"A STUDY ON SOME IMPORTANT ASPECTS OF WORKING CAPITAL MANAGEMENT IN SELECTED INDIAN INDUSTRIES"

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IN THE SUBJECT OF
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BY
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कर्पूरगौरं करुणावतारम् संसारसारम् भुजगेन्द्रहारम्।
सदावसन्तं हृदयारविन्दे भवं भवानीसहितं नमामि।।

Dedicated to the Lotus Feet of the Supreme Guru of Universe, Lord Shiva and his consort, Maa - Shakti

DECLARATION

I hereby declare that the theses titled, "*A Study on Some Important Aspects of Working Capital Management in Selected Indian Industries*" submitted by me to The Maharaja Sayajirao University of Baroda, Vadodara, Gujarat, India for the award of the degree of **Doctor of Philosophy** is a bonafide record of research work carried out by me. The contents of this thesis, in full of in parts, have not been submitted to any other Institute or University for the award of any degree or diploma. I certify that the works carried out by other authors have been duly acknowledged.

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THESIS CERTIFICATE

This is to certify that the thesis entitled, **"A Study on Some Important Aspects of Working Capital Management in Selected Indian Industries"** submitted by **Ms. Sumita J. Shroff** to The Maharaja Sayajirao University of Baroda, Vadodara, Gujarat, India for the award of the degree of **Doctor of Philosophy** in the Subject of Accounting and Financial Management is a bonafide record of research work carried out by her under my supervision. The contents of this thesis, in full or in parts have not been submitted to any other Institute or University for the award of the degree or diploma.

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गुरु गोविंद दोनों खड़े, काके लागूं पाँय।
बलिहारी गुरु आपने, गोविंद दियो मिलाय।।

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या देवी सर्वभूतेषु मातृरूपेण संस्थिता
नमस्तस्यै नमस्तस्यै नमस्तस्यै नमो नमः।।

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Sumita J. Shroff
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Table of Contents

LIST OF TABLES

LIST OF CHARTS

LIST OF ABBREVIATIONS

Abbreviation	Full Form
ACP	Average Collection Period
AE	Advance Estimates
ALR	Absolute Liquidity Ratio
ANOVA	Analysis of Variances
APP	Average Payment Period
BSE	Bombay Stock Exchange
CA	Current Assets
CAGR	Compounded Annual Growth Rate
CAME	Current Asset Management Efficiency
CANFAR	Current Assets to Net Fixed Assets Ratio
CATAR	Current Assets to Total Assets Ratio
CATR	Current Assets Turnover Ratio
CBBTCAR	Cash and Bank Balance to Current Assets Ratio
CBTR	Cash and Bank Turnover Ratio
CCC	Cash Conversion Cycle
CFC	Current Financing Charge
CFCCLR	Current Financing Charge to Current Liabilities Ratio
CL	Current Liabilities
CLCAR	Current Liabilities to Current Assets Ratio
CLTAR	Current Liabilities to Total Assets Ratio
Comm.	Communication
CR	Current Ratio
CSO	Central Statistical Organization
CTR	Creditors Turnover Ratio
CTSR	Current Assets to Sales Ratio
CV	Coefficient of Variation
DACE	Deposits and Advances from Customers and Employees
DACECLR	Deposits and Advances from Customers and Employees to Current Liabilities Ratio
DER	Debt Equity Ratio
EAT/TA	Earnings After Tax to Total Assets
EBIT	Earnings Before Interest and Tax
EBT/TA	Earnings Before Tax to Total Assets
EBT/NW	Earnings Before Tax to Net Worth
ECB	External Commercial Borrowings
FDI	Foreign Direct Investment
FEE	Foreign Exchange Earnings
FEM	Fixed Effects Model
FFA/TA	Fixed Financial Assets to Total Assets Ratio
FMCG	Fast Moving Consumer Goods
FTA	Foreign Tourist Arrivals
GDP	Gross Domestic Product
GLS	Generalized Least Squares
GOI	Gross Operating Income
ICR	Interest Coverage Ratio
IHP	Inventory Holding Period
ITCAR	Inventory to Current Assets Ratio

* *Arranged Alphabetically*

Abbreviation	**Full Form**
ITes	Information Technology enabled services
ITR	Inventory Turnover Ratio
LATCAR	Loans and Advances to Current Assets Ratio
LEV	Leverage
LnS	Natural Log of Sales
LnTA	Natural Log of Total Assets
LTD	Long Term Debts
LTDTAR	Long Term Debt to Total Asset Ratio
Misc.	Miscellaneous
MSTCAR	Marketable Securities to Current Assets Ratio
MTCR	Miscellaneous Current Asset Turnover Ratio
NIC	National Industrial Classification
NLB	Net Liquid Balance
NOP	Net Operating Profitability
NPM	Net Profit Margin
NTC	Net Trade Cycle
NWC	Net Working Capital
NWCCAR	Net Working Capital to Current Assets Ratio
OC	Operating Cycle
OCL	Other Current Liabilities
OCLCLR	Other Current Liabilities to Current Liabilities Ratio
OLS	Ordinary Least Squares
OPM	Operating Profit Margin
PBT	Profit Before Tax
PBITM	Profit Before Interest and Tax Margin
PCLR	Provisions to Current Liabilities Ratio
PETCAR	Prepaid Expenses to Current Assets Ratio
PROF	Profitability
PSU	Public Sector Undertakings
QR	Quick Ratio
ROCE	Return on Capital Employed
ROI	Return on Investments
ROTA	Return on Total Assets
RONW	Return on Net Worth
RTCAR	Receivables to Current Assets Ratio
RTR	Receivables Turnover Ratio
SD	Standard Deviation
STBB	Short Term Bank Borrowings
TA	Total Assets
TATR	Total Assets Turnover Ratio
TCCLR	Trade Credit to Current Liabilities Ratio
TD	Total Debts
TDTAR	Total Debt to Total Assets Ratio
WCL	Working Capital Leverage
WCP	Working Capital Policy
WCM	Working Capital Management
WCME	Working Capital Management Efficiency
WCR	Working Capital Requirements
WCTR	Working Capital Turnover Ratio

CHAPTER 1
INTRODUCTION

Working capital is synonymous to the lifeblood for every business. In absence of adequate working capital, the survival of a firm is put to test. The efficient management of working capital is vital for the health and growth of any business firm. May it be the manufacturing enterprise or a service enterprise, for smooth functioning, the role of working capital management is of considerable importance. With the development of Indian economy, the Service Sector has grown by leaps and bounds. The studies in the area of working capital management generally relates to the manufacturing sector. However, it is felt that to study the working capital management of the Service Sector would be equally important and provide insight on some important aspects of working capital management. In light of this background the present study deals with the working capital management prevalent in the Service Sector in India.

1.1 Indian Economy and Service Sector

Indian economy has been witnessing a phenomenal growth since the last decade and has "the third largest investor base in the world, with the largest number of listed companies, *i.e.*, 10,000 companies across 23 stock exchanges"[1]. The services sector has been a major and vital force steadily driving growth in the Indian economy for more than a decade. The Indian economy has successfully navigated the turbulent years of the recent global economic crisis because of the vitality of this sector in the domestic economy as well as its prominent role in India's external economic interactions"[2]. Thus, services sector has turned out to be one of the most important segments of Indian economy as validated by its contribution to the gross domestic product (GDP) in recent years. It has been at the forefront of the rapid growth of the Indian economy contributing nearly 59% of the GDP in 2011-12 **(Table 1.1)**. In addition, the services sector is contributing to about a quarter of total employment; accounting for a high share in foreign direct investment (FDI) inflows; over one-third of total exports. Further, it has recorded also very fast (27.4%) export growth through the first half of 2010-11[3].

India thus stands out for the size and zing of its services sector. The share of services in India's GDP at factor cost (at current prices) increased rapidly from 30.5 per cent in 1950-51 to 59 per cent in 2011-12 (**Table 1.1**).

Chart-1.1: Sector wise Contribution to GDP from 1991-92 to 2011-12

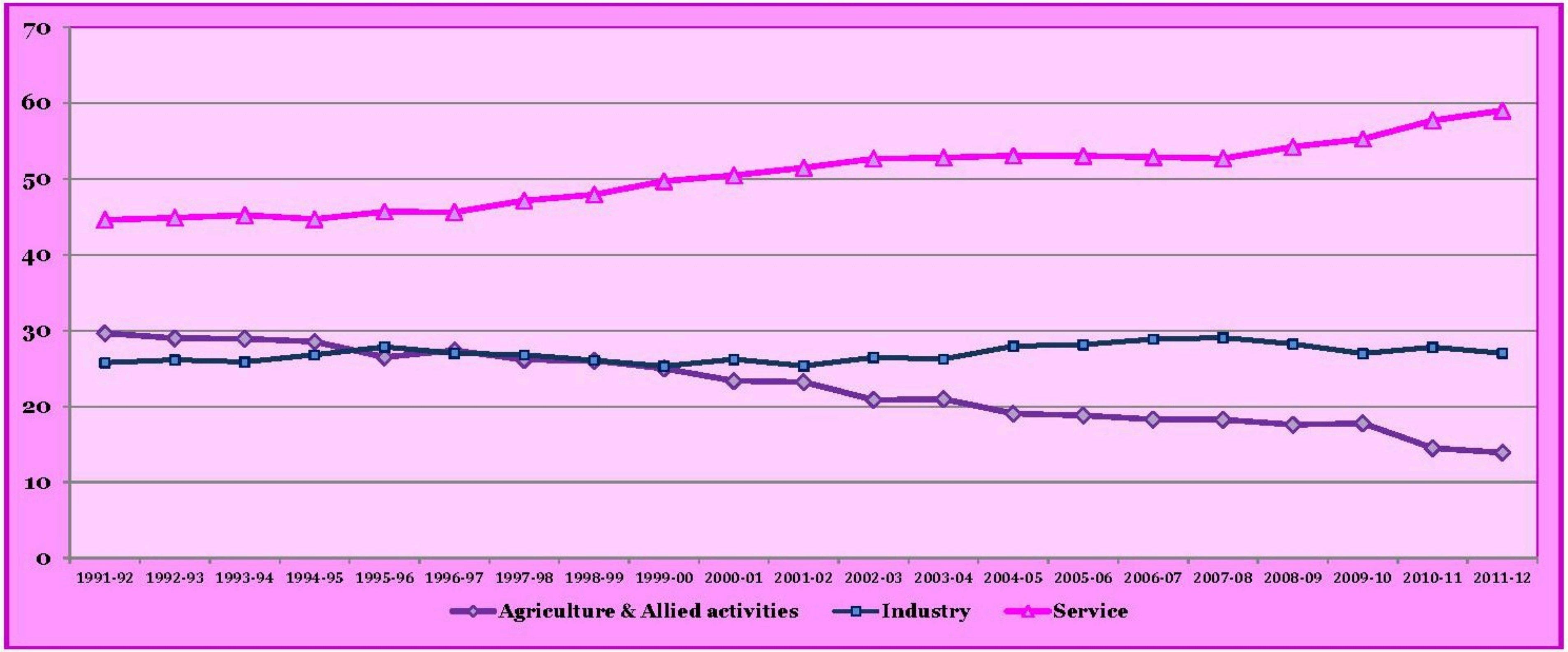

TABLE - 1.1

Sector wise Contribution to GDP (At 1999-00 prices till 2003-04 and at 2004-05 prices from 2004-05 onwards)

Particulars	1991-92	1992-93	1993-94	1994-95	1995-96	1996-97	1997-98	1998-99	1999-00	2000-01	2001-02	2002-03	2003-04	2004-05	2005-06	2006-07	2007-08	2008-09	2009-10	2010-11	2011-12
Agri. & Allied Act.	29.65	28.99	28.93	28.52	26.49	27.37	26.12	26.02	24.99	23.35	23.20	20.87	20.97	19.03	18.82	18.29	18.26	17.59	17.76	18.98	13.90
Industry	25.76	26.13	25.87	26.8	27.83	27.02	26.78	26.07	25.31	26.19	25.34	26.46	26.24	27.93	28.14	28.85	29.04	28.22	26.97	26.29	27.00
Service	44.59	44.88	45.2	44.68	45.68	45.61	47.11	47.92	49.69	50.46	51.46	52.66	52.79	53.05	53.04	52.86	52.7	54.2	55.27	54.73	59.00
Total	100	100	100	100	100	100	100.01	100.01	99.99	100	100	99.99	100	100.01	100	100	100	100.01	100	100	99.99

(Source: Compiled from various issues of Economic Survey)

The ratcheting up of the overall growth rate (compound annual growth rate [CAGR]) of the Indian economy from 5.7% in the 1990s to 8.6% during the period 2004-05 to 2009-10 was largely due to the acceleration of the growth rate (CAGR) in the services sector from 7.5% in the 1990s to 10.3% in 2004- 05 to 2009-10. The services sector growth was significantly faster than the combined annual output growth of agriculture and industry sectors during the same period. In 2009-10, services growth was 10.1% and in 2010-11 (advance estimates—AE) it was 9.6%[3]. Further, the growth in the services sector as compared to the agriculture and industry has been steady and increasing over a period of time as observed from Chart 1.1 & Table 1.1.

Thus, service sector has remained the major vehicle accelerating growth in GDP.

1.2 Conceptual Framework: Working Capital Management

The fuel of growth in any economy is the investments and fundings which are brought about by the entrepreneurs, government as well as the financial institution. Capital is a scarce and competitive productive resource in developing economies and therefore proper utilization of this resource promotes the rate of growth, cuts down the cost of production and above all improves the efficiency of the productive system. Fixed capital and working capital are dominant contributors to the total capital of the developing country. While fixed capital investment generates productive capacity only working capital makes the utilization of this capacity possible. Thus, every organization needs two types of capital, *viz,* fixed and working capital.

1.2.1 Short Term and Long Term Finance: A Comparison

An analysis of the statistics of past three decades as provided by Reserve Bank of India reveals that there has been gradual and incremental rise in the demand for short term capital, *i.e.,* working capital (**Table 1.2**).

The long term loans disbursed had increased from ₹ 60 crores in 1971 to ₹ 26105 crores in 2011, whereas for the same period working capital loan had increased from ₹ 5 crores to ₹ 19949 crores. The long term loans disbursements have increased by 435.08 times whereas the short term loan disbursements have increased by 3989.8 times which implies the significance and importance of working capital and the growing requirements of short term loans in our country.

This phenomenon highlights the growing demand of working capital in the industries which is due to the expansion of business activities to support the growing demand of customers. The growing demand leads to growth in sales resulting into increased demand for cash, inventory as also increasing receivables to support growth in a competitive environment. The procurement and management of short term capital is thus an important decision making arena for the smooth functioning of business as well as earning desirable returns.

TABLE 1.2

INDUSTRIAL FINANCE BY RESERVE BANK OF INDIA

(₹ In Crores)

Year	Long-term Finance Outstanding					Total	Short-term Finance Outstanding						Total
	IDBI	SIDBI	EXIM BANK	IIBI	NHB		IFCI	SFCs	ICICI	IDBI	SIDBI	DFHI	
1971	60	-	-	0	-	**60**	2	3	0	0	-	-	**05**
1972	118	-	-	0	-	**118**	2	4	0	0	-	-	**06**
1973	135	-	-	0	-	**135**	0	4	0	0	-	-	**04**
1974	204	-	-	0	-	**204**	0	5	0	0	-	-	**05**
1975	320	-	-	0	-	**320**	0	9	0	11	-	-	**20**
1976	385	-	-	0	-	**385**	0	12	0	0	-	-	**12**
1977	517	-	-	0	-	**517**	0	3	0	0	-	-	**03**
1978	614	-	-	0	-	**614**	0	1	0	0	-	-	**01**
1979	868	-	-	0	-	**868**	0	0	0	0	-	-	**00**
1980	1097	-	-	0	-	**1097**	0	5	0	0	-	-	**05**
1981	1303	-	-	0	-	**1303**	0	5	0	23	-	-	**28**
1982	1520	-	25	0	-	**1545**	0	3	0	0	-	-	**03**
1983	1828	-	70	0	-	**1898**	0	11	0	0	-	-	**11**
1984	2085	-	125	0	-	**2210**	3	8	0	141	-	-	**152**
1985	2341	-	180	0	-	**2521**	0	4	2	188	-	-	**194**
1986	2595	-	260	10	-	**2865**	0	11	3	138	-	-	**152**
1987	2885	-	345	25	-	**3255**	0	20	15	88	-	-	**123**
1988	3199	-	435	45	-	**3679**	0	30	10	38	-	-	**78**
1989	3531	-	530	70	50	**4181**	0	58	0	262	0	878	**1198**
1990	3822	-	625	95	75	**4617**	30	53	0	400	0	981	**1464**
1991	3705	400	745	130	125	**5105**	44	35	0	0	0	849	**928**
1992	3577	840	877	170	175	**5639**	0	66	0	0	0	630	**696**
1993	3422	840	877	170	175	**5484**	0	236	0	0	0	0	**236**
1994	3244	1172	877	170	175	**5638**	0	32	0	360	0	0	**392**
1995	3033	1380	877	170	175	**5635**	0	49	0	280	0	0	**329**
1996	2809	1604	877	170	175	**5635**	0	0	200	0	0	0	**200**
1997	2563	1730	852	170	175	**5490**	0	0	0	120	0	0	**120**
1998	2266	2004	807	170	875	**6122**	0	48	0	40	0	0	**88**
1999	2000	2004	752	170	875	**5801**	0	25	0	0	0	0	**25**
2000	1740	2004	697	170	875	**5486**	0	43	0	0	0	0	**43**
2001	1440	11454	617	160	875	**14546**	0	80	0	0	2956	0	**3036**
2002	0	10252	-	-	175	**10427**	0	93	-	0	2908	0	**3001**
2003	0	8361	-	-	175	**8536**	0	89	-	0	4367	0	**4456**
2004	-	8549	-	-	175	**8724**	0	40	-	-	1515	0	**1555**
2005	-	8523	-	-	50	**8573**	0	0	-	-	2339	0	**2339**
2006	-	11295	-	-	-	**11295**	0	0	-	-	2595	0	**2595**
2007	-	12461	-	-	50	**12511**	0	0	-	-	3570	0	**3570**
2008	-	11489	-	-	50	**11539**	0	0	-	-	8737	0	**8737**
2009	-	14786	-	-	0	**14786**	0	0	-	-	16100	0	**16100**
2010	-	22719	-	-	-	**22719**	-	-	-	-	15303	-	**15303**
2011	-	26105	-	-	0	**26105**	-	-	-	-	19949	-	**19949**

Notes : 1) Data for 2011 are Provisional.

2) Data for short-term finance outstanding by SFCs for 1993 are as per Under Section 17(4)(a) of the Reserve Bank of India Act, 1934.

3) For EXIM BANK, outstandings have been converted into tier I bonds of Government of India since 2002-03.

4) Pursuant to the Industrial Development Bank (Transfer of undertaking and repeal) Act 2003, IDBI Act was repealed on October 1, 2004 and IDBI was converted into bank w.e.f. that date.

5) ICICI was merged with ICICI Bank Ltd. effective March 30, 2002

6) IIBI is in the process of voluntary winding up.

7) Data relate to end-March for Long term finance and last Friday of March for Short term finance.

(Source: http://www.rbi.org.in/scripts/PublicationsView.aspx?Id=13641 accessed on 1st August, 2012)

1.2.2 Purpose and Significance of Working Capital Management

Working capital is more commonly referred to as revolving capital, circulating capital *etc*. As the word itself implies that the capital works, revolves and circulates in the business thereby taking different forms, *viz,* cash, inventory, receivables and prepaid expenses termed as current assets and in the process various short term liabilities are created termed as current liabilities. Working capital ensures smooth flow of operations and is an important factor driving growth of any business entity. Hence, a scientific and systematic management of short term finances as well as investments is indispensible which brings out the importance of short term financial management, *i.e.,* working capital management (WCM) and is often referred to as management of current assets and current liabilities. Thus, "Working capital management is the process of planning and controlling the level and mix of the current assets of the firm as well as financing these assets"[4] with an objective to ensure optimum investment in current assets in order to strike a right balance between the two fold objectives of liquidity and profitability in the utilization of funds. The goal also is to make sure ample flow of funds for day-to-day operations as well as to speed up the flow of funds, *i.e.,* minimize the stagnation of funds.

The importance of working capital also originates from its size. It is a large portion of a firm's investment in assets. It usually amounts to 40% in manufacturing industries and 50% - 60% in retailing and wholesales[5]. Trading and construction industries have 80% – 90% of their assets as current assets whereas service industries like hotels and restaurants have only 10% to 20% of assets as current assets, followed by electricity generation and distribution firms with 20% to 30% as current assets[6]. Thus, nature of business activities determine the level of working capital investments required thereby arising the requirements of finance to fund them. In addition, firms can save relatively large amounts by economizing on working capital investments as well as working capital finance, which is possible through efficient working capital management. Thus its effective provision can do much to ensure the success of a business, while its inefficient management can lead not only to decline in profits but also an ultimate downfall of the concern. A deeper understanding of the importance of working capital management and its adequacy can assist in cost savings and maintaining financial return on minimum capital employed. Further, "working capital management is vital both at the national level and at the corporate level. At the corporate level, investment in working capital is as important as investment in fixed assets. The subject of WCM is important at the national level for ensuring maximum capital formation.[7]"

1.2.3 An Overview of Few Empirical Studies

Weston[8] noted that largest portion of a financial manager's time is devoted to day to day internal operations of a firm, i.e. working capital management. Lamberson[9] observed that in practice, WCM has become one of the most important issues in the organizations where many financial executives are struggling to identify the basic working capital drivers and the appropriate level of working capital. Block and Hirt[10] noted, "While long-term decisions, involving plant and equipment or market strategy, may well determine the eventual success of the firm, short-term decisions on working capital determine whether the firm gets to the long term." Motaal[11] observed, "Inadequacy of working capital is a symptom, and sometimes an excuse of business failure." Thus, "the management of working capital plays an important role in maintaining the financial health of the firm during the normal course of the business[12]." Misra[13] identified inventory, receivables, cash and working finance as the four problem areas of working capital management. Hence, many empirical studies have been carried out on various aspects of working capital management. Major studies carried out in Indian context include that of Agrawal[14] who undertook a study in 10 manufacturing sectors taking a sample of 34 companies and concluded that WCM of the firms in these industries was inefficient. Further, studies of Ansari[15], Khandelwal[16], and Reddy[17] focused on the peculiarities of WCM in the SSI. And since then the literature has become replete focusing on the WCM of manufacturing or SSI's taking a large sample, case study or comparative study.

Pass and Pike[18] concluded that the two main objectives of working capital management are to increase the profitability of a company and to ensure that it has sufficient liquidity to meet short-term obligations as they fall due to continue the business. Smith[19] through his empirical work concluded that WCM is important because of its effects on the firm's profitability and risk, and consequently its value. In the Indian context, Misra[13] submitted that the way in which working capital is managed has a significant impact on the profitability of companies. Since profitability is related to the goal of shareholder wealth maximization, it is desirable that investments in current assets be made to maximize the returns. However, sometimes, the most unproductive asset, *i.e.,* idle cash is held to have sufficient liquidity. And therefore there is also conflict between the twin goals of profitability and liquidity. This is because on one hand current assets should be maintained to earn returns and avoid the risk of opportunity loss due to its inadequacies whereas on the other hand there has also to be sufficient liquidity to avoid the risk of technical insolvency. Several contributions have been made and still the puzzle of whether liquidity has a positive or negative impact on profitability is unresolved. A few major studies which were carried out with this objective are discussed here.

Jose, Lancaster and Stevens[20] concluded that aggressive liquidity management is associated with higher profitability. Similar results were observed in the comparative study of Wang[21] on Japanese and Taiwanese firms.

Shin and Soenen[22] through his empirical analysis on US Firms concluded that reducing the level of current assets to a reasonable level increases a firm's profitability and that the relationship between net trade cycle and return on total assets differed across the industries.

Thereafter many studies were carried out taking the operating cycle or cash conversion cycle to examine its impact on profitability. For *e.g.*, Deloof[23] carried out study for firms in Belgiam Lazaridis and Tryfonidis[24] conducted in Greek context; Shah and Sana[25] in Pakistan context; Tereul and Solano[26] in Spain context; Ganesan[27] in UK context; Samiloglu and Demirgunes[28] for Turkey firms; Nobanee and Alhajjar[29] in Japanese context whereas Falope and Ajilore[30] in Nigerian context and all the studies broadly agreed that lengthier the operating cycle or cash conversion cycle or its component lower is the profitability and established positive influence of liquidity on profitability.

In, Indian context, Singh and Pandey[31] in their case study found that CR, QR, RTR and working capital to total assets had significant impact on profitability. Mallick and Sur[32] in their case study on FMCG companies witnessed a very high degree of positive association between liquidity and profitability. However, Kannadhasan[33] in his case study found negative relation between liquidity and profitability. Similar conclusions were made by Sofat[34] in a study on seven Indian Cement companies as well as Saini and Saini[35] in their case study on IT sector firm.

Thus the mystery continues and more and more studies are focusing on examining the impact of liquidity on profitability to unravel the truth.

Further, Walker[36] in his pioneering work empirically examined the impact of change in level of working capital on the returns and concluded that the nature of finance utilized for financing current assets affects not only the profitability but also risk preposition of an enterprise and therefore the firms have to achieve a risk-return tradeoff to balance the tangle of liquidity, profitability and risk. Since then few studies have also been undertaken with an objective to examine the nature of working capital policy followed as well as its impact on profitability.

In a study of 10 diverse industry groups of, Weinraub and Visscher[37] made an attempt to examine the relative relationship between their aggressive/conservative working capital policies of US firms and concluded that the industries had distinctive and significantly different working capital management policies.

In a study of working capital financing policy of selected co-operatives of Botswana, Sathyamoorthi[38] found that the selected co-operatives followed conservative working capital policy.

Afza and Nazir[39] through their empirical study in Pakistan context concluded that aggressive working capital policy leads to decline in profitability. Similar conclusions were drawn by Singh and Chekol[40] in Indian context.

Overall it can be observed that various studies concentrating on a range of aspects of working capital management have been conducted and all of these have reinforced the essence of working capital management and its decision on the liquidity, risk and profitability of firms across the globe.

1.3 Rationale of the Study

Working capital management essentially is managing the relationship between a firm's short-term assets and its short-term liabilities. The management of working capital involves managing inventories, accounts receivables, payables and cash. In managing working capital the time involved in implementing the decision is so short that decisions involved are tactical. It is therefore important on the part of management to pay particular attention to the planning and control of working capital.

"The rationale of the study is emphasized by the fact that the manner of management of working capital determines the success or failure of the operation of the business.[41]" Shortage of funds for working capital has caused many businesses to fail and in many cases has retarded the growth. Lack of utilization of working capital either does permit a business enterprise to earn a plausible rate of return on capital employed or compels it to sustain continual losses. The need for skilled working capital management has thus become essential in recent years.[42]

The Weekend edition of Business Standard[43] reads, "Working Capital Crunch delays EIL's electric 3-wheeler launch. The two to three months of working capital is stuck which has resulted in production slowing down leading to a supply crunch in the market pushing wait periods for an e-bike due to which the company is losing its customers and has also to shut over 250 dealerships in the country whereas another 250 are in process to close down reducing the dealership to almost 50%." The shortage of working capital can thus rust the growing business and bring it an unfortunate halt

Thus, efficient working capital management is necessary for achieving both liquidity and profitability of a company. A poor and inefficient working capital management leads to tie up funds in idle assets and reduces the liquidity and profitability of a company.[44]

A number of research studies in the nature of comparative studies, case studies and fact finding studies have been undertaken by many researchers on the various aspects of working capital management which includes, Efficiency of working capital management including in depth study on each component of working capital; Structure of Working Capital; Impact of Working capital management on Profitability of the firm; Working capital management practices followed; Relationship between efficiency of working capital management and EBIT; Financing of Working capital; Inventory Management; Cash Management, reiterating the essence of working capital management. Studies have concentrated either on working capital management or on working capital policy of on impact of liquidity on profitability.

These studies have been undertaken in variety of industries with different business verticals, amongst which most of them have been carried out in Cement Industry[35, 45], Chemicals & Pharmaceutical Industry[46], Cooperatives[38], Textile Industry[47], Food Industry[48], Paper Industry[49,50], Public Sector Undertakings[42], Horticulture Industry[51], Small Manufacturing Enterprises[15,16,17], State Public Sector Undertakings[52], Steel Industry[53,54], Sugar Industry[55], Tea Industry[56], Tyre & Tube Industry[57] and Automobile Industry[58].

However, it was difficult to find a specific study of working capital management covering the whole of Non Financial Service Industry. Further a study focusing on all the important aspects of working capital management was also not found. In addition, a revolutionary growth in the service sector is observed globally and its growing importance in the development of Indian economy is evident from Table 1.1. In the said context, it is considered to be apt to understand the nature and management of working capital in the service industry. Hence, through this study, an attempt is made to bridge this gap in existing literature by undertaking a study on some important aspects of working capital management in Non Financial Service Industry.

Thus, the present study entitled as "A Study on Some Important Aspects of Working Capital Management in Selected Indian Industries" will be undertaken in Non Financial Services Industry based on review of literature and research, which is likely to add to the wealth of knowledge in the area of Working Capital Management with special reference to Non Financial Services Industry.

1.4 Objectives of the Study

The present study proposes to understand the working capital structure, working capital financing, its efficiency and its management performance. The researcher intends to carry out the present study with the following objectives for the Non Financial Services Industry for the financial years 1995-1996 to 2009-2010 (16 years).

1. To review the state of affairs and progress of Indian Non Financial Services Industry.
2. To study the structure of current assets and current liabilities of selected sample and examine trends over the study period.
3. To study the current asset investment and financing policy as well as the overall working capital policy of selected sample and examine the trends over the study period.
4. To study the nature of working capital requirements in the sample units for the period under study.
5. To study the liquidity position of the sample units and examine trends over the period under study.
6. To study the management of Inventory, Receivables, Cash and Payables of the selected sample and examine trends over the study period.
7. To examine, differences, if any regarding management of working capital, leverage position as well as profitability between the sample companies, between the selected non financial service industries and between the years over the selected time frame.
8. To measure working capital leverage of the selected sample units and examine trends as well as its impact on profitability for the period under study.
9. To examine the impact of Sales on Working Capital.
10. To examine the impact of liquidity, working capital policy, and working capital management efficiency on the profitability of the sample units of the selected industries for the period under study.

1.5 Contribution of the Study

Through the literature the researcher understood that the Non Financial Service Industry is a Sector which is hardly ventured upon. On the other hand there is phenomenal growth in this Sector. Under the circumstances, it is considered apt to carry out a study on some important aspects of working capital management in the Service Industry and it is felt that the present study will help in providing a detailed insight into the ways working capital is managed in Service Industry which will go a long way to fill this research gap.

This study uses a sample of companies belonging to 6 Indian Non Financial Service Industry groups covering a time span of 16 years, *i.e.,* 1995 to 2010 which is another aspect which differentiates this study from the previous ones. Further a long period of 16 years would provide an insight into the trends in working capital management over a period of time for all the Service Industry companies as well as for the individual industry groups.

It was difficult for the researcher to trace a study carried out on working capital management covering all its important aspects, *viz,* Current Assets Structure, Current Liabilities Structure, Working Capital Policy, Liquidity, Efficiency, Working Capital Leverage and impact of working capital management on profitability of a firm even for a large sample of manufacturing firms. In this study an attempt is made to focus on all of these with large number of ratios to derive behavioural conclusions on the same.

Specific firm level data with detailed accounting information for each firm have been used in this study. Apart from firm level analysis, an attempt has also been made to analyze the industry effects on various aspects of working capital management by making an industry-wise classification to find out differences, if any in working capital management when the firm belongs to a particular industry group.

In addition, this study has taken up the concept of "Net Trade Cycle". It was very difficult to trace any previous study in the Indian Context with special reference to Service Industry applying the concept of *"Net Trade Cycle"*.

Further, this study examines the impact of Sales on Working Capital; Working Capital Leverage on Return on Total Assets for sample companies. Also, taking 30 explanatory variables, the Impact of Firm Size, Leverage, Working Capital Policy, Liquidity and Working Capital Management Efficiency on *five* Profitability measures is taken up to understand if the impact differs when profitability is defined in a different way. This would also help in contributing to the existing literature.

1.6 Organization of Thesis

The present study is divided into eight chapters.

The **Chapter One "Introduction"** presents the theme, conceptual framework and rationale of the study. It also states the objectives of the study, contribution of the study and details the organization of the study in terms of different chapters and sections.

The **Chapter Two "Indian Services Sector: A Review"** presents a review of the development of Indian Service Sector over a period of time, the contribution of the important services in the Indian Economy as well as the present state of affairs of the sector along with the opportunities in the sector.

The **Chapter Three "Review of Literature"** gives an account of theoretical development in the area of working capital management over a period and presents review of major studies on working capital management carried out by academicians, practitioners and researchers in India and in abroad covering various aspects of working capital management. This is done to account for the work already undertaken by earlier researchers along with the findings of their study which helps in identification of the related areas of working capital management where certain behavioral conclusions are yet to be reached. This chapter serves as the foundation stone on which the current study proceeds. This chapter is divided into two sections. Section 1 details the theoretical construct and Section 2 presents review of empirical work on working capital management in India and Abroad with concluding remarks on the same.

The **Chapter Four "Research Methodology"** details the research methodology of the study. An attempt is made to cover various aspects of research design and gives an account of the technicalities of the research study including Sampling decisions, Data sources, Study period, Hypotheses of the Study, Financial techniques, Methodology adopted for examining the WCM as well as the impact of WCM on profitability of the Indian Service Industry. The quantitative tools applied to examine the empirical data are discussed in detail.

The **Fifth Chapter "Working Capital Management: Trend Analysis"** is devoted to the analysis of behavior of selected ratios of working capital management to gauge understanding about the management of current assets and its components, current liabilities and its components, working capital policies, nature of working capital requirements, liquidity management and efficiency of working capital management of the selected industries. The trends in working capital leverage of the selected industries are also examined in this chapter. This chapter also analyzes the leverage and profitability position of the selected industries as they are utilized in the latter part of analysis.

The **Sixth Chapter "Working Capital Management: Analysis of Variances"** attempts to analyze the variations if any for between parameters of working capital management, leverage and profitability between companies, between years and between industries which helps in understanding the differences in practices of the selected industries with respect to working capital management.

The **Seventh Chapter "An Empirical Analysis of Working Capital Management and Profitability"** examines the impact, if any, of liquidity, working capital policy, size, leverage, working capital risk and working capital management efficiency on the profitability. It also examines the impact of Sales on Working Capital as well as impact of working capital leverage on profitability of the Indian Service Sector Companies.

The **Eighth Chapter** presents **"Findings, Conclusions and Suggestions"** based on the results received in the form of the outcome of application of various statistical tools and test of significance applied to test the various statistical hypothesis in this research study. Further suggestions are also made for the selected industries based on the analysis.

Finally, thesis has been supported with Selected Bibliography, Webliography and Appendix.

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CHAPTER 2

INDIAN SERVICE SECTOR: A REVIEW

Gandhiji observed, "*Service to Man is Service to God.*" However, Bapu might never have visualized the commercialization of services to an extent that the Services' Sector has today become a force driving the world economy.

Economic Survey 2010-2011, in its Chapter 10 quotes, "India stands out for the size and dynamism of its services sector. The contribution of the services sector to the Indian economy has been manifold: a 55.2 % share in GDP which is growing by 10 % annually; contributing to about a quarter of total employment; accounting for a high share in FDI inflows and over one-third of total exports, and recording very fast (27.4 %) export growth through the first half of 2010-11." In the said context, this chapter examines the role of services in India's economy in terms of contribution to GDP, employment, FDI, and draws some international comparisons.

The chapter goes on to examine the performance of different services sub-sectors such as Domestic Trade; Tourism including Hotels and Restaurants; Shipping and Port Services; Storage; Telecommunications related services as well as Information Technology (IT) and IT enabled services (ITes).

2.1 Services Sector: An International Comparison

In 2010, the share of services with US$ 63 trillion, was nearly 68 % of the world gross domestic product (GDP), as in 2001 **(Table 2.1)**. Hence, with an overall share of 67.8 % in world GDP the services sector across the globe has been playing a dominant role in the growth of economies, especially in high income economies which have transited to services-led economies. India's performance in terms of this indicator is not only above that of other emerging developing economies, but also very close to that of the top developed countries.

- Among the top 12 countries with highest overall GDP in 2010, India ranked 8th. However, it ranked 11th in terms of Services GDP. Moreover, while countries like UK, US and France have the highest share of services in GDP at above 78%, India's share of 57% is much above that of China at 41.8%.
- In 2010, India was the second topmost country in terms of increase in its services share in GDP at 7.7% after China, which has registered a growth rate of 9.6% followed by Brazil at 4.8%, Japan and Russia at 2.9% each.
- In terms of CAGR, for the period 2001-10, China at 11.3% and India at 9.4% show very high services sector growth. Russia at 5.5% and Brazil at 4.0% are a distant

third and fourth respectively. While India's growth rate of the services sector at 10.1 % in 2009 was higher than that of China at 9.6 %, in 2010 it has decelerated to 7.7 % while China's has remained constant. It can also be observed that there has been rapid growth of services sector in India as compared to the developed economies *viz,* US, UK, Japan and Russia.

All these emphasize the prominence of the services sector in India.

TABLE 2.1

Performance in Services Growth of Top 12 Countries

Country	Rank as per overall GDP	Rank as per Services GDP	GDP (in US$ Billions)	Share of Services (as % of GDP)			Services Growth Rate (%)			
				2001	2009	2010	2001	2009	2010	CAGR
US	1	1	14447.1	77.0	79.0	78.2	2.9	-1.4	1.2	1.8
Japan	2	2	5458.9	69.8	71.7	70.0	2.0	-4.8	2.9	0.6
China	3	3	5739.4	39.8	42.1	41.8	10..3	9.6	9.6	11.3
Germany	4	4	3280.3	69.7	73.7	72.5	2.1	-1.6	2.3	1.4
France	6	5	2559.8	76.5	78.9	78.1	1.7	-1.1	0.2	1.4
UK	5	6	2253.6	73.9	78.8	78.4	3.5	-3.2	1.1	2.0
Italy	7	7	2051.3	70.1	73.6	73.3	2.3	-2.9	1.2	0.6
Brazil	11	8	2089.0	65.3	67.6	66.8	1.8	3.0	4.8	4.0
Spain	10	10	1407.3	65.7	70.5	71.0	3.4	-1.0	0.7	2.7
Canada	9	9	1577.0	64.9	70.7	70.2	3.6	0.1	2.5	2.8
India	8	11	1722.3	50.0	56.5	57.0	7.5	10.1	7.7	9.4
Russia	12	12	1479.8	63.3	62.0	61.5	3.2	-5.6	2.9	5.5
World			63064.0	68.1	68.7	67.8	2.9	-0.9	2.5	2.6

(Source: Economic Survey: 2010-12)

Note: (i) GDP (in US$ Billions) is GDP at current prices.
(ii) Growth rates are based on constant prices (US$).
(iii) CAGR is estimated for 2001-2010. (iv) Construction Sector is excluded in Services GDP.

2.2 Indian Service Sector: The Rising Sun

Table 1.1, 1.2 and Chart 1.1 have already given a glimpse of the growing significance of services sector in the Indian Economy. However, its contributions to different aspects of the economy are briefly discussed in this section.

2.2.1 Services GDP

The share of various service sectors to the services GDP is presented in Table 2.2 which has been compiled from the Economic Survey 2010-11 and 2011-12.

✠ The share of services in India's GDP at factor cost (at current prices) increased rapidly from 33.5 % in 1950-51 to 55.1 % in 2010-11 and to 56.3% in 2011-12 as per AE. If construction is also included, then the share increases to 63.3% in 2010-11 and 64.4% in 2011-12. **(Table 2.2)**

TABLE 2.2

Share of Different Services to GDP at Factor Costs (Current Prices) [In %]

Sector	2004-05	2005-06	2006-07	2007-08	2008-09	2009-10@	2010-11*	2011-12**
Trade, Hotels and Restaurants	16.1	16.7	17.1	17.1	16.9	16.6	16.9	25.2#
Transport, Storage and Communication	8.4	8.2	8.2	8	7.8	7.8	7.7	
Financing, Insurance, Real Estate and Business Services	14.7	14.5	14.8	15.1	15.9	15.8	16.4	16.9
Community, Social and Personal Services	13.8	13.5	12.8	12.5	13.3	14.5	14.3	14.2
Total Services (Excluding Construction)	53	52.9	52.9	52.7	53.9	54.7	55.1	56.3
Construction	7.7	7.9	8.2	8.5	8.5	8.2	8.2	8.1
Total Services (Including Construction)	60.7	60.8	61.1	61.2	62.4	62.9	63.3	64.4

(Source: Economic Survey 2010-11 and 2010-12)

@ represents Provisional Estimates (PE); * represents Quick Estimates (QE); ** represents Advance Estimates (AE)

Includes the share of both Trade, Hotels and Restaurants as well as Transport, Storage and Communication for 2011-12.

- With a 16.9% share, Trade, Hotels and Restaurants as a group is the largest contributor to GDP among the various services' sub- sectors. It is followed by Financing, Insurance, Real estate and Business Services with a 16.4% share. Community, Social and Personal Services with a share of 14.3% is in third place. Construction, a borderline service inclusion, is at fourth place with an 8.2% share.

- The ratcheting up of the overall growth rate of the Indian economy from 5.7 % in the 1990s to 8.6 % during the period 2004-05 to 2009-10 was to a large measure due to the acceleration of the growth rate (CAGR) in the services sector from 7.5 % in the 1990s to 10.3 % in 2004- 05 to 2009-10. The services sector growth was significantly faster than the 6.6 % for the combined agriculture and industry sectors annual output growth during the same period. In 2009-10, services growth was 10.1 % and in 2010-11, it was 9.6 %. India's services GDP growth has been continuously above overall GDP growth, pulling up the latter since 1997- 98. It has also been more stable.

2.2.2 Services Exports

India is also moving towards a services-led export growth. During 2004-05 to 2010-11, as per the Balance of Payments data, services exports grew at a CAGR of 20.6% compared to merchandise exports at 19.7%. Within the services sector, CAGRs of Financial Services (52.8%) and Business Services (29.2%) were higher, while that of Software at 21% was low.

- In terms of size, Software is a major services export category accounting for 41.7% of total services exports in 2010-11. The CAGR for import of services was 20.2% compared to the CAGR of merchandise imports at 21.4 %. Among services imports, Non-Software Services (22.6 %) and Transportation (20.5 %) had high CAGRs.
- The overall openness of the economy reflected by total trade including services as a percentage of GDP showed a higher degree of openness at 50.3 % in 2010-11 compared to 25.4 % in 1997-98. Openness indicator based only on merchandise trade is at 37.5% in 2010-11 compared to 21.2 % in 1997-98.

2.2.3 Services Employment in India

From the perusal of Table 2.3, it is noted that, although the primary sector (agriculture mainly) is the dominant employer followed by the services sector, the share of services has been increasing over the years while that of primary sector has been decreasing.

TABLE 2.3

Share of Services Sector in Employment

Sectors	Share			Changes in Share		
	1993-94	2004-05	2007-08	2004-05 over 1993-94	2007-08 over 2004-05	2007-08 over 1993-94
Primary	64.5	57	55.9	-7.5	-1.1	-8.6
Secondary	14.3	18.2	18.7	3.9	0.5	4.4
Tertiary	21.2	24.8	25.4	3.6	0.6	4.2

(Source: Economic Survey 2010-2011)

Between 1993-94 to 2004-05, there was a sharp fall in the share of the primary sector in employment. The consequent rise in share of employment of the other two sectors was almost equally divided between the secondary and tertiary sectors. In 2007-08 compared to 2004-05, though the trend was similar, the fall in employment in primary sector was less (at -1.1 %) with a small commensurate rise in employment in the other two sectors, which was again almost equally divided between the other two sectors.

2.2.4 Foreign Direct Investments in Services in India

From the perusal of Table 2.4, it is observed that the cumulative share of the four services sectors combined, *i.e.,* services: financial and nonfinancial; Computer Hardware and Software, Telecommunications as well as Housing and Real Estate in the FDI equity inflows during April 2000–December 2011 was around 41.9%. If construction is included then the share rises to 48.4%. If the shares of some other services or service-related sectors like, Hotels and Tourism (2.02%), Trading (1.94%), Information and Broadcasting (1.60%), Consultancy services (1.21%), Ports (1.04%), Agriculture Services (0.91%), Hospital and Diagnostic Centres (0.72%), Education

(0.30%), Air Transport including air freight (0.27%), and Retail trading (0.03%) are included then the total share of cumulative FDI inflows to the services sector would be 58.4%. Telecommunications and Construction are the leading sectors in FDI inflows to the services sector in 2011-12 (April-December).

TABLE 2.4

Sectors Attracting Highest FDI Equity Inflows (In US$ Terms)

Ranks	Sector	2008 -09	2009 -10	2010 -11	2011 -12	Cumulative Inflows (Apr-00 to Dec-11)	% Share to Total Inflows
1	Services Sector (Financial & Non Financial)	6,138	4,176	3,296	4,575	31,710	20.1%
2	Telecommunications	2,558	2,539	1,665	1,989	12,554	7.9%
3	Computer Software & Hardware	1,677	872	780	564	10,973	6.9%
4	Housing and Real Estate	2,801	1,935	1,227	551	10,933	6.9%
5	Construction Activities	2,028	2,852	1,103	1,602	10,239	6.5%

(Source: Economic Survey 2010-2012)

2.2.5 Important Services for India

- Some services have been particularly important for India's improving performance of which Software is one sector, which has achieved a remarkable global brand identity. Tourism and travel-related services and Transport services are also major contributors in India's services. Besides these, the potential and growing services include many professional services, infrastructure-related services and financial services.
- Central Statistical Organization's (CSO) classification of the services sector falls under four broad categories, namely a) Trade, Hotels and Restaurants; b) Transport, Storage, and Communication; c) Financing, Insurance, Real Estate, and Business Services; and d) Community, Social, and Personal Services.
- Among these, Financing, Insurance, Real Estate, and Business Services as well as the Trade, Hotels and Restaurants are the largest groups accounting for 16.7% and 16.3% respectively of the national GDP in 2009-10.
- The Community, Social, And Personal Services category accounts for a 14.3% share, while, Transport, Storage and Communication accounts for a 7.7% share. Construction, which is a borderline services inclusion has a share of 8.2 % (**Table 2.2**).

2.3 Performance of Service Sub-Sectors

As per Economic Survey 2011-12, Indian Services Sector excluding construction grew by 9.3% in 2010-11 and by 9.4% in 2011-12 whereas including construction it was 9.2% and 8.8% respectively in 2010-11 and 2011-12, which is nearly 2 percentage points higher than the overall growth rate.

- Broad category-wise, the "Trade, Hotels & Restaurants, Transport, Storage and Communications" category had the highest growth at 11.2%, followed by financing, insurance, real estate, and business services' at 9.1% in 2011-12. 'Trade' and 'Real estate, Ownership of dwellings and Business services' are two major sub-sectors with shares of 15.4% and 10.6% of GDP respectively in 2010-11.
- Communications followed by Banking and Insurance are the fastest growing sub-sectors over the years with 27.2 % and 14.5 % growth respectively in 2010-11 Among 'other services' which have a share of around 8 % in India's GDP, the major sub sectors include Education, Medical and Health as well as Personal Services.

2.4 Performance of Some Major Services in Indian Economy

In this section the performance the selected important services (*i.e.*, Trade, Tourism including Hotels and Restaurant, Transport Related Services, Telecommunication Services and IT - ITes) along with their contribution to the overall economy and growth is discussed.

2.4.1 Trade

- Trade is an important activity-providing interface between the producer and consumer. It is also an important segment in India's GDP. The GDP from trade (inclusive of wholesale and retail in the organized and unorganized sectors) at constant prices increased from ₹ 4,33,967 crore in 2004-05 to ₹ 7,42,621 crore in 2010-11, at a CAGR of 9.4%. As per the CSO's QE, the growth rate in 2010-11 was 9.1% **(Table 2.5)**
- The share of trade in GDP has been slightly above 15 % in the last six years (15.4 % in 2010-11). With a high GDP growth in the last five years coupled with high growth in consuming population, the retail business is of late being hailed as one of the sunrise sectors in the economy.
- T. Kearney, an international management consultancy firm, has identified India as one of the topmost retail destinations.
- As per the NSSO Survey, the International Council for Research on International Economic Relations (ICRIER) study of 2008 places employment in the retail trade

at 35.06 million, which constitutes 7.3 % of the workforce in the country. Based on employment intensity in retail trading, the contribution of the retail sector in the GDP is estimated in the range of 10 to 12% and with fast growth in the GDP and rising disposable income of the consuming classes, the modern format of retailing i.e. organized retailing is attracting domestic and foreign investment.

TABLE 2.5

Annual Growth in India's Services in GDP at Factor Costs (at Constant Prices) [In %]

Name of Sector	2005 -06	2006 -07	2007 -08	2008 -09	2009 -10@	2010 -11*	2011 -12**
Trade, Hotels, & Restaurants	12.2	11.0	10.1	5.7	7.8	9.0	11.2#
Trade	11.6	10.8	9.8	6.7	8.3	9.1	
Hotels & Restaurants	17.4	14.4	13.0	-3.3	2.8	7.7	
Transport, Storage, & Communications	11.8	12.6	12.5	10.8	14.8	14.7	
Railways	7.5	11.1	9.8	7.7	9.4	6.8	
Transport by Other Means	9.3	9.0	8.7	5.3	7.2	8.4	
Storage	4.7	10.9	3.4	14.1	8.7	7.9	
Communications	23.5	24.3	24.1	25.1	31.7	27.2	
Financing, Insurance, Real Estate & Business Services	12.6	14.0	12.0	12.0	9.4	10.4	9.1
Banking & Insurance	15.8	20.6	16.7	14.0	11.3	14.5	
Real Estate, Ownership of Dwellings & Business Services	10.6	9.5	8.4	10.4	7.8	6.9	
Community, Social, & Personal Services	7.1	2.8	6.9	12.5	12.0	4.5	5.9
Public Administration & Defence	4.3	1.9	7.6	19.8	18.2	1.3	
Other Services	9.1	3.5	6.3	7.4	7.2	7.3	
Construction	12.8	10.3	10.8	5.3	7.0	8.0	4.8
Total Services (excluding Construction)	10.9	10.1	10.3	10.0	10.5	9.3	9.4
Total Services (including Construction)	11.1	10.1	10.3	9.4	10.0	9.2	8.8
Total GDP	9.5	9.6	9.3	6.7	8.4	8.4	6.9

(Source: Economic Survey 2010-2012)

@ represents Provisional Estimates (PE); * represents Quick Estimates (QE);

** represents Advance Estimates (AE)

Includes the share of both Trade, Hotels and Restaurants as well as Transport, Storage and Communication for 2011-12.

2.4.2 Tourism, including Hotels and Restaurants

Tourism sector has witnessed significant growth in recent years in India. It has accounted for 13% of the total of services' exports in 2009-10. Tourism is not only a major growth engine of economic growth in most parts of the world including India but also an export growth engine and employment generator. The sector has capacity to create large-scale employment both direct and indirect, for diverse sections in society, from the most specialized to unskilled workforce.

- According to the UN World Tourism Organization, tourism provides 6% to 7% of the world's total jobs directly and millions more indirectly through the multiplier effect in this sector and also plays an important role in the country's foreign exchange earnings. In 2007-08, the contribution of tourism to India's GDP, and to total jobs (direct and indirect) was 5.92% and 9.24% respectively. In absolute numbers, the total number of tourism jobs in the country increased from 38.6 million in 2002-03 to 49.8 million in 2007-08.
- During the period 2006 to 2011, the CAGRs of Foreign Tourist Arrivals (FTA) and Foreign Exchange Earnings (FEE) from tourism (in ₹ terms) were 7.2% and 14.7% respectively. FTAs in India during 2010 were 5.78 million compared to 5.17 million during 2009, posting a growth of 11.8%, which is much higher than the growth of 6.5% for the world in 2010. FEEs from tourism during 2010 were ₹ 64,889 crore compared to ₹ 54,960 crore during 2009 with a growth rate of 18.1%. Despite the slowdown and recessionary trends in the economies of Europe and America, FTAs during 2011 were 6.29 million with a growth of 8.9% over 2010 and FEEs in 2011 were ₹77,591 crore with a growth of 19.6%. Domestic tourism has also emerged as an important contributor to the sector providing much needed resilience. Domestic tourist visits during 2010 are estimated at 740.2 million, with a growth of 10.7%.
- The growth in tourist inflows in 2012-13 and 2013-14 is likely to be driven by tourists from regions other than North America and Western Europe. This includes Asian regions like South Asia, East Asia, and South East Asia. The shares of tourists from these countries have been rising in recent years, as per the data released by the Ministry of Tourism, and are expected to rise in the coming years as well.

The hotels and restaurants sector is an important sub-component of the tourism sector. The hotels sector comprises various forms of accommodation, namely Star category hotels, Heritage category hotels, Timeshare resorts, Apartment hotels, Guest houses and Bed and breakfast establishments. Availability of good quality and affordable hotel rooms plays an important role in enhancing the growth of tourism in the country. As on 31 December 2011, there were 2,895 classified hotels having a capacity of 1,29,606 rooms in the country. The hotel industry had reported sales growth of 14.3 % during 2010-11 and is expected to maintain this level in 2011-12 and 2012-13. PAT is expected to grow at 36.2 % in 2011-12 and 26.4 % by 2012-13.

- The share of the hotels and restaurant sector in the overall economy increased from 1.46% in 2004-05 to 1.53% in 2008-09, and then decreased to 1.46% in 2010-11. There was, however, negative growth (-3.41%) in 2008–09 over the year 2007-08, which was due to the adverse global economic conditions in this year, while in 2009-10, the sector registered a growth of 2.2 %.
- Several studies have identified the demand-supply gap in hotel rooms in India; some of them have estimated a gap of 150,000 hotel rooms, of which 100,000 rooms are in the budget segment. Since the construction of hotels is primarily a private-sector activity and is capital intensive with a long gestation period, the Government is making efforts to stimulate investments in this sector and speed up the approval process. Various financial and fiscal incentives are announced by the Government for the hospitality sector including a five-year tax holiday under the Income Tax Act for two, three, and four star category hotels located in all United Nations Educational, Scientific and Cultural Organization (UNESCO) World Heritage sites (except Mumbai and Delhi) for hotels starting operations from 1 April 2008 to 31 March 2013; a five-year tax holiday announced in 2007-08 for two, three, and four star category new hotels and convention centres coming up between 1 April 2007 and 31 July 2010 in the National Capital Territory of Delhi and some neighboring districts of the National Capital Region.
- Other incentives include, relaxation of external commercial borrowings (ECB) to reduce the liquidity crunch being faced by the hotel industry for setting up new hotel projects; allowing FDI up to 100 percent under the automatic route for the hotel and tourism-related industry; delinking of credit to hotel projects from commercial real estate by the RBI, thereby enabling hotel projects to avail of credit at relaxed norms and reduced interest rates; and an investment-linked deduction under Section 35 AD of the Income Tax Act announced in the Union Budget 2010-2011 for establishing new hotels of 2- star category and above, all over India, thus allowing 100 % deduction in respect of the whole or any expenditure of capital nature. Government also has a voluntary scheme of granting approval to bonafide tour operators, travel agents, tourist transport operators and adventure tour operators who satisfy certain criteria specified in terms of turnover, infrastructure and manpower. Besides, A Hospitality Development and Promotion Board has been set up at central level with the main function of the Board being to monitor and facilitate clearances/ approvals for hotel projects both at central and state government levels and would be a single window for receiving applications for various clearances,

approving / clearing hotel projects in a time-bound manner, and reviewing hotel project policies to encourage the growth of hotel / hospitality infrastructure in the country.

Health tourism the new entrant in the sector, is a niche area where India has good potential. Several studies have estimated the global market for medical tourism ranging from US$ 100 billion to US$ 150 billion.

- The Asian medical tourism market is being bolstered by initiatives taken by the national governments, as also rising quality standards. According to a study by the Organization for Economic Cooperation and Development (OECD), Thailand, India, Singapore, Malaysia, Hungary, Poland, and Malta are promoting their comparative advantage as medical tourist destinations.
- Several features like cost-effective health-care solutions, availability of skilled health-care professionals, reputation for treatment in advanced health-care segments, increasing popularity of India's traditional wellness systems and strengths in IT have positioned India as an ideal health-care destination.
- India, while strengthening its capabilities in modern health-care systems is also leveraging its inherent strengths in traditional health-care systems such as ayurveda, siddha, yoga, naturopathy and faith healing/spiritualism. It also holds an edge over competitor countries with its mastery over techniques of concentration and mind control and its natural resources and cultural diversity.

2.4.3 Transport Related Services

Shipping is an important indicator of both commodity and services trade of any country and is playing an important role in the economic development of our country especially in international trade with around 95% of the country's trade by volume and 68% in terms of value being transported by sea.

- Besides, the Indian shipping industry also plays an important role in the energy security of the country as energy resources like coal, crude oil, and natural gas are mainly transported by ship. Further, during crisis situations, Indian shipping contributes to the uninterrupted supply of essentials and can serve as second line of defence.
- As on 1st January 2012, India had a fleet strength of 1,122 ships with Gross Tonnage (GT) of 11.06 million with the largest share being of public-sector Shipping Corporation of India at 36.17%. Of this, 372 ships with 10.01 million GT cater to India's overseas trade and the rest to coastal trade.

- The gross foreign exchange earnings/savings of Indian ships in 2010-11 were ₹ 10,666.45 crore. Leaving aside the 'flag of convenience' countries, the country with the highest dead weight tonnage (DWT) is Hong Kong. Though India has one of the largest merchant shipping fleets among developing countries, it is ranked eighteenth in the world in terms of DWT with a share of only 1.09 % as on 1 January 2011. In comparison, China is ranked ninth with a share of 3.78 % **(Table 2.6)**.

TABLE 2.6

Share of Merchant Fleets by Flags of Registration, as on 1st January 2011

Rank	Flag of Registration	DWT (In '000)	Share (%)
1	Panama	3,06,032	21.93
2	Liberia	1,66,246	11.91
3	Marshall Islands	98,757	7.08
4	Hong Kong	91,733	6.57
5	Greece	71,420	5.12
6	Bahamas	67,465	4.83
7	Singapore	67,287	4.82
8	Malta	61,294	4.39
9	China	52,741	3.78
10	Cyprus	32,321	2.32
11	Japan	22,201	1.59
12	Republic of Korea	20,155	1.44
13	Italy	19,440	1.39
14	Isle of Man	19,422	1.39
15	Norway	18,065	1.29
16	Germany	17,566	1.26
17	UK	16,999	1.22
18	India	15,278	1.09

(Source: Economic Survey 2010-2012)

- According to preliminary estimates by UNCTAD, at 8.94 million Twenty foot Equivalent Units of Container (TEUs) in 2010, India was ranked eighth among developing countries in terms of container ship operation with a world share of 0.32%. UNCTAD further classifies India (ranked 17th) as one of the top 20 economies for shipbuilding based on deliveries in the year 2010 (37 vessels of 136,000 DWT), though its share is only 0.11 % in the world. India is also one of the major nations undertaking ship-breaking service. In 2010, with a world share of 32.43 %, it topped the list of ship-scrapping nations, scrapping 451 ships with 9.28 million DWT. India is also one of the major countries supplying seafarers. At third rank and with a 7.5% share in 2010, it supplied 46,497 officers to the global shipping industry. However, India is ranked 22nd in 2011 according to the UNCTAD liner shipping index, down from 21st position in 2004.

- However, the global shipping industry has been experiencing turbulent waters in the year 2011 due to the economic slowdown which have been prevailing since 2008 with small windows of relief in 2011-12. Indian shipping companies faced problems of restricted cash inflows in 2011-12 due to very low charter hire and freight rates in all segments of shipping. Further, the incidence of piracy has been of great concern to the government. The government has deployed naval vessels for assistance to merchant vessels in the piracy-affected areas. As on 17th February 2012, 27 Indian seafarers are in the custody of somalian pirates. The government has been raising the issue of piracy and the need for more concerted international action at the meetings of the United Nations and the International Maritime Organization (IMO).
- While India's overseas seaborne trade has been growing substantially over the years, from 224.62 million tonnes in 1999-2000 to 570 million tonnes in 2010-11, there has been sharp decline in the share of Indian ships in the carriage of India's overseas trade. From about 40 % in the late 1980s, this share has declined to 9 % in 2010 11 with an 18% share in India's oil imports in 2009-10. Given the relatively low participation of Indian ships in India's trade and given the fact that Indian ships are ageing, with the average age of the Indian fleet increasing from 15 years in 1999 to 18.37 years in 2012, there is urgent need to increase the shipping fleet so that it is at least enough to meet India's trade volumes. At present Indian ships cater to only 9 per cent of India's overseas trade which is abysmally low by any standards. Huge investment and modernization are needed in this sector to capture at least a substantial portion of India's present, if not potential, trade. Higher asset size of Indian shipping will not only lead to higher growth of the economy but also higher employment and high foreign exchange earnings/savings. In order to provide the shipping industry a partial level playing field and make it competitive at international level, the government implemented certain policies in 2011 like giving a minimum depreciation of 3.34% (assuming life of 30 years) to drilling rigs; granting exemption on 29 July 2011 to ships falling under Chapter 8901 from additional customs duty and excise duty provided a general license under section 406 of the Merchant Shipping Act 1958 is granted by the Director General shipping; and exemption from import duty for spares and capital goods required by ship owners in Budget 2011-12.

Port Services

Ports being the gateways of international trade play a vital role in the overall economic development of the country.

- India is blessed with a long coastline with 13 major ports and around 200 non-major ports. The total capacity of Indian ports has reached approximately 1,160 million tonnes as on 1 January 2012. Despite the recessionary trend and decline in exports, during the years 2008-09 and 2009-10, traffic at major ports attained a growth of 2.2 percent and 5.74 % respectively over the previous year.
- The American Association of Port Authorities ranked Madras Port and the Jawaharlal Nehru Port Trust (JNPT) at 55th and 56th position in 2009 in terms of total cargo volume up from 70th and 71st positions in 2008.
- Union Budget 2011-12 has increased the allocation of funds for infrastructure and enhanced the limit of tax free bonds for the ports sector up to ₹ 50 billion. The government is also making all round efforts to increase port capacity in the country through the development of additional berths at the major ports, mechanization, deepening of channels and harbours to receive bigger vessels, improved rail and road connectivity and by facilitating similar development at the non-major ports promoted by state governments.
- Some recent developments in the port services sector include the finalization of a model concession agreement for awarding projects on public private partnership (PPP) basis in 2008 which has been awarded recently to the JNPT, Mumbai where the biggest dredging project is also being taken up. More trans-shipment of Indian EXIM containers is expected to take place at Indian ports, especially at the new International Container Trans-shipment Terminal at Cochin. Establishing one additional major port in each of the maritime states that is interested in providing support for such development is under consideration and a technical committee is evaluating proposals for new major ports received from the states of Andhra Pradesh, Gujarat, Karnataka, and Kerala. Besides, the government has successfully implemented the Port Community System as part of a paperless regime for transaction of business at ports.
- The sales of the transport logistics services industry are estimated to have grown by a healthy 17.5% during 2010-11. This growth is likely to have been achieved by a combination of higher cargo volumes and better realizations. In 2011-12 as a whole, the sales of this sector are expected to grow by 9.6% and profit after tax (PAT) at 17.8%. In 2012-13 sales are expected to grow at 9.9% and PAT 11.1%.

2.4.4 Storage Services

The warehousing services are an important cog both in inbound logistics as well as outbound logistics. In India, the most important component of warehousing is agricultural storage for agri-produce, food grains, fertilizers, manure, etc. Other components include industrial warehousing for industrial goods, import cargo, and excisable cargo; inland container depots (ICDs)/ container freight stations (CFSs) for facilitating import/export trade; and special warehouses for cold and temperature controlled storage. The warehousing sector also provides ancillary services like handling, transportation, pest control, farmer extension schemes, dedicated warehousing at doorsteps, consultancy, and project execution.

- Central Warehousing Corporation (CWC) was established with the objective of providing scientific storage facilities for agricultural implements and produce and other notified commodities. And, with the same objective, 17 State Warehousing Corporations (SWCs) were also set up under the Warehousing Corporations Act 1962. The commercial outreach with social objectives has resulted in the CWC operating a large warehousing network across the country. As on 31 December 2011, the CWC was operating 469 warehouses, with a total storage capacity of 99.81 lakh MTs and an average utilization of 89 %. At State level, the 17 SWCs meet the storage requirements and complement the work of the CWC. As on 31 December 2011, these SWCs were operating a network of 1,624 warehouses with an aggregate storage capacity of 230.10 lakh MT.
- Major policy initiatives taken recently by the Government include construction of godowns under the seven-years guarantee scheme of the Government of India, most of them being managed by the CWC or SWCs; permission of up to 100 % FDI in the construction of warehousing infrastructure; and construction of warehouses under the Grameen Bhandaran Yojana of NABARD and the Rastriya Krishi Vikas Yojana. In the year 2007-08, the Government enacted the Warehousing (Development & Regulation) Act 2007 to make the warehouse receipt fully negotiable. Recently the Government took another major initiative for construction of godowns under its Private Enterpreneurs Godown (PEG) scheme. The CWC has constructed 0.9 lakh MT godowns during the year 2009-10.

2.4.5 Telecom and Related Services

Indian telecom has proved to be an international success story with the sector witnessing commendable growth over the past few years. The Indian telecom network is ranked as the *second largest in the world*, next only to China. The opening of the telecom sector in India has not only led to rapid growth but also helped a great deal towards maximization of consumer benefits as tariffs have been falling across the board as a result of increasing competition, with the telecom service price index falling from 100 in 2004-05 to 85.08 in 2007-08.

- The telecom sector has grown from a level of 22.8 million telephone subscribers in 1999 to 206.83 million on 31 March 2007 to 926.53 million as on 31 December 2011. Wireless telephone connections have contributed to this growth which has been phenomenal as the number of wireless connections rose from 3.57 million in March 2001 to 729.58 million by the end of November 2010, reaching 893.84 million connections at the end of December 2011, taking their share to over 96 % of total telephones in the country.
- Tele-density which is an important indicator of telecom penetration increased has increased from 18.31% in March 2007 to 64.34% in November 2010 to 76.86% in December 2011. While urban tele-density as of December 2011 has reached a high level of 167.85 %, at 37.48 % rural tele-density is low, signifying the potential for further growth in rural areas. *The Internet*, which is another growing mode of communication, is a worldwide system of computer networks. Broadband is often called 'high-speed' Internet, because it usually has a high rate of data transmission. Since the announcement of the Broadband Policy in 2004, several measures have been taken to promote broadband penetration in the country. As a result, there are 13.30 million broadband subscribers as on 31 December 2011 and 19.69 million internet subscribers at the end of March 2011. However, broadband has lagged behind the growth of telephones in India. Special efforts are being made to increase the penetration of broadband, especially in rural and remote areas. The upcoming decade is likely to usher in an information era through Mobile Value Added Services (MVAS) and Broadband for All.
- After rising to 10.5 % during 2010-11, sales growth of the telecom industry is expected to be 8.7 % in 2011-12 and 10.6 % in 2012-13. PAT during 2011-12 is expected to fall by 84.7 %, mainly on account of the sharp rise in the industry's interest outgo and higher depreciation charges due to the heavy borrowings for acquiring 3G licences and rolling out 3G services.

2.4.6 IT and IT enabled services (ITeS)

India has gained a brand identity as a knowledge economy due to its IT and ITeS sector which is giving India the image of a young and resilient global knowledge power. IT-

ITeS industry has four major components, *viz.* IT services, Business process outsourcing (BPO), Engineering services and R&D and software products.

- The growth in the services sector in India has been led by the IT-ITeS sector which has become a growth engine for the economy, contributing substantially to increases in the GDP, employment, and exports. This sector has improved its contribution to India's GDP from 4.1% in 2004-05 to 6.1% in 2009-10 and an estimated 6.4% in 2010-11. The industry has also helped expand tertiary education significantly. The top seven States that account for about 90% of this sector's exports have started six to seven times more colleges than other States.

TABLE 2.7

Overall Growth in IT and ITeS Revenue and Exports (In US$ Billion)

Particulars	2007-08	2008-09	2009-10	2010-11(E)	2011-12(P)	Growth Rate in 2011-12 (%)	CAGR (%) 11th 5 Year Plan
Total IT-BPO Services Revenue	52.1	29.9	64.0	76.3	87.6	14.8	13.9
Exports	40.4	47.1	49.7	59.0	68.7	16.4	14.2
Domestic	11.7	12.8	14.3	17.3	19.0	9.7	12.8

(Source: Economic Survey 2010-2012)

- As per the estimates of NASSCOM, India's IT and BPO sector (excluding hardware) revenues were US$ 87.6 billion in 2011-12, generating direct employment for nearly 2.8 million persons and indirect employment of around 8.9 million. As a proportion of national GDP, IT and ITeS sector revenues have grown from 1.2 % in 1997-8 to an estimated 7.5% in 2011-12. Software exports in 2011-12 are estimated at US$69 billion compared to US$59 billion in 2010- 11. While exports continue to dominate the IT-ITeS industry and constitute about 78.4% of total industry revenue, the CAGR of the domestic sector has also been high at 12.8% compared to the 14.2% for exports during the Eleventh Five Year Plan period. The growth rate of the domestic sector in 2010-11 was 20.6 % as compared to 18.8 % for the export sector whereas in 2011-12 it was 9.7 % for domestic sector and 16.4 % for export sector. In 2012-13, as per NASSCOM estimates, export revenues are expected to grow by 11 to14 % and domestic revenues by 13 to 16 %, which are a pointer to the possibilities of making further forays into the untapped domestic sector for IT and ITeS **(Table 2.7).** This sector has also led to employment generation with direct employment in the IT services and BPO/ITeS segment expected to reach 2.8 million in 2011-12 compared to 2.5 million in 2010-11 and 2.3 million in 2009-10; and indirect employment of over 8.3 million jobs which have been generated in also initiated new e-Governance projects for education, health, public distribution system and postal services. This will ensure the common man access to quality education, cost efficient and quality health care and postal services at affordable costs. Further, basic banking services, *i.e.*, cash withdrawal, cash deposit, balance inquiry and transfer of money from one account to another is proposed to be extended to every panchayat through the CSCs and money transfer facility to every village by December 2013, leveraging information communication technology (ICT) and mobile technology which will help make financial inclusion a reality with the help of IT.

- The Draft National Policy on Information Technology 2011 focuses on deployment of ICT in all sectors of the economy and providing IT solutions to the world. The Policy emphasizes adoption of technology-enabled approaches to overcome developmental challenges in education, health, skill development, financial inclusion, employment generation, and governance so as to enhance efficiency across the board in the economy. It seeks to bring ICT within the reach of the whole of India while at the same time harnessing the immense human resource potential in the country to enable it to emerge as the global hub and destination for IT-ITes Services by 2020. Thus, IT and ITes is playing a tremendous role in the economy as well as in the day to day life and revolutionizing the way of life.

2.4.7 Health Services

The health services are among the basic necessities and therefore the government's prerogative of provision. However, despite the initiatives by the government, it has not been able to cater to the whole and sole of the population. And with the rise in private health care clinics and hospitals it has become a sector in itself with signing of MOUs with developed countries like US and attracting FDI's and gradually contributing to the nation's GDP. Further, with growth in Health Services, the allied areas, *i.e.*, Medical Tourism, Pharmaceutical Industry, Drug Formulations, Health Insurance *etc.* have also got a boost.

India is one of the world's most lucrative healthcare markets, and is expanding rapidly, according to latest findings of a report titled 'Indian Healthcare - New Avenues for Growth'. The Indian Healthcare Sector is expected to reach US$ 100 billion by 2015 and US$ 275.6 billion by 2020 from the current US$ 65 billion, growing at around 20 per cent a year, according to Fitch Rating Agency. According to Frost & Sullivan reports, spending on information technology (IT) by Indian healthcare players was estimated at US$ 244 million in 2010 and is expected to grow at 22 per cent a year over diverse fields such as commercial and residential real estate, retail, hospitality, transportation, and security. India continues to be the dominant player in the global outsourcing sector. The IT and ITeS sector is also a generator of skilled employment

- Indian IT service offerings have evolved from application development and maintenance to emerge as full service players providing testing and infrastructure services, consulting and system integration. The year also witnessed the next phase of BPO-sector evolution, characterized by greater breadth and depth of services, process re-engineering across the value chain, increased delivery of analytics and knowledge- based services through platforms, strong domestic market focus, and Small and Medium-sized Business (SMB) centric delivery models. In the engineering design and products development segments, there was increased use of electronics, adoption of fuel efficiency norms, convergence of local markets, and use of localized products. Increasing confidence between customers and service providers successfully executing a variety of activities across low-medium-high complexity projects has led to increasingly larger sizes of projects being sourced from India.
- In the domestic sector, the major component is IT services with 64.2% share, followed by software products/engineering with 19.6 % share and BPO with 16.2 % share. The CAGRs of these sectors were 11.5%, 13.6%, and 18.1% respectively. Strong economic growth, rapid advancement in technology infrastructure, increasingly competitive Indian organizations, enhanced focus by the government and emergence of business models that help provide IT to new customer segments are the key drivers for increased technology adoption in India.
- Government has taken various initiatives to promote the growth of the IT- ITeS industry and has been a key catalyst for increased IT adoption through sectors reforms that encourage IT acceptance, National e-Governance Plan (NeGP), and the Unique Identification Development Authority of India (UIDAI) programme that creates large-scale IT infrastructure and promotes corporate participation. The NeGP was approved by the Government of India in May 2006 to make all government services accessible to the common man in his locality, through common service delivery outlets at affordable costs. More than 97,000 common service centres (CSCs) have been established across the country as web-enabled service access points for making public services available to citizens on anytime, anywhere basis. Initiatives under the NeGP also include online services related to income tax, Ministry of Corporate Affairs (MCA) 21, passports and central excise. The government has

also initiated new e-Governance projects for education, health, public distribution system and postal services. This will ensure the common man access to quality education, cost efficient and quality health care and postal services at affordable costs. Further, basic banking services, *i.e.*, cash withdrawal, cash deposit, balance inquiry and transfer of money from one account to another is proposed to be extended to every panchayat through the CSCs and money transfer facility to every village by December 2013, leveraging information communication technology (ICT) and mobile technology which will help make financial inclusion a reality with the help of IT.

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2.4.7 Health Services

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- The hospital services market represents one of the most lucrative segments of the Indian healthcare industry. On the back of continuously rising demand, the hospital services industry is expected to be worth US$ 81.2 billion by 2015. The hospital and diagnostic centre in India has attracted foreign direct investment (FDI) worth US$ 1.34 billion, while drugs & pharmaceutical and medical & surgical appliances industry registered FDI worth US$ 9.19 billion and US$ 521.45 million, respectively during April 2000 to March 2012, according to the data provided by Department of Industrial Policy and Promotion (DIPP).
- According to a new report published by RNCOS, titled "Booming Medical Tourism in India" India's share in the global medical tourism industry will reach around 3 per cent by the end of 2013. The report states that medical tourism is expected to generate revenue around US$ 3 billion by 2013, growing at a CAGR of around 26 per cent during 2011–2013. The number of medical tourists is anticipated to grow at a CAGR of over 19 per cent during the forecast period to reach 1.3 million by 2013[5].
- The Indian health insurance market is also on an upsurge providing lucrative growth avenue for both the existing players as well as the new entrants. According to the RNCOS report, the health insurance market is one the fastest growing and second largest non-life insurance segment in the country. Posting tremendous growth in the last two fiscals, the health insurance premium is expected to grow at a CAGR of over 25 per cent for the period spanning from 2009-10 to 2013-14.
- With 3G there are possibilities of remote treatment and diagnosis of patients through mobile phones. Also, with the number of cellphone users currently at 600 million and rapidly increasing by 20 million every month, some telecom operators and value-added service developers such as Nokia and BlackBerry are considering usage of mobile phones for diagnostic and treatment support, remote disease monitoring, health awareness and communication.

- Government initiatives in the public health sector have recorded some noteworthy successes over time with focus on investments related to better medical infrastructure, rural health facilities etc. The Government has decided to increase health expenditure to 2.5 per cent of the gross domestic product (GDP) by the end of the Twelfth Five Year Plan, from the current 1.4 per cent. Further, 100 per cent FDI is permitted for health and medical services under the automatic route. The National Rural Health Mission (NRHM)'s allocation has been proposed to be increased to US$ 3.72 billion in 2012-13 from US$ 3.23 billion in 2011-12.

Thus, Health Services is also emerging to be a fast growing sector.

Epilogue

Indian Services Sector has emerged as a dominant sector in terms of both contribution as well as growth. This sector is a growth engine not only for the national economy but also for many states.

Unlike the unskilled or semi-skilled nature of jobs in the agriculture sector, this sector provides myriad job opportunities ranging from highly skilled to unskilled in a variety of activities, Hence, services along with a revival in manufacturing activity, can be major drivers of overall *employment*.

Unlike the merchandise sector, the services sector is a net foreign exchange earner with exports of some services growing exponentially. It is also the major *FDI-attracting sector* with the five services topping the list of sectors attracting FDI to the country.

India's services sector has been resilient even during the tumultuous years of the global economic crisis maintaining a steady growth of around 10 per cent. This happened even when overall GDP growth dipped sharply to 6.7 per cent in 2008-09. Thus, the domestic economy is more dominant in the case of services and any changes in government spending in community, social, and personal services within the fiscal space available or newly created fiscal space could strengthen the growth prospects of the services sector with ripple effects in related sectors.

In fact, every important service sector is a storehouse of opportunity. The software-telecom combination is speculated to be a high growth propelling force for many more years to come with positive spillovers to other sectors and can give a cutting edge in these sectors while facing international competition. This combination along with retail trade is envisaged to change the very face of the rural economy.

The tourism sector which is an industry in itself is another mine of opportunity for India. Shipping is another major service which can step up growth by tapping the opportunities provided by India's own merchandise trade. Business services, which consists of many dynamic services is a sunrise sector. Financial services, Health care and education are other niche areas with both external potential and internal opportunities which can be tailor-made to serve the objective of more inclusive development.

Thus Indian Services Sector is considered to be an uncharted sea with plenty of opportunities as well as new challenges having great future prospects with many untold stories and unfolded mysteries. This sector is envisaged to take the Indian growth story to the next level of development phase.

Having reviewed the Indian Service Sector and its growth story, the following chapter presents "Review of Literature" which accounts for the theoretical development in WCM theories as well as empirical analysis carried out in India and Abroad in the area of WCM which will help in understanding the nature of studies carried out as well as identifying the research gap.

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CHAPTER 3
REVIEW OF LITERATURE

This chapter describes the theoretical development in the area of working capital management over a period and presents review of empirical work on working capital management to account for the work already undertaken by earlier researchers along with the findings of their study. Hence, this chapter is divided in two parts. The first part accounts for the theoretical developments in the short term financial management and the second part reviews the empirical studies on working capital management in India as well as outside India. The review comprises of work undertaken in working capital management, (*i.e.*, theoretical and empirical) for a period of 146 years, *i.e.* from 1867 to 2012.

SECTION- I

Theoretical Construct

This section gives an account of theoretical work undertaken in the arena of working capital management by various researchers, academicians and practitioners. The objective is to account for the developments in the working capital theory and concepts over time and understand how the theory of short term financial management has evolved.

3.1 Introduction

The concept of "working capital" recorded in the literature on working capital management was, perhaps, first evolved by the great philosopher, socialist and economist, Karl Marx, who termed it as *variable capital* in a manner slightly different from present day's connotations. Marx explained the meaning of *variable capital* in context with the labour. Marx[1] noted, "That part of capital, represented by labour-power, does, in the process of production, undergo an alteration of value. It both reproduces the equivalent of its own value, and also produces an excess, a surplus value, which may itself vary, may be more or less according to circumstances. This part of capital is continually being transformed from a constant into a variable magnitude. I therefore call it the variable part of capital, or, shortly, *variable capital.*" He explained that the wages is paid to the laborer only after the labour power is expended and that the laborer provides funds to meet a part of private consumption of the capitalist[2]. Thus, the present day concept of working capital is rooted in the concept of *variable capital*

Further. Sir Adam Smith denoted working capital as the circulating capital. He explained, "The goods of the merchant yield him no revenue or profit till he sells them for money and the money yields him as little till it is again exchanged for goods. His capital is continuously going from him in one shape and returning to him in another and it is only by means of such circulation, or successive exchanges that it can yield him any profit. Such capital, therefore, may very properly be called circulating capital[3]." Mueller[4], on the basis of its functional role has referred working capital as revolving capital. The working capital represents that portion of the total resources which is put to variable operative use. The facilities represented by the investment in fixed assets which is imperative for carrying out the routine business activity of producing goods or services is made functional by the working capital in absence of which, it becomes meaningless. Thus, working capital is the *oil* which keeps the *engine* of fixed asset investments working efficiently. In essence it refers to the capital required for running day to day business operations. Working capital thus results to creation of short term assets and obligations for a firm, *i.e.,* assets and liabilities with maturities of less than or equal to twelve months which are termed as current assets and current liabilities. In the said context, the meaning and components of current assets and current liabilities are discussed below:

Current Assets refer to cash and other assets which are expected to be converted in to cash in the ordinary course of business within one year or within such longer period as constitute the normal operating cycle of a business[5] and includes cash and bank balance, marketable securities, inventories, one year fixed deposits with banks, prepaid expenses, debtors (account receivables)

The important characteristics of current assets are, *(i)* Short life span, generally a period of twelve months; *(ii)* Swift transformation into other form of assets, *i.e.,* cash is utilized to replenish inventories, which further gets converted into either cash or receivables (in case of credit sales) which when collected increases cash balance; *(iii)* Their life span depends on the extent of synchronization of three basic activities *viz,* production, distribution and collection[6].

Current Liabilities are those claims of outsider which are expected to mature for payment within one accounting year and include creditors (account payables), bills payable, bank over-draft, short term borrowings and outstanding expenses.

However, most important short term sources of financing current assets are: *(a)* Trade Credit, *(b)* Deferred income and accrued expenses and *(c)* bank finance. The first two sources are available in the normal course of business, and therefore, they are called spontaneous sources of working capital finance as they do not involve explicit costs. Bank finances have to be negotiated and involve explicit costs and so they are called non spontaneous sources of working capital finance. Besides, two alternative ways of raising short term finances in India are: factoring and commercial paper[7]. Hence, it can be inferred that all those current liabilities that arise in normal course of business without explicit costs are spontaneous sources of working capital finance and *vice-versa.*

With the passage of time and more and more research in short term financial management, various concepts of working capital have emerged which are discussed in the following section.

3.2 Working Capital: Various Concepts

a) Based on variability

Working capital has been classified based on the time period for which the investment in working capital is required. Permanent working capital is the amount of working capital that persists over time regardless of fluctuations in sales[8] which is also referred to as *fixed working capital*[9]. The level of current assets required over and above the permanent working capital, depending on the changes in production and sales levels is termed as temporary / variable / seasonal working capital or fluctuating working capital.

b) Conceptual classification

The conceptual classification splits the meaning of working capital into two, *viz,* quantitative concept and qualitative concept, commonly known as gross working capital and net working capital respectively. Both these concepts are also termed as Balance Sheet concept of working capital and are discussed as follows:

◆ *Quantitative concept*

Baker and Malott[10], Mueller[4], Smith[11], Mehta[6], Mead[12], Field[13] have advocated the quantitative approach to define working capital. They suggested that the whole of the current assets help to earn profits and prudent financial management calls for efficient utilization of total current assets and their contribution in fixed assets to device desired profits. They have suggested that working capital should be considered as current assets only because,

i) Both fixed and current assets help an enterprise to make profits. While fixed assets are means to produce, current assets are means to operate fixed assets and generate profits. While theoretically fixed assets are termed as fixed capital investment, current assets therefore should be termed as working capital, and *ii)* The management is generally concerned with the total amount of funds available in terms of current assets for meeting the operational requirements. The sources of funds for such current assets are treated as a different aspect.

Bogen[14] noted that working capital is the total of current assets of an enterprise which circulates from one form to another, for instance, from cash to inventories, from inventories to receivables and from receivables to back in cash. Thus, the capital that circulates equals the total current assets of an enterprise. Dewing[15] and Gestenberg[16] also considered Working capital and current assets as synonymous terms. Husband and Dockery[17] supported the quantitative definition of working capital on the grounds that, "despite the uncertainty of quantitative concept of working capital, it provides more objective basis of determining the type and the amount of financing".

Thus, the total current assets which is also recognized by the term, *Gross Working Capital*, is referred to as quantitative concept, as it deals with the quantum of investment with respect to current assets.

◆ *Qualitative concept*

Under this approach, working capital has been defined as the excess of current assets over current liabilities and is also known as net working capital (NWC). Saliers[18] and Lincon[19] have argued that – *(a)* In the long run what matters is the surplus of current assets over current liabilities; *(b)* It is this concept which helps creditors and investors to judge the financial soundness of an enterprise; *(c)* What can always be relied upon to meet the contingencies is the excess of current assets over the current liabilities since the amount is not to be refunded and *(d)* This definition helps to find out the current financial position of companies having the same amount of current assets. Stevens[20], Guthmann and Dougall[21], Gole[22], Park and Gladson[23], Kennedy and Mcullen[24], Walker[25] have also favored the concept of NWC. NWC thus, indicates the long term funds used for financing the current assets which provides cushion to short term creditors. NWC is referred to as *qualitative concept* as it signifies the short term financial solvency of an enterprise which is of special interest to the short term creditors of the business.

However, both, Gross and Net concepts of working capital have their own relevance and importance which depends on the purpose of analysis. The gross concept, *i.e.*, the Quantitative concept may be adopted to ascertain the level of investment required for day to day functioning and whether the level of current assets is optimal and the net concept may be adopted to gauge the financial strength of an entity as well as the nature of working capital financing policy adopted by the concern.

◈ Working Capital Deficit

It has been observed in some well established companies, a situation where current liabilities exceed current assets, also termed as "negative working capital".

◈ Working Capital Requirements and Net Liquid Balance

Shulman and Cox[26] refined the concept of NWC as a liquidity measure by adding new interpretations to various working capital relationships. They observed that the traditional definition of NWC was not reflective of real impact on liquidity and therefore offered an alternative interpretation which equated NWC to the difference between permanent capital and net fixed assets. From this view point, the amount of positive NWC measures that portion of current assets which is financed by permanent funds and negative NWC indicates the portion of short term funds used to finance net fixed assets. To further expand their analysis, they created two definitions. First, they defined working capital requirements, WCR as the difference between current operating assets consisting of prepaids, inventory and receivables and current operating liabilities defined as accounts payable and accruals. These accounts represent spontaneous uses and sources of funds over the firm's operating cycle. They then defined net liquid balance, NLB as the difference between current financial assets such as cash and marketable securities and current discretionary or non spontaneous financial liabilities such as notes payables and current maturing debt and the relationship between WCR, NLB and NWC, was defined as NWC = NLB + WCR.

NLB, if found negative, is indicative of dependence on outside financing and reduced level of financial flexibility. WCR divided by sales was ratio was suggested which, if statistically found different across industry categories, indicates different working capital needs amongst industries and *ceteris paribus* a greater ratio indicates the greater reliance of company on external funds for given change in level of sales. In cases, where WCR is found to be negative, the firm's operating cycle becomes permanent source of finance and the positive impact on liquidity would be significant.

◈ Operating Cycle

The first, comprehensive and coherent explanation of Operating Cycle (OC) concept was offered by Park and Gladson[23]. They started with defining the current assets and current liabilities, the two determinants of working capital and argued that current assets and liabilities cannot be defined in terms of twelve months period and that "currentness" period of a business is a function of the nature of its business activity as dictated by the technological requirements and the trading conventions. The operating cycle thus consists of four primary activities: purchasing resources, producing the product, distributing (selling) the product and collecting money when sales are on account. Chakraborty[27] defined operating cycle as the sum of the length of inventory conversion period and receivables conversion periods. Precisely, it is the time taken to convert the raw material into cash. The operating cycle concept thus penetrates to the heart of the working capital management in a more dynamic form.

◈ Cash Conversion Cycle

The conceptual model was developed by Gitman[28] in 1974 which was refined and operationalized by Gitman and Sachdeva[29] in 1982. This model was also found in the work of Laughlin and Richards[30]. Also known as *Net Operating Cycle*, it can be computed by reducing the length of Average Payment Period (APP) from the length of OC[31]. Cash conversion cycle (CCC) represents the net time interval between collection of cash receipts from product sales and cash payments for the company's various purchases. Thus, it reflects the time interval for which additional non spontaneous sources of working capital financing must be obtained to carry out the firm's activities. An increase in the length of operating cycle without any corresponding increase in payables deferral period will lengthen the cash conversion cycle and would further increase the need of working capital financing.

◈ Weighted Cash Conversion Cycle

Gentry, Vaidyanathan and Lee[32] developed a modified version of the CCC called the Weighted Cash Conversion Cycle (WCCC), which scales the timing by the amount of funds in each step of the cycle. The weights are calculated by dividing the amount of cash tied up in each component by the final value of the component. Therefore, the WCCC includes both the number of days and the amount of funds that is tied up at each stage of the cash cycle.

◈ Net Trade Cycle

Although the WCCC provides a better appreciation of the complexities of the cash cycle, it's drawback is the difficulty of getting information on break-up of inventories into its three main components, *i.e.*, raw materials, work-in-progress, and finished goods. Further, the CCC is an additive concept, but unfortunately the denominators for the three components (*i.e.*, ACP, IHP and APP) are all different, making addition not really useful. In contrast, the Net Trade Cycle (NTC) is basically equal to the CCC whereby all three components are expressed as a percentage of sales. The NTC actually indicates the number of "days sales" the company has to finance its working capital under *ceteris paribus* conditions. The NTC is calculated using the formula: (Inventory + Accounts receivable - Accounts payable) *365/ Sales.

◆ *Determinants of Working Capital*

The requirement of working capital in any concern is affected by its business environment and is a function of various factors such as, Nature and Size of Business; Length of production cycle; Volume and terms of purchase and sales; Seasonal Variations; Availability of Credit; Degree of Specialization; Location of Business; Phase of Business Cycle; Production Policy; Firm's Credit Policy; Growth Opportunities; Efficiency of Operations; Inflation; Profit Margin and Appropriation. These factors are known as determinants of working capital as they determine the working capital needs of business concerns.

3.3 Working Capital Management

Van Horne[33] defined working capital management as "an aspect of financial activity which is concerned with the safeguarding and controlling of the firm's current assets and the planning for sufficient funds to pay current bills".

As already discussed, current assets assume different forms, *i.e.,* Cash is converted into inventories which when sold gets converted into cash or receivables which further gets converted into cash which is considered as an operating cycle of an entity. Similarly, cash is also utilized for making prepaid expenses and Advance payments of tax. However, these do not get converted into cash but provide benefits and ensures uninterrupted flow of operations. This operating cycle is continuous with very swift transformation of one form of current assets to another, and hence, management of current assets is distinct from the management of fixed assets of a firm. And in order to finance these different forms of current assets, there is a continuous need of funds which is funded by either long term debts or through frequent creation and discharge of current liabilities. And due to this, the finance manager of an entity has to constantly monitor the process flows in order to ensure smooth operations thereby eliminating the risk of deteriorating the reputation as well as the net worth. Working capital management (WCM) thus, involves managing of the dynamic relationship between current assets (CA) and current liabilities (CL) which are ever changing and volatile.

The maintenance of reasonable level of working capital and the interaction between current assets and current liabilities is therefore the main theme of theory of working capital management. Thus efficient management of working capital is imperative for the success of each and every business. "WCM aims at protecting the purchasing power of assets and maximizing the return on investment[34]". In practice, WCM has become one of the most important issues in the organizations where many financial executives are struggling to identify the basic working capital drivers and the appropriate level of working capital.[35] Thus, the *goal of working capital management* is ensuring that a firm is able to continue its operations with sufficient capability in order to satisfy both maturing short-term obligations as well as upcoming operational expenses and plays a decisive role in the success or failure of a business entity.

3.4 WCM: Liquidity versus Profitability

WCM decisions are synonymous to decisions relating to management of short term assets and liabilities. There always has to be a balance between the two. A firm is expected to maintain sufficient levels of current assets not only to support the sales but also to provide cushion to its short term creditors. Thus, an important aspect of WCM is *liquidity*. In the said context, liquidity in terms of current assets is a pyramid with cash – the most liquid yet unproductive asset being on the top whereas inventory – the most illiquid yet revenue generating asset occupying the bottom of the pyramid. The goal is to manage these components in a way to provide enough liquidity without endangering the revenue generating capability of a firm. Hence, the finance manager should strike an optimum mix of working capital components. Thus, WCM decisions are synonymous with the liquidity as well as operational profitability decisions which affect not only the short term solvency position but also the earning capability of an entity.

3.5 Important Aspects of Working Capital Management

Management of working capital can be summarized to be involving four broad aspects, *i.e.,* determination of the level of current assets, which involves management of inventory, receivables, payables and cash; deciding the mix of long-term and short term capital to finance current assets; evolving suitable policies, procedures and reporting systems for controlling the individual components of current assets; and determining the various sources of working capital. These aspects are discussed in the following paras.

3.5.1 Cash and its Management: Cash is said to be one of the most liquid and unproductive asset. Components of cash includes, cash balances with the company and in its bank accounts and marketable securities. It is an important current asset for any firm to keep the operations rolling. However, cash should be kept in right proportions as cash deficiency will interrupt the operations while excessive cash, being idle would contribute least to the firm's profitability. Thus, one of the pivotal functions of a finance manager is to maintain sound cash position. Generally, idle cash is invested in marketable securities also known as short term investments or near cash assets as they can be readily converted into cash as and when the need arises and at the same time earning returns on money invested.

Keynes[36] identified three reasons for holding cash: (i) Transaction motive – to conduct its business smoothly; (ii) Precautionary Motive – to meet contingencies and (iii) Speculative motive – for investing in profit making prospects as and when they arise. However, with developments in banking and finance, a fourth motive of holding cash was identified to be Compensating motive – to maintain minimum balance in the bank accounts as per agreement[37].

The already-present concern over managing cash blossomed in the 1970s for several reasons[38]. Gentry[39] cited the reasons as: *First*, there was a rapid increase in inflation and interest rates that focused management attention on the need to invest idle cash balances and simultaneously, computer technology emerged that provided commercial banks the tools to offer cash management services to corporate customers; *Second*, Microcomputers arrived in the 1980s and provided easy access to daily cash receipt and disbursement information, resulting in a better understanding of the short-run cash flow process.

Since 1970 the cash management (CM) literature has experienced phenomenal growth that has been enhanced by the successful introduction of the Journal of Cash Management[39]. According to Scherr[40], cash management deals with determining the optimal level of cash, the appropriate types and amounts of short-term investments in cash as well as the efficient methods and controls of cash collections and disbursements.

In 1986, Srinivasan and Kim[41] presented the state of the art in cash management and categorized the major cash management tasks that had evolved during the preceding fifteen years into five major conceptual areas: *(i)* cash balance management which encompasses short-term borrowing and investing, cash forecasting, and cash position management; *(ii)* cash forecasting, *(iii)* cash gathering, mobilization, and concentration, *(iv)* cash disbursement, and *(v)* the designing of bank systems for credit services.

Robichek, Teichroew, and Jones[42] focused on short-term borrowing while Orgler, 1970[43] and 1974[44] presented cash management as a multi-period linear programming model which was designed so as to minimize the net cost from a cash budget through the planning horizon. Mao[45], Gitman, Forrester and Forrester[46]; Maier and Vander Weide[47] have used linear programming to formulate the cash management process.

Maier and Vander Weide[48] developed a leading user friendly L.P. model and Stone[49] created a financial statement simulator to determine a firm's line of credit and/or short-term investment needs.

A finance manager is always interested to know the funds that will be required and excesses if any, so that it can be invested. However, seasonal fluctuations and cyclical requirements make it difficult to find out these amounts accurately. In order to address the problems of cash management, models were developed which can be used by finance managers to help them maintain enough cash to cover all the three motives as given by J. M. Keynes. Baumol's model[50] of cash management provided a formal approach for determining a firm's optimum cash balance under certainty and considered cash management problem to be similar to inventory management problems. His model hypothesized that cash inflows of a firm were periodic and the outflows were continuous. The two costs considered were holding costs and transaction costs. Beranek's Model[51] also being a model under certainty, hypothesized that cash inflows in a firm were steady and outflows were periodic which was mirror image of time pattern of cash flows in the Baumol model. However, both the models ruled out the possibilities of fluctuations in cash flows which became its limitations as in practice firms do not utilize their cash balances uniformly and nor are they able to predict daily cash inflows and outflows. The Miller and Orr model[52] overcomes this limitation and allows for daily cash flow variation and is also termed as model under uncertainty. Stone model[49] also took the control limits approach but when cash balances fell outside the control limits, the firm is signaled to evaluate whether investment or disinvestment depending upon the future estimates of cash inflows rather than taking an action.

There are plentiful statistically based cash forecasting models of which the important models were created by Stone and Wood[53], Stone and Miller – 1981[54] and 1987[55], Miller and Stone[56], Boyd and Mabert[57], Kallberg and Parkinson[58] and Homonoff and Mullins[59]. The cash gathering process collects customer payments and deposits them into the banking system, commonly known as lockbox and lockbox collection models were created by several authors, a few of which are, Maier and Vander Weide[60]; Stone[61]; Levy[62]; Corneujols, Fisher and Nemhauser[63]; Nauss and Markland – 1974[64] and 1979[65]; Fielitz and White – 1981[66] and 1982[67].

Cash mobilization and concentration emphasizes the moving of funds through a concentration system to desired locations, where the company can then efficiently utilize its resources. The principal focus is on selecting concentration banks and transferring funds among banks. Stone and Hill[68] introduced the concentration system concept and analyzed its influence on cash management.

The objective of the cash disbursement process is to select optimal disbursement sites. Maier and Vander Weide[69] developed a unified model that locates lockboxes and disbursement banks. Their model recognized that a firm may use one bank for both collecting customer payments and disbursing its cheques. In surveying the research on the lockbox location problem, they divided the literature into (i) formulation and economic analysis and (ii) mathematical optimization techniques. Ferguson and Maier[70] used the efficient frontier concept from portfolio theory to show a firm can design a disbursement system that delays the availability of funds to its suppliers.

Several studies have analyzed the problem of designing an optimal banking system for credit and non-credit services, for example, Stone – 1974[71], 1983[72]; Emery[73] and Pogue, Faucett, and Bussard[74]. A principal concern was determining how much in balances or cash to reimburse a bank for services it provided. When designing a company's banking system, Stone[75] stressed the importance of taking into account the interrelationships existing among a company's cash budget, credit requirement needs, and the bank system design. The cash flow timeline was based on the principle of present value and it showed that a firm's value is determined by the amount and the timing of its cash inflows and outflows[76]. In another context, cash flow information in the form of funds flow components was used in a probit or logit model to classify and predict financial failure (Gentry, Newbold, and Whitford – 1984[77]; 1985a[78]; 1985b[79]). Three separate studies by Casey and Bartczak – 1984[80], 1985[81], Gentry, Newbold, and Whitford[78]; and Gombola, Haskins, Ketz, and Williams[82] found that net operating cash flows (operating inflows minus operating outflows) are not significant in predicting corporate bankruptcy. Opler, Pinkowitz, Stulz and Williamson[83] examined the determinants of holdings of cash and marketable securities by publicly traded firms. They found evidence that firms behave according to the static trade-off consistent with the industry.

Thus, over a period of time, there has been much development on the theories and methods for the efficient management of the most unproductive asset, Cash.

3.5.2 Inventory and its Management: Inventories are a stock of the product a company is manufacturing for sale and components that make up the product and comprises a significant portion of current assets of large majority of companies in India[84]. The different types of inventories are used to satisfy different purposes (Scherr[40] and Stevenson[85]). They exist in four forms in any manufacturing concern, *i.e.,* raw materials – which are inputs for making final product; work in process which refers to semi processed inputs; finished goods are the final products; and stores and spares which do not directly enter the production process but are necessary for production process.

The literature related to inventories is ample. Arrow, Karlin and Scarf[86] classified the motives for holding inventories into three classes based on Keynesian theory applicable to cash, *i.e.,* Transaction Motive, Precautionary Motive and Speculative Motive and was explained by Starr, Martin and Miller[87] whereas Bhalla[88] discussed the fourth motive for holding inventories as contractual requirements.

Since inventories represent investment of an enterprise's funds, the objective of inventory management should be to maximize the value of firm. Thus, factors to be considered in establishing policy would comprise of costs, return and risks involved.

Costs associated with inventories can be classified into ordering costs and carrying costs. Ordering costs relate to purchasing raw materials and include requisition, placing of order, transportation, receiving, inspecting, storing and clerical and staff services. The peculiarity of this cost is that it is fixed per order and so they decline with increase in order size. Carrying costs consist of warehousing, handling, clerical and staff services, insurance and taxes which vary with inventory holding and increases with increase in size of order. Carrying costs are generally about 20% of the value of inventories held[89]. Thus these two costs behave opposite to each other and so there has to be a trade-off between the two. The behaviour of these two costs to optimize the level of inventory holding is captured through the basic Economic Order Quantity (EOQ) model which is based on certain assumptions and is one of the simplest inventory models. Yet another cost associated with inventory management is shortage costs which arise when inventories are short of requirement for meeting the production or demand of customers.

In general, the inventory literature is located in three separate areas. Topics related to inventory valuation are in the accounting related literature; inventory planning and control models are in the management science literature, while the effect that inventories have on the aggregate economy is found in the economics literature[90]. From a financial viewpoint Hall's[91] concept of a stockless production strategy stands in sharp contrast to the traditional view of an optimal level of inventory and has profound implications on cash flow performance. Stockless production reduces work in process inventory and space needed for production and also eliminates problems related to quality, production bottlenecks, coordination, obsolescence, shrinkage, and supplier unreliability[98]. The financial benefit of stockless production is an increase in profitability and liquidity with a decrease in financial leverage.

Lambrix and Singhvi[93] suggested that investment in working capital could be optimized and cash flows could be improved by reducing the time frame of the physical flow from receipt of raw material to shipment of finished goods, *i.e.* inventory management. Neglecting management of inventories jeopardizes a firm's short-term as well as long-term profitability as they are the least liquid of all current assets and therefore should provide the highest yield to justify investment[94].

The development of these theories thus, highlights the contribution that inventory management has on the total value of the firm as well as its relevance.

3.5.3 Receivables and its Management: Credit sales give rise to trade credit. A credit sale has three characteristics[95]: *First,* it involves default risk, as the payment is yet to be received. *Second,* it is based on economic value of goods and services which has already been transferred to buyer at the time of sale, while the seller expects the equivalent value to be received at some future date. *Third,* it implies futurity as the payment is expected to be received in future.

Trade credit is granted to facilitate movement of goods through production and distribution; to protect sales of the firm from its competitors and to attract potential customers to buy its product at favourable terms thereby creates accounts receivable, also known as trade debtors / book debts which are expected to be collected in the near future.

Debtors occupy an important position in the short term asset management of any enterprise as granting credit and creating debtors results into blocking of firm's funds representing investment. The size of investment in accounts receivables is determined by the volume of credit sales and the collection period. The collection period depends on the economic conditions as well as on credit policy variables which include (i) credit standards – the maximum riskiness of acceptable credit accounts; (ii) credit terms which includes, credit period allowed as well as cash discounts given for early payments; and (iii) collection policy of a firm.

The credit policy followed may be either lenient or stringent. While the former has liberal terms and standards with credit granted for longer periods and without bothering much about the creditworthiness of the customer, the latter policy is highly selective based on the creditworthiness of the customer and shorter credit periods. Thus, financial managers can influence the volume of credit sales and collection period through the credit policy.

The decision to grant credit may either be part of marketing strategy or pure finance strategy but mostly it is a trade-off between both these strategies[96]. Thus the goal of receivables policy is to promote the sales and increase the profits such that there is a trade-off between benefits and costs through rigorous monitoring of receivables and efficient collection system. The costs associated with receivables can be understood to be collection costs, cost of capital, delinquency costs and default costs. Thus major risk in granting credit is the default risk also known as credit risk which is evaluated by the credit managers based on five C's of credit, which are, character, capacity, capital, collateral and conditions. The optimum trade credit policy is the one which maximizes the value of the firm.

A firm has to continuously monitor its receivables to ensure success of collection efforts. Broadly three methods of monitoring receivables are, *(i)* Average collection period; *(ii)* Aging schedule (Both being traditional methods) and *(iii)* Collection experience matrix – a new and better approach to receivables monitoring[97].

The literature related to the management of receivables is quite extensive. The receivables literature is subdivided into seven categories: *(i)* Monitoring performance, *(ii)* Measuring stability of the payment patterns, *(iii)* Credit policy effects, *(iv)* Inter-relationships among working capital accounts, *(v)* Investing in accounts receivable, *(vi)* Trade credit theories, and *(vii)* Financing accounts receivable[98]. Monitoring the performance of receivables is the area that has received the greatest attention by researchers (Freitas[99], Lewellen and Edmister[100], Stone[101]). Stone[101] showed that a payment pattern effect was responsible for changes in receivables in a very lucid way. Lewellen and Johnson[102] exemplified the collection experience matrix construction and showed how it is advantageous and better approach for monitoring receivables. Carpenter and Miller[103] (CM) developed an algorithm that measured the changes in receivables caused by sales and collection effects. Gentry and De La Garza[104] refined the CM algorithm, added a joint effect, and used the trend in sales and collection patterns to measure the receivable strategy employed by management.

Gallinger and Ifflander[105] suggested using the difference between actual and budgeted receivables in a single time period as a technique to measure the factors that cause receivables to change. Halloran and Lanser[106] showed that credit policy adjustments in response to anticipated inflation affected the value of the firm. Hill and Riener[107] used a discounted cash flow model to measure the cost/benefit tradeoffs related to a cash discount decision. Weston and Tuan[108] verified the optimizing methodology of Hill and Riener and found it produced the same results as a generalized approximation method.

Mehta[109] derived operating decision rules for credit extension by examining past bad debt levels, credit period length, collection activities, and lost sales levels. Srinivasan and Kim[110] focused on credit granting classification model. Kim and Atkins[111] were the first to use the NPV approach to determine if accounts receivable were an acceptable investment alternative for a firm and their NPV approach was a forerunner of the more expansive models that integrate short term financial management variables into the value creation process of the firm. Bierman and Hausman[112] offered a set of credit granting models which quantified the expected value of future credit extension opportunities and captured an important dimension concerning why firms extend credit. Credit scoring model based on financial ratios was first presented systematically by Beaver[113]. However, Bhattacharya[114] based on his review of various credit scoring models concluded that no credit-scoring model is universal in application as it is specific to similar population from which the sample is drawn and therefore every firm should develop its own credit scoring model and update it periodically. Also, Markov analysis was proposed to predict the behavior of accounts receivables.

Schwartz[115] concluded that a seller with easy access to capital markets may benefit by extending trade credit to customers who do not have easy access to capital. Lewellen, McConnell and Scott[116] showed that trade credit cannot be used to increase firm value when financial markets are perfect. Copeland and Khoury[117] argued that receivables should be treated as an investment rather than the passive consequence of sales. The investment motive becomes particularly important if the seller can charge a higher price by offering credit terms, generating an implicit interest income for delayed rather than immediate payment. Emery[118] developed a positive theory of trade credit based on its use as a financial response to deterministic variations in demand. The operating alternatives to demand were modeled using results from the peak-load pricing literature. Emery[119] focused on several financial market imperfections in explaining why firms extend trade credit; how they establish the terms of sale, *i.e.*, a pure financial explanation, a pure operating flexibility motive, and a pure financial intermediary motive and showed that a trade credit lender is familiar with the payment behaviour of its customers and can economize on lending transaction costs, when extending trade credit. Additionally, the trade credit lender has an advantage over financial intermediaries as related to collection costs. Cheng and Pike[120] found strong empirical support for seven propositions linked to competitiveness, pricing, investment and financing, and weaker support for a number of other theoretically derived motives for trade credit extension. Factor analysis suggested a more insightful approach to classifying trade credit motives, covering investment in customers, customer's operating and financial benefits, supplier's marketing/operational benefits and market pressure to conform. In addition, two factors, *i.e.*, customer relations and pricing flexibility were extracted as motives for varying credit terms.

Mian and Smith[121] analyzed the implications of the choice of accounts receivable financing policy that ranged from internal management to subcontracted financing through a factor. They presented seven alternate trade credit administration policies that are used to finance receivables which are: *i)* financing through general corporate credit, *(ii)* establishing a captive finance subsidiary, *(iii)* financing through accounts receivable, *(iv)* secured debt using a credit reporting agency or *(v)* using a credit collection agency, or *(vi)* a credit insurance company or *(vii)* using a factoring. They found that the larger, more credit worthy firms established captives, while the smaller, riskier firms issued debt secured by accounts receivable.

Since, credit management is a specialized as well as a time consuming activity, Factoring has evolved over a period of time which has become popular mechanism of managing, financing and collecting receivables in developed countries and is a unique financial innovation which provides liquidity to book debts. Factoring facilities are available worldwide and can be classified into four major groups, *(i)* Full service non recourse; *(ii)* Full service recourse factoring; *(iii)* Bulk/ agency factoring and *(iv)* Non-notification factoring[122] which is gaining more and more focus in the field of receivables management.

Thus, accounts receivable, despite being short term in nature, the policy decisions relating to them have long term implications for the organization as well as its financial structure. This is so because once the policy is decided, it is difficult to revert it except at the cost of adverse market reactions which also affects the value of firms and therefore receivables management decisions needs proper caution and care.

3.5.4 Payables and its Management: Accounts payables includes trade credit and outstanding expenses which together provide finance to the day to day business operations on a continuous basis and are therefore referred to as, spontaneous – self adjusting sources of finance. They are exactly opposite face of accounts receivables and exist due to the existence of latter[123]. In many countries like the United States, trade credit is the single most important source of short term finance[124], but in India, large firms are found to implicitly enjoy the cheaper institutional credits available to small suppliers. Bhattacharya[125] notes that, the accounts payables policy of the firm depends greatly on the receivables policies of the supplier. The goal of accounts payable management is to provide as much spontaneous financing as possible at zero cost. However, at the same time, a firm has to consider the given terms of purchase which determines its cost of trade credit. Terms of purchase generally consist of a credit period and a cash discount for early payments whereas penalty for delayed payments. Firms may stretch the credit period to enjoy the additional float but it involves cost in the form of loss of goodwill as well as penalties, if any and therefore these costs should well be considered. Further, considering these factors, a model has been developed to determine the effective costs of trade credit.

A good information system for accounts payable is desirable for every firm as it serves two purposes, *(i)* to protect the firm from overtrading and missed out discount opportunities and *(ii)* aids in cash forecasting and cash budgeting.

Accounts payable period (APP) is an important variable to determine the CCC and the higher the APP, the lower is the CCC. Robichek *et al*[126] developed the importance of accounts payable as a primary source of short-run financing in a linear programming model. Gentry and De La Garza[127] have developed algorithms for monitoring payables and receivables. Their model showed that payables change because of purchasing, payment, and joint effects. Gentry, Vaidyanathan and Lee[34] introduced payables effect that takes into account the relative financing contribution provided by payables in the cash conversion cycle and termed it as weighted cash conversion cycle (WCCC) which caused WCCC to be longer than original CCC. Thus, payables management is an equally important part of working capital management.

3.5.5 Working Capital Policy: Working capital policy can be best described as a strategy which provides the guideline to manage the current assets and current liabilities in such a way that it reduces the risk of default[128]. The working capital policy decisions can further be segregated to the current asset investment policy and current asset financing policy of the firm. Investing decisions relate to decisions on funds required to maintain current assets (cash, receivables, inventories) and the selection of investment mix depends on its effect on the cash flows from operations. The current asset financing decisions refer to the decisions relating to sources of financing to be used, which includes debt (short or long-term), equity or retained earnings.

Aspects of WCM which makes it an important policy decision[129] are: *(i)* The amount of time consumed, *(ii)* Representing large amount of investment; *(iii)* Its criticality for large and small firms and *(iv)* Its need to support the growth of the firm.

The two important objectives of WCM are profitability and solvency. Solvency refers to the firm's continuous capability to meet maturing obligations and so a firm has to maintain enough liquidity to avoid risk of insolvency. Thus, the firm's decision about the level of investment in current assets involves a trade-off between risk and return, *i.e.,* cost of liquidity and cost of illiquidity. This is because as more and more is invested in current assets, the liquidity increases, whereas it affects the profitability as opportunity to earn from excess investment in current assets is lost. However, with lower level of current assets the risk of solvency is high. Profitability is related to the goal of shareholder wealth maximization, so investment in current assets should be made only if an acceptable return is obtained. Similarly, for financing the current assets a firm has a choice between short term and long term sources of finance. Short term financing is less expensive than long term financing but at the same time it involves greater risk as compared to the latter. Thus, the current asset financing policy also involves a risk-return trade-off.

Walker[130] in his study made a pioneering effort to develop a theory of WCM by empirically testing, though partially, three propositions based on risk-return trade-off of WCM. Walker studied the effect of the change in the level of working capital on the rate of return in nine industries for the year 1961 and found the relationship between the level of working capital and the rate of return to be negative. On the basis of this observation, Walker stated that if a firm wished to reduce its risk to the minimum, it should employ only equity capital for financing of working capital; however by doing so, the firm reduced its opportunities for higher gains on equity capital as it would not be taking advantage of leverage. He advocated that the problem is not whether to use debt capital but how much debt capital to use, which would depend on management attitude towards risk and return. On the basis of this, he developed his second proposition which stated that the type of capital (debt or equity) used to finance working capital directly affects the amount of risk that a firm assumes as well as the opportunities for gain or loss. Walker again suggested that not only the debt-equity ratio, but also the maturity period of debt would affect the risk-return trade-off. The longer the period of debt, the lower be the risk. For, management would have enough opportunity to acquire funds from operations to meet the debt obligations. But at the same time, long-term debt is costlier. On the basis of this, he developed his third proposition, which stated that greater the disparity between the maturities of a firm's debt instruments and its flow of internally generated funds, the greater the risk and *vice-versa.* Thus, Walker tried to build-up a theory of WCM by developing three prepositions.

Thus while taking decisions the manager is faced with the alternative of pursuing either a conservative working capital policy characterized with lower risk and higher liquidity or an aggressive policy characterized with higher risk and lower liquidity which largely depends on the nature of business activity of an enterprise. The high risk – high return working capital investment and financing strategies are referred as aggressive whereas lower risk and return strategies are called moderate or matching and still lower risk and return is called conservative working capital policy. A firm may adopt an aggressive WCM policy with a low level of current assets as percentage of total assets or high level of current liabilities as percentage of total liabilities. Nevertheless, excessive levels of current assets may have a negative effect on the firm's profitability whereas a low level of current assets may lead to lower level of liquidity and stock-outs resulting in difficulties in maintaining smooth operations[130]. Similarly use of current liabilities to finance the current assets as well as portion of fixed assets is risky to the company as the current obligations are to be honored every 12 months. Higher the use of current funds to total assets, the higher is the risk but such a policy gives higher return in the context that it saves the cost of long term funds used (since the cost of long term funds are greater than the short term funds[131]). However if more of long term funds are used to finance current assets, the risk is less but the returns are also less. Thus every management strives hard to adopt such working capital policy which ensures risk–return tradeoffs.

Lambrix and Singhvi[93] suggested that working capital investment could be optimized *(a)* by improving the terms on which goods are sold, *(b)* by improving the terms on which firms bought goods i.e. creditors and payment of cash *(c)* by eliminating the administrative delays *i.e.* the deficiencies of paper-work flow which tended to extend the time-frame of the movement of goods and cash.

Risk in working capital management is therefore, an outcome of aggressive working capital investment and financing policy. Thus, before deciding on an appropriate level of working capital investment, the management has to evaluate the trade-off between expected profitability and the risk of being unable to meet its current obligations.

The key policy areas relate to the level of investment in working capital for a given level of operations and the extent to which working capital is financed from short-term funds such as a bank overdraft. Working capital policies need to consider the nature of the company's business since different businesses will have different working capital requirements. A manufacturing company will need to invest heavily in spare parts and components and might be owed large amounts of money by its customers. A food retailer will have large inventories of goods for resale but will have very few trade receivables. The manufacturing company clearly has a need for a carefully thought out policy on receivables management, whereas the food retailer may not grant any credit at all. Working capital policies will also need to reflect the credit policies of a company's close competitors to avoid any possible losses due to unfavorable comparison of terms of trade. Therefore, in shaping its working capital policy the firm should keep in mind the relative asset liquidity (in terms of level of current assets) and the relative financing liquidity (in terms of level of short term financing) of WCM[132].

3.5.5.1 Working Capital Leverage: Walker[132] noted, "If the amount of working capital is varied relative to sales, the amount of risk that a firm assumes is also varied and the opportunity for gain or loss is increased and this can be technically termed as working capital leverage". According to him risk means risk of not maintaining sufficient investment in current assets to meet all the maturing financial obligations to support a given sales level and pioneered the concept of working capital leverage (WCL). Thus, WCL analyzes the impact of a firms' current asset investment policy on ROTA. "WCL reflects the sensitivity of returns on investment (earning power) to changes in the level of current assets" Chandra[133]. According to Hyderabad[134], WCL indicates a firm's responsiveness to its working capital investment policies. It shows the extent to which return on capital employed (ROCE) varies for one percent change in the amount of working capital. The quotient of WCL may be more than 1, equal to 1 or less than 1. The higher the WCL, the higher would be the sensitivity of ROCE to changes in working capital. But at the same time it increases the risk also.

The formula for computing the WCL is as follows:

$$\text{WCL} = \frac{\text{Percentage Change in ROTA}}{\text{Percentage Change in Current Assets (CA)}}$$

If the change in current assets is denoted by △CA without impairing in any way the earning capacity of the firm, then the percentage change in ROTA can be expressed as:

$$\text{Percentage Change in ROTA} = \frac{\dfrac{\text{EBIT}}{\text{TA}-\triangle\text{CA}} - \dfrac{\text{EBIT}}{\text{TA}}}{\dfrac{\text{EBIT}}{\text{TA}}}$$

This equation when simplified results to, $\dfrac{\triangle\text{CA}}{\text{TA}-\triangle\text{CA}}$

Similarly the percentage change in current assets can be written as, $\frac{\triangle CA}{CA}$

$$\text{Thus, WCL} = \frac{\triangle CA}{TA-\triangle CA} \div \frac{\triangle CA}{CA} = \frac{\triangle CA}{TA-\triangle CA} \text{ X } \frac{CA}{\triangle CA}$$

$$= \frac{CA}{TA \pm \triangle CA}$$

An analysis of this relationship is must for any firm to optimize its investments in current assets. A high degree of WCL indicates that the firm is highly vulnerable to variations in the amount of working capital, whereby a small decrease in working capital would lead to increase in ROI by a higher percentage.

In this context Hyderabad[134] notes, "a conservative management maintains a high level of investment, thus depressing the ROCE. On the other hand, a relatively aggressive management maintains a lower level of investment earnings and thereby a higher ROCE. Hence, the management's attitude towards risk is predominant factor influencing the level of working capital. WCL is not uniform for all firms, *i.e.,* all firms are not equally responsive to the WCL. Firms having a low ratio of fixed assets to working capital are more responsive than those having a high ratio of fixed assets to working capital. Thus, the asset structure is the basic determinant of WCL".

From the review of theoretical work, it is observed that various academicians, researchers and economists have put in their intellectual efforts to develop the theory of short term financial management, *i.e.,* WCM. The major developments in the theory of WCM are presented in the summary form in Table 3.1.

TABLE 3.1

Development of Theory on Working Capital Management

Sr. No.	Name of Concept/Theory	Name of Pioneer	Year
1	The concept of Working Capital as Variable Capital	Sir Karl Marx	1867
2	Current Ratio	Cited by A. R. Foulke in his book, "Analysis of Financial Decisions"	1890's
3	Qualitative Concept of Working Capital: Net Working Capital	Saliers	1927
4	Three Motives for Holding Cash	Sir John Maynard Keynes	1936
5	The Concept of Working Capital as the Circulating capital	Sir Adam Smith	1937
6	Working capital as Revolving Capital	F. W. Mueller	1953
7	Operating Cycle	Park and Gladson	1951

TABLE 3.1

Development of Theory on Working Capital Management

Sr. No.	Name of Concept/Theory	Name of Pioneer	Year
8	Cash Management Model for Optimal Cash Balances under certainty	Baumol and Beranek	1952 & 1963
9	Motives for Holding Inventories	Arrow, Karlin and Scarf	1958
10	Fourth Motive for Holding Cash	O Maurice Joy in his book "Introduction to Financial Management"	1962
11	Cash Management Model for Optimal Cash Balances under Uncertainty	Miller and Orr	1966
12	Lockbox and Lockbox Collection Models	Maier and Vander Weide; Stone; Levy; Corneujols, Fisher and Nemhauser; Nauss and Markland – 1974 and 1979; Fielitz and White – 1981 & 1982.	1966 to 1982
13	Credit Scoring Model	Beaver	1967
14	Use of linear programming in formulating the cash management process.	Mao	1968
15	Cash Management as multi-period linear programming model	Orgler	1970 & 1974
16	Cash Management Model for Optimal Cash Balances under Uncertainty with signaling to evaluate investment or disinvestment	Stone	1973
17	Cash Conversion Cycle	Gitman, Gitman and Sachdeva and Laughlin and Richards	1974
18	Working Capital Leverage	E. W. Walker	1974
19	Cash Forecasting Models	Stone and Wood, Stone and Miller – 1981 & 1987, Miller and Stone, Boyd and Mabert, Beehler, Kallberg and Parkinson, Homonoff and Mullins	1975 to 1981.
20	NPV Approach to evaluate receivables	Kim and Atkinson	1978
21	Important characteristics of current assets	Dileep R. Mehta	1979
22	Introduction of Concentration Banking and its influence on Cash Management	Stone and Hill	1980
23	Working Capital Requirements and Net Liquid Balance	Shulman and Cox	1985
24	Weighted Cash Conversion Cycle	Gentry, Vaidyanathan and Lee	1990

TABLE 3.1			
Development of Theory on Working Capital Management			
Sr. No.	Name of Concept/Theory	Name of Pioneer	Year
25	Fourth Motive for holding inventory	V. K. Bhalla	1997
26	Net Trade Cycle	Shin and Soenen	1998

Having discussed the theoretical development over a period of time, the next section presents the empirical work undertaken on the various aspects of working capital management.

SECTION II

Review of Related Literature

In this section, a review of empirical work on various aspects of working capital management is presented. As already observed from the theoretical construct, the short term financial management is the key to the success of any and every business enterprise and is multi faceted having various aspects which are interlinked. Hence, for an efficient management all the aspects have to be simultaneously managed. In the said context, the studies are conducted across the world on various aspects of WCM. Hence, these studies are grouped in six broad categories according to the aspect of WCM examined. This classification helps to understand different aspects of WCM concentrated upon by various researchers over the years. It also helps to know the progress of empirical work in WCM. The classification is presented as follows:

- **a.** Studies on inventory management
- **b.** Studies on receivables management
- **c.** Studies on cash management
- **d.** Studies on general working capital management
- **e.** Studies examining impact of liquidity on profitability
- **f.** Studies on Working Capital Policy and Working Capital Leverage

Further, the studies have been again segregated into those carried undertaken outside India and within India to understand if differences exist between countries with respect to the WCM and if the country specific factors have an impact on the same. Thus, in all the 6 broad groups stated above, first the review of *Studies conducted abroad* and then the review of *Studies conducted in India* is presented.

The review of studies is presented in summary form in the following paragraphs which follows the chronological order in each group classified as above.

3.6 Studies on Inventory Management

In this para a review of studies conducted with special reference to Inventory Management is presented in the chronological order.

3.6.1 Inventory Management Studies Abroad

Gaur, Fisher and Raman[1] **(2005)** developed an empirical model using financial data for 311 publicly listed retail firms for the years 1987–2000 to investigate the correlation of ITR with GPM, capital intensity (Gross Fixed Assets[GFA]/GFA+CA) and sales surprise (ratio of actual sales to expected sales) through log linear model. They found that ITR in retail services had a high correlation with GPM, capital intensity and sales surprise and so they suggested that it should not be used in performance analysis. Instead, an empirical metric derived from the model was proposed taking adjusted ITR which empirically adjusts ITR for changes in GPM, capital intensity and sales surprise can be applied in performance analysis and managerial decision making. The analysis of time trends in ITR and adjusted ITR revealed that both have declined in retailing service sector over the study period.

Boute, Lambrecht, Lambrechts and Sterckx[2] **(2007)** investigated the level of inventories held by Belgian companies in May 2004 by examining differences in inventory ratios between manufacturing industry sectors as well as between wholesale and retail using ANOVA. They found empirical evidence that the type of production process was the most important driver for work in process inventory. The finished goods inventory ratio also differed significantly among industry sectors, but the reasons for the difference were harder to distinguish. Also the inventory ratio was found to be significantly higher in retail than in wholesale sector. Further, on examining the financial impact of inventories (Raw material, Work-in-process, Finished Goods) in the manufacturing industry on ROTA, it was found that companies with very high inventory ratios were more likely to be bad financial performers. Regression analyses partially supported the hypothesis of a negative relationship between inventory ratios and financial performance but significant results could not be obtained for all the sectors.

3.6.2 Inventory Management Studies in India

Chowdury[3] **(1971)** in his article suggested various inventory control techniques for efficient inventory control that is, Minimum Stock Level, Economic Ordering Quantity, Standard Costing, Budgetary Control and Material as a limiting factor which helps in betterment of profit. Standardisation and variety reduction, to the extent possible, was suggested for effective control of inventories, which unearths many areas of hidden profit and aids in making operations more efficient. Also, ITR, Work-in-Progress Turnover Ratio, Finished Goods Turnover Ratio and ITCAR were suggested for efficient control of inventories through ratio analysis.

Shah[4] (1974) in his study analyzed investment in inventories and costs associated with inventory in two textile mills for two years, *i.e.* 1966 and 1971. It was found that there was accumulation of inventories which resulted into greater investment in inventories and that cost of materials accounted for nearly 55% to 60% of total cost of production.

Kumar[5] (1996) in his case study on Punjab State Electricity Board conducted a detailed analysis of inventory management functions by administering a questionnaire and found that stores control was carried out strictly and inventory control techniques like EOQ, ITR, ABC Analysis were used for inventory management.

Rabiul Alam and Hossain[6] (2001) examined and evaluated the performance and practice of inventory management of Khulna Shipyards Limited (KSL) through ratio and correlation analysis for a period of ten years from 1987-88 to 1996-97. A high degree of statistically significant positive association existed between inventory and current assets as well as total assets. Inventory was found to have occupied highest share in current as well as total assets. The work in progress conversion period was very high and the financial data analysis revealed poor inventory management at KSL.

Parmar[7] (2003) attempted to evaluate the performance of inventory management of GSFC and GNFC for a period of seven years from 1994-95 to 2000-01. The overall performance regarding inventory management at GNFC was better in terms of efficient utilization of inventories whereas GSFC was not able to do so as it had larger amount invested in inventories in relation to total current assets which was further confirmed by a statistically significant relationship between sales and inventory in case of GNFC and insignificant relationship for GSFC. It was concluded that overall performance of GNFC was encouraging and that of GSFC was alarming.

Singh[8] (2008) in his comparative study in Indian Farmers Fertilizer Cooperative Limited (IFFCO) and National Fertilizer Ltd. (NFL), two fertilizer companies, evaluated the effect of the size of inventory and its impact on working capital through inventory ratios and trends in inventory and working capital. Inventory ratios of both the companies have improved over the study period but NFL's position was better than IFFCO. Trend of inventory and working capital followed the same pattern in both the companies. However in NFL, the portion of inventory in gross working capital regularly decreased specially in the last six years, which positively affected the liquidity position of the company during the study period. It was found that the size of inventory directly affects working capital and its management. Overall a need for improvement in inventory in case of IFFCO was suggested as it was not found to be properly utilized and maintained.

Soni[9] (2012) examined the inventory management practices of Engineering Goods Industry in Punjab taking a sample of 150 companies over the period 2004 to 2009 through primary data collection as well as ratio analysis. The study revealed that size of inventory has increased marginally over the study period with half of the GWC being used for meeting out inventory requirements which has resulted to high IHP and lower ITR. Major part of inventory was found in the form of raw material followed by work-in-process, stores and spare parts and semi finished goods. Moreover, a significant impact of sales on inventory was found through regression analysis.

Concluding Remarks

- Inventory was found to occupy the major share in current assets structure of US Retail sector[2], Indian Textile Sector[4], Shipping[6] and Fertilizer[9] Industry.
- Companies with high ITCAR in retail sectors were observed to be bad financial performers[2].
- Sales was observed to have a significant positive relationship with inventory[7, 9] and size of inventory also affected the net working capital.

3.7 Studies on Receivables Management

In this para a review of studies conducted with special reference to Receivables Management is presented in the chronological order.

3.7.1 Receivables Management Studies Abroad

Gama and Mateus[10] (2010) focussed on signalling role of trade credit and assessed the existence of credit rationing by examining if trade credit was a substitute and/or a complement to bank credit by taking a data set of 468 Portuguese and 7017 Spanish SMEs for a period of eight years from 1998-2006 and controlling for endogeneity problems by using GMM estimators. The variable age was found to be positively and significantly related to trade credit for young firms which was opposite for older firms, which reinforces the result that the small, young firms are credit rationed whereas older firms may have lower financial needs because of their sufficient level of retained earnings due to which they may prefer internal financing. This result was strengthened by the variable size and since large firms are less opaque, it is reasonable to assume that suppliers offer more credit to firms of higher quality. Thus, the results confirmed the existence of credit rationing. Results also confirmed that firms that maintain an exclusive relationship with one bank report a higher degree of substitution between both bank and trade credit as sources of financing, which indicates the greater severity of adverse selection problem in those companies. In line with the theories that emphasize the informational role of trade credit, due to the informative advantage of suppliers, empirical results confirmed that trade credit allowed the younger and smaller firms to improve their reputation.

3.7.2 Receivables Management Studies in India

Suryanarayanana[11] **(1975)** in his study of 1501 non government Indian public limited company for the year 1969-70, analyzed the sundry debtors. It was found that Trade Debtors formed the major part of Shareholders' Funds (34%) and were also found to be a major constituent of current asset at 37%. For control of Debtors, Ageing schedule of debtors and Debtors as a percentage of sales was suggested.

Reddy, Reddy and Reddy[12] **(2003)** evaluated the performance of debtors' management of selected six paper mills of Andhra Pradesh for a period of ten years (1990-1999) using ratio and trend analysis. The study revealed that sample mills adopted a liberal credit policy which had a favourable impact on sales except one unit. The size of debtors as a percentage of current assets showed a declining trend. However, the ACP had increased over the study period indicating slackness of collection efforts.

Shukla[13] **(2007)** analyzed the efficiency of receivables management of selected eight pharmaceutical companies using ratio analysis and ANOVA for a period of ten years from 1997-98 to 2005-06. They found that receivables of selected sample formed the highest component of current assets, but receivables as a percentage of sales were only 3.37 percent. Also ACP was found to be much higher than the norms prescribed by the Tandon Committee. Moreover, significant differences were observed between companies for all the receivables management ratios.

Kannadhasan[14] **(2008)** assessed the receivables management of a public limited undertaking for a period of five years (1999 to 2003) through CR, QR, WCTR, Credit Sales to Total Sales ratio, RTR, ACP, CTR, APP, RTCAR, ITCAR, CBBTCAR and LATCAR using descriptive statistics and correlation analysis. They found that the liquidity position as well as receivables management of the company was satisfactory.

Nageswari, Bennet and Selvam[15] **(2011)** analyzed the efficiency of receivables management of a eleven sample automobile companies for a period of ten years from 1999 to 2009 taking RTCAR, ACP, RTR, Receivables to Payables Ratio, Receivables to TA and Receivables to Sales Ratio and ANOVA. It was found that receivables formed 42.11% of the CA on an average with ACP of 41 days. They found significant differences between companies for RTCAR and concluded that Indian Automobile Industry efficiently managed their Receivables with a scope of further improvement.

Velmathi and Ganesan[16] (2011) examined the credit management of selected five companies of Indian commercial vehicle industry over a period of ten years using ratios, descriptive statistics and ANOVA. The study revealed that debtors' management was good in selected sample whereas the application of one-way ANOVA revealed that the mean ratios of all the selected units differed significantly.

Concluding Remarks

- Receivables was observed to be major share of current assets in Indian Public Limited Companies[11] and Pharmaceutical Companies[13].
- Significant differences were observed between selected firms with respect to the receivables management ratios[13, 15, 16].
- The signalling role of Trade Credit was empirically proved and the results confirmed the existence of credit rationing with *older firms* having easy access to trade credit and *vice-versa*[10].

3.8 Studies on Cash Management

In this para a review of studies conducted with special reference to Cash Management is presented in the chronological order.

3.8.1 Cash Management Studies Abroad

Sathyamoorthi[17] (1999) examined the cash flows of selected medium scale enterprises of Botswana for three year period from 1994-1996 using cash flow statement analysis. The analysis revealed that the selected sample spent the same amount on investing activities over the study period. Also, operating cash flows was the major source to finance the business operations and that the sample firms were in process of expansion.

3.8.2 Cash Management Studies in India

Acharya[18] (1973) discussed aspects pertaining to symptoms of bad cash management; the critical areas needing constant attention being credit control, inventory control, production cycle and suppliers; the planned programme of sound cash management in a going concern and suggested remedies to tide over temporary as well as long term cash deficits. It was concluded that sound cash management is the outcome of sound working capital management.

Khatik and Jain[19] **(2009)** made an in-depth study of MPSEB in respect of its performance and cash management for a period of ten years from 1995-96 to 2005-06 through ratio analysis. They found a high volatility in total cash payment and cash ratio. The cash management position was found to be unsatisfactory as it had not maintained adequate amount of cash in hand and cash at bank.

Ghosh[20] **(2011)** evaluated cash management performance of two leading companies in Indian Steel industry namely, SAIL and TSL during the period of 2003-04 to 2009-10 using cash flow based measures *viz,* CBTR, Operating Cash Flows to Sales as well as Total Assets. Linear regression was applied to examine the impact of cash balances on profitability. The empirical findings revealed that TSL had utilized its cash more efficiently as compared to SAIL and had better capacity to convert its sales into cash.

Kaur[21] **(2012)** studied the cash management of two dairy cooperatives of Punjab and Haryana, *viz,* MILKFED and HDDCF for a period of five years from 2005-06 to 2009-10 using ratio analysis. It was found that liquidity position measured in terms of CR, QR and CBBTCAR as well as operational efficiency measured in terms of net cash flows coverage ratio, of MILKFED is better than HDDCF. It was concluded that both the companies have shown improvement but the performance of MILKFED was better than that of HDDCF.

Concluding Remarks

- It was found that operating cash-flows was the major source of financing the business operations[17].
- Cash management was concluded to be the outcome of sound WCM[18].
- Cash management was found to be unsatisfactory for MP State Electricity Board[19] whereas it had improved for Steel Industry[20] and Dairy Cooperatives[21].

3.9 Studies on Overall Working Capital Management

In this para a review of studies conducted with special reference to overall Working Capital Management, *i.e.,* covering multiple aspects of WCM *viz,* inventory, receivables, cash management as well as working capital structure, trends *etc.* is presented in the chronological order.

3.9.1 General Working Capital Management Studies Abroad

Sagan[22] **(1955)** emphasized on the need for management of working capital accounts and concluded that it could vitally affect the health of the company. He indicated that the task of money manager is to provide funds as and when needed and to invest temporarily surplus funds as profitably as possible in view of particular requisites of safety and liquidity of funds by examining the risk and return of various investment opportunities.

Smith[23] (1997) investigated the cross sectional influences in working capital of 135 industrial firms listed in Johannesburg Stock Exchange for a period of ten years from 1984 to 1993. It was found that the significant sector differences existed with respect to six out of thirteen selected measures of working capital which were, ITR, RTR, CTR; accounts receivables to accounts payable ratio, CCC and NTC.

Sarawat and Agrawal[24] (2004) carried out a comparative study of WCM in two Nepal Cement Industry firms for a period of eight years (1993-94 to 2000-2001). The size of working capital was higher in HCIL coupled with more variations as compared to UCIL. Also, the rate of increase of working capital per year as well as the average compound progressive growth rate was higher in HCIL as compared to UCIL. A statistically significant difference between sizes of working capital of both the samples was found. There was no significant correlation between working capital and sales in both the sample. Exponential Trend was found to be best fit in case of HCIL and Quadratic Trend was found to be best fit in case of UCIL for working capital trend. A positive relationship between profit and sales was found for both the companies; however the increase in profit was double in HCIL as compared to UCIL. A negative relationship was found between current assets and profit indicating lower profitability with higher liquidity. CA and Sales accounted for 88% of variation in profit. The study pointed out that important reason for the losses or low level of profits of public enterprises in Nepal was ineffective and inefficient utilization of working capital.

Sayaduzzaman[25] (2006) analyzed WCM efficiency of British American Tobacco Bangladesh Company Ltd. for a period of five years (1999-00 to 2002-03) using correlation analysis. The study found that the WCM efficiency was highly satisfactory due to the positive cash inflows and planned approach in managing the major elements of working capital.

Padachi, Narsimham and Howorth[26] (2008) in their study examined the structural differences in working capital and the financing pattern of 58 Mauritian small manufacturing firms, operating in five industry groups for the period 1998-2003. An analysis of working capital components and funding pattern showed significant structural changes. While the stocks level and trade debtors had not experienced any major variations, yet they accounted for 80% of the short-term resources tied up in working capital. Thus, the working capital position of the sample firms revealed disproportionate increase in current asset investment in relation to sales resulting in a sharp decline in the WCTR. The mean value was three times, indicating a lower operational efficiency. The study also showed an increasing trend in the short-term component of working capital financing. While the short-term funds, in particular trade credit and other payables, have financed the major part of the working capital, the percentage of long-term funds used to finance the working capital has declined consistently during the same period.

Sathyamoorthi and Wally-Dima[27] (2008) in their study analyzed the WCM of four listed retail domestic companies in Botswana for a period of three years, *i.e.* 2004 to 2006. The findings revealed that ACP had reduced indicating efficient credit policy of the sample selected. APP had increased which indicated that creditors were not made prompt payment which needed to be addressed by sample units to save it from damage of confidence of the suppliers. Also, the selected sample were found to be most liquid in the year 2006, followed by 2005 and 2004 as indicated by Comprehensive Liquidity ranking indicating improvement in liquidity position over the period under study. The analysis of distribution of components of current assets showed that cash and other assets had the tendency to vary over the study period. The research findings also revealed that the listed companies adopted conservative approach in the management of their working capital.

Ojeka[28] (2011) examined the effect of credit policy on the liquidity of four manufacturing companies in Nigeria over a period of five years from 2003-07 taking primary data and secondary data of selected sample and using ratio analysis and regression analysis. The findings revealed that credit policy did not have a negative effect on liquidity of selected sample which implies that a favorable credit policy would result in favorable liquidity position. It was suggested that companies should ensure the monitoring and regular review of their credit policy and the allowance of cash discounts should be minimized as much as possible.

3.9.2 General Working Capital Management Studies in India

Agrawal[29] (1976) examined the industry practice related to WCM by collecting primary information through questionnaire and evaluated its efficiency through ratio analysis and descriptive statistics for 34 companies belonging to ten industry groups over a period of 8 years from 1966-67 to 1973-74. It was found that working capital per rupee of sales varied from industry to industry and it registered a downward trend during the study period except in cement industry. Also, majority of the industries were not able to utilize their total current assets effectively with unsatisfactory liquidity position. However, positive net cash flows and CL Turnover rate enabled firms to carry out activities smoothly. Cash, Receivables and Inventory Management was also inefficient. The study revealed that over the study period, there was an upward trend in the share of Long term funds in financing working capital in all industries and the importance of internal short term funds for financing the working capital increased in six out of ten industries. The proportion of short term bank borrowings declined over the study period whereas the proportion of trade credit showed an upward trend.

Ansari[30] **(1985)** studied the WCM of selected 100 SSIs belonging to eleven industry groups over a period of five years from 1977-78 to 1981-82 through secondary data analysis. Of the eleven industry groups, CR and QR were found to be above the thumb rule for five industries, whereas for other industries it was lower than thumb rule which was highest for Repairs of Motor Vehicle Industry and lowest for Fabricated Items Industry. Also, the OC had narrowed down for five and widened for six industry groups. Further, it was observed that industry groups have been suffering from underutilization of working capital. About 50 percent of the total assets were current assets in Food, Leather & Plastic Goods, Chemical, structured Items, Fabricated Items, Tools & Appliances & Repair of Motor Vehicle Industry whereas share was two-thirds in Power loom, Furniture & Tobacco Industry and three fourths in Printing and Publishing Industry. Industries conducted their business with very low proportion of cash at hand & Bank except Food & Repair of Motor Vehicle Industry where share of cash to CA was in double digit. Current assets were found to be financed majorly through CL followed by Retained Earnings and then other Non Current Liabilities.

Khandelwal[31] **(1985)** studied the WCM of selected 40 SSI units of Jodhpur over a period of five years from 1975-76 to 1979-80. CAME was found to be lower as compared to the industry average. There was an overall decline in the coverage of CL over the study period and the liquidity position was below the standard norms. Inventory formed the major part of CA with raw materials having major share of inventory and size of inventory holdings showed rising trend. Receivables management was found to be inefficient. CBBTCAR showed a declining trend. Size of working capital finance was found to be positively correlated to the size of the unit. The growth rate of working capital finance was found to be higher than growth rate of output and sales during the study period. It was found that the share of Bank credit in financing the working capital was one third with marginally declining trend, which however exceeded own funds in all industry groups under study suggesting that institutional finance continued to be the mainstay of financing working capital.

Sarkar and Saha[32] **(1987)** analyzed WCM efficiency of CCI Ltd and its financing for a period of ten years from 1973-74 to 1982-83. They found that CBBTCAR always remained at the lowest ebb. Ineffective inventory management was observed from the fluctuating trend in ITCAR. RTCAR have been moderate indicating that firm was prompt in the collection of its dues. But the advantage accruing to the company from the declining share of debtors had been offset by increase in the share of loans and advances. Also, company followed a conservative working capital financing policy due to which WCM was found to be risk free.

Basu[33] **(1992)** analyzed the WCM of selected eight tyre companies for a period of three years from 1987-88 to 1989-90 using ratio analysis. The industry pattern showed a steady trend during the period under study with respect to components of working capital with inventory being the highest component followed by debtors, other current assets and cash and bank balances. The inventory management was found to be satisfactory. Of the eight firms, one firm had good collection policy, four had liberal credit policy and two followed balanced credit policy. The short term solvency position of all the sample firms was found to be unsatisfactory as per the standard norms throughout the study period.

Banerjee and Hazra[34] **(1992)** in their case study of Grasim Industries Limited, attempted to study and evaluate the WCM, its financing and examined the reasons for variation in working capital over the period of five years from 1985-86 to 1989-90 through ratio analysis, fund flow analysis and simple regression analysis. They found that the moderate approach was followed in working capital investment whereas working capital financing policy was found to be more conservative. Loans and advances formed major part of current assets and its share increased whereas that of receivables and inventories declined over the study period. An increasing trend was observed in both sales and working capital but the rate of growth in working capital was much higher than the growth rate of sales. There was no co-ordination in the growth rates of working capital and sales, which bespeaks of the inefficacy in WCM of company which was partly due to major portion of current assets being invested outside the business.

Das[35] **(1993)** studied the WCM of a government sector public undertaking for a period of ten years from 1981-82 to 1990-91 through ratio analysis. The analysis revealed that inventory constituted highest share of current assets followed by receivables and cash and bank balances. Current assets to sales ratio had declined over the study period but had been exceptionally high indicating inefficient utilization of funds. Working capital to sales ratio indicated that the undertaking was functioning with negative working capital. Analysis of debtors revealed moderate credit and collection policy followed by firm. The APP was very high indicating delayed payments to creditors. Inventory management was found to be ineffective and liquidity position of the firm was also not satisfactory.

Datta[36] **(1995)** analyzed WCM of five paper mills of paper industry in West Bengal over a period of four years from 1982-83 to 1985-86 using fund flow analysis. The analysis revealed that overall there was working capital shortage in the sample firms and alarming situation existed in three of five firms under study.

Reddy and Rao[37] **(1996)** analyzed the working capital of public sector undertaking HCL and measured its efficiency for a period of five years from 1989-90 to 1993-94 through ratio analysis. Component analysis revealed that the share of debtors was highest on an average followed by inventory, loans and advances and cash and bank balances. The analysis also revealed good short term solvency and liquidity position. Poor credit management coupled with liberal collection policy was also found. It was concluded that overall WCM is not up to the expectations which needed to be improved by effective utilization and control of current assets.

Reddy[38] **(1997)** examined the efficiency of liquidity management of Bharat Heavy Electricals Limited (BHEL) for a period of eight years from 1987-88 to 1994-95 through ratio analysis. The liquidity ratios improved over the study period and the liquidity position was found to be satisfactory. However, initiation of measures for further improvements was suggested.

Sur[39] **(1997)** analyzed the WCM of Colgate Palmolive Ltd for a period of twelve years from 1980 to 1991 through ratio analysis. The element wise analysis indicated that, inventory constituted highest share in working capital followed by Debtors, Cash and Bank Balance and Other Current Assets including loans and advances. The mean proportion of current assets to total assets had declined considerably indicating a change in approach of the firm regarding current asset investment policy. Current assets to sales ratio and inventory to sales ratio indicated fluctuating trend. Debtors' management was found to be encouraging. However, the liquidity position of the sample was not satisfactory.

Vijayakumar[40] **(1998)** made a comparative study of WCM performances of five co-operatives and five private sector companies in the sugar industry of Tamil Nadu taking financial data for a period of ten years from 1982-83 to 1992-93 using ratio analysis, trend analysis, correlation and regression analysis. The liquidity position was found to be sounder in private sector as compared to co-operatives. The inventory management was found to be poor. A significant negative correlation was observed between WCL and CATAR indicating that changes in net working capital had low impact on return on investment. The pooled regression results of the study contradicted less than unitary sales elasticity hypotheses of Baumol, Tobin and Frazer with respect to demand for cash by sugar industries in Tamil Nadu. Overall, it was concluded that the WCM had a great scope for improvement in sugar industry in Tamil Nadu.

Sarma and Chary[41] (1999) in their case study of VST Limited examined the trends in current asset investments, its financing and evaluated the effectiveness of its WCM over a period of eight years from 1989-1996 using ratio and fund flow analysis. The study revealed disproportionate increase in current asset investment in relation to sales which resulted in sharp decline in working capital turnover. Also, it was observed that changes in inventory investment did not reflect any consistent policy and its turnover declined in five of eight years. Credit policy of VST was found to be highly volatile with increasing risk of bad debts. The fund flow analysis revealed that VST could not make use of the benefits of trading on equity for long term financing and hedging approach for short term financing. Hence an ample scope for reengineering the financing mission of VST in light of profitability was suggested.

Chundawat and Bhanawat[42] (2000) analysed the WCM practices in IDBI assisted tube and tyre companies for the period 1994- 1998. Using ratios and Shrivastav and Yadav model they concluded that the WCM of IDBI assisted companies was more effective than the industry as a whole.

Rajeswari[43] (2000) analyzed the liquidity management of Tamilnadu Cement Corporation of India Ltd, Alangulam for a period of five years from 1993-94 to 1997-98 using ratios. The study revealed that all the liquidity ratios *viz,* CR, QR and ALR were below the standard norms throughout the study period and it was concluded that the liquidity management of the selected sample was not satisfactory.

Prasad[44] (2000) stressed on structure of current assets, its management and financing of 21 paper companies for a period of ten years. The study revealed that the working capital formed 47.2% of the total net assets during the study period. The data on the adequacy of working capital showed a negative turn indicating inadequacy of working capital in all the selected units as also evident from negative working capital indicating divergence of funds for long term requirement which was validated by the Chief Executives' Survey, thereby leading to sub optimum utilization of working capital. Inventory, Cash and Receivables management was found to be poor. Moreover, financing through public deposits emerged as a potential source of working capital. A transcendental change was observed, whereby the loans and borrowings from bank showed a decline while dealer advances and term lending surfaced substantially. The survey revealed that collection of debts, availability of working funds and uncertain cash flows were major working capital problems encountered by sample selected.

Reddy[45] **(2001)** examined working capital structure; evaluated cash management procedures, trade credit policies, efficiency of inventory management and probed into financial pattern of current assets of 20 SSIs for a period of 6 years (1989-90 to 1994-95). The study revealed that fifty percent of sample very closely watched working capital and one third of sample units controlled working capital by preparing production and sales budget. Liquidity position of the sample was discouraging both in technical and actual terms which was attributed to inefficient cash management, excess investment in debtors and overstocking of inventories. A conservative approach was followed for financing working capital. The overall profitability was found to be satisfactory which could be enhanced by adopting effective working capital management practices envisaged in the study.

Sur[46] **(2001)** made a comparative study of liquidity management in four Indian power sector companies and measured the association between liquidity and profitability for the period of ten years (1987-88 to 1996-97). He found that liquidity position of all the sample units was not satisfactory as evidenced by the CR and QR which were below the standard norms throughout the study period. The ITR for all the companies was higher than the norms prescribed for the industry indicating efficient management of inventory in all the companies during the study period. Debtors' management was found to be stable for one unit, showed increasing trend for one unit and declining trend for two units reflecting deterioration in the efficiency of their debt management. The association between profitability and liquidity was found to be statistically significant for three out of four sample units indicating favourable impact of liquidity on profitability.

Anand and Gupta[47] **(2002)** estimated three quantitative working capital benchmarks (OC, CCC and Cash Conversion Efficiency) in order to help Corporate India to manage working capital more efficiently and create firm value by taking data of 427 manufacturing companies over a period of three years. They found that cash conversion efficiency was highest for Coal and Lignite industry followed by Telephone Services. OC was found to be lowest for Liquor Industry and Health Services whereas CCC was found to be lowest for Tourism industry and highest for Computer hardware industry and Telephone Services.

Khatik and Singh[48] (2003a) in their case study attempted to examine the liquidity position as well as identify factors affecting liquidity position of selected firm for a period of five years from 1994-95 to 1998-99 with the help of ratio analysis. They found that the overall liquidity position of the company was not satisfactory.

Khatik and Singh[49] (2003b) in their case study analyzed WCM for a period of eight years from 1992-93 to 1999-2000 through ratio analysis and Motaal's Comprehensive test of liquidity. It was found that lower percentage of funds was invested in total current assets. Debtors and other current assets formed the highest portion of total current assets. The short term liquidity was found to be satisfactory as indicated by the CR; QR and ALR. However, age of inventory increased throughout the study period indicating working capital being blocked for longer time. Also, credit and collection policies were found to be liberal from the analysis of debtors.

Ghosh and Maji[50] (2004) examined the WCM efficiency of selected 20 Indian cement companies for a period of ten years from 1992-93 to 2001 -2002. Using industry norm as target efficiency level of the individual firms, they also tested the speed of achieving the target level of efficiency by an individual firm during the period of study. For measuring the WCM efficiency three index values -performance index, utilisation index and overall efficiency index were calculated. The performance index indicated efficient management however utilization index indicated inefficient utilization of current assets for generating sales. Efficiency index indicated firm's inefficiencies in adopting a sound WCM policy. Overall, findings of the study indicated that the Indian Cement Industry as a whole did not perform remarkably well during the period with the scope for improvement.

Bardia[51] (2004) in his case study on Steel Authority India Limited studied the liquidity maintained by the Steel giant, its year-to-year change and relationship with profitability for a period of eleven years (1991-92 to 2001-2002). It was found that, of the six different parameters of liquidity management, the CATAR was most consistent and stable followed by CR, ITR, QR, CPR and DTR respectively. The DTR in SAIL was highly variable and inconsistent which signified slackness of credit and collection policy pursued by SAIL. A statistically significant positive correlation was found between liquidity and profitability indicating the favourable impact of liquidity on profitability of SAIL.

Mukhopadhyay[52] **(2004)** conducted case study of a company belonging to heavy engineering industry for a period of ten years (1993-94 to 2002-03) with an objective to examine the effectiveness of working capital practices of firms and to assess the short term liquidity and solvency as also to find out if adequacy or otherwise of working capital affects the commercial operations. It was found that NWC of the firm was negative throughout the study period indicating aggressive working capital policy of the firm as also indicating bad liquidity position and an alarming situation as the mean CR and QR were below standard norms which jeopardized the interests of short term creditors. Inventory and receivables management was also found inefficient. On the basis of overall analysis, it was stated that the company had been suffering from acute crises of working capital.

Singh[53] **(2004)** in his case study of Lupin Laboratories Limited attempted to assess the significance of working capital through ratio analysis as well as analyzed each component of working capital to identify the components responsible for changes in working capital and studied the liquidity position of the firm for a period of seven years from 1995-96 to 2001-02. The mean CATAR indicated higher investment in current assets. The short-term liquidity was found to be very satisfactory. Age of inventory declined, which is very positive for liquidity point of view. Position of debtors, as compared to sales was found to be very good. Operating cycle (in days) decreased consistently from 158 days to 96 days indicating proper utilization of working capital. Debtors and loans and advances formed the major share of current assets followed by inventory and cash and bank balances throughout the study period. The overall position of the working capital was satisfactory but a need of improvement in debtors was observed as liberal credit policy was followed.

Bardia[54] **(2006)** carried out a comparative study of liquidity trends of SAIL and TISCO belonging to Indian Iron and Steel Sector for a period of seven years (1997-98 to 2003-04) to provide a basis to judge whether the liquidity policies pursued by the companies were satisfactory or any improvement was needed in the sphere of financial management. The study revealed that there was lack of steadiness in liquidity trends of SAIL. Also, the relationship between sales and working capital was poor in SAIL. The rotation of working capital was slow in SAIL which indicated that it used relatively larger funds to attain sales as compared to TISCO. Overall, it was found that liquidity management of TISCO was efficient and far better than SAIL for the study period.

Rajendran and Ramesh[55] **(2006)** in their case study on Tamil Nadu Tourism Development Corporation Limited examined and evaluated its liquidity position and assessed efficiency of its liquidity management over a period of ten years from 1994-95 to 2003-04. They found that absolute liquid ratio; QR and CR were always below the standard norms and concluded that the liquidity management of the sample firm was very poor and not satisfactory.

Jafar and Sur[56] **(2006)** in their case study on NTPC Ltd evaluated the WCM efficiency by segregating the twenty year study period into pre liberalization and post liberalization and made a comparison of overall performance of efficiency for both the study periods. The study revealed that the company achieved a higher level of efficiency in managing its working capital during the post – liberalization era by adapting itself to the new environment emanated from liberalization, globalization and competitiveness.

Bhunia[57] **(2007)** in his study made an assessment of WCM, examined the adequacy or otherwise of the working capital, observed the liquidity position and areas of weakness of 2 steel companies, Steel Authority of India Limited (SAIL) and Indian Iron and Steel Co. (IISCO) for a period of twelve years from 1991-92 to 2002-03. The analysis revealed inadequate level of working capital for both the firms which was attributed to low raw materials inventory in the case of SAIL and to low level of receivables in the case of IISCO. Poor liquidity position was found in case of both SAIL and IISCO. Receivables management was inefficient in IISCO whereas in case of SAIL inventory management was inefficient. However, an efficient management of payable policy was found in case of both the enterprises.

Das[58] **(2008)** in his case study on Ranbaxy Laboratories studied and evaluated the liquidity position of the company and ranked the liquidity position from year to year for a period of nine years. They also examined the relationship between liquidity and profitability. The study revealed that the quick NWC was positive throughout the study period thereby representing sound liquidity position of the selected company. The overall liquidity position was satisfactory from the view point of standard norms and industry norms except the Cash Position which needed to be improved. IHP had declined in the study period giving positive indication for liquidity position. Consistency and stability in current asset investment policy of the company was found. A statistically insignificant association was found between liquidity and profitability.

Ghosh[59] **(2008)** in his case study on TISCO Limited examined the liquidity management through ratio analysis and Motaal's Comprehensive test, and measured the association between liquidity and profitability through Rank Correlation over a period of five years. The study revealed that the company was capable to meet the instant cash needs of the firm only during the first two years of study. The results indicated efficient management of inventory during the study period. The debtors management improved during the study period however further efforts were required to tighten the debt policy. The liquidity ranking analysis found that liquidity position of firm fluctuated throughout the study period. The association between profitability and liquidity was found to be insignificant.

Shrotiya[60] **(2009)** in his case study on Dabur India Limited discussed the association between working capital and sales for the period of ten years (1997-98 to 2006-07). A strong positive association was found between working capital and sales. However, Trend values of working capital based on sales indicated that actual working capital was less than estimated working capital in the first four years but in the last six years it was more than the requirement indicating an under trading situation and inefficient management of funds. Also, trend values of sales based on working capital indicated that actual sales were less than estimated sales in the first six years of the study whereas it was more than estimated sales in the last four years indicating an overtrading situation and that the operations were expanded beyond the funds availability.

Goel[61] **(2009)** in his study on WCM in Reliance Industries Limited for a period of two years analyzed the liquidity trend and the utilization of current assets. The study disclosed that efficiency in utilization of current assets was really good as the current asset turnover ratio had increased at the rate of 45.53 percent during the period under study. The level of investment in working capital had registered a decreasing trend during the period under study which is an indication of the pursuance of an aggressive policy by the management. Also, the level of liquidity has been low which is prone to considerable degree of risk as indicated by the decline in CR and QR.

Verma[62] **(2009)** in his study attempted to identify whether the liquidity management and the financing of working capital of Gujarat Cooperative Milk Marketing Federation have undergone change or not in the second phase of liberalization (1998-2004) vis-à-vis the first phase (1991-97) of liberalization. The study revealed that liquidity management policies and practices followed by the sample firm continued to be same in both the phases under study with respect to current assets and quick assets. However, the proportion of current liabilities and provisions and accruals to finance current assets has declined in the second phase. The study indicated that bank borrowings, which were not used in the first phase, have been used in the second phase. The study did not find any significant change in two phases with respect to ACP and APP.

measured in terms of CR, QR, ITR, CATR and WCTR whereas significant variation were observed for RTR indicating that the debtors' management of two companies are different. Moreover, the credit and collection policy of Torrent was more efficient than that of Cipla as evidenced by higher RTR of the former.

Bhunia[68] (2010) examined the trends in working capital of selected two private sector steel enterprises for a period of nine years from 1997-98 to 2005-06. They found that NWC was less than the estimated values whereas current liabilities and current assets were more than the estimated values for majority of the years under study.

Jaiswal, Nigam and Pandey[69] (2010) examined the efficiency of WCM of Ranbaxy Laboratory Ltd. during 2002 to 2006 using ratio analysis as well as liquidity ranking. They found that, on an average 62% of the total asset was invested in current asset which was remarked to be a higher investment. Moreover, inventory with 32% was observed to be the major component of current asset. They found that liquidity position measured in terms of QR and ALR was satisfactory but debtors and inventory management were found to be inefficient.

Kantawala and Joshi[70] (2010) analyzed the components of current assets of 52 steel companies of Indian Steel Industry taking sixteen WCM ratios over a period of ten years from 1998-99 to 2007-08 through time series analysis. The analysis of structural ratios revealed that the fixed assets base in steel industry was high. Further, 68 percent of current assets were financed by current liabilities. The liquidity position of the industry was very good as it was above the standard norms throughout the study period. Time series analysis revealed that on the whole, WCM of steel industry has improved over the study period.

Rao, Rao and Azhagaiah[71] (2010) analyzed the trends and patterns of working capital utilization efficiency in respect of size of 53 firms of cotton textile sector in India through application of three indices *viz.*, Performance Index (PI), Utilization Index (UI), and Efficiency Index (EI) over a period of ten years from 1997-98 to 2007-08. For the purpose of analysis the selected firms were classified into three size categories *viz* "Small", "Medium" and "Large" based on average assets size over the study period. The study revealed that Linear Growth Rate (LGR) of PI, UI and EI in respect of working capital efficiency for small size firms was significant while in case of medium size firms, the trend of UI alone was significant. The trend of PI, UI and EI for large size firms was insignificant.

Patidar[72] (2011) analyzed WCM of Nahar Spinning Mills over a period of five years from 2003-04 to 2007-08 using ratio analysis, correlation analysis and t-test. It was found that the CR was highly satisfactory with significant positive correlation between current assets and current liabilities. Further, debtors formed the major share of current assets and the proportion of cash was very less indicating liberal credit policy which had affected the liquidity position of firm. The condition of loans and advances was also found to be unsatisfactory. The inventory management was also found to be inefficient.

Khatik and Varghese[73] **(2011)** examined the solvency position of Power Financial Corporation Limited for a period of ten years from 2000-01 to 2009-10 using ratio analysis technique and correlation analysis. It was found that the short and long term solvency position of PFCL was not satisfactory.

Untwal[74] **(2011)** analyzed WCM of Indian Tools Limited for a period of nine years *w.e.f.* 2000-01 using ratio analysis. The study revealed unsatisfactory liquidity position of selected sample and also inefficient credit policy. However, inventory management was found to be satisfactory.

Ramanaiah[75] **(2011)** examined the liquidity management at MAA Fruits Pvt Limited, for a period of four years from 2002-03 to 2005-06 using ratio analysis, Motaals' comprehensive liquidity test and correlation analysis. The study results showed that the company enjoyed sound liquidity during the study period excepting 2002-03. However the cash management was found to be poor. It was also found that firms invested almost 70% of funds in current assets. The company followed a liberal credit policy. Inventory management improved and relationship between liquidity and profitability was found to be statistically insignificant.

Bhunia[76] **(2011)** examined the overall efficiency of liquidity management of selected 4 private sector companies of steel industry in India for a period of ten years (1997 to 2006) using ratio analysis, multiple correlations and regression analysis. The analysis revealed that the liquidity position of all firms except Kalyani Steels Limited was unsatisfactory whereas receivables management was unsatisfactory for the entire sample. The regression analysis revealed a negative significant relationship between profitability and IHP, ACP and APP, QR, ALR and financial leverage whereas it was positively related to CR.

Chandrabai and Rao[77] **(2011)** conducted a comparative study of WCM in Indian Electrical Equipment Manufacturing industry for two companies, *viz,* BHEL and ABB Ltd representing PSU and Private sector respectively over a period of 2005-06 to 2009-10 through ratio analysis. The liquidity position was found to be satisfactory in the sample units. They also found that the receivables and loans and advances formed the major share of current assets in both the companies and suggested improvement in debt collection policy.

Aljroub, Alrabei, Saleh and Alrawashdeh[78] **(2012)** examined if differences existed between the WCM practices of selected 4 cement units of Rajhasthan over the period of 5 years from 2006-2010 through ANOVA taking Size of Inventory and Receivables, Inventory to NWC, ITCAR, RTCAR and ITR. They found that there exist significant differences between companies with respect to the size of inventories, size of receivables as well as RTCAR whereas no significant differences were observed for ITCAR and ITR. They concluded that the companies significantly differed in size of inventory as well as receivables and maintained different proportion of receivables in the current asset structure.

Concluding Remarks

On reviewing the studies on Overall WCM it was found that,

- In few studies, Inventory formed major share of current assets of sample[31,35,39,69] whereas in others Receivables[37,49,53,72,77], Loans and Advances[34,53,77] formed the major share of current assets of sample under study.
- Cash management was inefficient[29,44,75]; Inventory Management was inefficient[29,32,35,40,44,52,57,69,72]; Receivables Management was inefficient[29,37,44,52,57,69,74,76] and liquidity management was also unsatisfactory[29,33,35,43,45,46,48,53,55,57,60,65,73,74,76]. However few studies found that the liquidity management was sound and satisfactory[37,38,49,58,69,70,75,77]. Further, few studies observed improvement and efficient inventory management[59,74] as well as efficient receivables management[59,27]
- In few studies sample units pursued conservative working capital financing policy[30,32,34,45] whereas in others an aggressive working capital financing policy[52].

Thus it can be submitted that in majority of the cases the WCM was not found to be sound and satisfactory. Some or the other inefficiencies were present making the overall WCM sub optimal.

3.10 Studies Examining Impact of WCM on Profitability

In this para a review of studies examining the impact of WCM, Liquidity and WCM efficiency *etc.* on profitability is presented in the chronological order.

3.10.1 Studies Abroad

Jose, Lancaster and Stevens[79] **(1996)** examined the relationship between profitability measures and management of on-going liquidity needs of 2718 firms taken from

Compustat Database belonging to seven industrial sectors over a twenty year period (1974 to 1993) in order to determine if aggressive liquidity management is associated with higher returns. Controlling industry and size differences they have concluded that more aggressive liquidity management is associated with higher profitability for several industries including natural resources, manufacturing, service, retail/wholesale and professional services for which statistically significant inverse relationship existed between CCC and profitability which is not driven by size.

Shin and Soenen[80] (1998) investigated the relationship between the NTC as a measure of WCM efficiency and profitability of U.S firms for a period of twenty years (1975 to 1994) using sample of 58985 firm years through correlation and panel data regression analysis. The coefficient of NTC was significant and negative in all eight regressions. Increases in the CR and debt ratios were negatively associated with profitability and risk-adjusted return. Evidence showed that both an increase in NTC and CR lowered the profitability. The results further implied that an increase in leverage is associated with a decline in profitability even if EBIT is used as a measure of profitability. Sales growth remained positively related to change in the accounting measure of profitability and the results also showed that past sales growth added significantly to the explanation of stock returns. They concluded that reducing the level of current assets to a reasonable extent increases a firm's profitability and shorter NTCs were associated with higher risk adjusted stock returns. Furthermore, this inverse relationship between NTC and ROTA was found different across industries depending on the type of industry.

Lyroudi and Lazaridis[81] (2000) examined the relationship of CCC with the traditional measures of liquidity (CR, QR), leverage (DER, ICR), profitability (ROTA, NPM), firm size and its component variables for 82 firms of Greek food industry for the year 1997 through regression analysis. The results indicated a significant positive relationship between the CCC and CR, QR. Similarly it had significant positive relationship with ACP & IHP whereas negative relationship with APP. The CCC was positively related to ROTA and the NPM but had no relationship with leverage ratios. On the other hand, CR and QR had negative relationship with the DER whereas a positive one with the ICR. Finally, there was no difference between the liquidity ratios of large and small firms.

Wang[82] (2002) examined the relationship of liquidity management with operating performance and corporate value for 1,555 firms in Japan and 379 firms in Taiwan by taking data for a period of eleven years from January 1985 to December 1996. It was observed that the CCC-ROTA and CCC–RONW relationships were commonly negative and sensitive to industry factors. Both Japanese and Taiwanese firms with *Tobin's q*>1 had significantly lower CCC than firms with Tobin's *q*<=1. Japanese firms with Tobin's *q*>1 had significantly higher ROTA and RONW than firms with Tobin's *q*<=1. Overall, it was noted that aggressive liquidity management enhances operating performance and is usually associated with higher corporate values for both countries in spite of differences in structural characteristics or in financial system of a firm.

Yucel and Kurt[83] (2002) investigated the relationship of CCC with profitability (NPM, RONW and ROTA), liquidity (CR and QR) and debt structure (TDTAR) of 167 firms listed on the Istanbul Stock Exchange (ISE) for the period of 1995-2000. CCC, profitability, liquidity and debt structure were examined comparatively in this study on the basis of period, industry and firm size using descriptive statistics, correlation and regression analysis. The results showed that CCC is positively related to liquidity ratios and negatively related to ROTA and RONW. High leverage ratio affected the liquidity and profitability of the firms adversely. No significant relationship was observed between the CCC and the leverage ratio. Also, there was no significant difference in the CCC on the basis of period, but it differed on the basis of sector and firm size.

Deloof[84] (2003) analyzed a sample of 1009 Belgian firms for the period of five years from 1992-1996 to investigate the relationship between WCM and the profitability of firms. A significant negative relation of GOI with ACP indicated that customers would take more time to assess the quality of products they buy from firms with declining profitability; with IHP indicated that lower inventory would result into declining sales leading to lower profits and again lower profitability and APP indicated that less profitable firms waited longer to pay their bills. The results thus confirmed that managers can create values for their shareholders by reducing IHP and ACP to the minimum extent.

Eljelly[85] (2004) empirically examined the relation between liquidity as measured by the CR and cash gap and profitability of a sample of twenty nine listed Saudi Arabian companies belonging to the main business sectors except power generation and banking sector for a period of five years from 1996 to 2000. Through correlation and panel data regression analysis, the study found a significant inverse relationship between firm profitability and liquidity as measured by CR. Such relationship was more evident in firms with high CRs and longer CCCs. CR was found to be most important liquidity measure affecting profitability but within sectors the CCC was found to be more important as compared to CR that affected the profitability. The size variable also had significant effect on the profitability and the results were found to be stable over the study period. However, size and CCC variables were found to lose its importance within the labour intensive sectors such as service.

Lazaridis and Tryfonidis[86] (2006) investigated the relationship of corporate profitability (GOI) and WCM for 131 firms listed at Athens Stock Exchange for a period of four years from 2001-2004 using regression analysis. The regression results found a positive impact of size and fixed financial assets whereas negative impact of debt on profitability. Further, a negative relationship between GOI and CCC, ACP, APP and IHP was found and suggested that managers can create profit by correctly handling the individual components of working capital to an optimal level.

Zainuddin[87] (2006) in his study on 145 small and medium enterprises (SMEs) in fourteen different manufacturing sectors of Malaysia empirically examined the relationship between liquidity and profitability for period of 1999 to 2004. Using the non parametric Spearman rank correlation coefficient analysis, the results revealed that there was a statistically significant moderate positive association between liquidity and profitability which suggested that profitable firms tend to maintain higher liquidity levels. However a significant association was found between liquidity and size of firms, signifying that larger small firms tend to maintain higher liquidity levels. In order to investigate whether or not different industry sectors had different levels of liquidity, Kruskal-Wallis test statistic was applied which confirmed that different industry sectors had different degrees of liquidity.

Padachi[88] (2006) in his study on 50 small Mauritian manufacturing enterprises belonging to 5 industry groups examined the impact of ACP, IHP, APP and CCC on ROTA, analyzed the trend in working capital needs of firms and also examined the causes for any significant differences between the industries for a period of 6 years using correlation and regression analysis along with separate analysis of components of working capital. The firms' profitability increased with firms' size, CATR and with a lesser aggressiveness of asset management. The regression results showed that high investment in inventories and receivables was associated with lower profitability. A negative impact of APP on ROTA was found confirming negative relationship between profitability and number of days APP. An analysis of the liquidity, profitability and operational efficiency of the five industries showed significant changes and the contribution of the best practices in the paper industry to performance. The findings also revealed an increasing trend in the short-term component of working capital financing.

Shah and Sana[89] **(2006)** investigated the relationship between working capital and the profitability of seven listed companies of oil and gas sector of Pakistan for the period 2001-2005. Applying correlation and OLS method using Fixed Effect Estimation model, results showed a negative impact of ACP, IHP, CCC and sales growth whereas positive impact of APP on GPM. Results also showed the existence of firm effect, *i.e.,* the effect of different management style and working capital needs of the companies.

Teruel and Solano[90] **(2007)** studied the effects of WCM on the profitability of a sample of 38,464 observations of small and medium-sized Spanish firms belonging to eight different industrial sectors for a period 1996 to 2002 using panel data methodology. They concluded that managers can create value by reducing their IHP and ACP. Moreover, shortening the CCC also improved the firm's profitability.

Raheman & Nasr[91] **(2007)** in their study of sample of 94 Pakistani firms listed on Karachi Stock Exchange for a period of six years from 1999 – 2004, examined the effect of different WCM variables (IHP, ACP, APP and CCC) along with Debt ratio, Firm Size (LnS) and financial assets to total assets ratio on profitability (NOP) of Pakistani firms using Pearson's correlation and regression analysis. The results indicated that increase in CCC leads to decrease in profitability of the firm, and concluded that managers can create a positive value for the shareholders by reducing the CCC to a possible minimum level. They also found a negative impact of liquidity and debt whereas a positive impact of Firm Size on the profitability.

Ganesan[92] **(2007**) in his study analyzed the WCM efficiency taking a sample of 349 telecommunication equipment companies covering the period 2001-2007 using correlation, regression analyses and ANOVA. The study found that CCC of the sample firms is higher than the industry average whereas ACP and APP are in line with their industry averages. CCC had insignificant impact on ROTA and NPM and same was the case observed for ACP which is attributed to heavy fixed assets requirements in telecommunication industry. Receivables and Payables management was found to be poor and it was concluded that the overall WCM efficiency in telecommunication industry for the study period was poor.

Samiloglu and Demirgunes[93] **(2008)** analyzed the impact of WCM (ACP, IHP, APP, CCC) along with Firm Size, Fixed Financial Assets Ratio, Leverage and Sales Growth on profitability (ROTA) of 5483 listed firms of Turkey for a period of ten years from 1998 to 2007 using multiple regression analysis. They found that ACP, IHP and leverage had negative effect whereas growth had positive effect on profitability. However, firm size, CCC and fixed financial assets ratio had no statistically significant effect on the firm profitability. They suggested that shortening of ACP and IHP would increase the profitability of firms.

Toby[94] (2008) in his study on 87 quoted Nigerian manufacturing firms for a period of twelve years aimed at determining the empirical relationships between company's liquidity measures and selected profitability, efficiency and leverage ratios through multiple regression and significance was tested through F-test. A statistically significant relationship was found between return on fixed assets and CR, inventory to net working capital and acid test ratios. Also the relationship between NPM and CR, inventory to net working capital was found to be statistically significant. The relationship of tangible assets turnover ratio with CR and cash flow ratio was also found to be statistically significant. Also, the relationship of fixed assets to net worth ratio with CR and acid test ratio was statistically significant and similar relationship existed between current debt to net worth and inventory to net working capital ratio. The F-ratio revealed a statistically significant relationship between efficiency and liquidity as well as leverage and liquidity.

Uyar[95] (2009) aimed to investigate the relationship among length of CCC with size of firm and profitability for 166 listed corporations of Turkey for a period of one year. It was found that CCC of retail/wholesale industry was shortest whereas that of textile industry was longest. A significant negative correlation between the CCC and firm size in terms of both net sales and total assets was found indicating that smaller firms have longer cash cycle and larger firms have shorter cycles. Also a significant negative relationship was found with the profitability indicating that firms with longer cycles were less profitable.

Nobanee and Al-Hajjar[96] (2009a) investigated the relationship between WCM and firm profitability for a sample of 2123 Japanese non-financial firms listed in the Tokyo Stock Exchange for the period 1990-2004 using multiple regression analysis. The results suggested that managers can increase profitability of their firms by shortening the CCC, ACP, IHP and by lengthening the APP. However, managers should be careful when lengthening the APP because this could damage the firm's credit reputation and harm its profitability in the long run.

Falope and Ajilore[97] (2009) examined sample of 50 Nigerian listed non-financial firms for the period of ten years from 1996 -2005 to provide empirical evidence about the effects of WCM on profitability performance by utilizing panel data analysis in a pooled regression, where time-series and cross-sectional observations were combined and estimated. They found a significant negative impact of ACP, IHP and CCC whereas a positive impact of Sales growth, leverage, GDP growth rate and APP on NOP. The authors indicated that more profitable firms waited longer to pay their bills. Furthermore, the study found no significant variations in the impact of WCM between large and small firms.

Nobanee[98] **(2009b)** examined the relationship between company's performance and length of CCC and its components using dynamic panel data analysis based on a sample of 5802 U.S. non-financial firms listed in the New York Stock Exchange, American Stock Exchange, NASDAQ Stock Market and the Over The Counter Market for the period 1990-2004 (87030 firm-year observations). The results showed that the length of the CCC, ACP and IHP had positive rather than negative impact on the company's performance measured using the operating income to sales thereby indicating that shortening the CCC, ACP and IHP by reducing the time that cash is tied up in working capital and by speeding up collections results on low operating income to sales. The results also showed that the APP had significant negative impact on performance. The lagged operating income to sales indicated that the company's performance in the previous period had a strong positive effect on the company's performance in the current period. The results also showed that increase in QR was negatively associated with firm's performance, thus certifying the traditional trade off between profitability and liquidity. Sales growth was found to be positively related to the firm's performance whereas total debt to equity as a measure of capital structure was not significantly related to profitability. The results of the empirical analysis suggested that shortening the CCC reduces rather than increases firm's profitability.

Nobanee and Al-Hajjar[99] **(2009c)** examined the relationship between working capital management, corporate performance and operating cash flow using dynamic panel data analysis based on a sample of 5802 U.S. non-financial firms listed in the NYSE, AMEX, NASDAQ Stock Market and the OTC Market for the period 1990-2004 (87030 firm-year observations). The results suggested that managers can increase profitability and operating cash flow of their firms by shortening the CCC and by shortening the ACP. The results also suggested that shortening the IHP and lengthening the APP reduces profitability and operating cash flow of firms instead of increasing them which indicates that when shortening the IHPs, managers should avoid the increase of shortage costs and while lengthening the APP, the bankruptcy costs that could harm the company's performance and cash flow.

Sen and Oruc[100] **(2009)** aimed to determine the relationship between efficiency level of WCM and their ROTA for 49 production firms belonging to white goods and electronic, cement, food, textile and chemistry sector, being traded in ISE (Istanbul Stock Exchange) taking quarterly data of fifteen years from 1993 to 2007 using panel data regression analysis through two models. According to the results in terms of both all firms involved in the study and sectors, a significant negative impact of CCC, CR, ACP and IHP on ROTA was found. The fact that ROTA has a negative relationship with CR and positive relationship with NWC indicates that if firms minimize resource allocation for NWC, their ROTA increases accordingly which emphasizes the positive relationship between liquidity risk and profitability in terms of relative highness of short term liabilities, thus confirming traditional risk relationship.

Zariyawati, Annuar, Taufiq and Abdul Rahim[101] **(2009)** examined the relationship between WCM and firm profitability using panel data of 148 firms for the period of eleven years from 1996-2006 that consist of six different economic sectors *viz*, construction, consumer products, industrial product, trade/services, plantation and property, listed in Bursa Malaysia. The fixed effect panel data regression results provided a strong evidence of negative relationship between CCC and firm profitability indicating that reducing CCC results to profitability increase. Thus, to create shareholder value, firm managers should shorten the CCC till optimal level is achieved.

Nobanee and Al-Hajjar[102] **(2009d)** examined the relationship between the length of CCC, NTC, OC and the firm's profitability for different periods of time. They also examined the relationship between the lengths of ACP, ICP, PDP and firm's profitability using dynamic panel data analysis based on a sample of 5802 U.S. non-financial firms listed in the NYSE, AMEX, NASDAQ Stock Market and the OTC Market for the period 1990-2004 (87030 firm-year observations). The results indicated that shorter CCC, NTC and OC are not always associated with an increase in firm's profitability, thus signifying the importance of achieving an optimal lengths of the CCC, NTC and the OC that minimizes both carrying cost and opportunity cost of inventory, receivable, and payable and maximizes profitability and market value of firms.

Danuletiu[103] **(2010)** examined the relationship between profitability and efficiency of WCM of 29 financial large companies of Alba County for a period of four years from 2004 to 2008 using correlation analysis. The author concluded that there was a weak negative linear correlation between working capital management indicators and profitability measures.

Gill, Biger and Mathur[104] **(2010)** investigated the relationship between the WCM and the firms' profitability (GOI) for a sample of 88 American manufacturing companies listed on the New York Stock Exchange for the period of three years from 2005 to 2007 using correlation and multiple regression analysis. They found a positive impact of CCC whereas a negative impact of ACP on GOI. The results suggest that less profitable firms will pursue a decrease of their ACP in an attempt to reduce their cash gap in the CCC. They concluded that managers can create profits for their companies by correctly managing the CCC and by keeping accounts receivables at an optimal level.

Mathuva[105] **(2010)** examined the influence of WCM components on corporate profitability taking a sample of 30 firms listed on the Nairobi Stock Exchange (NSE) for the period 1993 to 2008 by using Pearson and Spearman's correlations, the pooled ordinary least square (OLS), and the fixed effects regression models to conduct data analysis. The key findings of the study stated that ACP and CCC had negative impact whereas IHP and APP had positive impact on profitability. Also, firm size, fixed financial assets ratio and age of firm had positive influence whereas leverage had negative influence on profitability.

Karaduman, Akbas, Ozsozgun and Durer[106] **(2010)** mainly aimed to provide some empirical evidence on the effects of WCM on the profitability of selected 140 companies listed in the Istanbul Stock Exchange for the period of 2005-2008 using panel data methods to analyze the mentioned effects. They found that a ROTA is increased by shortening ACP, IHP, APP and CCC. Also, company's size had positive effect whereas debt ratio had negative effect on profitability. Moreover, the high values of the coefficients of the real GDP growth rate in Turkey highlighted the importance of economic growth regarding companies' profitability.

Hayat and Bhatti[107] **(2010)** investigated the relative importance of different factors that result in profit heterogeneity at firm level using ANOVA random effect model for panel data of 330 listed firms of Pakistan belonging to nine different industry sectors for a period of twenty years from 1987 to 2006. Leverage was found to be the dominant factor explaining more than half of the total explained variation in profitability and adversely affecting it. However, its impact became positive in foreign owned firms. Size had a positive whereas liquidity had negative impact on profitability. Age, growth and market share had a very minor contribution in explaining profitability while that of capital intensity was insignificant. Furthermore, transient industry effect was observed significant but its explanation in the profitability was very low while stable industry and year effect were insignificant.

Nobanee, Abdullatif and Alhajjar[108] **(2010)** investigated the relation between the firm's CCC and its profitability using dynamic panel data analysis for the sample of

34771 firm years covering the period 1990-2004, by industry and by size. They found a strong negative impact of firm's CCC on its profitability for all study samples except for consumer goods companies and services companies. The results also showed that the company's performance in the previous period had a strong positive effect on the company's performance in the current period for all the study samples except for small companies where the positive coefficient was insignificant, and for basic industries and information companies where the coefficients were significantly negative.

Dong and Su[109] **(2010)** attempted to investigate the relationship existing between profitability, the CCC and its components for 130 listed firms in Vietnam stock market for a three year period of 2006 to 2008. The analysis of regression found a positive impact of leverage on GOI which indicates that an increase in debt ratio will lead to increase in profitability of firm. The result also indicated a positive impact of size, fixed financial assets to total assets and GOI. Further, a strong negative impact of CCC on profitability was observed and they concluded that managers can create a positive value for the shareholders by handling the adequate CCC and keeping each different component to an optimum level.

Morawakage and Lakshan[110] **(2010)** examined the relationship of WCM (ACP, IHP, APP, CCC) and Cost Structure (Administrative, Selling and Finance cost each to sales ratio) with profitability (GOP, PBT, NOP) taking a sample of 65 Sri Lankan companies listed on Colombo Stock Exchange for a period of 5 years from 2003-2007 through correlation and regression analysis. The results suggest that managers can increase corporate profitability by reducing IHP and increasing APP in order to minimize the length of CCC. Further, increase in APP would give opportunities to the company for further investments. Moreover, the results also suggest that the spending on selling and distribution would not increase the profitability and more finance cost would hinder the profits of the companies.

Nassirzadeh and Rostami[111] **(2010)** studied the relationship between traditional (CR, QR) and modern (CCC, WCR, NLB) indices of liquidity along with Leverage and Firm Size with profitability (ROTA, RONW and NPM) of 108 companies listed on Tehran Stock Exchange for a nine year period from 2002-2010 using correlation and regression analysis The research findings showed that traditional and modern liquidity indices measure liquidity differently Further, CR, CCC and Leverage had a significant negative impact whereas WCR, NLB, QR and Size had positive impact on all the measures of profitability.

Raheman, Afza, Qayyum and Bodla[112] **(2010a)** analyzed the impact of WCM on firm's performance of 204 listed manufacturing firms in Pakistan for the period of ten years from 1998 to 2007. The results indicated that the CCC, NTC and IHP significantly affected the performance of the firms. The manufacturing firms in general faced problems with their collection and payment policies. Moreover, the financial leverage, sales growth and firm size also had significant effect on profitability. The study also concluded that firms in Pakistan were following conservative working capital management policy. It was suggested that efficient management and financing of working capital can increase the operating profitability of manufacturing firms.

Telmoudi, Jameleddine and Noubbigh[113] **(2010)** determined the explanatory power of the operating cycle components on the behaviour of the operating cash-flows for 25 Tunisian commercial companies over the period of 1996 to 2002. The results of the study proved that operating cash-flow is significantly given by the means of four factors dependent on the operating cycle, *i.e.*, the timely debt collection, the timely debt payment, the timely flow of stock and the gross commercial margin. However, operating earnings and variation of sales turnover did not significantly affect the operating cash flows.

Zubairi and Baig[114] **(2010)** examined empirically, using pooled data analysis, whether profitability of selected seven firms in the automobile sector of Pakistan is influenced by WCM (CR) and capital structure (Degree of Financial Leverage-DFL) for a period of nine years from 2000 to 2008 by taking CR being representative of the result of Supplementary analysis was also undertaken to assess the impact of operating leverage and firm size on profitability. It was found that financial leverage and firm size had a positive impact whereas operating leverage had negative influence on profitability of the firms. Also, it was found that an increase in CR lead to an increase in firm profitability which was in contrast to earlier findings.

Mohamad and Saad[115] **(2010)** explored the effects of working capital component on the firm's performance by looking at firm's value *i.e.* Tobin's Q and two profitability measures by taking a sample of 172 listed Malaysian firms over a period of five year from 2003 to 2007 and applying correlations and multiple regression analysis. The result shows that there are significant negative associations between working capital variables with firm's performance thereby emphasizing the importance of proper management of working capital as it affects firm's market value and profitability. They suggested that working capital management should be part of the company's strategic and operational processes in order to be effective and efficient.

Raheman, Afza, Qayyum and Bodla[116] **(2010b)** empirically estimated and compared sector-wise impact of WCM on performance of manufacturing firms in terms of collection policy, inventory policy, payment policy, CCC and NTC using financial data for 204 firms listed on Karachi Stock Exchange classified in 9 sectors for a period of ten years from 1998-2007. The results indicate that there were variations in sectoral performance in terms of different WCM measures with no consistent behavior of any of the measure in all of the sectors. In some sectors, some of the measures played vital role in predicting the profitability while not in others. In case of Leather and Synthetic sector, ACP, whereas in case of Sugar, Cement, Automobile and Textile, IHP had significant negative coefficients. The analysis of APP on sectoral basis revealed a significant positive coefficient only in case of Chemical & Fertilizer sector. The comparative sectoral coefficients for CCC and NTC showed significant negative impact in case of Automobile & Engineering, Chemical & Fertilizer, Sugar, Cement and Textile sectors. The results also revealed that NOP increased with increase in CATR and CATAR for almost all sectors. While in some sectors Sales growth and Size had significant positive impact on profitability whereas in some sectors profitability decreased with increase in CLTAR, CR and financial debt ratio. The study also found that both, CCC and NTC measured liquidity differently from conventional CR.

Alipour[117] **(2011)** examined the relationship between WCM and profitability of 1063 companies listed on Teheran Stock Exchange for a period starting from 2001 to 2006 using regression analysis. The results of the research showed that in the studied companies, WCM had a significant effect on the profitability of the companies and the managers can create value for shareholders by means of decreasing receivables and inventory.

Karaduman, Akbas, Caliskan and Durer[118] **(2011)** investigated the empirical relationship between corporate profitability (ROTA) and WCME using panel data analysis of 127 sample companies listed on the Istanbul Stock Exchange for the period of 2005- 2009. The findings indicated that ROTA increased by shortening number ACP, IHP, APP and CCC. Further in Size and sales growth had positive effect whereas debt ratio had a negative impact on profitability.

Enqvist, Graham and Nikkinen[119] **(2011)** examined the impact of business cycles on the working capital-profitability relationship using a sample of Finnish listed companies from years 1990 to 2008. A negative relationship was found between profitability and CCC, APP, ACP, IHP, economic downturns and leverage whereas a positive relationship existed between profitability and firm size, growth, liquidity measure by CR and operating income. They found that the impact of business cycle on the working capital-profitability relationship was more pronounced in economic downturns relative to the economic boom state suggesting that WCM is relatively more important in low economic states than in high economic states which in turn increased the significance of efficient inventory management and ACP on corporate profitability during periods of economic downturns. The results demonstrated that active WCM should therefore be included in firms' financial planning.

Alam, Ali, Rehman and Akram[120] **(2011)** examined the impact of WCM on the profitability and explored the impact of efficient WCM, proxy for financial performance, on market value of 65 companies randomly selected from Karachi Stock Exchange taking panel data for a period of five years from 2005-09 applying correlation and multiple regression technique using SPSS. The analysis revealed that significant correlations existed between working capital components with market value and firm's profitability. CCC and CLTAR had a significant negative impact whereas CATAR had significant positive influence on ROI, ROTA and Tobin's Q. CR had a significant negative impact on ROI and ROTA. Leverage had a positive influence on Tobin's Q whereas negative influence on ROTA. The findings confirmed that the market valuation and ROTA were dependent on good WCM and the changes in ROTA and Tobin's Q can be explained by change in leverage.

Hayajneh and Yassine[121] **(2011)** investigated the relationship between WCME and profitability of 53 Jordanian manufacturing firms listed in Amman Exchange Market for the period of six years from 2000-06 using descriptive statistics, Correlation and Regression (OLS & 2SLS) analysis. Correlation and regression analysis revealed a negative relation between profitability and ACP, IHP, APP, CCC and financial leverage whereas a positive relation with CR, Sales growth and LnS.

Bieniasz and Golas[122] **(2011)** examined the impact of WCME (IHP, ACP, APP and CCC), Liquidity (CR, QR) along with Size (LnTA) and Leverage on profitability (ROTA) of food industry in Poland, Germany, Belgium, Spain, France, Italy, Austria and Portugal. The research was conducted on the basis of the unpublished data by the Polish CSO for the period 2005-2009. It was observed that WCM was efficiently managed in Poland, Germany, Austria and Belgium. It was concluded that Leverage and prolonging of IHP, ACP, APP as well as CCC had a negative influence on the ROTA in the small, medium as well as large-sized food industry enterprises. However, Size had negative impact on profitability of small enterprises which indicated that with increased investment in assets there is a possibility of decline in efficiency of asset management. Moreover, CR and QR had positive influence on profitability of small enterprises. However, no significant relationship existed for ROTA with size and liquidity of large and medium sized food enterprises of the selected countries.

Haq, Sohail, Zaman and Alam[123] **(2011)** examined the relationship between WCM (CR, QR, CATAR ratio, CA to Sales, CBTR, ITR, RTR, CTR) and profitability (ROI) taking 14 cement firms of Pakistan for the period of six years from 2004-2009 using the correlation and multiple regression analysis. The results revealed that the CR, LR, CATAR, DTR and CTR have a significant positive impact on ROI whereas CBTR had a negative impact on ROI.

Quayyum[124] **(2011)** investigated effect of WCM efficiency as well as liquidity (QR, ALR, Cash to Sales Ratio, CCC, ACP, APP, IHP) along with Leverage (ICR) on the profitability (EAT/TA, NPM) of 4 cement firms listed on Dhaka Stock Exchange for the period 2005 to 2009 using correlation and simple regression analysis. All the WCM variables as well as ICR except CCC were observed to have significant positive impact on both EAT/TA and NPM. They concluded that WCME and liquidity have positive impact on the Bangladeshi firms' profitability.

Al-Debi'e[125] **(2011)** examined the impact of WCM (ACP, APP, IHP and ACP) along with Size (LnTA), GDP growth rate and Leverage (TDTAR) on profitability (GOI) of 77 Jordanian Industrial firms listed on Amman Stock Exchange for the period 2001-2010 through regression analysis. They found negative relationship between WCM and GOI and concluded that less profitable companies wait longer to sell their products, to collect credit sales and to pay their supplies of goods. Moreover, regardless of the level of profitability industrial companies in Jordan paid their suppliers before collecting credit sales. Also, profitability was found to increase with Size and GDP growth and decrease with increase in leverage.

Saleem and Rehman[126] **(2011)** investigated the relationship between liquidity (CR, QR, ALR) and profitability (EBT/TA, EBT/NW, ROI) of 26 Pakistani Oil and Gas companies listed on Karachi Stock Exchange for the period 2004 to 2009 using simple and multiple regression. They found a significant positive impact of QR on EBT/TA whereas of QR and ALR on ROI. CR had a negative impact on both EBT/TA and ROI. No significant impact of liquidity was observed on EBT/NW.

Ali[127] **(2011)** examined the association between WCM Efficiency (CCE, OC, CCC) and the profitability (ROTA) of 160 Textile firms in Pakistan for the period 2000–05 using correlation analysis, OLS and FEM. CATAR, CATR, Firm Size (LnS) and TDTAR were also taken as explanatory variable. The results of OLS model indicated negative impact of ACP and APP whereas positive impact of IHP on ROTA. In FEM, APP had no significant impact on ROTA. Also, firm size was observed to have significant positive impact on ROTA in both OLS and FEM. TDTAR had a significant negative impact on ROTA in FEM only.

Lingesiya and Nalini[128] **(2011)** investigated the relationship between WCM (CATAR, CLTAR, CR, QR, ITCAR, CATR, CCC) and profitability (ROTA) along with Size (LnS) and Debt Ratio (TDTAR) using regression analysis taking a sample of 30 manufacturing firms of Sri-Lanka listed on Colombo Stock Exchange for the period 2006–2010. They found that high investment in inventories and receivables lead to lower profitability whereas high CATAR lead to higher profitability. Moreover, CR, QR, CATR and Size had positive impact whereas CCC and TDTAR had negative impact on firm performance.

Garcia, Martins and Brandao[129] **(2011)** studied the impact of WCM (CCC, ACP, IHP, APP) along with CR, Firm Size, Leverage upon the profitability (GOP) of 2,974 non - financial European companies listed in 11 European Stock Exchanges for a period of 12 years from 1998 – 2009. The results of GLS and OLS regression analysis found that ACP, IHP, APP and CCC had negative impact on profitability and it was concluded that companies can improve their profitability by reducing the time span during which working capital is tied up within the company. A negative impact of CR on profitability was also found and an additional analysis revealed that different levels of liquidity lead to differentiated impacts of the CCC upon operating profitability.

Khan, Akash, Hamid and Hussain[130] **(2011)** investigated the impact of WCM (ACP, IHP, APP, CCC) on profitability (NPM) along Leverage (TDTAR), Firm Size (LnS) and Fixed Financial Assets to TA Ratio taking a sample of 92 Textile Sector Pakistani firms for the period 2001- 2008 through correlation and regression analysis. They found that ACP, IHP, FFA/TA had negative impact whereas APP, CR and TDTAR had positive impact on NOP and concluded that sample firms can create value for shareholders by reducing the ACP and IHP and increasing APP.

Mojtahedzadeh, Tabari and Mosayebi[131] **(2011)** studied the relationship between WCM (ACP, IHP, APP, CCC) and profitability (GOI) along with Size (LnS), Debt Ratio (TDTAR) and Fixed Financial Asset to TA Ratio of 101 Iranian firms listed on Tehran Stock Exchange during the period of 2004-2008. They found a significant negative impact of CCC, ACP, APP and TDTAR on GOI whereas Size had significant positive impact.

Afeef[132] **(2011)** investigated the effect of WCM on profitability (ROTA and OPM) of 40 Pakistani SME's listed in Karachi Stock Exchange for a period of six years from 2003 to 2008. The results indicated negative impact of IHP and ACP on OPM. However, APP, CCC, CR, Leverage and Sales growth had no significant impact on OPM. Size measured in terms of LnS had a positive impact on OPM. However, no significant impact of explanatory variables was observed when ROTA was taken.

Raheman, Qayyum and Afza[133] **(2011)** analyzed WCM (IHP, ACP, APP, CCC) as well as Profitability (ROTA) performance of 204 manufacturing and trading firms listed at Karachi Stock Exchange, classified in 24 sectors for 10 years from 1998-2007. Sector-wise WCM performance reveals that both CCC and NTC provide almost similar results. Oil & Gas Exploration and Refinery, Cement, Fertilizer and Oil and Gas Marketing sectors are on top based on IHP, CCC and NTC. Similarly sectors which are laggard in terms of CCC and NTC are mainly due to inefficient inventory and receivables management. Cement, Sugar and Vanaspati & Allied sectors were efficient sectors in terms of WCM but laggard in terms of profitability. WCM of all Textile sectors was inefficient in terms. Moreover, dominant and laggard sectors in terms of WCM performance is mainly attributed to their inventory policy represented by IHP.

Saghir, Hashmi and Hussain[134] **(2011)** investigated the relationship between WCM (ACP, IHP, APP and CCC) and profitability (ROTA) of 60 Pakistani Textile firms listed on Karachi Stock Exchange for the period of 2001-2006 using correlation and regression analysis. They found a negative relationship between WCM and ROTA and concluded that managers can create profits for their companies by handling correctly the CCC and keeping ACP, APP and IHP to an optimum level.

Abbasi and Bosra[135] **(2012)** investigated the effect of the CCC and its components on the GOI of 112 Iranian firms belonging to 8 industries listed on Tehran Stock Exchange for the period of 1998 -2009 using regression analysis taking, CCC, ACP, IHP and APP along with 12 control variables comprising of 8 industry dummies, Firm Size, Fixed Financial Assets Ratio, Financial Debt Ratio and Sales Growth. They found that ACP, CCC, IHP and APP had negative impact on GOI and concluded that managers can increase profitability by reducing IHP, ACP, APP and CCC. Moreover, Size measured in terms of LnS had no significant impact; Financial Debt Ratio had significant negative impact whereas Sales Growth had positive impact on profitability.

Quayyum[136] **(2012)** investigated the relationship between WCM (ACP, IHP, APP, CCC, CR, QR) and profitability (NPM and ROTA) of 28 Bangladeshi firms belonging to Food, Pharmaceuticals, Cement and Engineering industry listed on Dhaka Stock

Exchange for the period 2005-2009 using simple linear regression. They found that profitability-liquidity relationship varied from industry to industry with different WCM variables affecting Profitability in different industry at different significance levels.

Farzinfar and Arani[137] **(2012)** examined the impact of WCM (IHP, APP, ACP and CCC) on profitability (GOI) for 22 Iranian pharmaceutical firms listed on Tehran Stock Exchange over the period 2005 to 2009 using correlation and multiple regression analysis. It was found that GOI can be increased by reducing ACP, APP, CCC and increasing IHP. It was concluded that although granting more credit and longer deadline to customers may increase sales volume, but limiting the ACP improves the performance of Iranian firms. Moreover, firms with low profitability tend to delay the payment of their liabilities. Also, an unusual finding that the profitability of Iranian firms increase by the increase in IHP was attributed to the special character of the products of pharmaceutical industry, and suggests that those companies keeping sufficient amount of pharmaceutical inventory can supply them at the time they are needed based on ethical principles to increase their profitability. Moreover, increase in firm size and decrease in Financial Debt Ratio and Fixed Financial Assets ratio increased the profitability of Iranian firms indicating that the companies did not use the long term debt and investments optimally too improve their profitability.

Khan, Jawaid, Arif and Khan[138] **(2012)** investigated the effect of WCM (ACP, IHP, APP, CR) on profitability (ROTA) of 262 Pakistan firms belonging to Textile, Chemical, Engineering and Sugar and allied industries through regression analysis and the robustness of results were carried out through sensitivity analysis. Moreover, Size (LnS) and Debt Ratio were also taken. ACP was found to be significantly positively affecting ROTA in sugar and allied sector, whereas Debt ratio had a significant negative impact on ROTA of engineering sector. Furthermore, APP had a significant positive impact on all industries except sugar and allied sector. IHP, CR and LnS had a positive impact on ROTA of all sectors. Sensitivity analysis confirmed that the results are robust.

Ahmed[139] **(2012)** investigated the relationship between WCM (CATAR, CA to Sales Ratio, ITR, RTR, CR) and firm performance (ROTA, RONW) taking 984 firm year observations of Pakistani firms listed on Karachi Stock Exchange over the period 2004-2009 using the Logistic Regression, OLS Regression and Pearson Correlation techniques. The result suggests that out of the selected WCM measures only current asset to sales ratio showed significant negative relationship with both the proxies of performance *i.e.* ROTA and RONW whereas, CR, ITR, DTR and CATAR had positive impact on ROTA and RONW. Logistic regression results suggested that probability of firms being in profit is highly determined by CATAR, CR and CA to Sales Ratio.

Kaddumi and Ramadan[140] **(2012)** assessed the impact of WCM (ACP, IHP, APP, CCC, NTC,CATR, CATAR, CLTAR and CR) on Profitability (GOI, ROTA) of 49 Jordanian Industrial firms listed at Amman Stock Exchange over the period 2005-2009 using OLS and Fixed Effects Model. It was concluded that shortening ACP, IHP, CCC and NTC whereas increasing APP will increase the profitability of sample firms. Moreover, a conservative working capital investment policy had a positive impact whereas an aggressive working capital financing policy had a negative impact on profitability.

Pouraghajan and Emamgholipourarchi[141] **(2012)** analyzed the impact of WCM (CCC, CR, CATAR, CLTAR) along with Leverage (TDTAR) on profitability (ROTA, RONW) and Market returns (Tobin's q) of the 80 Iranian firms listed on Tehran Stock Exchange for the period 2006 to 2010. They found that CCC, TDTAR had negative impact whereas CR had positive impact on ROTA and RONW. CLTAR was observed to have significant negative impact only on ROTA. However WCM had no significant relationship with Tobin's q. They concluded that Iranian firms can increase the profitability of company by reducing CCC and TDTAR.

Napompech[142] **(2012)** examined the effect of WCM (CCC, IHP, ACP, APP) along with Firm Size, Debt Ratio and Fixed Financial Asset Ratio and Industry dummies. on profitability (GOI) taking a panel sample of 255 companies listed on the Thailand Stock Exchange from 2007 to 2009 through regression analysis. The results revealed a negative impact of WCM measures on GOI indicating that managers can increase the profitability of their firms by shortening the CCC, IHP and ACP. However, they cannot increase profitability by lengthening the APP. The findings also demonstrated that larger the firm size, larger is the profitability whereas negative impact of debt ratio on profitability was observed.

Ahmadi, Arasi and Garajafary[143] **(2012)** investigated the relationship between WCM (ACP, IHP, APP and CCC) and profitability (NOP) of 33 firms of Iranian food industry listed at Tehran Stock Exchange for a period of five years from 2006-2011 using correlation analysis. They found a negative relationship between WCM and NOP and concluded that managers can create a positive value for stockholders by decreasing ACP, IHP, APP and CCC to the lowest possible level.

Ogundipe, Idowu and Ogundipe[144] **(2012)** examined the impact of WCM (CLTAR, CATAR, CCC, CR) along with Leverage (TDTAR) on firms' performance (ROTA, RONW) and market value (Tobin's q) of 54 Nigerian firms listed on Nigeria Stock Exchange for the period 1995-2009 using correlation and regression analysis. The results showed a significant negative impact of CCC on Tobin's q as well as ROTA. TDTAR had a positive impact on Tobin's q whereas negative impact on firm's performance (ROTA). Also CLTAR had a positive impact on ROTA. No significant impact was observed when ROTW is taken.

Owolabi and Alayemi[145] **(2012)** examined the impact of WCM on profitability of Nestle Nigeria Plc. over a five year period from 2004-2009 using correlation analysis. The results showed a negative relation of CR and ACP with profitability indicating that as CR and ACP reduces ROCE of the firm will increase. It was concluded that the firm should be aggressive in the management of its working capital to improve profitability.

Azam and Haider[146] **(2012)** investigated the impact of WCM (IHP, ACP, APP, CCC, NTC, CATR, CATAR, CLTAR and CR) on firm's performance (ROTA and RONW) of 21 non-financial institutions listed in Karachi Stock Exchange (KSE-30) Index for the period 2001 to 2010 using Canonical Correlation Analysis. The results revealed a significant negative relationship between IHP and ROTA whereas a positive relationship between CR, CATAR and ROTA. However, IHP, ACP, CCC and NTC were significantly negatively correlated with RONW but APP was positively correlated and it was concluded that managers can increase value of share holder and return on asset by reducing their inventory size, CCC and NTC. Moreover, increase in liquidity APP will also improve firms' performances.

Sial and Chaudhry[147] **(2012)** examined the impact of WCM (CR, ACP, IHP, APP and CCC) along with Size (LnS) and debt ratio on profitability (ROTA) of 100 Pakistani manufacturing firms belonging to 5 industry groups for a period of 1999-2008 using ratio, correlation, OLS and FEM. The results of the study found positive relationship between size and ROTA signifying that larger firms are more profitable as compared to smaller firms. Debt ratio showed negative relationship with ROTA. CR also showed negative relationship with ROTA which confirmed the hypothesis that liquidity and profitability has inverse relationship. ACP, IHP, APP and CCC also had negative relationship with ROTA. Coefficients of chemical, sugar, fuel & energy were different from cement sector. Study also reported that behavior of the ROTA was different with the passage of time.

Uwuigbe, Uwalomwa and Egbide[148] **(2012)** investigated the impact of cash management (CR, CCC) along with Sales Growth and TDTAR on profitability (operating income) of 15 listed manufacturing firms in Nigeria for the period 2005-

2009 using Pearson's correlation and regression analysis. The study revealed a significant negative impact of CCC and TDTAR on profitability. It was concluded that managers can create a positive value for the shareholders by reducing the CCC to a possible minimum level.

Khan and Sajjad[149] **(2012)** examined the linkages of liquidity (CR, QR, ALR) and profitability (ROI, ROTA, RONW) in the Fertilizer Sector of Pakistan taking 4 companies for a period of 2005-2011 using regression analysis. They found a negative impact of CR and QR on ROTA and RONW whereas no significant impact was observed for ROI and concluded that liquidity had a negative influence on profitability.

3.10.2 Studies in India

Panigrahi[150] **(1990)** analyzed working capital and examined the impact of working capital on profitability of selected large scale public limited companies for a period of seventeen years from 1970-71 to 1986-87 using ratio analysis, correlation and regression analysis. They found that the liquidity position of sample was unsatisfactory as the three liquidity ratios were below the standard norms throughout the study period indicating lack of liquidity and risky WCM of selected sample. Inventory had the highest share of current assets followed by debtors, other current assets and cash and bank balances. The regression analysis found that QR, ACP, ITR negatively affected profit and DTR positively affected profit.

Vijayakumar and Venkatachalam[151] **(1996)** analyzed the working capital of Tamil Nadu Sugar Corporation as also examined the relationship between liquidity and profitability using ratio, correlation and multiple regression analysis by taking the financial data for a period of nine years from 1985-86 to 1993-94. The analysis revealed that the company followed moderate approach in investing in current assets. Inventory followed by loans and advances constituted major component of current assets. A decreasing trend was observed in use of long term funds for financing working capital. The company had experienced excess of working capital throughout the years under study. Liquidity position was found to be satisfactory. A significant positive relationship between profitability and ITR was found. A significant negative relationship was found between profitability and working capital to total assets ratio, DTR and QR.

Mallick and Sur[152] **(1998)** empirically examined the impact of working capital on the profitability of AFT Industries Limited belonging to tea industry for a period of ten years from 1986-87 to 1995-96 through correlation, regression and WCL analysis. The analysis revealed that CATAR and DTR had positive impact on ROI. The WCL recorded a fluctuating trend during the study period and further analysis revealed that increase in profitability was less than proportion to decrease in working capital.

Mallick and Sur[153] **(1999)** examined the liquidity position as well as the impact of WCM on profitability with the help of WCL analysis and also the joint effect of various components of working capital on the profitability through ratio, correlation and regression analysis, by taking data of ten years from 1987 to 1996 of Hindustan Lever Limited. The correlation analysis revealed a significant positive relationship between liquidity and profitability implying favourable impact of liquidity of selected firm on its profitability. The outcomes of regression analysis indicated that profitability of HLL was highly influenced by the efficient management of inventory and debtors. The company followed a conservative working capital policy and working capital of the company was found to be significantly related to sales. The overall analysis revealed that WCM of the company had been remarkably encouraging over the last ten years.

Bhayani[154] **(2004)** assessed the impact of WCM on the profitability of Gujarat Ambuja Cements Limited taking data for the period of ten years from 1992-93 to 2002-03 using ratio analysis, simple correlation, multiple correlation and regression analysis and t-test. The analysis revealed that CR, QR, CATAR, CTSR and WCTR had negative correlation with ROI whereas ITR witnessed positive association with ROI. Regression analysis revealed that CATAR, CTR and MCTR had negative influence on profitability whereas ITR and DTR had positive influence on profitability. The WCL of the company recorded a fluctuating trend and was found to be always less than unity which indicated that the increase in profitability was less than proportionate to decrease in working capital.

Narware[155] **(2004)** examined the interrelationship between working capital and profitability of National Fertilizers Limited for a period of ten years from 1990-91 to 1999-2000 through ratio, correlation and regression analysis. Of the nine selected WCM ratios, Current assets to sales ratio, WCTR and DTR were found to be negatively associated with ROI. All the partial regression coefficients were found to be significant at fifty percent level. WCL analysis indicated that increase in profitability of the business was less than proportionate to decrease in working capital.

Vishnani and Shah[156] **(2006)** examined the interrelationship between profitability and liquidity of twenty three listed companies of Indian Consumer Electronics Industry for a period of eleven years from 1994-95 to 2004-05 using correlation and regression analysis. It was concluded that no established relationship between liquidity and profitability existed for the industry as a whole which varied from company to company, although majority of them revealed positive association between liquidity and profitability.

Kannadhasan[157] **(2007)** in his case study examined WCM and relationship between liquidity and profitability of selected firm by using the data available in annual reports for the period of seven years (1998-99 to 2004-05). The rank correlation of liquidity and profitability was observed to be inversely related to each other which implied that as the liquidity increased, the profitability decreased. The study concluded that liquidity position of the company was good and managed effectively and the working capital management efficiency had increased every year during the study period.

Luther[158] **(2007)** in his case study attempted to measure and evaluate the liquidity position, correlation between liquidity and profitability as well as to assess the trade-off between profitability and risk of Madras Cements Limited for a period of eight years from 1997-98 to 2004-05 through use of ratio analysis, correlation analysis and tests of significance. A significant positive correlation was found between liquidity and profitability. Risk analysis indicated that conservative approach was followed in the first four years whereas an aggressive approach in financing the working capital in the later four years. A negative correlation was found between profitability and risk. Further, hypotheses testing proved that the aggressive policy adopted by MCL had a negative impact on its profitability.

Singh and Pandey[159] **(2008)** in examined the working capital components and impact of WCM on the profitability of Hindalco Industries Limited for a period of eighteen years from 1990 to 2007. It was found that current assets of sample witnessed a steady growth since 1990 which was over forty times of the base year and was mainly supported by inventory and loans and advances. The contribution of the long term sources in working capital was found to be below thirty percent throughout the study period. Regression results showed that CR, QR, DTR and working capital to total assets ratio had statistically significant impact on the profitability of sample.

Azhagaiah and Janakiraman[160] **(2009)** carried out a study for analyzing the relationship between WCM Efficiency (WCME) and EBIT of the 30 BSE Listed Paper Companies belonging to Paper Industry in India for a period of ten years. A negative relationship was observed between EBIT and CCC which indicated that operational EBIT dictates how to manage the working capital of the firm. The APP had a negative relationship with EBIT, which indicates that by deploying payment to suppliers they improve the EBIT. The positive relationship between ACP and EBIT suggests that less profitable firms will pursue a decrease of their ACP in an attempt to reduce their cash gap in the CCC. The UI revealed that utilization of working capital for the industry as a whole was mostly efficient during the period of study. The PI revealed that performance of the industry as whole in WCM was mostly efficient during the period of study. And the overall WCM was also found to be efficient indicated by EI. Thus the study revealed that the Paper Industry has managed the working capital satisfactorily.

Arunkumar and Jayakumar[161] **(2010)** examined the impact of WCM (ACP, APP, IHP, CCC, CR) along with size, leverage and sales growth on profitability of two major public sector undertaking in the electrical industry of Kerala for a period of nine years from 1997-98 to 2005-06 through correlation and regression analysis. It was found that only ACP had significant negative impact on NPM.

Sofat[162] **(2010)** examined the relationship of profitability with liquidity and risk of selected seven Indian Cement companies of for a period of five years from 2003-04 to 2007-08. The study revealed a direct and significant relationship between degree of operating risk and profitability. A negative correlation was found between CR and profitability.

Mandal and Goswami[163] **(2010)** assessed the impact of WCM on liquidity, profitability and non-insurable risk of ONGC, a leading public sector enterprise in India over a nine year period from 1998-99 to 2006-07 through ratio, correlation and multiple regression analysis. Ratio Analysis revealed that the short term solvency position was very good and has improved over the study period which was further corroborated by Motaal's Comprehensive Liquidity Test. Correlation analysis revealed a positive relationship between liquidity and profitability as well as risk and profitability. Multiple Regression results found that selected liquidity ratios taken as explanatory variables had statistically significant influence on the profitability of business such that 96.1 percent variation was contributed by these variables.

Saini and Saini[164] **(2010)** conducted a study with an objective to measure and evaluate the efficiency of liquidity management of Infosys Technologies Limited, to assess the association between liquidity and profitability as well as the trade-off between profitability and risk for a period of ten years (1999-2000 to 2008-09). The analysis of structural determinants of the working capital revealed that on average cash and bank balance constituted the highest of GWC followed by loans and advances and debtors indicating that company maintained excess liquid funds during the study period. The company adopted a liberal credit policy and performance in respect of CATR and WCTR was not encouraging. Moreover, CATAR was also very high. The study thus revealed that overall performance regarding liquidity management of selected company was very good from creditor's point of view but to the management's point of view, it reflects bad financial planning and inefficient tie up of liquid funds. The negative correlation between liquidity and profitability was observed. Further, positive association between risk and profitability indicated that high degree of conservative policy adopted by the company has made a negative impact on its profitability.

Chawla, Harkawat and Khairnar[165] **(2010)** studied the effect of CCC, NWC and CR on the GOI of the selected three Indian petrochemicals firms for a period of five years from 2004 to 2009 using correlation and regression analysis and t-test. The results showed a significant negative relationship of profitability with CCC, CR and NWC which indicated that increase in length of CCC, CR and NWC negatively affected the profitability of the selected firms.

Rajesh and Reddy[166] **(2011)** studied the working capital components and the impact of WCM on profitability of Amararaja Batteries Limited for ten year period from 2000 to 2009 by using ratio analysis, correlation and multiple regression analysis and found that of the eight selected ratios, CR, ITR, DTR and WCTR significantly positively affected the profitability of the firms.

Nandi[167] **(2011)** in his study examined the influence of WCM (CR, QR, CATAR, CASR, WCTR, ITR, DTR, CTR) on corporate profitability (ROI) of National Thermal Power Corporation Ltd. during the period of ten years (1999-2000 to 2008–09) using Pearson's coefficient of correlation and multiple regression analysis. The results of multiple regression analysis revealed a negative impact of CR and WCTR whereas a positive impact of ITR on ROI. Moreover, WCL indicated a fluctuating trend over the study period. Hence, it was concluded that the increase in the profitability of the company is less than the proportionate to decrease in working capital throughout the study period.

Bhattacharjee[168] **(2011)** examined the determinants of financial performance and also investigated the existence of any relationship between the determinant factors taking 151 companies covering 13 industrial groups through correlation analysis and tests of significance. The empirical result found that the financial performance varied from industry to industry and company to company. In some cases size was positively related to growth & profitability whereas in other cases it was reverse. It was found that no particular factor lead to improvements in financial performance of companies.

Bhunia[169] **(2011)** examined the overall efficiency of short term liquidity management as well as the liquidity profitability relationship of selected two firms of Indian steel industry for the period 2002-2010 using ratio and multiple regression analysis. The liquidity and solvency position in TATA Steel was found to be satisfactory whereas that of JSW Steel was unsatisfactory. The overall WCM of TATA Steel Limited was better than JSW Steel Limited. Further it was found that of the selected seven ratios, six had negative impact on ROCE whereas CR had positive impact on ROCE for the sample companies.

Goswami and Sarkar[170] **(2011)** assessed the liquidity and profitability position of four airways company for a period of six years from 2000-01 to 2005-06 using correlation analysis and t-test. The study found negative correlation between ROCE and CR for three of four selected companies implying that higher the CR, the better is the short term debt paying capacity and the lower is the overall profitability and *vice-versa*. Receivables management was found to be significantly contributing to the profitability for two of four firms.

Bhunia and Brahma[171] **(2011)** examined the overall efficiency of liquidity management of selected four private sector companies of steel industry in India for a period of ten years from 1997 to 2006 using ratio analysis, multiple correlations and regression analysis. The analysis revealed that the liquidity position of all firms except Kalyani Steels Limited was unsatisfactory whereas receivables management was unsatisfactory for the entire sample. It was found that liquidity had significant impact on profitability whereas solvency position had no significant impact on profitability. The regression analysis revealed a negative impact of IHP, ACP, APP, QR ALR and financial leverage whereas positive impact of CR on profitability.

Vijayakumar[172] **(2011)** examined the impact of CCC along with Size (LnS), Sales Growth, Leverage (DER) and GDP Growth on the profitability (ROTA) taking 20 firms in Indian Automobile Industry for the period 1996-2009 using correlation and multiple regression analysis. The results of the study demonstrate that managers can create value by reducing ACP, IHP and CCC and increasing APP. The study also found that Size, Sales Growth and GDP growth had positive impact whereas leverage had negative impact on firms' profitability.

Kumar, Azash and Ramana[173] **(2011)** investigated the impact of WCM (CR, QR, CATAR, CA to Sales Ratio, WCTR, ITR, RTR, CTR, MCTR) on profitability (ROI) for Dr. Reddy's Laboratories for the period from 2001 to 2010 applying correlations and multiple regression analysis. However, none of the WCM variables had significant impact on profitability of the sample. They had also measured the WCL of the sample and found that it was less than 1 in all the years of the study period signifying that increase in rate of return on investment was less than proportionate to decline working capital investment.

Bagchi and Khamrui[174] **(2012)** investigated the relationship of WCM (IHP, ACP, APP and CCC) along with Leverage (ICR, DER) with profitability (ROTA) of 10 Indian FMCG firms for a period of 10 years from 2000–01 to 2009–10 using Pearson's correlation, pooled ordinary least squares regression analysis and stepwise regression analysis. The study results confirmed a strong negative impact of CCC and ACP on ROTA and it was concluded that managers can create a positive value for the shareholders by reducing the CCC to a possible minimum level. A negative impact of debt used by the firm on profitability was also found.

Nandi[175] **(2012)** assessed the trends in liquidity management taking trend values of CL and CA, liquidity position (CR, QR) and financing of current assets (ratio of long term and short term funds each to CA) as well as impact of liquidity (CR, QR, ITR, RTR, CTR, WCTR, WC/TA) along with DER on profitability (ROCE) of Bharat Heavy Electrical Ltd. (BHEL) for a period of 11 years 1999-2000 to 2009-10 using correlation and multiple regression analysis. It was found that the selected company always tried to maintain adequate amount of net working capital in relation to current liabilities so as to keep a good amount of liquidity throughout the study period and the liquidity position was satisfactory. Further, the sample utilized about 50% and more of long term funds to finance the working capital. WC/TA, ITR, CTR and WCTR had positive impact whereas CR, QR, RTR and DER had a negative impact on ROCE. However, the beta coefficients for all the variables were found to be insignificant at 1% and 5% significance level.

Sabunwala[176] **(2012)** studied the impact of WCM (CLTAR, CATR, IHP, ACP, APP and CCC) along with Size (LnS), Leverage (DER) on profitability (ROTA) of 60 Indian Cement firms for a period of 5 years from 2007-2011. Through the results of multiple regression it was concluded that CCC, IHP, ACP and APP significantly negatively influenced the ROTA of the cement firms. Also, it was found that firm size had positive influence whereas CLTAR and DER had negative influence on profitability of cement firms. Also ROTA had positive relationship with CATR which indicated that the higher the efficiency in the usage of current assets in generating sales, higher is the ROTA.

Concluding Remarks:

From the review on studies on impact of WCM on profitability the following observations are made:

- Different authors have taken different measures of profitability to examine the impact of WCM on profitability and as a result there are differences in results obtained.
- Some studies found positive impact of aggressive liquidity management on profitability[79,82]. Some studies found negative impact of CR[80,85,98,100,111,145,162,165,170] on profitability whereas others found positive impact of CR[114,119,121,138,141,146,169,171] on profitability.
- Only two studies examined the impact of NTC on profitability which were taken up abroad in manufacturing sector and found negative impact of NTC on Profitability[80,146].
- Further studies suggested that managers can create value by reducing IHP, ACP and CCC[84,86,88-90,93,96,97,99,100,104,105,106,117,118,119,121,122,125,129,130-132,134,135,138,140,142,143,145-147,161,171,172,174,176].
- Studies also suggested that managers can increase profitability by increasing APP[89,97,105,110,130,140,146] whereas other studies found that increasing APP would lead to decline in profitability[84,86,88,96,98,106,118,119,121,122,125,129,130,131,134,135,137,143,147,171,176].

From the above studies, it is concluded that the efficiency of liquidity management is key to profitability of an enterprise. Inefficient liquidity management and thereby WCM leads negative impact on profitability whereas *vice-versa* is the case when WCM is efficient.

3.11 Studies Examining Working Capital Policy

In this para a review of studies on working capital policy is presented in the chronological order.

3.11.1 Working Capital Policy Studies Abroad

Gardner, Mills and Pope[177] **(1986)** explored the relationship between hedging behaviour and operating risk of 139 firms for the period 1980 to 1984. It was found that the measures of operating risk were neither significantly nor positively related to the hedging ratio in the five years. Thus, more aggressive working capital policies are associated with higher return and higher risk while conservative working capital policies are concerned with the lower risk and return.

Belt[178] (1991) attempted to place working capital policy in perspective with other policies of the small business. According to him, working capital policy should be expressed in terms of asset liquidity, deferability of current liabilities, predictability of sales, and composition of financing (particularly debt), rather than in terms of net working capital magnitude (CA minus CL). The distinction is critical for the small business because: (1) initial liquidity is generally poor; (2) postponability of current liabilities is both an unknown and risky element; (3) sales predictability —when attempted—is low; and (4) long-term capital is difficult to obtain.

Hossain and Akon[179] (1997) studied the financing pattern of working capital in 40 public sector textile mills of Bangladesh over the period of 12 years from 1982-83 to 1993-94 using ratio analysis, trend analysis and correlation between components of current liabilities. They found a consistently rising trend in negative NWC over the study period and concluded that the BTMC (Bangladesh Textile Mill Corporations) were pursuing a highly aggressive working capital financing policy taking risk of illiquidity as short term funds were diverted for fixed assets investments. The current liabilities structure analysis revealed that STBB was the most preferred source followed by Trade Credit to finance the working capital.

Weinraub and Visscher[180] (1998) examined the relative relationship between the aggressive/conservative working capital policies of 206 US firms belonging to ten diverse industry groups by using quarterly data for the period 1984 -1993. Their study concluded that the industries had distinctive and significantly different aggressive current asset management policies. Moreover, the relative nature of the current asset management policies between industries exhibited remarkable stability over the ten year study period. Also, there existed a high correlation between the working capital investment policies among the ten industry groups excepting steel and petroleum industry, which appears to suggest a possible relationship between the policies and some external macroeconomic factor such as the business cycle. Industry policies concerning the relative degree of aggressive liability management also were significantly different, but not to the same extent or with the same stability. The lack of correlation between the working capital financing policies of these industries appeared to suggest that the policies are independent of any external factors and the changes over time may depend more on industry factors than investment policy changes. In general it appeared to the authors that when relatively aggressive working capital asset policies are followed, they are balanced by relatively conservative working capital financial policies.

Cote and Latham[181] **(1999)** explored the limitations of the traditional measures of WCM and presented an alternative measure based on earlier work in the finance literature. They also examined the degree of association between the alternative measure and profitability and debt proportion to identify the working capital strategy adopted of selected 37 retail firms for a period of five years from 1990 to 1994. They proposed a new ratio "merchandising ratio" (360/CCC) which measured the net effect of a firm's WCM strategy. They found through correlation analysis that as the merchandising ratio days increases (*i.e.* CCC decreases), ROTA increases indicating that efficient management of the CCC is positively related to the global measure of asset utilization. They also found that those firms with longer CCCs (*i.e.*, smaller merchandising ratios) had higher proportions of debt financing, indicating that successful management of the CCC offers firms an alternative to traditional debt avenues.

Filbeck and Krueger[182] **(2005)** analyzed the working capital policies of twenty six non-financial industries in USA and examined if differences existed among these industries with respect to their working capital policies during the period 1996 to 2000. Their analysis revealed that significant differences existed between industries in working capital practices over time. Moreover, these working capital practices, themselves, varied significantly within industries over time.

Sathyamoorthi[183] **(2002)** analyzed the components of current assets and studied the working capital financing policy of selected co-operatives of Botswana over a period of four years from 1994 to 1997. The study showed that the selected co-operatives had low liquidity resulting their weak position to pay short-term debts and that they followed conservative working capital policy.

Salawu[184] **(2006)** investigated forty two firms in fifteen diverse industrial groups over an extended period to establish the relationship between aggressive and conservative working capital practices during the period 1993 – 2004. Descriptive statistics were used for analyzing the data collected. Empirical results strongly showed that the industries had significantly different current asset management policies. Additionally, the relative industry ranking of the aggressive/conservative asset policies exhibited remarkable stability over time. There existed a significant negative correlation between industry asset and liability policies which indicates that a relatively aggressive working capital asset management seems to bc balanced by relatively conservative working capital financial management.

Afza and Nazir[185] **(2007a)** investigated the relationship between the aggressive and conservative working capital policies of 263 public limited companies listed on Karachi Stock Exchange belonging to seventeen industrial groups using cross-sectional data for the period 1998-2003. Using Analysis of Variance (ANOVA) and Least Significant Difference (LSD) test, the study found significant differences among their working capital investment and financing policies across different industries. Moreover, rank order correlation confirmed that these significant differences were remarkably stable over the six-year study period. The positive and significant correlation between the investment and financing policies for industries indicate that industries which pursue aggressive investment working capital policies also follow aggressive working capital financing policies. Finally, ordinary least regression analysis found a negative relationship between the profitability measures of firms and the degree of aggressiveness of working capital investment and financing policies

Afza and Nazir[186] **(2007b)** investigated the relative relationship between the aggressive/conservative working capital policies and profitability as well as risk of firms for 208 public limited companies listed at Karachi Stock Exchange for the period of 1998-2005. The impact of aggressive/conservative working capital investment and financing policies has been examined through cross-sectional regression models between working capital policies and profitability as well as risk of the firms. The empirical results found the negative relationship between profitability measures and degree of aggressiveness of working capital investment and financing policies. These results are further validated by examining the impact of aggressive working capital policies on market measures of profitability which was not tested before. The results of Tobin's q were in line of the accounting measures of profitability and produced almost the same results. Moreover, no relationship between the level of current assets and liabilities and risk of the firms was also found.

Chowdhury and Amin[187] **(2007)** critically evaluated WCM as practiced in the selected 8 Pharmaceutical firms listed on Dhaka Stock Exchange over a period of 2000-2003 using questionnaires and ratio analysis. Moreover, regression analysis was used to examine the impact of overall working capital policy on the profitability of the selected firms. From the analysis of primary data it was concluded that pharmaceutical firms operating in Bangladesh efficiently dealt with their liquidity preferences and investment criteria and which was due to the competitive nature of this industry. Also, it was found that the nature of working capital policy (CASR), financing of working capital (CLTAR), inventory holdings (ITCAR) played significant role in determining ROTA.

Afza and Nazir[188] **(2008)** in their study investigated the relationship between the aggressive/conservative working capital policies for two hundred sixty three firms belonging to seventeen industrial groups of public limited companies listed at Karachi Stock Exchange for a period of six years from 1998-2003. The ordinary least square regression model has been used to investigate into the relationship of working capital approaches and the returns of firms. The study found significant differences among their working capital investment and financing policies across different industries. Moreover, these significant differences are remarkably stable over the period of six years. The aggressive investment working capital policies are accompanied by aggressive working capital financing policies. Finally, a negative relationship was found between the profitability measures of firms and degree of aggressiveness of working capital investment and financing policies indicating that the firms yield negative returns if they follow an aggressive working capital policy Although, significant results were observed for both the regression, however, regression equation taking Return on Asset as measure of profitability produced more broader and consistent results where F-value and Beta coefficients were highly significant as compared to Return on Equity.

Boisjoly[189] **(2009)** examined RTR, CTR, ITR, cash flow and working capital per share, and investment ratio for 50 of the largest non-bank corporations belonging to Fortune 500 companies over the period of fifteen years (1990-2004) to determine whether their management practices had an impact on their financial ratios and distributions. Aggressive management of working capital and significant increases in productivity resulted in significant improvements in cash flow per share and reduced corporate reinvestment. Furthermore, it appeared that the distributions have been altered significantly by management practices with cash flow per share becoming more positively skewed and working capital per share becoming less positively skewed during the period under study.

Afza and Nazir[190] **(2009)** investigated the relationship between the aggressive/ conservative working capital investment and financing polices and its impact on profitability of 204 Pakistani firms divided into sixteen industrial groups by Karachi Stock Exchange for 8 year period (1998-2005) using panel data regression models. The study found that degree of aggressiveness of working capital investment and financing policies had negative impact on the firm's profitability and value. The market value of firms using high level of current liabilities in their financing is more than the book value which indicated that investors were giving more value to those firms that are more aggressive in managing their current liabilities. However, the authors suggested that there are various other factors like agency problem which may play a pivotal role in such cases, and so these factors may further be explored in future.

Al-Shubiri[191] **(2010)** analyzed the impact WCM policies on profitability of 59 Jordanian Industrial firms listed on Amman Stock Exchange for the period of 2004 to 2007. The result indicated a negative impact of degree of aggressiveness of working capital investment and financing policy on profitability measures, *i.e.*, ROTA, RONW and Tobin's q. It was concluded that the firms yield negative returns if they follow an aggressive working capital policy.

Shah, Amjad, Hasnu and Shah[192] **(2010)** examined the type of approach followed by 15 small and medium size industrial companies in Pakistan for financing their current assets for a 3 year period (2002-2004). An important finding of the study is that in the SME sector, lenders do not give weight to the capital structure of the company which was dominantly constituted by equity with some firms even having no long term liabilities. Based on the analysis of financial data, it was concluded that conservative approach of financing the current assets was being followed by selected sample not by choice but because they had no option or lack of options for using any other approach.

Al-Shubiri[193] **(2011)** analyzed the impact WCM policies on profitability of 59 Jordanian Industrial firms and 14 banks listed on Amman Stock Exchange for the period of 2004 to 2008. The result indicated a negative impact of degree of aggressiveness of working capital investment and financing policy on profitability measures, *i.e.*, ROTA, ROI, RONW and Tobin's q. It was concluded that the firms yield negative returns if they follow an aggressive working capital policy. This similarity in market and accounting returns confirmed the notion that investors do not believe in the aggressive approach of WCM, hence, they don't give any additional value to the firms in Amman Stock Exchange

Magpayo[194] **(2011)** attempted to determine the effect of WCM policy and financial leverage on financial performance (NPM, RONW, ROTA) of 110 randomly selected Philippine firms using Pearson's rank correlation test, ANOVA F-test, and multiple regression analysis. Results of the study indicated that firm's WCM policy and firm size had positive impact whereas financial leverage had negative impact on NPM However WCM policy had no significant effect on ROTA and RONW.

Al-Mwalla[195] **(2012)** investigated the impact of WCM policies (CLTAR and CATAR) on the firms' profitability (ROTA) and value (Tobin's q) for 57 Jordanian Industrial firms listed in Amman Stocks Exchange for the period of 2001 to 2009 regression analysis. Firm Size (LnS), Growth (Sales Growth), GDP Growth and Leverage were also taken as explanatory variables and the results showed that following a conservative investment policy had a positive impact on a firm's profitability and value. However following the aggressive financing policy had a negative impact on the firm's profitability and value. Moreover, Firm Size, Growth and GDP Growth had a positive impact on the firm's profitability and value whereas, financial leverage had a significant negative effect on firm value only which emphasizes the importance of debt financing on firms' value maximization.

Hussain, Farooq and Khan[196] **(2012)** empirically investigated the relationship between working capital policy (CLTAR, CATAR) along with Firm Size (LnTA), Sales Growth, Leverage (TDTAR) and GDP growth and profitability (ROTA, RONW) taking 36 firms listed on Karachi Stock Exchange for the period of 2006-2010 using correlation and panel data regression with fixed effect. The results revealed a positive impact of aggressive investment policy whereas negative impact of aggressive financing policy on profitability. Firm size had positive impact on profitability which reveals that as the firm sizes increases in terms of its assets profitability increases whereas leverage had negative impact on profitability indicating that as debt decreases, cost of debt decreases which increases profitability of Pakistani firms. GDP growth had no statistically significant impact on WCM practices of Pakistani firms. The Pakistani firms were suggested to adopt an aggressive investment policy that leads to lower investment in current assets, and a shorter CCC. Moreover, Pakistani firms cannot create value by adopting aggressive financing policy so the managers were advised to use conservative financing policy.

Islam and Mili[197] **(2012)** examined the relationship between the working capital investment and financing practices of 5 pharmaceutical companies of Bangladesh listed on Dhaka Stock Exchange over a period of five years from 2005 to 2009 using ratio analysis, ANOVA and Rank Correlation. From the results of ANOVA it was found that there is a significant difference in the working capital investment and financing policies among the companies. However, through rank correlation it was found that aggressive working capital investment policy of the companies was balanced by conservative working capital financing.

Vahid, Mohsen and Mohammadreza[198] **(2012)** investigated the impact of WCM policies (CLTAR, CATAR) along with Size (LnS), Sales Growth and Leverage (DER) on the firms' profitability (ROTA) and value (Tobin's q) of 28 Iranian Companies listed on Tehran Stock Exchange for a period of 5 years from 2005-2009. The results show that following a conservative investment policy and aggressive financing policy has a negative impact on a firm's profitability and value. It was concluded that using more CL to finance TA would negatively affect the firm profitability and value whereas investing in more CA also negatively affects profitability and value. Moreover, firm Size had a positive impact whereas firm leverage has negative impact on the firm's profitability and value. Firm Growth had significant positive impact on profitability but not on value.

3.11.2 Working Capital Policy Studies in India

Agrawal[199] **(1984)** developed a model for examining the working capital policy of a firm and related the model developed with profitability of the firm. The model was termed as working capital policy index (WCPI) which was arrived by multiplying CATAR, CR and Liquid Assets to Total Assets Ratio. It was concluded that a higher WCPI indicates conservative working capital management policy which results into high cost of liquidity further resulting into lower profitability and a lower WCPI indicates aggressive working capital policy which decreases cost of liquidity but increases profitability and cost of illiquidity. So, aggressive firms will have positive correlation between WCPI and profitability with *vice-versa* the case for conservative firms. In case of moderate firms, moderately negative or positive correlation can be observed.

Pradhan[200] **(1986)** attempted to determine the size of short term financing used to finance current assets and the distribution of short term financing amongst its various sources or components in the context of selected 42 Indian companies belonging to six industry groups for two years 1974 and 1983. Overall approach was found to be aggressive to finance gross working capital in both the years, except in case of Tea and Plantations in the year 1983. In the year 1974, the major source of short term finance was found to be loans and advances which was largest for all the selected industries except in paper, pulp and hardboard where the size of sundry creditors was observed to be the largest. However in year 1983, the major source of financing was sundry creditors followed by loans and advances, provision for taxation which indicated a switch in source of financing.

Chitnis[201] **(1988)** in his book entitled, "Working Capital Management of Large Industrial Units" discussed the banker's approach to working capital assessment of large industrial units in India as well as the CAS proposal and WCTL at length through illustrations and case studies. He mentioned that increase in NWC over a period of years was a positive indication as it strengthened the financial base of the organisation which may be on account of additional equity, retained profits or raising of additional funds, whereas negative NWC was considered as a sign of industrial sickness.

Majumdar[202] **(1996)** studied the financing pattern of corporate working capital in India for a period of ten years 1981 to 1990 by analyzing balance sheets of twenty companies, ten each belonging to private sector and public sector (*i.e.* government companies) respectively. It was found that all the companies used multiple short term and long term sources of finance to fund working capital. Trade Credit and Bank borrowings were found to be prominent sources of financing working capital in selected sample. Further, it was found that private sector companies followed aggressive policy whereas government companies adopted conservative policy but with high cost of liquidity.

Babu and Jain[203] **(1999)** examined the short term and long term debt financing of 527 BSE Listed Indian companies for a period of fifteen years from 1980-1994 through ratio analysis. The study found that there was a shift towards preference for long term debt in lieu of short term debt. Also, due to the debt ascendant capital structure of selected sample the debt servicing capacity was found to be low due to which majority of corporate firms were exposed to high degree of financial risk.

Hyderabad[204] **(1999a)** analyzed the operation of WCL with the help of case studies of three private sector enterprises by taking data for one year. It was generalized with the help of WCL analysis that a company with higher fixed assets to working capital ratio suffers more than the companies with lower ratio in terms of profitability measure return on capital employed.

Hyderabad[205] **(1999b)** evaluated the working capital investment and financing policies of 756 non government and non financial large public limited companies in India for a period of three years, (1994-95 to 1996-97). It was found that excepting fifty nine companies, all others followed a conservative working capital investment policy characterized by excessive investment in current assets as compared to fixed assets. Financing approach exhibited by large majority of companies was that of resorting to excessive short term sources to finance working capital. Further, the study revealed that companies with better current assets position had financed it by using excessive short term funds.

Rao[206] **(2001)** studied the causes of changes in working capital through fund flow analysis of five cement companies over a period of four years from 1990-91 to 1993-94. The study revealed that the selected firms followed a liberal working capital policy and the short term liquidity position was found to be satisfactory.

Luther[207] **(2007)** attempted to measure and evaluate the liquidity, profitability and risk trade-off in his case study on Madras Cements Limited for a period of nine years (1997-98 to 2005-06) which was further sub divided into two parts with Ist period covering first four years and the IInd period covering the last 5 years of the time frame selected. It was found that MCL had adopted a conservative policy in financing working capital for the initial four years and an aggressive policy for the rest five years. In the last five years, the liquidity position was much below the standard levels, resulting in negative NWC indicating an aggressive working capital policy. Positive association between liquidity and profitability existed in the period – I because of the healthy liquid ratios on account of conservative working capital policy, whereas a negative association between liquidity and profitability was found in period – II due to lower liquid ratios which was on account of high risk assumed by MCL in the last five years. Further, the positive association between risk and profitability was substantiated in the Period – I due to conservative working capital policy followed by firm.

Yadav, Kamath and Manjrekar[208] **(2009)** in their study analyzed the WCM of Maharashtra's bulk drugs companies that are listed on the Bombay Stock Exchange for three years period 2004 to 2006. The financial analysis revealed that the companies in the sample adopted a conservative approach in the working capital investment policy in 2005 which was then aggressive in 2006 as evident from low CRs and QRs and financing policy had changed from aggressive to conservative in the recent years of the study as more than 50% long term funds used for financing working capital. The ACP declined over the study period indicating efficiency in management of debtors. The APP increased over the study period indicating deferability of credit payments. The overall conclusion drawn from this study was that working capital policy is not static overtime and it varied with the changes in the state of the economy. Therefore, in times of high business volatility, companies tend to adopt a conservative approach and they tend to adopt an aggressive approach in times of low volatility.

Singh and Chekol[209] **(2009)** investigated the impact of working capital policies on the performance of four hundred sixty four Indian firms belonging to eight different industry groups by taking financial data for the period of ten years, (1999 to 2008) using panel data regression analysis. The findings of the study revealed a negative effect of aggressive working capital management policies on profitability of the firm as a positive relationship was found between current asset to total asset ratio and profitability. Also, among the industry groups the differences in working capital management policies were found to be statistically significant.

Concluding Remarks:

From the review of studies on working capital policy the following results were broadly observed:

- Studies found that the firms following aggressive working capital financing policy balanced it with conservative working capital investment policy[180,184] whereas some studies found that firms following aggressive working capital financing policy also pursue aggressive working capital investment policies[185,188]
- Moreover studies concluded that aggressive working capital financing policy had a negative impact on profitability[141,186,188,190,191,193,195,196,198,209].
- Studies also concluded that conservative working capital investment policy had a positive impact on profitability[146,186,188,190,91,193,195,209].

Conclusions

From the review of empirical studies in India and Abroad it is observed that all the above research studies focused on industries belonging to manufacturing sector. And it was difficult to find a specific study on Service Sector. Also, all the studies focused on different aspects of WCM, but a comprehensive study covering all the seven dimensions of WCM, *i.e.*, Working Capital Policy, Current Asset Structure, Current Liabilities Structure, Liquidity, WCM Efficiency, Working Capital Leverage and impact of WCM on Sales and profitability could not be traced even in the manufacturing sector with large samples. In context of the above, the current study bridges this gap in literature by examining all the seven dimensions of WCM over a period of 16 years in the Indian Service Sector due to the growing importance of the sector in the Indian and World economy as discussed in Chapters 1 and 2.

This chapter had accounted the theoretical development in WCM as well as reviewed the academic literature of academicians, practitioners and researcher who have empirically examined various aspects of "Working Capital Management" in India and abroad. This has helped to identify the research gap and in the said context, *following chapter presents the* **"Methodology Adopted"** to carry out the present study.

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CHAPTER 4:
RESEARCH METHODOLOGY

This chapter presents the research methodology adopted for analyzing some important aspects of working capital management in selected Indian Non Financial Service Sector Industries. The meaning of Non Financial Service Sector is also discussed. This chapter apprises on the procedure followed for sample selection along with the period of study as well as data collection. The hypotheses of the study that are to be tested are also stated. Moreover, the measures of working capital management, profitability and leverage employed to satisfy the objectives of the study are detailed. Further, the statistical tools and techniques adopted for the analysis of data as well as to substantiate the findings have been discussed in detail.

4.1 Introduction

Surveys indicate that largest portion of a financial manager's time is devoted to day to day internal operations of a firm, *i.e.* working capital management[1] which facilitates smooth functioning and efficient asset utilization. In practice, working capital management has become one of the most important issues in the organizations where many financial executives are struggling to identify the basic working capital drivers and the appropriate level of working capital[2]. In the said context, considering the growing importance of service sector globally as well as in India, an attempt has been made through the current study to examine some important aspects of WCM of Service Sector companies which will provide an insight into the short term financial management in the selected industries.

The service sector is defined as per the National Industrial Classification (NIC) and is explained in detail in Section 4.2.1. Throughout the study, the terms 'sector' and 'industry' has been used interchangeably. The same is the case with terms 'company' and 'firm'. This study aims to examine the significant aspects of working capital management and analyze its impact on the profitability of the selected sample of service sector companies.

On the basis of available literature and existing theories of working capital management and keeping in view the results of various related empirical studies, a list of relevant ratios is prepared which is presented in para 4.4.

4.2 Research Gap

Since its inception in late 1860's the theory on working capital management has developed with contributions of various economists, researchers, academicians and practitioners. The literature on WCM is replete with various empirical studies being either a case study or comparative or of a fact finding nature or for developing a theory based on empirical analysis. In the course of literature review it was observed that all the research studies focused on industries belonging to manufacturing sector and it was difficult to find a specific study with full fledged focus on nature of WCM in the Service Sector. Further, it was difficult to find a comprehensive study covering all the seven dimensions of WCM, *i.e.*, Working Capital Policy, Current Asset Structure, Current Liabilities Structure, Liquidity Management, WCM Efficiency, Working Capital Leverage and impact of Sales on Working Capital; WCL on ROTA and WCM on profitability even in the manufacturing sector with large samples. In context of the above, the current study bridges this gap in literature by examining all the seven dimensions of WCM over a period of 16 years in the Indian Service Sector due to the growing importance of the sector in the Indian and World economy as discussed in the preceding para.

4.3 Data Source and Sample Selection

In this section, the meaning of the phrase "Non Financial Service Industry" is discussed. Also the source of data as well as selection of sample and time frame for carrying out this study is discussed.

4.3.1 Meaning of the Non Financial Service Industry

The present study is entitled, "*A Study on Some Important Aspects of Working Capital Management in Selected Indian Industries*". The Service Industry has been selected based on its growing importance in the Indian as well as the World Economy (already discussed in Chapters 1 & 2, pp. 1 – 36). The CSO under the aegis of Ministry of Statistics and Programme Implementation (MOSPI) prepares and revises NIC for the purpose of developing and maintaining comparable data base according to economic activities. The NIC of the Services is given in Table 4.1. Thus, Service Sector encompasses all the activities grouped as per NIC.

Taking this classification as base, Centre for Monitoring Indian Economy (CMIE) has further classified the Service Sector into Financial Services Sector and Non Financial Services Sector. The Financial Service Sector includes Banking, Financial Services like Leasing, Asset & Portfolio Management, Broking *etc* and Insurance Services. The Non

Financial Services Sector incorporates all those services which do not fall under the purview of Financial Services Sector. Thus, for the purpose of current study, the Service Sector would specifically mean and include the Non Financial Service Industry. Thus, throughout the study the phrases, "Service Industry", "Service Sector", "Non Financial Service Industry" and "Indian Non Financial Service Industry" are used interchangeably and in the same context.

TABLE – 4.1: Activities Comprising the Services Sector

a	Trade
b	Hotels and restaurants
c	Transport including tourist assistance activities as well as activities of travel agencies and tour operators
d	Storage and communication
e	Banking and insurance
f	Real estate and ownership of dwellings
g	Business services including accounting; software development; data processing services; business and management consultancy; architectural, engineering and other technical consultancy; advertisement and other business services
h	Public administration and defence
i	Other services including education, medical and health, religious and other community services, legal services, recreation and entertainment services
j	Personal services and activities of extra-territorial organizations and bodies

(Source: http://mospi.nic.in/nscr/sss.htm)

4.3.2 Data Collection and Sample Selection

The data for the purpose of research is obtained from PROWESS Database maintained by CMIE (updated up to 28th September, 2011). The database gets updated on regular basis and hence the total number of companies keeps changing. Similarly, the number of listed companies also keeps changing as and when the database is updated. Table 4.2 shows the sample and time frame selection procedure which is detailed as follows:

First Step: Of the 6305 companies (the numbers keeps being updated) representing the service industry existing as on 28th September, 2011, the number of listed companies, listed on Bombay Stock Exchange (BSE), as on the same date was found to be 1072. Prowess gives information about listing as on the current date. There is no provision whereby, one can find out how many companies have been listed as on any particular date. So, first a list of listed companies existing on 28th September, 2011 is obtained for each industry group.

Second Step: Of these, the availability of companies having audited financial information for a period of 11 years, 12 years, 13 years, 14 years, 15 years and 16 years are found.

TABLE 4.2

Table Detailing Sample and Time Frame Selection

Sr. No.	Name of Sector	1	2	Data Availability Check for Different Time Frames					
				1999-00 To 2009-10 (11 Yrs)	1998-99 To 2009-10 (12 Yrs)	1997-98 To 2009-10 (13 Yrs)	1996-97 To 2009-10 (14 Yrs)	1995-96 To 2009-10 (15 Yrs)	1994-95 to 2009-10 (16 Yrs)
1	Communication Services	201	22	17	14	10	8	7	4
2	Health Services	136	23	19	17	16	14	13	11
3	Hotel and Restaurants	388	67	57	52	48	43	40	31
4	Information Technology and enabled Services	975	287	174	133	102	72	58	41
5	Miscellaneous Services	1532	103	82	71	56	45	37	24
6	Recreational Services	326	88	30	22	16	11	7	6
7	Transport Services	414	47	55	47	40	33	29	23
8	Wholesale and Trading Services	2333	435	251	228	186	160	141	85
	Total	6305	1072	685	584	474	386	332	225

1 represents Total number of Listed & Non Listed Companies

2 represents Total number of BSE Listed Companies

(Source: Compiled from CMIE Prowess Database)

- Some companies have accounting period of more or less than 12 months. Comparison between such companies with different accounting period is not possible. Hence to serve the purpose of accounting comparison, the data for the companies which do not have a normal 12 months accounting period have been annualized to bring these companies on even platform with other companies.
- For detecting outliers – For the purpose of analysis purpose, average ratios for the entire period from 1995 to 2010 have been computed in this study. Firms reporting zero sales value for any of the year/s for the period 1995 – 2010 were excluded, as it would affect the Efficiency & Profitability Ratios as well as the OC variables.
- In addition, firms with Abnormal CR, Abnormal Profitability Ratios and or Abnormal OC variables and Efficiency Ratios were excluded from the sample. The inclusion of such companies with abnormal observations vitiated the entire industry results and thus their elimination from sample was considered appropriate.

- The Industry wise details of the companies eliminated from analysis along with the reasons for elimination is detailed in Table 4.3. Moreover, the Industry wise summary of eliminated companies along with reasons is presented in Table 4.4.

TABLE – 4.3

Industry wise Details of Companies Eliminated with Reasons

Sr. No.	Industry-wise Name of Company	Reason
Hotels and Restaurant Industry		
1	Hotel Rugby	Zero Sales: Mar 09 –10
2	Howard Hotels	Zero Sales: Mar 96
3	Khyati Multimedia Limited	Zero Sales: Mar 96
4	Lord Ishwar Hotels Ltd	Zero Sales: Mar 96; Mar 05 –08
5	Polo Hotels Limited	Zero Sales: Mar 03 –10
6	Vedant Hotel	Zero Sales: Mar 04 –07
ITes Industry		
1	Ace Software Exports Ltd.	Abnormal Observations for Operating Cycle Variables & Efficiency Ratios
2	B N R Udyog Ltd.	Zero Sales: Mar-95 –98
3	Clio Infotech Ltd	Zero Sales: Mar-95–98; Mar-06–10 & Abnormal CR
4	Computech International Ltd.	Abnormal Observations for Operating Cycle Variables & Efficiency Ratios
5	Cranes Software Intnl. Ltd.	Abnormal Observations for Operating Cycle Variables & Efficiency Ratios
6	I E C Education Ltd.	Abnormal Observations for Operating Cycle Variables & Efficiency Ratios
7	Lee & Nee Softwares (Exports) Ltd.	Zero Sales: Mar-02
8	Magnum Ltd.	Zero Sales: Mar-07 – 10
9	Mangalya Softech Ltd.	Abnormal Current Ratio + Abnormal Observations for Operating Cycle Variables & Efficiency Ratios
10	Mega Corporation Ltd	Zero Sales: Mar-95 – 99 + Abnormal Current Ratio
11	Nettlinx Ltd.	Zero Sales: Mar-95 – 97
12	Odyssey Technologies	Abnormal Observations for Profitability Ratios
13	Omega Interactive Technologies Ltd.	Zero Sales: Mar-95 – 98
14	P V P Ventures Ltd.	Zero Sales: Mar-06 & 07; Mar-09 & 10
15	Pagaria Energy Ltd.	Zero Sales: Mar-95, 97 & 99 + Abnormal Current Ratio
16	Ram Informatics Ltd.	Abnormal Observations for Operating Cycle Variables & Efficiency Ratios
17	Shreejal Infohubs Ltd.	Abnormal Current Ratio + Abnormal Observations for Operating Cycle Variables & Efficiency Ratios
18	Silicon Valley Infotech Ltd	Zero Sales: Mar-95 & Mar-02 –10
19	Trigyn Technologies	Abnormal Observations for Profitability Ratios
20	Unisys Softwares & Holding Inds. Ltd.	Zero Sales: March 95–98 & March 03–05 Abnormal Current Ratio
21	Virtualsoft Systems Ltd.	Zero Sales: Mar-95 – 00

TABLE – 4.3 (Continued...)

Industry wise Details of Companies Eliminated with Reasons

Sr. No.	Industry-wise Name of Company	Reason
Transport Services Industry		
1	Central Provinces Railways Co. Ltd	Zero Sales: Mar-04 –10
2	Scindia Steam Navigation Co. Ltd.	Negative Net Worth Zero Sales: Mar-03 –10
3	Tolani Bulk Carriers Ltd.	Zero Sales: Mar-08 –10 + Abnormal Current Ratio
4	Arshiya International Ltd.	Abnormal Observation for Operating Cycle Variables
5	Global Offshore Services Ltd.	Abnormal Observation for Operating Cycle Variables
6	Coastal Roadways Ltd	Very erratic WCTR
7	Shipping Corporation of India Ltd	Very erratic WCTR
Miscellaneous Services Industry		
1	International Data Management Ltd.	Negative Net Worth Zero Sales: Mar 99 & Mar 2001 – 10
2	M C S Ltd.	Zero Sales: 95 & 96, Mar – 00, 03 to 10
3	A B G Infralogistics Ltd	Abnormally high ACP, OPM & NPM: 2002 – 10 Abnormally high APP: 97 – 98 & 2002 – 2010.
4	Alphageo India Ltd.	Abnormally high negative NPM, OPM & Operating Cycle variables for Mar-97
5	In House Productions Ltd	Abnormally High ACP & OC: Mar: 96 – 98, 02 – 04 Abnormally High negative NPM, OPM: 98 – 04
6	Reliance Indl. Infra.	Abnormally high OC variables: 96– 00; 04 – 10.
7	Lynx Machinery and Commercials	Involved in the business of Trading in Machinery and Investments in Shares
8	Shri Matre Power and Infrastructure Limited	Involved in Manufacturing Activities.
9	Simplex Realty Limited	Involved in Construction Business
10	Vallabh Poly Plast Limited	Invovled in Manufacturing Activities.
11	Paraan Ltd.	Involved in Manufacturing Activities.
12	Ganesh Benzoplast Limited	Involved in Manufacturing and Export Activities.
13	GAIL (India) Ltd.	Involved in processing – Manufacturing Activities.
14	Gagan Gas Ltd.	Involved in processing – Manufacturing Activities.
15	Gujarat Gas Ltd.	Involved in processing – Manufacturing Activities.
Health Services Industry		
1	Dolphin Medical Services Ltd	Abnormally high CR & ACP in last years.
2	K M C Speciality Hospitals (India) Ltd.	Negative Net Worth
3	Medinova Diagnostic Services Ltd.	Negative Net Worth
4	N G Industries Ltd.	High CR in 1st 3 years & very high ACP in 1996.
Communication Services Industry		
1	Ez – Communication Ltd	Abnormal Observation for Operating Cycle Variables
2	Quadrant Televentures Ltd	Zero Sales: Mar – 96 & Mar – 99

- While screening the companies, in the respective industries, it was found that all the companies belonging to Wholesale & Trading Services Industry, either were involved in providing financial services or were engaged in manufacturing and or process activities which was found out by reviewing the websites of all the 85 companies. Thus, the decision was taken to drop the entire industry, as the firms in the said industry were not involved in providing services.
- In the Recreational Services Industry, of the 6 companies, 1 had zero sales and for the remaining 5 companies, abnormal observations were observed for CR as well as Operating Cycle Variables for all the companies of the industry which affected the Recreational Services Industry average abnormally. In addition, inclusion of such industry with abnormal observations would have vitiated the entire industry results and so for proper analysis it was considered appropriate to drop this industry.

TABLE – 4.4

Industry wise Summary of Companies eliminated from analysis with reasons

Sr. No.	Name of Industry	Reason
1	Hotels & Restaurant Industry (Total 31 Companies)	6 Companies were eliminated on account of Zero Sales
2	ITes Industry (Total 20 Companies)	21 Companies were eliminated: 12 on account of Zero Sales of which 4 companies also had abnormal CR. 7 on account of Abnormal Operating Cycle Variables & Efficiency Ratios of which 3 companies also had abnormal CR. 2 companies on account of abnormal profitability.
3	Transport Services Industry (Total 23 Companies)	7 Companies were eliminated: 1 due to Negative Net Worth. 2 due to Zero Sales. 2 due to abnormal operating cycle variables. 2 due to erratic WCTR.
4	Miscellaneous Services Industry (Total 24 Companies)	15 Companies were eliminated, as, 9 companies were found to be involved in manufacturing and or construction activities and hence dropped. 1 had Negative Net Worth. 1 on account of Zero Sales. 4 either due to abnormal profitability or operating cycle variable or both.
5	Health Services Industry (Total 11 Companies)	4 companies were dropped: 2 due to Negative Net Worth. 2 due to abnormal CR & ACP.
6	Communication Services Industry (Total 4 Companies)	2 Companies were eliminated: 1 due to zero sales. 1 due to abnormal Operating Cycle Variables.

TABLE – 4.5

Industry Wise Classification of Sample

Sr. No.	Name of Industry	No. of Companies
1	Hotels & Restaurant Industry	25
2	IT$_{es}$ Industry	20
3	Transport Services Industry	16
4	Miscellaneous Services Industry	09
5	Health Services Industry	07
6	Communication Services Industry	02
	TOTAL	**79**

Thus, after removing the outliers, the final sample was a set of 79 companies representing 6 service industries having audited financial information available throughout the study period of sixteen years starting from 1994-95 to 2009-2010. Table 4.5 presents the industry wise classification of the selected sample of 79 Service sector companies. These industries are also referred to as "service industry groups" as well as "constituent industries" of Non Financial Service Industry throughout the study.

4.4 Hypotheses of the Study

In this study, an attempt is made to analyze the time trends of the WCM, Leverage (LEV) and Profitability (PROF) variables to know the direction and change in the working capital policies as well as profitability and leverage position of the selected industries in the ***first stage of analysis***. In the ***second stage of analysis***, an attempt is made to examine the difference if any in the WCM, LEV and PROF between the sample service industries. Finally, ***in the third stage***, impact of sales on working capital as well the impact of selected independent variables on the Profitability of the selected sample is examined. The objectives of the present study have been stated in Chapter 1, Para 1.5. Considering these objectives, the hypotheses have been framed for each stage of analysis.

Hypotheses for the 1st Stage of Analysis

To study the time trends in WCM, LEV and PROF of Indian Non Financial Service Industry

H_{01} The working capital policy ratios, *i.e.,* CATAR, CLTAR, CLCAR and NWCCAR remain same in the Non Financial Service Industry over the study period.

H_{02} The leverage ratios, *i.e.,* LTDTAR and TDTAR remain same in the Non Financial Service Industry over the study period.

H_{03} There is no significant linear trend in the current asset structure ratios, *i.e.,* ITCAR, RTCAR, CBBTCAR, PETCAR, LATCAR and MSTCAR of the Non Financial Service Industry over the study period.

H_{04} There is no significant linear trend in the current liabilities structure ratios, *i.e.,* TCCLR, DACECLR, PCLR, STBBCLR, CFCCLR and OCLCLR of the Non Financial Service Industry over the study period.

H_{05} There is no change in the liquidity position of Non Financial Service Industry measured in terms of CR, QR and ALR over the study period.

H_{06} There is no significant linear trend in efficiency of current asset management measured in terms of TATR, CATR, WCTR, CBBTR, ITR, RTR and CTR for Non Financial Service Industry over the study period.

H_{07} The length of ACP, IHP and APP remains same in the Non Financial Service Industry over the study period.

H_{08} The length of Operating cycle and Net Trade Cycle does not change over the study period for the Non Financial Service Industry.

H_{09} The profitability position of Non Financial Service Industry measured in terms of OPM, NPM, ROTA, EAT/TA and RONW remains same over the study period.

H_{010} There is no significant linear trend in Working Capital Leverage of Non Financial Service Industry over the study period.

Similarly, the industry wise trends in WCM, LEV and PROF is also observed for the 6 constituent service industry groups of the Non Financial Service Industry, *i.e.,* Hotels and Restaurant Industry, ITeS Industry, Transport Services Industry, Health Services Industry, Communication Services Industry and Miscellaneous Services Industry. Therefore, all the above mentioned hypotheses, *i.e.,* from H_{01} to H_{010} were also tested individually for all the 6 service industry groups to examine the industry wise trends in WCM, LEV and PROF. For *e.g.* In case of Hotels and Restaurant Industry, the null hypothesis, H_{01} will be written as,

H_{01} The working capital policy ratios, *i.e.,* CATAR, CLTAR, CLCAR and NWCCAR remain same in the Hotels and Restaurant Industry over the study period.

Similarly, all the hypotheses from H_{02} to H_{10} would be applicable to Hotels and Restaurant Industry wherein Non Financial Service Industry will be replaced with Hotels and Restaurant Industry. The same would apply for the remaining 5 industries as well for all the hypotheses, H_{01} to H_{10}.

Hypotheses for the 2nd Stage of Analysis

To examine if there exists differences between companies of Non Financial Service Industry with respect to management of working capital, LEV and PROF:

H_{011} There are no significant differences between the companies of Non Financial Service Industry with respect to the working capital policy pursued measured in terms of ratios, *i.e.,* CATAR, CLTAR, CLCAR and NWCCAR.

H_{012} No significant differences exist between companies of Non Financial Service Industry in the leverage ratios, *i.e.,* LTDTAR and TDTAR over the study period.

H_{013} No significant differences exist between the companies of Non Financial Service Industry with respect to the current asset structure ratios, *i.e.,* ITCAR, RTCAR, CBBTCAR, PETCAR, LATCAR and MSTCAR.

H_{014} No significant differences exist between the companies of Non Financial Service Industry with respect to the current liabilities structure ratios, *i.e.,* TCCLR, DACECLR, PCLR, STBBCLR, CFCCLR and OCLCLR

H_{015} There are no significant differences between the companies of Non Financial Service Industry with respect to the liquidity position measured in terms of CR, QR and ALR.

H_{016} There are no significant differences between the companies of Non Financial Service Industry in the current asset management efficiency measured in terms of TATR, CATR, WCTR, CBBTR, ITR, RTR and CTR.

H_{017} No significant differences exist between companies of Non Financial Service Industry in the length of ACP, IHP and APP.

H_{018} No significant differences exist between the companies of Non Financial Service Industry with respect to the length of Operating cycle and Net Trade Cycle.

H_{019} There are no significant differences between companies of Non Financial Service Industry in the profitability position measured in terms of OPM, NPM, ROTA, EAT/TA and RONW.

H_{020} No significant differences exist between the companies of Non Financial Service Industry with respect to the degree of Working Capital Leverage.

To examine if there exist differences between years in the selected WCM, LEV and PROF Ratios:

H_{021} There are no significant differences in the selected WCM, LEV and PROF ratios between the years for the companies of Non Financial Service Industry.

To examine if there exists significant differences in WCM, LEV and PROF ratios between industries:

H_{022} There are no significant differences in management of WCM, LEV and PROF parameters between the selected Indian Non Financial Service industries over the study period.

H_{023} There are no significant differences in selected parameters of WCM, LEV and PROF between the years of the selected industries of the Non Financial Service Industry.

Differences are also to be examined between companies of each of the individual 6 service industries. Moreover, the differences between years for the selected ratios of WCM, LEV and PROF are also to be examined for the 6 service industry groups. Hence, all the above mentioned hypotheses, from H_{011} to H_{023} are also tested individually for each of the 6 constituent service industry groups of the Non Financial Service Industry.

Hypotheses for the 3rd Stage of Analysis

To study the impact of Sales on Working capital

H_{024} There is no significant impact of Sales on the working capital of company.

To study the impact of Working Capital Leverage on Return on Total Assets

H_{025} There is no significant impact of Working Capital Leverage on a company's Profitability.

To study the impact of various measures of Size, LEV, Working Capital Policy, Liquidity and WCM Efficiency on the Profitability of the companies in Indian Non Financial Service Industry:

H_{026} There is no significant impact of Size of a company on its Profitability.

H_{027} There is no significant impact of Leverage of a Company on its Profitability.

H_{028} There is no significant impact of Working Capital Policy and risk of a company on its Profitability.

H_{029} There is no significant impact of Liquidity of a company on its Profitability.

H_{030} There is no significant impact of WCM Efficiency on a Company's Profitability.

The impact of: *i)* Sales on Working Capital; *ii)* Working Capital Leverage on Return on Total Assets as well as *iii)* WCM, LEV and Size on PROF is also to be examined for the selected industries of the Non Financial Service Industry. Hence, all the above mentioned hypotheses, from H_{024} to H_{030} are also tested for the selected individual service industry groups.

4.5 Explanation of Terms Used in Study

1. ***Working Capital investment*** is used synonymously for Current Asset Investment and similarly working capital financing is synonymously used for current asset financing.
2. ***Working Capital Management Efficiency*** is used synonymously for Current Asset Management Efficiency,
3. ***Risk free rate of Return*** is taken as the 91 day T bill rate as given on RBI Website updated on 24th September 2012.

In the following *para* all the WCM, LEV and PROF parameters used to conduct the study are explained in detail with their equations and interpretations.

4.6 Financial Tools used for the Analysis

Ratio analysis is one of the widely used financial tools for analyzing the financial aspects of a business entity. "Ratio analysis owes its origin to Euclid. He, for the first time, made a rigorous analysis of the properties of ratios in Book V of his 'Elements' published in about 300 BC. Since then ratios have been used extensively as analytical tools in the fields of science and technology. Its use in financial management is, however, of recent origin"[3]. With development of financial management theory research has also been carried out on various aspects of ratio analysis *viz,* Properties of ratios and analysis[4,5,6,7], Usefulness of Financial Ratios[8,9,10,11,12], Adjustment of ratios of industry/ firms over a period of time[13], Ratios to understand industry characteristics[14], Assessment of industry risk through ratios[15], Predictive powers of ratios[16,17,18,19,20,21,22,23,24,25,26,27] etc.

Hence, financial ratios are applied in the present study to analyze important aspects of WCM of the selected Non Financial Service Industries of India. The list of ratios selected for the purpose of analysis is arrived at on the basis of literature reviewed. Throughout the study, the terms, "ratio", "measure" and "parameter" are used interchangeably and in the same context. The meaning, formulae and interpretation of selected ratios are discussed in the following section.

4.6.1 Working Capital Policy Ratios

1. Current Asset to Total Asset Ratio (CATAR)

$$\text{CATAR} = \frac{Current\ Assets}{Total\ Assets}$$

This ratio indicates the extent of funds invested in the current assets of any firm and thus represents the level of investment in current assets. Higher the ratio, higher is the investment in current assets leading to higher liquidity. However, higher liquidity results into lower profitability but at the same time low level of risk associated with the asset structure and indicating that company can pay off its short term obligations. Such high ratio signifies conservative working capital investment policy followed by a firm. Low ratio indicates lower investment in the current assets thereby reducing the liquidity of asset structure and increasing risk and at the same time profitability and indicating an aggressive policy pursued by the firm. Thus, it is essentially portraying the working capital investment policy pursued by a firm and is used as a measure of working capital investment policy by Afza & Nazir[28], Afza & Nazir[29], Afza & Nazir[30], Afza & Nazir[31], Singh & Chekol[32], Raheman *et al*[33], Haq *et al*[34], Al Shubiri[35], Al Shubiri[36], Hussain *et al*[37], Vahid, *et al*[38], Al-Mwalla[39].

2. Current Liabilities to Total Asset Ratio (CLTAR)

$$\text{CLTAR} = \frac{Current\ Liabilities}{Total\ Assets}$$

This ratio establishes the relationship between current liabilities and total assets. A high ratio indicates greater use of short term funds to finance the total assets thereby reflecting aggressive financing approach with lower cost and liquidity along with higher profitability and risk and vice-versa is the case when ratio is low. Thus, it is essentially portraying the working capital financing policy pursued by a firm and is used as a measure of working capital financing policy by Padachi[40], Chowdhury & Amin[41], Afza & Nazir[28], Afza & Nazir[29], Afza & Nazir[30], Afza & Nazir[31], Singh & Chekol[32], Raheman *et al*[33], Al Shubiri[35], Al Shubiri[36], Hussain *et al*[37], Vahid *et al*[38], Al-Mwalla[39].

3. Current Assets to Net Fixed Assets Ratio (CANFAR)

$$\text{CANFAR} = \frac{Current\ Assets}{Net\ Fixed\ Assets}$$

Assuming a constant level of fixed assets a higher CA/FA ratio indicates a conservative current assets policy and a lower CA/FA means an aggressive current assets policy assuming other factors to be constant.[42] Thus, this ratio is a measure of the level of liquidity of the firm. Risk, profitability trade-off is considered by varying the current assets, holding constant the fixed assets. The firm is said to follow a conservative policy when this ratio is highest at all levels of output. In such a case, the firm's liquidity is high while the risk and profitability are low. When the firm follows an aggressive policy, the ratio of current assets to fixed assets is lowest while risk and profitability are high, liquidity is low. Thus, it also indicates the current asset investment policy pursued by a firm.

4. Current Liabilities to Current Assets Ratio (CLCAR)

$$\text{CLCAR} = \frac{Current\ Liabilities}{Current\ Assets}$$

This ratio is reciprocal of CR and it indicates the extent of current assets financed by current liabilities and reflects the current asset financing policy of a firm. A high ratio represents less use of short term funds to finance current assets which indicates conservative current asset financing policy with lower risk. However a lower ratio indicates aggressive financing policy with higher use of short term funds to finance current assets and is a risky proposition. This ratio was employed by Verma[43].

5. Net Working Capital to Current Assets Ratio (NWCCAR)

$$\text{NWCCAR} = \frac{Net\ Working\ Capital}{Current\ Assets}$$

This ratio indicates the extent of CA financed by the long term funds of the company and reflects the current asset financing policy of a firm. The higher the ratio, the greater is the liquidity and conservative approach to finance CA. The lower the ratio lesser of long term funds are used to finance the CA and simultaneously less cushion is available to the short term creditors and aggressive is the approach. Thus, "how far the company is from liquidity crisis can be judged by making a comparison of this ratio.[44]"

6. Working Capital Leverage (WCL)

$$\text{WCL} = \frac{\text{CA}}{\text{TA}\pm\triangle\text{CA}}$$

The derivation of formulae has already been discussed in Chapter 3, Para 3.5.5.1. It measures the sensitivity of ROTA to change in current asset investment policy. Since, this equation is related to the working capital investment policy of the business and how it affects the ROTA, it is considered under the working capital policy classification. Further, as a measure of sensitivity it is an indicator of working capital risk arising out of current asset investment policy.

4.6.2 Leverage Ratios

1. Long Term Debt to Total Assets Ratio (LTDTAR)

$$\text{LTDTAR} = \frac{Long\ Term\ Debt}{Total\ Assets}$$

This ratio indicates the proportion of long term funds used to support the total assets of the firm. This is one of the debt measure. Also, by simultaneously referring to CLTAR and LTDTAR over a period of time, the policy of the firm with respect to use of long term and short term debt in financing the total assets can be gauged and the Pecking Order Hypothesis can be confirmed.

2. Total Debt to Total Assets Ratio (TDTAR)

$$\text{TDTAR} = \frac{Total\ Debt}{Total\ Assets}$$

Total debt here means the aggregate of short term debt and the long term debt. This ratio measures the proportion of total assets financed by the total debt funds and reflects the level of leverage of a firm.

4.6.3 Current Asset Structure Ratios

The current asset structure ratios indicate the investment in different constituents of current assets by a firm and thus, reveal the composition or structure of current assets (CA). As per, Chandra[45] and Banerjee[46] current assets include Inventories, Receivables (Bills Receivables & Debtors), Cash & Bank Balances, Marketable Securities, Prepaid Expenses and Loans and Advances. However, Berstein and Wild[47] have not considered Prepaid Expenses as a constituent of current asset whereas, Gibson[48] and Wild, Subramanyam and Halsey[49] have not considered Loans and Advances as a constituent of Current Asset. However, as per Weston and Brigham[50], Pandey[51], Gitman[52], Brigham and Ehrhardt[53], Brearley, Myers, Allen and Mohanty[54] and Van Horne[55] current assets include, Cash, Marketable Securities, Inventories and Receivables only. Moreover, Park and Gladson[56] observed, "The term current assets includes 'prepaid expenses such as insurance, interest, taxes, unused royalties, current paid advertising service not received, and operating supplies. Prepaid expenses are not current assets in the sense that, they will be converted into cash but in the sense that, if not paid in advances they would require the use of current assets during the operating cycle." Considering all these, for the purpose of carrying out the present study, the analysis of current structure is carried out as per the definition of Chandra[45] and Banerjee[46].

1. Inventory to Current Assets Ratio (ITCAR)

$$\text{ITCAR} = \frac{Inventory}{Current\ Assets}$$

This ratio is computed by dividing the total inventories (*i.e.*, raw material, work – in – process, finished goods & stores & spares) by the Total Current Assets. This ratio indicates the proportionate investment of inventories in current assets of a firm. Inventory is considered to be the most illiquid as compared to the other components of current assets. In the said context, this ratio gives an idea about the liquidity of the current assets. It also indicates the policy followed by a firm with respect to the investment in inventory.

2. **Receivables to Current Assets Ratio (RTCAR)**

$$\text{RTCAR} = \frac{Receivables}{Current\ Assets}$$

This ratio is computed by dividing the total receivables (*i.e.,* Debtors and Bills Receivables) by the Total Current Assets. This ratio indicates the proportionate investment of receivables in current assets of a firm. It also indicates the credit policy followed by a firm.

3. **Loans and Advances to Current Assets Ratio (LATCAR)**

$$\text{LATCAR} = \frac{Loans\ and\ Advances}{Current\ Assets}$$

This ratio indicates that portion of current assets which is held as loans and advances given and also signifies about the receivables management of the companies.

4. **Prepaid Expenses to Current Assets Ratio (PETCAR)**

$$\text{PETCAR} = \frac{Prepaid\ Expenses}{Current\ Assets}$$

This ratio indicates the share of prepaid expenses in the total current assets of a firm.

5. **Marketable Securities to Current Assets Ratio (MSTCAR)**

$$\text{MSTCAR} = \frac{Marketable\ Securities}{Current\ Assets}$$

This ratio is computed by dividing Marketable Securities by the Total Current Assets. This ratio indicates the portion of current assets invested in marketable securities and helps in analysis of cash management.

6. **Cash and Bank Balance to Current Assets Ratio (CBBTCAR)**

$$\text{CBBTCAR} = \frac{Cash\ and\ Bank\ Balances}{Current\ Assets}$$

This ratio is computed by dividing the total amount of cash and Bank balances held by the Total Current Assets. This ratio indicates the portion of current assets held as cash balances. The larger the ratio, the more liquid the current asset structure is.

4.6.4 Current Liabilities Structure Ratios

The current liabilities (CL) structure ratios indicate the composition of current liabilities as well as the different sources of short term funds utilized to finance the current assets of business. Berstein and Wild[47] and Wild, Subramanyam and Halsey[49] have given the most comprehensive constituents of Current liabilities which includes Accounts payables, Bills payables, Unearned Income, Accrued Expenses, Short Term Bank Borrowings (STBB), Interest Payable, Taxes Payable & Current Portion of Long term Debt (CPLTD). However, they do not include provisions for dividend and other current Liabilities. Weston and Brigham[50], Brigham and Ehrhardt[53], Brearley *et al*[54] and

Gibson[48] have not included STBB in the constituent of Current Liabilities, whereas Banerjee[46] have not considered CPLTD. Chandra[45] has defined current liabilities to include all the short term loans and advances and maturing obligations due for payment in twelve months as well as current liabilities and provision. Though, he has not given item wise description of components of CL but has conceptually made the meaning very clear. Thus, for the present study, all the constituents as given by Berstein and Wild[47] and Wild, Subramanyam and Halsey[49] along with the conceptual definition given by Chandra[45] have been considered. Hence, Provisions for Dividend and Other Current Liabilities is also taken as a part of Current Liabilities.

While carrying out computations, it was observed that accrued interest was appeared in the balance sheets of selected sample, however, it was observed for very few companies which was again for few years only. Similar observation was made for CPLTD. Considering both of them as financing charge which is a current obligation, both of them were added together and termed as Current Financing Charge. Similarly, the amount of Acceptances (*i.e.,* Bills Payables) were found only for few companies and that too for few years and so Creditors (*i.e.,* Accounts Payables) and Acceptances were added to give the amount of total Trade Credit and thus, Trade Credit as a proportion of Current Liabilities was computed. Also, it was found that, Provision for Tax and for dividend is aggregated and shown as Provisions in Prowess database. Hence, the Provisions include both for tax and dividends. Accrued expenses and Unearned Income as a part of current liabilities were not found in the balance sheets of selected sample. However, a new component *viz*, Deposits & Advances from Customers and Employees (DACE) was found and its proportion was considered in the Current Liabilities Structure Ratios.

1. **Trade Credit to Current Liabilities Ratio (TCCLR)**

$$\text{TCCLR} = \frac{Trade\ Credit}{Current\ Liabilities}$$

This ratio is computed by dividing the Trade Credit, *i.e.,* aggregate of Creditors and Acceptances by the total Current Liabilities. This ratio indicates the proportion of Trade Credit to total current liabilities utilized as a source for financing of the current assets. This ratio was employed by Hossain and Akon[56] as well as Padachi[57].

2. **Deposits and Advances from Customers and Employees to Current Liabilities Ratio (DACECLR)**

$$\text{DACECLR} = \frac{DACE}{Current\ Liabilities}$$

This ratio indicates the proportion of DACE in the total current liabilities structure.

3. Provisions to Current Liabilities Ratio (PCLR)

$$\text{PCLR} = \frac{\textit{Provisions}}{\textit{Current Liabilities}}$$

This ratio indicates the proportion of Provisions in the total current liabilities structure utilized to create liquidity to finance the current assets.

4. Short Term Bank Borrowings to Current Liabilities Ratio (STBBCLR)

$$\text{STBBCLR} = \frac{\textit{Short Term Bank Borrowings}}{\textit{Current Liabilities}}$$

This ratio is computed by dividing the STBB by the total Current Liabilities. This ratio indicates the proportion of STBB utilized in the total CL structure to finance the current assets. This ratio was employed by Hossain and Akon[56] as well as Padachi[57].

5. Current Financing Charge to Current Liabilities Ratio (CFCCLR)

$$\text{CFCCLR} = \frac{\textit{Current Financing Charge}}{\textit{Current Liabilities}}$$

This ratio indicates the proportion of CFC in the total CL structure.

6. Other Current Liabilities to Current Liabilities Ratio (OCLCLR)

$$\text{OCLCLR} = \frac{\textit{Other Current Liabilities}}{\textit{Current Liabilities}}$$

This ratio indicates the proportion of OCL in the total CL structure.

4.6.5 Liquidity Ratios

1. Current Ratio (CR)

$$\text{CR} = \frac{\textit{Current Assets}}{\textit{Current Liabilities}}$$

Sometime during the last few years of the 1890s there arose the practice of comparing current assets of an enterprise with its current liabilities[58]. This ratio popularly came to be known as current ratio. Truly, the use of ratios of financial analysis can be said to have begun with the advent of current ratios[4]. This ratio is computed by dividing current assets with current liabilities and it measures the ability of a firm to meet its current obligations and is a measure of a firm's short term solvency. It indicates the availability of current assets per rupee of current liabilities. As a conventional rule, a ratio of 2:1 is considered to be indicative of good liquidity position. However, this is bound to differ depending on the industry. Lower CR will indicate lower liquidity, meaning thereby the lesser use of long term capital to finance the current operations of the business, which would add to the profitability as well as the risk of the firm and will reduce the liquidity. Similarly, a higher CR will indicate liberal use of long term funds to finance current assets which would increase liquidity but reduce profitability as well as risk. Thus, CR also measures the working capital risk. However, it is only a crude measure of a firm's liquidity as it ignores the liquidity of the composition of current assets, which also needs due consideration before opining on a firm's liquidity position.

2. Quick Ratio (QR)

$$QR = \frac{Current\ Assets - Inventories}{Current\ Liabilities}$$

This ratio is based on the premise that, an asset is liquid if it can be converted into cash immediately or reasonably soon without loss in the value of asset and therefore inventories are eliminated from current assets while computing this ratio. It is a more rigorous and piercing test of liquidity and is considered to be a better guide to liquidity position of a firm as compared to current ratio. Generally a ratio of 1:1 is considered to be satisfactory and representing sound liquidity position. However, the standard norm is even bound to differ depending on the industry.

3. Absolute Liquidity Ratio (ALR)

$$ALR = \frac{Cash\ Assets}{Current\ Liabilities}$$

In this ratio, cash assets include cash and bank balances and marketable securities. This ratio, also known as super quick ratio and cash position ratio is a more rigorous test of liquidity position of a business concern. This ratio measures the cash available to pay current obligations. Also, termed as cash ratio, it measures liquidity in absolute terms and is a severe test of liquidity. Generally a ratio of 0.5:1 is considered to indicate a sound liquidity position. However, this is also bound to differ depending on the industry. It is determined by dividing cash including bank balances and marketable securities by the amount of current liabilities. A high ratio may be considered well by the short term creditors of any company, however, from the management point of view, it indicates slack cash management and improper utilization of cash.

4.6.6 Current Asset Management Efficiency (CAME) Ratios

1. Total Asset Turnover Ratio (TATR)

$$TATR = \frac{Sales}{Total\ Assets}$$

This ratio measures the overall efficiency in utilization of a firm's assets and is analogous to the output – capital ratio in economic analysis. It shows the ability of a firm in generating sales utilizing all the financial sources in the form of total assets and indicates sales generated per rupee of investment in total assets.

2. Current Asset Turnover Ratio (CATR)

$$CATR = \frac{Sales}{Current\ Assets}$$

This ratio indicates how effectively current assets are being utilized by a firm. This ratio is applied to measure the profitability and efficiency of total current assets employed in operating activities.

3. Working Capital Turnover Ratio (WCTR)

$$WCTR = \frac{Sales}{Net\ Working\ Capital}$$

This ratio is calculated by dividing Sales by Average Net Working Capital (NWC). This ratio indicates number of times NWC of a firm is turned over within specified period and helps to assess the degree of efficiency in the use of long term funds for operating sales. A high WCTR is desirable but it may also imply an overtrading situation which may be a sign of financial weakness. Similarly a low WCTR indicates inefficient utilization of funds and may also indicate excess liquidity.

4. Inventory Turnover Ratio (ITR)

$$ITR = \frac{Sales}{Inventories}$$

This ratio indicates the rapidity with which the inventory is converted into sales (cash and credit) and measures the liquidity of a firm's inventory. It signifies the efficiency or otherwise of the investment in inventories as well as the inventory control policy adopted by the firm. A high ITR indicates efficient inventory management. However, it may also indicate under investment in inventories which may adversely affect the ability of a firm to meet demands of its customers as well as create a problem of stock-out with high stock-out costs. A low ITR signifies excessive investment in slow moving inventories resulting into high inventory costs and lowering the profitability reflecting poor inventory management.

5. Receivables Turnover Ratio (RTR)

$$RTR = \frac{Sales}{Receivables}$$

This ratio is determined by dividing Sales by Average Receivables. This ratio indicates, number of times the debtors' of a firm are turned over and collected in cash and is a measure of the efficiency of receivables management of a firm. This ratio reflects the efficiency of credit and collection policy pursued by a firm. It measures the speed of collections from receivables and thereby measuring liquidity of receivables of a firm in terms of their rapidity or slowness in collectability and its quality. Low ratio indicates liberal credit policy and relaxed collection efforts on the part of the firm. A higher ratio indicates strict credit policy and good collection efforts.

6. Cash and Bank Turnover Ratio (CBTR)

$$\text{CBTR} = \frac{Sales}{Cash\ Assets}$$

Also known as Cash Velocity ratio, this ratio is determined by dividing Sales by Average Cash Assets. Cash assets include cash and bank balances and marketable securities. Ghosh[59] in his study has employed this formula for computing CBTR. This ratio explains the speed with which cash is turned over. It indicates the efficiency with which cash assets are utilized in the business. The higher the ratio, the less the cash balance required for any given level of sales and taking other things constant, it indicates greater efficiency and vice versa.

7. Creditors Turnover Ratio (CTR)

$$\text{CTR} = \frac{Sales}{Creditors}$$

This ratio is determined by dividing Sales by Average Payables. This ratio indicates the speed with which creditors of the company are paid off. The higher is the ratio, the more number of times payables are settled during the years implying less credit period as well as disciplined payment approach followed by a firm. Lower the ratio, lesser number of times payables are settled indicating more credit enjoyed by a business. This ratio is also an indicator of the credit policy pursued by a firm.

8. Average Collection Period (ACP)

$$\text{ACP} = \frac{365}{RTR}$$

ACP is expressed in number of days. This is one of the Operating Cycle Measure. It represents the number of day's worth of credit sales that is locked in receivables and is yet another indicator of efficiency of credit management. If compared with the credit terms of the firm, one can gauge about the efficiency or otherwise of its receivables management. Over the period, if the ACP increases, it indicates a slack control of receivables and deteriorating quality of receivables and very liberal, ineffective and inefficient credit and collection policy whereas if it reduces, it indicates improved receivables management and prompt payment by customers. Thus, this ratio indicates the time required for receivables to get converted into cash and is an indicator of the receivables policy pursued by a firm.

9. Inventory Holding Period (IHP)

$$\text{IHP} = \frac{365}{ITR}$$

IHP is expressed in number of days. This is also one of the measures for computing the operating cycle. It represents number of days worth investment tied up in inventories and thus time taken for inventories to get converted into cash and is an indicator of the inventory investment & control policy pursued by a firm.

10. Average Payment Period (APP)

$$APP = \frac{365}{CTR}$$

APP is also expressed in number of days. This is computed by dividing 365 by the Creditors Turnover Ratio. Also known as credit payment period or disbursement period, it reveals the time lag between the date of credit purchase and the date on which payment is made and reflects the payment policy of the company in terms of its promptness in settling its accounts. A high value would represent greater time taken by the firm in paying its obligations which may provide cushion to the liquidity but have an adverse impact on the reputation of the firm and its borrowing power in the short run in future. A low value would indicate prompt payments which have an impact of reducing liquidity but at the same time enhancing the repute of firm.

11. Operating Cycle (OC)

$$OC = ACP + IHP$$

Operating cycle is also expressed in number of days. It measures the length of time that elapses between acquisition of raw materials and final cash realization. If over a period of time the OC increases, it indicates mismanagement of Inventory and Receivables whereas if it decreases, it signifies improvement in the inventory and Receivables management and thereby overall improvement in WCM efficiency.

12. Net Trade Cycle (NTC)

$$NTC = OC - APP$$

Net trade cycle is also expressed in number of days. NTC represents the time within which the working capital investments in the form of inventories and receivables gets realized in cash. Thus it reflects the company's ability to finance its core operations with vendor credit. NTC captures liquidity risk. If creditors exceed the sum of receivables and inventory, NTC is negative. The negative NTC implies that company may be following the strategy of turning over inventory as quickly as possible, collecting its receivables as quickly as possible, and paying payables as late as possible without involving intangible costs of stretching payables. If it is negative, the probability a firm defaulting in its current obligations is high. NTC is an outcome of working capital financing decision of a firm - whether the inventory and receivables are financed through suppliers' credit or through some other source. Over a period if NTC increases, it is an indicator of poor WCM whereas if it decreases, it indicates efficient WCM.

4.6.7 Profitability Ratios

1. **Operating Profit Margin (OPM)**

$$\text{OPM} = \frac{\textit{Earnings Before Interest and Tax}}{\textit{Net Sales}} \times 100$$

This ratio measures the efficiency with which the firm sells its goods and services. It is a useful measure of efficiency of operations based on sales when comparison is to be made between companies or industries having different degrees of leverage and falling under different tax brackets.

2. **Net Profit Margin (NPM)**

$$\text{NPM} = \frac{\textit{Earnings after Tax}}{\textit{Net Sales}} \times 100$$

Expressed in percentage terms, this ratio establishes the relationship between net profit after tax with sales and signifies management's efficiency in manufacturing, administering and selling the products. This ratio shows the net contributions made by every ₹ 1 of sales to owner's funds. It is an indication of management's ability to operate business with sufficient success not only to recover from the revenues of the period, but also the cost of merchandise or services, the expense of operating the business (including depreciation) and the cost of borrowed funds but also to leave a margin of reasonable compensation to owners for providing their capital. It is the overall measure of a firm's ability to turn each rupee sales into net profit and indicates a firm's capacity to withstand adverse economic conditions.

3. **Return on Total Assets (ROTA)**

$$\text{ROTM} = \frac{\textit{Earnings Before Interest and Tax}}{\textit{Total Assets}} \times 100$$

This ratio indicates the basic earning power of the firm's total assets before interest and tax and financial leverage (interest). It is a useful measure of business performance and profitability when analysis is done to compare firms and industries with different tax rates and different degrees of financial leverage.

4. **Earnings after Tax to Total Assets**

$$\text{EAT/TA} = \frac{\textit{Earnings after Tax}}{\textit{Total Assets}} \times 100$$

This ratio measures the overall efficiency of the management in generating profits on the investments in total asset. This measure relates the profit to the size of the firm (which is measured in terms of total assets). This ratio measures the efficiency of utilization of total assets in generating revenues.

5. Return on Net Worth

$$\text{RONW} = \frac{Earnings\ after\ Tax}{Net\ Worth} \times 100$$

This ratio examines the profitability from the perspective of the equity investors by relating the profits available to equity shareholders with the book value of the equity investment. Preference dividends, if any, are deducted from the net profit to determine equity earnings. Net Worth includes paid up equity share capital including reserves and surplus net of losses and miscellaneous expenditures, if any. Thus, the total equity is synonymous to 'net worth' and 'shareholders' funds'. This ratio measures the returns that a company earns on its net worth. Generally, the investors expect returns more than the risk free rate of return as risk is associated with equity capital and is an important yardstick of performance for equity shareholders since it indicates the return on funds employed by them.

The list of Ratios *along with their appropriate categorization and abbreviation* is presented in Table 4.6. The formulae used for calculating the ratio and the rationale for their categorization is already discussed in Para 4.6.1 to 4.6.7.

TABLE 4.6

Category wise List of Ratios Used for Analysis

Sr. No.	Name of Ratio	Abbreviation
Working Capital Policy Ratios		
1	Current Assets to Total Asset Ratio	CATAR
2	Current Liabilities to Total Asset Ratio	CLTAR
3	Current Liabilities to Current Asset Ratio	CLCAR
4	Net Working Capital to Current Asset Ratio	NWCCAR
5	Current Assets to Net Fixed Assets Ratio	CANFAR
6	Working Capital Leverage	WCL
Leverage Ratios		
7	Long Term Debt to Total Assets Ratio	LTDTAR
8	Total Debt to Total Assets Ratio	TDTAR
Current Asset Structure Ratios		
9	Inventory to Current Asset Ratio	ITCAR
10	Receivables to Current Asset Ratio	RTCAR
11	Cash and Bank Balances to Current Asset Ratio	CBBTCAR
12	Prepaid Expenses to Current Asset Ratio	PETCAR
13	Loans and Advances to Current Asset Ratio	LATCAR
14	Marketable Securities to Current Asset Ratio	MSTCAR
Current Liabilities Structure Ratios		
15	Trade Credit to Current Liabilities Ratio	TCCLR
16	Deposits & Advances from Customers and Employees to Current Liabilities Ratio	DACECLR

TABLE – 4.6 (Continued...)

Category wise List of Ratios Used for Analysis

Sr. No.	Name of Ratio	Abbreviation
Current Liabilities Structure Ratios		
17	Provisions to Current Liabilities Ratio	PCLR
18	Short Term Bank Borrowings to Current Liabilities Ratio	STBBCLR
19	Current Financing Charge to Current Liabilities Ratio	CFCCLR
20	Other Current Liabilities to Current Liabilities Ratio	OCLCLR
Liquidity Ratios		
21	Current Ratio	CR
22	Quick Ratio	QR
23	Absolute Liquidity Ratio (Cash Ratio)	ALR
Current Asset Management Efficiency Ratios & Operating Cycle Variables		
24	Total Asset Turnover Ratio	TATR
25	Current Asset Turnover Ratio	CATR
26	Working Capital Turnover Ratio	WCTR
27	Inventory Turnover Ratio	ITR
28	Inventory Holding Period	IHP
29	Receivables Turnover Ratio	RTR
30	Average Collection Period	ACP
31	Cash and Bank Turnover Ratio	CBTR
32	Creditors Turnover Ratio	CTR
33	Operating Cycle	OC
34	Average Payment Period	APP
35	Net Trade Cycle	NTC
Profitability Ratios		
36	Operating Profit Margin	OPM
37	Net Profit Margin	NPM
38	Earnings before Interest and Tax to Total Assets	ROTA
39	Earnings after Tax to Total Assets	EAT/TA
40	Return on Net Worth (Return on Equity)	RONW

Having discussed the financial tools, the following *para* details the methodology adopted in terms of application of descriptive and inferential statistical tools for the first stage of empirical analysis.

4.7 Methodology Adopted for the First Stage of Empirical Analysis

The first stage of empirical analysis involves analyzing the Trends as well as examining the Time Trends in the selected ratios for Non Financial Service Industry as well as its constituent industry groups. Hence, the methodology adopted for analyzing trend is detailed first followed by that of Time Trends in WCM, LEV and PROF.

4.7.1 Analysis of Trend in WCM, LEV and PROF of Non Financial Service Industry

Besides looking at the ratios for one year, one would like to look at the ratios for several years. This will help in detecting secular changes and avoiding bias introduced by transitory forces[60]. Thus, to analyze the trends and direction of changes in the working capital management of 79 service sector companies of India, various WCM, LEV and PROF ratios (as mentioned in Table 4.6) were computed for all the companies. Moreover, the year wise mean ratios for all the companies in the selected industry for each industry for the entire study period (1995 to 2010) had been calculated.

The most popular and widely used measure of representing the entire data by one value is what is connoted as Arithmetic Mean[61]. It is also termed as central value and is a representative of a data set.

Levine *et al*[62] observed, "The standard deviation helps one to know how a set of data clusters or distributes around its mean." Gupta[63] noted, "The standard deviation measures the absolute dispersion, the greater the standard deviation, the greater will be the magnitude of the deviations of the values from their mean". Coefficient of variation (CV) is a relative measure of variance and is expressed in percentage. It measures the scatter in the data in relation to mean and is calculated as:

$\mathbf{CV} = \frac{\sigma}{\bar{x}} \mathbf{\times 100}$, where σ is standard deviation and $\bar{x}$ is arithmetic mean of a sample.

Along with tabular presentation of various WCM, LEV & PROF ratios, diagrams and graphs have been used for obtaining visual impression of trends in the selected ratios of sample over the study period. Doughnut Graph is used to depict the current asset financing mix; Pie Charts are used to show the mean share of various components of current assets to total current assets as well as the mean share of components of current liabilities to total liabilities whereas Line Charts are used to portray trends in mean Working Capital Leverage.

4.7.2 Analysis of Time Trends in WCM, LEV and PROF of Non Financial Service Industry

To examine the time trends in WCM, LEV and PROF of Non Financial Service Industry as well as its constituent industry groups, Method of Least Squares was applied. The Method of Least Squares may be used for fitting a Linear Trend Model or a Quadratic Trend Model.

- **Linear Trend Model**

In order to examine whether the selected ratios of selected companies exhibit a significant linear trend, the linear trend model is used. In the regression analysis, regression of selected ratios of WCM, LEV & PROF as dependent variables and time in years as independent variables is conducted. The time period is 16 years (1994-95 to 2009-10). Time dummies are used to denote this independent variable. The straight line trend, if any in the selected ratios is represented by the equation:-

$Y = \alpha + \beta_1 X + u_{t.}$ 1

Where,

Y = the value of Dependent variable (Y), which is being predicted.

α = constant term of the model – intercept

β_1 = Beta, the co-efficient of X, the slope of the regression line.

X = the value of independent variable, which predicts or estimates the value of Y.

$u_{t.}$ = the unexplained variation also termed as the error term which indicates the error in predicting the value of Y, given the value of X.

In time series analysis, Y represents the trend value of the ratios of WCM, "X" variable represents time in number of years, β_1 represents the slope of the trend line, α is the computed trend figure of Y variable, when $X = 0$

For the purpose of analyzing the behaviour of the ratios and to examine the time trends, total selected ratios are divided into 8 groups

◈ Quadratic Trend Model

The results of 'Linear Trend Model' along with 'D statistics' for each selected parameter is observed. There may be a possibility that a ratio does not follow a linear trend but a quadratic trend and therefore the 'Quadratic Trend Model' is also fitted to examine if the ratio follows the quadratic trend for all the selected ratios.

$Y = \alpha + \beta_1 X + \beta_2 X^2 + u_{t.}$ 2

Where,

Y = the value of Dependent variable (Y), which is being predicted.

α = constant term of the model – intercept

β_1 = the estimated linear effect on Y (the slope of the curve at origin)

β_2 = the estimated quadratic effect on Y (the rate of change in slope)

X = the value of independent variable, which predicts or estimates the value of Y.

$u_{t.}$ = the unexplained variation also termed as the error term which indicates the error in predicting the value of Y, given the value of X.

Both 'Linear Trend Model' and the 'Quadratic Trend Model' are applied to find whether there is a linear trend or curvilinear trend in the WCM, LEV and PROF Ratios, over the period of study. The results of both 'Linear Trend Model' and the 'Quadratic Trend Model' are interpreted jointly. The trends in WCM, LEV & PROF ratios of overall sample of 79 Service sector companies are examined first followed by Industry wise trends for the 6 service sector industries.

Now the following para discusses the methodology for the second stage of empirical analysis.

4.8 Methodology Adopted for the Second Stage of Analysis

The second stage of empirical analysis involves examining differences, if any, amongst the companies of the Non Financial Service Industry with respect to the management of WCM which is also examined individually for its constituent industry groups and hence this para briefs on the statistical tool applied for conducting this analysis.

Analysis of Variance (ANOVA)

Professor Ronald A. Fischer developed the technique of Analysis of Variance in 1920's and is commonly abbreviated as ANOVA.

The simplest form of the *F-test* or *Analysis of Variance* is an extension of the *t test* to the comparison of more than two groups. The technique is useful in application of diversified practical problems. The technique consists of classifying and cross classifying the statistical results and testing whether the means of a specified classification differ significantly. It helps in determining whether the classification is important in deciding results.

The basic principle of ANOVA is to test for difference among the means of populations by examining the amount of variation within which each of these samples relative to the amount of variation between the samples. ANOVA assumes Normality, Homogeneity and Independence of Error.

"However, none of these assumptions are fully satisfied by real data. The underlying populations from which samples are drawn are never exactly normally distributed with precisely equal variances. If the violation of these assumptions were likely to result in a large F, then the F test would be a poor test of null hypothesis. A statistical test is considered to be *robust* if it is not greatly affected by such extraneous assumptions. F test is found to be robust with respect to non normality if N is large and is likely to be robust if N is only moderately large. When sample sizes are equal, the F test is robust with respect to the non normality and unequal variances. Although very little has been done to assess the effect of non normality with unequal sample sizes, the results appear to indicate that the effect of non zero skewness is negligible and the effect of non zero kurtosis, although slightly greater than with equal sample sizes, is still too small to be of concern in most applications.[64]" Analysis of Variances (ANOVA) thus, helps to examine differences, if any, which may exist among the companies and among the industries over the period of time as well as differences between the years which further helps to interpret the changes if any in the policies adopted by a particular industry or company. To examine whether variations exist between companies regarding various ratios indicating WCM, LEV & PROF, the Single Factor Analysis of Variance referred abbreviated as Single Factor ANOVA and also termed as One Way ANOVA or simply, ANOVA is applied which is detailed in the following para.

◈ ***Single Factor ANOVA***

If there were only two samples, t-test can be easily used but with more than two samples, the family wise experiment error increases. And so, in order to have robust results without reducing the power of test, ANOVA is considered to be a better alternative. Single factor ANOVA is conducted when variances are to be analyzed based on 1 factor. The following steps are involved in one way or single factor ANOVA:

Step-1: Calculate variance between the samples

1. Obtain the mean of each sample, $\bar{X}_1$, $\bar{X}_2$, $\bar{X}_3$, $\bar{X}_4$, $\bar{X}_5$ etc.
2. Calculate the grand average of and workout the mean of sample by

$$\bar{\bar{X}} = \frac{\bar{X}1 + \bar{X}2 + \bar{X}3 + \ldots.}{N1 + N2 + N3 + \ldots.}$$

3. Take the deviation of sample means from the mean of samples and grand average.
4. Square these deviations and obtain the total which will give sum of squares between the samples.
5. Divide the total obtained in *Step 4* by the degrees of freedom. The degrees of freedom will be one less than the number of samples, *i.e.*, if there are 10 samples, then the degrees of freedom will be 10-1 = 9 or v = k-1, where, k is the number of samples.

Step 2: Calculate the variance within the samples

1. Obtain the mean of each sample by $\bar{X}_1$, $\bar{X}_2$, $\bar{X}_3$, $\bar{X}_4$, $\bar{X}_5$ etc.
2. Take the deviations of the various items in a sample from the mean values of respective samples.
3. Obtain these deviations for all samples and then the aggregate which gives the Sum of Squares within the samples.
4. Divide the result obtained in *Step 4* by the degrees of freedom between the samples to obtain the variance or mean squares (MS) between the samples.

Step 3: F ratio is worked out as under

$$F = \frac{\textbf{Between Column Variance}}{\textbf{Within Coloumn Variance}}$$

Symbolically, $F = \frac{S_1^2}{S_2^2}$

The F distribution measures the ratio of the variance between the groups to the variance within the groups. It is used to judge whether the difference among several sample means is significant or is just a matter of sampling fluctuations. If the value of F is less than table value (also known as the critical value) of F, the difference is taken as insignificant, *i.e.*, due to chance and the null hypothesis of no difference between sample means is considered to be true and valid. However, where the value of F is more than table value of F, the difference is considered as significant, which means that samples could not have come from the same universe and accordingly the null hypothesis of no difference between sample means stands invalid and appropriate conclusions may be drawn. The higher the calculated value of F than the table value, the more definite and sure one can be about the conclusions.

In addition to examining the variations, if any, between companies within given industry, an attempt is also made to examine the variance over a period of time, *i.e.* between years. Also, it was considered to be important to examine the variance between industries. Hence, this is also examined for all ratios measures of WCM, LEV and PROF between industries.

The next para discusses the technique for the third stage *i.e.,* final stage of empirical analysis.

4.9 Methodology Adopted for Third Stage of Analysis

This para details *Specification of Model for Industry Level Study to examine the Impact of Liquidity on Profitability* which is the third stage of empirical analysis. This analysis is further segregated into two parts, *i.e., i)* Application of Simple Linear Regression and *ii)* Stepwise Regression which is detailed in the following paras.

4.9.1 First Phase Analysis: Simple Linear Regressions

Firstly the impact of sales on working capital is examined applying simple linear regression. Similarly, *secondly,* simple linear regression is also applied to examine the impact of WCL on ROTA. Further, in order to examine the impact of various measures of Liquidity, LEV, Size, CAME, and working capital policy on the profitability of a company, in the first stage of analysis, simple linear regression between each indicator of an independent variable, one at a time, with each measure of Liquidity, LEV, Size, CAME and working capital policy (dependent variable) is conducted. The simple linear regression of each indicator of independent variable with each measures of dependent variable will give an indication with respect to whether the selected independent variable has significant impact on Profitability and are able to predict the values of dependent variables or otherwise.

The simple linear regression equation used to estimate the impact of each of the indicators of explanatory variables on the dependent variable is

$Y = \alpha + \beta_1 X + u_t$.

Where,

Y = the value of Dependent variable (Y), which is being predicted.

α = constant term of the model – intercept

β_1 = Beta, the co-efficient of X, the slope of the regression line.

X = the value of independent variable, which predicts or estimates the value of Y.

u_t = the unexplained variation also termed as the error term which indicates the error in predicting the value of Y, given the value of X.

◊ **The t-test**

This test has been applied to determine the existence of significant linear impact of independent variables on the dependent variable. The test of hypotheses 't' test concerning β_1 (slope of the regression line) is equal to zero is conducted. If null hypotheses, **(Refer Para 4.4)** is rejected one can conclude that there is an evidence of linear impact. The best and only significant predictors, which have significant impact on the ratio where significance of 't' statistics at 5% and 1% level of significance is tested and selected for the next stage of analysis. This is done to understand the impact of individual indicators on profitability measures.

4.9.2 Second Phase Analysis: Stepwise Regression Analysis

In the second stage of analysis, the simultaneous impact of all the indicators of Liquidity, Leverage, Working Capital Policy, WCM Efficiency and Size on the *five* individual measures of Profitability, *i.e.,* OPM, NPM, ROTA, EAT/TA and RONW is examined using stepwise regression technique which is an extension to simple regression technique, where, instead of a single explanatory variable, several explanatory variables can be used to predict the value of a dependent variable.

In the standard regression model, all the independent variables enter the regression equation at once as we want to examine the impact of whole set of the independent variables together on the dependent variable.

As observed by Levine *et al*[65], “An important feature of stepwise regression process is that an explanatory variable that has entered into the model at an early stage may subsequently be removed after other explanatory variables are considered. In stepwise regression, variables are added or deleted from the regression model at each step of model building process. The stepwise procedure terminates with the selection of a best fitting model, when, no additional variables can be added to or deleted from the last model fitted”,

This technique is considered to be better than Multiple Regression Model for two reasons: i) It retains only those independent variables in the model which are significantly related to the dependent variable and ii) It eliminates those independent variables which are highly correlated based on the VIF statistics and gives the best fit model. Hence, there is no need of separately examining the multicollinearity through Pearson’s Correlation Matrix as the regression model takes this factor into consideration in the process of model building.

SPSS (Statistical Package for Social Sciences), a statistical software has been used to conduct the analysis. In this study, along with the standard model where all the specified independent variables enter the regression equation at once, stepwise multiple regression method has also been used. In the standard model, since we want to observe the relationship between the entire set of independent variables and dependent variables, all the independent variables are entered by SPSS regardless of their significance levels. The interpretations are made on the basis of theoretical construct and literature review findings after the output, result of regression is received.

In stepwise procedure, a new regression is run for each new variable that is considered to be included in the model in order to see if the variable is beneficial to the model and how beneficial it is. In this method, SPSS enters the independent variable with highest ‘t’ statistic and continues entering these variables until there are no variable left with ‘t’ statistic having significance value less than 0.05. The stepwise process comes to an end when the best fitting model is selected and when no more independent variables can be added or deleted or would make any significant difference to model R^2.

The standard model is as follows:

$$Y = \alpha + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \beta_5 X_5 + \ldots\ldots\ldots \beta_n X_n + u_t \qquad \ldots\ldots\ldots\ldots\ldots 3$$

Where,

Y = the value of Dependent variable (Y), which is being predicted.

α = constant term of the model – intercept

$\beta_1, \beta_2, \beta_3\ \beta_4\ \beta_5\ \beta_6 \ldots\ldots \beta_n$ are the Beta co-efficients of independent variables.

X_1, X_2,…… X_n are the values of independent variable, which predicts or estimates the value of Y.

u_t = the unexplained variation also termed as the error term which indicates the error in predicting the value of Y, given the value of X.

◊ **Variance Inflationary Factor (VIF) test**

Variance Inflationary Factor (VIF) is a measure of multicollinearity of each explanatory variable. Gujarati noted[66], "The variance inflationary factor shows how the variance of an estimator is inflated by the presence of multicollinearity".

$$\text{Variance Inflationary Factor} = \frac{1}{1-R_j^2}$$

Where, R_j is the multiple correlation coefficient. ($1-R_j^2$) is also called as tolerance. The tolerance is the percentage of the variance in a given predictor that cannot be explained by the other predictors. When the tolerances are close to 0, there is high multicollinearity and the standard error of the regression coefficients would be inflated. Levine *et al*[65] noted, "If a set of explanatory variables is uncorrelated, then VIF_j is equal to 1. If the set is highly intercorrelated, then VIF_j may exceed even 10." Thus if $VIF_j \geq 10$, then there is a problem with multicollinearity. Some statisticians suggest that to be on the conservative side, even if VIF_j exceeds 5, the regression model should be used with caution.

If multicollinearity exists, the variable with largest VIF value is deleted. In this way we can make certain that multicollinearity problem, if any among the predictors is solved. Variance inflationary factors for each multiple regression conducted in the third stage of analysis are reported in this study.

◊ **The Co-efficient of Multiple Determination (R^2)** measures the proportion of the dependent variable 'Y' that is explained by a set of independent variables selected. R^2 is an accurate value for the sample drawn but is considered an optimistic estimate for the population value and so it is desirable to review the value of Adjusted R^2.

◊ **The Adjusted R^2** is considered a better population estimate and is useful when comparing the R^2 value, between models with different numbers of independent variables. Hence, in this study, for stepwise regression analysis, both R^2 and Adjusted R^2 are observed, that predict the same dependent variable but have different number of independent variables.

◊ **t-tests** are used to assess the statistical significance of individual β_2 coefficients (regression coefficients), specifically testing the null hypothesis that the regression coefficient is zero. The rule of thumb adopted is to drop all variables, not significant at the 5% level or 1% level from the equation.

◊ **F-test** is used to test the significance of R^2 or the significance of the regression model as a whole. It is used to test the null hypothesis that all the slopes are equal to zero. F is the test statistic from an F Distribution, is a function of R^2, the number of independents, and the number of cases. F is computed with k and (n – k – 1) degrees of freedom, where, k = number of independent variables in the regression model. At 5% and 1% level of significance level, if p-value is <0.05 or < 0.01 (depending on the level of significance), then the model is considered significantly better than would be expected by chance and we reject the null hypothesis of no linear relationship of Y (dependent variables) to the independent variables.

◊ **p-value** is the observed level of significance and is the smallest level at which the null hypothesis can be rejected for a given set of data. If the p-value for one or more coefficients is less than 0.05 level of significance, then these coefficients can be statistically significant, and it can be inferred that the related independent variables affect the dependent variables 'Y'.

Since this study uses a fixed sample of 79 companies belonging to 6 diverse service sectors covering a span of 16 years from 1994-95 to 2009-10, to carry out stepwise regressions, the values of all the independent variables and dependent variable have been calculated for each company of the sample of 79 companies for each year from 1995 to 2010. The ratios used as indicators for the dependent and explanatory variables have been calculated for each year and for each company and then are averaged over the time period of 16 years. *Further,* the empirical analysis is also carried out for firms based on industry wise classification.

Having discussed the model for Industry Level Analysis of Influence of Liquidity on Profitability the next para defines the Liquidity and Profitability Variables used in the present study.

4.10 Specification of Model for Liquidity and Profitability Parameters

In this section, the parameters of firm size, leverage, working capital policy, liquidity, working capital management efficiency and profitability selected for examining the impact of liquidity on profitability are presented. Since, the impact of one variable on another is to be examined; these parameters are categorized as Dependent and Explanatory Variables. Further, various ratios represent each of the parameter, *for e.g.,* Liquidity is measured by CR, QR as well as ALR and hence these three ratios are indicators of Liquidity. Similarly, all the explanatory and dependent variables have various indicators. The meaning, computation, justification and interpretation of all the ratios have already been discussed in Para 4.4.1, so here the list of all the dependent and explanatory variables along with their broad groups and abbreviations is presented in Table 4.7. Further, from literature review, it emerged that Firm Size is also an explanatory variable to predict the profitability. Hence, Firm Size is included for examining its impact on profitability and is explained in the para following the table.

TABLE – 4.7

DETAILS OF INDEPENDENT AND DEPENDENT VARIABLES USED IN STUDY

Broad Group	Variables	Abbreviation
	Independent Variables – WCM, LEV and Size	
Size	Natural Logarithm of Sales	LnS
	Natural Logarithm of Total Assets	LnTA
Leverage	Long Term Debt/Total Assets	LTDTAR
	Total Debt/ Total Assets	TDTAR
Working Capital Policy	Current Liabilities/ Total Assets	CLTAR
	Current Assets/ Total Assets	CATAR
	Current Assets/ Net Fixed Assets	CANFAR
	Current Liabilities/ Current Assets	CLCAR
	Working Capital/ Current Assets	WCCAR
Liquidity	Inventory/Current Assets	ITCAR
	Receivables /Current Assets	RTCAR
	Cash and Bank Balances/ Current Assets	CBBTCAR
	Prepaid Expenses/ Current Assets	PETCAR
	Loans and Advances/ Current Assets	LATCAR
	Marketable Securities/ Current Assets	MSTCAR
	Current Assets/ Current Liabilities	CR
	Current Assets – Inventories/ Current Liabilities	QR
	Cash and Bank Balances + Marketable Securities/ Current Liabilities	ALR
Efficiency	Sales / Total Assets	TATR
	Sales/ Current Assets	CATR
	Sales/ Working Capital	WCTR
	Sales/ Inventory	ITR
	Inventory Holding Period	IHP
	Sales/ Receivables	RTR
	Average Collection Period	ACP
	Sales/ Cash and Bank Balances	CBBTR
	Sales/ Creditors	CTR
	Average Payment Period	APP
	Operating Cycle	OC
	Net Trade Cycle	NTC
	Dependent Variable – Profitability	
Based on Sales	Earnings Before Interest and Taxes/ Sales	OPM
	Earnings After Taxes/ Sales	NPM
Based on Total Assets	Earnings Before Interest and Taxes/ Total Assets	ROTA
	Earnings After Taxes/ Total Assets	EAT/TA
Based on Net Worth	Earnings After Taxes/ Net Worth	RONW

Firm Size:

Past theories of Firm size predict positive relationship between the size and profitability[67]. It is believed that large firms take cost advantage (economics of Scale), diversify their products, create entry Barriers for new firms and have a great power to bear risk arising from different changes in the market place, which results in increased rate of profits. Padachi[40] (2006), Afza and Nazir[31] (2009), Magpayo[68] (2011), Sabunwala[69] (2012) found that firm size had positive impact on profitability. However, Bieniasz and Golas[70] (2011) found a negative impact of firm size on profitability indicating that as the firms become much larger the advantages of economies of scale are offset by organizational cost. Samiloglu and Demirgunes[71] (2008) and Abbasi and Bosra[72] (2012) found no relationship between size and profitability.

It can be measured in terms of sales as well as total assets. In this study, both the measures are taken to examine the impact of Firm Size on Profitability as from the literature review, it emerged that both the measures are employed for measuring firm size. It is computed by taking Natural Logarithm of Sales and Total Assets.

Having discussed the sample and the methodology for the empirical analysis, the next chapter begins with the ***first stage of empirical analysis*** and examines the trends and time trends in the WCM, LEV and PROF of the Non Financial Service Industry as well as its constituent industry groups.

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CHAPTER – 5

WORKING CAPITAL MANAGEMENT: TREND ANALYSIS

This chapter examines the Trends in Working Capital Management (WCM), Leverage (LEV) and Profitability (PROF) of Indian Non-Financial Service Industry companies. All the 40 ratios mentioned in Table 4.6 are employed to analyze the trends and direction of change in the WCM, LEV and Profitability of sample 79 Non Financial Service Industry companies over the selected time frame (1994-95 to 2009-10). Arithmetic Mean, Standard Deviation and Coefficient of Variation for all the selected ratios are calculated to analyze the trends. Doughnut graph is used to portray the current asset financing mix whereas Pie graphs are used for graphic presentation of current asset structure and current liabilities structure. The trends have been examined taking the entire Non Financial Service Industry, *i.e.,* 79 companies as well as for individual 6 Service Industry groups.

In order to understand time trends in selected WCM, LEV and PROF ratios, 'Method of Least Squares' is applied using 'Linear Trend Model' and 'Quadratic Trend Model'. Time trend analysis is also conducted on entire sample of 79 companies belonging to 6 service sector industries as well as on the individual service industry group. This chapter is divided into four major sections followed by conclusions.

In Section – I, the methodology adopted is stated. **In Section - II** the overall and time trends in 38 ratios of WCM, LEV and Profitability ratios of all the 79 companies belonging to 6 service industry groups taken together is examined to have a holistic understanding of the WCM of Service Industry. **In Section – III**, industry wise trends (overall and time trends) in WCM, LEV and Profitability ratios is examined. **In Section – IV**, overall and time trends in Working Capital Leverage (WCL) for the entire Non Financial Service Industry, *i.e.,* 79 companies as well as the constituent service industry groups is examined.

SECTION - I

5.1 Methodology Adopted

The various ratios/measures employed to examine the trends in WCM of 79 Indian Non Financial Service Sector companies are categorized as Working Capital Policy Ratios, Current Asset Structure Ratios, Current Liabilities Structure Ratios, Liquidity Ratios, Current Asset Management Efficiency (CAME) Ratios and Operating Cycle Variables.

The LEV and Profitability Ratios are also examined in order to utilize these ratios in the latter part of the analysis. The list of selected ratios as per their respective categorization is given in Table 5.1.

TABLE – 5.1

Ratios for Working Capital Management Analysis

Sr. No.	Name of Category and Ratio	Abbreviated Form
	Leverage Ratios	
1	Long Term Debt to Total Assets Ratio	LTDTAR
2	Total Debt to Total Assets Ratio	TDTAR
	Working Capital Policy Ratios	
3	Current Assets to Total Asset Ratio	CATAR
4	Current Liabilities to Total Asset Ratio	CLTAR
5	Current Liabilities to Current Asset Ratio	CLCAR
6	Net Working Capital to Current Asset Ratio	NWCCAR
7	Current Assets to Net Fixed Assets Ratio	CANFAR
8	Working Capital Leverage	WCL
	Current Asset Investment Ratios	
9	Inventory to Current Asset Ratio	ITCAR
10	Receivables to Current Asset Ratio	RTCAR
11	Cash and Bank Balances to Current Asset Ratio	CBBTCAR
12	Prepaid Expenses to Current Asset Ratio	PETCAR
13	Loans and Advances to Current Asset Ratio	LATCAR
14	Marketable Securities to Current Asset Ratio	MSTCAR
	Current Liabilities Structure Ratios	
15	Trade Credit to Current Liabilities Ratio	TCCLR
16	Deposits & Advances from Customers and Employees to Current Liabilities Ratio	DACECLR
17	Provisions to Current Liabilities Ratio	PCLR
18	Short Term Bank Borrowings to Current Liabilities Ratio	STBBCLR
19	Current Financing Charge to Current Liabilities Ratio	CFCCLR
20	Other Current Liabilities to Current Liabilities Ratio	OCLCLR
	Liquidity Ratios	
21	Current Ratio	CR
22	Quick Ratio	QR
23	Absolute Liquidity Ratio (Cash Ratio)	ALR
	Current Asset Management Efficiency Ratios & Operating Cycle Variables	
24	Total Asset Turnover Ratio	TATR
25	Current Asset Turnover Ratio	CATR
26	Working Capital Turnover Ratio	WCTR
27	Inventory Turnover Ratio	ITR
28	Inventory Holding Period	IHP
29	Receivables Turnover Ratio	RTR
30	Average Collection Period	ACP
31	Cash and Bank Turnover Ratio	CBTR

TABLE – 5.1 (Continued...)		
Ratios for Working Capital Management Analysis		
Sr. No.	Name of Category and Ratio	Abbreviated Form
Current Asset Management Efficiency Ratios & Operating Cycle Variables		
32	Creditors Turnover Ratio	CTR
33	Average Payment Period	APP
34	Operating Cycle	OC
35	Net Trade Cycle	NTC
Profitability Ratios		
36	Operating Profit Margin	OPM
37	Net Profit Margin	NPM
38	Return on Total Assets	ROTA
39	Earnings after Tax to Total Assets	EAT/TA
40	Return on Net Worth	RONW

- Ratios are calculated by taking average values for amounts given in Balance Sheet for respective Balance Sheet variables whereas absolute amount as given in Profit and Loss Account (P & L A/c) for P & L A/c items.
- However, in case of WCL the denominator includes Change in Average Current Assets. Therefore, when change is taken for Average CA, observation for one more year is not available for the study for WCL. Thus, observations are available for 14 years. Hence, for 38 ratios analysis is done for 15 years whereas for 2 ratios *i.e.,* WCL and CANFAR analysis is done for 14 years. Therefore, the analysis of WCL in separate section, *i.e.,* Section – IV.
- After computation of ratios, **as a first step** of analysis, aggregate mean for WCM, LEV and PROF ratios of all the 79 companies for the period (1994-95 to 2009-10) are calculated. To examine the extent of variation, Standard Deviation (SD) and Coefficient of Variation (COV) are also calculated.
- **In the second step**, Year wise average ratios of LEV, each WCM group and PRPF for the sample of 79 companies for the period from 1994-95 to 2009-10 are calculated to observe and analyze the overall trends in WCM, LEV and Profitability over the study period.
- **In the third step,** time trend is carried out to examine the movements in WCM, LEV and PROF over a period of time. In order to examine whether the WCM, LEV and PROF ratios of selected 79 Indian Non Financial Service Industry companies exhibit significant linear trend, the Linear Trend model is applied. Selected ratios are regressed on time to examine the rate of change in ratio per year. Quadratic Trend model is also fitted to examine the best fit model, *i.e.,* whether a ratio follows a Linear Trend or Quadratic Trend. Results of both the models, *i.e.,* Linear Trend

and Quadratic Trend model are jointly interpreted. The Durbin-Watson 'D Statistic' is also computed to check for presence of autocorrelation, if any.

- **In the fourth step**, overall and time trends in WCM, LEV and PROF independently for each of the Non Financial Service Industry group is examined. The sample of 79 companies comprises of *six* industry groups (Table – 4.5). The number of sample companies in each industry group varies from maximum *twenty five* companies in Hotels & Restaurants Industry to a minimum of *two* companies in Communication Services Industry. The same procedure as mentioned above in the *first, second* and *third step* was followed to examine the industry wise trends in WCM, LEV and Profitability.
- **In the fifth step**, the overall and time trends in WCL for all the 79 sample companies as well as independently for each of the Non Financial Service Industry group is examined following the same methodology as presented in *first, second and third step* above.

SECTION II

5.2 Trend Analysis: WCM, LEV and PROF of Non Financial Service Industry (79 companies)

This section examines the overall trends in WCM, LEV and PROF Ratios of the Indian Non Financial Service Industry taken in entirety, *i.e.,* for 79 sample companies. The results of Time Trends (Linear and Quadratic Trend) in the 38 ratios of WCM, LEV and PROF for all the 79 companies over the study period are also presented in this section. The overall trend is presented and interpreted first which is followed by the presentation and elucidation of the time trends analysis.

5.2.1 Trends in WCM, LEV and PROF: Non Financial Service Industry

The overall trends in WCM, LEV and PROF ratios is observed by taking industry average on yearly basis to understand the yearly movements in ratios as well as the nature of WCM, LEV and PROF position in the Service industry. As already discussed, to analyze different aspects of WCM, various ratios related to WCM have been categorized into 6 groups apart from the LEV and PROF ratios and so the results of the analysis are presented and interpreted as per the group to which each ratio belongs.

A. Leverage and Working Capital Policy Ratios

As already discussed in Chapter 4, to examine the LEV and working capital policy of the Service industry 6 measures are studied. The computation for each ratio of LEV and Working Capital Policy (WCP) over the study period is presented in Table 5.2. Chart

5.1 presents the current asset financing mix, *i.e.,* share of current liabilities (CL) and net working capital (NWC) in financing the total current assets.

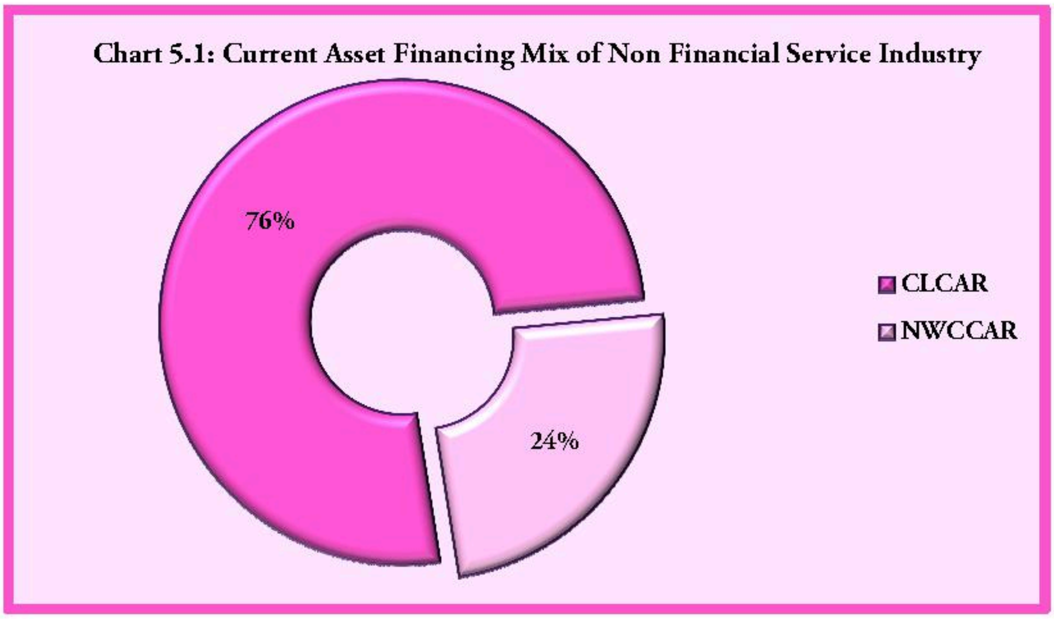
TABLE – 5.2

Working Capital Policy and Leverage Ratios: Non Financial Service Industry

Year	Leverage Ratios		Working Capital Policy Ratios			
	LTDTAR	TDTAR	CLTAR	CATAR	CLCAR	NWCCAR
Mar-96	0.20	0.46	0.26	0.46	0.70	0.30
Mar-97	0.20	0.46	0.26	0.45	0.76	0.24
Mar-98	0.20	0.46	0.26	0.44	0.77	0.23
Mar-99	0.20	0.46	0.26	0.44	0.78	0.22
Mar-00	0.18	0.43	0.25	0.43	0.79	0.21
Mar-01	0.18	0.42	0.24	0.43	0.81	0.19
Mar-02	0.17	0.41	0.24	0.43	0.78	0.22
Mar-03	0.18	0.42	0.24	0.42	0.80	0.20
Mar-04	0.17	0.43	0.26	0.43	0.79	0.21
Mar-05	0.16	0.44	0.28	0.44	0.77	0.23
Mar-06	0.16	0.44	0.28	0.45	0.72	0.28
Mar-07	0.16	0.44	0.28	0.45	0.74	0.26
Mar-08	0.17	0.45	0.28	0.45	0.77	0.23
Mar-09	0.16	0.44	0.28	0.45	0.74	0.26
Mar-10	0.17	0.45	0.28	0.45	0.75	0.25
Mean	0.18	0.44	0.26	0.44	0.76	0.24
SD	0.02	0.02	0.02	0.01	0.03	0.03
CV(%)	8.91	3.69	6.03	2.55	3.95	12.84

- From the perusal of Table 5.2, it can be observed that LTDTAR of the service industry ranged between 16% and 20% with 18% of the total assets of the Service Industry financed by long term debts on an average, which seems to be a reasonable policy of debt financing being pursued in the Service Industry. CLTAR ranged between 24% and 28% and on an average, 26% of the total assets of the service industry were financed by the current liabilities. It is interesting to note that in all the years CLTAR is greater than LTDTAR and indicates that firms in Service Industry had utilized more of short term debt as compared to long term debt to finance its total assets. It can also be observed that on an average, 44% of the total assets of the Service Industry are financed by total debt, which seems to be a conservative debt financing policy in the service industry. Also, it is observed that of the total debt, current liabilities form the major portion. Due to decline in LTDTAR and increase in CLTAR, TDTAR has remained in the range of 41% to 46% with lower fluctuations which is also evident from CV of 3.69%.
- From Table 5.2, it can also be observed that the ratio of current assets to total assets ranged between 42% and 46%. On an average, 44% of the service industry's funds are invested in current assets (CA) indicating that the industry is following a

- conservative current asset investment policy which is characterized with higher proportion of current assets and results to liquid asset structure with lower risk. Such high proportion of CA is generally found in manufacturing industries. However, this ratio is lower as compared to the results observed by Ansari[1] for 11 manufacturing industry groups where this ratio was observed to be 50%. But it is very high when compared with the study of Kantawala and Joshi[2] in Steel Industry where CATAR was observed to be 38%. From the above discussion it is concluded that even the Non Financial Service Industry is characterized with high CATAR.



- From the perusal of Chart 5.1, it is observed that current liabilities finance 76% of current assets whereas net working capital contributes 24%. A higher use of CL is indicative of an aggressive working capital financing policy being pursued by the Non Financial Service Industry of India. From perusal of Table 5.2, it can be observed that CLCAR ranged between 0.72 and 0.81 whereas NWCCAR ranged between 0.19 and 0.28 and overall it can be observed that the industry is operating with lower level of NWC. Thus the firms in industry are utilizing more of short term funds in the form of current liabilities to finance the current assets as compared to NWC which is in line with the analysis of LTDTAR and CLTAR in preceding paras. Similar phenomenon was observed in the study of Ansari[1]. Thus, it can be concluded that the Service Industry is following an aggressive approach of financing its current assets which was also observed in the study of Pradhan[3] for 6 manufacturing industries. The reason can be assigned to the good reputation, established business and creditworthiness due to which the Service Industry has access to and is able to utilize more short term funds to finance its current assets. Lower values of SD and CV indicate that over a period of time the leverage position as well as the working capital policy of the Service Industry has not undergone high fluctuations.

B. Analysis of Current Asset Structure

As mentioned in Chapter 4, to examine the structure of CA, the composition of CA with reference to various components of CA is studied. The computation for each ratio over the study period is presented in Table 5.3 whereas Chart 5.2 presents the share of each CA in pie of total current asset.

- As observed from Chart 5.2, Receivables formed the highest share in the current assets of Non Financial Service Industry with 50% on an average followed by Cash and Bank Balance at 20%; Inventories, Loans and Advances and Prepaid Expenses at 8% each and Marketable Securities at 6%.

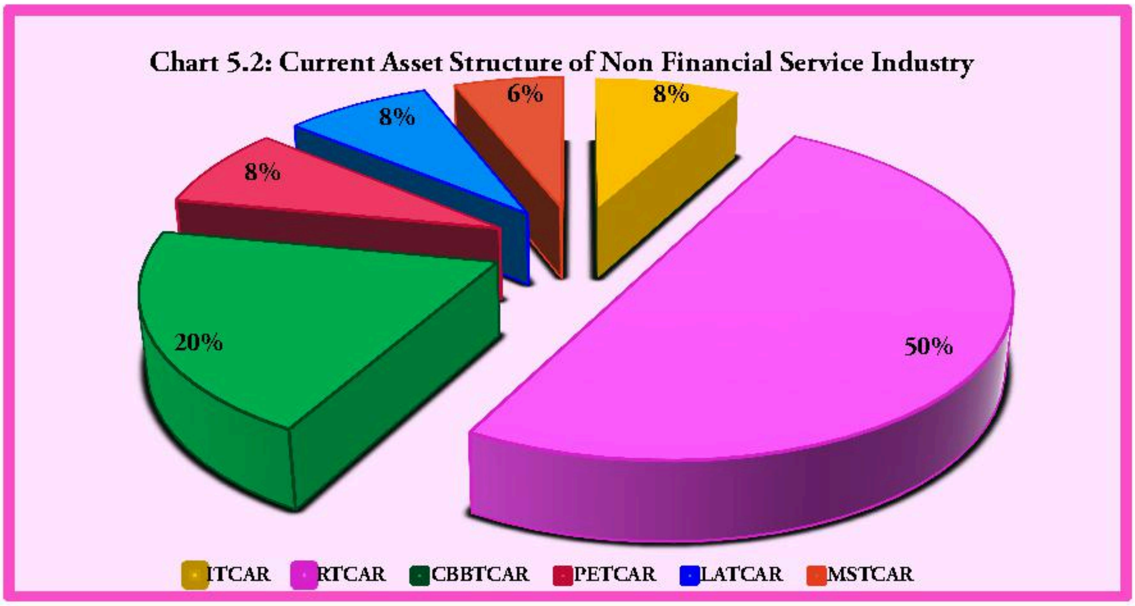


Chart 5.2: Current Asset Structure of Non Financial Service Industry

- The lower ratio of inventory to CA necessarily distinguishes the Non Financial Service Industry from the Manufacturing Industries where inventory is generally noted to be very high proportion of current assets. For *e.g.* Kantawala and Joshi[2] observed it to be 39% in Steel Industry; Alam and Hossain[4] in their study in Ship building industry observed ITCAR to be 62%; Janakiramudu[5] observed it to be 39.47% in Indian Commercial Vehicle industry; Kannadhasan[6] observed ITCAR to be 31.75% in Public Limited companies; Khatik and Singh[7] found it to be 26.42% in fertilizer industry; Mallick and Sur[8] observed it to be 56% in HLL; Padachi *et al*[9] observed it to be 48% in Mauritian Small Manufacturing firms; Reddy and Rao[10] observed it to be 37% in PSUs; whereas Sarma and Chary[11] observed to be 57% in Tobacco manufacturing company. Also, reduction in the level of inventory is observed indicating improvement in inventory management of the Non Financial Service Industry over the study period.

- From the perusal of Table 5.3 it is observed that receivables ranged between 44% and 58% of current assets with on an average 50% of investment in CA being in the form of receivables. Thus the mean RTCAR of the Non Financial Service Industry is very high when compared with manufacturing industries. For *e.g.*, Janakiramudu[5] observed it to be 33.9%; Kannadhasan[6] observed RTCAR to be 31%; Khatik and Singh[7] found it to be 23.27%; Mallick and Sur[8] observed it to be 23.9%; Padachi *et al*[9] observed it to be 34%; Reddy and Rao[10] observed it to be 37% whereas Sarma and Chary[11] observed to be 16.54%. Loans and advances ranged between 5% and 10% with the firms in Non Financial Service Industry having 8% of average Loans and Advances in their CA Structure. A declining trend is observed in receivables over the study period indicating reduction in the level of investments in receivables resulting to an improvement in receivables management of firms in Non Financial Service Industry.

TABLE – 5.3

Current Asset Structure Ratios: Non Financial Service Industry

Year	ITCAR	RTCAR	CBBTCAR	PETCAR	LATCAR	MSTCAR
Mar-96	0.10	0.56	0.22	0.04	0.06	0.02
Mar-97	0.11	0.58	0.19	0.05	0.05	0.02
Mar-98	0.10	0.57	0.18	0.07	0.06	0.02
Mar-99	0.10	0.57	0.18	0.07	0.06	0.02
Mar-00	0.08	0.53	0.20	0.07	0.09	0.03
Mar-01	0.08	0.50	0.20	0.08	0.10	0.04
Mar-02	0.08	0.49	0.20	0.08	0.10	0.05
Mar-03	0.08	0.49	0.19	0.09	0.09	0.06
Mar-04	0.08	0.48	0.20	0.08	0.09	0.07
Mar-05	0.08	0.46	0.22	0.08	0.09	0.07
Mar-06	0.06	0.45	0.23	0.09	0.09	0.08
Mar-07	0.06	0.45	0.23	0.10	0.07	0.09
Mar-08	0.06	0.44	0.21	0.11	0.07	0.11
Mar-09	0.06	0.44	0.20	0.12	0.07	0.11
Mar-10	0.06	0.44	0.20	0.13	0.06	0.11
Mean	0.08	0.50	0.20	0.08	0.08	0.06
SD	0.02	0.05	0.02	0.02	0.02	0.03
CV(%)	21.55	10.56	7.81	28.74	21.86	57.74

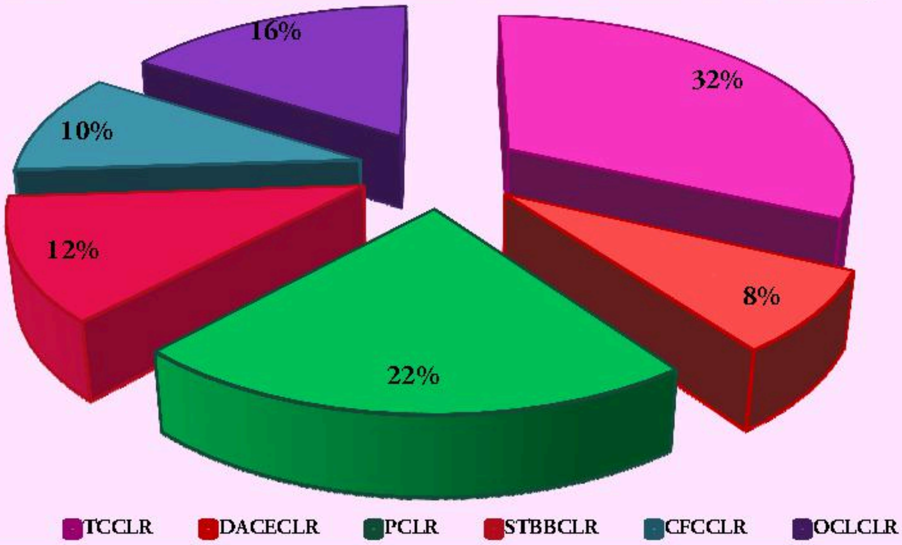
- The share of cash and bank balance has ranged between 18% and 23% wherein fluctuations can be observed. The share of marketable securities has ranged between 2% and 11% which has shown an increasing trend throughout the study period. CV is also observed to be highest for MSTCAR due to the consistent rising trend in MSTCAR. The increasing share of marketable securities in current asset structure indicates that firms in Non Financial Service Industry are investing their idle lying excess cash and signifies efforts made toward efficient cash management which can further be substantiated from the analysis of efficiency ratios. The mean share of cash assets *i.e.,*[Cash and Bank Balance (CBB)+ Marketable Securities (MS)] of 26% indicates a good liquidity position of the Service Industry which can further be substantiated by the analysis of liquidity ratios.

- From the perusal of Table 5.3 it is observed that the share of prepaid expenses has increased which means increased blocking of funds in the form of Prepaid Expenses by the firms in the Service Industry over the period under study. The changes in current asset ratios have been progressive and with lower volatility throughout the study period as evidenced by the values of SD.

C. Analysis of Current Liabilities Structure Ratios

In order to examine the structure of current liabilities, the composition of CL with reference to various components of CL is studied. The computation for each ratio over the study period is presented in Table 5.4. Chart 5.3 presents the share of each CL in pie of total current liability.

Chart 5.3: Current Liabilities Structure of Non Financial Service Industry



From the perusal of Chart 5.3, it can be observed that Trade Credit with 32% of the total CL is the major source of financing the current assets of the Service Industry, followed by Provisions at 22%, Other Current Liabilities (OCL) at 16%, Short Term Bank Borrowings (STBB) at 12%, Current Financing Charge (CFC) at 10%, Deposits and Advances from Customers and Employees (DACE) at 8%. Also, among the current liabilities, the Spontaneous source of short term finance (Trade Credit, CFC, Provisions and OCL) is dominating the current liabilities structure at 80% and balance 20% comprises of the negotiated sources of short term finance (STBB and DACE). TCCLR was also observed to be major source of financing current assets in the study of Padachi *et al*[9]. However in the study of Akon and Hossain[12] and Khandelwal[13] it was observed to be Bank Borrowings.

TABLE – 5.4

Current Liabilities Structure Ratios: Non Financial Service Industry

Year	TCCLR	DACECLR	PCLR	STBBCLR	CFCCLR	OCLCLR
Mar-96	0.35	0.03	0.21	0.12	0.10	0.19
Mar-97	0.34	0.04	0.22	0.12	0.10	0.18
Mar-98	0.34	0.05	0.21	0.12	0.10	0.18
Mar-99	0.34	0.05	0.19	0.13	0.11	0.18
Mar-00	0.32	0.06	0.20	0.13	0.12	0.17
Mar-01	0.31	0.10	0.20	0.12	0.11	0.16
Mar-02	0.34	0.10	0.20	0.12	0.11	0.13
Mar-03	0.35	0.10	0.20	0.12	0.11	0.12
Mar-04	0.33	0.10	0.22	0.12	0.10	0.13
Mar-05	0.32	0.10	0.23	0.12	0.10	0.13
Mar-06	0.32	0.09	0.24	0.11	0.10	0.14
Mar-07	0.31	0.10	0.24	0.12	0.08	0.15
Mar-08	0.29	0.10	0.25	0.13	0.08	0.15
Mar-09	0.29	0.09	0.26	0.13	0.07	0.16
Mar-10	0.29	0.08	0.26	0.13	0.08	0.16
Mean	0.32	0.08	0.22	0.12	0.10	0.16
SD	0.02	0.03	0.02	0.01	0.01	0.02
CV(%)	6.57	32.48	10.52	4.84	14.53	14.16

- From the perusal of Table 5.4 it is observed that TCCLR has ranged between 0.29 and 0.35. DACECLR has ranged between 0.03 and 0.10. PCLR has ranged between 0.19 and 0.26. STBBCLR has ranged between 0.11 and 0.13. CFCCLR has ranged between 0.07 and 0.12. OCLCLR has ranged between 0.12 and 0.19. It is also observed that DACECLR has increased over the study period whereas TCCLR, and OCLCLR has reduced over the study period whereas, STBBCLR has remained stable with 4.84% variation which is lowest amongst the CL Structure Ratios.

D. Liquidity Analysis

The outcome of computations for the liquidity ratios over the study period is presented in Table 5.5.

- From the perusal of Table 5.5, it is observed that the industry CR ranged between 1.68 and 2.03 whereas the QR ranged between 1.89 and 2.35. The yearly mean CR is above the thumb rule in all the years except, 2008 & 2009 whereas the yearly mean QR is above the thumb rule in all the years. Since the investment in inventories is only 8% of the current assets, it can be observed that the difference in the mean current ratio and quick ratio is also very less. The industry ALR ranged between 0.49 and 0.91 with yearly ALR being above the thumb rule in all years except 1997 & 1998. On an average the Non Financial Service Industry maintains ₹ 2.28 of current assets, ₹ 2.10 of quick assets and ₹ 0.70 as cash assets against ₹ 1 of current liabilities indicates a comfortable liquidity position in the industry.

TABLE – 5.5

Liquidity Ratios:
Non Financial Service Industry

Year	CR	QR	ALR
Mar-96	2.45	2.29	0.72
Mar-97	2.22	2.05	0.49
Mar-98	2.28	2.12	0.49
Mar-99	2.33	2.18	0.52
Mar-00	2.49	2.35	0.67
Mar-01	2.34	2.21	0.67
Mar-02	2.31	2.18	0.70
Mar-03	2.31	2.18	0.75
Mar-04	2.19	2.06	0.69
Mar-05	2.11	1.98	0.73
Mar-06	2.17	2.07	0.80
Mar-07	2.22	2.12	0.83
Mar-08	1.98	1.89	0.75
Mar-09	1.99	1.89	0.80
Mar-10	2.06	1.96	0.91
Mean	2.23	2.10	0.70
SD	0.15	0.14	0.12
CV(%)	6.79	6.46	17.45

◈ CR indicates that the industry is having a very good liquidity position which is also substantiated by the fact that that the industry is maintaining high level of current assets in proportion to total assets. However, as quick ratio is considered to be a more rigorous test of liquidity when compared with current ratio, it can be concluded that the Non Financial Service Industry enjoyed sound liquidity position for the selected time frame. ALR indicates liquidity position in absolute sense and the mean ALR of 0.70 indicates that the Non Financial Service industry is technically solvent, cash rich with very good short term liquidity. Further, a rising trend in ALR whereas a falling trend in CR and QR is observed. This phenomenon indicates that over the study period there is increase in cash assets whereas decline in receivables, inventories and other current assets.

E. Current Asset Management Efficiency Analysis

The computation for each CAME Ratio and Operating Cycle Variables over the study period is presented in Table 5.6.

◈ From the perusal of Table 5.6 it is observed that, TATR has ranged between 0.74 and 0.88 and on average total assets of the Service Industry have been turned over

0.82 times which is considerably a good situation. It is also observed that current assets have been turned over 2.25 times on an average which indicates effective utilization of current assets..

- WCTR for Service industry is observed to be errant and has ranged between -6.61 and 20.07. The results indicate that firms in Non Financial Service Industry utilize lower level of NWC and at times resort to negative NWC for operating sales. However, looking at the mean of NWCCAR in Table 5.2, negative values are not found in any year and hence the data was examined. On examination, a very low level of negative NWC *i.e.,* in decimal points was observed for 34 of the 79. For a given level of sales as numerator and such low negative NWC as denominator, the resultant value of WCTR is bound to be very high and negative. Also, for the years 2000 and 2002 majority companies had negative NWC which has resulted to negative WCTR for these 2 years.
- ITR ranged between 18.90 and 74.90 which is again a very wide range and on an average the inventory is converted into sales 47.07 times which indicates a very very high turnover of inventory in the industry. Such high ITR is also indicative of overtrading situation which arises when a higher level of sales is supported with lower level of inventory and this has been found true of the Service Industry which is operating at 8% inventory. However, the reason for such a low level of inventory is attributable to the nature of the industry and hence carrying lower level of inventory is justified in case of Service Industry which means that this overtrading situation is actually not a risky preposition for the industry. IHP has ranged between 5 and 21 days.
- From the perusal of Table 5.6 it can be observed that, RTR ranged between 4.26 and 7.32 with an increasing trend overall. ACP ranged between 103 and 152 days except 291 days in 1999 on account of Informed Technologies Ltd. When this company is eliminated from analysis for 1999, the mean ACP comes to 122 days instead of 132 days. Overall it is observed that the RTR has increased indicating an improvement in receivables management of the Service Industry over the study period as also observed from findings of Table 5.3. There seems to be conscious efforts of restricting the liberal credit policy. However, ACP of 122 days is very high for an industry like involved in provision of services and is a sign of deep concern with an ample scope for further improvement in managing its receivables.

TABLE 5.6

Efficiency Ratios and Operating Cycle Variables: Non Financial Service Industry

Year	TATR	CATR	WCTR	ITR	IHP (In Days)	RTR	ACP (In Days)	CBTR	CTR	APP (In Days)	OC (In Days)	NTC (In Days)
Mar-96	0.88	2.10	0.30	18.02	21	4.51	152	19.77	16.05	55	173	118
Mar-97	0.86	2.17	1.15	18.73	20	4.50	138	22.00	17.17	48	158	110
Mar-98	0.85	2.17	1.12	21.61	17	4.39	133	21.63	15.75	47	150	103
Mar-99	0.82	2.18	3.75	26.25	14	4.26	291 (134)	22.53	15.39	170 (46)	305 (148)	135 (102)
Mar-00	0.80	2.18	-0.83	28.95	13	4.64	132	22.97	19.72	43	145	102
Mar-01	0.84	2.44	20.07	33.91	11	6.19	126	22.50	22.56	42	137	95
Mar-02	0.75	2.21	-6.61	37.77	10	5.59	132	19.54	527.36 (20.60)	51	142	91
Mar-03	0.74	2.30	2.96	46.31	8	5.78	116	21.93	21.19	49	124	75
Mar-04	0.77	2.42	6.14	60.40	6	6.19	108	22.83	22.35	47	114	67
Mar-05	0.82	2.41	7.20	65.83	6	6.86	103	19.56	20.20	43	109	66
Mar-06	0.86	2.36	3.55	68.62	5	6.88	109	21.45	22.77	43	114	71
Mar-07	0.88	2.37	12.16	74.90	5	6.92	103	15.70	20.23	38	108	70
Mar-08	0.83	2.30	6.24	71.02	5	7.32	106	16.40	20.73	40	111	71
Mar-09	0.81	2.15	5.72	71.93	5	6.87	113	21.89	26.59	42	118	76
Mar-10	0.73	1.95	3.55	61.79	6	5.54	125	22.19	23.77	51	131	80
Mean	0.82	2.25	4.43	47.07	10	5.76	132 (122)	20.86	54.12 (20.34)	54 (46)	143 (132)	89 (87)
SD	0.05	0.14	6.05	21.54	5.66	1.08	46.20 (14.90)	2.25	130.96 (3.18)	32.44 (4.66)	49.04 (20.15)	21.16 (17.38)
CV(%)	6.04	6.17	136.52	45.76	55.81	18.81	34.88 (12.21)	10.81	241.96 (15.61)	60.16 (10.19)	34.39 (15.25)	23.87 (20.10)

Figures in bracket represent values after eliminating companies with abnormal observation. For ACP and APP, Informed Technologies Ltd is eliminated whereas for CTR Infosys Technologies Ltd is eliminated.

- It is also observed that CTR ranged from 15.39 to 26.59 except in 2002 when it was observed to be 527.36 on account of Infosys Technologies Ltd. When this company is eliminated from analysis for 2002, the CTR obtained is 20.60 and the industry average turns out to be 20.34 which is much lower. APP ranged between 38 and 55 days except in 1999 which is observed to be 170 days on account of Informed Technologies Ltd. When this company is eliminated from analysis for 1999, the APP becomes 46 days and the industry average turns out to be 46 days instead of 54 days. Overall it can be observed that creditors are turned over 20.34 times on an average with 46 days as the time taken by the industry to repay its creditors. The high CTR indicates that the Service Industry is prompt in paying its dues. This promptness has resulted to good reputation of the Service Industry as well as easy access to short term funds which can be the possible cause for highly relying on current liabilities to finance the current assets in the industry.
- In addition, it is also observed that throughout the study period the CTR has been greater than RTR meaning thereby that the industry is repaying its liabilities regularly and more frequently than the industry's debtors. Ideally, it is believed that there should be a positive difference between RTR and CTR. However, for the Non Financial Service Industry the difference is negative indicating that the companies in the industry are extending credit greater than what they are receiving from their trade creditors which needs attention and improvement on the part of management of Service Industry for efficient credit management.
- CBTR has remained in the range of 19 to 22 times except in 2007 and 2008 indicating that the CBTR has remained more or less stable. Mean CBTR is 20.86 times which indicates high turnover of cash in the industry which is a sign of better utilization of cash assets in the industry which further leads to a good liquidity position. Thus, cash management of Non Financial Service Industry is efficient as also observed form the analysis of CBBTCAR and MSTCAR in Para B.
- Operating cycle of Service Industry has ranged between 108 and 173 days except in 1999 when it was observed to be 305 days which was due to abnormally high ACP of Informed Technologies Limited. NTC has ranged between 66 days to 118 days except in 1999 when it was observed to be 135 days which was due to abnormally high ACP and APP of Informed Technologies Limited. The effect of its elimination is very much evident from the values given in bracket which becomes normal. In addition, it is observed that the working capital investments of Service Industry in the form of total current assets remains blocked for 143 days on an average whereas

it gets realized in cash in 89 days. Overall it can be observed that both OC and NTC have declined over the study period which is indicative of improvement in management of inventory as well as receivables. Further OC and NTC of Non Financial Service Industry is very high considering the fact that it is mainly involved in provision of services and hence, operates with lower level of inventories. Thus, the cause of high OC and NTC is mainly can be attributed to the liberal credit policy of the industry as already discussed in the preceding paras. And, with further improvement in receivables management, the length of OC and NTC can be reduced.

F. Profitability Analysis

The computations for each of the profitability ratio of the Non Financial Service Industry over the study period are presented in Table 5.7.

TABLE – 5.7

Profitability Ratios: Non Financial Service Industry

Year	OPM	NPM	ROTA	EAT/TA	RONW
Mar-96	24.74	15.16	16.41	11.49	19.91
Mar-97	19.96	9.40	13.93	9.09	16.09
Mar-98	18.42	9.32	11.91	7.93	13.76
Mar-99	18.06	8.84	11.25	7.17	12.51
Mar-00	17.60	9.40	12.02	7.95	15.83
Mar-01	14.60	6.26	10.49	7.84	19.52
Mar-02	10.18	1.82	7.39	3.50	4.50
Mar-03	13.64	5.22	7.87	3.77	0.59
Mar-04	14.25	6.94	8.98	5.01	17.58
Mar-05	18.08	10.52	11.25	7.17	13.09
Mar-06	23.39	16.33	14.97	10.57	30.60
Mar-07	23.58	15.56	15.69	11.00	20.40
Mar-08	23.25	14.16	15.10	9.81	15.13
Mar-09	19.09	10.22	11.79	7.35	12.28
Mar-10	21.02	11.41	10.25	6.36	15.37
Mean	18.66	10.04	11.95	7.73	15.14
SD	4.20	4.08	2.79	2.43	6.88
CV(%)	22.51	40.63	23.36	31.44	45.41

- From the perusal of Table 5.7, it is observed that the operational efficiency in terms of OPM is good. However, a RONW has been very fluctuating thereby indicating that firms in Non Financial Service Industry have not given stable returns to its shareholders over the study period.
- Further, the years 2001 – 2004 have not been good for the financial health of the industry. The returns on total assets have also substantially gone down in these years. Moreover, post tax return on total assets is lesser than the risk free rate of return – 8.10%[14] in 10 of 15 years which is a dismal situation.

5.2.2 Time Trends in WCM, LEV and PROF: Non Financial Service Industry

Time trends in WCM, LEV and PROF ratios of Indian Non Financial Service Industry have been examined by fitting the Linear Trend Model and Quadratic Trend Model. The results of linear trend on time variable are presented in Table 5.8 whereas the results of quadratic trend are presented in Table 5.9 for all the ratios. The results of both the models are interpreted jointly and the interpretations are presented as per the group to which each ratio belongs.

A. Leverage and Working Capital Policy Ratios

- On examining the outcome of regression analysis from Tables 5.8 and 5.9, it is observed that for both the leverage ratios *viz*, LTDTAR and TDTAR, there is a quadratic trend. The values of β_1 and β_2 indicate that the ratios are falling at an increasing rate over a period of time and the trend is likely to reverse after 14th year and 6th year respectively. From this it can be concluded that there is decline in utilization of long term as well as total debt for asset financing in the Non Financial Service Industry and is in line with the analysis made based on Table 5.2.
- For the ratio CLTAR, a significant positive linear trend is observed which indicates that the ratio increases over the period of study and it is concluded that Service Industry utilizes higher short term funds to finance its total assets and are moving towards aggressive approach to assets financing which confirms the results observed for CLTAR from Table 5.2.
- The remaining three working capital policy ratios are found to have quadratic trend for the period under study. CATAR is declining at an increasing rate over a period of time and the trend is likely to reverse in 4th year. These results signify that the Non Financial Service Industry is doing away with the excess liquidity by reducing investments in current assets leading to decline in CATAR and gradually adopting an aggressive working capital investment policy.
- The ratios CLCAR and NWCCAR are just two parts of current assets and therefore necessarily the behaviour of the same is bound to be opposite to each other. CLCAR is rising at decreasing rate over the period under study and reverse is the case for NWCCAR. Further, the trend is likely to reverse in 9th year for the period under study for both the ratios. These results indicate that over the period under study the Non Financial Service Industry is reducing its NWC for financing the current assets and relying more on CL. It is obvious also as "Long term interest rates normally exceeds short-term rates because of reduced flexibility of long term

borrowing relative to short-term borrowing. In fact, the effective cost of long term debt may be higher than the cost of short-term debt, even when short-term interest rates are equal to or greater than long term rates"[15]. Further, "the justification of higher cost of long-term financing can be found in the **liquidity preference theory** which says that since lenders are risk averse and risk generally increases with the length of lending time (because it is more difficult to forecast the more distant future), most lenders would prefer to make short-term loans. The only way to induce these lenders to lend for longer periods is to offer them higher rates of interest[16]". Hence, it is concluded that the industry is pursuing aggressive current asset financing policy.

- The 'D Statistic' for CLTAR lies in inconclusive region for the linear trend model. However, quadratic trend for this ratio was not found to be significant. Similarly, the 'D Statistic' for TDTAR and CATAR lies in inconclusive region for the quadratic trend model. Further analysis was not carried out as it results to loss in degrees of freedom. But since, the 't statistic' is significant for all the ratios, the linear and quadratic trend observed in these ratios are considered to be significant and same is considered uniformly for all the ratios used in further analysis across the industries where autocorrelation has persisted in case of linear trend or quadratic trend.

B. Analysis of Current Asset Structure

- On examining the outcome of regression analysis from Tables 5.8 and 5.9, a significant linear trend is observed for ITCAR, RTCAR as well as PETCAR. The trend in ITCAR as also RTCAR is declining which is thus, the major cause for decline in CATAR observed in *Para A*. 87% decline in ITCAR and 91.4% decline in RTCAR is explained by time factor indicating that there is decline in blockage of funds in inventory and receivables over the study period which means that inventory and receivables management of the Industry has improved and further signals increased efficiency in WCM. However, an increasing linear trend is observed for PETCAR with 89.5% increase explained by time factor thereby indicating that over the study period there is increased blocking of funds in the form of Prepaid Expenses in the Industry.
- However LATCAR and MSTCAR exhibited a significant quadratic trend. LATCAR is rising at decreasing rate and the trend is likely to reverse in the 9th year for the period under study. MSTCAR is observed to be rising at an increasing rate with 97% increase in ratio explained by time indicating that over the study period

there is rising trend of investing idle excess cash in the Service Industry and implies systematic and efficient cash management in the industry. Further, no significant trend is observed for CBBTCAR.

TABLE – 5.8

Linear Trend on Time Variable for WCM, LEV & Profitability Ratios: Non Financial Service Industry (79 Companies)

Category & Name of Ratio	R^2	Adj. R^2	Intercept	Slope	t-Statistic	p-value	D Statistic
Leverage and Working Capital Policy Ratios							
LTDTAR	0.756	0.737	0.202	-0.003	-6.349*	0.000	1.230
TDTAR	0.051	-0.022	0.447	-0.0008	-0.837	0.418	0.483
CLTAR	0.401	0.355	0.245	0.002	2.951**	0.011	0.464
CATAR	0.020	-0.055	0.438	0.0004	0.517	0.614	0.408
CLCAR	0.012	-0.064	0.771	-0.0008	-0.403	0.694	0.871
NWCCAR	0.012	-0.064	0.229	0.001	0.403	0.694	0.871
Current Asset Structure Ratios							
ITCAR	0.872	0.863	0.108	-0.004	-9.432*	0.000	1.711
RTCAR	0.914	0.907	0.586	-0.011	-11.741*	0.000	0.864
CBBTCAR	0.162	0.097	0.192	0.001	1.584	0.137	0.907
PETCAR	0.895	0.887	0.043	0.005	10.527*	0.000	0.871
LATCAR	0.029	-0.045	0.072	0.001	0.628	0.541	0.473
MSTCAR	0.964	0.962	0.000	0.008	18.787*	0.000	0.906
Current Liabilities Structure Ratio							
TCCLR	0.662	0.636	0.354	-0.004	-5.045*	0.000	1.102
DACECLR	0.544	0.509	0.045	0.004	3.940*	0.002	0.502
PCLR	0.662	0.636	0.188	0.004	5.046*	0.000	0.514
STBBCLR	0.046	-0.027	0.120	0.0003	0.795	0.441	1.053
CFCCLR	0.499	0.461	0.116	-0.002	-3.599*	0.003	0.690
OCLCLR	0.297	0.242	0.177	-0.003	-2.341**	0.036	0.344
Liquidity Ratios							
CR	0.638	0.610	2.446	-0.027	-4.786*	0.000	1.597
QR	0.512	0.474	2.276	-0.022	-3.693*	0.003	1.566
ALR	0.661	0.635	0.523	0.022	5.032*	0.000	1.548
Current Asset Management Efficiency Ratios & Operating Cycle Measures							
TATR	0.116	0.048	0.846	-0.004	-1.306	0.214	0.845
CATR	0.011	-0.065	2.221	0.003	0.389	0.704	0.825
WCTR	0.084	0.013	1.301	0.391	1.089	0.296	2.997
ITR	0.891	0.882	10.706	4.545	10.298*	0.000	0.614
IHP	0.863	0.853	19.533	-1.175	-9.065*	0.000	0.312
RTR	0.666	0.640	4.180	0.198	5.088*	0.000	1.066
ACP	0.223	0.163	171.467	-4.875	-1.930	0.076	2.206
CBTR	0.099	0.029	22.126	-0.158	-1.193	0.254	1.571
CTR	0.002	-0.075	64.001	-1.235	-0.152	0.881	2.133
APP	0.096	0.026	71.905	-2.246	-1.174	0.261	2.370
OC	0.304	0.251	191.00	-6.050	-2.385**	0.033	2.166
NTC	0.646	0.619	119.095	-3.804	-4.872*	0.000	1.169

TABLE – 5.8 (Continued...)

Linear Trend on Time Variable for WCM, LEV & Profitability Ratios:
Non Financial Service Industry (79 Companies)

Category & Name of Ratio	R^2	Adj. R^2	Intercept	Slope	t-Statistic	p-value	D Statistic
Profitability Ratios							
OPM	0.027	-0.048	17.418	0.155	0.603	0.557	0.549
NPM	0.063	-0.009	8.204	0.229	0.936	0.366	0.671
ROTA	0.003	-0.073	12.247	-0.037	-0.213	0.835	0.528
EAT/TA	0.008	-0.068	8.123	-0.049	-0.323	0.752	0.647
RONW	0.004	-0.072	14.335	0.101	0.237	0.816	1.597

* Indicating significant results at 1% level of significance.
** Indicating significant results at 5% level of significance.

Critical Values of "t"

Degrees of Freedom	Probability (Alpha)	Table Value – t
13	0.01	3.010
13	0.05	2.160

Durbin – Watson Statistic (D-W Statistic), K = 1

N	Probability (Alpha)	D_L (Lower Critical Value)	D_U (Upper Critical Value)
13	0.01	0.738	1.038
13	0.05	1.010	1.340

Where, N = Sample size and K represents number of independent variables

C. Analysis of Current Liabilities Structure Ratios

- On examining the outcome of regression analysis from Tables 5.8 and 5.9, a significant negative linear trend is observed for TCCLR indicating that over the study period there is a decline of 66.2% in the share of trade credit to CL. However no significant trend is observed for STBBCLR thereby indicating that share of STBB in total CL has not undergone significant changes over the study period as also observed in findings of Table 5.4. For remaining CL Structure ratios a significant quadratic trend is found.
- From the results of quadratic trend, it is observed that DACECLR and CFCCLR are increasing at decreasing rate and the trend is likely to reverse in 11th and 5th year respectively whereas the ratios, OCLCLR and PCLR are falling at increasing rate and the trend is likely to reverse in 9th and 5th year respectively. Hence, it is concluded that over the study period there is preference for DACE and CFC as a source of financing current assets over Trade Credit, OCL and Provisions.

D. Liquidity Analysis

A significant rising trend observed for ALR indicates that over the period under study liquidity measured in term of cash assets to CL has increased. Alternatively, it also signifies increase in cash assets over the study period which is in line with the significant quadratic trend observed for MSTCAR.

TABLE – 5.9

Quadratic Trend on Time Variable for WCM, LEV and Profitability Ratios: Non Financial Service Industry (79 Companies)

Category & Name of Ratio	R^2	Adj. R^2	Intercept	Slope β1	Slope β2	t-Statistic β1	t-Statistic β2	F-Statistic	D-Statistic
Leverage and Working Capital Policy Ratios									
LTDTAR	0.857	0.833	0.215	-0.008	0.000293	-4.692* (0.001)	2.914* (0.013)	36.008* (0.000)	1.986
TDTAR	0.589	0.521	0.479	-0.012	0.001	-4.141* (0.001)	3.965* (0.002)	8.608* (0.005)	1.012
CLTAR	0.589	0.521	0.264	-0.004	0.0004	-1.482 (0.164)	2.346** (0.037)	8.615* (0.005)	0.667
CATAR	0.662	0.605	0.462	-0.008	0.001	-4.443* (0.001)	4.772* (0.000)	11.743* (0.001)	0.883
CLCAR	0.442	0.349	0.718	0.018	-0.001	2.834** (0.015)	-3.038* (0.010)	4.747** (0.030)	1.325
NWCCAR	0.442	0.349	0.282	-0.018	0.001	-2.834** (0.015)	3.038* (0.010)	4.747** (0.030)	1.325
Current Asset Structure Ratios									
ITCAR	0.880	0.861	0.112	-0.005	8.888E-5	-3.053* (0.000)	0.894 (0.389)	44.193* (0.000)	1.832
RTCAR	0.935	0.925	0.607	-0.018	0.0005	-4.989* (0.000)	2.004 (0.068)	86.932* (0.000)	1.191
CBBTCAR	0.162	0.022	0.191	0.002	-1.293E-5	0.406 (0.692)	-0.053 (0.959)	1.159 (0.347)	0.909
PETCAR	0.900	0.883	0.047	0.004	9.454E-5	1.697 (0.115)	0.735 (0.477)	53.713* (0.000)	0.913
LATCAR	0.728	0.683	0.035	0.014	-0.0008	5.663* (0.000)	-5.551* (0.000)	16.054* (0.000)	1.491
MSTCAR	0.974	0.970	0.008	0.004	0.000196	2.886** (0.014)	2.088** (0.059)	224.272* (0.000)	1.181
Current Liabilities Structure Ratio									
TCCLR	0.718	0.671	0.340	0.001	-0.0003	0.264 (0.796)	-1.545 (0.148)	15.277* (0.001)	1.339
DACECLR	0.890	0.872	0.005	0.018	-0.00088	7.789* (0.000)	-6.158* (0.000)	48.764* (0.000)	1.521
PCLR	0.881	0.862	0.217	-0.006	0.000638	-2.673** (0.020)	4.713* (0.001)	44.607* (0.000)	1.325
STBBCLR	0.176	0.038	0.126	-0.002	0.000124	-1.144 (0.275)	1.373 (0.195)	1.280 (0.313)	1.210
CFCCLR	0.817	0.787	0.095	0.005	-0.00047	3.106* (0.009)	-4.567* (0.001)	26.797* (0.000)	1.839
OCLCLR	0.770	0.732	0.217	-0.017	0.001	-5.749* (0.000)	4.968* (0.000)	20.076* (0.000)	0.838
Liquidity Ratios									
CR	0.691	0.639	2.354	0.005	-0.002	0.232 (0.820)	-1.432 (0.178)	13.405* (0.001)	1.938
QR	0.582	0.513	2.181	0.012	-0.002	0.486 (0.636)	-1.420 (0.181)	8.361* (0.005)	1.892
ALR	0.670	0.615	0.554	0.012	0.001	0.594 (0.564)	0.565 (0.583)	12.159* (0.001)	1.530

TABLE – 5.9 (Continued)

Quadratic Trend on Time Variable for WCM, LEV and Profitability Ratios:
Non Financial Service Industry (79 Companies)

Category & Name of Ratio	R^2	Adj. R^2	Intercept	Slope β1	Slope β2	t-Statistic β1	t-Statistic β2	F-Statistic	D-Statistic
Current Asset Management Efficiency Ratios & Operating Cycle Measures									
TATR	0.173	0.035	0.877	-0.015	0.001	-1.188 (0.258)	0.911 (0.380)	1.256 (0.320)	0.935
CATR	0.614	0.550	1.937	0.104	-0.006	4.348* (0.001)	-4.328* (0.001)	9.545* (0.003)	1.653
WCTR	0.109	-0.039	-1.261	1.296	-0.057	0.820 (0.428)	-0.589 (0.567)	0.737 (0.499)	3.071
ITR	0.909	0.894	3.062	7.243	-0.169	4.026* (0.002)	-1.542 (0.149)	59.837* (0.000)	0.657
IHP	0.991	0.990	24.870	-3.059	0.118	-20.727* (0.000)	13.127* (0.000)	668.664* (0.000)	1.987
RTR	0.743	0.700	3.384	0.479	-0.018	3.150* (0.008)	-1.901 (0.082)	17.354* (0.000)	1.269
ACP	0.233	0.105	183.800	-9.228	0.272	-0.824 (0.426)	0.400 (0.696)	1.822 (0.204)	2.234
CBTR	0.102	-0.048	21.778	-0.035	-0.008	-0.060 (0.953)	-0.214 (0.834)	0.682 (0.524)	1.579
CTR	0.084	-0.068	-35.368	33.836	-2.192	0.976 (0.348)	-1.040 (0.319)	0.553 (0.589)	2.325
APP	0.096	-0.055	72.429	-2.431	0.012	-0.285 (0.781)	0.022 (0.983)	0.637 (0.546)	2.370
OC	0.323	0.2110	208.670	-12.287	0.390	-1.100 (0.293)	0.574 (0.576)	2.862 (0.096)	2.222
NTC	0.740	0.697	136.242	-9.855	0.378	-3.303* (0.006)	2.085 (0.059)	17.101* (0.000)	1.529
Profitability Ratios									
OPM	0.450	0.358	24.627	-2.390	0.159	-2.771** (0.017)	3.035* (0.010)	4.901** (0.028)	0.844
NPM	0.306	0.190	13.507	-1.643	0.117	-1.747 (0.106)	2.047 (0.063)	2.642 (0.112)	0.841
ROTA	0.257	0.133	15.960	-1.347	0.082	-2.023 (0.066)	2.024 (0.066)	2.075 (0.168)	0.700
EAT/TA	0.222	0.092	11.094	-1.097	0.066	-1.849 (0.089)	1.817 (0.094)	1.713 (0.222)	0.813
RONW	0.044	-0.115	17.950	-1.175	0.080	-0.631 (0.540)	0.705 (0.494)	0.276 (0.764)	1.654

* Indicating significant results at 1% level of significance.
** Indicating significant results at 5% level of significance.

Critical Values of "t" and "F"

t-test			F-test: Degrees of Freedom = 2		
DF	Probability (Alpha)	Table Value – t	N	Probability (Alpha)	Table Value – F
12	0.01	3.055	12	0.01	6.93
12	0.05	2.179	12	0.05	3.88

Durbin – Watson Statistic (D-W Statistic), K = 2

N	Probability (Alpha)	D_L (Lower Critical Value)	D_U (Upper Critical Value)
12	0.01	0.569	1.274
12	0.05	0.812	1.579

Where, N = Sample size and K represents number of independent variables

- However, CR and QR exhibit significant declining trend with 63.8% decline in CR and 51.2% decline in QR explained by time which indicates an improvement in liquidity management of the industry over the period under study. It also indicates that the industry is making efforts to do away with the excess liquidity as also evident by the yearly mean ratios as presented in Table 5.5. These results are also in line with the decline observed in CATAR in *Para A*. Further, the decline in CR and QR is attributable to decline in ITCAR and RTCAR in *Para B*.

E. Current Asset Management Efficiency Analysis

- On examining the outcome of regression analysis from Tables 5.8 and 5.9, it is observed that TATR, WCTR, CBTR, CTR, ACP and APP has not shown significant trend with time and it is concluded that there is no significant change in any of the above CAME ratios of the Service Industry.
- However a significant quadratic trend is observed for CATR which is observed to be increasing at decreasing rate and the trend is likely to reverse in the 9th year for the study period. Hence, it is concluded that the current asset management efficiency has improved over the study period which is attributable to improvement in receivables well as inventory management over the study period as observed from the results of trend analysis for ITCAR, RTCAR and CBBTCAR.
- On observing the results of regression analysis, a significant linear positive trend is observed in ITR whereas a significant quadratic trend is observed for IHP. It is also observed that IHP is falling at increasing rate and the trend is likely to reverse in 13th year for the period under study. The results indicate that inventory management has improved over the study period.
- It is also observed that RTR exhibits a significant positive linear trend indicating that over the study period the RTR has increased leading to greater liquidity of receivables. An increase in RTR is a positive sign and it is concluded that receivables management of Service Industry has improved and industry is moving towards a controlled credit policy.
- On examining the outcome of regression analysis, a significant downtrend is observed for both OC and NTC. The declining trend in OC signifies reduced working capital investments whereas that in NTC signifies the quick realization of working capital investments in cash. Both these further signify improvement in WCM of the Service Industry over the study period which is in line with the significant trend observed for CATAR, ITCAR, RTCAR, CATR, QR, ALR, RTR,

ACP, ITR and IHP. Thus, it is concluded that over the study period the WCM of the Service Industry has improved and become efficient.

F. Profitability Analysis

On examining the outcome of regression analysis from Tables 5.8 and 5.9 it is observed that there is no significant trend in NPM, ROTA, EAT/TA and RONW. *However, a significant quadratic trend is observed for* OPM. The results indicate that the profitability measured in terms of OPM has declined at an increasing rate over a period of time and the trend is likely to reverse in 8th year for the period under study. From the results it is concluded that there is deterioration in the operational efficiency of the Service Industry.

SECTION III

5.3 Industry wise Trends in WCM, LEV and PROF (6 Industries)

In this section, the trends in WCM, LEV and PROF ratios is observed and interpreted individually for the 6 constituent industries of the Non Financial Service Industry to gain an understanding about the industry practices with reference to LEV, WCM and the profitability of various industry groups. **Five** important aspects of WCM are studied through various WCM ratios and so the analysis of the ratios is presented for each individual aspect of WCM for all the industries. As mentioned in Chapter 4, the descriptive statistical techniques, (*i.e.,* Arithmetic Mean, SD and CV) and inferential statistics, (*i.e.,* time trend analysis) are applied for the purpose of analyzing 5 categories of WCM ratios, *i.e.,* Working Capital Policy, Current Asset Structure, Current Liabilities Structure, Liquidity, Current Asset Management Efficiency ratios as well as the profitability and leverage ratios. And so, the analysis of each industry is further segmented in two parts. The first part deals with the findings based on descriptive statistics whereas the second part deals with the time trends in the ratios, *i.e.,* inferential statistics. The data analysis and interpretation is presented for Hotels and Restaurant Industry first followed by ITes Industry, Transport Services Industry, Health Services Industry, Communication Services Industry and Miscellaneous Services Industry.

5.3.1 Trend Analysis: WCM, LEV and PROF of Hotels and Restaurant Industry (25 Companies)

This para examines the overall trends as well as the time trends (Linear and Quadratic Trend) in WCM, LEV and PROF Ratios of the Hotels and Restaurant Industry for 25 sample companies. The overall trends is presented and interpreted first which is followed by the presentation and elucidation of the time trends analysis.

5.3.1.1 Trends in WCM, LEV and PROF: Hotels and Restaurant Industry

The overall trends in WCM, LEV and Profitability ratios is observed by taking industry average on yearly basis to understand the yearly movements in ratios as well as the nature of WCM, LEV and Profitability position in the Hotels and Restaurant Industry. As already discussed, to analyze different aspects of WCM, various ratios related to WCM have been categorized into 6 groups apart from the LEV and Profitability ratios and so the results of the analysis are presented and interpreted as per the group to which each ratio belongs.

A. Leverage and Working Capital Policy Ratios

The computation for each ratio of LEV and Working Capital Policy over the study period is presented in Table 5.10. Chart 5.4 presents the current asset financing mix, *i.e.,* share of CL and NWC in financing total current assets.

TABLE – 5.10

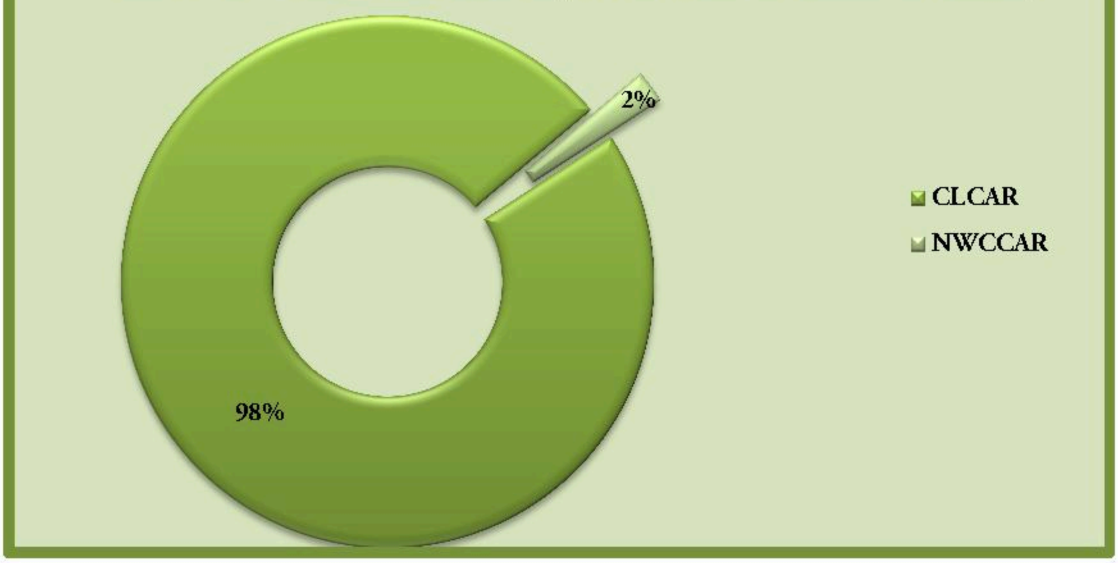
Working Capital Policy and Leverage Ratios: Hotels and Restaurant Industry

	Leverage Ratios		Working Capital Policy Ratios			
Year	LTDTAR	TDTAR	CLTAR	CATAR	CLCAR	NWCCAR
Mar-96	0.25	0.44	0.19	0.31	0.89	0.11
Mar-97	0.23	0.43	0.20	0.31	0.96	0.04
Mar-98	0.24	0.44	0.20	0.31	0.98	0.02
Mar-99	0.24	0.44	0.20	0.31	1.03	-0.03
Mar-00	0.24	0.44	0.20	0.30	1.10	-0.10
Mar-01	0.24	0.44	0.20	0.29	1.17	-0.17
Mar-02	0.25	0.44	0.19	0.28	1.08	-0.08
Mar-03	0.26	0.45	0.19	0.27	1.09	-0.09
Mar-04	0.26	0.45	0.19	0.29	0.96	0.04
Mar-05	0.26	0.45	0.19	0.31	0.85	0.15
Mar-06	0.24	0.43	0.19	0.33	0.82	0.18
Mar-07	0.22	0.44	0.22	0.33	0.94	0.06
Mar-08	0.21	0.45	0.24	0.33	0.98	0.02
Mar-09	0.21	0.43	0.22	0.34	0.89	0.11
Mar-10	0.20	0.42	0.22	0.34	0.95	0.05
Mean	0.24	0.44	0.20	0.31	0.98	0.02
SD	0.02	0.01	0.02	0.02	0.10	0.10
CV(%)	8.09	2.01	7.57	6.89	10.10	478.82

- From the perusal of Table 5.10, it is observed that LTDTAR of the Hotels and Restaurant Industry ranged between 20% and 26%; CLTAR ranged between 19% and 24% whereas TDTAR ranged between 42% and 45% which is not a very wide range. It can be observed that on an average, long term debts were utilized to finance 24% whereas current liabilities were utilized to finance 20% of the total assets in the industry. Thus total debt of 44% on an average is utilized in the industry to finance total assets which seems to be a reasonable policy of debt financing being pursued in the Hotels and Restaurant Industry. Also it can be observed that long term debt forms the major portion of total debt. Further, increasing CLTAR indicates that the Hotels and Restaurant Industry is gradually pursuing an aggressive working capital financing policy.

- The ratio of current assets to total assets ranged between 27% and 34% and it can be observed that on an average 31% of the Hotels and Restaurant Industry's funds are invested in current assets indicating that the industry is following a moderate current asset investment policy. Also, it can be observed that the industry is steadily moving towards a conservative approach towards current asset investment which is characterized with high proportion of current assets to total assets.

Chart - 5.4: Current Assets Financing Mix of Hotels and Restaurant Industry



- From the perusal of Chart 5.4, it is observed that CL finances 98% of current assets whereas NWC contributes only 2%. CLCAR ranged between 0.82 and 1.17 whereas NWCCAR ranged between -0.17 and 0.18 which had the highest fluctuations as also evidenced by the CV of 478.82% as observed from Table 5.10. A fluctuating trend is noted in both the ratios. Further, it is observed that the industry is operating with negative working capital in 5 years and lower level of NWC in the remaining years which indicates that the industry is utilizing more of short term funds to finance the CA which is an aggressive working capital financing policy. This also conveys that the industry is having an easy access to current funds for financing its current assets which can only be due to the good reputation, established business and creditworthiness. Similar phenomenon was observed in the study of Ansari[1]. From this, it can be concluded that the Hotels and Restaurant Industry is following an aggressive working capital financing policy which was also observed in the study of Pradhan[4] for 6 manufacturing industries. Lower values of

SD and CV indicate that over a period of time the leverage position of the Hotels and Restaurant Industry as well as the working capital investment policy has changed progressively and with lower volatility excepting NWCCAR. However, working capital financing policy has been very vacillating.

B. Analysis of Current Asset Structure

In order to examine the structure of current assets (CA), the composition of CA with reference to various components of CA is studied. The computation for each ratio over the study period is presented in Table 5.11. Chart 5.5 presents the share of each CA in pie of total current asset.

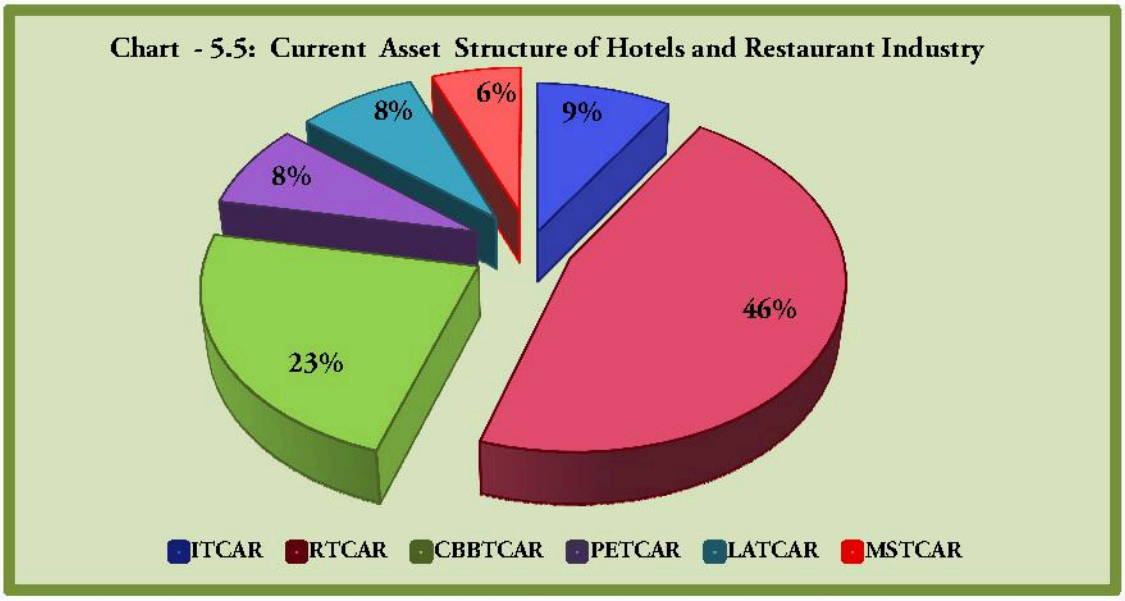


Chart - 5.5: Current Asset Structure of Hotels and Restaurant Industry

- As observed from Chart 5.5, Receivables formed the highest share in the current assets of Hotels and Restaurant Industry with 46% on an average followed by Cash and Bank Balance at 23%, Inventories at 9%, Loans and Advances and Prepaid Expenses at 8% each and Marketable Securities at 6%.
- The lower ITCAR necessarily distinguishes this service industry, i.e., Hotels and Restaurant Industry from the manufacturing sector, where inventory is found to be very high proportion of current assets as observed in the studies of Kantawala and Joshi[2], Alam and Hossain[4], Janakiramudu[5], Kannadhasan[6], Khatik and Singh[7], Mallick and Sur[8], Padachi *et al*[9], Reddy and Rao[10] as well as Sarma and Chary[11].

It is also observed that receivables ranged between 41% and 51% whereas Loans and advances ranged between 4% and 11% of current assets which is a wide range. Further, a declining trend is observed in receivables as well as loans and advances over the study period which indicates that the firms in Hotels and Restaurant

Industry have reduced and realized their blocked investments in receivables leading to improved receivables management over the study period.

TABLE – 5.11

Current Asset Structure Ratios: Hotels and Restaurant Industry

Year	ITCAR	RTCAR	CBBTCAR	PETCAR	LATCAR	MSTCAR
Mar-96	0.09	0.51	0.26	0.02	0.09	0.03
Mar-97	0.09	0.51	0.26	0.03	0.08	0.03
Mar-98	0.09	0.50	0.23	0.06	0.09	0.03
Mar-99	0.09	0.51	0.20	0.07	0.10	0.03
Mar-00	0.09	0.50	0.19	0.07	0.11	0.04
Mar-01	0.09	0.48	0.19	0.08	0.11	0.05
Mar-02	0.11	0.48	0.19	0.09	0.09	0.04
Mar-03	0.11	0.48	0.20	0.10	0.07	0.04
Mar-04	0.11	0.46	0.24	0.08	0.06	0.05
Mar-05	0.11	0.42	0.28	0.07	0.06	0.06
Mar-06	0.09	0.41	0.27	0.07	0.09	0.07
Mar-07	0.08	0.43	0.26	0.08	0.07	0.08
Mar-08	0.08	0.41	0.26	0.10	0.06	0.09
Mar-09	0.07	0.41	0.22	0.14	0.06	0.10
Mar-10	0.07	0.42	0.22	0.16	0.04	0.09
Mean	0.09	0.46	0.23	0.08	0.08	0.06
SD	0.01	0.04	0.03	0.04	0.02	0.02
CV(%)	14.84	8.86	13.95	43.81	26.26	44.72

- The share of cash and bank balance has ranged between 19% and 28% wherein a fluctuating trend can be observed from the perusal of Table 5.11. The share of marketable securities has ranged between 3% and 10% which has increased throughout the study period due to which CV is also observed to be highest for MSTCAR. The increasing share of MSTCAR indicates that firms in Hotels and Restaurant Industry are gradually adopting the practice of investing their idle lying excess cash and implies systematic approach towards cash management. The mean share of cash assets (CBB+MS) at 29% indicates a good liquidity position of the Hotels and Restaurant Industry which can further be substantiated by the analysis of liquidity ratios.
- On average prepaid expenses forms 8% share of CA. Further rising trend observed in PETCAR indicates that over the study period there has been increased blocking of funds in the form of Prepaid Expenses in the Hotels and Restaurant Industry.

C. Analysis of Current Liabilities Structure Ratios

In order to examine the structure of current liabilities of Hotels and Restaurant Industry, the composition of CL with reference to various components of CL is studied. The computation for each ratio over the study period is presented in Table 5.12 and Chart 5.6 presents the share of each component of CL in pie of total current liability.

Chart - 5.6: Current Liabilities Structure of Hotels and Restaurant Industry

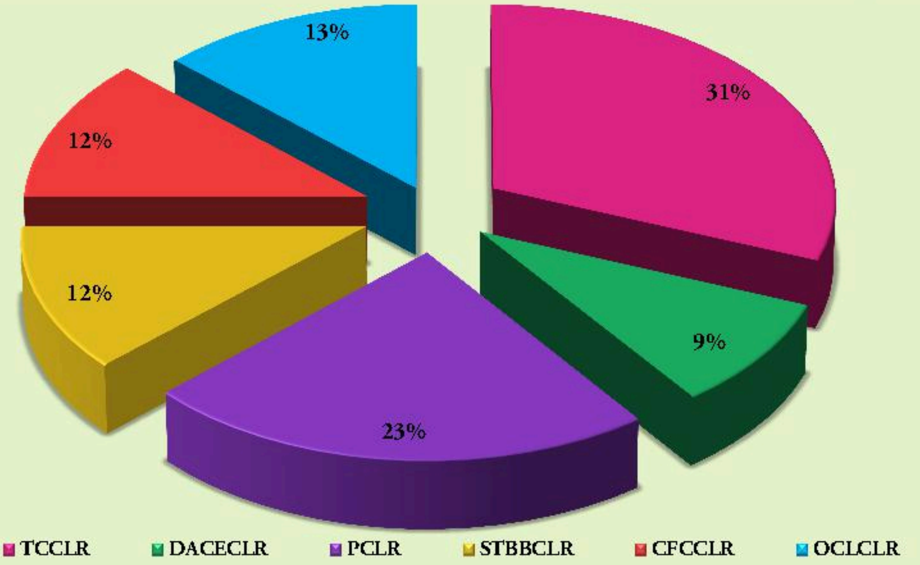


TABLE – 5.12

Current Liabilities Structure Ratios: Hotels and Restaurant Industry

Year	TCCLR	DACECLR	PCLR	STBBCLR	CFCCLR	OCLCLR
Mar-96	0.37	0.04	0.20	0.09	0.13	0.17
Mar-97	0.33	0.07	0.24	0.09	0.11	0.16
Mar-98	0.32	0.10	0.24	0.10	0.09	0.15
Mar-99	0.32	0.10	0.22	0.11	0.10	0.15
Mar-00	0.30	0.08	0.21	0.12	0.16	0.13
Mar-01	0.32	0.09	0.19	0.13	0.16	0.11
Mar-02	0.35	0.09	0.17	0.14	0.14	0.11
Mar-03	0.35	0.09	0.17	0.14	0.13	0.12
Mar-04	0.35	0.09	0.19	0.11	0.12	0.14
Mar-05	0.34	0.09	0.22	0.09	0.13	0.13
Mar-06	0.31	0.10	0.24	0.09	0.14	0.12
Mar-07	0.28	0.10	0.24	0.12	0.13	0.13
Mar-08	0.25	0.10	0.28	0.14	0.10	0.13
Mar-09	0.25	0.09	0.30	0.13	0.10	0.13
Mar-10	0.27	0.08	0.32	0.12	0.10	0.11
Mean	**0.31**	**0.09**	**0.23**	**0.12**	**0.12**	**0.13**
SD	0.04	**0.02**	0.04	**0.02**	**0.02**	0.02
CV(%)	**11.90**	18.09	**19.48**	16.76	18.09	**13.80**

◆ From the perusal of Chart 5.6 it is observed that Trade Credit with 31% of the total current liabilities is the major source of financing the current assets of the Hotels and Restaurant Industry, followed by Provisions at 23%, Other Current Liabilities at 13%, Current Financing Charge as well as Short Term Bank Borrowings at 12%, which is followed by Deposits and Advances from Customers and Employees at

9%. Spontaneous source of short term finance (Trade Credit, CFC, Provisions and OCL) is dominating the current liabilities structure at 79% and balance 21% comprises of the negotiated sources of short term finance (STBB and DACE).

- From the perusal of Table 5.12 it is observed that DACECLR has increased whereas, TCCLR and OCLCLR have reduced over the study period. Also, it can be observed that the changes in current liabilities structure ratios have been progressive and with lower volatility throughout the study period as evidenced by the values of SD.

D. Liquidity Analysis

The outcome of computations for the liquidity ratios over the study period is presented in Table 5.13.

TABLE – 5.13

Liquidity Ratios:
Hotels and Restaurant Industry

Year	CR	QR	ALR
Mar-96	2.03	1.89	0.69
Mar-97	1.77	1.65	0.67
Mar-98	1.70	1.59	0.62
Mar-99	1.74	1.62	0.48
Mar-00	1.75	1.64	0.54
Mar-01	1.86	1.74	0.59
Mar-02	1.86	1.74	0.66
Mar-03	1.76	1.63	0.71
Mar-04	1.80	1.66	0.75
Mar-05	1.97	1.83	0.84
Mar-06	2.05	1.93	0.78
Mar-07	1.75	1.65	0.66
Mar-08	1.68	1.59	0.68
Mar-09	1.97	1.87	0.95
Mar-10	2.02	1.92	1.09
Mean	1.85	1.73	0.71
SD	0.13	0.13	0.16
CV(%)	6.95	7.22	21.74

- From the perusal of Table 5.13 it is observed that the industry CR ranged between 1.68 and 2.05 whereas the QR ranged between 1.59 and 1.93. The yearly mean CR is above the thumb rule in only 3 of 15 years whereas the mean QR is above the thumb rule in all the years. Since the investment in inventories is only 9% of the current assets, it can be observed that the difference in the mean CR and QR is also only 0.09. The industry ALR ranges between 0.48 and 1.09 and is above the thumb rule in all years except 1999. As QR is considered to be a more rigorous test of liquidity when compared with CR, it is concluded that the Hotels and Restaurant

Industry enjoyed sound liquidity position over the selected time frame. Further, ALR indicates liquidity position in absolute sense and the mean ALR of 0.71 indicates that the hotel industry is technically solvent, cash rich with very good short term liquidity and solvency.

E. Current Asset Management Efficiency Analysis

The computation for each CAME ratio and Operating Cycle Variables over the study period is presented in Table 5.14.

- From the perusal of Table 5.14 it is observed that, total assets of Hotels and Restaurant Industry have been turned over 0.54 times on an average which indicates idle capacity and a scope to utilize total assets more productively. It is also observed that current assets have been turned over 2.71 times on an average which indicates effective utilization of current assets. WCTR for Hotels and Restaurant Industry is observed to be errant and has ranged between -1.35 and 10.60. The results indicate that firms in Hotels and Restaurant Industry utilize lower net level of NWC and at times resort to negative NWC for operating sales which is also observed from analysis of NWCCAR (Table 5.10).
- ITR ranged between 14.79 and 36.83 which is a very wide range and on an average the inventories of the Hotels and Restaurant Industry are turned over 21.10 times which is a very high ratio. Such high ITR is indicative of overtrading situation which arises when a higher level of sales is supported with lower level of inventory which is true of the Hotels and Restaurant Industry as it is operating at 9% inventory. The reason for such a low level of inventory is again assigned to the nature of the industry and hence, carrying lower level of inventory is justified in case of Hotels and Restaurant Industry and so this overtrading situation is actually not a risky preposition. IHP has ranged between 10 and 25 days. On an average the inventory of the industry gets converted into cash in 14 days. The lower length of IHP and reduction in the length over the study period coupled with increase in ITR is indicative of efficiency in inventory management. It also indicates that fast moving inventories are being maintained by the Hotels and Restaurant Industry. Further, it appears that the industry has made conscious efforts to do away with excess inventory by reducing investment in inventory.
- From the perusal of Table 5.14, it is observed that the RTR has increased over the study period leading to decline in ACP indicating an improvement in receivables management of the Hotels and Restaurant Industry over the study period. However, ACP of 121 days is very high for the Hotels and Restaurant Industry, being in

service sector and is a sign of profound concern with an ample scope for further improvement in managing its receivables.

- CTR ranged from 10.46 to 22.56 and APP ranged between 41 and 70 days. Overall it can be observed that creditors are turned over 16 times on an average with 54 days as the time taken by the firms in industry to repay its creditors. The high CTR indicates that the firms in Hotels and Restaurant Industry are prompt in paying its dues which has resulted to good reputation of the Industry which can be the possible cause for easy access to short term funds resulting to heavy reliance on current liabilities to finance the current assets as also observed from results of Table 5.10 in *para* A. Moreover, throughout the study period the CTR has been greater than RTR indicating that the firms are repaying liabilities regularly and more frequently than their debtors. Ideally, it is believed that there should be a positive difference between RTR and CTR. However, for the Hotels and Restaurant Industry the difference is negative indicating that the firms in the industry are extending credit greater than what they are receiving from its trade creditors which needs attention and improvement on the part of management for efficient credit management.
- CBTR has ranged between 15.07 and 34.69 with mean CBTR as 22.66 times which indicates high turnover of cash in the industry. This is indicative of better utilization of cash resources in the industry further leading to a good liquidity position as well as efficient cash management as also observed from the results of Table 5.11.
- Operating cycle of Hotels and Restaurant Industry has ranged between 109 days and 183 days whereas NTC has ranged between 63 days to 118 days thereby indicating large fluctuations in their respective lengths. On an average the working capital investments of Hotels and Restaurant Industry in the form of total current assets remains blocked for 140 days whereas it gets realized in cash in 86 days. However, OC and NTC it is still very high considering the fact that Hotels and Restaurant Industry is a service industry which operates with lower level of inventories. Hence, the cause for the same can be assigned to the liberal credit policy of the industry which further needs to be controlled and with this improvement the length of OC and NTC can be further reduced leading to increase in overall WCM efficiency.

TABLE 5.14

Efficiency Ratios and Operating Cycle Variables: Hotels and Restaurant Industry

Year	TATR	CATR	WCTR	WCTR**	ITR	IHP (In Days)	RTR	ACP (In Days)	CBTR	CTR	APP (In Days)	OC (In Days)	NTC (In Days)
Mar-96	0.55	2.23	3.41	3.91	18.36	20	5.11	145	16.83	10.46	70	164	94
Mar-97	0.52	2.30	1.49	4.16	16.86	22	4.92	128	15.07	10.87	60	150	90
Mar-98	0.49	2.27	0.90	3.17	15.30	24	4.84	117	15.26	11.01	61	140	79
Mar-99	0.45	2.29	0.70	2.81	14.97	24	4.65	133	22.22	11.49	56	157	100
Mar-00	0.42	2.34	-3.26	-1.38	14.79	25	5.05	148	22.22	13.11	55	172	117
Mar-01	0.53	3.10	2.12	-127.48	17.14	21	8.02	147	25.78	15.05	50	168	118
Mar-02	0.43	2.60	1.74	16.57	13.97	26	6.16	157	23.35	18.48	70	183	113
Mar-03	0.48	2.97	-1.35	0.96	15.64	23	6.88	108	27.18	14.72	61	131	70
Mar-04	0.52	3.25	10.60	12.02	17.81	21	8.00	98	25.47	22.56	55	119	64
Mar-05	0.58	3.13	0.41	2.97	20.74	18	9.79	95	17.25	19.27	49	112	63
Mar-06	0.62	3.00	0.44	4.41	22.71	16	9.42	107	24.19	19.54	46	123	76
Mar-07	0.66	3.09	0.62	4.22	30.49	12	8.65	102	19.18	20.32	43	114	71
Mar-08	0.63	2.93	9.11	13.17	36.83	10	8.80	99	21.59	18.65	42	109	67
Mar-09	0.60	2.63	8.41	11.72	32.10	11	8.05	108	34.69	18.71	41	119	78
Mar-10	0.54	2.50	4.08	5.75	28.72	13	7.12	124	29.58	16.06	52	137	85
Mean	0.54	2.71	2.63	-2.87	21.10	14	7.03	121	22.66	16.02	54	140	86
SD	0.07	0.37	3.92	34.84	7.37	5.41	1.80	20.84	5.50	3.95	9.24	24.35	19.01
CV(%)	13.72	13.72	149.12	-1214.70	34.95	28.35	25.60	17.21	24.25	24.67	17.09	17.41	22.19

NOTE 1: The WCTR of Jindal Hotels Limited was -3238 for the year 2001 due to which the industry average for that year was as low as -127.48. So this company was eliminated while analyzing the WCTR and the effect of elimination is very clear in the ratio. WCTR** is the yearly industry mean when Jindal Hotels Limited is included.

F. Profitability Analysis

The computations for each of the profitability ratio of the Hotels and Restaurant Industry over the study period are presented in Table 5.15.

- ◈ From the perusal of Table 5.15 it is observed that OPM is 24.26% on an average which reflects good operational efficiency in terms of sales. The analysis also reveals that the years 2001 to 2004 have not been good for the financial health of the industry. The returns on total assets have also substantially gone down in these years. Moreover, post tax return on total assets is lesser than the risk free rate of return – 8.10%[14] in 11 out of 15 years which is a dismal situation.
- ◈ RONW ranged between -7.53% and 63.39% which is a very wide and high range, Also the fluctuations in RONW is observed to be highest at 105.39% amongst all the measures of profitability. Thus, the trend in RONW is errant and is evidence that the Hotels and Restaurant Industry has not earned stable returns for its shareholders over the study period.

TABLE – 5.15

Profitability Ratios: Hotels and Restaurant Industry (In %)

Year	OPM	NPM	ROTA	EAT/TA	RONW
Mar-96	31.74	17.48	16.71	12.01	24.41
Mar-97	25.69	10.50	15.00	10.00	15.47
Mar-98	24.27	12.31	11.75	7.84	11.01
Mar-99	22.36	11.56	9.11	5.60	10.77
Mar-00	20.11	9.18	7.45	4.14	16.22
Mar-01	19.45	7.87	6.87	3.10	8.05
Mar-02	9.01	-2.83	1.60	-1.63	-7.53
Mar-03	18.62	5.50	6.41	2.26	0.23
Mar-04	18.99	7.78	7.59	3.36	2.97
Mar-05	23.84	12.30	11.66	6.57	11.18
Mar-06	28.87	17.47	14.24	8.53	63.39
Mar-07	33.07	20.32	16.79	10.26	23.16
Mar-08	33.30	19.76	16.75	9.94	22.49
Mar-09	27.62	15.37	11.52	6.40	13.04
Mar-10	26.92	14.21	9.79	5.43	11.37
Mean	24.26	11.92	10.88	6.25	15.09
SD	6.51	6.05	4.49	3.65	15.90
CV(%)	26.84	50.80	41.28	58.38	105.39

5.3.1.2 Time Trends in WCM, LEV and Profitability of Hotels and Restaurant Industry

Time trends in WCM, LEV and profitability ratios of Hotels and Restaurant Industry have been examined by fitting the Linear Trend Model and Quadratic Trend Model. The results of linear trend on time variable are presented in Table 5.16 whereas the results of quadratic trend are presented in Table 5.17 for all the ratios. The results of both the models are interpreted jointly and the interpretations are presented as per the group to which each ratio belongs.

TABLE – 5.16

Linear Trend on Time Variable for WCM, LEV & Profitability Ratios:
Hotels and Restaurant Industry

Category & Name of Ratio	R^2	Adj. R^2	Intercept	Slope	t-Statistic	p-value	D Statistic
Leverage and Working Capital Policy Ratios							
LTDTAR	0.294	0.240	0.225	-0.002	-2.326**	0.037	0.426
TDTAR	0.026	-0.048	0.442	-0.0003	-0.594	0.562	1.305
CLTAR	0.340	0.289	0.187	0.002	2.588**	0.022	0.845
CATAR	0.281	0.226	0.290	0.003	2.256**	0.042	0.356
CLCAR	0.100	0.031	1.035	-0.007	-1.202	0.251	0.688
NWCCAR	0.100	0.031	-0.035	0.007	1.202	0.251	0.688
Current Asset Structure Ratios							
ITCAR	0.133	0.067	0.100	-0.001	-1.414	0.181	0.436
RTCAR	0.885	0.876	0.531	-0.009	-10.000*	0.000	1.182
CBBTCAR	0.028	-0.046	0.222	0.001	0.616	0.549	0.503
PETCAR	0.688	0.664	0.028	0.007	5.351*	0.000	0.570
LATCAR	0.517	0.480	0.105	-0.003	-3.731*	0.003	1.013
MSTCAR	0.888	0.879	0.014	0.005	10.151*	0.000	0.786
Current Liabilities Structure Ratio							
TCCLR	0.479	0.439	0.360	-0.006	-3.458*	0.004	0.580
DACECLR	0.216	0.156	0.074	0.002	1.894	0.081	0.916
PCLR	0.350	0.300	0.182	0.006	2.646**	0.020	0.336
STBBCLR	0.166	0.102	0.101	0.002	1.607	0.132	0.750
CFCCLR	0.030	-0.045	0.140	-0.001	-0.632	0.538	0.936
OCLCLR	0.417	0.372	0.154	-0.003	-3.047*	0.009	0.723
Liquidity Ratios							
CR	0.070	-0.001	1.786	0.008	0.991	0.340	1.472
QR	0.112	0.044	1.655	0.009	1.281	0.222	1.484
ALR	0.491	0.452	0.519	0.024	3.541*	0.004	0.847
Current Asset Management Efficiency Ratios & Operating Cycle Variables							
TATR	0.356	0.306	0.456	0.010	2.679**	0.019	0.911
CATR	0.315	0.263	2.336	0.047	2.446**	0.029	0.928
WCTR	0.178	0.115	-0.329	0.370	1.665	0.117	2.251
ITR	0.637	0.609	10.567	1.316	4.778*	0.000	0.622
IHP	0.641	0.614	26.810	-0.968	-4.822*	0.000	0.686
RTR	0.598	0.567	4.541	0.311	4.397*	0.001	1.085
ACP	0.346	0.295	142.981	-2.739	-2.620**	0.021	1.007
CBTR	0.399	0.353	16.445	0.777	2.940**	0.011	1.657
CTR	0.600	0.569	10.547	0.684	4.414*	0.001	1.307
APP	0.555	0.521	66.381	-1.539	-4.028*	0.001	1.550
OC	0.452	0.410	169.152	-3.661	-3.274*	0.006	1.008
NTC	0.248	0.191	102.610	-2.118	-2.072	0.059	0.837

TABLE – 5.16 (Continued...)

Linear Trend on Time Variable for WCM, LEV & Profitability Ratios: Hotels and Restaurant Industry

Category & Name of Ratio	R^2	Adj. R^2	Intercept	Slope	t-Statistic	p-value	D Statistic
Profitability Ratios							
OPM	0.074	0.003	21.090	0.396	1.019	0.327	0.645
NPM	0.105	0.036	8.406	0.439	1.236	0.238	0.720
ROTA	0.006	-0.070	10.244	0.080	0.287	0.778	0.488
EAT/TA	0.003	-0.073	6.637	-0.048	-0.212	0.835	0.461
RONW	0.026	-0.049	10.537	0.568	0.584	0.569	1.459

* Indicating significant results at 1% level of significance.
** Indicating significant results at 5% level of significance.

Critical Values of "t"

Degrees of Freedom	Probability (Alpha)	Table Value – t
13	0.01	3.010
13	0.05	2.160

Durbin – Watson Statistic (D-W Statistic), K = 1

N	Probability (Alpha)	D_L (Lower Critical Value)	D_U (Upper Critical Value)
13	0.01	0.738	1.038
13	0.05	1.010	1.340

Where, N = Sample size and K represents number of independent variables

A. Leverage and Working Capital Policy Ratios

- On examining the outcome of regression analysis from Tables 5.16 and 5.17, it is observed that for both the leverage ratios *viz*, LTDTAR and TDTAR, there is a quadratic trend. The values of β_1 and β_2 indicate that the ratios have increased at decreasing rate over a period of time and the trend is likely to reverse after 6th year and 8th year respectively. From this it is concluded that there is increased utilization of long term debts as well as total debts by firms of Hotels and Restaurant Industry for asset financing and is in line with the findings of Table 5.10.
- For the ratio CLTAR significant positive linear trend indicates that there is increased use of short term funds by firms in Hotels and Restaurant Industry to finance total assets over the study period and are moving towards aggressive asset financing approach.
- On examining the results of significant quadratic trend in CATAR, it is observed that the ratio has decreased at an increasing rate over the study period and the trend is likely to reverse in 65 years. This indicates that the Hotels and Restaurant Industry is doing away with the excess liquidity by reducing investments in current assets leading to decline in CATAR.

TABLE – 5.17

Quadratic Trend on Time Variable for WCM, LEV and Profitability Ratios: Hotels and Restaurant Industry

Category & Name of Ratio	R^2	Adj.R^2	Intercept	Slope β1	Slope β2	t-Statistic β1	t-Statistic β2	F-Statistic	D-Statistic
Leverage and Working Capital Policy Ratios									
LTDTAR	0.701	0.651	0.223	0.009	-0.0007	3.131* (0.009)	-4.044* (0.002)	14.079* (0.001)	0.982
TDTAR	0.403	0.304	0.428	0.005	-0.0003	2.506** (0.028)	-2.752** (0.018)	4.052** (0.045)	1.996
CLTAR	0.536	0.459	0.205	-0.004	0.000396	-1.500 (0.159)	2.255** (0.044)	6.943* (0.010)	1.260
CATAR	0.701	0.652	0.326	-0.0104	0.0008	-3.210* (0.007)	4.108* (0.001)	14.087* (0.001)	0.787
CLCAR	0.261	0.138	0.931	0.030	-0.002	1.273 (0.227)	-1.615 (0.132)	2.117 (0.163)	0.805
NWCCAR	0.261	0.138	0.069	-0.030	0.002	-1.273 (0.227)	1.615 (0.132)	2.117 (0.163)	0.805
Current Asset Structure Ratios									
ITCAR	0.660	0.603	0.074	0.008	-0.0005	3.682* (0.003)	-4.306* (0.001)	11.621* (0.002)	1.007
RTCAR	0.885	0.866	0.529	-0.008	-3.6E-05	-2.092 (0.058)	-0.156 (0.879)	46.257* (0.000)	1.187
CBBTCAR	0.101	-0.049	0.245	-0.007	0.001	-0.813 (0.432)	0.983 (0.345)	0.672 (0.529)	0.541
PETCAR	0.693	0.641	0.035	0.004	0.000145	0.785 (0.447)	0.435 (0.671)	13.517* (0.001)	0.568
LATCAR	0.610	0.546	0.089	0.003	-0.0004	0.718 (0.487)	-1.696 (0.116)	9.403* (0.003)	1.179
MSTCAR	0.939	0.929	0.028	-8.727E-6	0.00033	-0.005 (0.996)	3.182* (0.008)	92.757* (0.000)	1.460
Current Liabilities Structure Ratio									
TCCLR	0.591	0.523	0.327	0.006	-0.0007	0.884 (0.394)	-1.808 (0.096)	8.660* (0.005)	0.831
DACECLR	0.520	0.440	0.051	0.010	-0.0005	3.225* (0.007)	-2.758** (0.017)	6.511* (0.012)	1.139
PCLR	0.816	0.785	0.262	-0.022	0.002	-4.239* (0.001)	5.505* (0.000)	26.543* (0.000)	1.093
STBBCLR	0.233	0.105	0.088	0.006	-0.00029	1.372 (0.195)	-1.024 (0.326)	1.821 (0.204)	0.793
CFCCLR	0.339	0.229	0.097	0.011	-0.00072	2.134 (0.054)	-2.371** (0.035)	3.082 (0.083)	1.405
OCLCLR	0.614	0.549	0.175	-0.0102	0.00047	-3.246* (0.007)	2.474** (0.029)	9.535* (0.003)	1.090
Liquidity Ratios									
CR	0.162	0.023	1.889	-0.029	0.002	-0.882 (0.395)	1.148 (0.273)	1.162 (0.346)	1.532
QR	0.238	0.111	1.772	-0.032	0.003	-1.057 (0.311)	1.406 (0.185)	1.871 (0.196)	1.602
ALR	0.661	0.604	0.688	-0.035	0.004	-1.410 (0.184)	2.450** (0.031)	11.683* (0.002)	1.037

TABLE – 5.17 (Continued)

Quadratic Trend on Time Variable for WCM, LEV and Profitability Ratios: Hotels and Restaurant Industry

Category & Name of Ratio	R^2	Adj. R^2	Intercept	Slope β1	Slope β2	t-Statistic β1	t-Statistic β2	F-Statistic	D-Statistic
Current Asset Management Efficiency Ratios & Operating Cycle Measures									
TATR	0.422	0.325	0.506	-0.008	0.001	-0.505 (0.623)	1.171 (0.264)	4.378** (0.037)	1.025
CATR	0.685	0.632	1.739	0.257	-0.014	4.453* (0.001)	-3.749* (0.003)	13.002* (0.001)	1.829
WCTR	0.252	0.127	2.485	-0.623	0.062	-0.665 (0.519)	1.089 (0.298)	2.019 (0.175)	2.469
ITR	0.800	0.766	18.415	-1.454	0.173	-1.592 (0.137)	3.119* (0.009)	23.949* (0.000)	1.139
IHP	0.811	0.780	20.923	1.110	-0.130	1.709 (0.113)	-3.290* (0.006)	25.828* (0.000)	1.244
RTR	0.692	0.641	3.080	0.827	-0.032	2.994** (0.011)	-1.920 (0.079)	13.507* (0.001)	1.359
ACP	0.354	0.246	147.996	-4.509	0.111	-0.973 (0.350)	0.393 (0.701)	3.287 (0.073)	1.000
CBTR	0.401	0.301	15.826	0.995	-0.014	0.846 (0.414)	-0.191 (0.852)	4.020** (0.046)	1.665
CTR	0.776	0.738	6.166	2.230	-0.097	4.308* (0.001)	-3.071* (0.010)	20.768* (0.000)	2.182
APP	0.556	0.482	67.088	-1.789	0.016	-1.050 (0.314)	0.151 (0.883)	7.515* (0.008)	1.541
OC	0.452	0.361	168.145	-3.305	-0.022	-0.663 (0.520)	-0.073 (0.943)	4.951** (0.027)	1.012
NTC	0.249	0.124	101.031	-1.561	-0.035	-0.343 (0.738)	-0.126 (0.902)	1.993 (0.179)	0.841
Profitability Ratios									
OPM	0.458	0.368	31.74	-3.364	0.235	-2.537** (0.026)	2.917** (0.013)	5.072** (0.025)	1.037
NPM	0.396	0.295	17.023	-2.602	0.190	-1.998 (0.069)	2.402** (0.033)	3.929** (0.049)	1.028
ROTA	0.327	0.215	16.964	-2.292	0.148	-2.248** (0.044)	2.392** (0.034)	2.917 (0.093)	0.716
EAT/TA	0.391	0.290	12.643	-2.168	0.132	-2.750** (0.018)	2.766** (0.017)	3.859 (0.051)	0.723
RONW	0.062	-0.095	18.516	-2.248	0.176	-0.527 (0.607)	0.680 (0.510)	0.394 (0.682)	1.515

* Indicating significant results at 1% level of significance.

** Indicating significant results at 5% level of significance.

Critical Values of "t" and "F"

t-test			F-test: Degrees of Freedom = 2		
DF	Probability (Alpha)	Table Value – t	N	Probability (Alpha)	Table Value – F
12	0.01	3.055	12	0.01	6.93
12	0.05	2.179	12	0.05	3.88

Durbin – Watson Statistic (D-W Statistic), K = 2

N	Probability (Alpha)	D_L (Lower Critical Value)	D_U (Upper Critical Value)
12	0.01	0.569	1.274
12	0.05	0.812	1.579

Where, N = Sample size and K represents number of independent variables

- *However, no significant trend is observed in CLCAR and NWCCAR* and hence it can be concluded that the working capital financing policy of the industry has remained stable over the study period with higher utilization of short term funds and lower NWC for financing its current assets.

B. Analysis of Current Asset Structure

- On examining the outcome of regression analysis from Tables 5.16 and 5.17, a significant quadratic trend is observed for ITCAR which indicates that ITCAR has increased at declining rate and the trend is likely to reverse in 8th year for the period under study. From this it is concluded that firms in Hotels and Restaurant Industry are investing cautiously and judiciously in inventories.
- A significant declining trend is observed in RTCAR and LATCAR. This downward trend reflects a possibility of cautious measures taken by the industry to reduce the investment in receivables and loans & advances which can be further substantiated by analyzing the turnover ratios. However, it is concluded that over the study period efforts were made by managers of firms in Hotels and Restaurant Industry for reducing the investments in receivables as well as reducing advances thereby increasing the liquidity of current asset structure.
- A significant rising trend is observed for PETCAR indicating that over the study period there is increased blocking of funds in the form of Prepaid Expenses in the Hotels and Restaurant Industry. A significant rising trend is also observed for MSTCAR with 88.8% increase in MSTCAR explained by time factor thereby indicating that over the study period there is rising trend of investing idle cash in Hotels and Restaurant Industry indicating efforts toward efficient and systematic cash management.
- However, *no significant trend* is observed for CBBTCAR as also observed from the findings of Table 5.11 and hence it is concluded that the cash balances have remained more or less stable over the study period.

C. Analysis of Current Liabilities Structure Ratios

- On examining the outcome of regression analysis from Tables 5.16 and 5.17, a significant negative linear trend is observed for TCCLR indicating that over the study period there is a decline of 47.9% in the share of trade credit to CL. Moreover, DACECLR, PCLR and OCLCLR exhibit significant quadratic trend from which it is observed that DACECLR has increased at decreasing rate and the trend is likely to reverse in the 10th year for the period under study whereas OCLCLR and PCLR had decreased at increasing rate and the trend in these ratios is likely to reverse in 11th and 6th year respectively. From this it is concluded that over the study period the firms in Hotels and Restaurant Industry have preferred DACE and CFC as a source of financing current assets over Trade Credit, OCL and Provisions.

◈ However, *no significant trend* is observed for STBBCLR and CFCCLR indicating that share of STBB as well as CFC in total CL has not undergone significant changes over the study period.

D. Liquidity Analysis

◈ On examining the outcome of regression analysis from Tables 5.16 and 5.17, a significant increasing trend is observed for ALR indicating that liquidity measured in term of cash assets to CL of Hotels and Restaurant Industry has increased over a period of time. Alternatively, it also signifies increase in cash assets over the study period which is in line with the significant linear trend observed for MSTCAR. However, *no significant trend* is observed in CR and QR indicating that these two ratios have remained stable throughout the study period.

E. Current Asset Management Efficiency Analysis

◈ On examining the outcome of regression analysis from Tables 5.16 and 5.17, a significant rising trend is observed for TATR indicating that there is an improvement in asset utilization over the study period.

◈ On examining the outcome of regression analysis for CATR, a significant quadratic trend is observed which is increasing at decreasing rate and the trend is likely to reverse in 9th year for the period under study. From this it is concluded that the current asset management efficiency has improved over the study period which is due to improvement in receivables well as inventory management as observed from significant trend in ITCAR and RTCAR in *Para B*.

◈ A significant linear trend is observed in ITR as well as IHP which is positive for ITR whereas negative for IHP. Increase in ITR is associated with improved and efficient inventory management and decline in IHP is associated with reduced cycle of converting inventories into cash and is an indicator of liquidity of inventories. From these results it is concluded that inventory management of Hotels and Restaurant Industry has improved and become more efficient over the study period which is in line with the results of time trend observed for ITCAR in *para B*.

◈ A significant linear trend is observed in RTR as well as ACP which is positive for RTR whereas negative for ACP. These results indicate an improvement in receivables management of Hotels and Restaurant Industry and the firms are pursuing a comparatively controlled credit and collection policy as also observed from the results of linear trend in RTCAR in *para B.*

- ◈ A significant uptrend in CBTR indicates that over the study period the turnover of cash in the Hotels and Restaurant Industry has increased leading to better utilization of cash resources which may be assigned to improved inventory and receivables management that has lead to more liquid asset structure. The results are in line with the linear trend observed for ALR and MSTCAR as well as the findings observed from the analysis of Table 5.14. Hence, it is concluded that cash management of Hotels and Restaurant Industry is efficient.
- ◈ A significant quadratic trend is observed in CTR which is rising at falling rate and the trend is likely to reverse in the 12th year over the period under study whereas a significant linear negative trend is observed for APP. From these results it is concluded that the firms in Hotels and Restaurant Industry have increased the frequency of repaying the creditors over the study period which may be due to increased liquidity that the industry is repaying its short term debt more frequently. Thus, through prompt payments the firms in Hotels and Restaurant Industry have build good reputation and creditworthiness which has resulted to the easy access of short term funds due to which the firms are utilizing more of short term funds to finance their current assets as observed from the results of time trend in CLTAR in *Para A.*
- ◈ *A significant linear downtrend is observed in OC* indicating that there is significant decline in the length of OC which means reduced working capital investments and further signifies improvement in WCM of the Hotels and Restaurant Industry over the study period. Thus, it is concluded that over the study period the WCM of the firms in Hotels and Restaurant Industry has improved and become efficient.
- ◈ However, WCTR and NTC has not shown significant trend with time whereby it is concluded that there is no significant change in utilization of NWC for operating sales in the Hotels and Restaurant Industry. Also the length of NTC has not changed significantly over the study period which may be on account of simultaneous reduction in length IHP, ACP and APP.

F. Profitability Analysis

- ◈ On examining the outcome of regression analysis from Tables 5.16 and 5.17 it is observed that there is no significant trend in NPM, ROTA, EAT/TA and RONW. However quadratic trend is observed for OPM which indicates that OPM has decreased at an increasing rate over the study period and the trend is likely to reverse in 7th year for the period under study. From the results it is concluded that there is deterioration in the operational efficiency of the Hotels and Restaurant Industry

5.3.2 Trend Analysis: WCM, LEV and Profitability of ITes Industry (20 companies)

This para examines the overall trends as well as the time trends (Linear and Quadratic Trend) in WCM, LEV and Profitability Ratios of the ITes Industry for 20 sample companies. The overall trends is presented and interpreted first which is followed by the presentation and elucidation of the time trends analysis.

5.3.2.1 Trends in WCM, LEV and PROF: ITes Industry

The overall trends in WCM, LEV and Profitability ratios is observed by taking industry average on yearly basis to understand the yearly movements in ratios as well as the nature of WCM, LEV and Profitability position in the ITes Industry. The results of the analysis are presented and interpreted as per the group to which each ratio belongs.

A. Leverage and Working Capital Policy Ratios

The computation for each ratio of LEV and Working Capital Policy over the study period is presented in Table 5.18. Chart 5.7 presents the current asset financing mix, *i.e.,* share of current liabilities (CL) and net working capital (NWC) for financing total current assets.

◈ From the perusal of Table 5.18, it is observed that LTDTAR of ITes Industry ranged between 3% and 14%; CLTAR ranged between 25% and 38% whereas TDTAR ranged between 32% and 47% which is a wide range. It can be observed that on an average, long term debts (LTD) were utilized to finance 7.3% whereas current liabilities were utilized to finance 32.3% of the total assets in the industry. The lower ratio of LTD to total assets indicates a very conservative approach of industry towards utilization of long term debts for asset financing. Also, it can be observed that LTDTAR is consistently declining over the study period and so the CV is observed to be highest at 48.53% and indicates that over the study period there has been reduction in the utilization of long term debt to finance total assets which is less preferred for asset financing in ITes Industry. On an average 39.6% of the total assets are financed by total debt which implies that the ITes Industry is pursuing a conservative approach of asset financing by employing less long term as well as total debt to finance its total assets. It is interesting to note that in all the years CLTAR is greater than LTDTAR which means that the ITes Industry depends more on current liabilities as compared to long term debt to finance its total assets. Thus, firms in ITeS Industry had utilized more of short term debt as compared to long term debt to finance its total assets. Higher utilization of CL as compared to LTD is indicative of aggressive approach and thus it is concluded that working capital financing policy in the ITeS Industry is aggressive.

TABLE – 5.18

Working Capital Policy and Leverage Ratios: ITeS Industry

	Leverage Ratios		Working Capital Policy Ratios			
Year	LTDTAR	**TDTAR**	**CLTAR**	CATAR	**CLCAR**	**NWCCAR**
Mar-96	0.14	0.47	0.33	0.65	0.56	0.44
Mar-97	0.13	0.46	0.33	0.63	0.60	0.40
Mar-98	0.12	0.44	0.32	0.63	0.58	0.42
Mar-99	0.10	0.42	0.32	0.63	0.58	0.42
Mar-00	0.08	0.35	0.27	0.63	0.49	0.51
Mar-01	0.07	0.33	0.26	0.63	0.47	0.53
Mar-02	0.07	0.32	0.25	0.61	0.46	0.54
Mar-03	0.09	0.34	0.25	0.60	0.50	0.50
Mar-04	0.05	0.36	0.31	0.61	0.58	0.42
Mar-05	0.03	0.39	0.36	0.61	0.64	0.36
Mar-06	0.04	0.42	0.38	0.60	0.67	0.33
Mar-07	0.05	0.41	0.36	0.59	0.65	0.35
Mar-08	0.05	0.41	0.36	0.57	0.65	0.35
Mar-09	0.04	0.42	0.38	0.58	0.65	0.35
Mar-10	0.04	0.40	0.36	0.58	0.64	0.36
Mean	0.073	0.396	0.323	0.61	0.58	0.42
SD	0.04	0.05	0.05	0.02	0.07	0.07
CV(%)	48.53	11.76	14.27	3.82	12.32	17.10

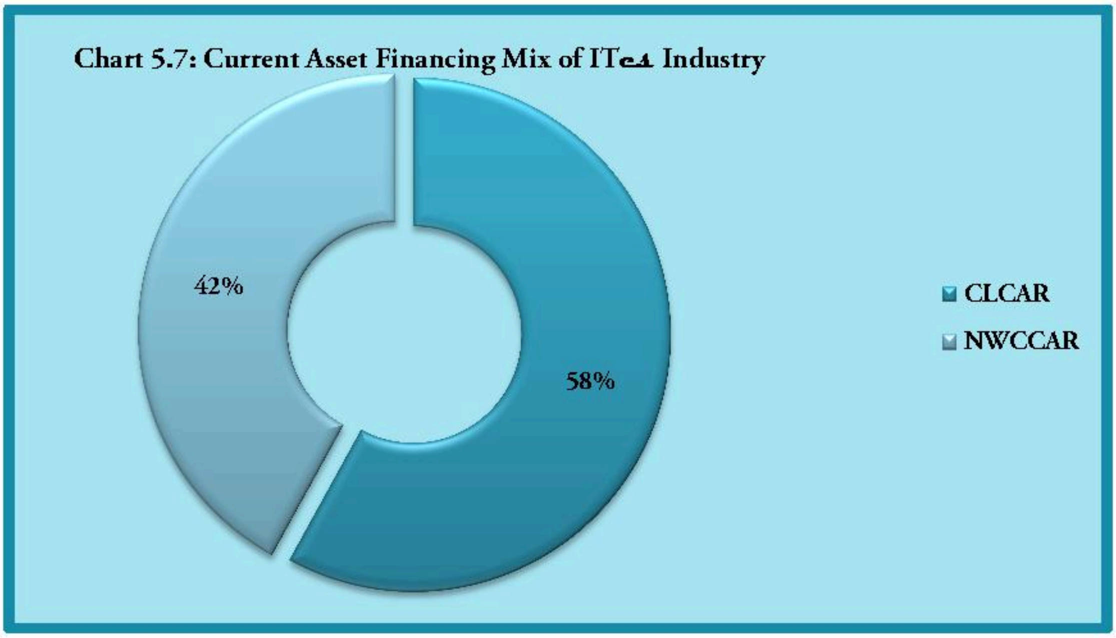


Chart 5.7: Current Asset Financing Mix of ITeS Industry

- From the perusal of Table 5.18, it is also observed that the ratio of current assets to total assets ranged between 57% and 65%. The ITeS Industry on an average invests 61% of its funds in current assets which is a very high proportion. The high CATAR suggests that the ITeS Industry is following a conservative current asset investment policy which is characterized with high proportion of current assets to total assets which results to liquid asset structure. Such dominance of current assets in total assets structure is generally found in manufacturing concerns and this comes out as a striking characteristic of the ITeS Industry. However, this ratio is much higher when compared with the studies of Ansari[1] as well as Kantawala and Joshi[2]. Possibly the industry has awaken to this fact and hence, overall a declining trend can be observed in CATAR indicating that over the study period, the industry has reduced its investment in current assets.
- From the perusal of Chart 5.7, it is observed that Current liabilities finance 58% of current assets whereas NWC contributes 42%. CLCAR ranged between 0.46 and 0.67 whereas NWCCAR ranged between 0.33 and 0.54 as observed from Table 5.18. Overall an increasing trend can be observed in CLCAR whereas a falling trend in NWCCAR and indicates that over the study period there has been increased use of current liabilities to finance the current assets as compared to NWC. Thus, it is concluded that the ITeS Industry is moving towards an aggressive approach for financing current assets over the study period. This also conveys that the ITeS Industry has easy access to short term funds for financing its current assets which can be assigned to the good reputation, established business and creditworthiness of the industry. Similar phenomenon was observed in the study of Ansari[1]. Lower values of SD indicate that over a period of time the changes in the leverage position as well as the working capital policy of ITeS Industry has been progressive with lower fluctuations.

B. Analysis of Current Asset Structure

In order to examine the structure of current assets (CA), the composition of CA with reference to various components of CA is studied. The computation for each ratio over the study period is presented in Table 5.19. Chart 5.8 presents the share of each CA in pie of total current asset.

- As observed from Chart 5.8, Receivables formed the highest share in the current assets of ITeS Industry with 55% on an average followed by Cash and Bank Balance at 19%, Prepaid Expenses as well as Marketable Securities at 8% each, Loans and Advances at 6% and Inventories at 4%.

Chart - 5.8: Current Asset Structure of ITeS Industry

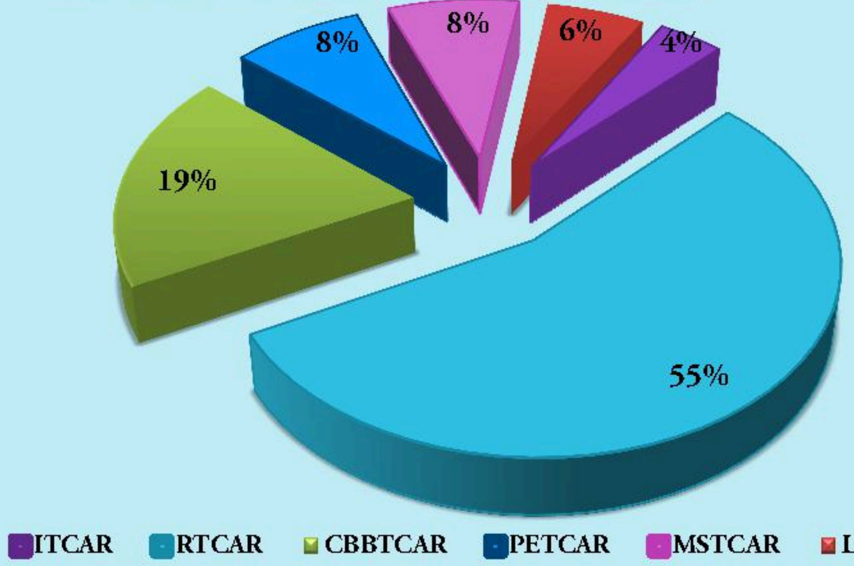


TABLE – 5.19						
Current Asset Structure Ratios: ITeS Industry						
Year	ITCAR	RTCAR	CBBTCAR	PETCAR	LATCAR	MSTCAR
Mar-96	0.11	0.64	0.20	0.02	0.02	0.01
Mar-97	0.11	0.66	0.17	0.03	0.03	0.00
Mar-98	0.11	0.64	0.17	0.04	0.04	0.00
Mar-99	0.09	0.60	0.21	0.05	0.05	0.00
Mar-00	0.04	0.52	0.26	0.07	0.08	0.03
Mar-01	0.03	0.49	0.26	0.09	0.08	0.05
Mar-02	0.02	0.49	0.23	0.09	0.09	0.08
Mar-03	0.02	0.49	0.21	0.08	0.10	0.10
Mar-04	0.02	0.51	0.15	0.08	0.12	0.12
Mar-05	0.02	0.51	0.14	0.09	0.11	0.13
Mar-06	0.02	0.54	0.15	0.09	0.08	0.12
Mar-07	0.02	0.55	0.17	0.11	0.04	0.11
Mar-08	0.02	0.54	0.16	0.12	0.04	0.12
Mar-09	0.02	0.53	0.16	0.13	0.04	0.12
Mar-10	0.03	0.50	0.17	0.14	0.03	0.13
Mean	0.04	0.55	0.19	0.08	0.06	0.08
SD	0.04	0.06	0.04	0.04	0.03	0.05
CV(%)	83.74	10.78	20.82	43.29	51.22	71.39

◆ From the perusal of Table 5.19 it is observed that the share of inventories ranged between 2% and 11% and on an average the ITeS Industry invests only 4% of its funds in inventories. ITCAR has declined substantially and essentially indicates the measures taken by the industry to do away with unnecessary inventory. This ratio also reflects the characteristic feature of ITeS Industry as a service industry operating with very low level of inventories and distinguishes it from the manufacturing sector, where inventory forms a very high proportion of current assets. Inventory was also observed to be zero for 13 of the selected 20 companies in the industry.

- Further, it is observed that Receivables ranged between 49% and 66% of current assets and on an average 55% of working capital is blocked in receivables whereas Loans and advances ranged between 2% and 12% of current assets with 6% on an average blocked in loans and advances. Total receivables including loans and advances are on an average 61% forming major share in the current asset structure and a sign of concern for the industry which can be further dealt with by analyzing the turnover ratios. The share of receivables has declined over the study period which indicates that the ITes Industry has improved its receivables management over the study period by restricting its credit policy and signifies efforts made by industry in restricting investment in receivables.
- The share of cash and bank balance has ranged between 14% and 26% with mean of 19% wherein a fluctuating trend can be observed from the perusal of Table 5.19. The share of Marketable securities has ranged between 0 to 13% wherein an increasing trend can be observed due to which CV is also observed to be very high, *i.e.*,71.39%. The increasing share of MSTCAR indicates that firms in ITes Industry invest their idle lying excess cash implying efforts for efficient cash management. A simultaneous glance at MSTCAR and CBBTCAR also indicates that over the study period, the industry has commenced the practice of investing excess cash in marketable securities, *i.e.*, a decline in cash balance is accompanied by increase in marketable securities. The mean share of cash assets (CBB+MS) at 27% indicates a good liquidity position in the industry which can further be substantiated by the analysis of liquidity ratios.
- The share of prepaid expenses ranged between 2% and 14% which has progressively increased throughout the study period resulting to high CV at 43.29%. This rising trend in PETCAR indicates that over the study period there has been increased blocking of funds in the form of Prepaid Expenses in the ITes Industry. The changes in CA structure ratios have been progressive and with lower volatility throughout the study period as evidenced by the values of SD

C. Analysis of Current Liabilities Structure Ratios:

In order to examine the structure of current liabilities of ITes Industry, the composition of CL with reference to various components of CL is studied. The computation for each ratio over the study period is presented in Table 5.20. Chart 5.9 presents the share of each component of CL in pie of total current liability.

Chart - 5.9: Current Liabilities Structure of ITeS Industry

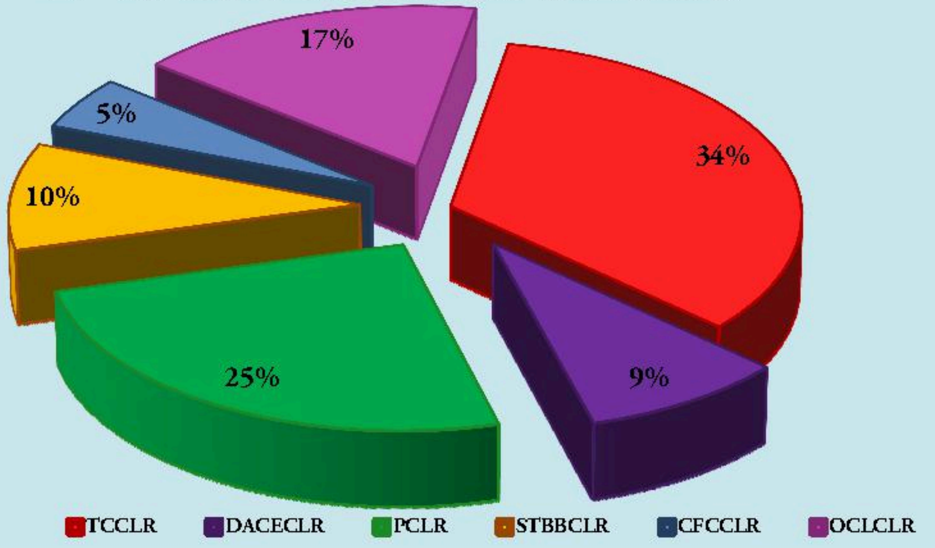


TABLE – 5.20						
Current Liabilities Structure Ratios: ITeS Industry						
Year	**TCCLR**	**DACECLR**	**PCLR**	**STBBCLR**	**CFCCLR**	**OCLCLR**
Mar-96	0.36	0.00	0.20	0.16	0.06	0.22
Mar-97	0.38	0.01	0.19	0.15	0.07	0.20
Mar-98	0.40	0.00	0.17	0.16	0.07	0.20
Mar-99	0.36	0.00	0.19	0.14	0.09	0.22
Mar-00	0.34	0.03	0.26	0.09	0.06	0.22
Mar-01	0.31	0.14	0.26	0.07	0.01	0.21
Mar-02	0.34	0.16	0.26	0.07	0.01	0.16
Mar-03	0.39	0.14	0.28	0.05	0.02	0.12
Mar-04	0.34	0.13	0.30	0.07	0.04	0.12
Mar-05	0.32	0.15	0.29	0.08	0.04	0.12
Mar-06	0.33	0.14	0.29	0.08	0.04	0.12
Mar-07	0.33	0.14	0.26	0.08	0.04	0.15
Mar-08	0.30	0.11	0.25	0.11	0.05	0.18
Mar-09	0.29	0.09	0.27	0.12	0.05	0.18
Mar-10	0.26	0.11	0.29	0.12	0.06	0.16
Mean	0.34	**0.09**	0.25	**0.10**	**0.05**	0.17
SD	0.04	**0.06**	0.04	**0.04**	**0.02**	0.04
CV(%)	**11.32**	69.77	**16.89**	35.21	47.55	**22.86**

◈ From the perusal of Chart 5.9, it is observed that Trade Credit with 34% of the total CL is the major source of financing the current assets of the ITeS Industry, followed by Provisions at 25%, Other Current Liabilities at 17%, Short Term Bank Borrowings at 10%, Deposits and Advances from Customers and Suppliers at 9%, which is followed by Current Financing Charge at 5%. Also, among the current liabilities, the Spontaneous source of short term finance (Trade Credit, CFC, Provisions and OCL) is dominating the current liabilities structure at 81% and balance 19% comprises of the negotiated sources of short term finance (STBB and DACE).

- From the perusal of Table 5.20 it is observed that TCCLR has ranged between 0.26 and 0.40 which has reduced over the selected time frame. DACECLR has ranged between 0 and 0.16 and it can be observed that there has been marked increase in DACECLR over the study period which has resulted to high CV of 69.77%. PCLR has ranged between 0.17 and 0.30 and it can be observed that it has also increased over the study period. OCLCLR has ranged between 0.12 and 0.22. STBBCLR has ranged between 0.05 and 0.16, which has declined until 2003 where after it has steadily increased whereas CFCCLR has ranged between 0.01 and 0.09. The changes in CL structure ratios have been progressive and with lower volatility throughout the study period as evidenced by the lower values of SD.

D. Liquidity Analysis

The outcome of computations for the liquidity ratios over the study period is presented in Table 5.21.

TABLE – 5.21

Liquidity Ratios: ITes Industry

Year	CR	QR	ALR
Mar-96	3.33	3.16	0.78
Mar-97	3.18	3.01	0.57
Mar-98	3.75	3.58	0.66
Mar-99	3.84	3.69	0.84
Mar-00	4.23	4.14	1.31
Mar-01	3.59	3.53	1.28
Mar-02	3.46	3.40	1.20
Mar-03	3.47	3.43	1.20
Mar-04	3.06	3.03	0.90
Mar-05	2.45	2.41	0.69
Mar-06	2.15	2.11	0.62
Mar-07	2.32	2.27	0.73
Mar-08	2.03	1.99	0.64
Mar-09	1.90	1.87	0.63
Mar-10	1.99	1.95	0.77
Mean	2.98	2.90	0.85
SD	0.77	0.74	0.26
CV(%)	25.90	25.53	30.56

- From the perusal of Table 5.21, it is observed that the industry CR ranged between 1.90 and 4.23 whereas the QR ranged between 1.87 and 4.14 which is a very wide range. The yearly mean CR has always been above the thumb rule except in 2009 and 2010 whereas the yearly mean QR is above the thumb rule in all the years. On an average the industry maintains ₹ 2.98 of current assets and ₹ 2.90 of quick assets against ₹ 1 of current liabilities which can be considered to be a very high proportion. The industry ALR ranges between 0.57 and 1.31 with yearly ALR being above the thumb rule in all years with industry mean of 0.85.

◈ CR indicates that the industry is having a very good liquidity position which is also substantiated by the fact that that the industry is maintaining high level of current assets in proportion to total assets as observed from the analysis of Table 5.18. However, as QR is considered to be a more rigorous test of liquidity when compared with CR, it is concluded that the ITes Industry had excess liquidity over the selected time frame. The ALR, as a test of absolute liquidity indicates that the ITes industry is technically solvent and cash rich indicating very good short term liquidity and solvency, rather a situation of excess liquidity in the industry.

E. Current Asset Management Efficiency Analysis

The computation for each CAME ratio and Operating Cycle Variables over the study period is presented in Table 5.22.

◈ From the perusal of Table 5.22 it is found that, TATR has ranged between 0.99 and 1.34 and average sales of ₹ 1.18 is generated from per rupee investment in total assets which indicates efficient utilization of total assets. However, 2007 onwards TATR is declining which indicates decline in efficiency of total assets utilization. A fluctuating trend can be observed for CATR from the perusal of Table 5.22 which ranged between 1.66 and 2.11 and on average current assets of the ITes Industry have been turned into sales 1.93 times which can be further improved through better utilization of current assets. WCTR of ITes industry has ranged between -36.89 and 58.19 which is observed to be errant as evident by CV of 353.76. Also, it can be observed that over the period the industry has utilized different levels of NWC for supporting sales which have been negative also in some years.

◈ From the perusal of Table 5.22 it is observed that ITR ranged between 7.91 and 138.72 which is a very large and wide range as also observed from CV of 65.08% and on an average inventory is turned over 74.71 times which is a very very high ratio. Such high ITR is indicative of overtrading situation which arises when a higher level of sales is supported with very low level of inventory and which is a fact in the ITes Industry, as it is operating at an average of 4% inventory of total current assets. The reason for such a low level of inventory is again attributable to the nature of the industry and hence, carrying lower level of inventory is justified in case of ITes Industry and so this overtrading situation is actually not a risky preposition for the industry. IHP has ranged between 3 and 46 days which is consistently declining over the period under study and on an average the inventory in ITes Industry gets converted into cash in 12 days. The lower length of IHP and reduction in the length over the study period coupled with simultaneous increase in ITR throughout the selected time frame is indicative of efficiency in inventory management which means that the industry has made conscious efforts to do away with excess inventory by reducing investment in inventory.

- RTR ranged between 3.08 and 4.57 whereas ACP ranged between 110 and 150 days except 760 days in 1999 on account of Informed Technologies Ltd. When this company is eliminated from analysis for 1999, the mean ACP comes down to 140 days instead of 760 days. Overall it can be observed that the RTR has increased over the study period leading to reduction in level of blockage of funds in receivables by the firms in ITes Industry thereby indicating an improvement in receivables management of the industry. However, ACP of 124 days is still very high for the ITes Industry thereby indicating slack collection policy and is a sign of real concern with an ample scope for further improvement in managing receivables.
- CTR ranged from 21.01 to 42.07 except in 2002 when it was observed to be 2025.27 on account of Infosys Technologies Ltd. When this company is eliminated from analysis for 2002, the CTR obtained is 24.23 and the industry average turns out to be 28.54 instead of 161.97. Also, the APP ranged from 31 days to 54 days except in 1999 when it was observed to be 530 days on account of Informed Technologies Ltd., and when this company is eliminated from analysis for 1999, the APP obtained is 38 days and the industry average also turns out to be 36 days instead of 69 days. Overall, it can be observed that on an yearly basis barring 1999, industry takes 34 to 54 days time to repay its creditors. Also, APP has reduced to considerable extent which indicates that the industry is paying its creditors more frequently and is prompt in repaying its dues. Ideally, it is believed that there should be a positive difference between APP and ACP, however for the ITes Industry the difference is negative indicating that the company in the industry are extending credit greater than what they are receiving from their trade creditors which needs attention and improvement on the part of management of ITes Industry for efficient credit management.
- CBTR ranged between 9.14 and 23.91 wherein a fluctuating trend can be observed. Mean CBTR is 15.47 times which indicates high turnover of cash – indicative of better utilization of cash funds in the industry as well as efficient cash management as also observed from the results of MSTCAR from Table 5.19.

TABLE 5.22

Efficiency Ratios and Operating Cycle Variables: ITes Industry

Year	TATR	CATR	WCTR	ITR	IHP (In Days)	RTR	ACP (In Days)	CBTR	CTR	APP (In Days)	OC (In Days)	NTC (In Days)
Mar-96	1.29	1.94	2.43	7.91	46	3.08	139	20.35	31.02	54	185	131
Mar-97	1.34	2.11	1.55	9.12	40	3.41	142	23.91	27.45	41	182	141
Mar-98	1.32	2.07	-0.35	12.71	29	3.40	150	19.94	21.63	41	179	138
Mar-99	1.27	2.06	0.82	19.61	19	3.45	760 (140)	15.58	24.94	530 (38)	779 (159)	249 (121)
Mar-00	1.26	1.98	-3.11	30.35	12	3.90	115	13.66	36.79	32	127	95
Mar-01	1.29	2.03	58.19	48.41	8	4.52	109	11.31	42.17	30	117	87
Mar-02	1.07	1.69	-36.89	69.67	5	3.92	130	9.14	2025.77 (24.23)	33	135	102
Mar-03	0.99	1.66	4.99	103.89	4	3.73	127	10.01	28.23	37	131	94
Mar-04	1.05	1.71	4.52	114.77	3	3.76	121	14.94	21.43	35	124	89
Mar-05	1.12	1.80	19.49	123.73	3	4.03	119	17.83	21.01	34	122	88
Mar-06	1.25	2.08	5.91	129.21	3	4.57	110	17.83	28.12	33	113	80
Mar-07	1.19	2.10	5.08	138.72	3	4.12	112	12.23	27.68	31	114	83
Mar-08	1.13	1.98	5.12	111.62	3	4.14	113	12.24	31.94	31	116	85
Mar-09	1.12	1.95	5.28	109.12	4	4.27	118	15.48	29.18	34	122	88
Mar-10	1.01	1.81	6.51	91.85	4	4.04	120	17.57	32.25	35	123	88
Mean	1.18	1.93	5.30	74.71	12	3.89	166 (124)	15.47	161.97 (28.54)	69 (36)	178 (137)	109 (100.67)
SD	0.12	0.16	18.76	48.62	14.49	0.42	164.88 (13.06)	4.16	515.64 (5.82)	127.75 (6.03)	168.19 (26.02)	43.69 (21.08)
CV(%)	9.94	8.14	353.76	65.08	116.82	10.92	99.52 (10.51)	26.89	318.34 (20.40)	185.86 (16.78)	94.52 (19.05)	40.01 (20.94)

Figures in bracket represent values after eliminating companies with abnormal observation. For ACP and APP, Informed Technologies Ltd is eliminated whereas for CTR Infosys Technologies Ltd is eliminated.

- OC of ITea Industry has ranged between 113 days to 185 days except in 1999 when it was observed to be 779 days which was due to abnormally high ACP of Informed Technologies Limited. NTC has ranged between 80 days to 141 days except in 1999 when it was 249 days which was due to abnormally high ACP and APP of Informed Technologies Limited. The effect of its elimination is very much evident from the values given in bracket which becomes normal. On an average the working capital investments of ITea Industry in the form of total current assets remains blocked for 178 days whereas it gets realized in cash in 109 days. However, OC and NTC it is very high considering the fact that ITea Industry is a service Industry operating with lower level of inventories as already observed from Table 5.19. Hence, the cause can be assigned to the liberal credit policy of the industry as already discussed in the preceding paras which needs critical attention and with improvement in receivables management, the length of OC and NTC can be shortened and liquidity of asset structure be improved along with overall efficiency.

F. Profitability Analysis

The computations for each of the profitability ratio of the ITea Industry over the study period are presented in Table 5.23

TABLE – 5.23

Profitability Ratios: ITea Industry (In %)

Year	OPM	NPM	ROTA	EAT/TA	RONW	RONW#
Mar-96	27.87	16.63	24.20	19.36	24.90	24.23
Mar-97	16.00	10.32	20.08	14.14	24.60	23.99
Mar-98	16.32	11.27	18.54	14.00	24.94	24.82
Mar-99	18.36	12.07	19.03	14.52	23.85	24.41
Mar-00	19.94	16.19	23.92	19.11	31.57	32.30
Mar-01	12.39	7.21	25.01	20.75	32.79	32.86
Mar-02	9.66	4.23	14.18	9.80	20.00	14.69
Mar-03	12.52	7.20	11.69	7.13	25.00	-8.49
Mar-04	14.22	10.17	12.28	8.44	12.25	46.60
Mar-05	12.31	8.25	12.79	9.03	8.25	15.21
Mar-06	15.42	11.46	17.48	13.48	14.81	12.58
Mar-07	20.02	15.62	20.05	15.74	20.15	29.98
Mar-08	18.97	13.41	18.17	13.04	28.58	24.29
Mar-09	19.51	13.67	17.67	12.75	26.07	17.24
Mar-10	21.76	15.84	16.41	12.42	16.52	24.82
Mean	17.02	11.57	18.10	13.58	22.29	22.64
SD	4.63	3.74	4.22	4.02	6.95	12.14
CV	27.18	32.36	23.33	29.64	31.18	53.63

The RONW of R S Software (India) Ltd was found to be abnormal in 2003 and 2004 which was on account of negative net worth in those years and it affected the entire industry mean RONW which is presented as RONW#. Also the effect of eliminating the company is very much evident from mean, SD and CV values in RONW column. Considering the same, it was considered appropriate to eliminate this company for the analysis of RONW which is based on 19 companies.

◈ From the perusal of Table 5.23 it is observed that OPM has ranged between 9.66% and 27.87% with industry mean of 17.02%. NPM has ranged between 4.23% and 16.63% with mean of 11.57%. The range of both the ratios is very high. The trend in profitability measured in terms of ROTA and EAT/TA is also observed to be fluctuating. From these results it can be concluded that the profitability position of the industry is not stable. *RONW ranged between* 8.25% and 32.79% which is a very wide and high range which is on account of highly vacillating trend observed in RONW and is evidence that the ITes Industry has not been able to provide stable returns to its shareholders over the study period.

◈ Moreover, the analysis also reveals that the years 2001 to 2004 have not been good for the financial health of the industry. The returns on total assets have also substantially gone down in these years.

5.3.2.2 Time Trends in WCM, LEV and PROF: ITes Industry

Time trends in WCM, LEV and profitability ratios of ITes Industry have been examined by fitting the Linear Trend Model and Quadratic Trend Model. The results of linear trend on time variable are presented in Table 5.24 whereas the results of quadratic trend are presented in Table 5.25 for all the ratios. The results of both the models are interpreted jointly and the interpretations are presented as per the group to which each ratio belongs.

A. Leverage and Working Capital Policy Ratios

◈ On examining the outcome of regression analysis from Tables 5.24 and 5.25, it is observed that for both the leverage ratios, *viz,* LTDTAR and TDTAR there is a significant quadratic trend. The values of β_1 and β_2 indicate that the ratios are falling at an increasing rate over a period of time and the trend is likely to reverse in 9th year for both the ratios. From this it is concluded that there is decline in utilization of long term as well as total debt for asset financing in the ITes Industry. On account of simultaneous decline in both the leverage ratios, it was considered important to examine the trend in Net Worth to Total Asset Ratio (NWTAR) and hence linear and quadratic trend was examined for this ratio. The results of the regression analysis indicated a significant quadratic trend in NWTAR which is observed to be increasing at decreasing rate with 57.3% increase being explained by time and the trend for this ratio is also likely to reverse in the 9th year for the period under study. From these results it is concluded that over the study period there is increased use of owned funds to finance total assets in ITes Industry which has resulted to reduction in utilization of debts. *However, CLTAR* has not shown significant linear trend with time indicating that over the study period, there is no significant change in the utilization of current liabilities to fund the total assets.

TABLE – 5.24

Linear Trend on Time Variable for WCM, LEV & Profitability Ratios: ITes Industry

Category & Name of Ratio	R^2	Adj. R^2	Intercept	Slope	t-Statistic	p-value	D Statistic
Leverage and Working Capital Policy Ratios							
LTDTAR	0.814	0.799	0.131	-0.007	-7.534*	0.000	0.934
TDTAR	0.036	-0.039	0.412	-0.002	-0.693	0.501	0.317
NWTAR	0.076	0.005	0.560	0.003	1.037	0.319	0.303
CLTAR	0.256	0.199	0.281	0.005	2.117	0.054	0.479
CATAR	0.895	0.887	0.649	-0.005	-10.522*	0.000	1.691
CLCAR	0.309	0.255	0.510	0.009	2.408**	0.032	0.469
NWCCAR	0.309	0.255	0.490	-0.009	-2.408**	0.032	0.469
Current Asset Structure Ratios							
ITCAR	0.646	0.619	0.100	-0.007	-4.869*	0.000	0.386
RTCAR	0.402	0.356	0.614	-0.008	-2.954**	0.011	0.372
CBBTCAR	0.214	0.154	0.220	-0.004	-1.882	0.082	0.639
PETCAR	0.919	0.912	0.021	0.008	12.108*	0.000	0.685
LATCAR	0.008	-0.068	0.058	0.001	0.321	0.753	0.307
MSTCAR	0.846	0.834	-0.013	0.011	8.461*	0.000	0.434
Current Liabilities Structure Ratio							
TCCLR	0.614	0.585	0.390	-0.007	-4.549*	0.001	1.439
DACECLR	0.465	0.424	0.013	0.010	3.359*	0.005	0.524
PCLR	0.558	0.524	0.194	0.007	4.051*	0.001	0.715
STBBCLR	0.178	0.114	0.131	-0.003	-1.675	0.118	0.347
CFCCLR	0.077	0.006	0.058	-0.001	-1.038	0.318	0.706
OCLCLR	0.342	0.292	0.213	-0.005	-2.601**	0.022	0.488
Liquidity Ratios							
CR	0.706	0.684	4.145	-0.145	-5.590*	0.000	0.655
QR	0.657	0.631	3.980	-0.134	-4.991*	0.000	0.621
ALR	0.054	-0.019	0.963	-0.014	-0.861	0.405	0.547
Current Asset Management Efficiency Ratios & Operating Cycle Variables							
TATR	0.453	0.410	1.321	-0.018	-3.278*	0.006	0.953
CATR	0.055	-0.018	1.997	-0.008	-0.867	0.402	0.853
WCTR	0.005	-0.071	2.834	0.309	0.266	0.794	3.058
ITR	0.758	0.740	-1.027	9.467	6.387*	0.000	0.394
IHP	0.671	0.646	33.629	-2.654	-5.151*	0.000	0.217
RTR	0.518	0.481	3.343	0.068	3.735*	0.002	1.369
ACP	0.088	0.018	253.171	-10.946	-1.121	0.283	2.276
CBTR	0.121	0.053	18.056	-0.324	-1.338	0.204	0.661
CTR	0.004	-0.073	218.86	-7.111	-0.223	0.827	2.137
APP	0.076	0.005	131.819	-7.886	-1.036	0.319	2.312
OC	0.131	0.064	286.848	-13.614	-1.400	0.185	2.286
NTC	0.344	0.293	155.029	-5.729	-2.610**	0.022	2.087

TABLE – 5.24 (Continued...)

Linear Trend on Time Variable for WCM, LEV & Profitability Ratios: ITeS Industry

Category & Name of Ratio	R^2	Adj. R^2	Intercept	Slope	t-Statistic	p-value	D Statistic
Profitability Ratios							
OPM	0.001	-0.075	17.332	-0.039	-0.137	0.893	0.882
NPM	0.020	-0.055	10.618	0.119	0.517	0.614	1.076
ROTA	0.181	0.118	21.312	-0.401	-1.694	0.114	0.972
EAT/TA	0.153	0.088	16.396	-0.352	-1.532	0.150	1.091
RONW	0.125	0.057	26.672	-0.548	-1.360	0.197	1.123

* Indicating significant results at 1% level of significance.

** Indicating significant results at 5% level of significance.

Critical Values of "t"

Degrees of Freedom	Probability (Alpha)	Table Value – t
13	0.01	3.010
13	0.05	2.160

Durbin – Watson Statistic (D-W Statistic), K = 1

N	Probability (Alpha)	D_L (Lower Critical Value)	D_U (Upper Critical Value)
13	0.01	0.738	1.038
13	0.05	1.010	1.340

Where, N = Sample size and K represents number of independent variables

- A significant negative linear trend is observed for CATAR indicating that the proportion of current assets to total assets have fallen and it is concluded that over the study period there is change in the current asset investment policy of ITeS Industry and the firms are gradually adopting aggressive approach with respect to current asset investment.
- A significant uptrend in CLCAR whereas significant downtrend in NWCCAR is observed indicating that over the study period, the firms in ITeS Industry are making greater use of current liabilities to finance the current assets thereby pursuing an aggressive working capital financing policy.

B. Analysis of Current Asset Structure

- On examining the outcome of regression analysis from Tables 5.24 and 5.25, a significant quadratic trend is observed for 4 CA Structure ratios *viz,* ITCAR, RTCAR, LATCAR and MSTCAR. The results of quadratic trend indicate that both ITCAR and RTCAR are declining at increasing rate and the trend is likely to reverse in 13th and 10th year respectively for the period under study. From this it is concluded that firms in ITeS Industry are making efforts to reduce investment in receivables and inventories. The decline also indicates the efficient management of inventory by the industry to bring it to as low as zero level as also improvement in receivables management over the study period.

TABLE – 5.25

Quadratic Trend on Time Variable for WCM, LEV and Profitability Ratios: ITeS Industry

Category & Name of Ratio	R^2	Adj. R^2	Intercept	Slope β1	Slope β2	t-Statistic β1	t-Statistic β2	F-Statistic	D-Statistic
Leverage and Working Capital Policy Ratios									
LTDTAR	0.910	0.895	0.160	-0.017	0.001	-5.922* (0.000)	3.589* (0.004)	60.769* (0.000)	1.769
TDTAR	0.606	0.540	0.505	-0.035	0.002	-4.293* (0.001)	4.165* (0.001)	9.216* (0.004)	0.694
NWTAR	0.634	0.573	0.463	0.037	-0.002	4.524* (0.001)	-4.273* (0.001)	10.382* (0.002)	0.643
CLTAR	0.530	0.452	0.345	-0.017	0.001	-1.976 (0.072)	2.646** (0.021)	6.776** (0.011)	0.752
CATAR	0.896	0.879	0.647	-0.004	-4.848 E-5	-1.999 (0.069)	-0.384 (0.708)	51.084* (0.000)	1.733
CLCAR	0.492	0.408	0.591	-0.020	0.002	-1.397 (0.188)	2.084 (0.059)	5.818** (0.017)	0.664
NWCCAR	0.492	0.408	0.409	0.020	-0.002	1.397 (0.188)	-2.084 (0.059)	5.818** (0.017)	0.664
Current Asset Structure Ratios									
ITCAR	0.904	0.888	0.151	-0.025	0.001	-7.629* (0.000)	5.688* (0.000)	56.617* (0.000)	1.162
RTCAR	0.711	0.663	0.701	-0.039	0.002	-4.441* (0.001)	3.587* (0.004)	14.779* (0.001)	0.822
CBBTCAR	0.282	0.162	0.193	0.005	-0.00 059	0.595 (0.563)	-1.066 (0.307)	2.358 (0.137)	0.715
PETCAR	0.922	0.909	0.016	0.009	-0.00 011	3.429* (0.005)	-0.682 (0.508)	70.516* (0.000)	0.710
LATCAR	0.794	0.760	-0.018	0.027	-0.002	6.742* (0.000)	-6.771* (0.000)	23.155* (0.000)	1.053
MSTCAR	0.891	0.872	-0.043	0.021	-0.00 065	4.392* (0.001)	-2.205** (0.048)	48.857* (0.000)	0.657
Current Liabilities Structure Ratio									
TCCLR	0.662	0.605	0.368	0.001	0.000	0.174 (0.865)	-1.298 (0.219)	11.738* (0.00)	1.560
DACECLR	0.763	0.723	-0.077	0.042	-0.002	4.908* (0.000)	-3.884* (0.002)	19.302* (0.000)	1.139
PCLR	0.729	0.684	0.148	0.023	-0.001	3.834* (0.002)	-2.751** (0.018)	16.134* (0.000)	1.254
STBBCLR	0.827	0.798	0.208	-0.031	0.002	-7.347* (0.000)	6.713* (0.000)	28.694* (0.000)	1.306
CFCCLR	0.421	0.325	0.093	-0.014	0.001	-2.895* (0.013)	2.674** (0.020)	4.370** (0.038)	1.116
OCLCLR	0.542	0.465	0.260	-0.022	0.001	-2.921* (0.013)	2.285** (0.041)	7.092* (0.009)	0.686
Liquidity Ratios									
CR	0.813	0.782	3.479	0.090	-0.015	0.971 (0.351)	-2.613** (0.023)	26.039* (0.000)	0.971
QR	0.795	0.761	3.253	0.122	-0.016	1.316 (0.213)	-2.841** (0.015)	23.262* (0.000)	0.973
ALR	0.368	0.263	0.577	0.123	-0.009	2.140 (0.054)	-2.443** (0.031)	3.498 (0.064)	0.861

TABLE – 5.25 (Continued)

Quadratic Trend on Time Variable for WCM, LEV and Profitability Ratios: ITes Industry

Category & Name of Ratio	R^2	Adj. R^2	Intercept	Slope β1	Slope β2	t-Statistic β1	t-Statistic β2	F-Statistic	D-Statistic
Current Asset Management Efficiency Ratios & Operating Cycle Measures									
TATR	0.495	0.411	1.385	-0.040	0.001	-1.744 (0.107)	1.007 (0.334)	5.885** (0.017)	1.078
CATR	0.159	0.019	2.131	-0.056	0.003	-1.393 (0.189)	1.221 (0.246)	1.134 (0.354)	1.021
WCTR	0.009	-0.156	-0.282	1.409	-0.069	0.273 (0.790)	-0.219 (0.830)	0.057 (0.945)	3.070
ITR	0.865	0.843	-43.050	24.299	-0.927	4.923* (0.000)	-3.090* (0.009)	38.583* (0.000)	0.573
IHP	0.969	0.964	54.519	-10.027	0.461	-14.292* (0.000)	10.808* (0.000)	189.853* (0.000)	0.606
RTR	0.642	0.582	2.948	0.208	-0.009	2.951* (0.012)	-2.037 (0.064)	10.738* (0.002)	1.728
ACP	0.088	-0.064	246.018	-8.422	-0.158	-0.193 (0.850)	-0.060 (0.953)	0.582 (0.574)	2.276
CBTR	0.504	0.421	24.854	-2.723	0.150	-3.358* (0.006)	3.043* (0.010)	6.093** (0.015)	1.079
CTR	0.084	-0.068	-167.38	129.211	-8.520	0.946 (0.363)	-1.027 (0.325)	0.552 (0.590)	2.325
APP	0.076	-0.077	126.332	-5.949	-0.121	-0.175 (0.864)	-0.059 (0.954)	0.497 (0.620)	2.312
OC	0.132	-0.013	300.613	-18.473	0.304	-0.426 (0.678)	0.115 (0.910)	0.912 (0.428)	2.290
NTC	0.372	0.267	174.281	-12.524	0.425	-1.307 (0.216)	0.729 (0.480)	3.550 (0.061)	2.183
Profitability Ratios									
OPM	0.632	0.570	27.029	-3.462	0.214	-4.457* (0.001)	4.532* (0.001)	10.292* (0.002)	1.861
NPM	0.465	0.376	17.216	-2.210	0.146	-2.917* (0.008)	3.161* (0.013)	5.223** (0.023)	1.767
ROTA	0.317	0.203	25.424	-1.853	0.091	-1.919 (0.079)	1.546 (0.148)	2.783 (0.102)	1.139
EAT/TA	0.258	0.134	19.84	-1.568	0.076	-1.634 (0.128)	1.303 (0.217)	2.086 (0.167)	1.214
RONW	0.151	0.009	29.636	-1.594	0.065	-0.900 (0.386)	0.607 (0.555)	1.064 (0.376)	1.175

* Indicating significant results at 1% level of significance.

** Indicating significant results at 5% level of significance.

Critical Values of "t" and "F"

t-test			F-test: Degrees of Freedom = 2		
DF	Probability (Alpha)	Table Value – t	N	Probability (Alpha)	Table Value – F
12	0.01	3.055	12	0.01	6.93
12	0.05	2.179	12	0.05	3.88

Durbin – Watson Statistic (D-W Statistic), K = 2

N	Probability (Alpha)	D_L (Lower Critical Value)	D_U (Upper Critical Value)
12	0.01	0.569	1.274
12	0.05	0.812	1.579

Where, N = Sample size and K represents number of independent variables

- The results of quadratic trend for LATCAR and MSTCAR indicate that both these ratios are increasing at decreasing rate and the trend is likely to reverse in 7th and 16th year respectively for the period under study. From this it is concluded that there is increased blockage of funds in Loans and Advances by the firms in the IT$_{e1}$ Industry over the study period. It is also concluded that there is rising trend of investing idle cash in the IT$_{e1}$ Industry over the study period which further is an indication of efficient cash management of the firms in the industry.
- An increasing trend is observed for PETCAR from which it is concluded that there is increased blocking of funds in the form of Prepaid Expenses in the IT$_{e1}$ Industry. However, CBBTCAR have remained more or less stable over the study period.

C. Analysis of Current Liabilities Structure Ratios

- On examining the outcome of regression analysis from Tables 5.24 and 5.25, a significant negative linear trend is observed for TCCLR indicating that over the study period there is a decline in share of trade credit to CL.
- Moreover, the remaining five CL Structure ratios are found to have significant quadratic trend for the period under study. DACECLR and PCLR are increasing at decreasing rate with and the trend is likely to reverse in 11th and 12th year respectively. However, STBBCLR, CFCCLR and OCLCLR are observed to be falling at increasing rate over a period of time and the trend is likely to reverse in 8th, 7th and 11th years respectively. From these results it is concluded that DACE as well as Provisions had been preferred in the IT$_{e1}$ Industry to create liquidity for financing the current assets over STBB, CFC and OCL over the period of study. Further, the rising trend observed in CLCAR in *Para* A can be assigned to increase in DACECLR and PCLR.

D. Liquidity Analysis

- On examining the outcome of regression analysis from Tables 5.24 and 5.25 a significant negative linear trend is observed for CR and QR indicating that these ratios have declined over the period under study. From these results it is concluded that there is an improvement in liquidity management of the firms in IT$_{e1}$ Industry over the study period as also that the industry is making efforts to do away with the excess liquidity.
- However, no significant trend is observed for ALR thereby indicating that it has remained stable throughout the study period which is in line with no significant trend observed in CBBTCAR. Thus, it is concluded that firms in IT$_{e1}$ Industry are following a consistent policy for maintaining its cash assets.

E. Current Asset Management Efficiency Analysis

- ◈ On examining the outcome of regression analysis from Tables 5.24 and 5.25, a significant rising trend is observed for TATR and it is concluded that there is an improvement in asset utilization over the study period with an ample scope for more effective utilization of idle capacity. However, CATR, WCTR, ACP, CTR, APP and OC have not shown significant trend indicating that there is no significant change in WCM efficiency measured in terms of these ratios.
- ◈ A significant quadratic trend is observed in ITR as well as IHP wherein, ITR is observed to be increasing at decreasing rate and IHP is observed to be decreasing at an increasing rate and trend in these ratios is likely to reverse in 13th and 11th year respectively. Increase in ITR is associated with improved and efficient inventory management and decline in IHP is associated with reduced cycle of converting inventories into cash and is an indicator of liquidity of inventories. From these results it is concluded that inventory management of the firms in ITes Industry has improved and become more efficient over the study period which is in line with the results of time trend observed for ITCAR in *para B*.
- ◈ From the significant uptrend observed for RTR it is concluded that there is improvement in receivables management of firms in ITes Industry over the period under study and is in line with the results of time trend observed for RTCAR in *para B*.
- ◈ A significant quadratic observed in CBTR indicates that it is decreasing at increasing rate over the period under study and the trend is likely to reverse in 9th year for the study period. From these results it is concluded that the turnover of cash in the ITes Industry has declined over a period of time.
- ◈ A significant linear downtrend in NTC indicates that there is significant decline in the length of NTC which means quicker conversion of working capital investments in cash. Thus, it is concluded that WCM efficiency of firms in ITes Industry has improved over the study period.

F. Profitability Analysis

On examining the outcome of regression analysis from Tables 5.24 and 5.25, no significant trend is observed in ROTA, EAT/TA and RONW. However, for remaining two ratios a significant quadratic trend is observed. Both OPM as well as NPM are falling at an increasing rate over a period of time and the trend is likely to reverse in the 8th year for both the ratios for the period under study. From this it is concluded that there is deterioration in the operational efficiency of the firms in ITes Industry and that attempts are being made to control the same.

5.3.3 Trend Analysis: WCM, LEV and Profitability of Transport Services Industry (16 companies)

This para examines the overall trends as well as the time trends (Linear and Quadratic Trend) in WCM, LEV and Profitability Ratios of the Transport Services Industry for 16 sample companies. The overall trends is presented and interpreted first which is followed by the presentation and elucidation of the time trends analysis.

5.3.3.1 Trends in WCM, LEV and PROF: Transport Services Industry

The overall trends in WCM, LEV and Profitability ratios is observed by taking industry average on yearly basis to understand the yearly movements in ratios as well as the nature of WCM, LEV and Profitability position in the Transport Services Industry. The results of the analysis are presented and interpreted as per the group to which each ratio belongs.

A. Leverage and Working Capital Policy Ratios

The computation for each ratio of LEV and Working Capital Policy over the study period is presented in Table 5.26. Chart 5.10 presents the current asset financing mix, *i.e.*, share of CL and NWC in financing total current assets.

TABLE – 5.26

Working Capital Policy and Leverage Ratios: Transport Services Industry

	Leverage Ratios		Working Capital Policy Ratios			
Year	LTDTAR	TDTAR	CLTAR	CATAR	CLCAR	NWCCAR
Mar-96	0.22	0.48	0.26	0.50	0.56	0.44
Mar-97	0.21	0.50	0.29	0.49	0.66	0.34
Mar-98	0.21	0.50	0.29	0.50	0.65	0.35
Mar-99	0.22	0.50	0.28	0.49	0.64	0.36
Mar-00	0.22	0.48	0.26	0.47	0.66	0.34
Mar-01	0.22	0.48	0.26	0.46	0.67	0.33
Mar-02	0.22	0.46	0.24	0.46	0.65	0.35
Mar-03	0.20	0.44	0.24	0.46	0.66	0.34
Mar-04	0.19	0.43	0.24	0.47	0.61	0.39
Mar-05	0.20	0.43	0.23	0.48	0.51	0.49
Mar-06	0.20	0.44	0.24	0.50	0.49	0.51
Mar-07	0.20	0.47	0.27	0.48	0.65	0.35
Mar-08	0.20	0.46	0.26	0.45	0.75	0.25
Mar-09	0.19	0.44	0.25	0.44	0.70	0.30
Mar-10	0.20	0.44	0.24	0.47	0.54	0.46
Mean	0.21	0.47	0.26	0.48	0.63	0.37
SD	0.01	0.03	0.02	0.02	0.07	0.07
CV(%)	5.38	5.57	7.46	3.97	11.45	19.23

- From the perusal of Table 5.26 it is observed that LTDTAR ranged between 19% and 22% with very low fluctuations as observed from CV of 5.38% which is observed to be lowest amongst all 6 ratios. On an average, long term funds have financed 21% of the total assets of the Transport Services Industry which seems to be a reasonable policy of debt financing being pursued in the industry. CLTAR ranged from 23% to 29% on an average 26% of the total assets of the Transport Services Industry were financed by the current liabilities. It is interesting to note that in all the years CLTAR is greater than LTDTAR indicating that firms in Transport Services Industry had utilized more of CL as compared to long term debt to finance its total assets. It can also be observed that on an average, 47% of the total assets of Transport Services Industry are financed by total debt, of which current liabilities formed the major portion. The firms in the Transport Services Industry seem to be pursuing a conservative approach of debt financing. Overall a decline in all the three ratios can be observed.
- From Table 5.26, it can be observed that the ratio of current assets to total assets ranged between 44% and 50% and on an average Transport Services Industry invests 48% of its funds in current assets. The higher CATAR suggests that the transport industry is following a distinctive current asset investment policy and its asset structure is liquid. Such a proportion is generally observed in manufacturing concerns and theoretically considered to be a conservative current asset investment policy which is very near to 50% as observed by Ansari[1] in his study on 11 manufacturing industries. However, the ratio is much high when compared with the results observed in the study of Kantawala and Joshi[2] in Steel Industry. Overall a decline can be observed in the ratio over the study period indicating possible measures taken by the industry to do away with excess liquidity.
- From the perusal of Chart 5.10, it is observed that CL finance 63% of current assets whereas NWC contributes 37%. From the perusal of Table 5.26 it is observed that CLCAR ranged between 51% and 75% whereas NWCCAR ranged between 25% and 49% and a fluctuating trend is noted in both the ratios. However, overall it can be observed that the industry is operating with lower NWC and utilizing more of short term funds to finance the current assets. Thus, it can be concluded that the Transport Services Industry is following an aggressive approach of financing its current assets which is in line with findings observed for CLTAR and LTDTAR. The reason for such a high reliance on CL can be assigned to the good reputation, established business and creditworthiness due to which the industry has access to

and is able to utilize more short term funds to finance its current assets. Lower values of SD and CV indicate that over a period of time the leverage position of the Transport Services Industry as well as the working capital policy has not undergone major fluctuations.

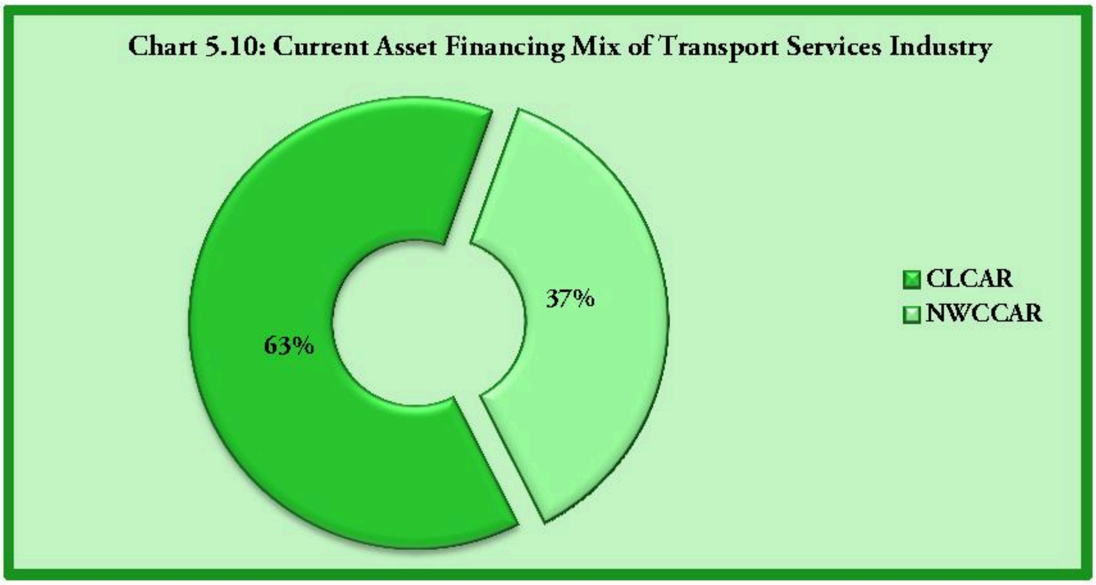


Chart 5.10: Current Asset Financing Mix of Transport Services Industry

B. Analysis of Current Asset Structure

In order to examine the structure of current assets (CA), the composition of CA with reference to various components of CA is studied. The computation for each ratio over the study period is presented in Table 5.27. Chart 5.11 presents the share of each CA in pie of total current asset.

◈ As observed from Chart 5.11, Receivables had the highest share in the current assets of Transport Services Industry with 52% on an average followed by Cash and Bank Balance at 24%, Prepaid Expenses at 7%, Loans and Advances as well as Marketable Securities at 6% each and Inventories at 5%.

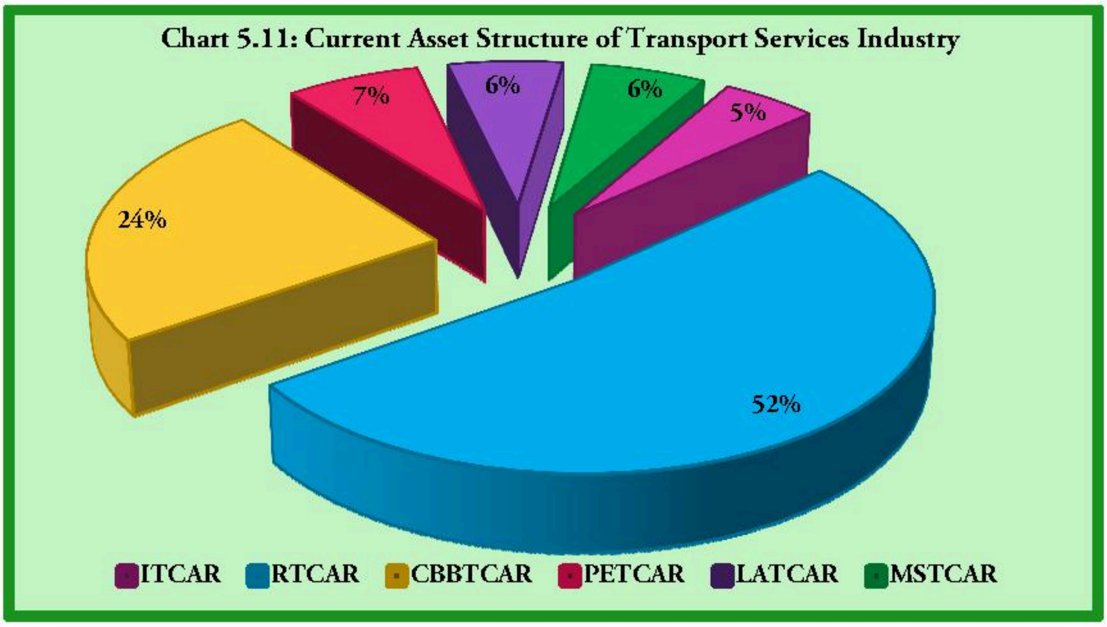


Chart 5.11: Current Asset Structure of Transport Services Industry

- From the perusal of Table 5.27 it is observed that the share of inventories ranged between 3% and 7% with an overall declining trend indicating reduction of investment in inventories by the Transport Services Industry leading to improvement in inventory management which can be further substantiated by the analysis of turnover ratios. The industry operates with very low level of inventories (5% on an average) which necessarily distinguishes this service industry, *i.e.*, Transport Services Industry from the manufacturing sector, where inventory is a very high proportion of current assets.

TABLE – 5.27

Current Asset Structure Ratios: Transport Services Industry

Year	ITCAR	RTCAR	CBBTCAR	PETCAR	LATCAR	MSTCAR
Mar-96	0.06	0.60	0.18	0.08	0.04	0.04
Mar-97	0.07	0.59	0.15	0.09	0.06	0.04
Mar-98	0.06	0.58	0.16	0.10	0.06	0.04
Mar-99	0.07	0.61	0.17	0.08	0.04	0.03
Mar-00	0.07	0.60	0.18	0.06	0.06	0.03
Mar-01	0.07	0.57	0.19	0.06	0.09	0.02
Mar-02	0.06	0.55	0.22	0.07	0.07	0.03
Mar-03	0.06	0.54	0.22	0.08	0.05	0.05
Mar-04	0.06	0.51	0.24	0.08	0.04	0.07
Mar-05	0.05	0.46	0.32	0.06	0.04	0.07
Mar-06	0.03	0.42	0.36	0.06	0.06	0.07
Mar-07	0.03	0.43	0.34	0.07	0.06	0.07
Mar-08	0.04	0.45	0.29	0.07	0.06	0.09
Mar-09	0.04	0.44	0.29	0.07	0.06	0.10
Mar-10	0.03	0.43	0.30	0.08	0.05	0.11
Mean	0.05	0.52	0.24	0.07	0.06	0.06
SD	0.02	0.07	0.07	0.01	0.01	0.03
CV(%)	28.93	14.05	29.23	15.99	24.15	48.65

- Further, it is observed that Receivables ranged between 42% and 61% of current assets and a declining trend can be observed in receivables over the study period which indicates reduction of investment in receivables and improvement in receivables management. Loans and Advances ranged between 4% and 9% and a fluctuating trend can be observed in LATCAR. Prepaid Expenses is observed to be in range bound of 6% to 10% throughout the study period.
- The share of cash and bank balance ranged between 15% and 36% wherein an overall rising trend can be observed. The rising share in CBBTCAR can be on account of declining ITCAR and RTCAR thereby increasing the cash balances. The share of marketable securities ranged between 2% and 11% which has shown an increasing trend after 2001. CV is also observed to be highest for MSTCAR at

48.65% due to the rising trend in MSTCAR. The increasing share of MSTCAR indicates that firms in Transport Services Industry invest their idle lying excess cash signalling efforts toward efficient cash management which can further be substantiated from the analysis of efficiency ratios. The mean share of cash assets (CBB+MS) of 30% indicates a very good liquidity position in the industry which can further be substantiated by the analysis of liquidity ratios. The changes in CA structure ratios have been progressive and with lower volatility throughout the study period as evidenced by the values of SD.

C. Analysis of Current Liabilities Structure Ratios:

In order to examine the structure of current liabilities of Transport Services Industry, the composition of CL with reference to various components of CL is studied. The computation for each ratio over the study period is presented in Table 5.28. Chart 5.12 presents the share of each component of CL in pie of total current liability.

- From the perusal of Chart 5.12, it is observed that Trade Credit with 32% of the total current liabilities is the major source of financing the current assets of the Transport Industry, followed by Provisions at 24%, Other Current Liabilities at 15%, Short Term Bank Borrowings at 13%, Current Financing Charge at 12% which is followed by Deposits and Advances from Customers and Suppliers at 4%. Also, among the current liabilities, the spontaneous source of short term finance (Trade Credit, CFC, Provisions and OCL) is dominating the current liabilities structure at 83% and balance 17% comprises of the negotiated sources of short term finance (STBB and DACE).

Chart5.12: Current Liabilities Structure of Transport Services Industry

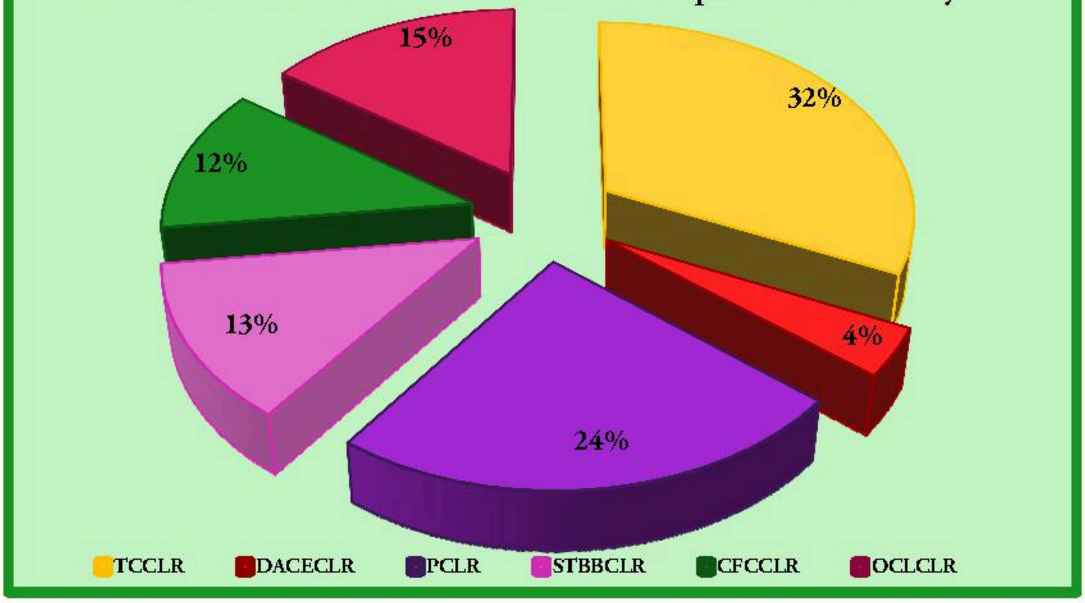


TABLE – 5.28

Current Liabilities Structure Ratios: Transport Services Industry

Year	TCCLR	DACECLR	PCLR	STBBCLR	CFCCLR	OCLCLR
Mar-96	0.31	0.04	0.28	0.09	0.12	0.16
Mar-97	0.31	0.04	0.27	0.09	0.12	0.17
Mar-98	0.30	0.05	0.26	0.10	0.12	0.17
Mar-99	0.30	0.06	0.22	0.13	0.14	0.15
Mar-00	0.30	0.05	0.22	0.14	0.14	0.15
Mar-01	0.29	0.05	0.22	0.15	0.14	0.15
Mar-02	0.31	0.04	0.24	0.15	0.13	0.13
Mar-03	0.30	0.03	0.25	0.16	0.15	0.11
Mar-04	0.31	0.05	0.23	0.16	0.14	0.11
Mar-05	0.33	0.06	0.23	0.14	0.13	0.11
Mar-06	0.36	0.04	0.22	0.11	0.11	0.16
Mar-07	0.35	0.05	0.22	0.13	0.10	0.15
Mar-08	0.33	0.07	0.23	0.13	0.08	0.16
Mar-09	0.33	0.09	0.23	0.09	0.06	0.20
Mar-10	0.32	0.06	0.24	0.11	0.08	0.19
Mean	0.32	0.05	0.24	0.12	0.12	0.15
SD	0.02	0.02	0.02	0.03	0.03	0.03
CV(%)	6.28	28.34	8.19	20.20	22.66	17.99

- From the perusal of Table 5.28 it is noted that TCCLR has ranged between 0.29 and 0.36 and it can be observed that it has increased over a period of time. PCLR has ranged between 0.22 and 0.28 and it can be noted that it has also reduced over the study period. OCLCLR has ranged between 0.11 and 0.20 wherein a declining trend can be observed until 2005 where after the trend has reversed. CFCCLR has ranged between 0.06 and 0.16 whereas DACECLR has ranged between 0.00 and 0.09. STBBCLR has ranged between 0.09 and 0.16 which has increased until 2004, where after it has continuously declined. The changes in CL structure ratios have been progressive and with lower volatility throughout the study period as evidenced by the values of SD.

D. Liquidity Analysis

The outcome of computations for the liquidity ratios over the study period is presented in Table 5.29.

- From the perusal of Table 5.29, it is observed that the industry CR ranged between 1.91 and 2.59 except in years 2006 and 2007 when it was observed to be 3.16. QR ranged between 1.72 and 2.39 except years 2006 and 2007 when it was observed to be above 3. The industry ALR ranged between 0.37 and 1.20 except in years 2006 and 2007 when it was above 1.50. QR was above the thumb rule in all the years whereas CR and ALR were observed to be below the thumb rule from 1997 to 2001. On an average the industry maintains ₹ 2.32 of current assets, ₹ 2.16 of quick assets and ₹ 0.84 of cash assets against ₹ 1 of current liabilities which is considerably high proportion. Thus, overall good short term liquidity, rather a situation of excess liquidity can be observed for the industry.

TABLE – 5.29

Liquidity Ratios:
Transport Services Industry

Year	CR	QR	ALR
Mar-96	2.30	2.01	0.53
Mar-97	1.93	1.72	0.37
Mar-98	1.91	1.74	0.40
Mar-99	1.94	1.78	0.43
Mar-00	1.95	1.77	0.44
Mar-01	1.97	1.78	0.43
Mar-02	2.23	2.03	0.60
Mar-03	2.39	2.15	0.75
Mar-04	2.28	2.06	0.83
Mar-05	2.59	2.39	1.18
Mar-06	3.16	3.03	1.68
Mar-07	3.16	3.07	1.63
Mar-08	2.40	2.33	1.12
Mar-09	2.17	2.12	1.03
Mar-10	2.45	2.39	1.20
Mean	2.32	2.16	0.84
SD	0.40	0.43	0.44
CV(%)	17.34	19.90	52.79

E. Current Asset Management Efficiency Analysis

The computation for each CAME ratio and Operating Cycle Variables over the study period is presented in Table 5.30.

◈ From the perusal of Table 5.30 it is found that, TATR has ranged between 0.74 and 1.34 and on an average every ₹ 1 of investment in total assets have been turned over into ₹ 1.01 of Sales which indicates efficient utilization of investments in total asset. A fluctuating trend can be observed until 2005, where after, it has declined continuously which indicates decline in total assets utilization as well as idle capacity with a scope to utilize total assets more effectively.

◈ It is also observed that on an average CA have been converted into sales 2.24 times which can be further improved through better utilization of current assets. WCTR has ranged between -3.65 and 11.78 and an erratic trend is observed as evident by CV of 71.26%.This indicates that over the study period the industry has utilized different levels of NWC and at times resort to negative NWC for supporting sales. However, looking at the mean of NWCCAR in Table 5.26, negative values are not found in any year and hence data was examined. On examination, a very low negative NWC in decimal points was observed for 5 of the 16 companies. For a given level of sales as numerator and negative NWC in decimal points as denominator, the resultant values of WCTR is bound to be very high and negative. Also, the negative NWC was observed to be for 3 of the 5 companies in 1997 and 1998 and so for these 2 years the industry WCTR turns out to be negative.

- ITR ranged between 11.09 and 71.76 which is a very high and wide range as also observed from CV of 61.18%. On an average inventory is turned over 40.08 times which is a very high ratio. Such high ITR is indicative of overtrading situation which arises when a higher level of sales is supported with very low level of inventory which is observed to be true of the Transport Services Industry which is operating at an average of 5% inventory of total current assets. The reason for such a low level of inventory is again assigned to the nature of the industry and hence this situation is actually not a risky for the industry. IHP has ranged between 5 and 33 days wherein a consistently declining trend is observed throughout the study period as also evidenced by high values of CV at 70.12%. It can be observed that on an average the inventory in Transport Services Industry gets converted into cash in 14 days. The lower length of IHP and reduction in the length over the study period coupled with simultaneous increase in ITR throughout the selected time frame is indicative of efficiency in inventory management in the industry.
- Further it is observed that RTR ranged between 4.10 and 9.67 whereas ACP ranged between 87 and 180 days. On an average receivables are turned over 6.25 times with 113 days as the ACP. Overall, it can be observed that RTR has increased leading to decline in ACP thereby indicating improvement in receivables management and is in line with the findings of RTCAR (Table 5.27). Although ACP has reduced to 113 days, it is considerably very high for a service industry and therefore credit and collection policy of the Transport Services Industry needs due attention with need for controlling the credit policy and bringing promptness in the collection process. CTR ranged between 14.11 and 41.84 whereas APP ranged between 31 and 69 days. On an average the payables of the industry is turned over 26.20 times with APP of 39 days. It can also be observed that throughout the study period the CTR has been greater than RTR meaning thereby that the industry is repaying its liabilities regularly and more frequently than the company's debtors which indicates improper credit management in the Transport Services Industry and calls attention for further improvement of the same.

TABLE 5.30

Efficiency Ratios and Operating Cycle Variables: Transport Services Industry

Year	TATR	CATR	WCTR	ITR	IHP (In Days)	RTR	ACP (In Days)	CBTR	CTR	APP (In Days)	OC (In Days)	NTC (In Days)
Mar-96	1.07	2.24	5.34	11.02	33	4.10	180	18.53	14.11	36	213	177
Mar-97	1.00	2.20	-3.65	11.75	31	4.31	134	25.65	23.40	37	165	128
Mar-98	1.02	2.12	-0.61	13.43	27	4.37	123	24.51	23.59	35	150	115
Mar-99	1.03	2.15	8.19	17.73	21	4.29	125	23.29	17.47	34	145	112
Mar-00	1.00	2.30	5.47	17.93	20	4.62	130	24.28	17.60	34	151	116
Mar-01	1.05	2.42	7.06	21.46	17	6.68	104	23.94	23.57	31	121	90
Mar-02	1.04	2.49	6.94	26.11	14	7.14	105	22.71	31.83	36	119	82
Mar-03	1.00	2.42	7.32	35.62	10	6.11	100	25.51	32.58	38	110	72
Mar-04	0.98	2.61	6.56	47.75	8	6.54	97	25.07	36.57	36	105	68
Mar-05	1.00	2.49	7.42	65.73	6	6.76	89	18.48	30.49	32	95	63
Mar-06	0.99	2.18	11.78	69.49	5	7.08	87	15.14	33.76	36	92	56
Mar-07	0.91	2.14	3.37	71.11	5	7.46	91	10.92	19.76	37	96	59
Mar-08	0.86	2.25	6.85	71.76	5	8.92	99	12.18	17.41	42	104	63
Mar-09	0.86	2.11	5.62	68.98	5	9.67	107	12.83	41.84	47	112	65
Mar-10	0.74	1.45	1.83	51.33	7	5.64	119	12.14	29.02	69	126	58
Mean	0.97	2.24	5.30	40.08	14	6.25	113	19.68	26.20	39	127	88
SD	0.09	0.27	3.78	24.52	10.00	1.7	23.96	5.63	8.22	9.24	32.85	24.69
CV(%)	9.23	12.00	71.26	61.18	70.12	27.44	21.26	28.61	31.35	23.90	25.88	39.30

- CBTR ranged between 10.92 and 25.65 as observed from Table 5.30 and on an average cash is turned over 19.68 times which is a high ratio, *i.e.,* sales are getting turned over 20 times on an average which is a positive sign again indicating better utilization of cash assets, liquidity of the current assets as well as efficiency in operating activities of the industry.
- From the perusal of Table 5.30 it is observed that OC ranged between 92 days to 213 days whereas NTC ranged between 56 days to 177 days. On an average the working capital investments of Transport Services Industry remains blocked for 127 days in the form of total current assets and are converted into cash in 88 days. Overall it can be observed that OC and NTC have continuously declined throughout the study period excepting 2009 which indicates an improvement in overall WCM which is on account of management of inventory as well as receivables in the Transport Services Industry al already observed from results for ITR, IHP, RTR and ACP in preceding paras as also ITCAR and RTCAR in *Para B*. However, OC and NTC of the industry can still be considered as very high in lieu of the fact that it is operating with very low level of inventories (4% on an average). Thus, the major cause for such a high OC and NTC can be assigned to the credit policy of the industry as already discussed above, which needs critical attention for further improvement in receivables management which will lead to shortening of the length of OC and NTC further leading to liquidity in asset structure along with overall improvement in WCM efficiency.

Profitability Analysis

The computations for each of the profitability ratio of the Transport Services Industry over the study period are presented in Table 5.31.

- From the perusal of Table 5.31 it is observed that OPM has ranged between 10.57% and 27.73% with industry mean of 17.33%. NPM has ranged between 3.72% and 18.75% with mean of 9.62%. The range of both the ratios is very high and overall, a fluctuating trend can be observed for both as also evidenced by CV of 28.84% and 50.46% respectively. The trend in profitability measured in terms of ROTA and EAT/TA is also observed to be fluctuating. From these results it can be concluded that the profitability position of the Transport Services Industry is unstable.
- The trend in RONW is errant and is evidence that the Transport Services Industry has not given stable returns to its shareholders over the study period. The overall operational efficiency is not very good in the industry. Moreover, post tax return on

total assets is lesser than the risk free rate of return – 8.10%[14] in 12 out of 15 years which is a dismal situation.

TABLE – 5.31

Profitability Ratios: Transport Services Industry (In %)

Year	OPM	NPM	ROTA	EAT/TA	RONW
Mar-96	22.46	15.08	13.88	8.03	17.30
Mar-97	17.85	9.25	12.68	6.35	13.95
Mar-98	14.55	5.93	10.65	4.82	9.96
Mar-99	13.36	4.29	9.9	4.33	8.33
Mar-00	13.50	5.22	10.34	4.80	8.77
Mar-01	14.68	7.68	11.41	5.81	11.23
Mar-02	10.60	3.72	10.03	4.66	7.46
Mar-03	10.57	4.59	8.59	3.85	7.58
Mar-04	16.57	11.01	13.10	8.42	19.08
Mar-05	27.73	18.75	16.15	10.89	22.97
Mar-06	21.89	16.77	13.80	9.60	20.00
Mar-07	18.55	12.09	12.08	7.83	10.97
Mar-08	19.52	11.79	12.51	7.83	12.08
Mar-09	14.34	5.41	10.53	6.17	11.64
Mar-10	23.83	12.76	9.23	5.66	4.48
Mean	17.33	9.62	11.66	6.60	12.39
SD	5.00	4.86	2.05	2.08	5.28
CV(%)	28.84	50.46	17.59	31.46	42.65

5.3.3.2 Time Trends in WCM, LEV and PROF: Transport Services Industry

Time trends in WCM, LEV and profitability ratios of Transport Services Industry have been examined by fitting the Linear Trend Model and Quadratic Trend Model. The results of linear trend on time variable are presented in Table 5.32 whereas the results of quadratic trend are presented in Table 5.33 for all the ratios. The results of both the models are interpreted jointly and the interpretations are presented as per the group to which each ratio belongs.

A. Leverage and Working Capital Policy Ratios

- On examining the outcome of regression analysis from Tables 5.32 and 5.33, it is observed that CLTAR, LTDTAR and TDTAR have shown significant downtrend indicating that there is reduction in utilization of LTD, CL as well as total debt for the financing of assets by firms in Transport Services Industry over the period under study. On account of simultaneous decline in both the leverage ratios, it was considered important to examine the trend in Net Worth to Total Asset Ratio (NWTAR). The results of the regression analysis however indicated no significant trend in NWTAR. Hence, it is concluded that, there is reduction in utilization of debt for financing the total assets of the business in the industry.

TABLE – 5.32

Linear Trend on Time Variable for WCM, LEV & Profitability Ratios: Transport Services Industry

Category & Name of Ratio	R^2	Adj. R^2	Intercept	Slope	t-Statistic	p-value	D Statistic
Working Capital Policy and Debt Ratios							
LTDTAR	0.557	0.523	0.222	-0.002	-4.044*	0.001	1.269
TDTAR	0.560	0.526	0.498	-0.004	-4.070*	0.001	0.759
NWTAR	0.006	-0.071	0.493	0.000	0.272	0.790	1.345
CLTAR	0.331	0.280	0.276	-0.002	-2.538**	0.025	0.928
CATAR	0.313	0.260	0.494	-0.002	-2.433**	0.030	1.064
CLCAR	0.003	-0.074	0.633	-0.0008	-0.185	0.856	1.220
NWCCAR	0.003	-0.074	0.367	0.001	0.185	0.856	1.220
Current Asset Structure Ratios							
ITCAR	0.703	0.680	0.076	-0.003	-5.547*	0.000	1.054
RTCAR	0.871	0.862	0.640	-0.015	-9.388*	0.000	0.666
CBBTCAR	0.756	0.737	0.131	0.014	6.347*	0.000	0.765
PETCAR	0.164	0.100	0.083	-0.001	-1.597	0.134	1.108
LATCAR	0.001	-0.076	0.055	7.143E-5	0.085	0.933	1.367
MSTCAR	0.757	0.739	0.014	0.005	6.372*	0.000	0.512
Current Liabilities Structure Ratio							
TCCLR	0.476	0.435	0.292	0.003	3.434*	0.004	1.034
DACECLR	0.620	0.591	-0.009	0.006	4.607*	0.000	0.947
PCLR	0.454	0.412	0.268	-0.003	-3.287*	0.006	0.988
STBBCLR	0.010	-0.067	0.123	0.001	0.355	0.728	0.496
CFCCLR	0.403	0.357	0.150	-0.004	-2.961**	0.011	0.602
OCLCLR	0.003	-0.074	0.151	0.000	0.191	0.851	0.445
Liquidity Ratios							
CR	0.342	0.291	1.901	0.053	2.599**	0.022	0.936
QR	0.458	0.417	1.638	0.065	3.316*	0.006	0.976
ALR	0.655	0.628	0.198	0.080	4.964*	0.000	0.776
Current Asset Management Efficiency Ratios & Operating Cycle Variables							
TATR	0.679	0.655	1.102	-0.017	-5.249*	0.000	0.768
CATR	0.109	0.041	2.397	-0.020	-1.264	0.228	0.718
WCTR	0.084	0.013	3.347	0.244	1.089	0.296	1.635
ITR	0.826	0.813	0.206	4.984	7.861*	0.000	0.615
IHP	0.872	0.863	30.981	-2.089	-9.429*	0.000	0.316
RTR	0.632	0.604	3.809	0.305	4.728*	0.000	1.684
ACP	0.455	0.413	141.581	-3.614	-3.296*	0.006	0.702
CBTR	0.581	0.549	27.358	-0.960	-4.250*	0.001	0.752
CTR	0.256	0.199	18.762	0.930	2.116	0.054	1.763
APP	0.358	0.308	28.781	1.236	2.691**	0.019	0.723
OC	0.602	0.572	172.533	-5.700	-4.436*	0.001	0.584
NTC	0.790	0.774	143.438	-6.896	-7.001*	0.000	0.744

TABLE – 5.32 (Continued...)

Linear Trend on Time Variable for WCM, LEV & Profitability Ratios: Transport Services Industry

Category & Name of Ratio	R^2	Adj. R^2	Intercept	Slope	t-Statistic	p-value	D Statistic
Profitability Ratios							
OPM	0.078	0.007	15.086	0.314	1.050	0.313	1.214
NPM	0.083	0.013	7.124	0.318	1.087	0.297	1.031
ROTA	0.001	-0.076	11.848	-0.014	-0.112	0.912	0.864
EAT/TA	0.118	0.050	5.381	0.161	1.318	0.210	0.832
RONW	0.002	-0.075	12.777	-0.049	-0.149	0.884	0.870

* Indicating significant results at 1% level of significance.
** Indicating significant results at 5% level of significance.

Critical Values of "t"

Degrees of Freedom	Probability (Alpha)	Table Value – t
13	0.01	3.010
13	0.05	2.160

Durbin – Watson Statistic (D-W Statistic), K = 1

N	Probability (Alpha)	D_L (Lower Critical Value)	D_U (Upper Critical Value)
13	0.01	0.738	1.038
13	0.05	1.010	1.340

Where, N = Sample size and K represents number of independent variables

- A significant downtrend is also observed in CATAR indicating that the ratio has declined over the period under study. From this it is concluded that there is reduction in the investment in current assets in proportion to total assets and the current asset investment policy pursued by firms in Transport Services Industry is moving towards an aggressive approach over the study period. However, on examining the outcome of regression analysis for CLCAR and NWCCAR, no significant trend is observed in both these ratios indicating that the working capital financing policy of the firms in Transport Services Industry have not undergone significant changes.

B. Analysis of Current Asset Structure

- On examining the outcome of regression analysis from the perusal of Tables 5.32 and 5.33, a significant downtrend is observed for ITCAR and RTCAR whereas a significant uptrend is observed for CBBTCAR and MSTCAR. The increasing trend in MSTCAR indicates rising trend of investing idle excess cash in the industry thereby implying effort towards efficient cash management. Thus it is concluded that firms in Transport Services Industry have pursued a policy to reduce investments in inventories and receivables due to which there is increase in cash and bank balances as well as investments in marketable securities. The reduced investment in inventories and receivables over the study period is the responsible factor for significant downtrend in CATAR. *However, no significant trend is observed for PETCAR and LATCAR.*

C. Analysis of Current Liabilities Structure Ratios

- On examining the outcome of regression analysis from the perusal of Tables 5.32 and 5.33, a significant positive linear trend is observed in TCCLR and it is concluded that over the study period there is rise in Trade credit as proportion of CL and as a source of financing current assets. *However, no significant trend is observed for DACECLR.*

- Moreover, a significant quadratic trend is observed for PCLR, STBBCLR, CFCCLR and OCLCLR. The trend in PCLR and OCLCLR is observed to be falling at increasing rate which is likely to reverse in 7th and 10th year respectively for the period under study. The trend in STBBCLR and CFCCLR is observed to be increasing at declining rate which is likely to reverse in 10th and 6th year respectively for the period under study. Thus it is noted that over the study period the structure of current liabilities has undergone change with the decline in share of Trade Credit, Provisions and OCL and rise in share of STBB and CFC. Thus it is concluded that STBB and CFC are preferred over Trade Credit, DACE, OCL and Provisions by firms in Transport Services Industry for creating liquidity to finance current assets.

D. Liquidity Analysis

- From the perusal of Tables 5.32 and 5.33, a significant positive linear trend is observed for all the liquidity ratios. Thus, it is concluded that there is an increase in liquidity position of the firms in Transport Services Industry over the period under study and is in line with the linear trend observed for CATAR, CBBTCAR and MSTCAR. However, increase in liquidity is also not always a very good situation as it may, at times, result to idle, unutilized and unproductive cash. But this is not a case for Transport Services Industry as it has already been noted that the industry is investing idle cash, if any in marketable securities.

E. Current Asset Management Efficiency Analysis

- On examining the outcome of regression analysis from Tables 5.32 and 5.33, a significant falling trend is observed for TATR and it is concluded that there is deterioration of asset utilization by firms in Transport Services Industry over the period under study with an ample scope for more effective utilization of idle capacity.

TABLE – 5.33

Quadratic Trend on Time Variable for WCM, LEV and Profitability Ratios: Transport Services Industry

Category & Name of Ratio	R^2	Adj. R^2	Intercept	Slope β1	Slope β2	t-Statistic β1	t-Statistic β2	F-Statistic	D-Statistic
Working Capital Policy & Leverage Ratios									
LTDTAR	0.560	0.486	0.220	-0.001	-3.185E-5	-0.666 (0.518)	-0.265 (0.796)	7.628* (0.007)	1.283
TDTAR	0.620	0.557	0.515	-0.0102	0.000368	-2.057 (0.062)	1.116 (0.286)	9.060* (0.004)	0.874
NWTAR	0.124	-0.022	0.484	0.004	-0.00021	1.304 (0.217)	-1.274 (0.227)	0.850 (0.452)	1.560
CLTAR	0.423	0.327	0.292	-0.008	0.000379	-1.968 (0.073)	1.385 (0.191)	4.407** (0.037)	1.144
CATAR	0.343	0.234	0.503	-0.005	0.00019	-1.292 (0.221)	0.747 (0.469)	3.137 (0.080)	1.094
CLCAR	0.006	-0.160	0.622	0.003	-0.00015	0.155 (0.879)	-0.203 (0.842)	0.036 (0.964)	1.211
NWCCAR	0.006	-0.160	0.378	-0.003	0.00015	-0.155 (0.879)	0.203 (0.842)	0.036 (0.964)	1.211
Current Asset Structure Ratios									
ITCAR	0.778	0.741	0.065	0.001	-0.00023	0.494 (0.630)	-2.011 (0.067)	21.008* (0.000)	1.324
RTCAR	0.878	0.857	0.625	-0.010	-0.00022	-1.436 (0.177)	-0.776 (0.453)	43.017* (0.000)	0.679
CBBTCAR	0.759	0.719	0.121	0.017	-0.0003	1.819 (0.094)	-0.377 (0.713)	18.885* (0.000)	0.777
PETCAR	0.367	0.261	0.097	-0.006	0.0003	-2.320** (0.039)	1.959 (0.074)	3.472 (0.065)	1.414
LATCAR	0.031	-0.131	0.049	0.002	-0.00016	0.612 (0.552)	-0.609 (0.554)	0.189 (0.830)	1.415
MSTCAR	0.905	0.889	0.043	-0.004	0.001	-1.871 (0.086)	4.309* (0.001)	57.014* (0.000)	1.129
Current Liabilities Structure Ratio									
TCCLR	0.478	0.391	0.294	0.002	5.471E-5	0.548 (0.593)	0.242 (0.813)	5.497* (0.020)	1.049
DACECLR	0.678	0.624	0.012	-0.001	0.000419	-0.289 (0.777)	1.470 (0.167)	12.639* (0.001)	1.113
PCLR	0.699	0.649	0.296	-0.013	0.001	-4.049* (0.002)	3.130* (0.009)	13.954* (0.001)	1.540
STBBCLR	0.755	0.714	0.069	0.019	-0.001	6.034* (0.000)	-6.044* (0.000)	18.499* (0.000)	1.691
CFCCLR	0.726	0.681	0.104	0.011	-0.00098	2.664** (0.021)	-3.766* (0.003)	15.920* (0.000)	1.358
OCLCLR	0.584	0.514	0.208	-0.019	0.001	-3.909* (0.002)	4.093* (0.001)	8.417* (0.005)	1.010
Liquidity Ratios									
CR	0.349	0.240	1.811	0.083	-0.002	0.935 (0.368)	--0.350 (0.732)	3.212 (0.076)	0.952
QR	0.460	0.370	1.591	0.081	-0.00172	0.938 (0.367)	-0.187 (0.854)	5.107** (0.025)	0.982
ALR	0.655	0.597	0.195	0.081	-6.892E-5	1.146 (0.274)	-0.016 (0.987)	11.372* (0.002)	0.776

TABLE – 5.33 (Continued)

Quadratic Trend on Time Variable for WCM, LEV and Profitability Ratios: Transport Services Industry

Category & Name of Ratio	R^2	Adj. R^2	Intercept	Slope β1	Slope β2	t-Statistic β1	t-Statistic β2	F-Statistic	D-Statistic
Current Asset Management Efficiency Ratios & Operating Cycle Measures									
TATR	0.861	0.838	0.997	0.018	-0.002	2.033 (0.065)	-3.960* (0.002)	37.178* (0.000)	1.679
CATR	0.585	0.516	1.889	0.150	-0.010	3.179* (0.008)	-3.706* (0.003)	8.449* (0.005)	1.289
WCTR	0.386	0.283	-2.347	2.148	-0.117	2.664** (0.021)	-2.430** (0.032)	3.770** (0.054)	2.421
ITR	0.833	0.806	-5.292	6.925	-0.121	2.500** (0.028)	-0.721 (0.485)	30.015* (0.000)	0.604
IHP	0.988	0.986	39.952	-5.255	0.198	-17.154* (0.000)	10.628* (0.000)	483.760* (0.000)	1.400
RTR	0.654	0.596	3.115	0.537	-0.014	1.954 (0.074)	-0.869 (0.402)	11.342* (0.002)	1.760
ACP	0.841	0.815	182.408	-17.265	0.840	-6.639* (0.000)	5.403* (0.000)	31.804* (0.000)	1.847
CBTR	0.765	0.726	20.735	1.225	-0.136	1.689 (0.117)	-3.068* (0.010)	19.581* (0.000)	1.200
CTR	0.300	0.183	14.062	2.501	-0.097	1.335 (0.207)	-0.864 (0.405)	2.568 (0.118)	1.870
APP	0.708	0.659	43.777	-3.779	0.309	-2.777** (0.017)	3.793* (0.003)	14.538* (0.001)	1.191
OC	0.930	0.919	222.233	-23.241	1.096	-9.692* (0.000)	7.522* (0.000)	80.205* (0.000)	1.717
NTC	0.942	0.932	179.090	-19.479	0.786	-8.412* (0.000)	5.588* (0.004)	97.109* (0.000)	1.847
Profitability Ratios									
OPM	0.232	0.104	20.485	-1.491	0.111	-1.242 (0.238)	1.548 (0.148)	-1.809 (0.206)	1.341
NPM	0.131	-0.014	10.073	-0.668	0.061	-0.534 (0.603)	0.812 (0.433)	0.905 (0.430)	1.030
ROTA	0.006	-0.160	12.241	-0.146	0.008	-0.262 (0.798)	0.243 (0.812)	0.035 (0.965)	0.866
EAT/TA	0.118	-0.029	5.511	0.117	0.003	0.219 (0.830)	0.083 (0.935)	0.806 (0.469)	0.830
RONW	0.026	-0.136	10.604	0.718	-0.048	0.498 (0.628)	-0.547 (0.595)	0.160 (0.854)	0.886

* Indicating significant results at 1% level of significance.
** Indicating significant results at 5% level of significance.

Critical Values of "t" and "F"

t-test			F-test: Degrees of Freedom = 2		
DF	Probability (Alpha)	Table Value – t	N	Probability (Alpha)	Table Value – F
12	0.01	3.055	12	0.01	6.93
12	0.05	2.179	12	0.05	3.88

Durbin – Watson Statistic (D-W Statistic), K = 2

N	Probability (Alpha)	D_L (Lower Critical Value)	D_U (Upper Critical Value)
12	0.01	0.569	1.274
12	0.05	0.812	1.579

Where, N = Sample size and K represents number of independent variables

- However, a significant quadratic trend is observed for CATR as well as WCTR. The results indicate that both CATR and WCTR are increasing at decreasing rate and the trend is likely to reverse in 8th and 9th year respectively. From these results it is concluded that the current asset management efficiency has improved over the period under study which is on account of improvement in receivables well as inventory management and can be credited to the appropriate policies pursued by the managers' of firms in Transport Services Industry with respect to current asset management. It is also concluded that there is an improvement in efficiency of net working capital utilization of firms in Transport Services Industry over the study period.
- A significant positive linear trend is observed for ITR which indicates that over the study period there is substantial rise in the ITR and a significant quadratic trend is observed for IHP which is falling at increasing rate and the trend is likely to reverse in the 13th year for the period under study. Increase in ITR is associated with improved and efficient inventory management as well as reduced risk of illiquidity. The decline in IHP further substantiates the fact of improved inventory management.
- A significant positive linear trend is observed for RTR which indicates that over the study period there is a rise in the RTR and a significant quadratic trend is observed for ACP which is declining at increasing rate and the trend is likely to reverse in 10th year. Increase in RTR is associated with improved and efficient receivables management leading to decline in credit risk and decline in ACP further substantiates the fact that the receivables management of the Transport Services Industry has substantially improved. This is in line with the results of time trend observed for RTCAR in para B.
- A significant downtrend observed in CBTR indicates that there is a decline in efficiency of cash management of firms in Transport Services Industry over the study period. However, *no significant trend is observed for CTR.*
- A significant quadratic trend is observed for APP which is falling at increasing rate and the trend is likely to reverse in 6th year for the period under study and it is concluded that firms in the industry are paying its dues more frequently.
- A significant quadratic trend is observed for both OC and NTC which is found to be falling at increasing rate and the trend is likely to reverse in 11th and 12th year respectively. The results indicate that there is a significant decline in the length of OC and NTC over the study period which signifies reduced working capital

investments as well as quick realization of these investments in cash which is in line with downtrend observed for ITCAR, CATAR and RTCAR and uptrend observed in CBBTCAR, MSTCAR, CR, QR and ALR. Hence, it is concluded that WCM of Transport Services Industry is efficient.

F. Profitability Analysis

On examining the outcome of time trend from Tables 5.32 and 5.33, no significant trend is observed for all the five measures of profitability and it is concluded that the profitability of Transport Services Industry has remained stable over the period under study.

5.3.4 Trend Analysis: WCM, LEV and PROF of Health Services Industry (7 companies)

This para examines the overall trends as well as the time trends (Linear and Quadratic Trend) in WCM, LEV and Profitability Ratios of the Health Services Industry for 7 sample companies. The overall trends is presented and interpreted first which is followed by the presentation and elucidation of the time trends analysis.

5.3.4.1 Trends in WCM and PROF: Health Services Industry

The overall trends in WCM, LEV and Profitability ratios is observed by taking industry average on yearly basis to understand the yearly movements in ratios as well as the nature of WCM, LEV and Profitability position in the Health Services Industry. The results of the analysis are presented and interpreted as per the group to which each ratio belongs.

A. Leverage and Working Capital Policy Ratios

The computation for each ratio of LEV and Working Capital Policy over the study period is presented in Table 5.34. Chart 5.13 presents the current asset financing mix, *i.e.*, share of current liabilities and net working capital for financing total current assets.

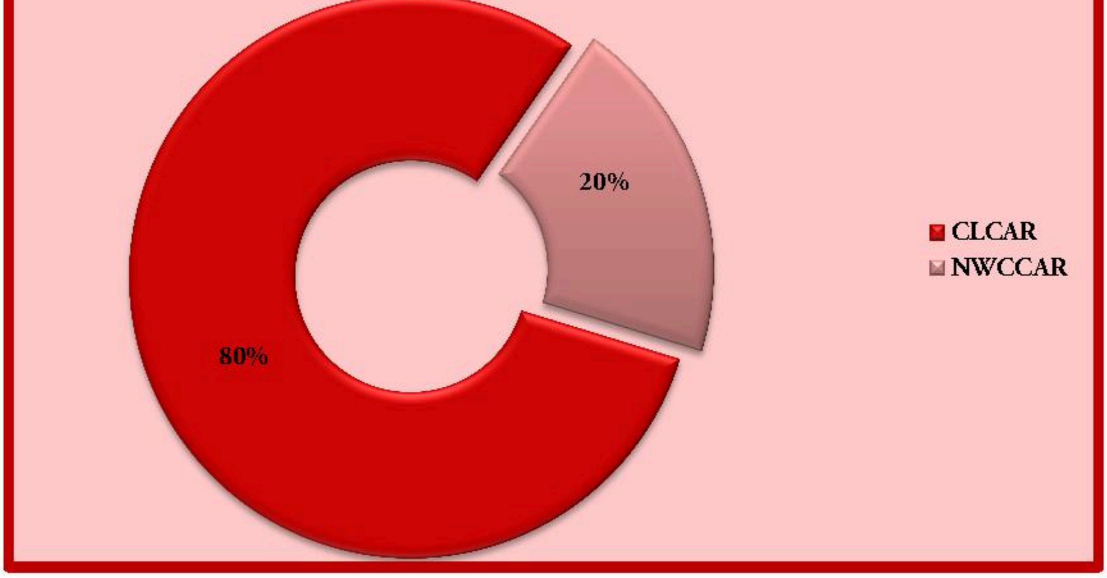
◈ From the perusal of Table 5.34 it is observed that LTDTAR ranged between 17% (2002) and 36% (2010) which is a very high range as also observed from CV of 23.95%. On an average, long term funds have financed 23% of the total assets of the Health Services Industry which seems to be a reasonable policy of debt financing being pursued in the industry. CLTAR ranged between 12% (1996) and 31% (2010) which is also a wide range as observed from CV of 27.38%. It can also be observed that on an average, 45% of the total assets of Health Services Industry are financed by total debt and seems to be a conservative approach of debt financing in the Health Services Industry. Also from the analysis of CLTAR it is noted that the Health Services Industry is pursuing a conservative working capital financing approach.

TABLE – 5.34

Working Capital Policy and Leverage Ratios: Health Services Industry

Leverage Ratios			Working Capital Policy Ratios			
Year	LTDTAR	TDTAR	CLTAR	CATAR	CLCAR	NWCCAR
Mar-96	0.23	0.35	0.12	0.28	0.64	0.36
Mar-97	0.25	0.39	0.14	0.25	0.67	0.33
Mar-98	0.26	0.41	0.15	0.24	0.70	0.30
Mar-99	0.24	0.41	0.17	0.25	0.75	0.25
Mar-00	0.20	0.39	0.19	0.29	0.77	0.23
Mar-01	0.18	0.39	0.21	0.31	0.78	0.22
Mar-02	0.17	0.39	0.22	0.32	0.85	0.15
Mar-03	0.19	0.43	0.24	0.32	0.94	0.06
Mar-04	0.21	0.47	0.26	0.34	0.92	0.08
Mar-05	0.20	0.50	0.30	0.35	0.99	0.01
Mar-06	0.17	0.47	0.30	0.38	0.95	0.05
Mar-07	0.18	0.42	0.24	0.43	0.64	0.36
Mar-08	0.26	0.52	0.26	0.40	0.68	0.32
Mar-09	0.31	0.60	0.29	0.39	0.75	0.25
Mar-10	0.36	0.67	0.31	0.38	0.95	0.05
Mean	0.23	0.45	**0.22**	**0.33**	**0.80**	**0.20**
SD	**0.05**	**0.08**	**0.06**	**0.06**	**0.12**	**0.12**
CV(%)	**23.95**	**19.32**	**27.38**	**18.11**	**15.57**	**61.75**

Chart 5.13: Current Asset Financing Mix of Health Services Industry

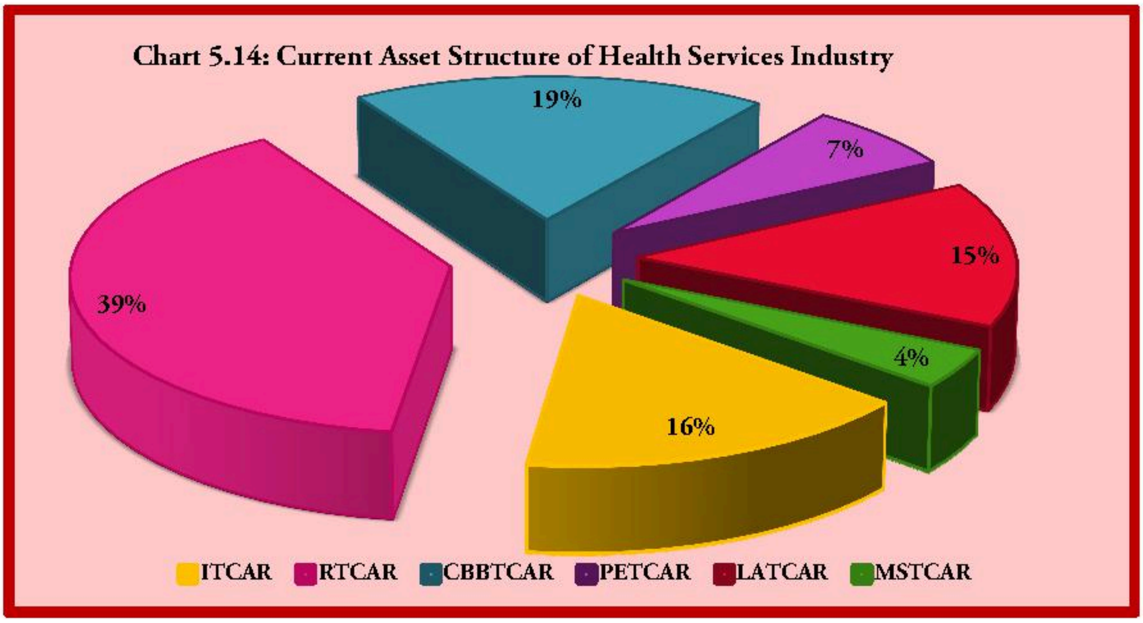


- ◈ From Table 5.34, it is observed that the ratio of current assets to total assets ranged between 24% (1998) and 43% (2007) and on an average Health Services Industry invests 33% of its funds in current assets. A rising trend is noted for CATAR indicating that there has been increased investment in current assets over the study period. Also, CATAR of 33% suggests that the Health Services Industry is following a moderate current asset investment policy.

◆ From the perusal of Chart 5.13, it is observed that CL finance 80% of current assets whereas NWC contributes 20%. CLCAR ranges between 0.64 and 0.99 whereas NWCCAR ranges between 0.01 and 0.36. Overall it can be observed that firms in the industry put a higher reliance on short term funds to finance the current assets as compared to NWC which is an aggressive approach of financing current assets. This also conveys that the industry is having an easy access to current funds for financing its current assets which can only be due to the good reputation, established business and creditworthiness. Similar phenomenon was observed in the study of Ansari[1]. Thus, it is concluded that the Health Services Industry is following an aggressive working capital financing policy which was also observed in the study of Pradhan[2] for 6 manufacturing industries. Lower values of SD indicate that over a period of time the leverage position of the Health Services Industry as well as the working capital policy has not undergone major fluctuations and has changed progressively.

B. Analysis of Current Asset Structure

In order to examine the structure of current assets (CA), the composition of CA with reference to various components of CA is studied. The computation for each ratio over the study period is presented in Table 5.35. Chart 5.14 presents the share of each CA in pie of total current asset.



◆ From the perusal of Chart 5.24, it is observed that Receivables had the highest share in the current assets of Health Services Industry with 39% on an average followed by Cash and Bank Balance at 19%, Inventories at 16%, Loans and Advances at 15%, Prepaid Expenses at 7% and Marketable Securities at 4%.

- From the perusal of Table 5.35 it is noted that the share of inventories ranged between 14% and 19% wherein a fluctuating trend can be observed. However, it has more or less remained stable with lower fluctuations as also observed from CV of 9.63%. From these results it seems that the Health Services Industry needs 16% inventory on an average to conduct its operations smoothly as there have been no major fluctuations in the level of inventory in the industry.

TABLE – 5.35

Current Asset Structure Ratios: Health Services Industry

Year	ITCAR	RTCAR	CBBTCAR	PETCAR	LATCAR	MSTCAR
Mar-96	0.16	0.42	0.37	0.01	0.03	0.01
Mar-97	0.16	0.47	0.27	0.05	0.03	0.02
Mar-98	0.16	0.53	0.19	0.08	0.02	0.02
Mar-99	0.16	0.54	0.17	0.09	0.01	0.03
Mar-00	0.15	0.44	0.18	0.09	0.08	0.06
Mar-01	0.14	0.41	0.17	0.09	0.14	0.05
Mar-02	0.18	0.39	0.17	0.09	0.13	0.04
Mar-03	0.19	0.33	0.18	0.08	0.18	0.04
Mar-04	0.18	0.32	0.17	0.07	0.22	0.04
Mar-05	0.17	0.31	0.16	0.08	0.24	0.04
Mar-06	0.16	0.28	0.15	0.11	0.25	0.05
Mar-07	0.14	0.28	0.15	0.09	0.27	0.07
Mar-08	0.15	0.33	0.14	0.07	0.24	0.07
Mar-09	0.14	0.40	0.14	0.06	0.21	0.05
Mar-10	0.15	0.45	0.17	0.05	0.16	0.02
Mean	0.16	0.39	0.19	0.07	0.15	0.04
SD	0.02	0.08	0.06	0.02	0.09	0.02
CV(%)	9.63	21.33	32.17	32.62	63.02	45.02

- Further, it is noted that Receivables ranged between 28% and 54% which is a very wide range wherein a fluctuating trend is observed. It can also be observed that the Health Services Industry on an average invests 39% in receivables. On an average the firms in Health Services Industry maintain 15% of CA as Loans and Advances which is a very high proportion whereas 7% as prepaid expenses.

- The share of cash and bank balance has ranged between 14% and 37% which has continuously declined till 2009 except years 2000 and 2003. This decline indicates possibility of the cautious measure taken by the industry to do away with the excess liquidity which can be confirmed through time trend analysis. The share of marketable securities has ranged between 1% and 7%. The mean share of cash assets (CBB+MS) at 23% in the current asset structure indicates good liquidity position in the industry which can further be substantiated by the analysis of liquidity ratios.

C. Analysis of Current Liabilities Structure Ratios

In order to examine the structure of current liabilities of Health Services Industry, the composition of CL with reference to various components of CL is studied. The computation for each ratio over the study period is presented in Table 5.36. Chart 5.15 presents the share of each component of CL in the pie of total current liability.

- From the perusal of Chart 5.15 it is observed that Trade Credit with 35% of the total current liabilities is the major source of financing the current assets of the Health Services Industry, followed by Short Term Bank Borrowings at 21%, Provisions at 19%, Other Current Liabilities at 16%, Current Financing Charge at 7%, which is followed by Deposits and Advances from Customers and Employees at 2%. Also, among the current liabilities, the Spontaneous source of short term finance (Trade Credit, CFC, Provisions and OCL) is dominating the current liabilities structure at 77% and balance 23% comprises of the negotiated sources of short term finance (STBB and DACE).

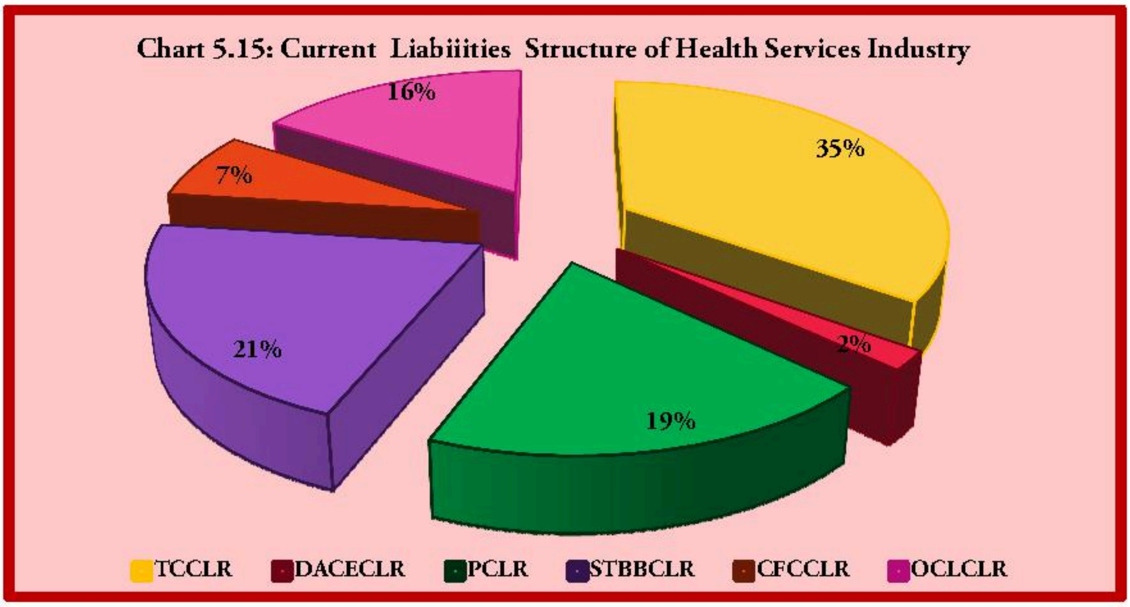


Chart 5.15: Current Liabiiities Structure of Health Services Industry

- From the perusal of Table 5.36 it is observed that TCCLR and DACECLR has increased over the study period indicating higher reliance on them for creating liquidity to finance the current assets; PCLR has reduced indicating reduced reliance on Provisions as a source to finance current assets. Also, it can be observed that the changes in current liabilities structure ratios have been progressive and with lower volatility throughout the study period as evidenced by the values of SD.

TABLE – 5.36

Current Liabilities Structure Ratios: Health Services Industry

Year	TCCLR	DACECLR	PCLR	STBBCLR	CFCCLR	OCLCLR
Mar-96	0.29	0.03	0.30	0.14	0.08	0.16
Mar-97	0.27	0.00	0.33	0.14	0.09	0.17
Mar-98	0.29	0.02	0.22	0.15	0.12	0.20
Mar-99	0.30	0.02	0.16	0.21	0.10	0.21
Mar-00	0.30	0.01	0.16	0.27	0.07	0.19
Mar-01	0.36	0.02	0.14	0.19	0.11	0.18
Mar-02	0.39	0.02	0.15	0.18	0.11	0.15
Mar-03	0.39	0.02	0.15	0.24	0.05	0.15
Mar-04	0.41	0.02	0.15	0.25	0.02	0.15
Mar-05	0.37	0.02	0.16	0.26	0.05	0.14
Mar-06	0.30	0.02	0.18	0.27	0.08	0.15
Mar-07	0.34	0.04	0.21	0.20	0.07	0.14
Mar-08	0.36	0.04	0.20	0.23	0.06	0.11
Mar-09	0.37	0.04	0.16	0.23	0.05	0.15
Mar-10	0.42	0.04	0.12	0.21	0.03	0.18
Mean	0.35	0.02	0.19	0.21	0.07	0.16
SD	0.05	0.01	0.06	0.04	0.03	0.03
CV(%)	14.19	49.30	31.73	21.08	41.11	16.20

D. Liquidity Analysis

The outcome of computations for the liquidity ratios over the study period is presented in Table 5.37.

TABLE – 5.37

Liquidity Ratios: Health Services Industry

Year	CR	QR	ALR
Mar-96	3.22	3.03	1.93
Mar-97	2.09	1.89	0.79
Mar-98	1.95	1.75	0.53
Mar-99	1.93	1.74	0.45
Mar-00	1.95	1.74	0.51
Mar-01	1.62	1.44	0.39
Mar-02	1.52	1.31	0.37
Mar-03	1.49	1.25	0.37
Mar-04	1.48	1.20	0.34
Mar-05	1.32	1.06	0.27
Mar-06	1.30	1.10	0.25
Mar-07	2.03	1.76	0.35
Mar-08	1.69	1.44	0.36
Mar-09	1.75	1.47	0.36
Mar-10	1.61	1.31	0.30
Mean	1.80	1.57	0.51
SD	0.47	0.48	0.42
CV(%)	26.00	30.81	82.40

- From the perusal of Table 5.37, it is observed that the industry CR ranged between 1.30 and 2.09 except 1996 when it was observed to be 3.22 whereas QR ranged between 1.10 and 1.89 except 1996 when it was observed to be 3.03. The industry ALR ranged between 0.25 and 0.79 except in 1996 when it was observed to be 1.20. CR was above 2 only in 3 of 15 years, QR was above the thumb rule in 6 years whereas ALR was above thumb rule in only 4 years. On an average the industry maintains ₹ 1.80 of current assets, ₹ 1.57 of quick assets and ₹ 0.51 of cash assets against ₹ 1 of current liabilities which is considerably a reasonable proportion. Overall, a declining trend can be observed in all the liquidity ratios except CR and QR where spike is observed in 2007. The reason for the same can be assigned to continuously declining cash balances as observed from perusal of Table 5.35.
- Considering the traditional norm for CR, it can be concluded that liquidity position is not very sound in the Health Services Industry. However, as QR is considered to be a more rigorous test of liquidity when compared with CR, it can be concluded that the Health Services Industry has sparing liquidity over the selected time frame which can be further improved for a sound and comfortable liquidity position. ALR indicates liquidity position in absolute sense and the mean ALR of 0.51 indicates that the Health Services Industry is having only sufficient short term liquidity.

E. Current Asset Management Efficiency Analysis

The computation for each CAME ratio and Operating Cycle Variables over the study period is presented in Table 5.38.

- From the perusal of Table 5.38 it is observed that TATR has ranged between 0.51 and 1.10 and on an average for ₹ 1 of investment in TA, sales of ₹ 0.78 is generated which indicates effective utilization of total assets. It is also be observed that current assets have been turned over 2.86 times on an average which indicates efficient utilization of current assets and that for per rupee investment in current assets sales of ₹ 2.86 is generated. WCTR of Health Services Industry is observed to be errant which has ranged between -2.67 and 16.41 except in 2007 when it was observed to be 106.10 on account of Kovai Medical Centre and Hospitals Limited. The effect of eliminating the company is evident from the values in bracket. Hence, the fluctuation in WCTR are grave as evidenced by the CV of 261.9% and indicates that over the study period the industry has utilized different levels of NWC and at times had resorted to negative NWC for supporting sales. However, looking at the mean of NWCCAR in Table 5.34, negative values are not found in any year and hence data was examined. On examination, very low negative NWC in decimal points was observed for 3 of the 7 companies due to which the industry NWCCAR was not affected. However, for a given level of sales as numerator and negative NWC in decimal points as denominator, the resultant values of WCTR is bound to be very high and negative. Also, all the 3 companies were observed to have negative NWC in 2000, 2002 and 2006 and so for these 3 years the industry WCTR turns out to be negative.

- ITR ranged from 13.58 to 21.84 and on an average inventory has been turned over 16.23 times whereas IHP has ranged from 15 to 28 days and on an average the inventory of Health Services Industry gets converted into cash in 23 days. Shorter length of IHP coupled with high ITR indicates quick conversion of inventory to sales and implicates efficient inventory management. However, a fluctuating trend is observed in both ITR and IHP.
- RTR ranged between 7.30 and 12.09 whereas ACP ranged between 47 and 100 days. On an average the receivables of the Health Services Industry gets turned over 9.31 times with 69 days as ACP. Overall it can be inferred that the receivables management of the industry is effective. However, a fluctuating trend is observed for both RTR and ACP. **CTR** has ranged between 8.06 and 26.94, whereas APP ranged between 26 and 75 days. On an average the creditors of Health Services Industry are turned over 12.25 times with 41 days as the time taken by the industry to repay its creditors. The high CTR indicates that the Health Services Industry is prompt in paying its dues which has resulted to good reputation of the Industry and can be assigned as the cause for easy access to short term funds resulting to heavy reliance on current liabilities to finance the current assets. It is also observed that throughout the study period the CTR has been greater than RTR except 2002 to 2005, meaning thereby that the industry is repaying its liabilities regularly and more frequently than the company's debtors. Ideally, it is believed that there should be a positive difference between APP and ACP, however for the Health Services Industry the difference is negative indicating that the company is extending credit greater than what it is receiving from its trade creditors which needs attention and improvement on the part of management of Health Services Industry.
- CBTR ranged between 14.63 and 49.82 and on an average cash is turned over 28.23 times which is a high ratio and a positive sign indicating better utilization of cash assets, efficient cash management leading to liquidity of the current assets as well as efficiency in operating activities of the industry.

TABLE 5.38

Efficiency Ratios and Operating Cycle Variables: Health Services Industry

Year	TATR	CATR	WCTR	ITR	IHP (In Days)	RTR	ACP (In Days)	CBTR	CBTR#	CTR	APP (In Days)	OC (In Days)	NTC (In Days)
Mar-96	0.51	2.67	2.84	14.05	26	9.11	85	21.82	52.84	10.71	27	111	84
Mar-97	0.60	2.89	2.31	13.18	28	9.11	86	26.85	95.87	11.83	27	114	87
Mar-98	0.66	3.20	3.39	14.05	26	8.05	80	34.24	114.5	10.51	26	106	80
Mar-99	0.72	3.39	16.41	14.78	23	7.60	72	39.27	66.32	10.44	27	95	68
Mar-00	0.76	3.18	-2.18	21.84	17	8.51	62	43.30	74.16	17.82	29	79	50
Mar-01	0.78	3.14	13.51	15.82	23	8.84	61	49.82	104.28	9.66	35	84	49
Mar-02	0.77	3.19	-0.41	15.17	24	9.07	58	32.18	87.15	9.98	40	82	42
Mar-03	0.73	3.11	0.83	15.93	23	12.09	57	29.39	76.76	8.06	44	80	36
Mar-04	0.71	2.56	1.65	16.16	23	10.96	59	22.40	34.82	8.46	56	82	26
Mar-05	0.74	2.54	2.93	17.01	21	9.83	65	27.87	30.08	8.57	63	86	23
Mar-06	0.72	2.53	-2.67	17.55	21	9.16	100	28.65	25.81	11.23	75	121	46
Mar-07	1.10	2.63	106.10 (5.11)	18.40	20	11.86	46	20.29	39.18	10.99	32	66	34
Mar-08	1.02	2.58	3.46	17.43	21	10.20	68	12.17	27.18	11.01	45	89	44
Mar-09	0.92	2.49	3.09	16.24	23	7.88	65	14.63	28.79	26.94	45	88	43
Mar-10	0.98	2.84	3.30	15.81	23	7.30	72	20.46	544.11	17.57	42	95	53
Mean	0.78	2.86	10.30 (3.57)	16.23	23	9.31	69	28.23	93.46	12.25	41	92	51
SD	0.16	0.31	26.99 (5.13)	2.11	2.68	1.46	13.85	10.39	128.25	4.97	14.60	15.15	20.12
CV(%)	20.41	10.87	261.90 (143.55)	13.01	11.75	15.64	20.05	36.82	137.20	40.54	35.71	16.49	39.45

The CBTR of Secunderabad Healthcare Ltd. was found to be very high and it affected the entire industry mean CBTR which is presented as CBTR**. Also the effect of eliminating the company is very much evident from mean, SD and CV values in CBTR column. Considering the same, it was considered appropriate to eliminate this company for the analysis of CBTR and its analysis is based on 6 companies. The values in bracket for WCTR are derived when WCTR of Kovai Medical Centre and Hospitals Limited is eliminated and is for 6 companies.

- From the perusal of Table 5.38 it is observed that OC ranged between 66 and 121 whereas NTC ranged between 23 days to 87 days. On an average the working capital investments of Health Services Industry remains blocked for 92 days in the form of total current assets and are realized in cash in 51 days. Overall a reduction in length of OC and NTC is observed indicating improvement in WCM.

Profitability Analysis

The computations for each of the profitability ratio of the Health Services Industry over the study period are presented in Table 5.39.

TABLE – 5.39

Profitability Ratios: Health Services Industry (In %)

Year	OPM	NPM	ROTA	EAT/TA	RONW	RONW#
Mar-96	20.87	10.92	10.63	5.43	12.54	9.31
Mar-97	18.93	7.44	11.58	5.08	12.43	9.45
Mar-98	14.00	4.90	10.30	4.28	11.26	9.69
Mar-99	13.35	5.42	10.26	4.40	8.14	9.00
Mar-00	11.05	4.80	9.26	4.26	7.81	8.38
Mar-01	6.56	1.64	5.10	1.39	0.12	3.20
Mar-02	9.19	3.22	7.47	2.78	5.21	5.72
Mar-03	6.22	-0.41	5.65	0.78	3.55	2.31
Mar-04	1.08	-5.04	2.54	-1.63	2.33	-5.54
Mar-05	-5.53	-7.08	0.58	-1.93	-3.52	-4.12
Mar-06	14.08	10.69	7.71	4.85	10.04	11.77
Mar-07	11.53	6.52	16.58	11.63	21.70	18.09
Mar-08	-2.05	-9.14	7.63	1.84	11.17	0.47
Mar-09	-5.03	-12.81	4.20	-1.14	6.46	-18.40
Mar-10	2.96	-4.29	3.06	-2.69	8.94	40.09
Mean	7.81	1.12	7.50	2.62	7.88	6.63
SD	8.20	7.29	4.14	3.74	6.04	12.73
CV	105.00	651.60	55.16	142.50	76.64	192.10

The RONW of Chennai Meenakshi Multispeciality Hospitals Limited was found to be very high in 2010 on account of negative net worth in that year and it affected the entire industry mean RONW which is presented as RONW#. Also the effect of eliminating the company is very much evident from mean, SD and CV values in RONW column. Considering the same, it was considered appropriate to eliminate this company for the analysis of RONW which is based on 6 companies.

- From the perusal of Table 5.39 it is observed that OPM has ranged between -5.53% and 20.87% with industry mean of 7.81%. NPM has ranged between -12.81% and 10.92% with industry mean of 1.12%. A fluctuating trend in both the OPM and NPM of Health Services Industry can be observed. The range of both the ratios is very high as evidenced by CV of 105% and 651.6% respectively. The trend in profitability measured in terms of ROTA and EAT/TA is also observed to be fluctuating and declining except few years. From these results it can be concluded that the profitability of the industry is very poor and unstable. RONW has ranged between -3.52% and 21.70% with mean of 7.88%. A fluctuating trend observed in

RONW indicates that companies in Health Services Industry are unable to provide stable returns to its investors.

- ◈ The operational efficiency of the Health Services Industry has deteriorated over the study period. The post tax return on total asset is lesser than the risk free rate of return 8.10%[14] in 14 out of 15 years which is a dismal situation. Also, the return on net worth has been very erratic.

5.3.4.2 Time Trends in WCM, LEV and PROF: Health Services Industry

Time trends in WCM, LEV and profitability ratios of Health Services Industry have been examined by fitting the Linear Trend Model and Quadratic Trend Model. The results of linear trend on time variable are presented in Table 5.40 whereas the results of quadratic trend are presented in Table 5.41 for all the ratios. The results of both the models are interpreted jointly and the interpretations are presented as per the group to which each ratio belongs.

A. Leverage and Working Capital Policy Ratios

- ◈ On examining the outcome of regression analysis from Tables 5.40 and 5.41, a significant quadratic trend is observed for LTDTAR as well as CLTAR. The trend is declining at increasing rate for LTDTAR which is likely to reverse in 9th year for the period under study. However, CLTAR is increasing at decreasing rate and the trend in this ratio is likely to reverse in 16th year for the period under study. From these results, it is concluded that over the study period there is decline in use of long term debt (LTD) whereas growth in utilization of CL to finance the total assets of the Health Services Industry and that the industry prefers CL to LTD for its financing needs which is obvious as "Long term interest rates normally exceeds short-term rates because of reduced flexibility of long term borrowing relative to short-term borrowing. In fact, the effective cost of long term debt may be higher than the cost of short-term debt, even when short-term interest rates are equal to or greater than long term rates[15]." Further, "the justification of higher cost of long-term financing can be found in the **liquidity preference theory** which says that since lenders are risk averse and risk generally increases with the length of lending time (because it is more difficult to forecast the more distant future), most lenders would prefer to make short-term loans. The only way to induce these lenders to lend for longer periods is to offer them higher rates of interest[16]." Thus, the firms in Health Services Industry are moving towards aggressive approach for asset financing. Further, a significant uptrend observed for TDTAR indicates that there is an increased use of total debt in the Health Services Industry over the study period which is mainly due to increased use of CL as observed from rising trend in CLTAR and declining trend in LTDTAR. In addition, industry is pursuing an aggressive working capital financing policy.

- A significant uptrend is also observed in CATAR indicating rise in the ratio and it is concluded that over the study period, there is increased investments by the firms in Health Services Industry in the current assets in proportion to total assets and the industry is moving towards adopting a conservative current asset investment policy.
- However, CLCAR and NWCCAR has remained stable over a period of time indication preference for use of current funds over NWC for funding its current assets as also observed from significant trend of CLTAR.

B. Analysis of Current Asset Structure

- On examining the outcome of time trend from Tables 5.40 and 5.41, no significant trend is observed for ITCAR. Maybe that looking to the industry requirement, holding 16% inventory is the ideal standard and there may be no need to further curtail it. Hence it is concluded that the Health Services Industry has followed a uniform policy with respect to investment in inventories which has remained stable over a period of time.
- A significant downtrend is observed for RTCAR indicating a possibility of cautious measures taken by the industry to reduce the investment in receivables which results in lower credit risk and higher liquidity and can further be substantiated by analyzing the turnover ratios.
- Further, it is observed that Quadratic Trend model fitted best for CBBTCAR, PETCAR, LATCAR and MSTCAR. The results of quadratic trend indicate that CBBTCAR is declining at increasing rate and the trend is likely to reverse in 10th year. PETCAR, LATCAR and MSTCAR are increasing at decreasing rate and the trend is likely to reverse in 10th, 11th and 11th year respectively for the period under study. From these results, it is concluded that there is increased blocking of funds in Prepaid Expenses, Loans and Advances as well as increased investments in marketable securities leading to decline in Cash Balances of Industry. Also it is concluded that the increase in CATAR is due to increase in PETCAR, LATCAR and MSTCAR. It also seems that the industry has taken cognisant measures to reduce the excess cash balances and invest excess cash in marketable securities as evident by declining trend in CBBTCAR and increasing trend in MSTCAR.

TABLE – 5.40

Linear Trend on Time Variable for WCM, LEV & Profitability Ratios: Health Services Industry

Category & Name of Ratio	R^2	Adj. R^2	Intercept	Slope	t-Statistic	p-value	D Statistic
Leverage and Working Capital Policy Ratios							
LTDTAR	0.090	0.020	0.198	0.004	1.131	0.279	0.411
TDTAR	0.710	0.688	0.322	0.017	5.648*	0.000	0.784
CLTAR	0.863	0.852	0.124	0.013	9.048*	0.000	0.937
CATAR	0.848	0.836	0.231	0.012	8.502*	0.000	1.039
CLCAR	0.163	0.098	0.709	0.011	1.590	0.136	0.895
NWCCAR	0.163	0.098	0.291	-0.011	-1.590	0.136	0.895
Current Asset Structure Ratios							
ITCAR	0.057	-0.015	0.166	-0.001	-0.889	0.390	0.932
RTCAR	0.326	0.274	0.479	-0.011	-2.509**	0.026	0.517
CBBTCAR	0.493	0.454	0.260	-0.009	-3.552*	0.004	0.629
PETCAR	0.042	-0.032	0.065	0.001	0.756	0.463	0.605
LATCAR	0.719	0.698	0.006	0.018	5.770*	0.000	0.527
MSTCAR	0.283	0.228	0.023	0.002	2.266**	0.041	0.928
Current Liabilities Structure Ratio							
TCCLR	0.454	0.412	0.285	0.007	3.290*	0.006	0.865
DACECLR	0.493	0.454	0.009	0.002	3.553*	0.004	1.922
PCLR	0.317	0.264	0.245	-0.007	-2.456**	0.029	0.597
STBBCLR	0.329	0.278	0.166	0.006	2.526**	0.025	1.264
CFCCLR	0.405	0.359	0.107	-0.004	-2.974**	0.011	1.443
OCLCLR	0.307	0.253	0.188	-0.003	-2.399**	0.032	0.969
Liquidity Ratios							
CR	0.330	0.278	2.277	-0.060	-2.530**	0.025	0.963
QR	0.388	0.341	2.104	-0.067	-2.871**	0.013	0.928
ALR	0.391	0.345	0.970	-0.058	-2.892**	0.013	0.862
Current Asset Management Efficiency Ratios & Operating Cycle Variables							
TATR	0.686	0.662	0.545	0.030	5.331*	0.000	1.518
CATR	0.326	0.275	3.181	-0.040	-2.510**	0.026	0.785
WCTR	0.042	-0.032	0.406	1.237	0.755	0.464	2.393
ITR	0.158	0.093	14.726	0.188	1.562	0.142	1.774
IHP	0.233	0.174	25.114	-0.289	-1.989	0.068	1.305
RTR	0.022	-0.053	8.917	0.048	0.543	0.596	1.050
ACP	0.089	0.018	76.438	-0.921	-1.124	0.281	2.012
CBTR	0.318	0.265	38.701	-1.310	-2.461**	0.029	0.736
CTR	0.149	0.083	8.826	0.428	1.507	0.156	1.610
APP	0.347	0.296	25.495	1.921	2.627**	0.021	1.253
OC	0.128	0.061	101.552	-1.211	-1.380	0.191	1.986
NTC	0.485	0.445	76.057	-3.132	-3.498*	0.004	0.527

TABLE – 5.40 (Continued...)

Linear Trend on Time Variable for WCM, LEV & Profitability Ratios:
Health Services Industry

Category & Name of Ratio	R^2	Adj. R^2	Intercept	Slope	t-Statistic	p-value	D Statistic
Profitability Ratios							
OPM	0.547	0.512	18.667	-1.357	-3.964*	0.002	1.794
NPM	0.437	0.394	9.742	-1.078	-3.179*	0.007	1.716
ROTA	0.161	0.096	10.474	-0.371	-1.579	0.138	1.304
EAT/TA	0.137	0.071	5.100	-0.310	-1.440	0.174	1.283
RONW	0.001	-0.076	8.184	-0.038	-0.102	0.920	1.164

* Indicating significant results at 1% level of significance.
** Indicating significant results at 5% level of significance.

Critical Values of "t"

Degrees of Freedom	Probability (Alpha)	Table Value – t
13	0.01	3.010
13	0.05	2.160

Durbin – Watson Statistic (D-W Statistic), K = 1

N	Probability (Alpha)	D_L (Lower Critical Value)	D_U (Upper Critical Value)
13	0.01	0.738	1.038
13	0.05	1.010	1.340

Where, N = Sample size and K represents number of independent variables

C. Analysis of Current Liabilities Structure Ratios

- A significant rising trend is observed for TCCLR and DACECLR and significant falling trend is observed for CFCCLR and OCLCLR which indicates that there is an increase in the share of Trade Credit and DACE whereas decline in share of CFC and OCL in CL structure as also as a source of financing current assets.
- Further, for PCLR a significant quadratic trend is observed which is falling at increasing rate and the trend is likely to reverse in 9th year. STBBCLR is increasing at decreasing rate and the trend is likely to reverse in 15th year. From these and above results it is concluded that firms in Health Services Industry have increased their reliance on Trade Credit, DACE and STBB to fund the current assets whereas Provisions, CFC and OCL are preferred less to create liquidity for financing the current assets.

D. Liquidity Analysis

A significant quadratic trend is observed for all the liquidity ratios. All the ratios, *viz,* CR, QR and ALR are observed to be falling at increasing rate and the trend is likely to reverse in 10th, 10th and 11th year respectively for the period under study. Hence, it is concluded that the liquidity position of the Health Services Industry has deteriorated which is in line with the results of quadratic trend observed for CBBTCAR. Further, as also observed from the perusal of Table 5.37, the firms in industry are becoming parsimonious with increased risk of cash crunch situation.

TABLE – 5.41

Quadratic Trend on Time Variable for WCM, LEV and Profitability Ratios: Health Services Industry

Category & Name of Ratio	R^2	Adj. R^2	Intercept	Slope β1	Slope β2	t-Statistic β1	t-Statistic β2	F-Statistic	D-Statistic
Leverage and Working Capital Policy Ratios									
LTDTAR	0.657	0.599	0.311	-0.034	0.002	-3.906* (0.002)	4.452* (0.001)	11.476* (0.002)	0.866
TDTAR	0.815	0.785	0.400	-0.010	0.002	-0.927 (0.372)	2.611** (0.023)	26.493* (0.000)	1.106
CLTAR	0.908	0.893	0.089	0.025	-0.00077	4.849* (0.000)	-2.437** (0.031)	59.454* (0.000)	1.358
CATAR	0.848	0.822	0.229	0.013	-2.946 E-5	2.011 (0.067)	-0.078 (0.939)	33.385* (0.000)	1.041
CLCAR	0.352	0.244	0.561	0.061	-0.003	2.230** (0.046)	-1.872 (0.086)	3.259 (0.074)	1.212
NWCCAR	0.352	0.244	0.439	-0.061	0.003	-2.230** (0.046)	1.872 (0.086)	3.259 (0.074)	1.212
Current Asset Structure Ratios									
ITCAR	0.223	0.093	0.149	0.005	-0.00041	1.331 (0.208)	-1.599 (0.136)	1.722 (0.220)	1.129
RTCAR	0.453	0.361	0.561	-0.038	0.002	-2.251** (0.044)	1.665 (0.122)	4.962** (0.027)	0.637
CBBTCAR	0.794	0.760	0.350	-0.039	0.002	-5.342* (0.000)	4.192* (0.001)	23.141* (0.000)	0.917
PETCAR	0.712	0.664	0.011	0.019	-0.001	5.444* (0.000)	-5.281* (0.000)	14.818* (0.001)	1.210
LATCAR	0.805	0.773	-0.068	0.043	-0.002	3.820* (0.002)	-2.307** (0.040)	24.848* (0.000)	0.731
MSTCAR	0.515	0.434	-0.002	0.011	-0.0005	2.943** (0.012)	-2.392** (0.034)	6.360** (0.013)	1.125
Current Liabilities Structure Ratio									
TCCLR	0.498	0.414	0.257	0.017	-0.0007	1.773 (0.102)	-1.021 (0.327)	5.950** (0.016)	1.014
DACECLR	0.637	0.577	0.021	-0.00233	0.000262	-1.168 (0.265)	2.187** (0.049)	10.541* (0.002)	2.513
PCLR	0.612	0.547	0.333	-0.037	0.002	-3.677* (0.003)	3.021* (0.011)	9.465* (0.003)	1.026
STBBCLR	0.653	0.595	0.096	0.029	-0.001	4.051* (0.002)	-3.347* (0.006)	11.293* (0.002)	2.025
CFCCLR	0.411	0.313	0.100	-0.002	-0.00014	-0.332 (0.746)	-0.358 (0.726)	4.189** (0.042)	1.456
OCLCLR	0.309	0.194	0.192	-0.004	7.632 E-5	-0.756 (0.464)	0.215 (0.834)	2.689 (0.108)	0.973
Liquidity Ratios									
CR	0.712	0.664	3.069	-0.325	0.016	-4.755* (0.000)	3.990* (0.002)	14.832* (0.001)	1.971
QR	0.733	0.689	2.881	-0.327	0.016	-4.819* (0.000)	3.941* (0.002)	16.497* (0.000)	1.860
ALR	0.718	0.671	1.622	-0.276	0.013	-4.587* (0.001)	3.726* (0.003)	15.267* (0.001)	1.425

TABLE – 5.41 (Continued)

Quadratic Trend on Time Variable for WCM, LEV and Profitability Ratios: Health Services Industry

Category & Name of Ratio	R^2	Adj. R^2	Intercept	Slope β1	Slope β2	t-Statistic β1	t-Statistic β2	F-Statistic	D-Statistic
Current Asset Management Efficiency Ratios & Operating Cycle Measures									
TATR	0.686	0.634	0.544	0.030	-2.855 E-5	1.233 (0.241)	-0.020 (0.985)	13.120* (0.001)	1.517
CATR	0.407	0.309	2.938	0.041	-0.005	0.635 (0.537)	-1.281 (0.224)	4.125** (0.043)	0.864
WCTR	0.043	-0.116	-2.152	2.092	-0.053	0.291 (0.776)	-0.122 (0.905)	0.271 (0.767)	2.395
ITR	0.293	0.175	12.676	0.911	-0.045	1.855 (0.088)	-1.514 (0.156)	2.488 (0.125)	2.076
IHP	0.424	0.328	28.202	-1.379	0.068	-2.452 (0.030)	1.996 (0.070)	4.417** (0.037)	1.690
RTR	0.192	0.057	7.273	0.598	-0.034	1.679 (0.119)	-1.588 (0.138)	1.426 (0.278)	1.249
ACP	0.280	0.160	92.453	-6.574	0.353	-2.022 (0.066)	1.788 (0.099)	2.337 (0.139)	2.503
CBTR	0.553	0.478	23.769	3.388	-0.2936	1.762 (0.103)	-2.513** (0.027)	7.422* (0.007)	1.191
CTR	0.328	0.216	14.601	-1.503	0.119	-1.355 (0.200)	1.792 (0.098)	2.933 (0.092)	2.135
APP	0.459	0.369	12.089	6.404	-0.276	2.189** (0.049)	-1.577 (0.141)	5.088** (0.025)	1.517
OC	0.356	0.248	120.655	-7.953	0.421	-2.363** (0.036)	2.060 (0.062)	3.312 (0.072)	2.508
NTC	0.887	0.868	109.738	-15.020	0.743	-8.016* (0.000)	6.525* (0.000)	49.961* (0.000)	1.963
Profitability Ratios									
OPM	0.591	0.523	23.377	-2.932	0.097	-2.051 (0.063)	1.134 (0.279)	8.673* (0.005)	1.961
NPM	0.437	0.344	9.963	-1.152	0.005	-0.773 (0.454)	0.051 (0.960)	4.666** (0.032)	1.716
ROTA	0.193	0.058	12.503	-1.050	0.042	-1.036 (0.320)	0.690 (0.504)	1.435 (0.276)	1.387
EAT/TA	0.138	-0.006	5.342	-0.391	0.005	-0.413 (0.687)	0.088 (0.931)	0.961 (0.410)	1.288
RONW	0.247	0.121	16.089	-2.828	0.174	-1.950 (0.075)	1.978 (0.071)	1.963 (0.183)	1.537

* Indicating significant results at 1% level of significance.
** Indicating significant results at 5% level of significance.

Critical Values of "t" and "F"

t-test			F-test: Degrees of Freedom = 2		
DF	Probability (Alpha)	Table Value – t	N	Probability (Alpha)	Table Value – F
12	0.01	3.055	12	0.01	6.93
12	0.05	2.179	12	0.05	3.88

Durbin – Watson Statistic (D-W Statistic), K = 2

N	Probability (Alpha)	D_L (Lower Critical Value)	D_U (Upper Critical Value)
12	0.01	0.569	1.274
12	0.05	0.812	1.579

Where, N = Sample size and K represents number of independent variables

E. Current Asset Management Efficiency Analysis

- On examining the outcome of regression analysis from Tables 5.40 and 5.41, a significant rising trend is observed for TATR indicating that the ratio has increased over the period under study and it is concluded that over the study period there is an increased efficiency in asset utilization by firms in Health Services Industry.
- CATR has significantly declined over a period of time indicating that current asset management efficiency of the Health Services Industry has deteriorated over the study period.
- Further, from the perusal of Tables 5.40 and 5.41 it is observed that WCTR, ITR, IHP, RTR, ACP, CTR, and OC have exhibited no significant trend with time indicating that there are no significant changes in WCM efficiency measured in terms of these ratios.
- A significant negative linear trend in CBTR indicates that there is significant decline in the ratio over a period of time. Hence, it is concluded that the cash management efficiency of the firms in Health Services Industry has deteriorated over the period under study.
- A significant positive linear trend is observed for APP indicating that the duration of APP has increased over the period under study which may be due to reduced frequency of repaying the creditors and hence it is concluded that firms in Health Services Industry have slowed down payment of its dues.
- A significant quadratic trend is observed for NTC which is declining at increasing rate and the trend is likely to reverse in 10^{th} year. The results indicate that there is significant decline in the duration of NTC over the study period which signifies quick realization of working capital investments in cash. Hence, it is concluded that the working capital requirements of the firms in Health Services Industry have reduced which can be assigned to increased APP.

F. Profitability Analysis

On examining the outcome of regression analysis from Tables 5.40 and 5.41, a significant negative linear trend is observed in OPM and NPM indicating that OPM and NPM have declined over the period under study and hence it is concluded that the profitability of firms in Health Services Industry measured in terms of sales has deteriorated over the study period. However, ROTA, EAT/TA and RONW have exhibited no significant trend over the period under study.

5.3.5 Trend Analysis: WCM, LEV and PROF of Communication Services Industry (2 companies)

This para examines the overall trends as well as the time trends (Linear and Quadratic Trend) in WCM, LEV and Profitability Ratios of the Communication Services Industry for 2 sample companies. The overall trends is presented and interpreted first which is followed by the presentation and elucidation of the time trends analysis.

5.3.5.1 Trends in WCM; LEV and PROF: Communication Services Industry

The overall trends in WCM, LEV and Profitability ratios is observed by taking industry average on yearly basis to understand the yearly movements in ratios as well as the nature of WCM, LEV and Profitability position in the Communication Services Industry. The results of the analysis are presented and interpreted as per the group to which each ratio belongs.

A. Leverage and Working Capital Policy Ratios

The computation for each ratio of LEV and Working Capital Policy over the study period is presented in Table 5.42. Chart 5.16 presents the current asset financing mix, *i.e.*, share of current liabilities and net working capital in financing total current assets.

TABLE – 5.42

Working Capital Policy and Leverage Ratios: Communication Services Industry

Leverage Ratios			Working Capital Policy Ratios			
Year	LTDTAR	TDTAR	CLTAR	CATAR	CLCAR	NWCCAR
Mar-96	0.27	0.68	0.41	0.68	0.61	0.39
Mar-97	0.26	0.63	0.37	0.70	0.53	0.47
Mar-98	0.22	0.56	0.34	0.70	0.48	0.52
Mar-99	0.14	0.50	0.36	0.69	0.52	0.48
Mar-00	0.10	0.43	0.33	0.68	0.49	0.51
Mar-01	0.09	0.41	0.32	0.69	0.46	0.54
Mar-02	0.04	0.42	0.38	0.69	0.56	0.44
Mar-03	0.00	0.38	0.38	0.64	0.58	0.42
Mar-04	0.00	0.35	0.35	0.61	0.56	0.44
Mar-05	0.00	0.35	0.35	0.59	0.58	0.42
Mar-06	0.00	0.34	0.34	0.54	0.61	0.39
Mar-07	0.00	0.33	0.33	0.51	0.65	0.35
Mar-08	0.00	0.35	0.35	0.51	0.69	0.31
Mar-09	0.03	0.41	0.38	0.53	0.72	0.28
Mar-10	0.06	0.50	0.44	0.48	0.88	0.12
Mean	0.08	0.44	0.36	0.62	0.60	0.40
SD	0.10	0.11	0.03	0.08	0.11	0.11
CV(%)	121.78	24.71	8.93	13.31	18.23	26.75

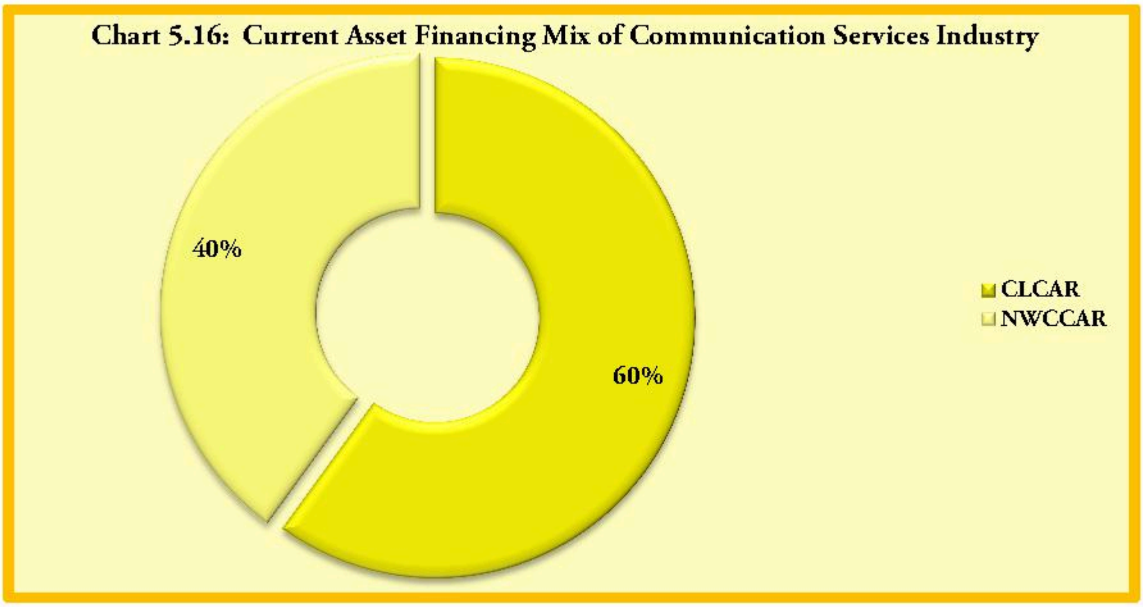
◆ From the perusal of Table 5.42, it is observed that LTDTAR ranged between 0 to 27% with 8% of the total assets of the industry being financed by long term debt

(LTD) on an average which seems to be a very conservative approach of asset financing. Overall a declining trend in LTDTAR can be observed and the industry has done away with the long term debt from 2003 to 2008, *i.e.,* for 6 years which implies that the Communication Services Industry prefers lesser LTD to finance their total assets. CLTAR ranged between 32% and 44% with 36% of the total assets of the industry being financed by the current liabilities on an average. Also, it is interesting to note that the CL is utilized more as compared to LTD to fund the total assets which indicates an aggressive approach of assets financing. TDTAR has ranged between 33% and 68% with 44% of the total assets of the industry being financed by total debt on an average of which current debt forms the major portion.

- It is also observed that the ratio of current assets to total assets ranged between 48% and 70% which is a very high range and on an average, 62% of the Communication Services Industry's funds are invested in current assets. This is a very high ratio for an industry belonging to service sector and is a revelation. Such high ratio was also observed in the ITeS Industry. The high CATAR suggests that the industry is following a conservative current investment policy by maintaining a higher level of current assets in the total asset structure which comes out as a distinctive feature of Communication Services Industry with high liquidity in asset structure resulting to lower risk. Such a proportion is generally observed in manufacturing concerns. It is even higher than that observed by Ansari[1] for 11 manufacturing industries which was found to be 50% as well as Kantawala and Joshi[5] for Steel industry which was found to be 39%. Possibly the industry has awaken to the fact and therefore a declining trend is observed for CATAR is observed over the selected time frame and indicates that the industry is steadily reducing its investments in current assets. The cause for such a high proportion as well as decline can be understood by examining the current assets structure ratios.
- From the perusal of Chart 5.26, it is observed that CL finance 60% of current assets whereas NWC contributes 40%. From the perusal of Table 5.42 it is observed that CLCAR ranged between 0.46 and 0.88 whereas NWCCAR ranged between 0.12 and 0.54 indicating that there is a high reliance on short term funds to finance the current assets as compared to NWC. From this it can be concluded that the Communication Services Industry is operating with lower NWC and prefer more of short term funds to finance the current assets and thus is following an aggressive current asset financing policy which was also observed in the study of Pradhan[3] for 6 manufacturing industries. Such a policy also implicates that the industry is having

an easy access to current funds for financing its current assets which can only be due to the good reputation, established business and creditworthiness. Similar phenomenon was observed in the study of Ansari[1].

Chart 5.16: Current Asset Financing Mix of Communication Services Industry

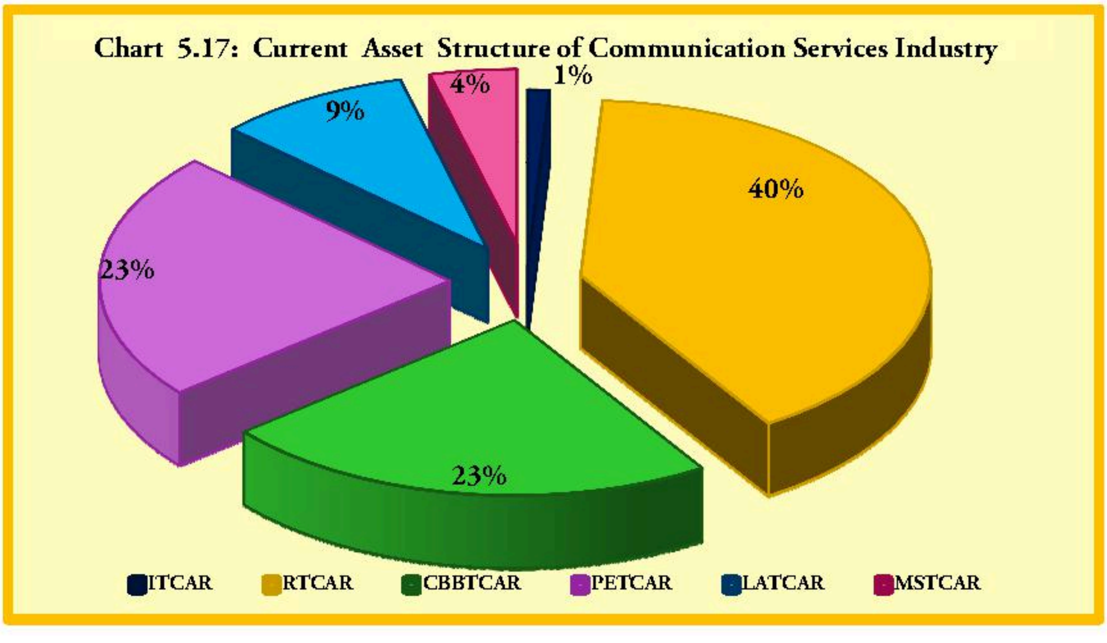


B. Analysis of Current Asset Structure

In order to examine the structure of current assets, the composition of CA with reference to various components of CA is studied. The computation for each ratio over the study period is presented in Table 5.43. Chart 5.17 presents the share of each CA in the pie of total current asset.

◆ From the perusal of Chart 5.17, it is observed that Receivables had the highest share in the current assets of Communication Services industry with 40% on an average followed by Cash and Bank Balance as well as Prepaid Expenses at 23% each, Loans and Advances at 9%, Marketable Securities at 4% and Inventories at 1%.

Chart 5.17: Current Asset Structure of Communication Services Industry



- From the perusal of Table 5.43 it is observed that the share of inventories ranged between 0% and 2% which is a low range as well as very low ratio and from this it can be noted that the Communication Services Industry is operating at very low level of inventory, *i.e.,* 1% on an average which necessarily distinguishes this service industry, from the manufacturing sector, where inventory is a very high proportion of current assets. It is interesting to note that, within the service sector also, ITCAR is found to be lowest for Communication Services Industry. May be looking at the nature of industry and requirement, holding 1% inventory is the ideal standard and there may be no need to further increase it and hence, the ratio has remained stable over a period of time as evidenced by low value of SD.

TABLE – 5.43

Current Asset Structure Ratios: Communication Services Industry

Year	ITCAR	RTCAR	CBBTCAR	PETCAR	LATCAR	MSTCAR
Mar-96	0.02	0.39	0.06	0.16	0.37	0.00
Mar-97	0.01	0.51	0.16	0.15	0.17	0.00
Mar-98	0.01	0.59	0.27	0.13	0.00	0.00
Mar-99	0.01	0.55	0.29	0.15	0.00	0.00
Mar-00	0.01	0.51	0.30	0.17	0.01	0.00
Mar-01	0.01	0.35	0.39	0.17	0.08	0.00
Mar-02	0.01	0.27	0.40	0.20	0.12	0.00
Mar-03	0.01	0.31	0.34	0.27	0.07	0.00
Mar-04	0.01	0.29	0.28	0.32	0.03	0.07
Mar-05	0.00	0.27	0.25	0.34	0.04	0.10
Mar-06	0.00	0.33	0.20	0.33	0.05	0.09
Mar-07	0.01	0.40	0.10	0.31	0.04	0.14
Mar-08	0.01	0.43	0.10	0.29	0.08	0.09
Mar-09	0.01	0.40	0.16	0.25	0.13	0.05
Mar-10	0.01	0.36	0.17	0.27	0.14	0.05
Mean	0.01	0.40	0.23	0.23	0.09	0.04
SD	0.01	0.10	0.11	0.08	0.09	0.05
CV(%)	49.04	25.76	45.71	32.18	105.80	122.50

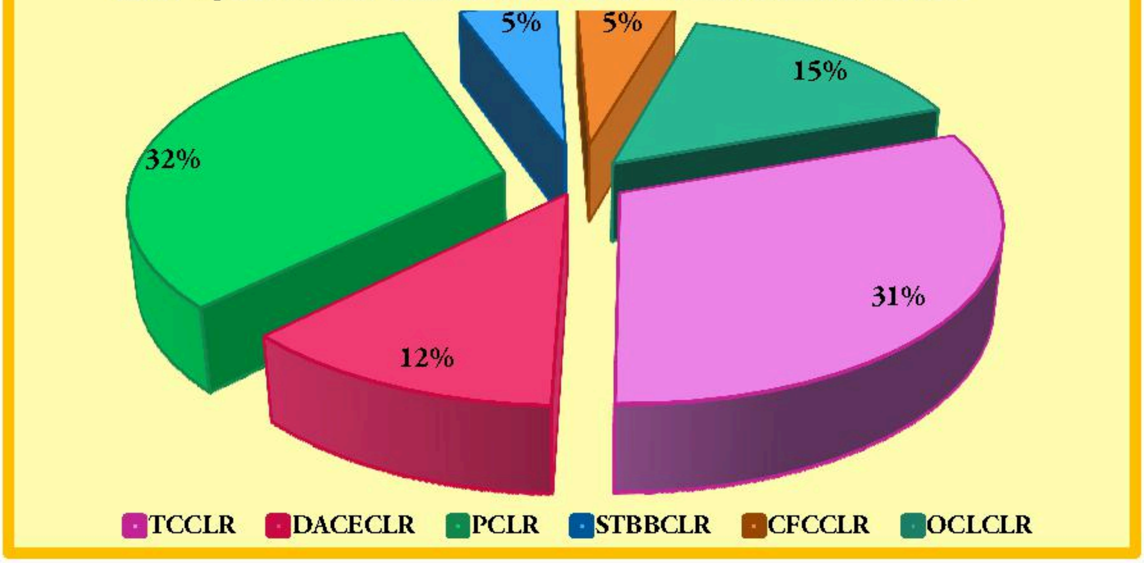
- Further, it is observed that receivables ranged between 27% and 59% of current assets which is a very wide range wherein a fluctuating trend is observed with an average of 40% investments as receivables. Loans and advances ranged between 0% and 37% which is again a very high range with an average share of 9% in CA structure. The share of prepaid expenses ranged between 13% and 34% and it has progressively increased from 1999 to 2006, whereafter again a decline is observed. However a share of 23% is very high indicating high blockage of current funds in the form of prepaid expenses.

- The share of cash and bank balance has ranged between 6% and 40% which is also observed to be a very high and wide range which has increased till 2002 whereafter it has declined and again increased from 2009. The share of Marketable securities has ranged between 0% and 14%. Also, it is observed that industry has commenced investments in marketable securities 2004 onwards. From a simultaneous glance at C&BB and marketable securities it can be noted that 2004 onwards every decline in C&BB results to corresponding increase in marketable securities and indicates that the industry has invested excess cash in marketable securities. The mean share of cash assets (CBB+MS) at 27% indicates a good liquidity position in the industry which can further be substantiated by the analysis of liquidity ratios.

C. Analysis of Current Liabilities Structure Ratios

In order to examine the structure of current liabilities of Communication Services Industry, the composition of CL with reference to various components of CL is studied. The computation for each ratio over the study period is presented in Table 5.44. Chart 5.18 presents the share of each component of CL in pie of total current liability.

Chart - 5.18: Current Liabilities Structure of Communication Services



- From the perusal of Chart 5.18 it is observed that Provisions with 32% of the total current liabilities is the major source of financing the current assets of the Communication Services Industry, followed by Trade Credit at 31%, Other Current Liabilities at 15%, Deposits and Advances from Customers and Employees at 12%, which is followed by Short Term Bank Borrowings and Current Financing Charge at 5% each. Also, among the current liabilities, Spontaneous source of short term finance (Trade Credit, CFC, Provisions and OCL) is dominating the current liabilities structure at 83% and balance 17% comprises of the negotiated sources of short term finance (STBB and DACE).
- From the perusal of Table 5.44 it is observed that over the study period TCCLR and has declined whereas OCLCLR has increased indicating higher reliance on OCL

with diminishing share of Trade Credit for financing current assets. Also, it can be observed that the changes in CL structure ratios have been progressive and with lower volatility throughout the study period as evidenced by the values of SD.

TABLE – 5.44

Current Liabilities Structure Ratios: Communication Services Industry

Year	TCCLR	DACECLR	PCLR	STBBCLR	CFCCLR	OCLCLR
Mar-96	0.32	0.07	0.29	0.07	0.09	0.16
Mar-97	0.33	0.15	0.30	0.06	0.07	0.09
Mar-98	0.34	0.15	0.29	0.04	0.10	0.08
Mar-99	0.35	0.14	0.28	0.01	0.15	0.07
Mar-00	0.38	0.15	0.28	0.00	0.08	0.11
Mar-01	0.34	0.17	0.34	0.00	0.02	0.13
Mar-02	0.27	0.12	0.37	0.05	0.10	0.09
Mar-03	0.29	0.09	0.31	0.12	0.07	0.12
Mar-04	0.33	0.09	0.34	0.07	0.00	0.17
Mar-05	0.34	0.08	0.34	0.02	0.00	0.22
Mar-06	0.30	0.12	0.35	0.02	0.00	0.21
Mar-07	0.27	0.16	0.35	0.04	0.00	0.18
Mar-08	0.26	0.14	0.33	0.10	0.00	0.17
Mar-09	0.27	0.12	0.32	0.11	0.04	0.14
Mar-10	0.26	0.10	0.23	0.06	0.09	0.26
Mean	0.31	0.12	0.32	0.05	0.05	0.15
SD	0.04	0.03	0.04	0.04	0.05	0.06
CV(%)	12.31	25.39	11.64	74.68	90.13	38.11

D. Liquidity Analysis

The outcome of computations for the liquidity ratios over the study period is presented in Table 5.45.

- From the perusal of Table 5.45, it is observed that the industry CR ranged between 1.23 and 2.20 whereas industry QR ranged between 1.22 and 2.18 and industry ALR ranged between 0.09 and 0.91. CR was above 2 only in 4 of 15 years, QR was above the thumb rule in all years except last 3 years whereas ALR was above thumb rule in 7 of 15 years. On an average the industry maintains ₹ 1.81 of current assets and ₹ 1.79 of quick assets against ₹ 1 of current liabilities which can be considered as a reasonable proportion. Also since the level of inventory in Communication Services Industry is very very low the difference between CR and QR is also observed to be low. However on an average the industry maintains only ₹ 0.45 of quick assets against ₹ 1 of current liabilities which is lower as compared to standard norm of ₹ 0.50. The gap between QR and ALR is very huge and from this it can be remarked that the problem lies with the liquidity of Receivables of the industry which can be further substantiated by analyzing turnover ratios.

TABLE – 5.45

Liquidity Ratios:
Communication Services Industry

Year	CR	QR	ALR
Mar-96	1.87	1.83	0.09
Mar-97	2.06	2.03	0.26
Mar-98	2.15	2.12	0.52
Mar-99	1.92	1.89	0.56
Mar-00	2.06	2.04	0.65
Mar-01	2.20	2.18	0.91
Mar-02	1.86	1.84	0.80
Mar-03	1.88	1.87	0.73
Mar-04	1.99	1.99	0.64
Mar-05	1.86	1.85	0.49
Mar-06	1.67	1.67	0.34
Mar-07	1.55	1.54	0.15
Mar-08	1.45	1.44	0.15
Mar-09	1.39	1.38	0.23
Mar-10	1.23	1.22	0.17
Mean	1.81	1.79	0.45
SD	0.29	0.29	0.27
CV(%)	16.05	15.90	59.67

- As QR is considered to be a more rigorous test of liquidity when compared with CR, it is concluded that the Communication Services Industry had good liquidity position over the selected time frame. However, ALR is a test of absolute liquidity and it indicates that the absolute liquidity position of industry is sparing.

E. Current Asset Management Efficiency Analysis

The computation for each CAME ratio and Operating Cycle Variables over the study period is presented in Table 5.46.

- From the perusal of Table 5.46 it is observed that TATR has ranged between 0.19 and 1.01 and on average total assets of Communication Services Industry have been turned over 0.49 times on an average. Further, CATR has ranged between 1.49 and 0.42 and on average current assets have been turned over 0.79 times which indicates inefficiently managed current assets as well as opportunity to improve the current assets management. A consistently declining trend can be observed in TATR as well as CATR throughout the study period and indicates deterioration in the efficiency of total assets utilization which can be attributed to decline in current asset management efficiency. WCTR has ranged between -0.04 and 7.25.
- ITR ranged from 38.61 to 79.37 and on an average the inventory of the industry is turned over 48.46 times which is a very high ratio. Such high ITR is indicative of overtrading situation which arises when a higher level of sales is supported with

lower level of inventory which is the case for Communication Services Industry as it is operating at only 1% of inventory in the CA structure. The reason for such a low level of inventory is again attributable to the nature of the industry due to which operating with lower level of inventory is justified in case of Communication Services Industry and so this overtrading situation is actually not a risky preposition for the industry. IHP has ranged from 5 to 11 days and an average the inventory of Communication Services Industry gets converted into cash in 8 days. On the whole inventory is a very minor part of total CA and hence the improvement in ITR/IHP does not have far reaching implication for CATR or OC.

- It is also observed that RTR ranged between 1.43 and 4.01 whereas ACP ranged between 92 and 452 days. On an average the receivables of the Industry gets turned over 2.34 times with 259 days as ACP which reflects a very poor state of receivables management in the industry. In addition, it is observed that RTR has reduced and ACP has increased, thereby indicating deterioration in receivables management over the selected time frame and is the cause for deteriorating liquidity position of the industry as well as the inefficiency of the current asset management. These results thus substantiate the findings observed for QR and ALR in *para C* as well as TATR and CATR in the preceding *para*.
- CTR has ranged between 9.16 and 2.39 and APP ranged between 47 and 154 days. On an average the creditors of Communication Services Industry are turned over 6.23 times with 76 days as the time taken by the industry to repay its creditors. Overall it can be observed that CTR has decreased and APP has increased. Thus, over the study period, the industry has gradually delayed payments to its creditors. Further, throughout the study period CTR has been greater than RTR meaning thereby that the industry is repaying its liabilities more frequently than the company's debtors indicating that the company is extending credit greater than what it is receiving from its trade creditors which needs due attention in order to improvement the Credit Management and thereby the WCM in Communication Services Industry.
- CBTR ranged between 2.13 and 22.74 and on an average cash is turned over 6.91 times, *i.e.*, sales are getting turned over 6.91 times on an average which is which is a very low ratio. However, this low ratio is obvious given the slack collection policy as observed from RTR and CTR and is a cause of concern as it indicates poor utilization of cash assets as well as poor liquidity of the current assets as also inefficiency of operating activities of the industry.

TABLE 5.46

Efficiency Ratios and Operating Cycle Variables: Communication Services Industry

Year	TATR	CATR	WCTR	ITR	IHP (In Days)	RTR	ACP (In Days)	CBTR	CTR	APP (In Days)	OC (In Days)	NTC (In Days)
Mar-96	1.01	1.49	7.25	33.89	11	4.01	92	22.74	9.16	47	103	56
Mar-97	0.77	1.10	3.14	38.61	10	2.20	265	9.01	7.72	56	275	219
Mar-98	0.67	0.94	1.96	42.87	9	2.11	366	4.28	7.98	57	375	317
Mar-99	0.62	0.87	1.82	48.89	8	1.91	299	3.26	7.93	64	307	243
Mar-00	0.59	0.85	1.64	48.96	8	1.81	255	2.96	7.03	64	263	199
Mar-01	0.58	0.82	1.49	47.05	8	2.37	174	2.29	7.56	56	182	126
Mar-02	0.54	0.77	1.69	44.73	8	2.80	141	2.13	8.56	53	149	96
Mar-03	0.45	0.70	1.72	48.33	7	2.43	196	2.29	7.90	57	203	146
Mar-04	0.38	0.62	1.53	79.37	5	2.82	195	2.40	6.74	72	200	128
Mar-05	0.35	0.62	1.47	63.63	6	3.22	213	2.45	4.93	82	219	137
Mar-06	0.36	0.72	1.76	56.71	6	2.85	236	3.49	4.91	76	242	166
Mar-07	0.33	0.74	2.00	47.19	7	2.16	298	11.65	4.50	81	305	224
Mar-08	0.28	0.61	1.96	40.87	9	1.51	341	18.75	3.63	102	350	248
Mar-09	0.26	0.54	2.01	45.76	8	1.43	358	8.84	3.09	123	366	243
Mar-10	0.19	0.42	-0.04	39.01	9	1.45	452	7.04	2.39	154	461	307
Mean	0.49	0.79	2.09	48.46	8	2.34	259	6.91	6.23	76	267	190
SD	0.22	0.26	1.56	11.22	1.58	0.72	95.67	6.41	2.16	29.55	95.87	76
CV(%)	44.84	32.65	74.50	23.15	19.91	30.57	36.98	92.78	34.48	38.75	35.95	39.95

- From the perusal of Table 5.46, it is observed that OC has ranged between 92 days to 452 days and the working capital investments of Communication Services Industry remains blocked for 258 days in the form of current assets on an average. NTC has ranged between 48 days to 309 days and on an average the working capital investments of the industry gets realized in cash in 182 days. It can be observed that there are grave fluctuations in OC and NTC. It is surprising to find such a high OC and NTC for a service industry operating with a very low level of inventory. Thus, the major cause for such a high OC and NTC can be assigned to the credit policy of the industry as already discussed above, which needs critical attention. Hence, with improvement in receivables management, the length of OC and NTC can be shortened leading to liquidity of asset structure along with overall WCM efficiency.

Profitability Analysis

The computations for each of the profitability ratio of the Communication Services Industry over the study period are presented in Table 5.47.

TABLE – 5.47

Profitability Ratios: Communication Services Industry (In %)

Year	OPM	NPM	ROTA	EAT/TA	RONW
Mar-96	34.18	13.11	22.61	10.71	33.10
Mar-97	40.56	16.41	19.64	9.48	26.62
Mar-98	41.50	20.02	21.09	11.89	26.51
Mar-99	42.18	22.55	22.11	12.99	25.17
Mar-00	26.78	16.50	14.57	8.74	15.38
Mar-01	35.54	25.49	20.63	14.61	23.89
Mar-02	33.41	21.39	17.70	11.53	19.62
Mar-03	26.89	16.14	12.11	7.35	12.12
Mar-04	21.32	14.92	7.74	5.41	9.33
Mar-05	27.05	19.83	10.05	7.32	11.36
Mar-06	15.35	11.53	5.90	4.32	6.70
Mar-07	19.85	13.17	6.55	4.32	6.80
Mar-08	16.06	10.84	4.43	2.93	4.89
Mar-09	15.51	9.25	4.74	2.78	4.76
Mar-10	-27.25	-28.16	-1.42	-2.34	-8.76
Mean	24.60	10.99	10.88	6.25	14.50
SD	17.15	6.23	4.49	3.65	11.20
CV(%)	69.73	91.83	61.79	61.62	125.50

From the perusal of Table 5.47 it is observed that RONW has ranged between -8.76% and 33.10%. Overall, it can be observed that there has been a declining trend in RONW. The steadily declining returns on net worth in the industry can be due to growing competition in the Telecommunication Sector and it can be concluded that companies in the Industry are not able to provide stable returns to its investors. *Overall a declining trend is observed in* all the profitability ratios with negative returns of the industry in 2010 and the operational efficiency of industry is not very good with post tax return on total assets being lesser than the risk free rate of return – 8.10%[14] in 8 out of 15 years which is a murky situation.

5.3.5.2 Time Trends in WCM, LEV and Profitability of Communication Services Industry

Time trends in WCM, LEV and profitability ratios of Communication Services Industry have been examined by fitting the Linear Trend Model and Quadratic Trend Model. The results of linear trend on time variable are presented in Table 5.48 whereas the results of quadratic trend are presented in Table 5.49 for all the ratios. The results of both the models are interpreted jointly and the interpretations are presented as per the group to which each ratio belongs.

A. Leverage and Working Capital Policy Ratios

- On examining the outcome of regression analysis it is observed that the LTDTAR, TDTAR and CLTAR have exhibited significant quadratic trend over the study period. From the results of quadratic trend it is observed that LTDTAR, TDTAR as well as CLTAR are falling at increasing rate over a period of time and the trend is likely to reverse in 12th, 11th and 10th year respectively. The results are indicating that there is a reduction in utilization of LTD, CL as well as total debt for the financing of assets by firms in Communication Services Industry over the study period. On account of simultaneous decline in both the LEV ratios as well as CLTAR, it was considered important to examine the trend in Net Worth to Total Asset Ratio (NWTAR). The results of the regression analysis indicated significant quadratic trend in NWTAR which is observed to be increasing at declining rate and the trend is likely to reverse in the 10th year for the period under study. This result indicates that over the study period there is an increased use of owned funds. Hence, it is concluded that firms in Communication Services Industry have reduced their reliance on total debt and preferred owned funds to finance the total assets over the period under study.
- A significant quadratic trend is also observed for CLCAR and NWCCAR. CLCAR is observed to be falling at increasing rate over the period under study and reverse is the case for NWCCAR. The trend is likely to reverse in the 5th year for the period under study for both the ratios. These results further substantiate that the industry has reduced use of CL and increased the use of long term funds to finance CA and

it is concluded that over the period under study the firms in Communication Services Industry are adopting a conservative working capital financing policy.

TABLE – 5.48

Linear Trend on Time Variable for WCM, LEV & Profitability Ratios: Communication Services Industry

Category & Name of Ratio	R^2	Adj. R^2	Intercept	Slope	t-Statistic	p-value	D Statistic
Leverage and Working Capital Policy Ratios							
LTDTAR	0.669	0.643	0.224	-0.018	-5.124*	0.000	0.283
TDTAR	0.485	0.446	0.579	-0.017	-3.500*	0.004	0.338
NWTAR	0.358	0.309	0.434	0.013	2.694**	0.018	0.331
CLTAR	0.016	-0.059	0.355	0.001	0.467	0.648	0.935
CATAR	0.870	0.860	0.753	-0.017	-9.338*	0.000	0.659
CLCAR	0.587	0.555	0.446	0.019	4.297*	0.001	0.719
NWCCAR	0.587	0.555	0.446	-0.019	-4.297*	0.001	0.719
Current Asset Structure Ratios							
ITCAR	0.175	0.112	0.013	-0.0004	-1.662	0.120	1.215
RTCAR	0.212	0.151	0.482	-0.011	-1.869	0.084	0.616
CBBTCAR	0.054	-0.019	0.275	-0.005	-0.862	0.404	0.383
PETCAR	0.633	0.605	0.127	0.013	4.734*	0.000	0.428
LATCAR	0.052	-0.021	0.127	-0.005	-0.845	0.413	0.704
MSTCAR	0.532	0.496	-0.024	0.008	3.844*	0.002	0.827
Current Liabilities Structure Ratios							
TCCLR	0.494	0.455	0.358	-0.006	-3.563*	0.003	1.200
DACECLR	0.015	-0.061	0.130	-0.001	-0.445	0.664	1.106
PCLR	0.025	-0.050	0.304	0.001	0.573	0.576	0.993
STBBCLR	0.103	0.034	0.029	0.003	1.221	0.244	1.119
CFCCLR	0.297	0.243	0.101	-0.006	-2.342**	0.036	1.248
OCLCLR	0.490	0.451	0.077	0.009	3.535*	0.004	1.360
Liquidity Ratios							
CR	0.699	0.676	2.244	-0.054	-5.496*	0.000	0.965
QR	0.668	0.643	2.210	-0.052	-5.118*	0.000	0.945
ALR	0.091	0.022	0.590	-0.018	-1.144	0.273	0.330
Current Asset Management Efficiency Ratios & Operating Cycle Variables							
TATR	0.916	0.909	0.870	-0.047	-11.903*	0.000	0.859
CATR	0.753	0.733	1.186	-0.050	-6.287*	0.000	0.753
WCTR	0.340	0.289	3.720	-0.203	-2.587**	0.023	0.908
ITR	0.051	-0.022	43.915	0.568	0.838	0.417	0.946
IHP	0.189	0.127	9.162	-0.154	-1.741	0.105	0.555
RTR	0.194	0.132	2.902	-0.070	-1.767	0.101	0.873
ACP	0.255	0.198	172.33	10.80	2.109	0.055	0.699
CBTR	0.000	-0.077	6.986	-0.010	-0.025	0.980	0.751
CTR	0.841	0.828	9.814	-0.443	-8.280*	0.000	0.743
APP	0.705	0.683	31.933	5.550	5.580*	0.000	0.465
OC	0.247	0.189	181.495	10.646	2.063	0.060	0.690
NTC	0.091	0.021	149.333	5.125	1.140	0.275	0.808

TABLE – 5.48 (Continued…)

Linear Trend on Time Variable for WCM, LEV & Profitability Ratios:
Communication Services Industry

Category & Name of Ratio	R^2	Adj. R^2	Intercept	Slope	t-Statistic	p-value	D Statistic
Profitability Ratios							
OPM	0.642	0.614	49.172	-3.072	-4.826*	0.000	1.507
NPM	0.332	0.280	26.332	-1.600	-2.539**	0.025	1.108
ROTA	0.897	0.889	25.714	-1.644	-10.636*	0.000	2.172
EAT/TA	0.723	0.701	14.469	-0.875	-5.821*	0.000	1.465
RONW	0.905	0.898	33.561	-2.383	-11.120*	0.000	2.313

* Indicating significant results at 1% level of significance.
** Indicating significant results at 5% level of significance.

Critical Values of "t"

Degrees of Freedom	Probability (Alpha)	Table Value – t
13	0.01	3.010
13	0.05	2.160

Durbin – Watson Statistic (D-W Statistic), K = 1

N	Probability (Alpha)	D_L (Lower Critical Value)	D_U (Upper Critical Value)
13	0.01	0.738	1.038
13	0.05	1.010	1.340

Where, N = Sample size and K represents number of independent variables

- Further the proportion of CA to TA has shown significant downtrend which means that there is a reduction in the investment in CA in proportion to TA in the Industry. Hence, it is concluded that over the study period the firms in the Communication Services Industry are moving toward aggressive current asset investment policy in order to do away with illiquid and excess investments in CA.

B. Analysis of Current Asset Structure

- A quadratic trend is observed for ITCAR, CBBTCAR and LATCAR. Both ITCAR and LATCAR are declining at increasing rate and the trend is likely to reverse in the 11th and 8th year respectively for the period under study which indicates that firms in Communication Services Industry are making efforts to reduce investment in inventories as well as loans and advances. The decline also indicates efficient inventory management and improvement in receivables management in terms of loans advanced over the study period. However, CBBTCAR is increasing at decreasing rate which is likely to reverse in 7th year. These results indicate that there is an increase in cash & bank balances of the industry and thereby liquidity. Hence, it is concluded that over the study period firms in have reduced blockage of funds in Inventories and Loans and Advances resulting to increase in cash & bank balances which is also the cause for significant downtrend in CATAR.

TABLE – 5.49

Quadratic Trend on Time Variable for WCM, LEV and Profitability Ratios: Communication Services Industry

Category & Name of Ratio	R^2	Adj. R^2	Intercept	Slope β1	Slope β2	t-Statistic β1	t-Statistic β2	F-Statistic	D-Statistic
Leverage and Working Capital Policy Ratios									
LTDTAR	0.975	0.971	0.368	-0.069	0.003	-15.995* (0.000)	12.143* (0.000)	234.775* (0.000)	1.715
TDTAR	0.958	0.951	0.778	-0.087	0.004	-14.124* (0.000)	11.686* (0.000)	138.288* (0.000)	1.129
NWTAR	0.948	0.939	0.238	0.082	-0.004	13.432* (0.000)	-11.637* (0.000)	108.852* (0.000)	0.969
CLTAR	0.434	0.339	0.410	-0.019	0.001	-2.754** (0.017)	2.974** (0.012)	4.596** (0.033)	1.231
CATAR	0.923	0.910	0.703	0.000	-0.001	0.061 (0.952)	-2.850** (0.015)	71.538* (0.000)	0.931
CLCAR	0.903	0.887	0.607	-0.038	0.004	-4.096* (0.001)	6.527* (0.000)	55.898* (0.000)	1.777
NWCCAR	0.903	0.887	0.393	0.038	-0.004	4.096* (0.001)	-6.257* (0.000)	55.898* (0.000)	1.777
Current Asset Structure Ratios									
ITCAR	0.422	0.326	0.019	-0.003	0.000133	-2.648** (0.021)	2.265** (0.043)	4.386** (0.037)	1.563
RTCAR	0.363	0.257	0.587	-0.048	0.002	-2.105 (0.057)	1.686 (0.118)	3.416 (0.067)	0.847
CBBTCAR	0.599	0.532	0.069	0.067	-0.005	3.626* (0.003)	-4.034* (0.002)	8.947* (0.004)	0.697
PETCAR	0.713	0.665	0.070	0.033	-0.001	2.984** (0.011)	-1.834 (0.092)	14.923* (0.001)	0.547
LATCAR	0.482	0.395	0.289	-0.062	0.004	-3.322* (0.006)	3.153* (0.008)	5.574** (0.019)	0.911
MSTCAR	0.539	0.463	-0.034	0.012	-0.00024	1.294 (0.220)	-0.438 (0.669)	7.025* (0.010)	0.830
Current Liabilities Structure Ratio									
TCCLR	0.564	0.491	0.331	0.003	-0.00059	0.485 (0.636)	-1.383 (0.192)	7.752* (0.007)	1.347
DACECLR	0.026	-0.136	0.121	0.002	-0.00019	0.260 (0.800)	-0.370 (0.718)	0.161 (0.853)	1.088
PCLR	0.433	0.339	0.243	0.023	-0.001	3.030* (0.010)	-2.943** (0.012)	4.590** (0.033)	1.448
STBBCLR	0.195	0.061	0.060	-0.008	0.001	-0.851 (0.412)	1.172 (0.264)	1.454 (0.272)	1.239
CFCCLR	0.384	0.282	0.139	-0.019	0.001	-1.831 (0.092)	1.306 (0.216)	3.745 (0.054)	1.368
OCLCLR	0.527	0.448	0.105	-0.001	0.001	-0.119 (0.907)	0.969 (0.352)	6.690* (0.011)	1.369
Liquidity Ratios									
CR	0.901	0.884	1.899	0.067	-0.008	2.656** (0.021)	-4.937* (0.000)	54.444* (0.000)	2.365
QR	0.894	0.876	1.852	0.074	-0.008	2.878** (0.014)	-5.043* (0.000)	50.429* (0.000)	2.369
ALR	0.713	0.666	0.036	0.178	-0.012	4.506* (0.001)	-5.104* (0.000)	14.940* (0.001)	0.710

TABLE – 5.49 (Continued)

Quadratic Trend on Time Variable for WCM, LEV and Profitability Ratios: Communication Services Industry

Category & Name of Ratio	R^2	Adj. R^2	Intercept	Slope β1	Slope β2	t-Statistic β1	t-Statistic β2	F-Statistic	D-Statistic
Current Asset Management Efficiency Ratios & Operating Cycle Measures									
TATR	0.953	0.946	0.982	-0.087	0.002	-6.603* (0.000)	3.106* (0.009)	122.777* (0.000)	1.219
CATR	0.837	0.810	1.384	-0.120	0.004	-4.165* (0.001)	2.497** (0.028)	30.839* (0.000)	0.968
WCTR	0.516	0.435	5.449	-0.814	0.038	-2.710* (0.019)	2.091 (0.059)	6.400* (0.013)	1.109
ITR	0.484	0.398	24.419	7.449	-0.430	3.342* (0.006)	-3.174* (0.008)	5.635** (0.019)	1.585
IHP	0.779	0.743	12.367	-1.285	0.071	-3.637* (0.000)	5.666* (0.000)	21.191* (0.000)	1.492
RTR	0.226	0.098	2.560	0.050	-0.008	0.288 (0.778)	-0.712 (0.490)	1.756 (0.214)	0.951
ACP	0.450	0.359	284.077	-28.639	2.465	-1.459 (0.170)	2.067 (0.061)	4.918** (0.028)	0.999
CBTR	0.478	0.391	18.680	-4.137	0.258	-3.229* (0.007)	3.313* (0.006)	5.488** (0.020)	1.228
CTR	0.911	0.897	8.294	0.093	-0.034	0.523 (0.610)	-3.098* (0.009)	61.750* (0.000)	1.343
APP	0.904	0.887	66.666	-6.709	0.766	-2.642** (0.021)	4.964* (0.000)	56.212* (0.000)	0.929
OC	0.453	0.362	296.444	-29.924	2.536	-1.525 (0.153)	2.126 (0.055)	4.965** (0.027)	0.999
NTC	0.250	0.125	229.374	-23.125	1.766	-1.269 (0.228)	1.594 (0.137)	1.998 (0.178)	1.041
Profitability Ratios									
OPM	0.759	0.719	33.646	2.408	-0.342	1.034 (0.321)	-2.421** (0.032)	18.932* (0.000)	1.912
NPM	0.691	0.639	6.661	5.343	-0.434	2.794** (0.016)	-3.734* (0.003)	13.404* (0.001)	1.831
ROTA	0.906	0.890	23.815	-0.974	-0.042	-1.475 (0.166)	-1.044 (0.317)	57.502* (0.000)	2.327
EAT/TA	0.835	0.807	10.400	0.561	-0.090	1.084 (0.300)	-2.853** (0.015)	30.317* (0.000)	2.247
RONW	0.906	0.890	32.766	-2.102	-0.018	-2.207** (0.048)	-0.303 (0.767)	57.549* (0.000)	2.318

* Results significant at 1% level of significance ** Results significant at 5% level of significance

Critical Values of "t" and "F"

t-test			F-test: Degrees of Freedom = 2		
DF	Probability (Alpha)	Table Value – t	N	Probability (Alpha)	Table Value – F
12	0.01	3.055	12	0.01	6.93
12	0.05	2.179	12	0.05	3.88

Durbin – Watson Statistic (D-W Statistic), K = 2

N	Probability (Alpha)	D_L (Lower Critical Value)	D_U (Upper Critical Value)
12	0.01	0.569	1.274
12	0.05	0.812	1.579

Where, N = Sample size and K represents number of independent variables

- Further, a significant uptrend is observed for PETCAR and MSTCAR indicating that these ratios have increased over a period of time. Hence, it is concluded that over the study period there is increased blockage of funds in prepaid expenses. It is also concluded that there is a rising trend of investing excess cash in marketable securities in the Communication Services Industry. No significant trend is observed for RTCAR.

C. Analysis of Current Liabilities Structure Ratios

- On examining the outcome of time trend, a significant negative linear trend is observed for TCCLR and CFCCLR whereas a significant positive linear trend is observed for OCLCLR indicating that there is a decrease in the share of Trade Credit and CFC whereas rise in share of OCL in CL structure as also a source of financing current assets. The decline in CFC and Trade Credit is in line with downtrend observed for LTDTAR, TDTAR, CLTAR and CLCAR.
- However, PCLR exhibits a significant quadratic relationship over the study period increasing at decreasing rate and the trend is likely to reverse in 12th year, thereby indicating that Provisions are used to create liquidity for financing the current assets.
- No significant trend is observed for DACECLR and STBBCLR thereby indicating that share of DACE as well as STBB in total CL structure has not undergone significant changes over the study period as also observed from the analysis of Table 5.44.

D. Liquidity Analysis

- On examining the outcome of regression analysis, it is observed that Quadratic Trend fitted best for all the liquidity ratios. From the results it is observed that all the liquidity ratios, *viz,* CR, QR and ALR are increasing at decreasing rate and the trend is likely to reverse in 4th, 5th and 7th year respectively. Thus, it is concluded that there is an increased liquidity in the Communication Services Industry which is in line with the results of quadratic trend observed for CBBTCAR and indicates improvement in liquidity position of the industry.

E. Current Asset Management Efficiency Analysis

- On examining the outcome of regression analysis from Tables 5.48 and 5.49, a significant quadratic trend is observed in both TATR and CATR. The values of β_1 and β_2 indicate that the ratios are falling at increasing rate and the trend is likely to reverse in 22nd and 15th year. Thus, over the study period there is deterioration in the total asset utilization and current asset management efficiency of the firms in the

Communication Services Industry which is a situation of great concern. However, no significant trend is observed for WCTR, RTR, ACP, OC and NTC on examining the results of regression analysis.

- Moreover a significant quadratic trend is observed for ITR as well as IHP. The trend in ITR is increasing at decreasing rate and reverse is the case for IHP. The trend in both cases is likely to reverse in 9th year. Increase in ITR is associated with improved and efficient inventory management and decline in IHP is associated with shorter cycle of converting inventories into cash and is an indicator of liquidity of inventories. From these results it is concluded that inventory management of the industry has improved and become more efficient over the study period which is in line with the results of time trend observed for ITCAR in *para B*, which, however, does not agree with the study of Ganesan[17] in the Telecommunication Equipment Industries in US wherein inventory management was not found to be good. Hence, it can be concluded that the Indian Communication Services Industry is efficiently managing its inventories.
- A significant quadratic trend is observed in CBTR which is falling at increasing rate and the trend is likely to reverse in 8th year for the period under study. The results indicate that over the study period the turnover of cash in the Communication Services Industry has declined and hence it is concluded that there is deterioration in utilization of cash resources of firms in the industry and supports the analysis of Table 5.46.
- A significant negative linear trend is observed for CTR whereas a quadratic trend is observed in APP. The downtrend in CTR indicates that the turnover of creditors have reduced over a period of time indicating that gradually the Communication Services Industry is delaying payments to their creditors. This situation has its own implications. If the firms are established with good credibility in the market and at the same time have multiple suppliers of raw materials then adopting such a policy would not harm the reputation and the operations of the industry however in *vice versa* situation such a policy can prove to be detrimental.
- A significant quadratic trend in APP indicates decline in the ratio at an increasing rate and the trend is likely to reverse in the 4th year for the period under study. Hence, thereafter APP has increased with reduction in CTR.

F. Profitability Analysis

On examining the outcome of regression analysis from Table 5.48 and 5.49, a significant downtrend is observed in all the profitability ratios except NPM which has a significant quadratic trend rising at falling rate which is likely to reverse in 6th year. These results indicate that there is consistent decline in the earnings of firms in the Communication Services Industry over the study period with weakened profitability position except post tax returns measured as a percentage of sales.

5.3.6 Trend Analysis: WCM, LEV and PROF of Miscellaneous Services Industry (9 companies)

This para examines the overall trends as well as the time trends (Linear and Quadratic Trend) in WCM, LEV and Profitability Ratios of the Miscellaneous Services Industry for 9 sample companies. The overall trends is presented and interpreted first which is followed by the presentation and elucidation of the time trends analysis.

5.3.6.1 Trends in WCM and PROF: Miscellaneous Services Industry

The overall trends in WCM, LEV and Profitability ratios is observed by taking industry average on yearly basis to understand the yearly movements in ratios as well as the nature of WCM, LEV and Profitability position in the Miscellaneous Services Industry. The results of the analysis are presented and interpreted as per the group to which each ratio belongs.

A. Leverage and Working Capital Policy Ratios

The computation for each ratio of LEV and Working Capital Policy over the study period is presented in Table 5.50. Chart 5.19 presents the current asset financing mix, *i.e.,* share of current liabilities and net working capital for financing total current assets.

- From the perusal of Table 5.50, it is observed that LTDTAR ranged from 11% to 22% with 17% of the total assets of the industry being financed by long term debt (LTD) on an average which seems to be a reasonable policy of asset financing. Overall a fluctuating trend in LTDTAR can be observed. It is also observed that CLTAR ranged from 23% to 40% and on an average 32% of the total assets of industry are financed by the current liabilities indicating that the industry is following moderate working capital financing policy. Also, it is interesting to note that the CL is utilized more as compared to LTD to fund the total assets which indicates an aggressive approach of assets financing. TDTAR has ranged between 40% and 54% with 49% of the total assets of the industry being financed by total debt on an average of which current debt forms the major portion. However it is observed that over the study period there has been decline in share of both CL and LTD which indicates a possibility of increased use of owned funds to debt funds for financing the assets in Miscellaneous Services Industry.

- It can also be observed that the ratio of current assets to total assets ranged between 38% and 53% and on an average firm in the Miscellaneous Services Industry invests 43% of its funds in current assets indicating that the industry is pursuing a conservative current asset investment policy which is characterized with higher proportion of current assets due to which the asset structure is liquid. Such dominance of current assets in total assets structure is generally found in manufacturing concerns which comes out as a striking characteristic of the Miscellaneous Services industry. This ratio is even higher than that observed by Kantawala and Joshi[5] in their study in Steel industry which was found to be 39%. However, it is lower than the results observed by Ansari[1] for 11 manufacturing industries where this ratio was observed to be 50%. Also over the selected time frame a declining trend is observed for CATAR and indicates that the industry is steadily reducing its investments in current assets.

TABLE – 5.50

Working Capital Policy and Leverage Ratios:
Miscellaneous Services Industry

Leverage Ratios			Working Capital Policy Ratios			
Year	LTDTAR	TDTAR	CLTAR	CATAR	CLCAR	NWCCAR
Mar-96	0.15	0.48	0.33	0.50	0.75	0.25
Mar-97	0.15	0.49	0.34	0.53	0.89	0.11
Mar-98	0.17	0.51	0.34	0.39	0.94	0.06
Mar-99	0.22	0.54	0.32	0.39	0.85	0.15
Mar-00	0.21	0.52	0.31	0.38	0.94	0.06
Mar-01	0.16	0.50	0.34	0.38	0.98	0.02
Mar-02	0.15	0.49	0.34	0.40	0.88	0.12
Mar-03	0.14	0.48	0.34	0.41	0.82	0.18
Mar-04	0.11	0.49	0.38	0.39	1.03	-0.03
Mar-05	0.14	0.54	0.40	0.38	1.20	-0.20
Mar-06	0.19	0.50	0.31	0.39	0.80	0.20
Mar-07	0.22	0.48	0.26	0.45	0.63	0.37
Mar-08	0.20	0.45	0.25	0.51	0.60	0.40
Mar-09	0.18	0.41	0.23	0.50	0.56	0.44
Mar-10	0.14	0.40	0.26	0.49	0.64	0.36
Mean	0.17	0.49	0.32	0.43	0.83	0.17
SD	0.03	0.04	0.05	0.06	0.18	0.18
CV(%)	19.77	15.18	8.27	13.15	31.52	23.70

- From the perusal of Chart 5.19, it is observed that CL finance 83% of current assets whereas NWC contributes 17%. Further from the perusal of Table 5.50 it can also be observed that the industry is operating with very low levels of NWC which had been negative in 2 years.

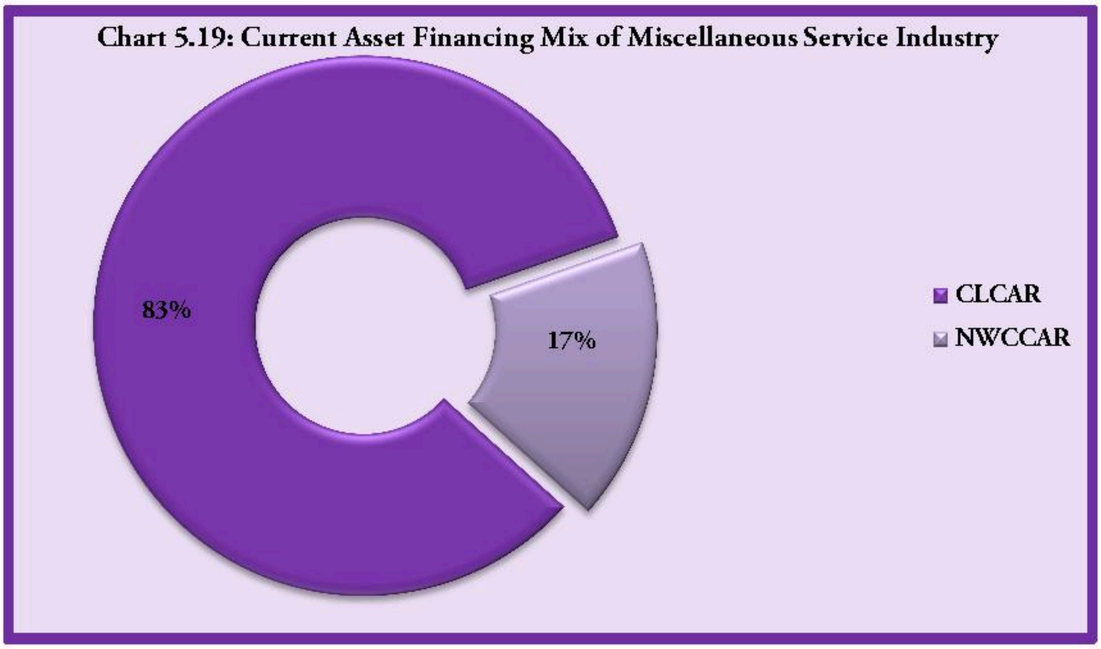


Chart 5.19: Current Asset Financing Mix of Miscellaneous Service Industry

B. Analysis of Current Asset Structure

In order to examine the structure of current assets of Miscellaneous Services Industry, the composition of CA with reference to various components of CA is studied. The computation for each ratio over the study period is presented in Table 5.51. Chart 5.20 presents the share of each CA in the pie of total current asset.

- As observed from Chart 5.20, Receivables had the highest share in the current assets of Miscellaneous Services Industry with 55% on an average followed by Inventories at 12%, Cash and Bank Balance at 11%, Loans and Advances at 10%, Prepaid Expenses at 8% and Marketable Securities at 5%.

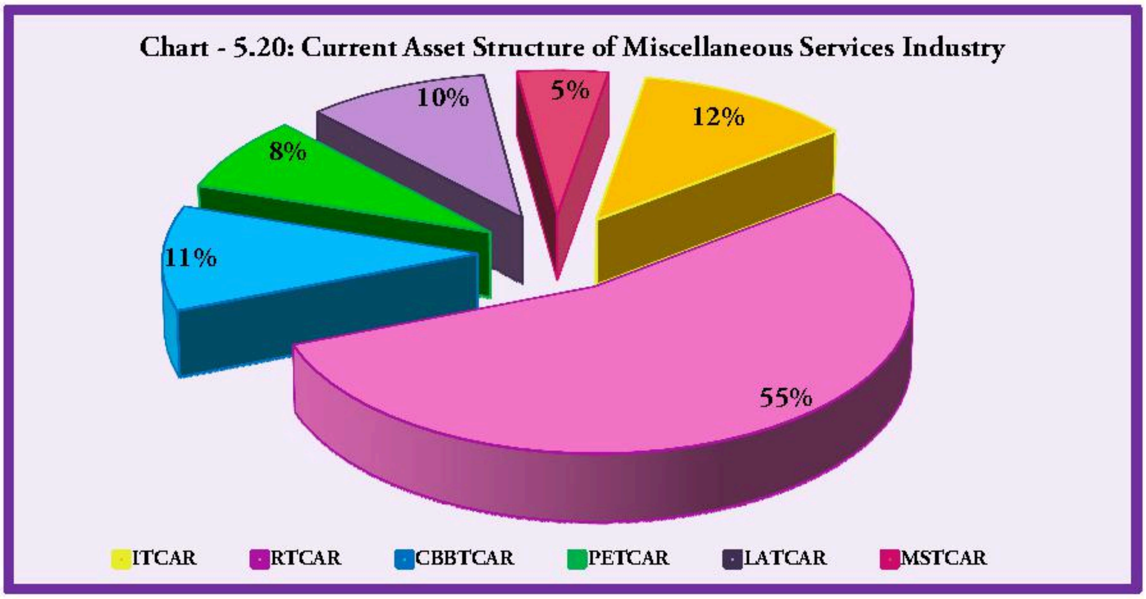


Chart - 5.20: Current Asset Structure of Miscellaneous Services Industry

- From the perusal of Table 5.51 it is observed that the share of inventories ranged between 7% and 20% and overall, it can be observed that the share of inventories in current assets has declined thereby indicating improvement in inventory management which can be further substantiated by the analysis of turnover ratios. From the perusal of Table 5.51 it is also observed, that ITCAR of 12% in Miscellaneous Services Industry is higher as compared to other service industry groups except Health Services Industry where it is observed to be 14%. However, it is lower when compared with the manufacturing sector which is obvious also looking at the nature of the industry. The share of prepaid expenses ranged between 4% and 12% and it can be observed that its share has increased progressively over the study period indicating that there has been increased blockage of current funds in prepaid expenses of Miscellaneous Services Industry.

TABLE – 5.51

Current Asset Structure Ratios: Miscellaneous Services Industry

Year	ITCAR	RTCAR	CBBTCAR	PETCAR	LATCAR	MSTCAR
Mar-96	0.18	0.64	0.12	0.04	0.02	0.00
Mar-97	0.20	0.65	0.08	0.04	0.02	0.01
Mar-98	0.19	0.61	0.09	0.05	0.06	0.00
Mar-99	0.16	0.60	0.08	0.06	0.10	0.00
Mar-00	0.15	0.60	0.09	0.06	0.10	0.00
Mar-01	0.14	0.56	0.09	0.07	0.14	0.00
Mar-02	0.09	0.55	0.09	0.07	0.18	0.02
Mar-03	0.08	0.59	0.09	0.06	0.14	0.04
Mar-04	0.09	0.61	0.09	0.06	0.12	0.03
Mar-05	0.09	0.60	0.10	0.08	0.13	0.00
Mar-06	0.07	0.57	0.08	0.11	0.09	0.08
Mar-07	0.08	0.45	0.15	0.12	0.04	0.16
Mar-08	0.09	0.39	0.16	0.12	0.08	0.16
Mar-09	0.09	0.39	0.16	0.11	0.09	0.16
Mar-10	0.09	0.41	0.11	0.11	0.13	0.15
Mean	0.12	0.55	0.11	0.08	0.10	0.05
SD	0.05	0.09	0.03	0.03	0.05	0.07
CV(%)	21.24	106.69	38.07	16.58	27.30	37.37

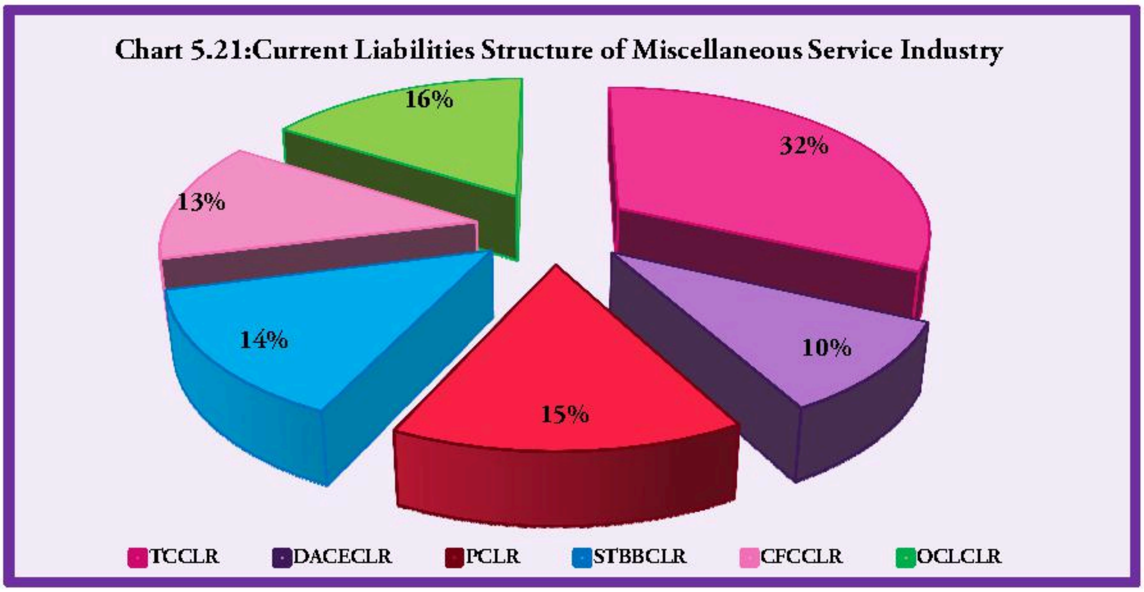
- Further it is observed that receivables ranged between 39% and 65% of current assets and overall, it can be observed that the share of receivables in current assets has declined thereby indicating improvement in receivables management which can be further substantiated by the analysis of turnover ratios. Loans and advances ranged between 2% and 18% and on an average 10% of the CA Structure represents Loans & Advances. Total receivables including Loans and Advances of Miscellaneous Services Industry are 65% which is a very high proportion.
- The share of cash and bank balance has ranged between 8% and 16% and the share of Marketable securities ranged between 0% and 16% which has increased as a

share of current asset over the study period. The mean share of cash assets of 16% seems to be a risky liquidity position in the industry.

C. Analysis of Current Liabilities Structure Ratios:

In order to examine the structure of current liabilities of Miscellaneous Services Industry, the composition of CL with reference to various components of CL is studied. The computation for each ratio over the study period is presented in Table 5.52. Chart 5.21 presents the share of each component of CL in pie of total current liability.

- From the perusal of Chart 5.21, it is observed that Trade Credit with 32% of the total current liabilities is the major source of financing the current assets of the Miscellaneous Services Industry, followed by Other Current Liabilities at 16%, Provisions at 15%, Short Term Bank Borrowings at 14%, Current Financing Charge at 13% and Deposits and Advances from Customers and Employees at 10%. Also, among the current liabilities, the Spontaneous source of short term finance (Trade Credit, CFC, Provisions and OCL) is dominating the current liabilities structure at 76% and balance 24% comprises of the negotiated sources of short term finance (STBB and DACE)..



- From the perusal of Table 5.52 it is observed that PCLR has increased over the study period indicating higher reliance on them for creating liquidity to finance the current assets; TCCLR has reduced over the study period indicating reduced reliance on Trade Credit as a source to finance current assets. DACECLR has increased until 2005 where after the trend has reversed. Further due to fluctuations the values of CV of all the ratios are observed to be very high. These fluctuations also indicate that the industry does not follow a definite policy with respect to the structure of current liabilities.

TABLE – 5.52

Current Liabilities Structure Ratios: Miscellaneous **Services Industry**

Year	TCCLR	DACECLR	PCLR	STBBCLR	CFCCLR	OCLCLR
Mar-96	0.40	0.00	0.08	0.17	0.12	0.23
Mar-97	0.42	0.00	0.06	0.20	0.12	0.20
Mar-98	0.40	0.00	0.07	0.17	0.14	0.21
Mar-99	0.43	0.01	0.07	0.16	0.16	0.17
Mar-00	0.34	0.06	0.08	0.16	0.17	0.19
Mar-01	0.31	0.15	0.08	0.12	0.17	0.17
Mar-02	0.37	0.18	0.06	0.11	0.19	0.09
Mar-03	0.35	0.19	0.05	0.12	0.19	0.10
Mar-04	0.27	0.19	0.12	0.13	0.16	0.13
Mar-05	0.24	0.17	0.18	0.11	0.16	0.14
Mar-06	0.23	0.14	0.25	0.13	0.10	0.15
Mar-07	0.25	0.11	0.28	0.15	0.06	0.15
Mar-08	0.27	0.10	0.28	0.12	0.08	0.15
Mar-09	0.27	0.09	0.28	0.11	0.09	0.16
Mar-10	0.24	0.09	0.26	0.15	0.09	0.17
Mean	0.32	**0.10**	0.15	**0.14**	0.13	0.16
SD	0.07	**0.07**	0.10	**0.03**	0.04	0.04
CV(%)	**48.35**	126.14	**22.47**	72.47	65.23	**19.46**

D. Liquidity Analysis

The outcome of computations for the liquidity ratios over the study period is presented in Table 5.53.

TABLE – 5.53

Liquidity Ratios:
Miscellaneous Services Industry

Year	CR	QR	ALR
Mar-96	1.74	1.48	0.20
Mar-97	2.02	1.74	0.14
Mar-98	1.56	1.30	0.11
Mar-99	1.76	1.51	0.11
Mar-00	2.14	1.87	0.14
Mar-01	2.15	1.94	0.13
Mar-02	1.85	1.72	0.14
Mar-03	1.87	1.75	0.15
Mar-04	1.82	1.70	0.12
Mar-05	1.56	1.46	0.13
Mar-06	1.57	1.47	0.26
Mar-07	1.96	1.84	0.67
Mar-08	2.31	2.14	0.98
Mar-09	2.24	2.03	0.82
Mar-10	2.16	2.00	0.81
Mean	**1.91**	**1.73**	**0.33**
SD	**0.25**	0.25	**0.32**
CV(%)	13.11	14.20	**96.33**

- From the perusal of Table 5.53, it is observed that the industry CR ranged between 1.56 and 2.31whereas the QR ranged between 1.30 and 2.14 which is a very wide range. The yearly industry mean of CR is below the thumb rule in 9 of 15 years, whereas yearly industry mean of QR is below the thumb rule in 4 of 15 years. On an average the industry maintains ₹ 1.91 of current assets and ₹ 1.73 of quick assets against ₹ 1 of current liabilities which can be considered to be a reasonable proportion. The industry ALR ranged between 0.11 and 0.98 with industry mean of 0.33 and is observed to be below the thumb rule in 11 of 15 years which indicates the possibility of cash crunch situation in the Miscellaneous Services Industry. It has been above the thumb rule in last 4 years under study which indicates improvement in the cash and liquidity position in the recent years. The gap between QR and ALR is very high indicating higher proportion of current assets being blocked in receivables which is also observed from the analysis of Table 5.51 in *para B*.
- As quick ratio is considered to be a more rigorous test of liquidity when compared with current ratio it can be concluded that the Miscellaneous Services Industry had sound liquidity position over the selected time frame. However, ALR being is a piercing test of liquidity indicates a situation of liquidity crunch in the industry which may lead to technical insolvency as it is managing its operations with lower levels of cash in majority of the years under study as also observed by the analysis of CBBTCAR and MSTCAR from Table 5.51.

E. Current Asset Management Efficiency Analysis

The computation for each CAME ratio and Operating Cycle Variables over the study period is presented in Table 5.54.

- From the perusal of Table 5.54 it is observed that TATR has ranged between 0.82 and 0.48 and on an average the total assets of the Miscellaneous Services Industry have been turned over 0.62 times thereby indicating that an investment of ₹ 1 in total assets generates sales of ₹ 0.62. A fluctuating trend can be observed however, overall, TATR has declined which indicates decline in efficiency of total assets utilization with a scope to utilize total assets more productively. CATR has ranged between 1.29 and 1.89 and on an average current assets have been turned over 1.54 times. A fluctuating trend is also observed for CATR which has also declined over the study period indicating inefficiency in current asset management. WCTR has ranged between -3.15 and 15.90 indicating utilization of lower levels and negative

NWC in the industry for operating sales. An erratic trend is observed for WCTR as also evident by CV of 153.48%.

◈ ITR ranged between 6.95 and 33.69 and on an average inventory is turned over 19 times. IHP has ranged from 11 to 52 days and on an average the inventory of Miscellaneous Services Industry gets converted into cash in 28 days. The lower length of IHP and reduction in the length over the study period coupled with simultaneous increase in ITR throughout the selected time frame is indicative of efficiency in inventory management in the Miscellaneous Services Industry. It also appears that the industry has made conscious efforts to do away with excess inventory by reducing investment in inventory.

◈ RTR ranged between 2.55 and 6.46 whereas ACP ranged between 94 and 219 days. On an average receivables are turned over 3.54 times with 148 days as the ACP. Overall, it can be observed that there has been marginal increase in RTR however ACP has declined substantially which indicates an improvement in receivables management. However, ACP of 148 days is very high and therefore credit and collection policy of the industry needs due attention with need for controlling the credit policy and bringing promptness in the collection process. CTR ranged between 6.80 and 26.59 whereas APP ranged between 35 and 65 days. On an average the payables of the industry is turned over 13.17 times with APP of 52 days. Overall, it can be observed that CTR has increased with a corresponding decline in APP which indicates that over the study period the Miscellaneous Services Industry has become prompt in paying its dues and is repaying its dues more frequently. It was observed from Table 5.50 that the industry has reduced its reliance on CL and has increased using NWC for financing its current assets. The reason can be assigned to reduced APP. In the said context the increased CTR and reduced APP indicates that the trade creditors of the Miscellaneous Services Industry have restricted their credit policy and thereby shortened the credit period due to which there is increased frequency of payments which has lead to reduced reliance on CL for financing of assets in the Miscellaneous Services Industry. It can also be observed that throughout the study period the CTR has been greater than RTR meaning thereby that the industry is repaying its liabilities regularly and more frequently than the Industry's debtors indicating that the Industry is extending credit greater than what it is receiving from its trade creditors which needs attention and improvement on the part of management of companies in Miscellaneous Services Industry.

TABLE 5.54

Efficiency Ratios and Operating Cycle Variables: Miscellaneous Services Industry

Year	TATR	CATR	WCTR	ITR	IHP (In Days)	RTR	ACP (In Days)	CBTR	CTR	APP (In Days)	OC (In Days)	NTC (In Days)
Mar-96	0.82	1.56	-0.90	7.22	51	3.30	219	26.81	7.46	68	270	202
Mar-97	0.72	1.58	5.60	6.95	52	3.04	182	30.18	7.04	60	234	174
Mar-98	0.67	1.66	5.60	9.98	52	3.07	143	33.34	7.75	58	195	137
Mar-99	0.60	1.56	0.57	7.52	49	2.83	149	30.62	6.80	64	198	134
Mar-00	0.57	1.49	-0.34	8.38	43	2.74	159	34.27	8.22	55	202	147
Mar-01	0.48	1.35	15.09	11.41	32	2.75	187	21.97	11.42	66	219	153
Mar-02	0.50	1.31	6.99	14.52	25	2.88	175	21.86	9.78	69	200	131
Mar-03	0.51	1.33	3.88	14.98	24	2.55	175	26.89	16.39	63	199	136
Mar-04	0.63	1.70	1.22	19.37	19	2.92	140	33.84	12.80	56	159	103
Mar-05	0.67	1.89	1.87	25.36	14	3.61	125	30.00	15.67	45	139	94
Mar-06	0.64	1.79	-3.15	32.31	11	3.70	128	32.27	13.28	38	139	101
Mar-07	0.67	1.60	3.00	33.69	11	4.63	107	20.09	14.93	36	118	82
Mar-08	0.69	1.56	2.13	33.68	11	6.46	94	21.07	18.90	35	105	70
Mar-09	0.62	1.41	1.66	32.15	11	4.84	111	24.47	20.53	37	122	85
Mar-10	0.57	1.29	-0.61	27.35	13	3.81	120	34.30	26.59	37	133	96
Mean	0.62	1.54	2.84	18.99	28	3.54	148	28.13	13.17	52	175	123
SD	0.09	0.18	4.36	10.68	17	1.06	34.91	5.18	5.77	13.00	48.45	37.09
CV(%)	14.47	11.60	153.48	56.21	61.00	33.28	18.40	29.81	23.65	23.26	27.61	30.15

- CBTR ranged between 21.07 and 34.30 and on an average cash is turned over 28.13 times, *i.e.,* sales are getting turned over 28 times on an average which is a high ratio and a positive sign and indicating better utilization of cash assets, liquidity of the current assets as well as efficiency in operating activities of the industry and is in line with the results observed for ITCAR and RTCAR in *Para B,* Table 5.51.
- Further it is observed that OC ranged from 105 days to 270 whereas NTC ranged between 70 days to 202 days. On an average the working capital investments of Miscellaneous Services Industry remains blocked for 175 days in the form of total current assets it gets realized in cash in 123 days. A fluctuating trend can be observed in both OC and NTC, however, overall both have declined which indicates that there has been improvement in management of inventory as well as receivables in the Miscellaneous Services Industry and the results are in line with the findings observed for ITCAR, RTCAR, RTR, ACP, IHP, ITR and CBBTR. However, OC and NTC of the industry are very high considering the fact that it is operating with very low level of inventories (12% on an average). Thus, the major cause for such a high OC and NTC can be assigned to the credit policy of the industry as already discussed in the preceding para which needs critical attention for further improvement in receivables management which will lead to shortening of the length of OC and NTC further leading to liquidity in asset structure along with overall improvement in WCM efficiency.

Profitability Analysis

The computations for each of the profitability ratio of the Miscellaneous Services Industry over the study period are presented in Table 5.55.

- From the perusal of Table 5.55 it is observed that OPM has ranged between 7.52% and 37.59% with industry mean of 17.08%. NPM has ranged between -3.47% and 28.66% with industry mean of 8.31%. The range of both the ratios is very high as evidenced by CV of 84.4% and 84.86% respectively which is due to a vacillating trend in both the ratios. However, an overall rise is observed in OPM over the study period. The trend in profitability measured in terms of ROTA and EAT/TA is also observed to be fluctuating. It is also observed that in the last five years the profitability of the industry is very good as compared to the previous 10 years. Thus, the operational efficiency of the industry seems to be improving in the recent years. Further, *RONW ranged between 2.62% and 29.11%* with industry mean of 10.77% wherein a fluctuating trend can be observed and it can be concluded that companies in the industry are not able to provide stable returns to its investors.

TABLE – 5.55

Profitability Ratios: Miscellaneous Services Industry (In %)

Year	OPM	NPM	ROTA	EAT/TA	RONW	RONW#
Mar-96	16.61	9.32	7.87	3.60	7.83	7.73
Mar-97	12.84	4.58	7.69	3.26	9.58	6.88
Mar-98	11.98	3.75	6.57	2.23	7.45	3.81
Mar-99	12.16	1.80	6.27	1.15	6.98	-1.77
Mar-00	15.83	4.47	6.90	2.03	7.22	-3.37
Mar-01	7.52	-3.47	3.37	-0.52	2.62	48.19
Mar-02	9.41	0.59	4.31	0.48	3.09	5.67
Mar-03	10.89	3.11	5.32	1.86	5.16	5.41
Mar-04	5.70	-2.27	5.05	1.02	6.65	10.82
Mar-05	13.36	7.61	8.61	5.16	11.38	9.86
Mar-06	37.59	28.66	22.87	17.35	29.11	18.39
Mar-07	24.29	15.91	14.00	9.10	19.16	13.03
Mar-08	32.74	23.32	19.10	13.53	22.44	-6.61
Mar-09	22.49	14.90	11.90	7.70	12.66	25.82
Mar-10	22.79	12.40	10.80	5.74	10.17	11.00
Mean	17.08	8.31	9.38	4.91	10.77	10.32
SD	9.19	9.21	5.56	5.09	7.41	13.30
CV	84.40	84.86	30.91	25.91	68.84	128.78

The RONW of United Van Der Horst Ltd. was found to be very high for 7 out of 15 years on account of negative net worth in those years which affected the industry mean RONW which is presented as RONW#. Also the effect of eliminating the company is very much evident from mean, SD and CV values in RONW column. Considering the same, it was considered appropriate to eliminate this company for the analysis of RONW which is based on 6 companies.

5.3.6.2 Time Trends in WCM, LEV and Profitability of Miscellaneous Services Industry

Time trends in WCM, LEV and profitability ratios of Miscellaneous Services Industry have been examined by fitting the Linear Trend Model and Quadratic Trend Model. The results of linear trend on time variable are presented in Table 5.56 whereas the results of quadratic trend are presented in Table 5.57 for all the ratios. The results of both the models are interpreted jointly and the interpretations are presented as per the group to which each ratio belongs.

A. Leverage and Working Capital Policy Ratios

- On examining the outcome of regression analysis from the perusal of Tables 5.56 and 5.57, it is observed that LTDTAR has not shown significant. However, TDTAR exhibits significant quadratic trend which is observed to be rising at falling rate and the trend is likely to reverse in the 6th year conveying that after 6th year there is fall in the utilization of total debt for asset financing in Miscellaneous Services Industry over the period under study.
- A significant downtrend in CLTAR indicates decline in use of CL to finance the total assets. Thus, it is concluded that firms in Miscellaneous Services Industry are

moving towards conservative approach of working capital financing. A significant quadratic trend is also observed for CLCAR and NWCCAR. The trend in CLCAR is observed to be increasing at decreasing rate and reverse is the case for NWCCAR. The trend in both the ratios is likely to reverse in 7th year for the period under study. These results indicate that there is reduced use of CL and more reliance on NWC to finance the current assets by firms in Miscellaneous Services Industry which is in line with decline in CLTAR. Hence, it is concluded that the firms in Miscellaneous Services Industry are gradually shifting to adopting a conservative working capital financing policy over the period under study.

- A significant quadratic trend is observed for CATAR which is falling at an increasing rate over a period of time and the trend is likely to reverse in 7th year for the period under study. The results indicate that firms in Miscellaneous Services Industry are doing away with the excess liquidity by reducing investments in current assets leading to decline in CATAR.

B. Analysis of Current Asset Structure

- On examining the outcome of time trend from Tables 5.56 and 5.57, a significant quadratic trend is observed for ITCAR and LATCAR. The results indicate that ITCAR is declining at increasing rate and the trend is likely to reverse in 13th year for the period under study. The trend in LATCAR is increasing at decreasing rate which is likely to reverse in 7th year for the period under study. Hence, it is concluded that firms in Miscellaneous Services Industry are making efforts to reduce investment in inventories which also signifies improvement of inventory management in the industry. Further there is an increase in loans & advances as a component of CA of firms in the Miscellaneous Services Industry.
- The remaining four CA structure ratios are found to have linear trend for the period under study. The declining trend in RTCAR indicates reduced investments in receivables over a period of time thereby resulting to liquidity of receivables as well as improvement in receivables management. The increasing trend observed in PETCAR indicates increased blocking of funds in the form of prepaid expenses in the Industry over the study period. An increasing trend in CBBTCAR indicates increase in liquidity attributable to reduction in receivables and inventory leading to increased cash assets in the industry. From increasing trend in MSTCAR it is concluded that the firms are investing excess cash in the marketable securities implying systematic cash management. From the above results it is also noted that the decline in CATAR is caused due to decline in ITCAR and RTCAR.

TABLE – 5.56

Linear Trend on Time Variable for WCM, LEV & Profitability Ratios: Miscellaneous Services Industry

Category & Name of Ratio	R^2	Adj. R^2	Intercept	Slope	t-Statistic	p-value	D Statistic
Working Capital Policy and Debt Ratios							
LTDTAR	0.003	-0.073	0.165	0.0004	0.208	0.839	0.858
TDTAR	0.385	0.338	0.530	-0.006	-2.853**	0.014	0.659
CLTAR	0.312	0.259	0.365	-0.006	-2.427**	0.031	0.681
CATAR	0.029	-0.045	0.415	0.002	0.627	0.542	0.664
CLCAR	0.217	0.156	0.981	-0.018	-1.895	0.080	0.945
NWCCAR	0.217	0.156	0.019	0.018	1.895	0.080	0.945
Current Asset Structure Ratios							
ITCAR	0.742	0.722	0.189	-0.009	-6.114*	0.000	0.590
RTCAR	0.718	0.696	0.686	-0.017	-5.746*	0.000	0.647
CBBTCAR	0.327	0.276	0.076	0.004	2.515**	0.026	1.306
PETCAR	0.842	0.829	0.030	0.006	8.312*	0.000	0.843
LATCAR	0.105	0.036	0.069	0.003	1.233	0.240	0.567
MSTCAR	0.728	0.708	-0.050	0.013	5.905*	0.000	0.758
Current Liabilities Structure Ratio							
TCCLR	0.777	0.760	0.432	-0.014	-6.727*	0.000	1.372
DACECLR	0.278	0.222	0.031	0.008	2.237**	0.043	0.263
PCLR	0.765	0.747	-0.003	0.019	6.511*	0.000	0.464
STBBCLR	0.382	0.335	0.171	-0.004	-2.837*	0.014	1.180
CFCCLR	0.263	0.206	0.172	-0.005	-2.155	0.051	0.435
OCLCLR	0.245	0.187	0.194	-0.004	-2.054	0.061	0.714
Liquidity Ratios							
CR	0.141	0.074	1.746	0.021	1.458	0.169	1.200
QR	0.322	0.269	1.481	0.031	2.482**	0.028	1.344
ALR	0.599	0.568	-0.109	0.055	4.407*	0.001	0.517
Current Asset Management Efficiency Ratios & Operating Cycle Variables							
TATR	0.049	-0.024	0.660	-0.004	-0.817	0.428	0.466
CATR	0.006	-0.070	1.564	-0.003	-0.285	0.780	0.675
WCTR	0.066	-0.006	4.837	-0.250	-0.955	0.357	1.847
ITR	0.860	0.849	1.282	2.214	8.937*	0.000	0.651
IHP	0.895	0.887	56.638	-3.596	-10.536*	0.000	0.443
RTR	0.426	0.382	2.309	0.154	3.108*	0.008	1.000
ACP	0.666	0.640	198.571	-6.371	-5.093*	0.000	1.000
CBTR	0.038	-0.036	29.939	-0.226	-0.718	0.486	1.521
CTR	0.833	0.821	3.747	1.178	8.065*	0.000	1.536
APP	0.714	0.692	72.124	-2.457	-5.697*	0.000	0.755
OC	0.846	0.835	255.210	-9.968	-8.465*	0.000	1.025
NTC	0.820	0.806	183.086	-7.511	-7.703*	0.000	1.197

TABLE – 5.56 (Continued...)

Linear Trend on Time Variable for WCM, LEV & Profitability Ratios: Miscellaneous Services Industry

Category & Name of Ratio	R^2	Adj. R^2	Intercept	Slope	t-Statistic	p-value	D Statistic
Profitability Ratios							
OPM	0.323	0.271	7.745	1.167	2.489**	0.027	1.417
NPM	0.327	0.275	-1.106	1.177	2.511**	0.026	1.246
ROTA	0.325	0.273	3.705	0.709	2.503**	0.026	1.345
EAT/TA	0.347	0.297	-0.452	0.671	2.629**	0.021	1.300
RONW	0.279	0.224	3.759	0.876	2.245**	0.043	1.066

* Indicating significant results at 1% level of significance.
** Indicating significant results at 5% level of significance.

Critical Values of "t"

Degrees of Freedom	Probability (Alpha)	Table Value – t
13	0.01	3.010
13	0.05	2.160

Durbin – Watson Statistic (D-W Statistic), K = 1

N	Probability (Alpha)	D_L (Lower Critical Value)	D_U (Upper Critical Value)
13	0.01	0.738	1.038
13	0.05	1.010	1.340

Where, N = Sample size and K represents number of independent variables

C. Analysis of Current Liabilities Structure Ratios

- From the perusal of Tables 5.56 and 5.57, a significant linear trend is observed for TCCLR as well as PCLR. The downtrend in TCCLR indicates that over the study period there is a decline in share of trade credit to CL. The uptrend in PCLR indicates that over the study period there is an increase in the share of Provisions in proportion to CL which have been used to create liquidity for financing the currents assets.
- Moreover, the remaining four CL Structure ratios are found to have quadratic trend. From the results of quadratic trend, it is observed that DACECLR and CFCCLR are increasing at decreasing rate and the trend is likely to reverse in 9th and 5th year which indicates that over the study period DACE as well as CFC had been used in the Miscellaneous Services Industry to create liquidity for financing the current assets. However, STBBCLR and OCLCLR have declined at increasing rate over a period of time and the trend is likely to reverse in the 9th and 7th year indicating declined proportion of STBB as well as OCL to total CL as well as lesser reliance on them as a source of financing current assets. Thus, over a period of time the decline in CLTAR can be attributed to decline observed in TCCLR, STBBCLR and OCLCLR.

TABLE – 5.57

Quadratic Trend on Time Variable for WCM, LEV and Profitability Ratios: Miscellaneous Services Industry

Category & Name of Ratio	R^2	Adj. R^2	Intercept	Slope β1	Slope β2	t-Statistic β1	t-Statistic β2	F-Statistic	D-Statistic
Working Capital Policy & Leverage Ratios									
LTDTAR	0.004	-0.162	0.168	-0.0004	5.171 E-5	-0.043 (0.966)	0.092 (0.928)	0.024 (0.976)	0.863
TDTAR	0.738	0.694	0.467	0.017	-0.00139	2.930* (0.013)	-4.021* (0.002)	16.902* (0.000)	1.204
CLTAR	0.577	0.506	0.299	0.017	-0.001	1.973 (0.072)	-2.742** (0.018)	8.180* (0.006)	1.110
CATAR	0.694	0.643	0.538	-0.041	0.003	-4.713* (0.001)	5.104* (0.000)	13.602* (0.001)	1.857
CLCAR	0.554	0.480	0.710	0.078	-0.006	2.370** (0.035)	-3.016* (0.011)	7.464* (0.008)	1.572
NWCCAR	0.554	0.480	0.290	-0.078	0.006	-2.370** (0.035)	3.016* (0.011)	7.464* (0.008)	1.572
Current Asset Structure Ratios									
ITCAR	0.888	0.870	0.235	-0.025	0.001	-5.939* (0.000)	3.965* (0.002)	47.718* (0.000)	1.357
RTCAR	0.804	0.771	0.615	0.008	-0.002	0.690 (0.503)	-2.299** (0.040)	24.598* (0.000)	0.934
CBBTCAR	0.494	0.409	0.107	-0.007	0.001	-1.280 (0.225)	1.984 (0.071)	5.847** (0.017)	1.739
PETCAR	0.847	0.821	0.035	0.004	0.000118	1.290 (0.221)	0.620 (0.547)	33.097* (0.000)	0.887
LATCAR	0.470	0.381	-0.005	0.029	-0.002	3.154* (0.008)	-2.875** (0.014)	5.315** (0.022)	0.981
MSTCAR	0.849	0.824	0.012	-0.009	0.001	-1.232 (0.241)	3.091* (0.009)	33.693* (0.000)	1.360
Current Liabilities Structure Ratio									
TCCLR	0.796	0.762	0.459	-0.023	0.001	-2.609** (0.023)	1.061 (0.309)	23.412* (0.000)	1.520
DACECLR	0.774	0.737	-0.102	0.055	-0.003	5.893* (0.000)	-5.138* (0.000)	20.587* (0.000)	0.741
PCLR	0.842	0.816	0.067	-0.006	0.002	-0.571 (0.579)	2.417** (0.032)	32.014* (0.000)	0.691
STBBCLR	0.655	0.597	0.209	-0.017	0.001	-3.842* (0.002)	3.076* (0.010)	11.378* (0.002)	2.019
CFCCLR	0.660	0.603	0.102	0.020	-0.002	2.928* (0.013)	-3.743* (0.003)	11.648* (0.002)	0.889
OCLCLR	0.706	0.657	0.263	-0.028	0.002	-4.958* (0.000)	4.340* (0.001)	14.422* (0.001)	1.585
Liquidity Ratios									
CR	0.217	0.087	1.929	-0.044	0.004	-0.713 (0.490)	1.085 (0.299)	1.666 (0.230)	1.327
QR	0.342	0.233	1.574	-0.002	0.002	-0.035 (0.973)	0.617 (0.549)	3.124 (0.081)	1.392
ALR	0.838	0.811	0.298	-0.089	0.009	-2.534** (0.026)	4.203* (0.001)	31.000* (0.000)	1.180

TABLE – 5.57 (Continued)

Quadratic Trend on Time Variable for WCM, LEV and Profitability Ratios: Miscellaneous Services Industry

Category & Name of Ratio	R^2	Adj. R^2	Intercept	Slope β1	Slope β2	t-Statistic β1	t-Statistic β2	F-Statistic	D-Statistic
Current Asset Management Efficiency Ratios & Operating Cycle Measures									
TATR	0.384	0.282	0.798	-0.053	0.003	-2.714** (0.019)	2.557** (0.025)	3.746 (0.054)	0.655
CATR	0.033	-0.129	1.487	0.024	-0.002	0.493 (0.631)	-0.573 (0.577)	0.203 (0.819)	0.673
WCTR	0.155	0.014	1.398	0.964	-0.076	0.870 (0.402)	-1.126 (0.282)	1.099 (0.365)	1.993
ITR	0.861	0.838	2.183	1.896	0.020	1.722 (0.111)	0.297 (0.772)	37.179* (0.000)	0.666
IHP	0.938	0.928	65.982	-6.894	0.206	-5.910* (0.000)	2.907** (0.013)	91.544* (0.000)	0.704
RTR	0.544	0.468	3.266	-0.184	0.021	-0.932 (0.370)	1.762 (0.104)	7.165* (0.009)	1.314
ACP	0.666	0.610	198.549	-6.364	-0.00048	-1.140 (0.246)	-0.001 (0.999)	11.971* (0.001)	1.001
CBTR	0.047	-0.112	31.246	-0.687	0.029	-0.491 (0.632)	0.339 (0.740)	0.298 (0.748)	1.526
CTR	0.884	0.865	7.171	-0.030	0.076	-0.056 (0.956)	2.284** (0.041)	45.678* (0.000)	1.977
APP	0.767	0.729	64.182	0.346	-0.175	0.199 (0.845)	-1.661 (0.123)	19.801* (0.000)	0.980
OC	0.852	0.827	264.532	-13.258	0.206	-2.568** (0.025)	0.655 (0.525)	34.469* (0.000)	1.004
NTC	0.851	0.827	200.349	-13.604	0.381	-3.438* (0.005)	1.584 (0.139)	34.359* (0.000)	1.286
Profitability Ratios									
OPM	0.423	0.327	15.445	-1.551	0.170	-0.803 (0.437)	1.448 (0.173)	4.405** (0.037)	1.664
NPM	0.430	0.335	6.711	-1.582	0.172	-0.822 (0.427)	1.474 (0.166)	4.525** (0.034)	1.472
ROTA	0.371	0.266	6.850	-0.401	0.069	-0.329 (0.748)	0.936 (0.368)	3.540 (0.062)	1.460
EAT/TA	0.382	0.279	2.066	-0.218	0.056	-0.197 (0.847)	0.826 (0.425)	3.713 (0.056)	1.390
RONW	0.295	0.178	6.244	-0.001	0.055	-0.0007 (0.999)	0.524 (0.610)	2.516 (0.122)	1.106

* Results significant at 1% level of significance. ** Results significant at 5% level of significance.

Critical Values of "t" and "F"

t-test			F-test: Degrees of Freedom = 2		
DF	Probability (Alpha)	Table Value – t	N	Probability (Alpha)	Table Value – F
12	0.01	3.055	12	0.01	6.93
12	0.05	2.179	12	0.05	3.88

Durbin – Watson Statistic (D-W Statistic), K = 2

N	Probability (Alpha)	D_L (Lower Critical Value)	D_U (Upper Critical Value)
12	0.01	0.569	1.274
12	0.05	0.812	1.579

Where, N = Sample size and K represents number of independent variables

D. Liquidity Analysis

- On examining the results of time trend from Tables 5.56 and 5.57, no significant trend is observed in CR indicating that over a period of time the policy of the firms in Miscellaneous Services Industry with respect to the proportion of current assets to current liabilities has remained same.
- However a significant rising trend is observed for QR and hence it is concluded that there is increase in the liquidity of firms in Miscellaneous Services Industry measured in terms of quick ratio.
- Further, a significant quadratic trend is observed for ALR which is decreasing at an increasing rate and the trend is likely to reverse in 5th year for the period under study which indicate decline in the absolute liquidity position. Thus, it is concluded that there is deterioration in the absolute liquidity position of the firms in Miscellaneous Services Industry as also observed from the findings of Table 5.53.

E. Current Asset Management Efficiency Analysis

- From perusal of Tables 5.56 and 5.57, no significant trend is observed for TATR, CATR, WCTR and CBTR and it is concluded that there is no significant change in the current asset, total asset and net working capital utilization efficiency as well as cash management efficiency of firms in the Miscellaneous Services Industry.
- On observing the results of regression analysis from Tables 5.56 and 5.57, a significant positive linear trend is observed for ITR whereas a significant quadratic trend is observed for IHP declining at increasing rate and the trend is likely to reverse in 17th year. The uptrend in ITR indicates that over the study period there is substantial rise in the ITR and hence improved and efficient inventory management which is further substantiated by fall in IHP. Thus, it is concluded that the inventory management in Miscellaneous Services Industry is efficient and has got better with time which is in line with the results of time trend observed for ITCAR in *para B*.
- A significant linear trend is observed in RTR and ACP. RTR has increased over a period of time as a result ACP has reduced. This indicates that there is an improvement in receivables management of firms in Miscellaneous Services Industry and is in line with the results of trend observed for RTCAR in *para B*.
- A significant linear trend is also observed for CTR and APP, which is increasing in case of CTR and falling in case of APP. From these results it is concluded that the firms in Miscellaneous Services Industry have increased its frequency of repaying the creditors over the study period which is in line with the results of time trends

observed for CLTAR in *para A* and TCCLR in *para C* as also the findings of Table 5.54 for CTR and APP discussed in *para E* of Section 5.3.6.1.

- Further, a significant linear downtrend is observed for both OC and NTC indicating significant decline in the length of OC and NTC over the study period. The declining trend in OC indicates reduced working capital investments and declining trend in NTC indicates quicker conversion of these investments in cash and further signifies improvement in WCM. Thus, it is concluded that over the study period the WCM of the firms in the Miscellaneous Services Industry has improved which is on account of improvement in inventory and receivables management as observed from the results of trends for ITCAR, RTCAR, ITR, IHP, RTR and ACP.

F. Profitability Analysis: On examining the outcome of regression analysis from Tables 5.56 and 5.57, a significant linear uptrend is observed for all the five measures of profitability indicating a rise in the profitability of the firms in Miscellaneous Services Industry and hence it is concluded that the profitability of Miscellaneous Services Industry has improved over the study period. Also, it is interesting to note that amongst all the Non Financial Service Industry groups, rising trend in profitability is observed only for Miscellaneous Services Industry.

SECTION IV

In this section, the trends in Working Capital Leverage (WCL) is observed and interpreted for the Non Financial Service Industry taken in entirety, *i.e.,* for 79 companies as well as individually for the 6 constituent industries of the Non Financial Service Industry. For lucidity and better understanding, the analysis is divided into two parts. The **first part** presents the findings based on descriptive statistics *i.e.,* analyzes the overall trends in WCL of the Non Financial Service Industry as well as its constituent industry groups. The **second part** presents the results of time trend analysis of WCL *i.e.,* inferential statistics for the Non Financial Service Industry as well as its constituent industries. Working Capital Leverage is a measure of sensitivity of ROTA (EBIT/TA) to changes in level of current asset investment and thus is affected by the asset structure. Therefore, for more appropriate understanding and interpretations, CANFAR and ROTA have been included in the overall analysis. As discussed in Chapter 4, the equation employed for calculation of WCL is:-

$$WCL = \frac{\triangle CA}{TA \pm \triangle CA}$$

The analysis of WCL is presented for 14 years due to loss of observations of 2 years in computation as already discussed in *para* 5.2. And in the said context for the purpose of analysis of WCL and in order to maintain consistency in presentation and interpretation of results, the observations for CANFAR and ROTA is also considered for the period of 14 years ranging from March 97 to March 2010 for all firms across industries.

5.4 Trends in Working Capital Leverage: Non Financial Service Industry

The overall trend in WCL of the Non Financial Service Industry and its constituent industry groups is presented in this section. The yearly mean, SD and CV of WCL, CANFAR and ROTA for the Non Financial Service Industry (79 companies) is presented in Table 5.58 and for its constituent industries in Table 5.59. Moreover, the trends in WCL of Non Financial Service Industry as well as its constituents are presented in Chart 5.22. The findings are presented for the entire Non Financial Service Industry first, followed by Hotels and Restaurant, ITes, Transport Services, Health Services, Communication Services and Miscellaneous Services Industry

A. Non Financial Service Industry (79 Companies)

- From the perusal of Table 5.58, it is observed that mean WCL of the entire Service Industry (79 companies) is 0.48 on an average. and has ranged between 0.44 and 0.52. Mean CANFAR of the entire Service Industry (79 companies) is 1.68, which ranged between 1.53 and 1.86.
- Banerjee[18] observed, "The industries having low ratio of fixed assets to working capital are more responsive to working capital leverage than those having a high fixed assets to working capital ratio." Considering this, an industry having a high Current Asset to Net Fixed Asset ratio (CANFAR) can be understood to be more sensitive to WCL as compared to industries having low CANFAR. The CANFAR of the Non Financial Service Industry fluctuated until 2001 whereafter a consistently rising trend is observed indicating that there have been increased investments in Current Assets as compared to Net Fixed Assets over the study period. Thus, it can be inferred that the ROTA of the Non Financial Service Industry is moderately sensitive to variability in level of current asset investments. However, WCL is less than 1 for the Service Industry indicating that the decrease in ROTA is less than proportionate to increase in level of working capital investment, *i.e.,* level of investment in current assets. Hyderabad[19] observed, "WCL indicates the number of times the ROCE decreases for every one percent increase in working capital." And based on the same, it can be inferred that in the Non Financial Service Industry with 1% increase in current asset investment, the ROTA would decrease by 0.48% on an average and *vice versa.* Mean WCL of 0.48 indicates that, with 1% change in Current Assets, the ROTA will be affected by 0.48%.

TABLE – 5.58

WCL and Related Ratios:
Non Financial Service Industry

Year	WCL	CANFAR	ROTA
Mar-97	0.52	1.75	13.93
Mar-98	0.50	1.53	11.91
Mar-99	0.49	1.53	11.25
Mar-00	0.48	1.55	12.02
Mar-01	0.48	1.54	10.49
Mar-02	0.45	1.57	7.39
Mar-03	0.44	1.58	7.87
Mar-04	0.46	1.61	8.98
Mar-05	0.48	1.74	11.25
Mar-06	0.49	1.80	14.97
Mar-07	0.50	1.80	15.69
Mar-08	0.49	1.82	15.10
Mar-09	0.48	1.86	11.79
Mar-10	0.48	1.86	10.25
Mean	0.48	1.68	11.95
SD	0.02	0.13	2.79
CV (%)	4.30	7.91	30.56

B. Hotels and Restaurant Industry

- From the perusal of Table 5.59, it is observed that WCL of the Hotels and Restaurant Industry ranged between 0.27 and 0.37 with mean WCL of 0.33. Mean CANFAR of the Hotels and Restaurant Industry is 0.99 which ranged between 0.73 and 1.44. The CANFAR of Hotels and Restaurant industry has consistently declined until 2002 whereafter an uptrend can be observed for the same, thereby indicating that there was decline in current asset investments as compared to Net Fixed Assets until 2002 whereafter it has increased. Mean WCL of 0.33 indicates that, with 1% change in Current Assets, the ROTA will be affected by 0.33% *i.e.,* with 1% increase in current asset investment, the ROTA would decrease by 0.33% on an average and *vice versa*. In addition, the WCL for the Hotels and Restaurant Industry is noted to be is less than 1 indicating that the decrease in ROTA is less than proportionate to increase in level of working capital investment, *i.e.,* level of investment in current assets. However, due to high ratio of CANFAR, it can be observed that there have been heavy fluctuations in ROTA, which indicates high sensitivity of ROTA to changes in current asset investment and signifying a risky position in the Hotels and Restaurant Industry.

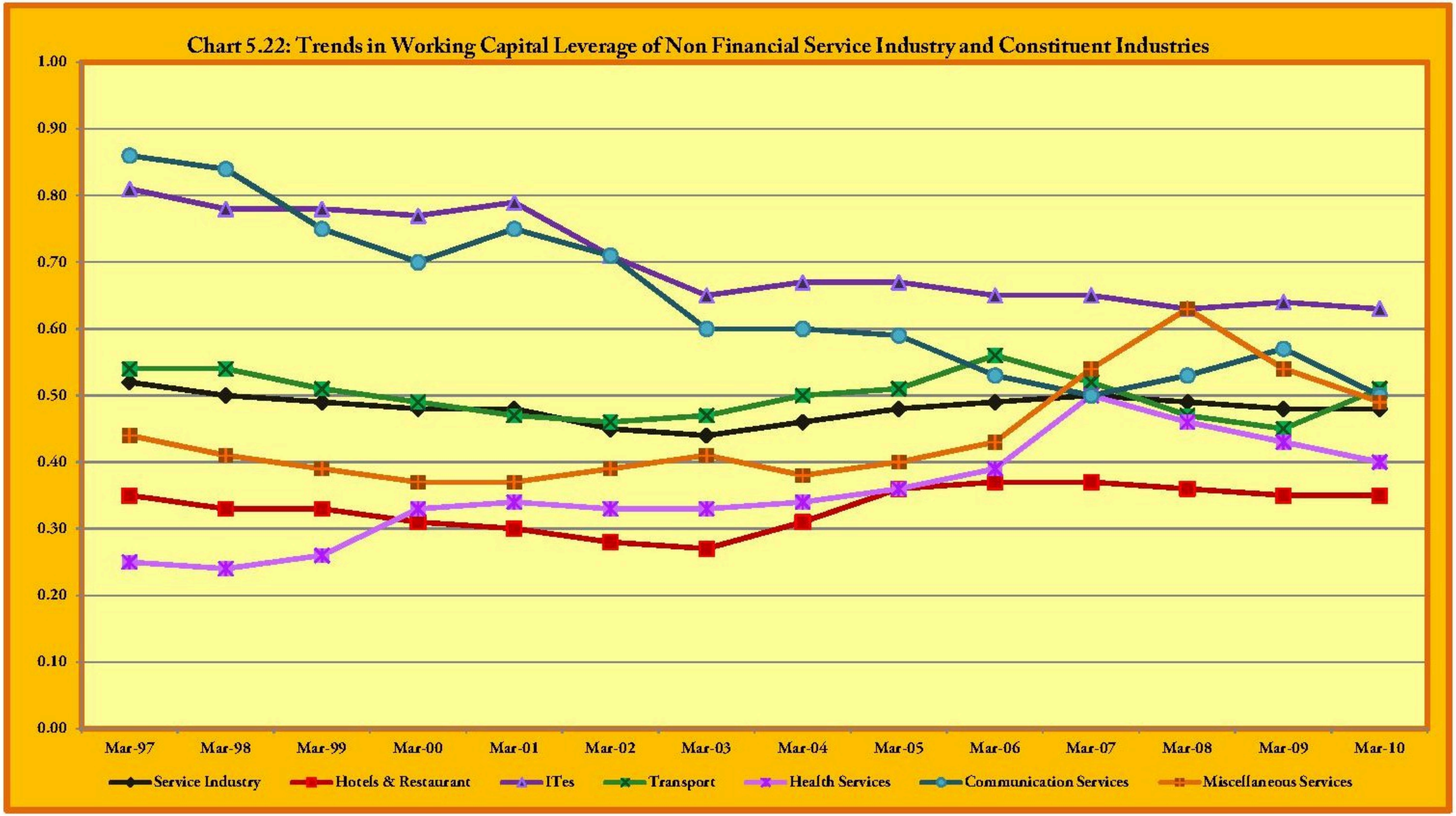


Chart 5.22: Trends in Working Capital Leverage of Non Financial Service Industry and Constituent Industries

TABLE – 5.59

Industry Wise Mean of WCL and related ratios

Year	Hotels and Restaurant Industry			ITes Industry			Transport Services			Health Services			Communication Services			Miscellaneous Services		
	WCL	CANFAR	ROTA	WCL	CANFAR	ROTA	WCL	CANFAR	ROTA	WCL	CANFAR	ROTA	WCL	CANFAR	ROTA	WCL	CANFAR	ROTA
Mar-97	0.35	0.82	15.00	0.81	2.57	20.08	0.54	1.69	12.68	0.25	0.37	11.58	0.86	4.62	19.64	0.44	1.16	7.69
Mar-98	0.33	0.75	11.75	0.78	2.80	18.54	0.54	1.62	10.65	0.24	0.33	10.30	0.84	5.04	21.09	0.41	0.91	6.57
Mar-99	0.33	0.76	9.11	0.78	2.92	19.03	0.51	1.54	9.90	0.26	0.36	10.26	0.75	4.95	22.11	0.39	0.91	6.27
Mar-00	0.31	0.74	7.45	0.77	2.93	23.92	0.49	1.52	10.34	0.33	0.46	9.26	0.70	4.72	14.57	0.37	0.86	6.90
Mar-01	0.30	0.73	6.87	0.79	3.20	25.01	0.47	1.35	11.41	0.34	0.55	5.10	0.75	4.56	20.63	0.37	0.85	3.37
Mar-02	0.28	0.70	1.60	0.71	3.14	14.18	0.46	1.38	10.03	0.33	0.60	7.47	0.71	4.80	17.70	0.39	0.91	4.31
Mar-03	0.27	0.74	6.41	0.65	3.24	11.69	0.47	1.44	8.59	0.33	0.60	5.65	0.60	4.00	12.11	0.41	0.94	5.32
Mar-04	0.31	0.86	7.59	0.67	3.38	12.28	0.50	1.69	13.09	0.34	0.63	2.54	0.60	4.11	7.74	0.38	0.92	5.05
Mar-05	0.36	1.02	11.66	0.67	3.56	12.79	0.51	1.63	16.15	0.36	0.67	0.58	0.59	3.36	10.05	0.40	0.90	8.61
Mar-06	0.37	1.22	14.24	0.65	3.29	17.48	0.56	1.68	13.8	0.39	0.82	7.71	0.53	3.12	5.90	0.43	0.81	22.87
Mar-07	0.37	1.30	16.79	0.65	3.12	20.05	0.52	1.65	12.08	0.50	1.04	16.58	0.50	2.87	6.55	0.54	1.03	14.00
Mar-08	0.36	1.44	16.75	0.63	2.84	18.17	0.47	1.80	12.51	0.46	0.85	7.63	0.53	3.00	4.43	0.63	1.44	19.10
Mar-09	0.35	1.42	11.52	0.64	3.05	17.67	0.45	1.57	10.53	0.43	0.82	4.20	0.57	3.10	4.74	0.54	1.48	11.90
Mar-10	0.35	1.37	9.79	0.63	3.25	16.41	0.51	1.70	9.23	0.40	0.81	3.06	0.50	1.98	-1.42	0.49	1.43	10.80
Mean	0.33	0.99	10.47	0.70	3.09	17.66	0.50	1.59	11.50	0.35	0.64	7.28	0.65	3.87	11.85	0.44	1.04	9.48
SD	0.03	0.29	4.35	0.07	0.26	4.02	0.03	0.13	2.03	0.08	0.21	4.20	0.12	0.96	7.52	0.08	0.24	5.75
CV (%)	9.89	29.56	41.57	9.73	8.42	22.74	6.66	8.23	17.65	21.66	33.47	57.69	18.98	24.78	63.50	17.79	22.95	60.67

C. ITes Industry

- From the perusal of Table 5.59, it is observed that WCL of the ITes Industry ranged between 0.63 and 0.81 with industry mean of 0.70. Overall, a declining trend is observed in WCL from the perusal of Chart 5.22. Mean CANFAR of the ITes Industry is 3.09, which, ranged between 2.57 and 3.38. Overall, an uptrend can be observed in the CANFAR, thereby indicating that there was an increase in current asset investments as compared to Net Fixed Assets. In addition, in all the years the ratio of CANFAR is more than 1 which indicates that the Current asset investment in all the years was more than net fixed assets in case of ITes Industry. Mean WCL of 0.70 indicates that, with 1% change in Current Assets, the ROTA will be affected by 0.70%. Further, the WCL of the ITes Industry is very near to 1, indicating that the decrease in ROTA is very sensitive to proportionate change in level of working capital investment, *i.e.*, level of investment in current assets. This may also be because of high CANFAR and confirms, "Asset structure is the basic determinant of working capital leverage.[18]" The results indicate a risky position in the ITes Industry.

D. Transport Services Industry

- From the perusal of Table 5.59, it is observed that WCL of the Transport Services Industry ranged between 0.56 and 0.49 with industry mean of 0.50. Overall, a fluctuating trend can be observed in WCL as also observed from Chart 5.22. A declining trend can be observed in the CANFAR until 2002 whereafter the trend is fluctuating. However, in all the years the ratio of CANFAR is more than 1 which indicates that the Current asset investment in all the years was more than net fixed assets in case of Transport Services Industry. However, observing WCL, CANFAR and ROTA simultaneously on year-to-year basis it can be observed that ROTA is not very sensitive to change in level of current asset investment.

E. Health Services Industry

- From the perusal of Table 5.59, it is observed that WCL of the Health Services Industry ranged between 0.24 and 0.50 with mean of 0.35. From the perusal of Chart 5.22, a rising trend can be noted in WCL over the study period. However, mean WCL of 0.35 is much less than 1 which indicates that the change in ROTA is less than proportionate to change in current asset investment which may also be because of the low CANFAR. Thus, it confirms, "Asset structure is the basic determinant of working capital leverage[18]" which could be the reason for ROTA not being sensitive to WCL in the Health Services Industry.

F. Communication Services Industry

◈ From the perusal of Table 5.59, it is observed that WCL of the Communication Services Industry ranged between 0.86 and 0.50 with mean of 0.65. Overall, a consistently declining trend can be observed in WCL as also evident from Chart 5.41. CANFAR ranged between 5.04 and 1.98 with mean of 3.87 wherein a declining trend is observed. In addition, in all the years the ratio of CANFAR is more than 1 which indicates that the Current asset investment in all the years was more than net fixed assets in case of Communication Services Industry. Mean WCL of 0.65 indicates that, with 1% change in Current Assets, the ROTA will be affected by 0.65%, *i.e.,* with 1% increase in current asset investment, the ROTA would decrease by 0.65% on an average and *vice versa.* Due to high ratio of CANFAR, it can be observed that there have been heavy fluctuations in ROTA, which indicates high sensitivity of ROTA to changes in current asset investment and signifying a risky position in the Communication Services Industry.

G. Miscellaneous Services Industry

◈ From the perusal of Table 5.59, it is observed that WCL of the industry ranged between 0.37 and 0.63 with industry mean of 0.44. Overall, a rising trend is observed in WCL from perusal of Chart 5.22. CANFAR of ranged between 0.81 and 1.48 with mean of 1.04 wherein a fluctuating trend can be observed. Mean WCL of 0.44 indicates that, with 1% change in Current Assets, the ROTA will be affected by 0.44%. In addition, by observing CANFAR, ROTA and WCL it can be noted that a small change in Current asset investment causes wide fluctuations in ROTA indicating that ROTA of Miscellaneous Services Industry is sensitive to WCL and is a risky position.

5.4.1 Time Trends in WCL: Non Financial Service Industry

Time trend in WCL of Non Financial Service Industry and the 6 individual service industry groups have been examined by fitting the Linear Trend Model and Quadratic Trend Model and the results of both the models are interpreted jointly.

The results of linear trend on time variable are presented in Table 5.60 whereas the results of quadratic trend are presented in Table 5.61 for the entire Service Industry (79 Companies) as well as individual 6 Service Industry Groups. The findings are presented for the entire Non Financial Service Industry first, followed by Hotels and Restaurant, ITes, Transport Services, Health Services, Communication Services, and Miscellaneous Services Industry.

TABLE 5.60

Linear Trend on Time Variable for Working Capital Leverage

Name of Industry	R^2	Adj. R^2	Intercept	Slope	t-Statistic	p-value	D Statistic
Service (as a whole)	0.038	-0.042	0.489	-0.001	-0.690	0.503	0.510
Hotels & Restaurant	0.187	0.119	0.306	0.003	1.659	0.123	0.523
ITes	0.855	0.843	0.815	-0.015	-8.424*	0.000	1.178
Transport Services	0.062	-0.016	0.515	-0.002	-0.889	0.391	0.994
Health Services	0.782	0.764	0.233	0.016	6.560*	0.000	1.261
Comm. Services	0.880	0.870	0.851	-0.027	-9.392*	0.000	1.253
Misc. Services	0.449	0.403	0.348	0.013	3.124*	0.009	0.818

* Indicating significant results at 1% level of significance.

Critical Values of "t"

DF	Probability (Alpha)	Table Value – t
12	0.01	3.055

Durbin – Watson Statistic (D Statistic), K = 1

N	Probability (Alpha)	D_L (Lower Critical Value)	D_U (Upper Critical Value)
12	0.01	0.697	1.023

Where, N = Sample size and K represents number of independent variables

TABLE 5.61

Quadratic Trend on Time Variable for Working Capital Leverage

Name of Industry	R^2	Adj. R^2	Intercept	Slopeβ1	Slopeβ2	t-Statistic β1	t-Statistic β2	F-Statistic	D Statistic
Service (as a whole)	0.484	0.390	0.527	-0.015	0.001	-3.250* (0.008)	3.081* (0.010)	5.153** (0.026)	0.819
Hotels & Restaurant	0.432	0.328	0.351	-0.014	0.001	-1.698 (0.118)	2.179 (0.052)	4.179** (0.045)	0.629
Transport Services	0.142	-0.014	0.541	-0.012	0.001	-1.185 (0.261)	1.012 (0.333)	0.908 (0.432)	1.085
Misc. Services	0.592	0.518	0.430	-0.018	0.002	-1.140 (0.279)	1.968 (0.075)	7.987* (0.007)	1.153

* Results significant at 1% level of significance. ** Results significant at 5% level of significance.

Critical Values of "t" and "F"

t-test			F-test: Degrees of Freedom = 2		
DF	Probability (Alpha)	Table Value – t	N	Probability (Alpha)	Table Value – F
11	0.01	3.106	11	0.01	7.21
11	0.05	2.201	11	0.05	3.98

Durbin – Watson Statistic (D-W Statistic), K = 2

N	Probability (Alpha)	D_L (Lower Critical Value)	D_U (Upper Critical Value)
11	0.01	0.519	1.297
11	0.05	0.658	1.604

Where, N = Sample size and K represents number of independent variables

A. Non Financial Service Industry (79 Companies)

On examining the outcome of regression analysis from Table 5.60 and 5.61, it is observed that WCL exhibits significant trend which is declining at increasing rate and likely to reverse in 8th year. From this, it is concluded that there has been decline in sensitivity of ROTA due to change in level of current asset investment of firms in the Non Financial Service Industry over the period under study.

B. Hotels and Restaurant Industry (25 Companies)

For WCL of Hotels and Restaurant Industry no significant trend is observed and it is concluded that the WCL of this industry has remained stable over the study period which is due to no trend in the CATAR observed from Table 5.16 indicating stable current asset investment policy.

C. ITes Industry (20 Companies)

A significant downtrend is observed for WCL of ITes Industry with 86% change in WCL explained by time. Hence it is concluded that the WCL of ITes Industry has declined over the study period as also observed from Chart 5.22. The reason for the same can be assigned to the falling trend observed in CATAR observed from Table 5.24. As already discussed that asset structure is the basic determinant of WCL and with decline in the current assets in the total asset structure, degree of WCL is bound to reduce and thus the sensitivity of ROTA also lessens.

D. Transport Services Industry (16 Companies)

On examining the outcome of regression analysis from Table 5.60 and 5.61, no significant trend is observed for WCL and it is concluded that the WCL of Transport Services Industry has remained stable over the study period.

E. Health Services Industry (7 Companies)

A significant uptrend is observed for WCL with 78% change in WCL for Health Services Industry, hence it is concluded that the WCL has increased over the study period as also observed from Chart 5.22 thereby indicating increased sensitivity of ROTA to change in current asset investment policy. Thus, over the study period the working capital risk in the industry has increased. The reason for the same is assigned to the rising share of CA in the TA structure observed from Table 5.40 which leads to high degree of WCL and thus greater sensitivity in ROTA.

F. Communication Services Industry (2 Companies)

A significant downtrend is observed for WCL with 88% change in WCL explained by the time factor, hence it is concluded that the WCL has declined over the study period as also observed in Chart 5.22. The reason for the same can be assigned to the falling trend observed in CATAR observed from Table 5.48.

G. Miscellaneous Services Industry (9 Companies)

On examining the outcome of time trend for Miscellaneous Services Industry, a significant positive linear trend is observed for WCL indicating increase in the degree of WCL of firms in the Miscellaneous Services Industry leading to greater sensitivity in ROTA due to change in CA investment policy. Thus, over the study period the working capital risk in the industry has increased. The reason for the same is assigned to the rise in share of CA in TA structure7th year onwards.

SUMMARY

In this chapter the trend analysis was performed for the selected 40 ratios of WCM, LEV and Profitability of the Non Financial Service Industry (79 companies) as well as its constituent industry groups, *i.e.,* Hotels and Restaurant Industry (25 companies); ITeS Industry (20 companies); Transport Services Industry (16 companies); Health Services Industry (7 companies); Communication Services Industry (2 companies) and Miscellaneous Services Industry (9 companies) through application of descriptive statistics as well as Linear and Quadratic Trend Model. A summary of some major observations are presented here, wherein, based on descriptive statistics are presented first as per the aspect of WCM studied for all industries which is followed by summary of Time Trend Analysis.

Trend Analysis

The overall trends in WCM, LEV and PROF ratios were observed by taking industry average on yearly basis. Five different aspects of WCM, along with LEV and PROF were analyzed and the crux is presented in Table 5.62 for each aspect studied.

TABLE 5.62

SUMMARY OF TREND ANALYSIS

Sr. No.	**Ratio**	**Description**	**Name of Industry**
LEVERAGE			
1	TDTAR	Conservative Debt Financing Policy.	Non Financial Service Industry as well as all the 6 Industry groups
2	LTDTAR	Long term debt formed major component of Total Debt.	Hotels and Restaurant and Health Services
3	CLTAR	Short term debt formed major component of Total Debt.	Non Financial Service Industry ITeS; Transport Services; Communication Services and Miscellaneous Services.

TABLE 5.62			(Continued...)
SUMMARY OF TREND ANALYSIS			
Sr. No.	**Ratio**	**Description**	**Name of Industry**
WORKING CAPITAL POLICY			
4	CATAR	Conservative Current Asset Investment Policy.	Non Financial Service Industry ITes Industry; Transport Services; Communication Services & Miscellaneous Services.
		Moderate Current Asset Investment Policy.	Hotels and Restaurant Industry and Health Services Industry
5	CLCAR, NWCCAR & CLTAR	Aggressive Current Asset Financing Policy.	Non Financial Service Industry and all its constituent industry groups.
WORKING CAPITAL LEVERAGE			
6	WCL	ROTA is sensitive to the current asset investment policy indicating inherent working capital risk in the asset structure.	Non Financial Service Industry as well as all its constituent industry groups.
		Industries least affected by WCL.	Transport Services & Health Services
		ITes Industry followed by the Communication Services Industry is very sensitive to the changes in the CA investment policy amongst all the Non Financial Service Industry groups.	
CURRENT ASSET STRUCTURE			
7	RTCAR	Receivables formed the major share in the current asset structure.	Non Financial Service Industry as well as all its constituent industry groups.
8	ITCAR	Inventory had a very low proportion in the current asset structure.	Non Financial Service Industry (8%); Communication Services Industry (2%); ITes Industry (4%), Transport Services Industry (5%), Hotels and Restaurant Industry (9%), Health Services Industry (12%) and Miscellaneous Services Industry (14%).
CURRENT LIABILITIES STRUCTURE			
9	TCCLR	Trade Credit formed the major share in the current liabilities structure.	Non Financial Service Industry as well as all its constituent industry groups.
10	TCCLR, CFCCLR, PCLR, OCLCLR	Among CL, the Spontaneous source of short term finance is noted to be dominating the current liabilities structure.	Non Financial Service Industry as well as all its constituent industry groups.
LIQUIDITY POSITION			
11	CR, QR & ALR	Sound Liquidity and Short term Solvency position.	Non Financial Service Industry as well as Hotels and Restaurant Industry.
		Excess Liquidity	ITes and Transport Services.
		Tight fisted liquidity position with risk of technical insolvency.	Health Services and Communication Services
CURRENT ASSET MANAGEMENT EFFICIENCY			
12	TATR and CATR	Efficient management of Total Assets and Current Assets.	Non Financial Service Industry Hotels and Restaurant; ITes; Transport Services; Health Services

TABLE 5.62 (Continued...)

SUMMARY OF TREND ANALYSIS

Sr. No.	Ratio	Description	Name of Industry
CURRENT ASSET MANAGEMENT EFFICIENCY			
12	WCTR	Utilization of low level and at times negative NWC for supporting sales.	Non Financial Service Industry as well as all its constituent industry groups.
13	CBTR, ITR, IHP, RTR and ACP	Efficient Inventory & Cash Management. Improving but unsatisfactory receivables management with a scope to improve credit management.	Non Financial Service Industry as well as all its constituent industry groups.
14	CTR and APP	Prompt payment of dues resulting to good reputation and is considered as the possible cause for easy access to short term funds which has resulted to heavy reliance on current liabilities to finance the current assets.	Non Financial Service Industry as well as all its constituent industry groups. However, in case of Communication Services as well as Miscellaneous Services Industry it is observed that gradually the industry is delaying payments to creditors.
15	OC and NTC	Long Operating and Net Trade Cycles indicating greater working capital requirements	Non Financial Service Industry as well as all its constituent industry groups.
PROFITABILITY POSITION			
16	OPM, NPM, ROTA, EAT/TA, RONW	The industry is not able to provide stable returns to its investors. Moreover, the post tax returns of the industry are observed to be lower than risk free rate of return.	Non Financial Service Industry as well as Hotels and Restaurant and Communication Services Industry.
		Poor & Unstable Profitability Position.	ITeA; Transport Services & Health Services (refer Table 5.23 and 5.39)

Time Trend Analysis

The results of time trend analysis are presented here for each industry separately. Moreover, the summary of the results of Trend analysis is presented in Table 5.63.

A. Non Financial Service Industry

The study rejects the null hypothesis that no significant linear trend is observed in WCM, LEV and PROF ratios of Non Financial Service Industry over a period of time for LTDTAR, TDTAR, CLTAR, CATAR, CLCAR, NWCCAR, WCL, ITCAR, RTCAR, PETCAR, LATCAR, MSTCAR, TCCLR, CFCCLR, PCLR, DACECLR, OCLCLR, CR, QR, ALR, CATR, ITR RTR, IHP, OC, NTC and OPM. However the null hypothesis is accepted for CBBTCAR, STBBCLR, TATR, WCTR, CBTR, CTR, ACP, APP, NPM, ROTA, EAT/TA and RONW.

TABLE 5.63

INDUTRY WISE SUMMARY OF TIME TRENDS IN WCM, LEV AND PROF RATIOS

LINEAR TREND

Name of Industry	Name of WCM, LEV and PROF RATIOS
Non Financial Service Industry	ITCAR, TCCLR, CR, QR, ALR, RTR, OC, NTC
Hotels and Restaurant Industry	RTCAR, RTR, CBTR, APP
ITes Industry	CATAR, TCCLR, RTR, NTC, WCL
Transport Services Industry	LTDTAR, CATAR, ITCAR, RTR
Health Services Industry	CATAR, DACECLR, CFCCLR, TATR, APP, WCL
Communication Services Industry	TCCLR, CFCCLR, OCLCLR, OPM, ROTA, EAT/TA, RONW, WCL
Miscellaneous Services Industry	CBBTCAR, TCCLR, QR, CTR, NTC, OPM, NPM, ROTA, EAT/TA

LINEAR TREND AND AUTOCORRELATION PROBLEM

Name of Industry	Name of WCM, LEV and PROF Ratios
Non Financial Service Industry	CLTAR, RTCAR, PETCAR, ITR
Hotels and Restaurant Industry	CLTAR, PETCAR, LATCAR, MSTCAR, TCCLR, ALR, TATR, ITR, IHP, ACP, OC
ITes Industry	CLCAR, NWCCAR, PETCAR, CR, QR, TATR
Transport Services Industry	TDTAR, CLTAR, RTCAR, CBBTCAR, MSTCAR, TCCLR, CR, QR, ALR, TATR, ITR, CBTR
Health Services Industry	TDTAR, RTCAR, TCCLR, OCLCLR, CATR, CBTR
Communication Services Industry	CATAR, PETCAR, MSTCAR, CTR
Miscellaneous Services Industry	CLTAR, RTCAR, PETCAR, MSTCAR, PCLR, ITR, RTR, ACP, APP, OC,

QUADRATIC TREND

Name of Industry	Name of WCM, LEV and PROF RATIOS
Non Financial Service Industry	LTDTAR, CLCAR, NWCCAR, LATCAR, MSTCAR, CFCCLR, PCLR, DACECLR, CATR, IHP, OPM
Hotels and Restaurant Industry	TDTAR, CATR, CTR
ITes Industry	LTDTAR, STBBCLR, OPM, NPM
Transport Services Industry	PCLR, STBBCLR, CFCCLR, CATR, WCTR, IHP, ACP, OC, NTC,
Health Services Industry	CLTAR, STBBCLR, CR, QR, ALR, NTC
Communication Services Industry	LTDTAR, CLCAR, NWCCAR, ITCAR, PCLR, CR, QR, ITR, IHP, NPM
Miscellaneous Services Industry	CATAR, CLCAR, NWCCAR, ITCAR, STBBCLR, OCLCLR

RATIOS DECREASING AT INCREASING RATE WITH PERSISTING AUTOCORRELATION

Name of Industry	Name of WCM, LEV and PROF RATIOS
Non Financial Service Industry	TDTAR, CATAR, OCLCLR, WCL
Hotels and Restaurant Industry	CATAR, PCLR, OCLCLR, OPM
ITes Industry	TDTAR, ITCAR, RTCAR, CFCCLR, OCLCLR, IHP, CBTR
Transport Services Industry	OCLCLR

TABLE 5.63	(Continued...)
INDUTRY WISE SUMMARY OF TIME TRENDS IN WCM, LEV AND PROF RATIOS	
RATIOS DECREASING AT INCREASING RATE WITH PERSISTING AUTOCORRELATION	
Health Services Industry	LTDTAR, CBBTCAR, PCLR,
Communication Services Industry	TDTAR, CLTAR, LATCAR, TATR, CATR, CBTR, APP
Miscellaneous Services Industry	ALR, IHP
RATIOS INCREASING AT DECREASING RATE WITH PERSISTING AUTOCORRELATION	
Name of Industry	Name of WCM, LEV and PROF RATIOS
Non Financial Service Industry	-----
Hotels and Restaurant Industry	LTDTAR, ITCAR, DACECLR,
ITes Industry	NWTAR, LATCAR, MSTCAR, DACECLR, PCLR, ITR
Transport Services Industry	-----
Health Services Industry	PETCAR, LATCAR, MSTCAR,
Communication Services Industry	CBBTCAR, ALR
Miscellaneous Services Industry	TDTAR, LATCAR, DACECLR, CFCCLR,
NO TREND	
Name of Industry	Name of WCM, LEV and PROF RATIOS
Non Financial Service Industry	CBBTCAR, STBBCLR, TATR, WCTR, CBTR, CTR, ACP, APP, NPM, ROTA, EAT/TA, RONW,
Hotels and Restaurant Industry	CLCAR, NWCCAR, CBBTCAR, CFCCLR, STBBCLR, CR, QR, WCTR, NTC, NPM, ROTA, EAT/TA, RONW, WCL
ITes Industry	CLTAR, CBBTCAR, ALR, CATR, WCTR, ACP, CTR, APP, OC, ROTA, EAT/TA, RONW
Transport Services Industry	CLCAR, NWCCAR, LATCAR, PETCAR, DACECLR, CTR, OPM, NPM, ROTA, EAT/TA, RONW, WCL
Health Services Industry	CLCAR, NWCCAR, ITCAR, WCTR, ITR, IHP, RTR, ACP, CTR, OC, OPM, NPM, ROTA, EAT/TA, RONW
Communication Services Industry	RTCAR, DACECLR, STBBCLR, WCTR, RTR, ACP, OC, NTC
Miscellaneous Services Industry	LTDTAR, CR, TATR, CATR, WCTR, CBTR, RONW, WCL

B. Hotels and Restaurant Industry

The study rejects the null hypothesis that no significant linear trend is observed in WCM, LEV and PROF ratios of Non Financial Service Industry over a period of time for LTDTAR, TDTAR, CLTAR, CATAR, , ITCAR, RTCAR, PETCAR, LATCAR, MSTCAR, TCCLR, DACECLR, PCLR, OCLCLR, TATR, ALR, CATR, ITR RTR, CTR, CBTR, IHP, OC, ACP, APP, and OPM. However the null hypothesis is accepted for CLCAR, NWCCAR, WCL, CBBTCAR, STBBCLR, CFCCLR, CR, QR, WCTR, NTC, NPM, ROTA, EAT/TA and RONW.

C. ITes Industry

The study rejects the null hypothesis that no significant linear trend is observed in WCM, LEV and PROF ratios of ITes Industry over a period of time for LTDTAR, TDTAR, CATAR, CLCAR, NWCCAR, WCL, ITCAR, RTCAR, PETCAR, LATCAR, MSTCAR, TCCLR, DACECLR, PCLR, STBBCLR, CFCCLR, OCLCLR, CR, QR, TATR, ITR, RTR, CBTR, IHP, NTC, OPM, and NPM. However the null hypothesis is accepted for CLTAR, CBBTCAR, ALR, CATR, WCTR, CTR, OC, ACP, APP, ROTA, EAT/TA and RONW.

C. Transport Services Industry

The study rejects the null hypothesis that no significant linear trend is observed in WCM, LEV and PROF ratios of Transport Services Industry over a period of time for LTDTAR, TDTAR, CLTAR, CATAR, ITCAR, RTCAR, CBBTCAR, MSTCAR, TCCLR, DACECLR, PCLR, STBBCLR, CFCCLR, OCLCLR, CR, QR, ALR, TATR, CATR, WCTR, ITR, RTR, CBTR, IHP, ACP, APP, OC and NTC. However the null hypothesis is accepted for CLCAR, NWCCAR, WCL, LATCAR, PETCAR, CTR, OPM, NPM, ROTA, EAT/TA and RONW.

D. Health Services Industry

In case of Health Services Industry, the study rejects the null hypothesis for LTDTAR, TDTAR, CLTAR, CATAR, WCL, RTCAR, CBBTCAR, PETCAR, LATCAR, MSTCAR, TCCLR, DACECLR, PCLR, STBBCLR, CFCCLR, OCLCLR, CR, QR ALR, TATR, CATR, CBTR, APP and NTC. However the null hypothesis is accepted for CLCAR, NWCCAR, ITCAR, WCTR, ITR, IHP, RTR, ACP, CTR, OC, OPM, NPM, ROTA, EAT/TA and RONW.

E. Communication Services Industry

In case of Communication Services Industry the study rejects the null hypothesis for LTDTAR, TDTAR, CLTAR, CATAR, CLCAR, NWCCAR, WCL, ITCAR, CBBTCAR, PETCAR, LATCAR, MSTCAR, TCCLR, PCLR, CFCCLR, OCLCLR, CR, QR ALR, TATR, CATR, ITR CTR, CBTR, IHP, APP, OPM NPM, ROTA, EAT/TA and RONW. However the null hypothesis is accepted for RTCAR, DACECLR, STBBCLR, WCTR, RTR, ACP, OC and NTC.

F. Miscellaneous Services Industry

In case of Miscellaneous Services Industry the study rejects the null hypothesis for TDTAR, CLTAR, CATAR, CLCAR, NWCCAR, WCL, ITCAR, RTCAR, PETCAR, LATCAR, MSTCAR, CBBTCAR, TCCLR, PCLR, DACECLR, STBBCLR, CFCCLR, OCLCLR, QR, ALR, ITR RTR, CTR, IHP, OC, ACP, APP, NTC, OPM, NPM, ROTA and EAT/TA. However the null hypothesis is accepted for LTDTAR, WCL, CR, TATR, CATR, WCTR, CBTR and RONW.

Having examined the trends in WCM, LEV and PROF for the Non Financial Service Industry as well as its constituent industry groups, the next chapter presents the ***second stage of analysis*** which proposes to examine if, differences exists between companies, between years and between industries with respect to the working capital management.

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CHAPTER – 6
WORKING CAPITAL MANAGEMENT: ANALYSIS OF VARIANCES

This chapter examines the variations, if any, in the selected WCM, LEV and PROF ratios for: (a) Between the industries (b) Between the companies of a given industry and (c) Between the years within a given industry. The detailed methodology for carrying out ANOVA has been discussed in Chapter 4. Further, Single Factor ANOVA is carried out for all the selected ratios as mentioned in Table 5.1, which are grouped as Leverage Ratios, Working Capital Policy Ratios, Current Asset Structure Ratios, Current Liabilities Structure Ratios, Liquidity Ratios, Current Asset Management Current Asset Management Efficiency Ratios, Operating Cycle Variables and Profitability Ratios. For lucidity and better presentation of results, this chapter is divided into *three* major sections followed by summary and conclusions.

Firstly industry level analysis is carried out by examining differences, if any, between the 6 Non Financial Service Industry groups as well as between the years for these industry groups taking all the ratios employing Single Factor ANOVA. This is presented in **Section I.** In **Section II,** *firm level analysis* is carried out to examine the differences, if any between the companies of Non Financial Service Industry *i.e.,* taking all the 79 sample companies applying Single Factor ANOVA for all the WCM, LEV and PROF ratios. Further, between the year differences are also examined for all the firms in the Non Financial Service Industry. In **Section III,** *firm level analysis based on industry wise classification* is carried out and presents the results of ANOVA for all the ratios for between the companies as well as between the years of the firms belonging to individual Non Financial Service Industry groups except Communication Services Industry where there are only 2 firms available for analysis.

SECTION – I

6.1 Single Factor ANOVA between Non Financial Service Industries (6 Industries)

In this section, industry analysis is carried out to examine differences, if any, between the 6 Non Financial Service Industry groups as well as between the years for these Industries with respect to WCM, LEV and PROF ratios for the selected time frame. For the said purpose, Single Factor ANOVA is applied and the results are presented in two sections. Firstly the results of ANOVA for between the Industries are presented followed by the results for between the years.

6.1.1 Single Factor ANOVA between the Industries

The results of single factor ANOVA between the 6 Industries for all the parameters of WCM, LEV and Profitability is presented in Table 6.1. The results of the analysis are interpreted as per the group to which each ratio belongs.

A. Working Capital Policy, Working Capital Leverage and Leverage Ratios

- From the perusal of Table 6.1, it is observed that means of the LEV, WCL and Working Capital Policy (WCP) ratios widely vary thereby indicating that there exists significant difference between various industry groups of the Non Financial Service Industry with respect to use of debt financing, working capital policy and degree of working capital leverage. The variations are high for LTDTAR as compared to TDTAR indicating that the differences are greater between the Service Industry groups in utilization of long term debt to finance the total assets as compared to the total debt position.
- Significant variations between industries are observed for the current asset investment policy represented by CATAR and CANFAR indicating that the service industries pursue different current asset investment policy. The highest variation is observed for CANFAR followed by CATAR thereby indicating that greater differences exist with respect to the proportion of current asset to net fixed assets.
- Significant variations between Service Industries are also observed for the current asset financing policy pursued as represented by CLCAR, NWCCAR and CLTAR indicating that they differ in terms of utilization of current liabilities and NWC for financing their current assets. Variations are highest for CLTAR indicating that they differ greatly in use of current liabilities to finance their total assets.
- Significant variations observed for WCL indicates that the Service Industry groups differ with respect to investment in current assets and the degree of Working Capital Leverage which is in line with the variations observed for CATAR and CANFAR.

B. Current Asset Structure Ratios

As observed from Table 6.1, the mean of all Current Asset Structure Ratios widely vary except MSTCAR, thereby indicating that there exists significant difference between the industries of Non Financial Service Sector with respect to the current asset component mix. Highest variation is observed for ITCAR indicating that Service Industries differ greatly in terms of maintaining level of inventories as a proportion of current assets. This is followed by PETCAR, CBBTCAR, RTCAR and LATCAR. No significant variation in MSTCAR indicates that the selected industries in the Service Sector maintain same level of marketable securities as a proportion CA. Thus, it is concluded that there are significant differences between the Service Industries in the structure of current assets maintained by them.

C. Current Liabilities Structure Ratios

On examining the results of ANOVA from Table 6.1, it is observed that mean of all the Current Liabilities Structure Ratios widely vary except TCCLR and OCLCLR. Highest variation is observed for STBBCLR amongst all the CL structure ratios indicating that the industries differ greatly in proportion of STBB to CL which also conveys that they utilize different levels of short term bank borrowing as a source of financing the current assets. No significant variation in TCCLR and OCLCLR indicates that the selected industries in the Service Sector do not differ in the proportion of Trade Credit as well as OCL to Current Liabilities. it is concluded that Industries of Non Financial Service Sector differ significantly with respect to DACELCR, PCLR, STBBCLR and CFCCLR and maintain different mix of current liabilities as a source of financing the current assets.

D. Liquidity Ratios

The results of ANOVA indicate significant evidence that mean of Liquidity ratios widely vary between the industries indicating that the selected industries in Service Sector significantly differ in their approach towards liquidity management. Highest variation is observed for QR indicating that Service Industries differ significantly in maintaining short term liquidity as measured in terms of proportion of quick assets to current liabilities. This is followed by CR and ALR.

E. Current Asset Management Efficiency Ratios and Operating Cycle Variables

The results of ANOVA for CAME Ratios and OC Variables provide significant evidence that their means vary widely between the industries for 5 out of 8 ratios indicating that the selected Service Industries significantly differ with respect to asset utilization efficiency as well as in the management of cash and receivables. Significant variation observed for **TATR** indicates that the Non Financial Service Industries pursue different approaches in managing their total assets and they vary in terms of asset utilization. Highest variation observed in **CATR** indicates that the selected industries greatly differ in terms of current asset management efficiency. This result is in line with the highest variation observed for CANFAR as well as CATAR, which also may be the reason for such high variation in CATR and TATR. CATR is followed by RTR, TATR, CBTR and ACP. Significant variations in **CBTR** indicate that there exists significant difference between the selected industries in terms of cash management efficiency.

TABLE 6.1

SINGLE FACTOR ANOVA BETWEEN THE INDUSTRIES BELONGING TO NON FINANCIAL SERVICES INDUSTRY (6 INDUSTRIES)

Sr. No.	Category & Name of Ratio	SS	df	MS	F-Value	p-Value
Working Capital Policy, Working Capital Leverage & Leverage Ratios						
1	LTDTAR					
	(i) Between Groups	0.394262	5	0.078852	30.5573*	1.41E-17
	(ii) Within Groups	0.21676	84	0.00258		
2	TDTAR					
	(i) Between Groups	0.066952	5	0.01339	3.3218*	0.009
	(ii) Within Groups	0.338613	84	0.004031		
3	CLTAR					
	(i) Between Groups	0.288739	5	0.057748	34.8912*	3.81E-19
	(ii) Within Groups	0.139027	84	0.001655		
4	CATAR					
	(i) Between Groups	1.31284	5	0.262568	106.0371*	8.87E-35
	(ii) Within Groups	0.208	84	0.002476		
5	CLCAR					
	(i) Between Groups	1.928889	5	0.385778	29.4298*	3.81E-17
	(ii) Within Groups	1.101107	84	0.013108		
6	NWCCAR					
	(i) Between Groups	1.928889	5	0.385778	29.4298*	3.81E-17
	(ii) Within Groups	1.101107	84	0.013108		
7	CANFAR	[Critical Value of F at 1% = 3.261]				
	(i) Between Groups	120.0176	5	24.00352	120.6734*	3.13E-35
	(ii) Within Groups	15.51522	78	0.198913		
8	WCL	[Critical Value of F at 1% = 3.261]				
	(i) Between Groups	1.60691	5	0.32138	56.877*	1.3005E-24
	(ii) Within Groups	0.44074	78	0.00565		
Current Asset Structure Ratios						
9	ITCAR					
	(i) Between Groups	0.22313	5	0.044626	64.0127*	3.4E-27
	(ii) Within Groups	0.05856	84	0.000697		
10	RTCAR					
	(i) Between Groups	0.379382	5	0.075876	12.562*	4.11E-09
	(ii) Within Groups	0.507373	84	0.00604		
11	CBBTCAR					
	(i) Between Groups	0.193449	5	0.03869	10.0593*	1.43E-07
	(ii) Within Groups	0.32308	84	0.003846		
12	PETCAR					
	(i) Between Groups	0.306129	5	0.061226	37.6535*	4.4E-20
	(ii) Within Groups	0.136587	84	0.001626		
13	LATCAR					
	(i) Between Groups	0.079557	5	0.015911	4.4957*	0.001
	(ii) Within Groups	0.297293	84	0.003539		
14	MSTCAR					
	(i) Between Groups	0.012476	5	0.002495	1.2987	0.27
	(ii) Within Groups	0.161387	84	0.001921		

TABLE 6.1 (Continued..)

SINGLE FACTOR ANOVA BETWEEN THE INDUSTRIES BELONGING TO NON FINANCIAL SERVICES INDUSTRY (6 INDUSTRIES)

Sr. No.	Category & Name of Ratio	SS	df	MS	F-Value	p-Value
Current Liabilities Structure Ratios						
15	TCCLR					
	(i) Between Groups	0.014246	5	0.002849	1.4002	0.233
	(ii) Within Groups	0.17092	84	0.002035		
16	DACECLR					
	(i) Between Groups	0.1107	5	0.22142	11.5871*	1.59E-08
	(ii) Within Groups	0.16052	84	0.001911		
17	PCLR					
	(i) Between Groups	0.249289	5	0.049858	16.4478*	2.73E-11
	(ii) Within Groups	0.254627	84	0.003031		
18	STBBCLR					
	(i) Between Groups	0.205606	5	0.041121	38.4481*	2.43E-20
	(ii) Within Groups	0.08984	84	0.00107		
19	CFCCLR					
	(i) Between Groups	0.105982	5	0.021196	18.4878*	2.43E-12
	(ii) Within Groups	0.096307	84	0.001147		
20	OCLCLR					
	(i) Between Groups	0.014099	5	0.00282	2.1468	0.068
	(ii) Within Groups	0.110333	84	0.001313		
Liquidity Ratios						
21	CR					
	(i) Between Groups	16.55425	5	3.310849	17.4063*	8.62E-12
	(ii) Within Groups	346.0133	84	1.544702		
22	QR					
	(i) Between Groups	18.27273	5	3.654546	19.5002*	7.68E-13
	(ii) Within Groups	15.74247	84	0.18741		
23	ALR					
	(i) Between Groups	3.629307	5	0.725861	6.8829*	1.99E-05
	(ii) Within Groups	8.858533	84	0.105459		
Current Asset Management Efficiency Ratios and Operating Cycle Variables						
24	TATR					
	(i) Between Groups	5.429543	5	1.085909	59.5505*	3.61E-26
	(ii) Within Groups	1.531747	84	0.018235		
25	CATR					
	(i) Between Groups	44.85617	5	8.971228	125.2976*	2.02E-37
	(ii) Within Groups	6.014347	84	0.071599		
26	WCTR					
	(i) Between Groups	1423.521	5	284.7041	0.907494	0.480
	(ii) Within Groups	26352.96	84	313.7257		
27	RTR					
	(i) Between Groups	505.9028	5	101.1806	60.1149*	2.66E-26
	(ii) Within Groups	141.3821	84	1.683121		
28	ACP					
	(i) Between Groups	310781.4	5	62156.29	9.6235*	2.74E-07
	(ii) Within Groups	542537.1	84	6458.775		

TABLE 6.1 (Continued..)

SINGLE FACTOR ANOVA BETWEEN THE INDUSTRIES BELONGING TO NON FINANCIAL SERVICES INDUSTRY (6 INDUSTRIES)

Sr. No.	Category & Name of Ratio	SS	df	MS	F-Value	p-Value
29	CBTR					
	(i) Between Groups	4990.905	5	998.1809	23.4858*	1.09E-14
	(ii) Within Groups	3570.129	84	42.50154		
30	CTR					
	(i) Between Groups	274018.2	5	54803.65	1.2361	0.300
	(ii) Within Groups	3724354	84	44337.55		
31	APP					
	(i) Between Groups	16759.79	5	3351.958	1.13334	0.349
	(ii) Within Groups	248434	84	2957.548		
Profitability Ratios						
32	OPM					
	(i) Between Groups	2825.337	5	565.0674	6.3398*	4.86E-05
	(ii) Within Groups	7486.991	84	89.13084		
33	NPM					
	(i) Between Groups	1469.236	5	293.8471	4.7997*	0.001
	(ii) Within Groups	5142.628	84	61.22177		
34	ROTA					
	(i) Between Groups	980.8542	5	196.1708	7.8206*	4.4E-06
	(ii) Within Groups	2107.033	84	25.08373		
35	EAT/TA					
	(i) Between Groups	1015.142	5	203.0284	12.8284*	2.86E-09
	(ii) Within Groups	1329.426	84	15.8265		
36	RONW					
	(i) Between Groups	1896.44	5	379.288	3.5288*	0.006
	(ii) Within Groups	9028.53	84	107.482		

* Indicating significant results at 1% level of significance with Critical Value of F = 3.243

** Indicating significant results at 5% level of significance with Critical Value of F = 2.323

✱ As already discussed in Chapter 5, due to the formula of WCL, observations for 2 years is lost and so the analysis is possible for only 14 years. Since, CANFAR is taken to support the analysis of WCL; its analysis is also for 14 years. The same is applicable for between the years analysis of variances.

Many of the companies had NIL inventory in atleast 1 year of the study period and hence it was not possible to examine the variances in ITR, IHP and resultantly variances in OC and NTC. This is applicable to variances between the years for these industries.

Significant variations in **RTR and ACP** indicate that differences exist between the selected industries of Non Financial Service Sector in managing their receivables and hence it is concluded that these industries pursue different credit and collection policy. However, no significant variation in **CTR, WCTR** and **APP** indicates that the Non Financial Service Industry groups follow similar approach with respect to payables management as well as utilization of net working capital for operating sales.

F. Profitability Ratios

The results of ANOVA for Profitability Ratios provide significant evidence at 1% level of significance for all the profitability ratios that their means vary widely between the selected Service Industries thereby indicating that there exists significant difference between the selected industries of Non Financial Service Sector with respect to their profitability position. Highest variation is observed for EAT/TA indicating that the selected Service Industries differ greatly with respect to their operational efficiency measured as percentage of post tax returns on total assets and that the industries manage their operations differently. This is followed by ROTA, OPM, NPM and RONW. The results are very much obvious looking at the results of Current Asset Structure as well as Current Asset Management Efficiency Ratios.

Hence, the null hypothesis that no significant variations exist between companies for selected Profitability ratios is rejected and it is concluded that the selected Non Financial Service Industries of India significantly differ in terms of their profit earning ability and manage their operations differently.

While analyzing the variances between industries of the Non Financial Service Sector over a period of 15 years, significant variances were observed at 1% level of significance for 30 out of 36 ratios. Highest variance was observed for the CATR.

Hence, the null hypothesis that no significant variations exist between Non Financial Service Industries for selected parameters of WCM, LEV and Profitability is broadly rejected.

6.1.2 Single Factor ANOVA between the years of Non Financial Service Industry

The results of single factor ANOVA between the years for 6 Industries of Non Financial Service Sector for all the parameters of WCM, LEV and Profitability is presented in Table 6.2.

While analyzing the variance between the years for Non Financial Service Industry for all the 36 ratios, significant variations were observed for only 2 ratios *viz,* MSTCAR (1%) and RTCAR (5%) which indicates that there have been variations in proportion of Receivables and Marketable Securities to Current Assets between the years for the Non Financial Service Industry.

Thus, it is concluded that there were no significant variations in the mean of selected parameters of WCP, LEV, CA Structure (except RTCAR and MSTCAR), CL Structure, Liquidity, CAME and PROF as well as OC Variables over the study period. These results indicate that the policies for managing working capital have remained consistent over the study period excepting those related to receivables and investment in marketable securities. Hence, the null hypothesis that there exists no significant variation between years for selected WCM, LEV and PROF ratios is broadly accepted.

TABLE 6.2

SINGLE FACTOR ANOVA BETWEEN THE YEARS FOR INDUSTRIES BELONGING TO NON FINANCIAL SERVICES INDUSTRY (6 INDUSTRIES)

Sr. No.	Category & Name of Ratio	Service Industry	df	MS	F-Value	p-Value
Working Capital Policy, Working Capital Leverage & Leverage Ratios						
1	CLTAR					
	(i) Between Groups	0.015249	14	0.001089	0.1980	0.999
	(ii) Within Groups	0.412517	75	0.0055		
2	LTDTAR					
	(i) Between Groups	0.055689	14	0.003978	0.5372	0.903
	(ii) Within Groups	0.555333	75	0.007404		
3	TDTAR					
	(i) Between Groups	0.047449	14	0.003389	0.7098	0.758
	(ii) Within Groups	0.358117	75	0.004775		
4	CATAR					
	(i) Between Groups	0.00934	14	0.000667	0.0331	1
	(ii) Within Groups	1.5115	75	0.020153		
5	CLCAR					
	(i) Between Groups	0.091629	14	0.006545	0.1671	0.999
	(ii) Within Groups	2.938367	75	0.039178		
6	NWCCAR					
	(i) Between Groups	0.091629	14	0.006545	0.1671	0.999
	(ii) Within Groups	2.938367	75	0.039178		
7	CANFAR	[Critical Value of F = 2.395 (1%) and 1.863 (5%)]				
	(i) Between Groups	0.177717	13	0.013671	0.0071	1
	(ii) Within Groups	135.3551	70	1.933644		
8	WCL	[Critical Value of F = 2.395 (1%) and 1.863 (5%)]				
	(i) Between Groups	0.04116	13	0.00317	0.1105	0.999
	(ii) Within Groups	2.00648	70	0.02866		
Current Asset Structure Ratios						
9	ITCAR					
	(i) Between Groups	0.022373	14	0.001598	0.4622	0.946
	(ii) Within Groups	0.259317	75	0.003458		
10	RTCAR					
	(i) Between Groups	0.291056	14	0.02079	2.6175**	0.004
	(ii) Within Groups	0.5957	75	0.007943		
11	CBBTCAR					
	(i) Between Groups	0.010362	14	0.00074	0.1097	0.999
	(ii) Within Groups	0.506167	75	0.006749		
12	PETCAR					
	(i) Between Groups	0.055716	14	0.00398	0.7713	0.696
	(ii) Within Groups	0.387	75	0.00516		
13	LATCAR					
	(i) Between Groups	0.035933	14	0.002567	0.5647	0.884
	(ii) Within Groups	0.340917	75	0.004546		
14	MSTCAR					
	(i) Between Groups	0.101996	14	0.007285	7.6030*	1.23E-09
	(ii) Within Groups	0.071867	75	0.000958		

TABLE 6.2 (Continued..)

SINGLE FACTOR ANOVA BETWEEN THE YEARS FOR INDUSTRIES BELONGING TO NON FINANCIAL SERVICES INDUSTRY (6 INDUSTRIES)

Sr. No.	Category & Name of Ratio	SS	df	MS	F-Value	p-Value
Current Liabilities Structure Ratios						
15	TCCLR					
	(i) Between Groups	0.031549	14	0.002253	1.1002	0.372
	(ii) Within Groups	0.153617	75	0.002048		
16	DACECLR					
	(i) Between Groups	0.056049	14	0.004003	1.3954	0.177
	(ii) Within Groups	0.215183	75	0.002869		
17	PCLR					
	(i) Between Groups	0.048249	14	0.003446	0.5673	0.882
	(ii) Within Groups	0.455667	75	0.006076		
18	STBBCLR					
	(i) Between Groups	0.006029	14	0.000431	0.1116	0.999
	(ii) Within Groups	0.289417	75	0.003859		
19	CFCCLR					
	(i) Between Groups	0.033556	14	0.002397	1.0654	0.402
	(ii) Within Groups	0.168733	75	0.00225		
20	OCLCLR					
	(i) Between Groups	0.028416	14	0.00203	1.5854	0.103
	(ii) Within Groups	0.096017	75	0.00128		
Liquidity Ratios						
21	CR					
	(i) Between Groups	2.018516	14	0.14418	0.3544	0.983
	(ii) Within Groups	30.51338	75	0.406845		
22	QR					
	(i) Between Groups	1.574829	14	0.112488	0.2601	0.996
	(ii) Within Groups	32.44037	75	0.432538		
23	ALR					
	(i) Between Groups	0.575173	14	0.041084	0.2587	0.997
	(ii) Within Groups	11.91267	75	0.158836		
Current Asset Management Efficiency Ratios and Operating Cycle Variables						
24	TATR					
	(i) Between Groups	0.239873	14	0.017134	0.1912	0.999
	(ii) Within Groups	6.721417	75	0.089619		
25	CATR					
	(i) Between Groups	0.862489	14	0.061606	0.0924	0.999
	(ii) Within Groups	50.008	75	0.666773		
26	WCTR					
	(i) Between Groups	5178.026	14	369.859	1.2275	0.274
	(ii) Within Groups	22598.45	75	301.3127		
27	RTR					
	(i) Between Groups	58.92266	14	4.208762	0.5365	0.904
	(ii) Within Groups	588.3623	75	7.884831		
28	ACP					
	(i) Between Groups	98319.67	14	7022.833	0.6976	0.770
	(ii) Within Groups	754998.8	75	10066.65		

TABLE 6.2 (Continued..)

SINGLE FACTOR ANOVA BETWEEN THE YEARS FOR INDUSTRIES BELONGING TO NON FINANCIAL SERVICES INDUSTRY (6 INDUSTRIES)

Sr. No.	Category & Name of Ratio	SS	df	MS	F-Value	p-Value
	CBTR					
29	(i) Between Groups	416.2816	14	29.7344	0.2738	0.995
	(ii) Within Groups	8144.752	75	108.5967		
	CTR					
30	(i) Between Groups	624060.4	14	44575.74	0.9908	0.471
	(ii) Within Groups	3374312	75	44990.83		
	APP					
31	(i) Between Groups	37388.29	14	2670.592	0.8792	0.584
	(ii) Within Groups	227805.5	75	3037.407		
Profitability Ratios						
	OPM					
32	(i) Between Groups	1348.34	14	96.31003	0.8058	0.6602
	(ii) Within Groups	8963.987	75	119.5198		
	NPM					
33	(i) Between Groups	1007.013	14	71.92947	0.9625	0.499
	(ii) Within Groups	5604.851	75	74.73135		
	ROTA					
34	(i) Between Groups	560.5969	14	40.04263	1.1883	0.302
	(ii) Within Groups	2527.29	75	33.69721		
	EAT/TA					
35	(i) Between Groups	365.978	14	26.14128	0.991	2E-10
	(ii) Within Groups	1978.59	75	26.3812		
	RONW					
36	(i) Between Groups	2235.95	14	159.711	1.3786	0.185
	(ii) Within Groups	8689.02	75	115.854		

* Indicating significant results at 1% level of significance with Critical Value of F = 2.329

** Indicating significant results at 5% level of significance with Critical Value of F = 1.826

SECTION – II

6.2 Single Factor ANOVA of Non Financial Service Industry (All 79 Companies)

In this section firm level analysis is carried out to examine the differences, if any, between all the 79 companies of the Indian Non Financial Service Industry as well as between the 15 years for all the 79 companies for the selected parameters of WCM, LEV and PROF over the selected time frame. The results of Single Factor ANOVA for between the companies is presented and interpreted first followed by the results of ANOVA for between the years.

6.2.1 Single Factor ANOVA between the companies of Indian Non Financial Service Industry

The results of single factor ANOVA between the 79 companies of Indian Non Financial Service Industry for all the parameters of WCM, LEV and PROF are presented in Table 6.3. The results of the analysis are interpreted as per the group to which each ratio belongs.

A. Working Capital Policy, Working Capital Leverage and Leverage Ratios

- The results of this analysis provide significant evidence that means of the LEV, WCL and Working Capital Policy (WCP) ratios widely vary as observed from the Table 6.3. The resulting values of F-test are significant at 1% level of significance for all the parameters of WCP and LEV thereby indicating that there exists significant difference between the companies of Non Financial Service Industry with respect to use of debt financing as well as aggressive/conservative working capital policy.
- The variations are high for LTDTAR as compared to TDTAR indicating that the differences are greater within the companies in the Non Financial Service Industry in utilization of long-term debt to finance the total assets as compared to the total debt position.
- Significant variations between companies are observed for the current asset investment policy represented by CATAR and CANFAR. Amongst the current asset investment policy, the highest variation is observed for CATAR followed by CANFAR, which indicates that the companies greatly differ in the current asset investment policy pursued by them.
- Significant variations between companies are also observed for the current asset financing policy followed as represented by CLCAR, NWCCAR and CLTAR indicating that firms differ in use of current liabilities and net working capital for financing their current assets. Also, variations are highest for CLTAR indicating that the firms in non financial service industry differ significantly in use of current liabilities to finance their total assets.
- Significant variations observed for WCL indicates that there exist significant differences between the companies of Non Financial Service Industry with respect to investment in current assets and the degree of Working Capital Leverage. The results are in line with the variations observed for CATAR and CANFAR.

B. Current Asset Structure Ratios

As observed from Table 6.3, the results of ANOVA also provide significant evidence that mean of the Current Asset Structure Ratios widely vary. Highest variation is observed for ITCAR indicating that companies differ significantly in terms of maintaining level of inventories as a proportion of current assets. This is followed by RTCAR, CBBTCAR, PETCAR, MSTCAR and LATCAR.

Thus, it is concluded that there are significant differences between the companies in the structure of current assets maintained by them.

C. Current Liabilities Structure Ratios

The results of ANOVA for Current Liabilities Structure Ratios provide significant evidence that their means vary widely between the companies. Highest variation between the companies is observed for CFCCLR followed by OCLCLR, PCLR, TCCLR, DACECLR and STBBCLR.

Thus, it is concluded that mean current liabilities structure ratios of companies in Non Financial Service Industry differ significantly and they maintain different mix of current liabilities as a source of financing the current assets.

D. Liquidity Ratios

The results of ANOVA also indicate significant evidence that mean of Liquidity ratios widely vary. Highest variation is observed for CR followed by QR and ALR indicating that companies differ significantly in terms of maintaining short term liquidity as measured in terms of proportion of current assets, quick assets as well as cash assets to current liabilities.

E. Current Asset Management Efficiency Ratios and Operating Cycle Variables

Many companies had zero inventory and so the company wise values for the 15 years of the study period of ITR and IHP were unavailable. Therefore, it was not possible to examine the variances in ITR and IHP and resultantly variances in OC and NTC could not be examined. Since companies with zero inventories belong to Hotels and Restaurant Industry, ITeS Industry, Transport Services Industry and Miscellaneous Services Industry, the examination of variances in ITR, IHP, OC and NTC is not done for these industries too.

The results of ANOVA for CAME Ratios and Operating Cycle Variables provide significant evidence that their means vary widely between the companies for all ratios except WCTR, CTR and APP. No significant variation in WCTR, CTR, and APP between firms of Non Financial Service Industry conveys that they follow similar approach for management of payables and utilization of net working capital.

Thus, it is concluded that firms in Non Financial Service Industry differ in terms of total and current the asset utilization efficiency as well as pursue different policies for management of cash and receivables.

TABLE 6.3

SINGLE FACTOR ANOVA BETWEEN THE COMPANIES OF NON FINANCIAL SERVICE INDUSTRY (79 COMPANIES)

Sr. No.	Category & Name of Ratio	SS	df	MS	F-Value	p-Value
Working Capital Policy, Working Capital Leverage & Leverage Ratios						
1	LTDTAR					
	(i) Between Groups	33.3984	78	1.42818	36.8901*	9E-254
	(ii) Within Groups	12.8374	1106	0.01161		
2	TDTAR					
	(i) Between Groups	37.332	78	0.47861	27.207*	8E-205
	(ii) Within Groups	19.4563	1106	0.01759		
3	CLTAR					
	(i) Between Groups	27.8896	78	0.35756	31.4681*	1E-227
	(ii) Within Groups	12.567	1106	0.01136		
4	CATAR					
	(i) Between Groups	52.2378	78	0.666972	72.2017*	0
	(ii) Within Groups	10.2588	1106	0.00928		
5	CLCAR					
	(i) Between Groups	272.607	78	3.49496	18.2832*	5E-149
	(ii) Within Groups	211.419	1106	0.19116		
6	NWCCAR					
	(i) Between Groups	275.499	78	3.53204	18.3873*	9E-150
	(ii) Within Groups	212.453	1106	0.19209		
7	CANFAR✱ [Critical Value of F = 1.43]					
	(i) Between Groups	3519.773	78	45.12529	34.0358*	6E-232
	(ii) Within Groups	1361.616	1027	1.325819		
8	WCL✱ [Critical Value of F = 1.43]					
	(i) Between Groups	68.16096	78	0.873858	43.0184*	8.3E-270
	(ii) Within Groups	20.86207	1027	0.020314		
Current Asset Structure Ratios						
9	ITCAR					
	(i) Between Groups	9.08191	78	0.11643	24.8835*	2E-191
	(ii) Within Groups	5.1752	1106	0.00468		
10	RTCAR					
	(i) Between Groups	34.4515	78	0.44169	20.6241*	6E-165
	(ii) Within Groups	23.6861	1106	0.02142		
11	CBBTCAR					
	(i) Between Groups	22.3658	78	0.28674	18.8488*	6E-153
	(ii) Within Groups	16.8252	1106	0.01521		
12	PETCAR					
	(i) Between Groups	6.51366	78	0.08351	17.1545*	5E-141
	(ii) Within Groups	5.38404	1106	0.00487		
13	LATCAR					
	(i) Between Groups	9.76269	78	0.12516	11.7247*	2E-98
	(ii) Within Groups	11.8067	1106	0.01068		
14	MSTCAR					
	(i) Between Groups	9.87668	78	0.12662	12.5065*	5E-105
	(ii) Within Groups	11.1979	1106	0.01012		

TABLE 6.3 (Continued..)

SINGLE FACTOR ANOVA BETWEEN THE COMPANIES OF NON FINANCIAL SERVICE INDUSTRY (79 COMPANIES)

Sr. No.	Category & Name of Ratio	SS	df	MS	F-Value	p-Value
Current Liabilities Structure Ratios						
15	TCCLR					
	(i) Between Groups	23.71731	78	0.304068	17.2319*	1.5E-141
	(ii) Within Groups	19.51611	1106	0.017646		
16	DACECLR					
	(i) Between Groups	13.52154	78	0.173353	16.0526*	6.7E-133
	(ii) Within Groups	11.94374	1106	0.010799		
17	PCLR					
	(i) Between Groups	28.12154	78	0.360533	18.8343*	7.3E-153
	(ii) Within Groups	21.17144	1106	0.019142		
18	STBBCLR					
	(i) Between Groups	13.06903	78	0.167552	12.0260*	5.7E-101
	(ii) Within Groups	15.40935	1106	0.013933		
19	CFCCLR					
	(i) Between Groups	20.78957	78	0.266533	24.9701*	5.7E-192
	(ii) Within Groups	11.80554	1106	0.010674		
20	OCLCLR					
	(i) Between Groups	22.40635	78	0.287261	20.7480*	9.9E-166
	(ii) Within Groups	37.2384	1106	0.013845		
Liquidity Ratios						
21	CR					
	(i) Between Groups	2192.378	78	28.10741	14.1777*	1.6E-118
	(ii) Within Groups	2192.656	1106	1.98251		
22	QR					
	(i) Between Groups	2088.912	78	26.78092	13.5152*	3.1E-113
	(ii) Within Groups	2191.585	1106	1.981542		
23	ALR					
	(i) Between Groups	567.6818	78	7.277972	9.5313*	4.01E-79
	(ii) Within Groups	844.5233	1106	0.763583		
Current Asset Management Efficiency Ratios and Operating Cycle Variables						
24	TATR					
	(i) Between Groups	364.2407	78	4.669752	37.8818*	3E-258
	(ii) Within Groups	136.3383	1106	0.123272		
25	CATR					
	(i) Between Groups	4649.339	78	59.60692	46.0708*	1.6E-292
	(ii) Within Groups	1430.956	1106	1.293812		
26	WCTR					
	(i) Between Groups	209664	78	2688	1.0247	0.422
	(ii) Within Groups	2901257	1106	2623.198		
27	RTR					
	(i) Between Groups	45550.36	78	583.979	29.3846*	1E-216
	(ii) Within Groups	21980.26	1106	19.87365		
28	ACP					
	(i) Between Groups	15525333	78	199042.7	1.4554*	0.007
	(ii) Within Groups	1.51E+08	1106	136759.9		

TABLE 6.3 (Continued..)

SINGLE FACTOR ANOVA BETWEEN THE COMPANIES OF NON FINANCIAL SERVICE INDUSTRY (79 COMPANIES)

Sr. No.	Category & Name of Ratio	SS	df	MS	F-Value	p-Value
29	CBTR					
	(i) Between Groups	729225.2	78	9349.041	16.1916*	6.1E-134
	(ii) Within Groups	638604.5	1106	577.4001		
30	CTR					
	(i) Between Groups	1.08E+08	78	1387687	1.0268	0.417
	(ii) Within Groups	1.49E+09	1106	1351466		
31	APP					
	(i) Between Groups	7467871	78	95741.94	1.1577	0.171
	(ii) Within Groups	91470147	1106	82703.57		
Profitability Ratios						
32	OPM					
	(i) Between Groups	330412.1	78	4236.052	16.5202*	2.3E-136
	(ii) Within Groups	283596.7	1106	256.4165		
33	NPM					
	(i) Between Groups	229910.6	78	2947.572	10.3058*	4.35E-86
	(ii) Within Groups	527849	1106	451.153		
34	ROTA					
	(i) Between Groups	74479.20	78	654.8615	8.6238*	9.41E-71
	(ii) Within Groups	122460.2	1106	110.7235		
35	EAT/TA					
	(i) Between Groups	63173.26	78	809.9135	10.8472*	7.4E-91
	(ii) Within Groups	82580.61	1106	74.66601		
36	RONW					
	(i) Between Groups	219826	78	2818.30	1.0845	0.2936
	(ii) Within Groups	3E+06	1106	2598.70		

* Indicating significant results at 1% level of significance with Critical Value of F = 1.43

✱ As already discussed in Chapter 5, due to the formula of WCL, observations for 2 years is lost and so the analysis is possible for only 14 years. Since, CANFAR is taken to support the analysis of WCL; its analysis is also for 14 years. The same is applicable for between the years analysis of variances.

Many of the companies had NIL inventory in atleast 1 year of the study period and it was not possible to examine the variances in ITR, IHP and resultantly variances in OC and NTC. The same is applicable to between the years analysis of variance.

F. Profitability Ratios

The results of ANOVA for Profitability Ratios provide significant evidence that their means vary widely between the companies except RONW. Highest variation is observed for OPM followed by EAT/TA, NPM and ROTA. For RONW, no significant variations are observed between companies of Non Financial Service Industry.

While analyzing the variances between the companies for the Non Financial Service Industry over a period of 15 years, it was observed that no significant variances existed for only 3 of the 36 ratios and they are WCTR, CTR and APP. For the remaining 33 ratios, variance is observed at 1% level of significance and the highest variance is observed for CATAR. Hence, the null hypothesis that no significant variations exist between companies for selected parameters of WCM, LEV and Profitability is rejected.

6.2.2 Single Factor ANOVA <u>between the years</u> of Indian Non Financial Service Industry

The results of single factor ANOVA between the years of 79 companies of Indian Non Financial Service Industry for all the parameters of WCM, LEV and Profitability is presented in Table 6.4. *While analyzing* the variance between the years for Service industry for all the selected parameters, it was observed that out of 36 ratios, only for 9 ratios, significant variations existed and for the remaining 27 ratios no significant variations were observed between the years. The ratios where significant variations are found are ITCAR, RTCAR, PETCAR, MSTCAR, DACECLR, OPM, NPM, ROTA and EAT/TA.

These results indicate that there have been changes in the *composition of current asset investment* over the study period, which has mainly been caused due to changes in level of investment in receivables, inventories, prepaid expenses and marketable securities. DACE as a proportion of CL has also varied over the study period. The variations significant for all the profitability ratios indicates that the profitability position of the service industry has varied significantly in the years under study.

Thus, it is concluded that there were no significant variations in the means of selected ratios of WCP, LEV, Current Liabilities Structure (except DACECLR), Liquidity, Efficiency and Operating Cycle Variables over the study period whereas, significant variations are observed for Current Asset Structure Ratios (except CBBTCAR and LATCAR) and Profitability Ratios. In addition, highest variation between the years is observed for MSTCAR.

TABLE 6.4

SINGLE FACTOR ANOVA BETWEEN THE YEARS OF
NON FINANCIAL SERVICE INDUSTRY (79 COMPANIES)

Sr. No.	Category & Name of Ratio	SS	df	MS	F-Value	p-Value
Working Capital Policy, Working Capital Leverage & Leverage Ratios						
1	LTDTAR					
	(i) Between Groups	0.233181	14	0.016656	0.4236	0.967
	(ii) Within Groups	46.00263	1170	0.039318		
2	TDTAR					
	(i) Between Groups	0.264787	14	0.018913	0.3915	0.977
	(ii) Within Groups	56.5235	1170	0.048311		
3	CLTAR					
	(i) Between Groups	0.244188	14	0.017442	0.5075	0.930
	(ii) Within Groups	40.21242	1170	0.03437		

TABLE 6.4 (Continued..)

SINGLE FACTOR ANOVA BETWEEN THE YEARS OF
NON FINANCIAL SERVICE INDUSTRY (79 COMPANIES)

Sr. No.	Category & Name of Ratio	SS	df	MS	F-Value	p-Value
4	CATAR					
	(i) Between Groups	0.134033	14	0.009574	0.1796	0.999
	(ii) Within Groups	62.36258	1170	0.053301		
5	CLCAR					
	(i) Between Groups	1.119574	14	0.07997	0.1938	0.999
	(ii) Within Groups	482.9068	1170	0.412741		
6	NWCCAR					
	(i) Between Groups	0.978496	14	0.069893	0.1679	0.999
	(ii) Within Groups	486.9736	1170	0.416217		
7	CANFAR [Critical Value of F = 2.146 (1%) and 1.729 (5%)]					
	(i) Between Groups	20.30254	13	1.561734	0.3508	0.983
	(ii) Within Groups	4861.086	1092	4.451544		
8	WCL [Critical Value of F = 2.146 (1%) and 1.729 (5%)]					
	(i) Between Groups	0.472155	13	0.03632	0.4479	0.952
	(ii) Within Groups	88.55088	1092	0.081091		
Current Asset Structure Ratios						
9	ITCAR					
	(i) Between Groups	0.311163	14	0.022226	1.8647**	0.026
	(ii) Within Groups	13.94595	1170	0.01192		
10	RTCAR					
	(i) Between Groups	2.982896	14	0.213064	4.5198*	5.35E-08
	(ii) Within Groups	55.15464	1170	0.047141		
11	CBBTCAR					
	(i) Between Groups	0.243899	14	0.017421	0.5234	0.920
	(ii) Within Groups	38.94702	1170	0.033288		
12	PETCAR					
	(i) Between Groups	0.606647	14	0.043332	4.4902*	6.28E-08
	(ii) Within Groups	11.29105	1170	0.00965		
13	LATCAR					
	(i) Between Groups	0.311339	14	0.02224	1.2240	0.251
	(ii) Within Groups	21.25804	1170	0.018169		
14	MSTCAR					
	(i) Between Groups	1.229105	14	0.087793	5.1759*	1.46E-09
	(ii) Within Groups	19.84548	1170	0.016962		
Current Liabilities Structure Ratios						
15	TCCLR					
	(i) Between Groups	0.548536	14	0.039181	1.0790	0.377
	(ii) Within Groups	42.68489	1170	0.036488		
16	DACECLR					
	(i) Between Groups	0.780505	14	0.05575	2.6425*	0.000
	(ii) Within Groups	24.68478	1170	0.021098		
17	PCLR					
	(i) Between Groups	0.725098	14	0.051798	1.2477	0.234
	(ii) Within Groups	48.56788	1170	0.041511		

TABLE 6.4 (Continued..)						
SINGLE FACTOR ANOVA BETWEEN THE YEARS OF NON FINANCIAL SERVICE INDUSTRY (79 COMPANIES)						
Sr. No.	Category & Name of Ratio	SS	df	MS	F-Value	p-Value
18	STBBCLR					
	(i) Between Groups	0.061668	14	0.004405	0.1814	0.999
	(ii) Within Groups	28.4167	1170	0.024288		
19	CFCCLR					
	(i) Between Groups	0.21282	14	0.015201	0.5492	0.904
	(ii) Within Groups	32.3823	1170	0.027677		
20	OCLCLR					
	(i) Between Groups	0.48083	14	0.03434	1.0791	0.372
	(ii) Within Groups	37.2384	1170	0.03183		
Liquidity Ratios						
21	CR					
	(i) Between Groups	26.6843	14	1.90602	0.5117	0.927
	(ii) Within Groups	4358.35	1170	3.72508		
22	QR					
	(i) Between Groups	20.2749	14	1.44821	0.3978	0.975
	(ii) Within Groups	4260.22	1170	3.64122		
23	ALR					
	(i) Between Groups	16.7058	14	1.19327	1.0005	0.450
	(ii) Within Groups	1395.50	1170	1.19273		
Current Asset Management Efficiency Ratios and Operating Cycle Variables						
24	TATR					
	(i) Between Groups	2.57728	14	0.18409	0.4325	0.964
	(ii) Within Groups	498.002	1170	0.42564		
25	CATR					
	(i) Between Groups	21.0738	14	1.50527	0.2907	0.994
	(ii) Within Groups	6059.22	1170	5.17882		
26	WCTR					
	(i) Between Groups	40480	14	2891.43	1.1018	0.351
	(ii) Within Groups	3070441	1170	2624.31		
27	RTR					
	(i) Between Groups	1299.70	14	92.8356	1.6400	0.062
	(ii) Within Groups	66230.91	1170	56.6076		
28	ACP					
	(i) Between Groups	2357373	14	168384	1.1982	0.270
	(ii) Within Groups	1.6E+08	1170	140534		
29	CBTR					
	(i) Between Groups	5620.3419	14	401.453	0.3448	0.987
	(ii) Within Groups	1362209.4	1170	1164.28		
30	CTR					
	(i) Between Groups	18967449.2	14	1354818	1.0007	0.450
	(ii) Within Groups	1583993525	1170	1353841		
31	APP					
	(i) Between Groups	1167056.52	14	83361.2	0.9976	0.453
	(ii) Within Groups	97770961.3	1170	83564.90		

TABLE 6.4 (Continued..)

SINGLE FACTOR ANOVA BETWEEN THE YEARS OF NON FINANCIAL SERVICE INDUSTRY (79 COMPANIES)

Sr. No.	Category & Name of Ratio	SS	df	MS	F-Value	p-Value
Profitability Ratios						
32	OPM					
	(i) Between Groups	19510.70	14	1393.62	2.7427*	0.000
	(ii) Within Groups	594498	1170	508.118		
33	NPM					
	(i) Between Groups	18388.10	14	1313.43	2.9113*	0.000
	(ii) Within Groups	527849	1170	451.153		
34	ROTA					
	(i) Between Groups	8626.96582	14	616.212	3.8286*	2.2E-06
	(ii) Within Groups	188312.467	1170	160.951		
35	EAT/TA					
	(i) Between Groups	6535.66134	14	466.833	3.9233*	1.3E-06
	(ii) Within Groups	139218.206	1170	118.99		
36	RONW					
	(i) Between Groups	52324.80	14	3737.49	1.4377	0.1283
	(ii) Within Groups	3041654	1170	2599.70		

* Indicating significant results at 1% level of significance with Critical Value of F = 2.07

** Indicating significant results at 5% level of significance with Critical Value of F = 1.70

SECTION - III

6.3 Single Factor ANOVA: Industry Wise (5 Industries)

In this section, firm level analysis based on industry-wise classification is carried out employing Single Factor ANOVA. Industry wise analysis of variances is carried out to examine if significant variations exist between the companies as well as between the years taking each industry separately for all the selected WCM, LEV and PROF ratios for the selected time frame. The results of ANOVA are presented for Hotels and Restaurant Industry first followed by ITes, Transport Services, Health Services and Miscellaneous Services Industry.

6.3.1 Single Factor ANOVA for Hotels and Restaurant Industry (25 Companies)

This section presents the results of Single Factor ANOVA between the 25 companies of Hotels and Restaurant Industry as well as between the 15 years for all the 25 companies for the selected parameters of WCM, LEV and PROF. The results of ANOVA between the companies is presented and interpreted first followed by the results of ANOVA between the years.

6.3.1.1 Single Factor ANOVA between the companies of Hotels and Restaurant Industry

The results of single factor ANOVA between the 25 companies of Hotels and Restaurant Industry for all the parameters of WCM, LEV and PROF is presented in Table 6.5. The results of the analysis are interpreted as per the group to which each ratio belongs.

A. Working Capital Policy, Working Capital Leverage and Leverage Ratios

- As observed from the Table 6.5, the results of this analysis provide significant evidence that means of the LEV, WCL and Working Capital Policy (WCP) ratios widely vary thereby indicating that there exists significant difference between the companies of Hotels and Restaurant Industry with respect to use of debt financing and working capital policy. The variations are high for LTDTAR as compared to TDTAR indicating that the differences are greater between the companies in the Hotels and Restaurant Industry in utilization of long-term debt to finance the total assets as compared to the total debt position.
- Significant variations between companies are observed for the current asset investment policy represented by CATAR and CANFAR. The highest variation is observed for CATAR followed by CANFAR, which indicates that the companies greatly differ in the aggressive/conservative current asset investment policy pursued by them. Significant variations between companies are also observed for the current asset financing policy followed as represented by CLCAR, NWCCAR and CLTAR indicating that firms differ in use of current liabilities and net working capital for financing their current assets. In addition, variations are highest for CLTAR indicating that the firms in Hotels and Restaurant Industry differ significantly in use of current liabilities to finance their total assets.
- Significant variations are also observed for WCL indicating that there exist significant differences between the companies of Hotels and Restaurant Industry with respect to investment in current assets and the degree of Working Capital Leverage. The results are in line with the variations observed for CATAR and CANFAR.

B. Current Asset Structure Ratios

As observed from Table 6.5, the results of ANOVA also provide significant evidence that mean of the CA Structure Ratios widely vary indicating that there exists significant difference between the companies of Hotels and Restaurant Industry with respect to the current asset component mix, *i.e.,* proportion of inventories, receivables, prepaid expenses, cash and bank balances, loans and advances and marketable securities to current assets. Highest variation is observed for ITCAR indicating that companies differ significantly in terms of maintaining level of inventories as a proportion of CA which is followed by MSTCAR, RTCAR, CBBTCAR, LATCAR, and PETCAR.

TABLE 6.5

SINGLE FACTOR ANOVA BETWEEN THE COMPANIES OF HOTELS & RESTAURANT INDUSTRY (25 COMPANIES)

Sr. No.	Category & Name of Ratio	SS	df	MS	F-Value	p-Value
	Working Capital Policy, Working Capital Leverage & Leverage Ratios					
1	LTDTAR					
	(i) Between Groups	16.10805	24	0.671169	66.9076*	3.4E-115
	(ii) Within Groups	3.510948	350	0.010031		
2	TDTAR					
	(i) Between Groups	12.6311	24	0.526296	39.1454*	4.16E-84
	(ii) Within Groups	4.705627	350	0.013445		
3	CLTAR					
	(i) Between Groups	4.637638	24	0.193235	37.2743*	1.77E-81
	(ii) Within Groups	1.814445	350	0.005184		
4	CATAR					
	(i) Between Groups	16.21906	24	0.675794	98.7355*	5.6E-140
	(ii) Within Groups	2.395571	350	0.006844		
5	CLCAR					
	(i) Between Groups	146.852	24	6.118832	16.7325*	1.51E-44
	(ii) Within Groups	127.99	350	0.365686		
6	NWCCAR					
	(i) Between Groups	146.852	24	6.118832	16.7325*	1.51E-44
	(ii) Within Groups	127.99	350	0.365686		
7	CANFAR*				[Critical Value of F = 1.85]	
	(i) Between Groups	624.5757	24	26.02399	28.8144*	3.86E-66
	(ii) Within Groups	293.5263	325#	0.903158		
8	WCL*				[Critical Value of F = 1.85]	
	(i) Between Groups	18.52513	24	0.77188	61.0173*	3.6E-105
	(ii) Within Groups	4.11131	325#	0.01265		
	Current Asset Structure Ratios					
9	ITCAR					
	(i) Between Groups	2.53748	24	0.105728	51.8298*	6.9E-100
	(ii) Within Groups	0.71397	350	0.00204		
10	RTCAR					
	(i) Between Groups	12.35971	24	0.514988	28.3546*	1.56E-67
	(ii) Within Groups	6.356843	350	0.018162		
11	CBBTCAR					
	(i) Between Groups	8.144326	24	0.339347	22.1096*	5.06E-56
	(ii) Within Groups	5.37194	350	0.015348		
12	PETCAR					
	(i) Between Groups	1.792041	24	0.074668	11.2503*	6.92E-31
	(ii) Within Groups	2.322945	350	0.006637		

TABLE 6.5 (Continued..)

SINGLE FACTOR ANOVA BETWEEN THE COMPANIES OF HOTELS & RESTAURANT INDUSTRY (25 COMPANIES)

Sr. No.	Category & Name of Ratio	SS	df	MS	F-Value	p-Value
13	LATCAR					
	(i) Between Groups	4.272276	24	0.178011	21.4590*	1.02E-54
	(ii) Within Groups	2.903401	350	0.008295		
14	MSTCAR					
	(i) Between Groups	4.739613	24	0.197484	29.8296*	5.07E-70
	(ii) Within Groups	2.317142	350	0.00662		
Current Liabilities Structure Ratios						
15	TCCLR					
	(i) Between Groups	7.864225	24	0.327676	29.9024*	3.84E-70
	(ii) Within Groups	3.835363	350	0.010958		
16	DACECLR					
	(i) Between Groups	5.292117	24	0.220505	24.6895*	5.5E-61
	(ii) Within Groups	3.125888	350	0.008931		
17	PCLR					
	(i) Between Groups	10.39033	24	0.43293	24.7998*	3.43E-61
	(ii) Within Groups	6.109942	350	0.017457		
18	STBBCLR					
	(i) Between Groups	3.131325	24	0.1300472	10.8226*	1.01E-29
	(ii) Within Groups	4.219417	350	0.012055		
19	CFCCLR					
	(i) Between Groups	7.800137	24	0.325006	24.1657*	5.28E-60
	(ii) Within Groups	4.707161	350	0.013449		
20	OCLCLR					
	(i) Between Groups	4.04004	24	0.168335	16.3363*	1.24E-43
	(ii) Within Groups	3.606517	350	0.010304		
Liquidity Ratios						
21	CR					
	(i) Between Groups	430.1983	24	17.92493	11.3906*	2.89E-31
	(ii) Within Groups	550.7815	350	1.573661		
22	QR					
	(i) Between Groups	441.3482	24	18.38951	11.7951*	2.39E-32
	(ii) Within Groups	545.6787	350	1.559082		
23	ALR					
	(i) Between Groups	248.2675	24	10.34448	9.4404*	7.53E-26
	(ii) Within Groups	383.5206	350	1.095773		
Current Asset Management Efficiency Ratios and Operating Cycle Variables						
24	TATR					
	(i) Between Groups	98.83971	24	4.118321	83.4982*	4.1E-129
	(ii) Within Groups	17.2628	350	0.049322		
25	CATR					
	(i) Between Groups	3665.819	24	152.7425	65.1524*	1.4E-113
	(ii) Within Groups	820.5356	350	2.344387		
26	WCTR#	[Critical Values of F: 1.867 (1%) and 1.562 (5%)]				
	(i) Between Groups	49427.89	23	2149.039	2.0836*	0.003
	(ii) Within Groups	346553.3	336	1031.409		

TABLE 6.5 (Continued..)

SINGLE FACTOR ANOVA BETWEEN THE COMPANIES OF HOTELS & RESTAURANT INDUSTRY (25 COMPANIES)

Sr. No.	Category & Name of Ratio	SS	df	MS	F-Value	p-Value
	RTR					
27	(i) Between Groups	45550.36	24	583.979	29.3846*	1E-216
	(ii) Within Groups	21980.26	350	19.87365		
	ACP					
28	(i) Between Groups	2597901	24	108245.9	12.2382*	1.61E-33
	(ii) Within Groups	3095712	350	8844.892		
	CBTR					
29	(i) Between Groups	502056	24	20919	17.9480*	2.73E-47
	(ii) Within Groups	407937.9	350	1165.537		
	CTR					
30	(i) Between Groups	159076.3	24	6628.18	24.1040*	6.91E-60
	(ii) Within Groups	96243.94	350	274.9827		
	APP					
31	(i) Between Groups	584460.3	24	24352.51	23.6302*	5.5E-59
	(ii) Within Groups	360698.9	350	1030.568		
Profitability Ratios						
	OPM					
32	(i) Between Groups	207119.7	24	8629.988	47.3211*	1.21E-94
	(ii) Within Groups	63829.76	350	182.3707		
	NPM					
33	(i) Between Groups	152285.1	24	6345.212	18.8773*	2.52E-49
	(ii) Within Groups	117645.3	350	336.1295		
	ROTA					
34	(i) Between Groups	17632.53	24	734.6887	14.3802*	5.85E-39
	(ii) Within Groups	17881.6	350	51.0903		
	EAT/TA					
35	(i) Between Groups	11478.68	24	478.2782	12.3341*	9.05E-34
	(ii) Within Groups	13571.92	350	38.77693		
	RONW					
36	(i) Between Groups	91037.20	24	3793.22	0.9628	0.5156
	(ii) Within Groups	1378957	350	3939.88		

* Indicating significant results at 1% level of significance with Critical Value of F = 1.845

** Indicating significant results at 5% level of significance with Critical Value of F = 1.549

✱ As already discussed in Chapter 5, due to the formula of WCL, observations for 2 years is lost and so the analysis is possible for only 14 years. Since, CANFAR is taken to support the analysis of WCL; its analysis is also for 14 years. The same is applicable for between the years analysis of variances.

The WCTR of Jindal Hotels Limited was -3238 for the year 2001 due to which the industry average for that year was as low as -126.88. So this company was eliminated while analyzing the WCTR and its analysis is based on 24 companies.

$ Many of the companies had NIL inventory in atleast 1 year of the study period and hence it was not possible to examine the variances in ITR, IHP and resultantly variances in OC and NTC. This is applicable to variances between the years for these industries.

C. Current Liabilities Structure Ratios

The results of ANOVA for Current Liabilities Structure Ratios provide significant evidence that their means widely vary indicating that companies in Hotels and Restaurant Industry differ significantly and they maintain different mix of current liabilities as a source of financing the current assets. Highest variation is observed for TCCLR amongst all the Current Liabilities structure ratios indicating that amongst the component of current liabilities, the companies differ greatly in the proportion of trade credit to current liabilities. This is followed by PCLR, DACECLR, CFCCLR, OCLCLR and STBBCLR.

D. Liquidity Ratios

The results of ANOVA indicate significant evidence that mean of Liquidity ratios vary widely thereby indicating that there companies of Hotels and Restaurant Industry differ in their approach towards liquidity management. Highest variation is observed for QR followed by CR and ALR.

E. Current Asset Management Efficiency Ratios and Operating Cycle Variables

The results of ANOVA for CAME Ratios and OC Variables provide significant evidence that their means vary widely between the companies for all ratios indicating that the asset utilization efficiency including the inventory, cash and credit management differ significantly between companies. Highest variation is observed for **TATR** indicating that the companies of Hotels and Restaurant Industry pursue different approaches in managing their total assets and they vary in terms of asset utilization. This result is in line with the highest variation observed for CATAR, which also may be the reason for such high variation in TATR. This is followed by CATR, RTR, CTR, APP, CBTR, ACP and WCTR. Moreover, from the combined results of RTR, ACP, CTR and APP it can be concluded that firms in Hotels and Restaurant Industry significantly differ in the credit management. Thus it is concluded that these companies follow different policies for asset management.

F. Profitability Ratios

The results of ANOVA for Profitability Ratios provide significant evidence that their means vary widely between the companies. The resulting values of F-test are significant at 1% level of significance for all the profitability ratios except RONW thereby indicating that the profitability position of companies in Hotels and Restaurant Industry is significantly different. Highest variation is observed for OPM followed by NPM, ROTA and EAT/TA.

While analyzing the variances between companies of the Hotels and Restaurant Industry over a period of 15 years, significant variances were observed for all the 36 ratios at 1% level of significance and highest variance was observed for the CATAR. Hence, the null hypothesis that no significant variations exist between companies for selected WCM, LEV and PROF ratios is rejected for Hotels and Restaurant Industry.

6.3.1.2 Single Factor ANOVA between the years of Hotels and Restaurant Industry

The results of single factor ANOVA between the years for 25 companies of Hotels and Restaurant Industry for all the parameters of WCM, LEV and PROF is presented in Table 6.6.

TABLE 6.6

SINGLE FACTOR ANOVA BETWEEN THE YEARS OF
HOTELS & RESTAURANT INDUSTRY (25 COMPANIES)

Sr. No.	Category & Name of Ratio	SS	df	MS	F-Value	p-Value
Working Capital Policy, Working Capital Leverage & Leverage Ratios						
1	LTDTAR					
	(i) Between Groups	0.149015	14	0.010644	0.1968	0.999
	(ii) Within Groups	19.46999	360	0.054083		
2	TDTAR					
	(i) Between Groups	0.020519	14	0.001466	0.0305	1
	(ii) Within Groups	17.31621	360	0.048101		
3	CLTAR					
	(i) Between Groups	0.089993	14	0.006428	0.3637	0.9838
	(ii) Within Groups	6.36209	360	0.017672		
4	CATAR					
	(i) Between Groups	0.162749	14	0.011625	0.2268	0.999
	(ii) Within Groups	18.45188	360	0.051255		
5	CLCAR					
	(i) Between Groups	3.443612	14	0.245972	0.3263	0.991
	(ii) Within Groups	271.3984	360	0.753884		
6	NWCCAR					
	(i) Between Groups	3.443612	14	0.245972	0.3263	0.991
	(ii) Within Groups	271.3984	360	0.051255		
7	CANFAR	[Critical Value of F = 2.183 (1%) and 1.749 (5%)]				
	(i) Between Groups	20.30254	13	1.561734	0.3508	0.983
	(ii) Within Groups	4861.086	1092	4.451544		
8	WCL	[Critical Value of F = 2.183 (1%) and 1.749 (5%)]				
	(i) Between Groups	0.472155	13	0.03632	0.4479	0.952
	(ii) Within Groups	88.55088	1092	0.081091		
Current Asset Structure Ratios						
9	ITCAR					
	(i) Between Groups	0.053795	14	0.003842	0.4326	0.963
	(ii) Within Groups	3.197655	360	0.008882		
10	RTCAR					
	(i) Between Groups	0.593872	14	0.042419	0.8265	0.622
	(ii) Within Groups	18.12268	360	0.050341		
11	CBBTCAR					
	(i) Between Groups	0.380206	14	0.027158	0.7443	0.729
	(ii) Within Groups	13.13606	360	0.036489		
12	PETCAR					
	(i) Between Groups	0.414068	14	0.029576	2.8770*	0.000
	(ii) Within Groups	3.700917	360	0.01028		

TABLE 6.6 (Continued..)

SINGLE FACTOR ANOVA BETWEEN THE YEARS OF HOTELS & RESTAURANT INDUSTRY (25 COMPANIES)

Sr. No.	Category & Name of Ratio	SS	df	MS	F-Value	p-Value
13	LATCAR					
	(i) Between Groups	0.160131	14	0.011438	0.5869	0.875
	(ii) Within Groups	7.015546	360	0.019477		
14	MSTCAR					
	(i) Between Groups	0.200352	14	0.014311	0.7514	0.721
	(ii) Within Groups	6.856402	360	0.019046		
Current Liabilities Structure Ratios						
15	TCCLR					
	(i) Between Groups	0.489299	14	0.03495	1.1224	0.336
	(ii) Within Groups	11.21029	360	0.03114		
16	DACECLR					
	(i) Between Groups	0.087813	14	0.006272	0.2711	0.996
	(ii) Within Groups	8.330191	360	0.023139		
17	PCLR					
	(i) Between Groups	0.685324	14	0.048592	1.1143	0.343
	(ii) Within Groups	15.81494	360	0.04393		
18	STBBCLR					
	(i) Between Groups	0.128515	14	0.00918	0.4576	0.954
	(ii) Within Groups	7.222228	360	0.020062		
19	CFCCLR					
	(i) Between Groups	0.15576	14	0.011126	0.3243	0.991
	(ii) Within Groups	12.35154	360	0.03431		
20	OCLCLR					
	(i) Between Groups	0.126206	14	0.009015	0.4315	0.964
	(ii) Within Groups	7.520351	360	0.02089		
Liquidity Ratios						
21	CR					
	(i) Between Groups	5.734524	14	0.409609	0.1520	0.999
	(ii) Within Groups	975.2453	360	2.709015		
22	QR					
	(i) Between Groups	5.605102	14	0.400364	0.1469	0.999
	(ii) Within Groups	981.4217	360	2.726172		
23	ALR					
	(i) Between Groups	9.538524	14	0.681321	0.3942	0.976
	(ii) Within Groups	622.2495	360	1.728471		
Current Asset Management Efficiency Ratios and Operating Cycle Variables						
24	TATR					
	(i) Between Groups	1.86309	14	0.133078	0.4194	0.969
	(ii) Within Groups	114.2394	360	0.317332		
25	CATR					
	(i) Between Groups	47.85016	14	3.417869	0.2772	0.996
	(ii) Within Groups	4438.504	360	12.32918		
26	WCTR	[Critical Values of F: 2.134 (1%) and 1.721 (5%)]				
	(i) Between Groups	5151.505	14	368.679	0.3255	0.991
	(ii) Within Groups	390819	345	1132.811		

TABLE 6.6 (Continued..)

SINGLE FACTOR ANOVA BETWEEN THE YEARS OF HOTELS & RESTAURANT INDUSTRY (25 COMPANIES)

Sr. No.	Category & Name of Ratio	SS	df	MS	F-Value	p-Value
27	RTR					
	(i) Between Groups	1135.532	14	81.10941	0.8056	0.663
	(ii) Within Groups	36246.07	360	100.6835		
28	ACP					
	(i) Between Groups	151556.6	14	10825.47	0.7032	0.771
	(ii) Within Groups	5542057	360	15394.6		
29	CBTR					
	(i) Between Groups	13153.53	14	939.5378	0.3771	0.981
	(ii) Within Groups	896840.4	360	2491.223		
30	CTR					
	(i) Between Groups	5465.733	14	390.4095	0.5625	0.894
	(ii) Within Groups	249854.5	360	694.0403		
31	APP					
	(i) Between Groups	30517.45	14	2179.818	0.8580	0.605
	(ii) Within Groups	914641.8	360	2540.672		
Profitability Ratios						
32	OPM					
	(i) Between Groups	14825.73	14	1058.981	1.4885	0.113
	(ii) Within Groups	256123.7	360	711.4548		
33	NPM					
	(i) Between Groups	12834.19	14	916.7277	1.2837	0.215
	(ii) Within Groups	257096.2	360	714.1561		
34	ROTA					
	(i) Between Groups	7061.756	14	504.4111	6.3822*	2E-11
	(ii) Within Groups	28452.38	360	79.03438		
35	EAT/TA					
	(i) Between Groups	4665.148	14	333.2248	5.8846*	2E-10
	(ii) Within Groups	20385.45	360	56.62626		
36	RONW					
	(i) Between Groups	88464.73	14	6318.909	1.6466	0.065
	(ii) Within Groups	1381529	360	3837.532		

* Indicating significant results at 1% level of significance with Critical Value of F = 2.13

** Indicating significant results at 5% level of significance with Critical Value of F = 1.72

While analyzing the variance *between the years* of Hotels and Restaurant industry for all the selected parameters, significant variations were observed only for 3 ratios *viz,* PETCAR, ROTA and EAT/TA at 1% level of significance out of the 36 ratios.

The significant variations in ROTA and EAT/TA indicates that Hotels and Restaurant industry is not able to consistently maintain its profitability and operational efficiency measured as a percentage of total assets over the study period. Also the proportion of Prepaid Expenses to current assets has varied over the study period. However, no significant variations were observed for the remaining 33 ratios between the years.

Thus, it can be concluded that there were no significant variations in the means of selected ratios of WCP, LEV, Current Asset Structure (except PETCAR), Current Liabilities Structure, Liquidity, Profitability (except ROTA and EAT/TA), Efficiency as well as Operating Cycle Variables over the study period.

6.3.2 Single Factor ANOVA for IT$_{e1}$ Industry (20 Companies)

This section presents the results of Single Factor ANOVA between the 20 companies of IT$_{e1}$ Industry as well as between the 15 years for all the 20 companies for the selected parameters of WCM, LEV and Profitability. The results of ANOVA between the companies is presented and interpreted first followed by the results of ANOVA between the years.

6.3.2.1 Single Factor ANOVA between the companies of IT$_{e1}$ Industry

The results of single factor ANOVA between the 20 companies of IT$_{e1}$ Industry for all the parameters of WCM, LEV and Profitability is presented in Table 6.7. The results of the analysis are interpreted as per the group to which each ratio belongs.

A. Working Capital Policy, Working Capital Leverage and Leverage Ratios

- The results of this analysis provide significant evidence that means of the LEV, WCL and WCP ratios widely vary as observed from the Table 6.7 indicating that difference exists between the companies of IT$_{e1}$ Industry with respect to utilization of debt financing as well as aggressive/conservative working capital investment and financing policies. The variations are highest for CLTAR followed by TDTAR, CLCAR, NWCCAR, CATAR, CANFAR and LTDTAR.
- Significant variations are also observed for WCL, which indicates that there exist significant differences between the companies of IT$_{e1}$ Industry with respect to investment in current assets and the degree of Working Capital Leverage. The results are in line with the variations observed for CATAR and CANFAR. Hence, the null hypothesis that there are no significant variations between companies with respect to the mean WCL is rejected.

B. Current Asset Structure Ratios

As observed from Table 6.7, the results of ANOVA also provide significant evidence that mean of the Current Asset Structure Ratios widely vary indicating that there exists significant difference between the companies of IT$_{e1}$ Industry with respect to the current asset component mix. Highest variation is observed for PETCAR indicating that companies differ significantly in terms of proportion of prepaid expenses to current assets. This is followed by RTCAR, CBBTCAR, MSTCAR, LATCAR and ITCAR.

TABLE 6.7

SINGLE FACTOR ANOVA BETWEEN THE COMPANIES OF ITes INDUSTRY (20 COMPANIES)

Sr. No.	Category & Name of Ratio	SS	df	MS	F-Value	p-Value
Working Capital Policy, Working Capital Leverage & Leverage Ratios						
1	LTDTAR					
	(i) Between Groups	4.061898	19	0.213784	16.5977*	1.26E-35
	(ii) Within Groups	3.606488	280	0.01288		
2	TDTAR					
	(i) Between Groups	10.03693	19	0.528259	23.8671*	9.5E-48
	(ii) Within Groups	6.197333	280	0.022133		
3	CLTAR					
	(i) Between Groups	10.99463	19	0.578665	30.6148*	3.19E-57
	(ii) Within Groups	5.292405	280	0.018901		
4	CATAR					
	(i) Between Groups	4.687506	19	0.246711	20.3222*	3.97E-42
	(ii) Within Groups	3.399197	280	0.01214		
5	CLCAR					
	(i) Between Groups	28.97503	19	1.525001	20.8008*	6.46E-43
	(ii) Within Groups	20.52804	280	0.073314		
6	NWCCAR					
	(i) Between Groups	30.2796	19	1.593663	20.6952*	9.62E-43
	(ii) Within Groups	21.56181	280	0.077006		
7	CANFAR*			[Critical Value of F at 1% = 1.98]		
	(i) Between Groups	1212.83	19	63.83315	19.7367*	4.85E-40
	(ii) Within Groups	840.9033	260	3.234244		
8	WCL*			[Critical Value of F at 1% = 1.98]		
	(i) Between Groups	11.0821	19	0.583268	15.6069*	5.73E-33
	(ii) Within Groups	9.716841	260	0.037372		
Current Asset Structure Ratios						
9	ITCAR					
	(i) Between Groups	0.749925	19	0.03947	5.7958*	3.34E-12
	(ii) Within Groups	1.906834	280	0.00681		
10	RTCAR					
	(i) Between Groups	6.087425	19	0.320391	16.5026*	1.88E-35
	(ii) Within Groups	5.436086	280	0.019415		
11	CBBTCAR					
	(i) Between Groups	2.725206	19	0.143432	11.9082*	2.18E-26
	(ii) Within Groups	3.37255	280	0.012045		
12	PETCAR					
	(i) Between Groups	2.86002	19	0.150527	33.1487*	1.95E-60
	(ii) Within Groups	1.271471	280	0.004541		
13	LATCAR					
	(i) Between Groups	1.140246	19	0.060013	6.3773*	1.17E-13
	(ii) Within Groups	2.634894	280	0.00941		
14	MSTCAR					
	(i) Between Groups	1.868753	19	0.098355	6.9432*	4.69E-15
	(ii) Within Groups	3.96643	280	0.014166		

TABLE 6.7 (Continued..)

SINGLE FACTOR ANOVA BETWEEN THE COMPANIES OF ITes INDUSTRY (20 COMPANIES)

Sr. No.	Category & Name of Ratio	SS	df	MS	F-Value	p-Value
Current Liabilities Structure Ratios						
15	TCCLR					
	(i) Between Groups	5.651167	19	0.29743	11.8361*	3.1E-26
	(ii) Within Groups	7.036108	280	0.025129		
16	DACECLR					
	(i) Between Groups	4.077083	19	0.214583	12.1302*	7.43E-27
	(ii) Within Groups	4.953197	280	0.01769		
17	PCLR					
	(i) Between Groups	3.866692	19	0.20351	9.2105*	1.93E-20
	(ii) Within Groups	6.186748	280	0.022096		
18	STBBCLR					
	(i) Between Groups	2.307351	19	0.12144	7.3463*	4.88E-16
	(ii) Within Groups	4.628583	280	0.016531		
19	CFCCLR					
	(i) Between Groups	0.847672	19	0.044614	7.0113*	3.2E-15
	(ii) Within Groups	1.781694	280	0.006363		
20	OCLCLR					
	(i) Between Groups	6.355315	19	0.33449	13.5233*	9.78E-30
	(ii) Within Groups	6.920977	280	0.024718		
Liquidity Ratios						
21	CR					
	(i) Between Groups	881.5946	19	46.39971	12.7886*	3.19E-28
	(ii) Within Groups	1015.899	280	3.628212		
22	QR					
	(i) Between Groups	901.9242	19	47.4697	13.2168*	4.25E-29
	(ii) Within Groups	1005.652	280	3.591615		
23	ALR					
	(i) Between Groups	120.8307	19	6.359509	13.2028*	4.53E-29
	(ii) Within Groups	134.8696	280	0.481677		
Current Asset Management Efficiency Ratios						
24	TATR					
	(i) Between Groups	85.78364	19	4.514928	17.8247*	7.65E-38
	(ii) Within Groups	70.92303	280	0.253297		
25	CATR					
	(i) Between Groups	185.2523	19	9.750121	14.5729*	8.52E-32
	(ii) Within Groups	187.3362	280	0.669058		
26	WCTR					
	(i) Between Groups	126781.7	19	6672.721	0.9516	0.519
	(ii) Within Groups	1963503	280	7012.51		
27	RTR					
	(i) Between Groups	1122.863	19	59.09805	18.8094*	1.44E-39
	(ii) Within Groups	879.744	280	3.141943		
28	ACP					
	(i) Between Groups	9599577	19	505240.9	0.9714	0.495
	(ii) Within Groups	1.46E+08	280	520115.1		

TABLE 6.7 (Continued..)

SINGLE FACTOR ANOVA BETWEEN THE COMPANIES OF ITes INDUSTRY (20 COMPANIES)

Sr. No.	Category & Name of Ratio	SS	df	MS	F-Value	p-Value
29	CBTR					
	(i) Between Groups	34460.06	19	1813.687	6.8688*	7.14E-15
	(ii) Within Groups	73933.11	280	264.0468		
30	CTR					
	(i) Between Groups	1.03+08	19	5424241	1.0163	0.442
	(ii) Within Groups	1.49E+09	280	5337020		
31	APP					
	(i) Between Groups	6481963	19	341156	1.0550	0.398
	(ii) Within Groups	90547538	280	323384.1		
Profitability Ratios						
32	OPM					
	(i) Between Groups	27248.2	19	1434.116	4.7649*	1.38E-09
	(ii) Within Groups	84273.43	280	300.9765		
33	NPM					
	(i) Between Groups	364475.5	19	1919.763	6.1464*	4.41E-13
	(ii) Within Groups	87455.07	280	312.3395		
34	ROTA					
	(i) Between Groups	27784.74	19	1462.355	8.1521*	5.69E-18
	(ii) Within Groups	50227.36	280	179.3834		
35	EAT/TA					
	(i) Between Groups	26527.56	19	1396.187	8.7846*	1.86E-19
	(ii) Within Groups	44501.93	280	158.9355		
36	RONW					
	(i) Between Groups	57153.9	19	3008.1	0.8033	0.7029
	(ii) Within Groups	1048546	280	3744.81		

* Indicating significant results at 1% level of significance with Critical Value of F = 1.971

** Indicating significant results at 5% level of significance with Critical Value of F = 1.624

✱ As already discussed in Chapter 5, due to the formula of WCL, observations for 2 years is lost and so the analysis is possible for only 14 years. Since, CANFAR is taken to support the analysis of WCL; its analysis is also for 14 years. The same is applicable for between the years analysis of variances.

$ Many of the companies had NIL inventory in atleast 1 year of the study period and hence it was not possible to examine the variances in ITR, IHP and resultantly variances in OC and NTC. This is applicable to variances between the years for these industries.

C. Current Liabilities Structure Ratios

The results of ANOVA for Current Liabilities Structure Ratios provide significant evidence that their means vary widely indicating that they maintain different mix of current liabilities as a source of financing the current assets. Highest variation is observed for OCCLR amongst all the Current Liabilities structure ratios indicating that amongst the component of current liabilities, the companies differ greatly in the proportion of other current liabilities to total current liabilities. This is followed by DACECLR, TCCLR, PCLR, STBBCLR and CFCCLR.

D. Liquidity Ratios

The results of ANOVA also indicate significant evidence that mean of Liquidity ratios widely vary. The resulting values of F-test are significant at 1% level of significance for all three liquidity ratios thereby indicating that there exists significant difference between the companies of IT$_{\underline{c1}}$ Industry in liquidity management. Highest variation is observed for QR followed by ALR and CR.

E. Current Asset Management Efficiency Ratios and Operating Cycle Variables

While examining the variations regarding CAME ratios mixed results are observed. Out of eight ratios for four ratios significant variations are observed. They are TATR, CATR, RTR and CBTR. It is surprising to note that whereas highest variance is observed for RTR, no significant variations are found for ACP. On the other hand for CTR and APP also no significant variations between the companies are observed for the period under study. This is also holding good for WCTR.

F. Profitability Ratios

The results of ANOVA for Profitability Ratios provide significant evidence that their means vary widely between the companies for all the profitability ratios except RONW thereby indicating that the profitability position of companies in IT$_{\underline{c1}}$ industry is significantly different. Highest variation is observed for EAT/TA indicating that the companies differ greatly with respect to their operational efficiency measured as a percentage of post tax returns on total assets and that the companies in IT$_{\underline{c1}}$ Industry manage their operations differently. This is followed by ROTA, NPM and OPM.

While analyzing the variances between companies of the IT$_{\underline{c1}}$ Industry over a period of 15 years, significant variances were observed for 31 out of the 36 ratios examined at 1% level of significance and highest variance was observed for the PETCAR. The 5 ratios for which significant variations were not observed are WCTR, ACP, CTR, APP and RONW.

6.3.2.2 Single Factor ANOVA between the years of IT$_{\underline{c1}}$ Industry

The results of single factor ANOVA between the years for 20 companies of IT$_{\underline{c1}}$ Industry for all the parameters of WCM, LEV and Profitability is presented in Table 6.8. While analyzing the variance *between the years* for IT$_{\underline{c1}}$ industry for all the selected parameters, out of the 36 ratios, significant variations were observed for 8 ratios *viz,* ITCAR, MSTCAR and DACECLR at 1% level of significance whereas for RTCAR, PETCAR, LATCAR, CR and QR at 5% level of significance. No significant variations were observed for the remaining 28 ratios between the years.

These results indicate that there have been changes in the composition of current asset investment in the ITes Industry over the study period, which has mainly been caused due to changes in level of investment in inventories, receivables, prepaid expenses, loans and advances and marketable securities. Also, there have been changes in the proportion of Deposits and Advances from Customers and Employees to current liabilities in the ITes Industry over the study period. The significant variations also are observed for CR and QR indicating that over the study period there had been changes in the liquidity position of the ITes Industry. ***Thus, it can be concluded*** that there were no significant variations in the means of selected ratios of WCP, LEV, Current Liabilities Structure (except DACECLR), PROF, CAME Ratios and Operating Cycle Variables over the study period. Significant variations are observed for Current Asset Structure Ratios (except CBBTCAR) and Liquidity Ratios (except ALR).

TABLE 6.8

SINGLE FACTOR ANOVA BETWEEN THE YEARS OF ITes INDUSTRY (20 COMPANIES)

Sr. No.	Category & Name of Ratio	SS	df	MS	F-Value	p-Value
Working Capital Policy, Working Capital Leverage & Leverage Ratios						
1	LTDTAR					
	(i) Between Groups	0.361025	14	0.025788	1.0058	0.447
	(ii) Within Groups	7.30736	285	0.02564		
2	TDTAR					
	(i) Between Groups	0.589716	14	0.042123	0.7674	0.704
	(ii) Within Groups	15.64454	285	0.054893		
3	CLTAR					
	(i) Between Groups	0.567326	14	0.040523	0.7347	0.739
	(ii) Within Groups	15.71971	285	0.055157		
4	CATAR					
	(i) Between Groups	0.135657	14	0.00969	0.3473	0.987
	(ii) Within Groups	7.951047	285	0.027898		
5	CLCAR					
	(i) Between Groups	1.411369	14	0.100812	0.5974	0.867
	(ii) Within Groups	48.0917	285	0.168743		
6	NWCCAR					
	(i) Between Groups	1.990634	14	0.142188	0.8129	0.655
	(ii) Within Groups	49.85078	285	0.174915		
7	CANFAR	[Critical Value of F = 2.197 (1%) and 1.757 (5%)]				
	(i) Between Groups	17.75432	13	1.365717	0.1784	0.999
	(ii) Within Groups	2035.979	266	7.654056		
8	WCL	[Critical Value of F = 2.197 (1%) and 1.757 (5%)]				
	(i) Between Groups	1.215517	13	0.093501	1.2700	0.231
	(ii) Within Groups	19.58342	266	0.073622		

* Indicating significant results at 1% level of significance with Critical Value of F = 2.14

** Indicating significant results at 5% level of significance with Critical Value of F = 1.73

TABLE 6.8 (Continued..)

SINGLE FACTOR ANOVA BETWEEN THE YEARS OF ITes INDUSTRY (20 COMPANIES)

Sr. No.	Category & Name of Ratio	SS	df	MS	F-Value	p-Value
Current Asset Structure Ratios						
9	ITCAR					
	(i) Between Groups	0.378151	14	0.027011	3.3784*	4.62E-05
	(ii) Within Groups	2.278607	285	0.007995		
10	RTCAR					
	(i) Between Groups	0.973788	14	0.069556	1.8791**	0.028
	(ii) Within Groups	10.54972	285	0.037017		
11	CBBTCAR					
	(i) Between Groups	0.451149	14	0.32225	1.6265	0.072
	(ii) Within Groups	5.646607	285	0.019813		
12	PETCAR					
	(i) Between Groups	0.361637	14	0.025831	1.9528**	0.021
	(ii) Within Groups	3.769854	285	0.013228		
13	LATCAR					
	(i) Between Groups	0.324835	14	0.023202	1.9166**	0.025
	(ii) Within Groups	3.450306	285	0.012106		
14	MSTCAR					
	(i) Between Groups	0.802947	14	0.057353	3.2482*	8.36E-05
	(ii) Within Groups	5.032235	285	0.017657		
Current Liabilities Structure Ratios						
15	TCCLR					
	(i) Between Groups	0.416049	14	0.029718	0.6902	0.784
	(ii) Within Groups	12.27123	285	0.043057		
16	DACECLR					
	(i) Between Groups	1.072563	14	0.076612	2.7438*	0.001
	(ii) Within Groups	7.959916	285	0.027922		
17	PCLR					
	(i) Between Groups	0.480697	14	0.034336	1.0222	0.431
	(ii) Within Groups	9.572742	285	0.033589		
18	STBBCLR					
	(i) Between Groups	0.374351	14	0.026739	1.1614	0.305
	(ii) Within Groups	6.561583	285	0.023023		
19	CFCCLR					
	(i) Between Groups	0.120518	14	0.008608	0.9779	0.476
	(ii) Within Groups	2.508848	285	0.008803		
20	OCLCLR					
	(i) Between Groups	0.40632	14	0.029023	0.6427	0.828
	(ii) Within Groups	12.86997	285	0.045158		
Liquidity Ratios						
21	CR					
	(i) Between Groups	167.2531	14	11.94665	1.9678**	0.020
	(ii) Within Groups	1730.241	285	6.071021		
22	QR					
	(i) Between Groups	154.2924	14	11.02089	1.7915**	0.039
	(ii) Within Groups	1753.284	285	6.151873		

TABLE 6.8 (Continued..)

SINGLE FACTOR ANOVA BETWEEN THE YEARS OF ITes INDUSTRY (20 COMPANIES)

Sr. No.	Category & Name of Ratio	SS	df	MS	F-Value	p-Value
23	ALR					
	(i) Between Groups	19.11759	14	1.365542	1.6450	0.067
	(ii) Within Groups	236.5827	285	0.830115		
	Current Asset Management Efficiency Ratios and Operating Cycle Variables					
24	TATR					
	(i) Between Groups	3.891975	14	0.277998	0.5185	0.922
	(ii) Within Groups	152.8147	285	0.536192		
25	CATR					
	(i) Between Groups	6.873876	14	0.490991	0.9826	0.979
	(ii) Within Groups	365.7146	285	1.283209		
26	WCTR					
	(i) Between Groups	98526.11	14	7037.579	1.0070	0.446
	(ii) Within Groups	1991758	285	6988.626		
27	RTR					
	(i) Between Groups	50.75817	14	3.625584	0.5294	0.915
	(ii) Within Groups	1951.849	285	6.848593		
28	ACP					
	(i) Between Groups	7629058	14	544932.7	1.0522	0.402
	(ii) Within Groups	1.48E+08	285	517904.3		
29	CBTR					
	(i) Between Groups	4846.875	14	346.2053	0.9529	0.502
	(ii) Within Groups	103546.3	285	363.3203		
30	CTR					
	(i) Between Groups	74446545	14	5317610	0.9951	0.458
	(ii) Within Groups	1.52E+09	285	5543788		
31	APP					
	(i) Between Groups	4574993	14	326785.2	1.0074	0.446
	(ii) Within Groups	92454508	285	324401.8		
	Profitability Ratios					
32	OPM					
	(i) Between Groups	3926.867	14	280.4905	0.7430	0.730
	(ii) Within Groups	107594.8	285	377.5255		
33	NPM					
	(i) Between Groups	4058.049	14	289.8606	0.6892	0.785
	(ii) Within Groups	119872.5	285	420.6054		
34	ROTA					
	(i) Between Groups	4992.947	14	356.6391	1.3920	0.156
	(ii) Within Groups	73019.16	285	256.2076		
35	EAT/TA					
	(i) Between Groups	4532.723	14	323.7659	1.3876	0.158
	(ii) Within Groups	66496.77	285	233.322		
36	RONW					
	(i) Between Groups	41263.10	14	2947.37	0.7892	0.681
	(ii) Within Groups	1064437	285	3734.87		

6.3.3 Single Factor ANOVA for Transport Services Industry (16 Companies)

This section presents the results of Single Factor ANOVA between the 16 companies of Transport Services Industry as well as between the 15 years for all the 16 companies for the selected parameters of WCM, LEV and PROF. The results of ANOVA between the companies is presented and interpreted first followed by the results of ANOVA between the years.

6.3.3.1 Single Factor ANOVA between the companies of Transport Services Industry

The results of single factor ANOVA between the 16 companies of Transport Services Industry for all the parameters of WCM, LEV and PROF is presented in Table 6.9. The results of the analysis are interpreted as per the group to which each ratio belongs.

A. Working Capital Policy, Working Capital Leverage and Leverage Ratios

- The results of this analysis provide significant evidence that means of the LEV, WCL and Working Capital Policy (WCP) ratios widely vary as observed from the Table 6.9. The resulting values of F-test are significant at 1% level of significance for all the parameters of WCP and LEV thereby indicating that there exists significant difference between the companies of Transport Services Industry with respect to use of debt financing as well as aggressive/conservative working capital investment and financing policies. The variations are high for LTDTAR as compared to TDTAR indicating that the differences are greater between the firms in utilization of LTD to finance the total assets as compared to the total debt position.
- Significant variations between companies are observed for the current asset investment policy represented by CATAR and CANFAR. In addition, the highest variation is observed for CATAR thereby indicating that the companies greatly differ in the current asset investment policy pursued by them in terms of proportion of current assets held in the total assets structure. Significant variations between companies are also observed for the current asset financing policy followed by firms as represented by CLCAR, NWCCAR and CLTAR indicating that firms in Transport Services Industry differ in use of current liabilities and net working capital for financing their current assets. Variations are highest for CLTAR with indicating that the firms differ significantly in use of CL to finance their total assets.
- Significant variations observed for WCL indicates that firms in Transport Services Industry differ significantly with respect to investment in current assets and the degree of Working Capital Leverage. The results are in line with the variations observed for CATAR and CANFAR.

TABLE 6.9						
SINGLE FACTOR ANOVA BETWEEN THE COMPANIES OF TRANSPORT SERVICES INDUSTRY (16 COMPANIES)						
Sr. No.	Category & Name of Ratio	SS	df	MS	F-Value	p-Value
Working Capital Policy, Working Capital Leverage & Leverage Ratios						
1	LTDTAR					
	(i) Between Groups	5.220456	15	0.34803	33.3153*	1.15E-48
	(ii) Within Groups	2.340033	224	0.010447		
2	TDTAR					
	(i) Between Groups	5.957351	15	0.397157	25.9660*	7.34E-41
	(ii) Within Groups	3.426145	224	0.015295		
3	CLTAR					
	(i) Between Groups	3.481655	15	0.23211	30.2986*	1.31E-45
	(ii) Within Groups	1.716012	224	0.007661		
4	CATAR					
	(i) Between Groups	8.896221	15	0.593081	65.4301*	5.07E-73
	(ii) Within Groups	2.030414	224	0.009064		
5	CLCAR					
	(i) Between Groups	19.94122	15	1.329415	12.2706*	5.63E-22
	(ii) Within Groups	24.26852	224	0.108342		
6	NWCCAR					
	(i) Between Groups	19.94122	15	1.329415	12.2706*	5.63E-22
	(ii) Within Groups	24.26852	224	0.108342		
7	CANFAR ✱			[Critical Value of F at 1% = 2.13]		
	(i) Between Groups	573.0687	15	38.20458	56.6012*	7.95E-65
	(ii) Within Groups	140.3955	208	0.674978		
8	WCL✱			[Critical Value of F at 1% = 2.13]		
	(i) Between Groups	9.354489	15	0.623633	41.9507*	1.75E-54
	(ii) Within Groups	3.092099	208	0.014866		
Current Asset Structure Ratios						
9	ITCAR					
	(i) Between Groups	0.857898	15	0.057193	19.9718*	1.93E-33
	(ii) Within Groups	0.641469	224	0.002864		
10	RTCAR					
	(i) Between Groups	8.48685	15	0.56579	25.1073*	7.3E-40
	(ii) Within Groups	5.047821	224	0.022535		
11	CBBTCAR					
	(i) Between Groups	6.830484	15	0.455366	23.6447*	4.07E-38
	(ii) Within Groups	4.313945	224	0.019259		
12	PETCAR					
	(i) Between Groups	0.500786	15	0.033386	11.8378*	2.99E-21
	(ii) Within Groups	0.631739	224	0.00282		
13	LATCAR					
	(i) Between Groups	0.457015	15	0.030468	4.8514*	3.72E-08
	(ii) Within Groups	1.406777	224	0.00628		
14	MSTCAR					
	(i) Between Groups	1.436254	15	0.09575	9.1363*	1.69E-16
	(ii) Within Groups	2.347558	224	0.01048		

TABLE 6.9						(Continued..)
SINGLE FACTOR ANOVA BETWEEN THE COMPANIES OF TRANSPORT SERVICES INDUSTRY (16 COMPANIES)						
Sr. No.	Category & Name of Ratio	SS	df	MS	F-Value	p-Value
Current Liabilities Structure Ratios						
15	TCCLR					
	(i) Between Groups	5.407537	15	0.360502	26.8469*	7.29E-42
	(ii) Within Groups	3.007886	224	0.013428		
16	DACECLR					
	(i) Between Groups	0.783576	15	0.052238	10.2409*	1.73E-18
	(ii) Within Groups	1.142612	224	0.005101		
17	PCLR					
	(i) Between Groups	7.772717	15	0.518181	40.6596*	6.94E-55
	(ii) Within Groups	2.897037	224	0.012933		
18	STBBCLR					
	(i) Between Groups	2.914754	15	0.194317	17.4379*	6.07E-30
	(ii) Within Groups	2.496112	224	0.011143		
19	CFCCLR					
	(i) Between Groups	4.350993	15	0.290066	25.5683*	2.12E-40
	(ii) Within Groups	2.54123	224	0.011345		
20	OCLCLR					
	(i) Between Groups	5.451521	15	0.363435	45.6027*	1.86E-59
	(ii) Within Groups	1.785189	224	0.00797		
Liquidity Ratios						
21	CR					
	(i) Between Groups	457.8432	15	30.52288	19.7592*	3.71E-33
	(ii) Within Groups	346.0133	224	1.544702		
22	QR					
	(i) Between Groups	298.2403	15	19.88269	12.4917*	2.42E-22
	(ii) Within Groups	356.5339	224	1.591669		
23	ALR					
	(i) Between Groups	139.7306	15	9.315374	9.5752*	2.69E-17
	(ii) Within Groups	217.9229	224	0.97287		
Current Asset Management Efficiency Ratios and Operating Cycle Variables						
24	TATR					
	(i) Between Groups	80.79937	15	5.386625	50.8033*	2.15E-63
	(ii) Within Groups	23.7505	224	0.106029		
25	CATR					
	(i) Between Groups	232.1429	15	15.47619	14.2878*	3.12E-25
	(ii) Within Groups	242.632	224	1.083179		
26	WCTR					
	(i) Between Groups	5112.703	15	340.8469	1.9890**	0.017
	(ii) Within Groups	38386.42	224	171.3679		
27	RTR					
	(i) Between Groups	9058.754	15	603.9169	18.9173*	5.15E-32
	(ii) Within Groups	7150.983	224	31.92403		
28	ACP					
	(i) Between Groups	867513.6	15	57834.24	12.3398*	4.32E-22
	(ii) Within Groups	1049847	224	4686.817		

TABLE 6.9 (Continued..)

SINGLE FACTOR ANOVA BETWEEN THE COMPANIES OF TRANSPORT SERVICES INDUSTRY (16 COMPANIES)

Sr. No.	Category & Name of Ratio	SS	df	MS	F-Value	p-Value
	CBTR					
29	(i) Between Groups	57836.58	15	3455.772	13.6788*	2.86E-24
	(ii) Within Groups	56590.75	224	252.6373		
	CTR					
30	(i) Between Groups	304209.5	15	20280.64	20.8113*	1.51E-34
	(ii) Within Groups	218288.1	224	974.5003		
	APP					
31	(i) Between Groups	168121.4	15	11208.09	8.2664*	7.01E-15
	(ii) Within Groups	303714.9	224	1355.87		
Profitability Ratios						
	OPM					
32	(i) Between Groups	41120.08	15	2741.338	11.5423*	9.48E-21
	(ii) Within Groups	53200.84	224	237.5037		
	NPM					
33	(i) Between Groups	23736.05	15	1582.403	7.4177*	2.91E-13
	(ii) Within Groups	47785.27	224	213.3271		
	ROTA					
34	(i) Between Groups	11072.7	15	738.18	19.8814*	2.55E-33
	(ii) Within Groups	8316.932	224	37.12916		
	EAT/TA					
35	(i) Between Groups	6834.663	15	455.6442	15.2434*	1.05E-26
	(ii) Within Groups	6695.654	224	29.89131		
	RONW					
36	(i) Between Groups	33025.2	15	2201.68	9.0257*	2.7E-16
	(ii) Within Groups	54641.2	224	243.934		

* Indicating significant results at 1% level of significance with Critical Value of F = 2.120

** Indicating significant results at 5% level of significance with Critical Value of F = 1.711

✱ As already discussed in Chapter 5, due to the formula of WCL, observations for 2 years is lost and so the analysis is possible for only 14 years. Since, CANFAR is taken to support the analysis of WCL; its analysis is also for 14 years. The same is applicable for between the years analysis of variances.

$ Many of the companies had NIL inventory in atleast 1 year of the study period and hence it was not possible to examine the variances in ITR, IHP and resultantly variances in OC and NTC. This is applicable to variances between the years for these industries.

B. Current Asset Structure Ratios

As observed from Table 6.9, the results of ANOVA provide significant evidence that mean of the Current Asset Structure Ratios widely vary thereby indicating that there exists significant difference between the companies of Transport Services Industry with respect to the structure of current assets maintained by them. Highest variation is observed for RTCAR indicating that among the Current Assets Structure ratios greater differences exist between companies in terms of proportion of receivables to current assets. This is followed by CBBTCAR, ITCAR, PETCAR, MSTCAR and LATCAR.

C. Current Liabilities Structure Ratios

The results of ANOVA for Current Liabilities Structure Ratios provide significant evidence that their means vary widely indicating that companies in Transport Services Industry differ significantly and they maintain different mix of current liabilities as a source of financing the current assets. Highest variation is observed for OCLCLR amongst all the CL structure ratios indicating that amongst the components of CL, the companies differ greatly in the proportion of other current liabilities to current liabilities. This is followed by PCLR, TCCLR, CFCCLR, STBBCLR and DACECLR.

D. Liquidity Ratios

The results of ANOVA further indicate significant evidence that mean of Liquidity ratios widely vary between the companies. Highest variation is observed for CR indicating that companies differ significantly in terms of maintaining short term liquidity as measured in terms of proportion of current assets to current liabilities. This is followed by QR and ALR.

E. Current Asset Management Efficiency Ratios and Operating Cycle Variables

The results of ANOVA for CAME Ratios and OC Variables provide significant evidence that their means vary widely between the companies, for all ratios. Amongst the CAME Ratios, the highest variation is observed for TATR significant at 1% level of significance indicating that there exists significant difference between the companies of Transport Services Industry in terms of total asset management efficiency and is in line with the highest variation observed for CATAR, which also may be the reason for such high variation in TATR. The highest variation in TATR is followed by CTR, RTR, CATR, ACP, APP and WCTR. These variations necessarily indicate that the firms in Transport Services Industry differ in management of their current assets and utilize different levels of net working capital for operating sales. They also differ with respect to the collection policy as well as payment policy pursued by them. Further, the companies also differ in managing their cash substantially.

F. Profitability Ratios

The results of ANOVA for Profitability Ratios provide significant evidence that their means vary widely between the companies thereby indicating that the profitability position of companies in Transport Services Industry is significantly different. Highest variation is observed for ROTA indicating that the companies differ greatly with respect to their operational efficiency measured as percentage of operating returns on total assets and that they manage their operations differently.

This is followed by EAT/TA, OPM, RONW and NPM.

While analyzing the variances between companies of the Transport Services Industry over a period of 15 years, significant variances were observed for all the 36 ratios, of which 37 ratios were found to be significant at 1% level of significance and 1 ratio, *i.e.,* WCTR at 5% level of significance. Highest variance was observed for the CATAR. Hence, the null hypothesis that no significant variations exist between companies of Transport Services Industry for selected parameters of WCM, LEV and Profitability is rejected.

6.3.3.2 Single Factor ANOVA between the years of Transport Services Industry

The results of single factor ANOVA between the years for 16 companies of Transport Services Industry for all the parameters of WCM, LEV and Profitability is presented in Table 6.10. *While analyzing the variance between the years* for Transport Services industry for all the selected parameters, out of the 36 ratios, significant variations were observed for only 2 ratios *viz,* CBBTCAR and for ALR. Significant variations in CBBTCAR indicates that there have been significant changes in the proportion of cash and bank balance to current assets in the Transport Services Industry over the study period which has affected the liquidity ratio ALR.

However, no significant variations were observed for the remaining 34 ratios. Thus, it can be concluded that there were no significant variations in the means of selected ratios of WCP, LEV, Current Asset Structure (except CBBTCAR), Current Liabilities Structure, Liquidity (except ALR), Profitability, Efficiency as well as Operating Cycle Variables over the study period.

Hence, the null hypothesis that there exists no significant variation between years for selected parameters of WCM, LEV and Profitability is broadly accepted.

TABLE 6.10

SINGLE FACTOR ANOVA BETWEEN THE YEARS OF TRANSPORT SERVICES INDUSTRY (16 COMPANIES)

Sr. No.	Category & Name of Ratio	SS	df	MS	F-Value	p-Value
	Working Capital Policy, Working Capital Leverage & Leverage Ratios					
1	LTDTAR					
	(i) Between Groups	0.023903	14	0.001707	0.0510	1
	(ii) Within Groups	7.536586	225	0.033496		
2	TDTAR					
	(i) Between Groups	0.143767	14	0.010269	0.2501	0.998
	(ii) Within Groups	9.239729	225	0.041065		
3	CLTAR					
	(i) Between Groups	0.0849	14	0.006064	0.2669	0.997
	(ii) Within Groups	5.112767	225	0.022723		

TABLE 6.10 (Continued..)

SINGLE FACTOR ANOVA BETWEEN THE YEARS OF TRANSPORT SERVICES INDUSTRY (16 COMPANIES)

Sr. No.	Category & Name of Ratio	SS	df	MS	F-Value	p-Value
4	CATAR					
	(i) Between Groups	0.135657	14	0.00969	0.3473	0.987
	(ii) Within Groups	7.951047	225	0.027898		
5	CLCAR					
	(i) Between Groups	1.163992	14	0.083142	0.4346	0.962
	(ii) Within Groups	43.04574	225	0.191314		
6	NWCCAR					
	(i) Between Groups	1.163992	14	0.083142	0.4346	0.962
	(ii) Within Groups	43.04575	225	0.191314		
7	CANFAR	[Critical Value of F = 2.216 (1%) and 1.767 (5%)]				
	(i) Between Groups	3.577715	13	0.275209	0.0814	0.999
	(ii) Within Groups	709.8865	210	3.380412		
8	WCL	[Critical Value of F = 2.216 (1%) and 1.767 (5%)]				
	(i) Between Groups	0.250121	13	0.01924	0.3313	0.987
	(ii) Within Groups	12.19647	210	0.058078		
Current Asset Structure Ratios						
9	ITCAR					
	(i) Between Groups	0.060143	14	0.004296	0.6716	0.800868
	(ii) Within Groups	1.439224	225	0.006397		
10	RTCAR					
	(i) Between Groups	1.182674	14	0.084477	1.5388	0.099
	(ii) Within Groups	12.352	225	0.054898		
11	CBBTCAR					
	(i) Between Groups	1.128517	14	0.080608	1.8108**	0.038
	(ii) Within Groups	10.01591	225	0.044515		
12	PETCAR					
	(i) Between Groups	0.024214	14	0.00173	0.3511	0.986
	(ii) Within Groups	1.108312	225	0.004926		
13	LATCAR					
	(i) Between Groups	0.041432	14	0.002959	0.3654	0.983
	(ii) Within Groups	1.82236	225	0.008099		
14	MSTCAR					
	(i) Between Groups	0.16879	14	0.012053	0.7504	0.722
	(ii) Within Groups	3.615022	225	0.016067		
Current Liabilities Structure Ratios						
15	TCCLR					
	(i) Between Groups	0.096579	14	0.006899	0.1866	0.999
	(ii) Within Groups	8.318843	225	0.036973		
16	DACECLR					
	(i) Between Groups	0.046716	14	0.003337	0.3995	0.974127
	(ii) Within Groups	1.879472	225	0.008353		
17	PCLR					
	(i) Between Groups	0.080713	14	0.005765	0.1225	0.999
	(ii) Within Groups	10.58904	225	0.047062		

TABLE 6.10 (Continued..)

SINGLE FACTOR ANOVA BETWEEN THE YEARS OF TRANSPORT SERVICES INDUSTRY (16 COMPANIES)

Sr. No.	Category & Name of Ratio	SS	df	MS	F-Value	p-Value
18	STBBCLR					
	(i) Between Groups	0.1381	14	0.009864	0.4209	0.967
	(ii) Within Groups	5.272766	225	0.023435		
19	CFCCLR					
	(i) Between Groups	0.155156	14	0.011083	0.3701	0.982
	(ii) Within Groups	6.737067	225	0.029943		
20	OCLCLR					
	(i) Between Groups	0.154577	14	0.011041	0.3508	0.986
	(ii) Within Groups	7.082134	225	0.031476		
Liquidity Ratios						
21	CR					
	(i) Between Groups	36.38164	14	2.598689	0.7619	0.710
	(ii) Within Groups	767.4748	225	3.410999		
22	QR					
	(i) Between Groups	41.1245	14	2.937464	1.0771	0.380
	(ii) Within Groups	613.6497	225	2.727332		
23	ALR					
	(i) Between Groups	44.2956	14	3.163972	2.2718*	0.006
	(ii) Within Groups	313.3579	225	1.392702		
Current Asset Management Efficiency Ratios and Operating Cycle Variables						
24	TATR					
	(i) Between Groups	1.766796	14	0.1262	0.2763	0.996
	(ii) Within Groups	102.7831	225	0.456814		
25	CATR					
	(i) Between Groups	16.08995	14	1.149282	0.5637	0.891
	(ii) Within Groups	458.685	225	2.0386		
26	WCTR					
	(i) Between Groups	3196.203	14	228.3002	1.2745	0.224463
	(ii) Within Groups	40302.92	225	179.1241		
27	RTR					
	(i) Between Groups	658.0635	14	47.00454	0.6801	0.793
	(ii) Within Groups	15551.67	225	69.11855		
28	ACP					
	(i) Between Groups	129475.2	14	9248.229	1.1639	0.305
	(ii) Within Groups	1787885	225	7946.157		
29	CBTR					
	(i) Between Groups	7098.721	14	507.0515	1.1259	0.336061
	(ii) Within Groups	101328.6	225	450.3494		
30	CTR					
	(i) Between Groups	15080.11	14	1077.151	0.4776	0.943
	(ii) Within Groups	507417.5	225	2255.189		
31	APP					
	(i) Between Groups	18758.98	14	1339.927	0.6654	0.807
	(ii) Within Groups	453077.4	225	2013.677		

TABLE 6.10 (Continued..)

SINGLE FACTOR ANOVA BETWEEN THE YEARS OF TRANSPORT SERVICES INDUSTRY (16 COMPANIES)

Sr. No.	Category & Name of Ratio	SS	df	MS	F-Value	p-Value
Profitability Ratios						
32	OPM					
	(i) Between Groups	5595.546	14	399.6604	1.0135	0.440624
	(ii) Within Groups	88725.67	225	394.3363		
33	NPM					
	(i) Between Groups	5282.162	14	377.2973	1.2816	0.220
	(ii) Within Groups	66239.15	225	294.3962		
34	ROTA					
	(i) Between Groups	942.4887	14	67.32062	0.8211	0.646
	(ii) Within Groups	18447.14	225	81.9873		
35	EAT/TA					
	(i) Between Groups	967.2531	14	69.08951	1.2374	0.249
	(ii) Within Groups	12563.06	225	55.83584		
36	RONW					
	(i) Between Groups	6252.29	14	446.592	1.2342	0.252
	(ii) Within Groups	81414.2	225	361.841		

* Indicating significant results at 1% level of significance with Critical Value of F = 2.16

** Indicating significant results at 5% level of significance with Critical Value of F = 1.74

6.3.4 Single Factor ANOVA for Health Services Industry (7 Companies)

This section presents the results of Single Factor ANOVA between the 7 Companies of Health Services Industry as well as between the 15 years for all the 7 Companies for the selected parameters of WCM, LEV and PROF. The results of ANOVA between the companies is presented and interpreted first followed by the results of ANOVA between the years.

6.3.4.1 Single Factor ANOVA between the companies of Health Services Industry

The results of single factor ANOVA between the 7 Companies of Health Services Industry for all the parameters of WCM, LEV and PROF is presented in Table 6.11. The results of the analysis are interpreted as per the group to which each ratio belongs.

A. Working Capital Policy, Working Capital Leverage and Leverage Ratios

- As observed from Table 6.11, the results of ANOVA provide significant evidence that means of the LEV, WCL and Working Capital Policy (WCP) ratios widely vary thereby indicating that there exists significant difference between the companies of Health Services Industry with respect to use of debt financing as well as aggressive/conservative working capital investment and financing policies. The variations are high for LTDTAR as compared to TDTAR indicating that the differences are greater within the companies in the Health Services Industry in utilization of long-term debt to finance the total assets as compared to the total debt position.

- Significant variations between companies observed for the current asset investment policy represented by CATAR and CANFAR indicates that the companies greatly differ in the current asset investment policy pursued by them. The highest variation is observed for CATAR thereby conveying that greater differences exist between companies in terms of proportion of current assets held in the total assets structure.
- Significant variations between companies observed for the current asset financing policy pursued by firms as represented by CLCAR, NWCCAR and CLTAR indicate that firms differ in use of current liabilities and NWC for financing their current assets. Variations are highest for CLCAR & NWCCAR indicating that the firms in Health Services Industry differ significantly in use of CL and NWC to finance their CA.
- Significant variations observed for WCL which indicates that there exists significant difference between the companies of Health Services Industry with respect to investment in current assets and the degree of Working Capital Leverage which is in line with the variations observed for CATAR and CANFAR.

B. Current Asset Structure Ratios

As observed from Table 6.11, the mean of the Current Asset Structure Ratios widely vary indicating that there exists significant difference between the companies of Health Services Industry with respect to the current asset component mix. Highest variation is observed for MSTCAR indicating that companies significantly differ in terms proportion of marketable securities to current assets, *i.e.,* with respect to level of investment in marketable securities. This is followed by CBBTCAR, ITCAR, PETCAR, LATCAR and RTCAR.

C. Current Liabilities Structure Ratios

The results of ANOVA for Current Liabilities Structure Ratios provide significant evidence that their means vary widely except DACECLR, indicating that companies of Health Services Industry they maintain different mix of current liabilities as a source of financing the current assets. Highest variation is observed for OCLCLR which is followed by PCLR, STBBCLR, CFCCLR, TCCLR and DACECLR.

D. Liquidity Ratios

The results of ANOVA also indicate significant evidence that mean of Liquidity ratios widely vary thereby indicating that there exists significant difference between the companies in liquidity management. Highest variation is observed for CR followed by

QR and ALR indicating that companies differ significantly in terms of maintaining short term liquidity as measured in terms of proportion of current assets or quick assets or cash assets to current liabilities. Hence, it is concluded that companies of Health Services Industry are managing liquidity distinctively.

E. Current Asset Management Efficiency Ratios and Operating Cycle Variables

- The results of ANOVA for CAME Ratios and OC Variables provide significant evidence that their means vary widely between the companies for all ratios except WCTR, CTR and APP. *Amongst the CAME Ratios,* highest variation is observed for CATR indicating that highest variations between the companies of Health Services Industry exist in terms of current asset management efficiency. Significant variations observed in CBTR indicate that there exists difference between companies of Health Services Industry with respect to cash management efficiency. Significant variations observed in ITR and IHP indicating differences between firms of the industry with respect to inventory management.
- The F value of RTR and ACP is significant at 1% level of significance indicating that there exist significant variations between the companies of Health Services Industry in managing their receivables. It is in line with the results observed for RTCAR. Thus, it can be concluded that firms in Health Services industry pursue different credit and collection policy and manage their receivables distinctively. The significant variations observed for CBTR indicates that companies manage their cash assets peculiarly. *No significant variations* observed for CTR, WCTR and APP indicates that the firms of Health Services industry follow similar approach in payables management and utilization of net working capital for operating sales.
- The F Value of OC and NTC is also found to be significant at 1% level of significance indicating that significant variations exist between firms in the length of Operating and Net Trade Cycle which is very much obvious looking at the results of all CAME and the CA Structure Ratios. Thus, it can be concluded that approaches used by the firms for managing their receivables, cash and inventory significantly vary resulting to differences in OC and NTC. *Thus, it is concluded that* firms in Health Services Industry differ in the asset utilization efficiency as well as follow different policies for management of inventory, cash and credit.

F. Profitability Ratios

- The results of ANOVA for Profitability Ratios provide significant evidence that their means vary widely between the companies. The resulting values of F-test are significant at 1% level of significance for OPM, NPM and ROTA whereas at 5%

level for EAT/TA thereby indicating that the profitability position of companies in Health Services Industry is significantly different. However, no significant variations are observed for RONW at 1% and 5% levels of significance.

- Highest variation is observed for NPM indicating that the companies differ greatly with respect to their overall ability to turn each rupee of sales into net profit and that the companies in Health Services Industry manage their operations differently as also evidenced by the results of WCP, Current Asset Structure, Current Liabilities Structure and Liquidity Ratios.

While analyzing the variances between companies of the Health Services Industry over a period of 15 years, significant variances were observed for 36 out of 40 ratios, of which 34 ratios were found to be significant at 1% level of significance whereas 2 ratios, *i.e.,* DACECLR and EAT/TA at 5% level of significance. Significant variances were not observed for WCTR, CTR, APP and RONW at 1 % and 5 % levels of significance. Highest variance was observed for the OCLCLR.

Hence, the null hypothesis that no significant variations exist between companies for selected parameters of WCM, LEV and Profitability is broadly rejected.

TABLE 6.11

SINGLE FACTOR ANOVA BETWEEN THE COMPANIES OF HEALTH SERVICES INDUSTRY (7 COMPANIES)

Sr. No.	Category & Name of Ratio	SS	df	MS	F-Value	p-Value
Working Capital Policy, Working Capital Leverage & Leverage Ratios						
1	LTDTAR					
	(i) Between Groups	1.098191	6	0.183032	14.1936*	1.42E-11
	(ii) Within Groups	1.263751	98	0.012895		
2	TDTAR					
	(i) Between Groups	1.090386	6	0.181731	8.6789*	1.41E-07
	(ii) Within Groups	2.052068	98	0.020939		
3	CLTAR					
	(i) Between Groups	0.218279	6	0.03638	3.1175*	0.008
	(ii) Within Groups	1.143633	98	0.01167		
4	CATAR					
	(i) Between Groups	1.192918	6	0.19882	21.9618*	3.18E-16
	(ii) Within Groups	0.88719	98	0.009053		
5	CLCAR					
	(i) Between Groups	14.41127	6	2.401879	19.1566*	1.18E-14
	(ii) Within Groups	12.28739	98	0.125381		
6	NWCCAR					
	(i) Between Groups	14.41127	6	2.401879	19.1566*	1.18E-14
	(ii) Within Groups	12.28739	98	0.125381		
7	CANFAR*			[Critical Value of F at 1% = 3.01]		
	(i) Between Groups	8.361698	6	1.393616	11.8195*	9.2E-10
	(ii) Within Groups	10.72968	91	0.117909		

TABLE 6.11 (Continued..)

SINGLE FACTOR ANOVA BETWEEN THE COMPANIES OF HEALTH SERVICES INDUSTRY (7 COMPANIES)

Sr. No.	Category & Name of Ratio	SS	df	MS	F-Value	p-Value
8	WCL*	[Critical Value of F at 1% = 3.01]				
	(i) Between Groups	1.448138	6	0.241356	18.4930*	6.1E-14
	(ii) Within Groups	1.187661	91	0.013051		
Current Asset Structure Ratios						
9	ITCAR					
	(i) Between Groups	1.251055	6	0.208509	23.5299*	4.7E-17
	(ii) Within Groups	0.868422	98	0.008861		
10	RTCAR					
	(i) Between Groups	1.32889	6	0.221482	7.6895*	8.77E-07
	(ii) Within Groups	2.822717	98	0.028803		
11	CBBTCAR					
	(i) Between Groups	2.032398	6	0.338733	24.9872*	8.48E-18
	(ii) Within Groups	1.328515	98	0.013556		
12	PETCAR					
	(i) Between Groups	0.455408	6	0.075901	16.2835*	6.33E-13
	(ii) Within Groups	0.4568	98	0.004661		
13	LATCAR					
	(i) Between Groups	1.596002	6	0.266	9.0428*	7.35E-08
	(ii) Within Groups	2.883543	98	0.029424		
14	MSTCAR					
	(i) Between Groups	0.526849	6	0.087808	50.7759*	6.27E-28
	(ii) Within Groups	0.16474	98	0.001729		
Current Liabilities Structure Ratios						
15	TCCLR					
	(i) Between Groups	0.585171	6	0.097528	4.1494*	0.001
	(ii) Within Groups	2.303421	98	0.023504		
16	DACECLR					
	(i) Between Groups	0.028132	6	0.004689	2.8341**	0.014
	(ii) Within Groups	0.162127	98	0.001654		
17	PCLR					
	(i) Between Groups	2.620754	6	0.436792	18.5207*	2.77E-14
	(ii) Within Groups	2.311238	98	0.023584		
18	STBBCLR					
	(i) Between Groups	1.718316	6	0.286386	12.7937*	1.27E-10
	(ii) Within Groups	2.193717	98	0.022385		
19	CFCCLR					
	(i) Between Groups	0.328024	6	0.054671	5.7376*	3.79E-05
	(ii) Within Groups	0.933797	98	0.009529		
20	OCLCLR					
	(i) Between Groups	1.488605	6	0.248101	40.6500*	1.69E-24
	(ii) Within Groups	0.598127	98	0.006103		
Liquidity Ratios						
21	CR					
	(i) Between Groups	44.89532	6	7.482553	6.3192*	1.21E-05
	(ii) Within Groups	116.0417	98	1.184099		

TABLE 6.11 (Continued..)

SINGLE FACTOR ANOVA BETWEEN THE COMPANIES OF HEALTH SERVICES INDUSTRY (7 COMPANIES)

Sr. No.	Category & Name of Ratio	SS	df	MS	F-Value	p-Value
22	QR					
	(i) Between Groups	35.81508	6	5.96918	4.9296*	0.000
	(ii) Within Groups	118.6665	98	1.210883		
23	ALR					
	(i) Between Groups	14.142	6	2.357	3.6762*	0.003
	(ii) Within Groups	62.83242	98	0.641147		
Current Asset Management Efficiency Ratios and Operating Cycle Variables						
24	TATR					
	(i) Between Groups	6.344837	6	1.057473	8.5947*	1.65E-07
	(ii) Within Groups	12.05772	98	0.123038		
25	CATR					
	(i) Between Groups	264.3775	6	44.06291	29.5757*	5.15E-20
	(ii) Within Groups	146.0037	98	1.489833		
26	WCTR					
	(i) Between Groups	18465.78	6	3077.63	0.6109	0.721
	(ii) Within Groups	493700.4	98	5037.759		
27	ITR					
	(i) Between Groups	47410.94	6	7901.823	17.8063*	7.36E-14
	(ii) Within Groups	43488.96	98	443.7649		
28	IHP					
	(i) Between Groups	29017.7	6	4836.283	10.2278*	9.05E-09
	(ii) Within Groups	46339.99	98	472.857		
29	RTR					
	(i) Between Groups	45550.36	6	583.979	29.3846*	1E-216
	(ii) Within Groups	21980.26	98	19.87365		
30	ACP					
	(i) Between Groups	94245.85	6	15707.64	6.9505*	3.56E-06
	(ii) Within Groups	221471.7	98	2259.916		
31	CBTR#	[Critical Values of F: 3.243 (1%) and 2.323 (5%)]				
	(i) Between Groups	86505.52	5	17301.1	27.5115*	2.18E-16
	(ii) Within Groups	52824.93	84	628.8682		
32	CTR					
	(i) Between Groups	907.7073	6	151.2845	0.9387	0.471
	(ii) Within Groups	15794.81	98	161.1716		
33	APP					
	(i) Between Groups	13524.89	6	2254.148	1.7859	0.110
	(ii) Within Groups	123698.1	98	1262.225		
34	OC					
	(i) Between Groups	169627.3	6	28271.21	6.8616*	4.22E-06
	(ii) Within Groups	403777.8	98	4120.182		
35	NTC					
	(i) Between Groups	128851.9	6	21475.31	8.6688*	1.44E-07
	(ii) Within Groups	242777.5	98	2477.321		

TABLE 6.11 (Continued..)

SINGLE FACTOR ANOVA BETWEEN THE COMPANIES OF
HEALTH SERVICES INDUSTRY (7 COMPANIES)

Sr. No.	Category & Name of Ratio	SS	df	MS	F-Value	p-Value
Profitability Ratios						
36	OPM					
	(i) Between Groups	5063.104	6	843.8506	3.1097*	0.008
	(ii) Within Groups	26593.35	350	271.3607		
37	NPM					
	(i) Between Groups	6479.512	6	1079.919	3.8799*	0.002
	(ii) Within Groups	27276.78	98	278.3345		
38	ROTA					
	(i) Between Groups	2386.678	6	397.7797	3.8247*	0.002
	(ii) Within Groups	10192.38	98	104.0039		
39	EAT/TA					
	(i) Between Groups	1519.921	6	253.3201	2.9582**	0.011
	(ii) Within Groups	8392.088	98	85.63355		
40	RONW					
	(i) Between Groups	5539.14	6	923.19	0.8772	0.515
	(ii) Within Groups	103136	98	1052.41		

* Indicating significant results at 1% level of significance with Critical Value of F = 2.992

** Indicating significant results at 5% level of significance with Critical Value of F = 2.193

✱ As already discussed in Chapter 5, due to the formula of WCL, observations for 2 years is lost and so the analysis is possible for only 14 years. Since, CANFAR is taken to support the analysis of WCL; its analysis is also for 14 years. The same is applicable for between the years analysis of variances.

The CBTR of Secunderabad Healthcare Ltd. was found to be very high and it affected the entire industry mean CBTR for all the years and So this company was eliminated while analyzing the CBTR and its analysis is based on 6 companies which is also applicable for between the years analysis of variances

6.3.4.2 Single Factor ANOVA between the years of Health Services Industry

The results of single factor ANOVA between the years for 7 Companies of Health Services Industry for all the parameters of WCM, LEV and Profitability is presented in Table 6.12.

While analyzing the variance between the years for Health Services Industry for all the selected parameters, significant variations were observed for CLTAR at 1% level of significance and for TDTAR, ALR at 5% level of significance. Thus of the 40 ratios, only for 3 ratios, significant variations existed.

Significant variations observed for CLTAR indicate that there have been significant changes in the proportion of Current Liabilities to Total Assets as a source of total asset financing in the Health Services Industry over the study period, which has lead to significant variations in total debt position as represented by TDTAR. The significant variation observed for ALR indicates that over the study period there have been changes in the absolute liquidity position of the Health Services Industry.

However, no significant variations were observed for the remaining 37 ratios between the years. Thus, it can be concluded that there were no significant variations in the means of selected parameters of WCP (except CLTAR), LEV (except TDTAR), Current Asset Structure, Current Liabilities Structure, Liquidity (except ALR) and Efficiency as well as Operating Cycle Variables over the study period. Hence, the null hypothesis that there exists no significant variation between years for selected parameters of WCM, LEV and Profitability is broadly accepted.

TABLE 6.12

SINGLE FACTOR ANOVA BETWEEN THE YEARS OF HEALTH SERVICES INDUSTRY (7 COMPANIES)

Sr. No.	Category & Name of Ratio	SS	df	MS	F-Value	p-Value
Working Capital Policy, Working Capital Leverage & Leverage Ratios						
1	LTDTAR					
	(i) Between Groups	0.287946	14	0.020568	0.8925	0.569
	(ii) Within Groups	2.073996	90	0.023044		
2	TDTAR					
	(i) Between Groups	0.749698	14	0.001466	2.0142**	0.025
	(ii) Within Groups	2.392756	90	0.026586		
3	CLTAR					
	(i) Between Groups	0.367648	14	0.026261	2.3771*	0.007
	(ii) Within Groups	0.994264	90	0.011047		
4	CATAR					
	(i) Between Groups	0.347739	14	0.024839	1.2904	0.229
	(ii) Within Groups	1.732369	90	0.0019249		
5	CLCAR					
	(i) Between Groups	1.516531	14	0.108324	0.3872	0.975
	(ii) Within Groups	25.181213	90	0.27949		
6	NWCCAR					
	(i) Between Groups	1.516531	14	0.108324	0.3872	0.975
	(ii) Within Groups	25.181213	90	0.27949		
7	CANFAR	[Critical Value of F = 2.349 (1%) and 1.839 (5%)]				
	(i) Between Groups	4.163691	13	0.320284	1.8023	0.056
	(ii) Within Groups	14.92769	84	0.177711		
8	WCL	[Critical Value of F = 2.349 (1%) and 1.839 (5%)]				
	(i) Between Groups	0.526933	13	0.040533	1.6145	0.097
	(ii) Within Groups	2.108866	84	0.025106		
Current Asset Structure Ratios						
9	ITCAR					
	(i) Between Groups	0.023148	14	0.001653	0.0710	0.999
	(ii) Within Groups	2.096329	90	0.023293		
10	RTCAR					
	(i) Between Groups	0.710763	14	0.050769	1.3279	0.207
	(ii) Within Groups	3.440844	90	0.038232		
11	CBBTCAR					
	(i) Between Groups	0.363511	14	0.025965	0.7796	0.688179
	(ii) Within Groups	2.997402	90	0.033304		

TABLE 6.12 (Continued..)

SINGLE FACTOR ANOVA BETWEEN THE YEARS OF HEALTH SERVICES INDUSTRY (7 COMPANIES)

Sr. No.	Category & Name of Ratio	SS	df	MS	F-Value	p-Value
12	PETCAR					
	(i) Between Groups	0.06183	14	0.004416	0.4674	0.944633
	(ii) Within Groups	0.85.378	90	0.009449		
13	LATCAR					
	(i) Between Groups	0.834872	14	0.059634	1.4726	0.138
	(ii) Within Groups	3.664673	90	0.040496		
14	MSTCAR					
	(i) Between Groups	0.033576	14	0.002398	0.3257	0.989
	(ii) Within Groups	0.662747	90	0.007364		
Current Liabilities Structure Ratios						
15	TCCLR					
	(i) Between Groups	0.248822	14	0.017773	0.6060	0.854
	(ii) Within Groups	2.639769	90	0.029331		
16	DACECLR					
	(i) Between Groups	0.018767	14	0.001341	0.7035	0.765
	(ii) Within Groups	0.171492	90	0.001905		
17	PCLR					
	(i) Between Groups	0.301495	14	0.021535	0.4186	0.965
	(ii) Within Groups	4.630497	90	0.05145		
18	STBBCLR					
	(i) Between Groups	0.200491	14	0.014321	0.3473	0.985
	(ii) Within Groups	3.711542	90	0.041239		
19	CFCCLR					
	(i) Between Groups	0.08438	14	0.006027	0.4607	0.948
	(ii) Within Groups	1.177442	90	0.013083		
20	OCLCLR					
	(i) Between Groups	0.058579	14	0.004184	0.1857	0.999
	(ii) Within Groups	2.028153	90	0.022535		
Liquidity Ratios						
21	CR					
	(i) Between Groups	21.39831	14	1.528451	0.9858	0.474244
	(ii) Within Groups	139.5387	90	1.55043		
22	QR					
	(i) Between Groups	22.80398	14	1.628856	1.1133	0.358
	(ii) Within Groups	131.6776	90	1.463084		
23	ALR					
	(i) Between Groups	17.06244	14	1.218746	1.8308**	0.046
	(ii) Within Groups	59.91198	90	0.665689		
Current Asset Management Efficiency Ratios and Operating Cycle Variables						
24	TATR					
	(i) Between Groups	2.48939	14	0.177814	1.0057	0.455
	(ii) Within Groups	15.91316	90	0.176813		
25	CATR					
	(i) Between Groups	9.456819	14	0.675487	0.1516	0.999
	(ii) Within Groups	400.9243	90	4.454715		

TABLE 6.12 (Continued..)

SINGLE FACTOR ANOVA BETWEEN THE YEARS OF HEALTH SERVICES INDUSTRY (7 COMPANIES)

Sr. No.	Category & Name of Ratio	SS	df	MS	F-Value	p-Value
	WCTR					
26	(i) Between Groups	71384.65	14	5098.904	1.0411	0.421
	(ii) Within Groups	440781.5	90	4897.573		
	ITR					
27	(i) Between Groups	3825.502	14	273.2501	0.2824	0.995
	(ii) Within Groups	87074.4	90	967.4933		
	IHP					
28	(i) Between Groups	4927.78	14	351.9843	0.4498	0.95277
	(ii) Within Groups	70429.9	90	782.5545		
	RTR					
29	(i) Between Groups	207.7786	14	14.84133	0.2005	0.999
	(ii) Within Groups	6662.041	90	74.02268		
	ACP					
30	(i) Between Groups	18718.43	14	1337.031	0.4052	0.986
	(ii) Within Groups	296999.1	90	3299.991		
	CBTR	[Critical Values of F: 2.329 (1%) and 1.826 (5%)]				
31	(i) Between Groups	9073.327	14	648.0948	0.3732	0.978597
	(ii) Within Groups	130257.1	75	1736.762		
	CTR					
32	(i) Between Groups	2418.895	14	172.7782	1.0887	0.379
	(ii) Within Groups	14283.63	90	158.707		
	APP					
33	(i) Between Groups	20684.38	14	1477.456	1.1410	0.335
	(ii) Within Groups	116538.6	90	1294.873		
	OC					
34	(i) Between Groups	28929.11	14	2066.365	0.3416	0.986306
	(ii) Within Groups	544476	90	6049.733		
	NTC					
35	(i) Between Groups	27716.8	14	1979.771	0.5181	0.917
	(ii) Within Groups	343912.6	90	3821.251		
Profitability Ratios						
	OPM					
36	(i) Between Groups	6411.073	14	457.9338	1.6325	0.085
	(ii) Within Groups	25245.38	90	280.5042		
	NPM					
37	(i) Between Groups	5208.129	14	372.0092	1.1728	0.309778
	(ii) Within Groups	10900.34	90	121.1149		
	ROTA					
38	(i) Between Groups	1678.723	14	119.9088	0.9900	0.470
	(ii) Within Groups	10900.34	90	121.1149		
	EAT/TA					
39	(i) Between Groups	1368.664	14	97.76168	1.0299	0.432
	(ii) Within Groups	8543.346	90	94.92606		
	RONW					
40	(i) Between Groups	15892.3	14	1135.16	1.1011	0.368
	(ii) Within Groups	92783.3	90	1030.93		

* Indicating significant results at 1% level of significance with Critical Value of F = 2.13

** Indicating significant results at 5% level of significance with Critical Value of F = 1.72

6.3.5 Single Factor ANOVA for Miscellaneous Services Industry (9 Companies)

This section presents the results of Single Factor ANOVA between the 9 companies of Miscellaneous Services Industry as well as between the 15 years for all the 9 companies for the selected parameters of WCM, LEV and PROF. The results of ANOVA between the companies is presented and interpreted first followed by the results of ANOVA between the years.

6.3.5.1 Single Factor ANOVA between the companies of Miscellaneous Services Industry

The results of single factor ANOVA between the 9 firms of Miscellaneous Services Industry for all the parameters of WCM, LEV and PROF is presented in Table 6.13. The results of the analysis are interpreted as per the group to which each ratio belongs.

A. Working Capital Policy, Working Capital Leverage and Leverage Ratios

- From the perusal of Table 6.13, it is observed that means of the LEV, WCL and WCP ratios widely vary thereby indicating that there exists significant difference between the companies of Miscellaneous Services Industry with respect to utilization of debt financing, aggressive/conservative working capital investment and financing policies as well as degree of Working Capital Leverage.
- The variations are high for TDTAR as compared to LTDTAR indicating that the differences are greater within companies of Miscellaneous Services Industry in the proportion of total debt to total assets as compared to long-term debt position. The reason for the high variation in TDTAR can be assigned to the high variations in CLTAR.
- Significant variations between companies are observed for the current asset investment policy represented by CATAR and CANFAR. The highest variation is observed for CATAR which indicates that the companies greatly differ in terms of proportion of current assets held in the total assets structure. It also is indicative of distinctive current asset investment policy pursued by them.
- Significant variations between companies are also observed for the current asset financing policy pursued by firms as represented by CLCAR, NWCCAR and CLTAR indicating that firms in Miscellaneous Services industry differ in use of current liabilities and NWC for financing their current assets. Also, variations are highest for CLTAR indicating that the firms in Miscellaneous Services industry differ significantly in use of current liabilities to finance their total assets. Hence, the null hypothesis that there are no significant variations between companies with respect to LEV and WCP ratios is rejected.

TABLE 6.13

SINGLE FACTOR ANOVA BETWEEN THE COMPANIES OF MISCELLANEOUS SERVICES INDUSTRY (9 COMPANIES)

Sr. No.	Category & Name of Ratio	SS	df	MS	F-Value	p-Value
Working Capital Policy, Working Capital Leverage & Leverage Ratios						
1	LTDTAR					
	(i) Between Groups	1.438341	8	0.179793	14.6972*	5E-15
	(ii) Within Groups	1.541379	126	0.012233		
2	TDTAR					
	(i) Between Groups	6.541922	8	0.81774	37.9165*	4.72E-30
	(ii) Within Groups	2.717425	126	0.021567		
3	CLTAR					
	(i) Between Groups	5.187633	8	0.648454	34.9795*	1.52E-28
	(ii) Within Groups	2.335802	126	0.018538		
4	CATAR					
	(i) Between Groups	3.551831	8	0.443979	44.2977*	4.52E-33
	(ii) Within Groups	1.262851	126	0.010023		
5	CLCAR					
	(i) Between Groups	29.00115	8	3.625144	17.8607*	1.3E-17
	(ii) Within Groups	25.57394	126	0.202968		
6	NWCCAR					
	(i) Between Groups	29.00115	8	3.625144	17.8607*	1.3E-17
	(ii) Within Groups	25.57394	126	0.202968		
7	CANFAR ✱				[Critical Value of F = 2.67]	
	(i) Between Groups	65.2888	8	8.1611	30.8420*	1.8E-25
	(ii) Within Groups	30.9593	117	0.26461		
8	WCL✱				[Critical Value of F = 2.67]	
	(i) Between Groups	3.485101	8	0.435638	23.7665*	2.73E-21
	(ii) Within Groups	2.144596	117	0.01833		
Current Asset Structure Ratios						
9	ITCAR					
	(i) Between Groups	2.056029	8	0.257004	31.0287*	2.25E-26
	(ii) Within Groups	1.043624	126	0.008283		
10	RTCAR					
	(i) Between Groups	2.984628	8	0.373078	13.7722*	3.16E-14
	(ii) Within Groups	3.413245	126	0.027089		
11	CBBTCAR					
	(i) Between Groups	0.435907	8	0.054488	3.8594*	0.000
	(ii) Within Groups	1.778907	126	0.014118		
12	PETCAR					
	(i) Between Groups	0.178533	8	0.022317	6.4424*	5.22E-07
	(ii) Within Groups	0.436468	126	0.003464		
13	LATCAR					
	(i) Between Groups	1.538526	8	0.192316	18.2110*	6.97E-18
	(ii) Within Groups	1.330614	126	0.01056		
14	MSTCAR					
	(i) Between Groups	1.127068	8	0.140884	7.8172*	1.73E-08
	(ii) Within Groups	2.270794	126	0.018022		

TABLE 6.13 (Continued..)

SINGLE FACTOR ANOVA BETWEEN THE COMPANIES OF MISCELLANEOUS SERVICES INDUSTRY (9 COMPANIES)

Sr. No.	Category & Name of Ratio	SS	df	MS	F-Value	p-Value
Current Liabilities Structure Ratios						
15	TCCLR					
	(i) Between Groups	2.662513	8	0.332814	12.9442*	1.72E-13
	(ii) Within Groups	3.239636	126	0.025711		
16	DACECLR					
	(i) Between Groups	2.503367	8	0.312921	16.2922*	2.33E-16
	(ii) Within Groups	2.420058	126	0.019207		
17	PCLR					
	(i) Between Groups	1.854766	8	0.231846	16.3414*	2.12E-16
	(ii) Within Groups	1.787644	126	0.014188		
18	STBBCLR					
	(i) Between Groups	1.673077	8	0.209135	7.8825*	1.47E-08
	(ii) Within Groups	3.342966	126	0.026531		
19	CFCCLR					
	(i) Between Groups	6.061636	8	0.757704	57.3855*	2.18E-38
	(ii) Within Groups	1.663673	126	0.013204		
20	OCLCLR					
	(i) Between Groups	4.731055	8	0.591382	33.4181*	1.05E-27
	(ii) Within Groups	2.229752	126	0.017696		
Liquidity Ratios						
21	CR					
	(i) Between Groups	111.3229	8	13.91536	11.1481*	7.91E-12
	(ii) Within Groups	157.2766	126	1.248227		
22	QR					
	(i) Between Groups	112.92	8	14.11501	11.2055*	6.98E-12
	(ii) Within Groups	158.7155	126	1.259647		
23	ALR					
	(i) Between Groups	6.777612	8	0.847202	2.5536**	0.013
	(ii) Within Groups	41.80234	126	0.331765		
Current Asset Management Efficiency Ratios and Operating Cycle Variables						
24	TATR					
	(i) Between Groups	7.579763	8	0.94747	11.6985*	2.39E-12
	(ii) Within Groups	10.20483	126	0.080991		
25	CATR					
	(i) Between Groups	16.89848	8	2.11231	8.4805*	3.51E-09
	(ii) Within Groups	31.38377	126	0.249078		
26	WCTR					
	(i) Between Groups	1791.377	8	22.39221	1.6943	0.101
	(ii) Within Groups	16652.84	126	132.1654		
27	RTR					
	(i) Between Groups	259.7065	8	32.46331	5.8548*	2.33E-06
	(ii) Within Groups	698.6379	126	5.544745		
28	ACP					
	(i) Between Groups	316748.3	8	39593.53	6.1199*	1.18E-06
	(ii) Within Groups	815168.8	126	6469.593		

TABLE 6.13 (Continued..)

SINGLE FACTOR ANOVA BETWEEN THE COMPANIES OF MISCELLANEOUS SERVICES INDUSTRY (9 COMPANIES)

Sr. No.	Category & Name of Ratio	SS	df	MS	F-Value	p-Value
29	CBTR					
	(i) Between Groups	21222.25	8	2652.781	5.1100*	1.6E-05
	(ii) Within Groups	65411.08	126	519.1355		
30	CTR					
	(i) Between Groups	14123.57	8	1765.446	8.7707*	1.76E-09
	(ii) Within Groups	25362.36	126	201.2886		
31	APP					
	(i) Between Groups	51790.44	8	6473.805	7.5495*	3.32E-08
	(ii) Within Groups	108047.1	126	857.5169		
Profitability Ratios						
32	OPM					
	(i) Between Groups	13565.78	8	1695.722	6.0632*	1.37E-06
	(ii) Within Groups	35238.98	126	279.6744		
33	NPM					
	(i) Between Groups	8888.639	8	1111.08	4.5068*	7.76E-05
	(ii) Within Groups	31063.11	126	246.5327		
34	ROTA					
	(i) Between Groups	1447.916	8	180.9895	2.1102**	0.039
	(ii) Within Groups	10807.03	126	85.77008		
35	EAT/TA					
	(i) Between Groups	1359.549	8	169.9437	2.4531**	0.017
	(ii) Within Groups	13571.92	126	38.77693		
36	RONW					
	(i) Between Groups	3490.14	8	436.267	0.1930	0.995
	(ii) Within Groups	284839	126	2260.62		

* Indicating significant results at 1% level of significance with Critical Value of F = 2.655

** Indicating significant results at 5% level of significance with Critical Value of F = 2.013

✱ As already discussed in Chapter 5, due to the formula of WCL, observations for 2 years is lost and so the analysis is possible for only 14 years. Since, CANFAR is taken to support the analysis of WCL; its analysis is also for 14 years. The same is applicable for between the years analysis of variances.

$ Many of the companies had NIL inventory in atleast 1 year of the study period and hence it was not possible to examine the variances in ITR, IHP and resultantly variances in OC and NTC. This is applicable to variances between the years for these industries.

Significant variations observed for WCL indicates that there exists significant difference between the companies of Miscellaneous Services Industry with respect to investment in current assets and the degree of Working Capital Leverage and are in line with the variations observed for CATAR and CANFAR. Hence, the null hypothesis that there are no significant variations between companies with respect to the mean WCL is rejected.

B. Current Asset Structure Ratios

As observed from Table 6.13, the results of ANOVA also provide significant evidence that mean of the Current Asset Structure Ratios widely vary indicating that the companies in Miscellaneous Services Industry maintain different mix of current asset components. Highest variations are observed for ITCAR indicating that companies significantly differ in terms of proportion of maintaining level of inventories as a proportion of current assets. This is followed by LATCAR, RTCAR, MSTCAR, PERCAR and CBBTCAR.

C. Current Liabilities Structure Ratios

The results of ANOVA for Current Liabilities Structure Ratios provide significant evidence that their means vary widely indicating that companies of Miscellaneous Services Industry maintain different mix of current liabilities as a source of financing the current assets. Highest variation is observed for CFCCLR indicating that amongst all the components of Current Liabilities, the companies differ greatly in using current financing charge as a source of financing the current assets. This is followed by OCLCLR, PCLR, DACECLR, TCCLR and STBBCLR.

D. Liquidity Ratios

From the perusal of Table 6.13, it is observed that mean of all the Liquidity ratios widely vary, thereby indicating that there exists significant difference between the companies of Miscellaneous Services Industry regarding liquidity management. Highest variation is observed for QR indicating that companies differ significantly in terms of maintaining short term liquidity as measured in terms of proportion of quick assets to current liabilities. This is followed by CR and ALR.

E. Current Asset Management Efficiency Ratios and Operating Cycle Variables

From the perusal of Table 6.13, it is observed that means of all the CAME Ratios except WCTR and Operating Cycle Variables vary widely between the companies of Miscellaneous Services Industry.

- Amongst the CAME Ratios, highest variation is observed for TATR indicating that the companies of Miscellaneous Services Industry pursue different approaches in managing their total assets and they vary in terms of asset utilization. This result is in line with the highest variation observed for CATAR, which also may be the reason for such high variation in TATR.
- Significant variations in CATR and CBTR indicate that companies of Miscellaneous Services Industry differ greatly in terms of current asset and cash management efficiency. However, no significant variation in WCTR indicates that the firms of Miscellaneous Service industry follow similar approach in utilization of net working capital for operating sales.

- Significant variations in RTR, ACP, CTR and APP indicate that firms in Miscellaneous Services Industry pursue different credit and collection policy and manage their receivables and payables distinctively.

F. Profitability Ratios

The results of ANOVA for Profitability Ratios (except RONW) provide significant evidence that their means vary widely between the companies thereby indicating that the profitability position of companies in Miscellaneous Services Industry is significantly different. Highest variation is observed for OPM indicating that the companies differ greatly with respect to their operational efficiency measured as percentage of sales and that the companies in Miscellaneous Services Industry manage their operations differently as also evidenced by the results of WCP, Current Asset Investment, Current Liabilities Structure and Liquidity Ratios.

While analyzing the variances between companies of the Miscellaneous Services Industry over a period of 15 years, it was observed that significant variances existed for 34 out of 36 ratios, of which 31 ratios were found to be significant at 1% level of significance and 3 ratios, *i.e.,* ALR, ROTA and EAT/TA at 5% level of significance. Significant variance was not observed only for RONW and WCTR. Highest variance was observed for the CFCCLR. Hence, the null hypothesis that no significant variations exist between companies of Miscellaneous Services Industry for selected parameters of WCM, LEV and Profitability is broadly rejected.

6.3.5.2 Single Factor ANOVA between the years of Miscellaneous Services Industry

The results of single factor ANOVA between the years for 9 companies of Miscellaneous Services Industry for all the parameters of WCM, LEV and PROF is presented in Table 6.14. *While analyzing the variance between the years* for all the selected parameters, out of the 36 ratios, significant variations were observed for only 6 ratios *viz,* STBBCLR, ALR, OPM, NPM, ROTA and EAT/TA at 1% level of significance whereas for the remaining 30 ratios no significant variations were observed. These results indicate that there have been changes in the proportion of Short Term Bank Borrowings to Current Liabilities, which is also a source of current asset financing in the Miscellaneous Services Industry over the study period.

The significant variations observed for ALR indicates that over the study period there have been changes in the absolute liquidity position of the Miscellaneous Services Industry.

The significant variations in all the profitability ratios indicate that Miscellaneous Services industry is unable to maintain its profitability consistently and operational efficiency measured in terms of both sales and total assets over the study period. In addition, highest variation between the years is observed for EAT/TA.

Thus, it can be concluded that there were no significant variations in the means of selected ratios of WCP, LEV, CA Structure, CL Structure (except STBBCLR), Liquidity (except ALR), CAME as well as OC Variables over the study period.

Hence, the null hypothesis that there exists no significant variation between years for selected parameters of WCM and LEV is broadly accepted whereas for Profitability ratios, it is rejected.

TABLE 6.14

SINGLE FACTOR ANOVA BETWEEN THE YEARS OF MISCELLANEOUS SERVICES INDUSTRY (9 COMPANIES)

Sr. No.	Category & Name of Ratio	SS	df	MS	F-Value	p-Value
Working Capital Policy, Working Capital Leverage & Leverage Ratios						
1	LTDTAR					
	(i) Between Groups	0.133901	14	0.009564	0.4033	0.972
	(ii) Within Groups	2.845818	120	0.023715		
2	TDTAR					
	(i) Between Groups	0.202209	14	0.014444	0.1914	0.999
	(ii) Within Groups	9.057138	120	0.075476		
3	CLTAR					
	(i) Between Groups	0.282028	14	0.020145	0.3338	0.988
	(ii) Within Groups	7.241407	120	0.060345		
4	CATAR					
	(i) Between Groups	0.308886	14	0.022063	0.5876	0.870
	(ii) Within Groups	4.505796	120	0.037548		
5	CLCAR					
	(i) Between Groups	3.936573	14	0.281184	0.6663	0.803
	(ii) Within Groups	50.63852	120	0.421988		
6	NWCCAR					
	(i) Between Groups	3.936573	14	0.281184	0.6663	0.803
	(ii) Within Groups	50.63852	120	0.421988		
7	CANFAR*	[Critical Value of F = 2.293 (1%) and 1.809 (5%)]				
	(i) Between Groups	6.55609	13	0.50431	0.6298	0.825
	(ii) Within Groups	89.692	112	0.80082		
8	WCL*	[Critical Value of F = 2.293 (1%) and 1.809 (5%)]				
	(i) Between Groups	0.692621	13	0.053279	1.2087	0.282
	(ii) Within Groups	4.937075	112	0.044081		
Current Asset Structure Ratios						
9	ITCAR					
	(i) Between Groups	0.240507	14	0.017179	0.7210	0.750
	(ii) Within Groups	2.859146	120	0.023826		

TABLE 6.14 (Continued..)

SINGLE FACTOR ANOVA BETWEEN THE YEARS OF MISCELLANEOUS SERVICES INDUSTRY (9 COMPANIES)

Sr. No.	Category & Name of Ratio	SS	df	MS	F-Value	p-Value
10	RTCAR					
	(i) Between Groups	1.018614	14	0.072758	1.6231	0.082
	(ii) Within Groups	5.379259	120	0.044827		
11	CBBTCAR					
	(i) Between Groups	0.103575	14	0.007398	0.4205	0.966
	(ii) Within Groups	2.111239	120	0.017594		
12	PETCAR					
	(i) Between Groups	0.101999	14	0.007286	1.7043	0.063
	(ii) Within Groups	0.513002	120	0.004275		
13	LATCAR					
	(i) Between Groups	0.257225	14	0.018373	0.8441	0.620
	(ii) Within Groups	2.611915	120	0.021766		
14	MSTCAR					
	(i) Between Groups	0.55516	14	0.039654	1.6739	0.069
	(ii) Within Groups	2.842702	120	0.023689		
Current Liabilities Structure Ratios						
15	TCCLR					
	(i) Between Groups	0.624587	14	0.044613	1.0144	0.444
	(ii) Within Groups	5.277562	120	0.04398		
16	DACECLR					
	(i) Between Groups	0.642361	14	0.045883	1.2862	0.225781
	(ii) Within Groups	4.281065	120	0.035676		
17	PCLR					
	(i) Between Groups	0.08938	14	0.006384	0.2156	0.998
	(ii) Within Groups	3.55303	120	0.029609		
18	STBBCLR					
	(i) Between Groups	1.101658	14	0.07869	2.4123*	0.005
	(ii) Within Groups	3.914386	120	0.03262		
19	CFCCLR					
	(i) Between Groups	0.206944	14	0.014782	0.2359	0.998
	(ii) Within Groups	7.518364	120	0.062653		
20	OCLCLR					
	(i) Between Groups	0.186047	14	0.013289	0.2354	0.998
	(ii) Within Groups	6.77476	120	0.056456		
Liquidity Ratios						
21	CR					
	(i) Between Groups	7.982373	14	0.570169	0.2625	0.997
	(ii) Within Groups	260.6171	120	2.171809		
22	QR					
	(i) Between Groups	7.637598	14	0.545543	0.2480	0.997
	(ii) Within Groups	263.998	120	2.199983		
23	ALR					
	(i) Between Groups	12.53725	14	0.895518	2.9815*	0.001
	(ii) Within Groups	36.0427	120	0.300356		

TABLE 6.14 (Continued..)

SINGLE FACTOR ANOVA BETWEEN THE YEARS OF MISCELLANEOUS SERVICES INDUSTRY (9 COMPANIES)

Sr. No.	Category & Name of Ratio	SS	df	MS	F-Value	p-Value
Current Asset Management Efficiency Ratios and Operating Cycle Variables						
24	TATR					
	(i) Between Groups	1.005217	14	0.071801	0.5135	0.921
	(ii) Within Groups	16.77938	120	0.139828		
25	CATR					
	(i) Between Groups	4.037345	14	0.288382	0.7821	0.687
	(ii) Within Groups	44.24491	120	0.368708		
26	WCTR					
	(i) Between Groups	2394.347	14	171.0248	1.2787	0.230
	(ii) Within Groups	16.77938	120	1.139828		
27	RTR					
	(i) Between Groups	139.8692	14	9.990661	1.4648	0.135
	(ii) Within Groups	818.4752	120	6.820626		
28	ACP					
	(i) Between Groups	153378.7	14	10955.62	1.3435	0.192
	(ii) Within Groups	978538.3	120	8154.486		
29	CBTR					
	(i) Between Groups	3376.232	14	241.1594	0.3476	0.986
	(ii) Within Groups	83257.09	120	693.8091		
30	CTR					
	(i) Between Groups	4196.238	14	299.7313	1.0192	0.439
	(ii) Within Groups	35289.69	120	294.0807		
31	APP					
	(i) Between Groups	21669.7	14	1547.836	1.3443	0.192
	(ii) Within Groups	138167.9	120	1151.399		
Profitability Ratios						
32	OPM					
	(i) Between Groups	10668.06	14	762.0043	2.3977*	0.006
	(ii) Within Groups	38136.7	120	317.8058		
33	NPM					
	(i) Between Groups	10691.91	14	763.7081	3.1321*	0.000
	(ii) Within Groups	29259.84	120	243.832		
34	ROTA					
	(i) Between Groups	3895.186	14	278.2276	3.9938*	1.27E-05
	(ii) Within Groups	8359.76	120	69.66466		
35	EAT/TA					
	(i) Between Groups	3264.106	14	233.1504	4.0998*	8.4E-06
	(ii) Within Groups	6824.329	120	56.86941		
36	RONW					
	(i) Between Groups	22267.2	14	1590.51	0.7174	0.754
	(ii) Within Groups	266062	120	2217.18		

* Indicating significant results at 1% level of significance with Critical Value of F = 2.234

6.3.6 Summary of Results of Single Factor ANOVA

In order to have a comparative analysis of the results of ANOVA for all the industries simultaneously, a summary of the results of Single Factor ANOVA between the companies of and between the years for the Non Financial Service Industry as well as its constituent industry groups is prepared. The summary of Single Factor ANOVA for between the companies is presented and discussed first followed by the summary of Single Factor ANOVA between the years.

6.3.6.1 Summary of Results of Single Factor ANOVA between the Companies of the Non Financial Service Industry and its Constituent Industry Groups

In order to get a glimpse of the results of ANOVA for all the industries together a summary of F Values with the indicators of level of significance based on results of ANOVA between the companies for Service Industry taken in entirety and for individual service industry groups, *i.e.*, Hotels and Restaurant, ITes, Transport Services, Health Services and Miscellaneous Services is prepared and presented in Table 6.15. The following major observations can be made from the Table 6.15:

Significant variations between the companies are found for all the 36 ratios for the *Transport Services Industry*. In case of *Hotels and Restaurant Industry*, except RONW all the 35 ratios are found to vary significantly between companies. For Miscellaneous *Services Industry*, except WCTR and RONW all the 34 ratios are found to vary significantly between companies. For *Non Financial Service Industry* taken in entirety, except WCTR, CTR, APP and RONW all the 32 ratios are observed to vary significantly between companies. Similar finding is for the Health Services Industry. However, in case of *Health Services Industry* 36 ratios are observed to vary significantly between companies as ITR, IHP, OC and NTC are also included. *For ITes Industry*, except 5 ratios, *viz*, WCTR, CTR, ACP, APP and RONW the remaining 31 parameters are observed to vary significantly between companies.

A. Working Capital Policy, Working Capital Leverage and Leverage Ratios

From Table 6.15, it can be observed that for all the WCP and LEV ratios *viz*, CLTAR, LTDTAR, TDTAR, CATAR, CLCAR, NWCCAR as well as WCL significant variances is observed at 1% level of significance between companies for all the industries. Variations are found to be highest in this group for CATAR in all industries except, ITes Industry where it is highest for CLTAR.

TABLE 6.15

SUMMARY OF SINGLE FACTOR ANOVA BETWEEN THE COMPANIES OF ALL THE INDUSTRIES

Sr. No.	Category & Name of Ratio	Name of the Service Industry					
		Service (All 79 Co.s)	Hotels (25 Co.s)	ITes (20 Co.s)	Transport (16 Co.s)	Health (7 Co.s)	Misc Services (9 Co.s)
Working Capital Policy and Leverage Ratios							
1	LTDTAR	36.8901*	66.9076*	16.5977*	33.3153*	14.1936*	14.6972*
2	TDTAR	27.207*	39.1454*	23.8671*	25.9660*	8.6789*	37.9165*
3	CLTAR	31.4681*	37.2743*	30.6148*	30.2986*	3.1175*	34.9795*
4	CATAR	72.2017*	98.7355*	20.3222*	65.4301*	21.9618*	44.2977*
5	CLCAR	18.2832*	16.7325*	20.8008*	12.2706*	19.1566*	17.8607*
6	NWCCAR	18.3873*	16.7325*	20.6952*	12.2706*	19.1566*	17.8607*
7	CANFAR	34.0358*	28.8144*	19.7367*	56.6012*	11.8195*	30.8420*
8	WCL	43.0184*	61.0173*	15.6069*	41.9507*	18.4930*	23.7665*
Current Asset Structure Ratios							
9	ITCAR	24.8835*	51.8298*	5.7958*	19.9718*	23.5299*	31.0287*
10	RTCAR	20.6241*	28.3546*	16.5026*	25.1073*	7.68995*	13.7722*
11	CBBTCAR	18.8488*	22.1096*	11.9082*	23.6447*	24.9872*	3.8594*
12	PETCAR	17.1545*	11.2503*	33.1487*	11.8378*	16.2835*	6.4424*
13	LATCAR	11.7247*	21.4590*	6.3773*	4.8514*	9.0428*	18.2110*
14	MSTCAR	12.5065*	29.8296*	6.9432*	9.1363*	50.7759*	7.8172*
Current Liabilities Structure Ratios							
15	TCCLR	17.2319*	29.9024*	11.8361*	26.8469*	4.1494*	12.9442*
16	DACECLR	16.0526*	24.6895*	12.1302*	10.2409*	2.8341**	16.2922*
17	PCLR	18.8343*	24.7998*	9.2105*	40.6596*	18.5207*	16.3414*
18	STBBCLR	12.0260*	10.8226*	7.3463*	17.4379*	12.7937*	7.8825*
19	CFCCLR	24.9701*	24.1657*	7.0113*	25.5683*	5.7376*	57.3855*
20	OCLCLR	20.7480*	16.3363*	13.5233*	45.6027*	40.6500*	33.4181*
Liquidity Ratios							
21	CR	14.1777*	11.3906*	12.7886*	19.7592*	6.3192*	11.1481*
22	QR	13.5152*	11.7951*	13.2168*	12.4917*	4.9296*	11.2055*
23	ALR	9.5313*	9.4404*	13.2028*	9.5752*	3.6762*	2.5536**
Current Asset Management Efficiency Ratios and Operating Cycle Variables							
24	TATR	37.8818*	83.4982*	17.8247*	50.8033*	8.5947*	11.6985*
25	CATR	46.0708*	65.1524*	14.5729*	14.2878*	29.5757*	8.4805*
26	WCTR	NS	2.0836*	NS	1.9890**	NS	NS
27	ITR	NC$^{\$}$	NC$^{\$}$	NC$^{\$}$	NC$^{\$}$	17.8063*	NC$^{\$}$
28	IHP	NC$^{\$}$	NC$^{\$}$	NC$^{\$}$	NC$^{\$}$	10.2278*	NC$^{\$}$
29	RTR	29.3846*	29.3846*	18.8094*	18.9173*	29.3846*	5.8548*
30	ACP	1.4554*	12.2382*	NS	12.3398*	6.9505*	6.1199*
31	CBTR	16.1916*	17.9480*	6.8688*	13.6788*	27.5115*	5.1100*
32	CTR	NS	24.1040*	NS	20.8113*	NS	8.7707*
33	APP	NS	23.6302*	NS	8.2664*	NS	7.5495*
34	OC	NC$^{\$}$	NC$^{\$}$	NC$^{\$}$	NC$^{\$}$	6.8616*	NC$^{\$}$
35	NTC	NC$^{\$}$	NC$^{\$}$	NC$^{\$}$	NC$^{\$}$	8.6688*	NC$^{\$}$

TABLE 6.15 (Continued...)

SUMMARY OF SINGLE FACTOR ANOVA
BETWEEN THE COMPANIES OF ALL THE INDUSTRIES

Sr. No.	Category & Name of Ratio	Name of the Service Industry					
		Service (All 79 Co.s)	Hotels (25 Co.s)	ITes (20 Co.s)	Transport (16 Co.s)	Health (7 Co.s)	Misc Services (9 Co.s)
Profitability Ratios							
36	OPM	16.5202*	47.3211*	4.769*	11.5423*	3.1097*	6.0632*
37	NPM	10.3058*	18.8773*	6.1464*	7.4177*	3.8799*	4.5068*
38	ROTA	8.6238*	14.3802*	8.1521*	19.8814*	3.8247*	2.1102**
39	EAT/TA	10.8472*	12.3341*	8.7846*	15.2434*	2.9582**	2.4531**
40	RONW	NS	NS	NS	9.0257*	NS	NS

* Indicating significant results at 1% level of significance

** Indicating significant results at 5% level of significance

NS indicate results being NOT SIGNIFICANT.

NC$^{\$}$ refers to NOT COMPUTED. Some of the companies have NIL inventory in some years and hence it was not possible to examine the variances in ITR and IHP and resultantly variances in OC and NTC could not be examined for between the companies as well as between the years. Hence, for the 5 industries, 4 ratios *viz*, ITR, IHP, OC and NTC are excluded from analysis. Therefore, it could not be taken for the Non Financial Service Industry, *i.e.*, 79 companies taken as a whole.

B. Current Asset Structure Ratios

All the CA Structure ratios *viz*, ITCAR, RTCAR, CBBTCAR, PETCAR, LATCAR and MSTCAR are found to vary significantly between companies of all the five industries. Highest variance in this group is observed for ITCAR in Hotels and Restaurant and Miscellaneous Services Industry which is also observed for Non Financial Service Industry, *i.e.*, when all 79 companies are taken. In ITes Industry, highest variance between the companies is observed for PETCAR. In Transport Services Industry, it is observed for RTCAR and in Health Services Industry it is observed for MSTCAR.

C. Current Liabilities Structure Ratios

All the Current Liabilities Structure Ratios *viz*, TCCLR, DACECLR, PCLR, STBBCLR, CFCCLR and OCLCLR are found to vary significantly between companies of all the industries. Highest variance in this group is observed for TCCLR in Hotels and Restaurant Industry; for OCLCLR in ITes, Transport Services and Health Services Industry whereas in Miscellaneous Services Industry highest variance is observed for CFCCLR, which is also the case when Service Industry is taken in entirety.

D. Liquidity Ratios

All the Liquidity ratios *viz*, CR, QR and ALR are found to vary significantly between companies of all the industries. Highest variance in this group is observed for QR in Hotels and Restaurant, ITes and Miscellaneous Services Industry whereas it is highest for CR in Transport Services and Health Services Industry, which is also the case when Service Industry is taken in entirety.

E. Current Asset Management Efficiency Ratios and Operating Cycle Variables

All CAME Ratios are observed to vary significantly in case of Hotels and Restaurant Industry as well as Transport Services Industry. In case of Miscellaneous Services Industry except WCTR, all other Current Asset Management Efficiency Ratios vary significantly between companies. In ITes Industry except WCTR, ACP, CTR and APP whereas in case of Health Services Industry, except, WCTR, CTR, and APP all ratios are found to vary significantly between the companies.

Highest variance in this group is observed for TATR in Hotels and Restaurant, Transport Services and Miscellaneous Services Industry. In case of Health Services Industry, highest variance is observed for CATR, which is also the case when Service Industry is taken in entirety.

All the Operating Cycle Variables vary significantly between companies for all the industries except ITes Industry, Health Services Industry as well as Service Industry taken as whole (all 79 companies). No variations are observed for ITes Industry for all the OC Variables. Significant variations are observed for all OC Variables between companies of remaining industries except CTR and APP for Health Services Industry.

Highest variance in this group is observed for APP in Hotels and Restaurant Industry as well as Miscellaneous Services Industry; for IHP in Health Services Industry whereas it is observed to be for ACP in Transport Services Industry as well as Service Industry taken as a whole (all 79 companies).

F. Profitability Ratios

All five profitability ratios are observed to vary significantly only for Transport Services Industry. All profitability ratios except RONW are observed to vary significantly between companies of all industries.

Highest variance is observed for EAT/TA in case of ITes Industry; for ROTA in Transport Services Industry; for NPM in Health Services Industry and for OPM in Hotels and Restaurant Industry as well as Miscellaneous Services Industry, which is also the case when Service Industry is taken in entirety.

From the above, it can be concluded that of the selected 40 ratios, for 33 ratios *viz,* all the LEV, WCP, CA Structure, CL Structure ratios; CAME ratios (except WCTR, ACP, CTR and APP) and PROF ratios (except RONW) significant variances between companies are observed for all the 5 industries. are Highest variance among all the ratios is observed for CATAR in Hotels and Restaurant Industry as well as Transport Services Industry, which is also the case when Service Industry is taken in entirety. It is observed to be highest for PETCAR in case of ITes Industry, for MSTCAR in case of

Health Services Industry, for TCCLR in case of Communication Services Industry and for CFCCLR in case of Miscellaneous Services Industry.

6.3.6.2 Summary of Results of Single Factor ANOVA between the Years of the Non Financial Service Industry and its Constituent Industry Groups

In order to get a glimpse of the results of ANOVA for all the industries together, a summary of F Values is prepared with indicators of level of significance. This is done based on results of ANOVA between the years for Non Financial Service Industry taken in entirety and for individual service industry groups, *i.e.,* Hotels and Restaurant, ITes, Transport Services, Health Services and Miscellaneous Services Industry. This summary is presented in Table 6.16. The following observations can be made from Table 6.16:

Non Financial Service Industry (79 Companies)

While analyzing the variances between the years for the Service Industry, it is found that of the 36 ratios, significant variations were observed for only 9 ratios *viz*, ITCAR, RTCAR, PETCAR, MSTCAR, DACELCR, OPM, NPM, ROTA and EAT/TA. Thus, for remaining 27 ratios no significant variations are observed between years over the selected time frame.

Hotels and Restaurant Industry (25 Companies)

While analyzing the variances between the years for the Hotels and Restaurant Industry, it was found that of the 36 ratios, significant variations were observed for only 3 ratios *viz*, PETCAR, ROTA and EAT/TA. Thus, for remaining 33 ratios no significant variations are observed between years over the selected time frame.

ITes Industry (20 Companies)

While analyzing the variances between the years for the ITes Industry, it is found that of the 36 ratios, significant variations were observed for only 8 ratios *viz*, ITCAR, DACELCR, MSTCAR, RTCAR, PETCAR, LATCAR, CR and QR. Thus, for remaining 28 ratios no significant variations are observed between years over the selected time frame.

Transport Services Industry (16 Companies)

While analyzing the variances between the years for the Transport Services Industry, it is found that of the 36 ratios, significant variations are observed for only 2 ratios *viz*, ALR and CBBTCAR. Thus, for remaining 34 ratios no significant variations were observed between years over the selected time frame.

TABLE 6.16

SUMMARY OF SINGLE FACTOR ANOVA BETWEEN THE YEARS FOR ALL THE INDUSTRIES

Sr. No.	Category & Name of Ratio	Name of the Service Industry					
		Service (All 79 Co.s)	Hotels (25 Co.s)	IT$_{es}$ (20 Co.s)	Transport (16 Co.s)	Health (7 Co.s)	Misc. Services (9 Co.s)
Working Capital Policy and Leverage Ratios							
1	LTDTAR	NS	NS	NS	NS	NS	NS
2	TDTAR	NS	NS	NS	NS	2.0142**	NS
3	CLTAR	NS	NS	NS	NS	2.3771*	NS
4	CATAR	NS	NS	NS	NS	NS	NS
5	CLCAR	NS	NS	NS	NS	NS	NS
6	NWCCAR	NS	NS	NS	NS	NS	NS
7	CANFAR	NS	NS	NS	NS	NS	NS
8	WCL	NS	NS	NS	NS	NS	NS
Current Asset Structure Ratios							
9	ITCAR	1.8647**	NS	3.3784*	NS	NS	NS
10	RTCAR	4.5198*	NS	1.8791**	NS	NS	NS
11	CBBTCAR	NS	NS	NS	1.8108**	NS	NS
12	PETCAR	4.4902*	2.8770*	1.9528**	NS	NS	NS
13	LATCAR	NS	NS	1.9166**	NS	NS	NS
14	MSTCAR	5.1759*	NS	3.2482*	NS	NS	NS
Current Liabilities Structure Ratios							
15	TCCLR	NS	NS	NS	NS	NS	NS
16	DACECLR	2.6425*	NS	2.7438*	NS	NS	NS
17	PCLR	NS	NS	NS	NS	NS	NS
18	STBBCLR	NS	NS	NS	NS	NS	2.4123*
19	CFCCLR	NS	NS	NS	NS	NS	NS
20	OCLCLR	NS	NS	NS	NS	NS	NS
Liquidity Ratios							
21	CR	NS	NS	1.9678**	NS	NS	NS
22	QR	NS	NS	1.7915**	NS	NS	NS
23	ALR	NS	NS	NS	2.2718*	1.8308**	2.9815*
Current Asset Management Efficiency Ratios and Operating Cycle Variables							
24	TATR	NS	NS	NS	NS	NS	NS
25	CATR	NS	NS	NS	NS	NS	NS
26	WCTR	NS	NS	NS	NS	NS	NS
27	ITR	NC$^{\$}$	NC$^{\$}$	NC$^{\$}$	NC$^{\$}$	NS	NC$^{\$}$
28	IHP	NC$^{\$}$	NC$^{\$}$	NC$^{\$}$	NC$^{\$}$	NS	NC$^{\$}$
29	RTR	NS	NS	NS	NS	NS	NS
30	ACP	NS	NS	NS	NS	NS	NS
31	CBTR	NS	NS	NS	NS	NS	NS
32	CTR	NS	NS	NS	NS	NS	NS
33	APP	NS	NS	NS	NS	NS	NS
34	OC	NC$^{\$}$	NC$^{\$}$	NC$^{\$}$	NC$^{\$}$	NS	NC$^{\$}$
35	NTC	NC$^{\$}$	NC$^{\$}$	NC$^{\$}$	NC$^{\$}$	NS	NC$^{\$}$

TABLE 6.16 (Continued...)

SUMMARY OF SINGLE FACTOR ANOVA BETWEEN THE YEARS
FOR ALL THE INDUSTRIES

Sr. No.	Category & Name of Ratio	Name of the Service Industry					
		Service (All 79 Co.s)	Hotels (25 Co.s)	ITeS (20 Co.s)	Transport (16 Co.s)	Health (7 Co.s)	Misc. Services (9 Co.s)
Profitability Ratios							
36	OPM	2.7427*	NS	NS	NS	NS	2.3977*
37	NPM	2.9113*	NS	NS	NS	NS	3.1321*
38	ROTA	3.8286*	6.3822*	NS	NS	NS	3.9938*
39	EAT/TA	3.9233*	5.8846*	NS	NS	NS	4.0998*
40	RONW	NS	NS	NS	NS	NS	NS

* Significant results at 1% level of significance ** Significant results at 5% level of significance

NS indicate results being NOT SIGNIFICANT.

NC$^{\$}$ refers to NOT COMPUTED. Some of the companies have NIL inventory in some years and hence it was not possible to examine the variances in ITR and IHP and resultantly variances in OC and NTC for between the companies as well as between the years. Hence, for the 4 industries, 4 ratios *viz,* ITR, IHP, OC and NTC are excluded from analysis. Therefore, it could not be taken for the Non Financial Service Industry, *i.e.,* 79 companies taken as a whole.

Miscellaneous Services Industry (9 Companies)

While analyzing the variances between the years, it was found that of the 36 ratios, significant variations were observed for only 6 ratios *viz,* STBBCLR, ALR, OPM, NPM, ROTA and EAT/TA. Thus, for remaining 30 ratios no significant variations were observed between the years.

Further, from Table 6.16 it can be concluded that of the 40 ratios, in 22 ratios no significant variances is observed between the years for any industry. In addition, it is observed that in all the industries, for majority ratios no significant variance is observed between the years indicating that on the whole the selected variables have remained stable over a period of time.

CONCLUSIONS

This chapter examined the variances, if any, for the selected 40 parameters of WCM (*including ratios related to Working Capital Policy, Current Asset Structure, Current Liabilities Structure, Liquidity, Current Asset Management Efficiency and Measures of Operating Cycle as well as Working Capital Leverage),* LEV and PROF between the industries as also between the years taking all the industries; between the companies for a given industry and between the years for a given industry and together. The conclusions derived based on the said analysis are presented in the following paragraphs. The conclusions are divided into three sections wherein, the *first section* gives conclusions for ANOVA between the selected non financial service industries the *second section* gives conclusions for ANOVA between companies for a given industry;

whereas the *third section* gives conclusions for ANOVA between years for the selected industries as well as between the years taking all the industries together.

I Analysis of Variances Between Non Financial Service Industries as well as Between Years for all Industries

- It is concluded that significant difference exists between the Non Financial Service Industry groups relating to utilization of debt financing as well as aggressive/conservative working capital investment and financing policies. The industries also vary with respect to the degree of Working Capital Leverage. Moreover, the structure of current assets maintained by them (except MSTCAR) and mix of current liabilities (except TCCLR and OCLCLR) as a source of financing the current assets also differ significantly.
- It is concluded that the selected industries in Service Sector significantly differ in their approach towards liquidity management, asset utilization efficiency, policies for management of inventory, cash and receivables. However, they pursue similar approach for managing payables and net working capital.
- It is concluded that the selected Non Financial Service Industries of India significantly differ in terms of their profit earning ability and manage their operations differently.
- It is concluded that the policies pursued by the 6 Non Financial Service Industry groups for managing working capital have remained consistent over the study period excepting those related to receivables and investment in marketable securities.

II Analysis of Variances Between Companies

A. Non Financial Service Industry (All 79 companies)

- It is concluded that there exists significant difference between the companies of Non Financial Service Industry with respect to use of long term as well as total debt financing. The firms of Non Financial Service Industry differ greatly in the current asset investment policy pursued by them. They also differ in use of current liabilities and net working capital for financing their current assets. Their approach with respect to the aggressiveness and/or conservativeness of working capital investment and financial policies also differ. Further, it is concluded that the companies of Non Financial Service Industry significantly vary with respect to degree of Working Capital Leverage.
- It is concluded that there exists significant difference between the companies of Non Financial Service Industry with respect to current asset structure and the mix of current liabilities as a source of financing the current assets.

- The companies differ significantly in liquidity management, management of current assets and total assets utilization efficiency and cash management efficiency. They pursue different credit and collection policy. However for managing payables and net working capital, their approach is similar.
- It is concluded the companies of Non Financial Service Industry differ in terms of their profitability position and operational efficiency.

B. Between companies based on Industry wise classification

- It is concluded that there exists significant difference between the companies when each industry is taken individually, *i.e.*, of Hotels and Restaurant Industry, ITes Industry, Transport Services Industry, Health Services Industry and Miscellaneous Services Industry with respect to use of debt financing and working capital policy. Further companies belonging to Hotels and Restaurant Industry, Transport Services Industry and Health Services Industry differ greatly in their approach with respect to use of long term debt to finance the total assets as compared to the total debt position. However, in case of ITes and Miscellaneous Services Industry differences between firms are greater with respect to the total debt position as compared to use of long term debt to finance the total assets. It is concluded that firms of Hotels and Restaurant Industry, ITes Industry, Transport Services Industry and Miscellaneous Services Industry differ greatly in the current asset investment policy pursued by them as well as use of current liabilities and net working capital for financing their current assets
- It is also concluded that there were significant variations in level of current asset investment and thereby degree of Working Capital Leverage between the companies of all industries, *viz*, Hotels and Restaurant Industry, ITes Industry, Transport Services Industry, Health Services Industry and Miscellaneous Services Industry.
- It is concluded that there exists significant difference between the companies of all the 5 Non Financial Service Industry groups with respect to the structure of current assets maintained by them. Also, they maintain different mix of current liabilities as a source of financing the current assets
- It is concluded that firms of all the five Non Financial Service Industry groups differ with respect to liquidity management, management of current assets and total assets utilization efficiency. It is concluded that firms in Hotels and Restaurant and Transport Services Industry pursue different credit and collection policy and follow different approaches in managing their payables. However, firms in ITes Industry

follow similar approach for managing their payables. Further, firms in Miscellaneous Services Industry pursue different credit and collection policy but uniform approach/policy for managing their payables.

- It is concluded that firms in Hotels and Restaurant Industry, ITes Industry, Transport Services Industry, Health Services Industry and Miscellaneous Services Industry manage their cash distinctively.
- It is concluded that firms in Hotels and Restaurant and Transport Services Industry manage net working capital distinctively. However, firms in ITes; Miscellaneous Services and Health Services Industry follow similar approach in managing their net working capital.
- It is concluded the companies of all the 6 Non Financial Services Industry groups differ in terms of their profitability position and operational efficiency.

III Analysis of Variances Between Years

A. Non Financial Service Industry

It is concluded that that there have been changes in the composition of CA structure of Non Financial Service Industry over the study period which has mainly been caused due to changes in receivables, inventories, prepaid expenses and marketable securities of which highest variation is for MSTCAR. In addition, DACE as a proportion to CL have varied over the study period. Further, there have been significant changes in the profitability and operational efficiency of firms over the study period. Further for remaining 27 ratios no significant variations between the years are observed.

B. Hotels and Restaurant Industry

It is concluded that Hotels and Restaurant industry is unable to maintain its profitability consistently and operational efficiency (except ROTA and EAT/TA) over the study period. Also PETCAR has varied over the study period. However the remaining 33 ratios have not shown significant variations over the study period.

C. ITes Industry

It is concluded that there were no significant variations in the means of selected parameters of WCP, LEV, CL Structure except DACECLR, Profitability, CAME Ratios and Operating Cycle Variables over the study period. However, variations are observed for CA Structure Ratios except CBBTCAR and Liquidity ratios except ALR.

D. Transport Services Industry

It is concluded that there have been significant changes in CBBTCAR in the Transport Services Industry over the study period which has affected the liquidity ratio ALR. For remaining 34 ratios no significant variations are observed between years.

E. Health Services Industry

It is concluded that there have been significant changes in CLTAR as a source of total asset financing in the Health Services Industry over the study period, which has lead to significant variations in total debt position as represented by TDTAR. Significant changes are also observed in ALR. For the remaining 37 ratios no significant variations is observed.

F. Miscellaneous Services Industry

It is concluded that there have been significant changes in STBBCLR as a source of current asset financing in the Miscellaneous Services Industry over the study period. Also variations are observed in ALR of the study period. Further, the industry was unable to maintain its profitability (except RONW) consistently. In the remaining 30 ratios no significant variations were observed.

Having examined the differences between companies, between industries and between years, the next chapter moves to the last, *i.e.*, ***third stage of analysis*** and empirically examines the impact of Sales on Working Capital; Impact of Working Capital Leverage on ROTA and Impact of Firm Size, Leverage, Working Capital Policy, Liquidity and Current Assets Management Efficiency on Profitability Measures of the Non Financial Service Industry.

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CHAPTER 7

AN EMPIRICAL ANALYSIS OF WORKING CAPITAL MANAGEMENT AND PROFITABILITY

Having examined the state of various ratios, time trends and the variations, if any, between industries, between companies and between the years, as a final stage of analysis, ***in this chapter***, an attempt is made to examine the determinants of working capital in terms of sales as well as the impact of working capital policy and management as measured by various ratios on the selected 5 measures of profitability. For the purpose of better presentation the chapter is divided into five sections.

In **Section – I**, the methodology adopted is discussed. From the literature review it emerges that the level of sales affects the level of net working capital and thus **Section – II** empirically examines the impact of Sales on Working Capital of the firms in the Non Financial Service Industry which is also done for firms based in industry wise classification. Working Capital Leverage is a measure of sensitivity of ROTA due to change in level of current asset investment and thus, in **Section – III** the impact of WCL on ROTA is examined. The literature review also indicates impact of WCM, LEV & Size on profitability and hence, in **Section – IV** an attempt is made to identify the WCM, Size and LEV indicators affecting the profitability of 79 sample firms in Non Financial Service Industry taken as a whole. In **Section – V** an attempt is made to identify the industry – wise WCM, LEV and Size indicators affecting the profitability as well as to examine the differences, if any, for the companies belonging to three major service industry groups – Hotels and Restaurant Industry, ITes Industry and Transport Services Industry.

In Section IV and V, the analysis for each industry is divided into two parts. In PART – I, Simple Linear Regressions of each selected measure of WCM, LEV and Size on each individual measure of profitability are conducted to examine the impact of these individual measures on profitability. In PART – II, Stepwise Regression is carried out to find out the best fit model and the indicators of WCM, Size and LEV which accounts for the highest variation in Profitability.

The average represented by Mean of selected ratios over a 15 year period of each company in each industry is taken for conducting simple linear regressions to examine the impact of sales on working capital; WCL on ROTA as well as WCM, LEV and Size on profitability of the Non Financial Service Industry as well as its constituent industries.

The sample of Indian Non Financial Service Industry for the present study is 79 companies representing 6 industry groups. For the purpose of firm level analysis based on industry-wise classification, 3 major industry groups having at least 15 member companies are selected as it is necessary to have at least ten data points for conducting regression analysis which is satisfied for only ***three industry groups*** as detailed below:

Sr. No.	Industry Classification	No. of Companies
1	Hotels & Restaurant Industry	25
2	ITes Industry	20
3	Transport Services Industry	16

SECTION – I

7.1 Methodology Adopted

In order to examine the impact of Sales on Working Capital, the mean values of each company over a period of 15 years for each industry is taken. The Mean Working Capital was found to be negative for 6 companies in Hotels and Restaurant Industry and 2 companies each in ITes Industry and Transport Services Industry. As Natural Log (Ln) of negative values cannot be computed, therefore the regression was carried out on the mean values of Sales and Working Capital of each company in the industry instead of the Ln of Sales and Working Capital. As both Sales and Working Capital are the absolute values in ₹ crores terms and as none of them were in ratio form, no difficulty was found in carrying out regression on the absolute values.

In order to examine the impact of Working Capital Leverage on ROTA, the mean WCL and ROTA of each company of the Non Financial Service Industry as well as belonging to each of the three industries over a period of 14 years are taken.

In the first stage of empirical analysis at firm level and based on industry-wise classification, in order to examine the impact of WCM, LEV & Size on profitability, simple linear regression of various measures of WCM, Size and LEV on each indicator of PROF is conducted. Further, the parameters of WCM are divided into 3 broad groups, *i.e.,* Ratios indicating *a)* Working Capital Policy, *b)* Liquidity and c) Efficiency in current assets management. The results will point out the ratios with the broad group which has significant impact on Profitability.

In the second stage it was considered appropriate to carry out Stepwise Regression to identify the variables which explain the highest variation in Profitability and at the same time eliminating the problem of multicollinearity as stepwise regression method eliminates those independent variables that are highly correlated considering the values of Variance Inflationary Factor (VIF) and Tolerance Limit.

SECTION - II

7.2 Impact of Sales on Working Capital

An attempt is made to examine the impact of sales on working capital. For this purpose, simple linear regression is carried out by taking working capital as dependent variable and sales as explanatory variable and the results of this regression is presented in Table 7.1 for the Non Financial Service Industry as well as selected three industries.

TABLE – 7.1

Results of Simple Linear Regression for Sales on Working Capital

Sr. No.	Name of Industry	R^2	Intercept	Slope	t-Statistic	p-value
A	Service Industry (All 79 Companies)	0.551	205.137	1.601	9.726*	4.83E-15
1	Hotels and Restaurant	0.774	-8.5E+07	0.365	8.883*	6.8E-09
2	ITes Industry	0.369	5.62E-08	0.214	3.244*	0.005
3	Transport Services	0.750	-1.1E+08	0.361	6.472*	1.47E-05

Critical Values of "t"

Sr. No.	DF	Probability (Alpha)	Table Value – t
A	77	0.01	2.390
1	23	0.01	2.807
2	18	0.01	2.878
3	14	0.01	2.977

*Indicating results significant at 1% level of significance

On examining the outcome of simple linear regression from the perusal of Table 7.1, it is observed that sales have a significant positive impact on working capital of Non Financial Service Industry. The explained variation is 55.1% in case of Non Financial Service Industry which indicates that the working capital requirements of the companies in the Service Industry in terms of net working capital are highly affected by the level of sales. However, when it is observed for the individual industries, in case of Hotels and Restaurant Industry 77.40% of variation in working capital is accounted by Sales. In the Transport Services Industry 75% of variation in working capital is accounted by Sales whereas in case of ITes Industry, 36.90% of variation in working capital is accounted by Sales.

This relationship supports the premise, "there is a direct relationship between a firm's growth and its working capital needs. As sales grow, the firm needs to invest more in inventories and debtors[1]". Thus, Sales is found to be an important determinant of working capital and supports the findings of Mallick & Sur[2].

SECTION – III

7.2 Impact of Working Capital Leverage on ROTA

In this section, the impact of WCL on the ROTA is examined for the Non Financial Service Industry as well as its 3 major industries by applying simple linear regression taking ROTA as dependent variable and WCL as explanatory variable and the results of this regression is presented in Table 7.2 for the Non Financial Service Industry as well as selected three industries.

TABLE – 7.2

Results of Linear Trend on Working Capital Leverage for ROTA

Sr. No.	Name of Industry	R^2	Intercept	Slope	t-Statistic	p-value
1	Service Industry (All 79 Companies)	0.168	5.237	13.296	3.939*	0.000
2	Hotels and Restaurant	0.196	6.172	13.000	2.369**	0.027
3	ITes Industry	0.347	-3.178	29.684	3.092*	0.006
4	Transport Services	0.077	16.132	-9.280	-1.078	0.299

Critical Values of "t"

Sr. No.	DF	Probability (Alpha)	Table Value – t
1	77	0.01	2.390
2	23	0.05	2.069
3	18	0.01	2.878
4	14	0.01 0.05	2.977 1.761

* Indicating results significant at 1% level of significance

** Indicating results significant at 5% level of significance

On examining the outcome of regression analysis from Table 7.2, it is observed that ROTA of the service industry is sensitive to change in current assets investment with 17% variation in ROTA being explained by WCL and hence it is concluded that WCL affects ROTA of the Indian Non Financial Service Industry.

Further, the results also confirms that ROTA of the Hotels and Restaurant *and* ITes Industry are sensitive to change in CA investment with 20% and 35% variation respectively in ROTA being explained by WCL. *However*, no statistically significant impact of WCL on ROTA is observed for the Transport Services Industry.

As already discussed, WCL is the sensitivity of ROTA to change in the level of current asset investment. Thus, it measures the risk in the current asset investment policy. And from the above results, it can be concluded that firms in Non Financial Service Industry as well as Hotels and Restaurant *and* ITes Industry are affected by the working capital risk whereas *vice-versa* is the case for Transport Services Industry.

SECTION – IV

In this section, an attempt is made to examine the impact of WCM, LEV and Size on Profitability of the Non Financial Service Industry. ***2*** measures each of *LEV* and *Size*, ***5*** measures of *Working Capital Policy*, ***9*** ratios of *Liquidity* and ***7*** indicators of *Current Asset Management Efficiency* (CAME) are taken as explanatory variables based on literature review as already discussed in Chapter 4 which is presented in Table 7.3. Five measures of profitability are taken as dependent variables of which 2 measures are based on each sales and total assets and 1 measure is based on Net Worth. Simple Linear Regressions are conducted first followed by Stepwise Regression.

TABLE – 7.3

DETAILS OF INDEPENDENT AND DEPENDENT VARIABLES USED IN STUDY

Broad Group	Variables	Abbreviation
	Independent Variables – WCM, LEV and Size	
Size	Natural Logarithm of Sales	LnS
	Natural Logarithm of Total Assets	LnTA
Leverage	Long Term Debt/Total Assets	LTDTAR
	Total Debt/ Total Assets	TDTAR
Working Capital Policy	Current Liabilities/ Total Assets	CLTAR
	Current Assets/ Total Assets	CATAR
	Current Assets/ Net Fixed Assets	CANFAR
	Current Liabilities/ Current Assets	CLCAR
	Working Capital/ Current Assets	WCCAR
Liquidity	Inventory/Current Assets	ITCAR
	Receivables /Current Assets	RTCAR
	Cash and Bank Balances/ Current Assets	CBBTCAR
	Prepaid Expenses/ Current Assets	PETCAR
	Loans and Advances/ Current Assets	LATCAR
	Marketable Securities/ Current Assets	MSTCAR
	Current Assets/ Current Liabilities	CR
	Current Assets – Inventories/ Current Liabilities	QR
	Cash and Bank Balances + Marketable Securities/ Current Liabilities	ALR
Efficiency	Sales / Total Assets	TATR
	Sales/ Current Assets	CATR
	Sales/ Working Capital	WCTR
	Sales/ Inventory	ITR
	Inventory Holding Period	IHP
	Sales/ Receivables	RTR
	Average Collection Period	ACP
	Sales/ Cash and Bank Balances	CBBTR
	Sales/ Creditors	CTR
	Average Payment Period	APP
	Operating Cycle	OC
	Net Trade Cycle	NTC
	Dependent Variable – Profitability	
Based on Sales	Earnings Before Interest and Taxes/ Sales	OPM
	Earnings After Taxes/ Sales	NPM
Based on Total Assets	Earnings Before Interest and Taxes/ Total Assets	ROTA
	Earnings After Taxes/ Total Assets	EAT/TA
Based on Net Worth	Earnings After Taxes/ Net Worth	RONW

7.4 Impact of WCM, LEV and Size on Profitability of Firms in Non Financial Service Industry (All 79 Companies)

The results of Simple Linear Regressions and Stepwise Regression for Non Financial Service Industry are presented and analyzed in this section. The results of Simple Linear Regressions for each measure of profitability are presented separately in Tables 7.4 to 7.8. Also the interpretation is made first for OPM followed by NPM, ROTA, EAT/TA and RONW. Thereafter the results of Stepwise Regressions are presented in Table 7.9. Also, a comparative summary of results of Simple and Stepwise Regressions is presented in Table 7.10 after discussing the result of Stepwise Regressions.

7.4.1 Results of Simple Linear Regressions on OPM, NPM, ROTA, EAT/TA and RONW

A. Simple Linear Regressions for OPM

From the perusal of Table 7.4 it is observed that of the 30 explanatory variables representing 5 broad groups, only 9 variables have significant impact on OPM of firms in Non Financial Service Industry.

Size measured in terms of LnTA has a positive impact on OPM indicating that as LnTA increases, OPM improves. Thus, it can be inferred that firms with higher investments in total assets in the industry are earning higher profits.

Leverage measured in terms of TDTAR has a negative influence on OPM indicating that with increase in utilization of total debt, OPM of firms in Non Financial Service Industry would decrease.

Working Capital Policy measured in terms of CLTAR is found to have a negative impact on OPM which indicates that as the proportion of CL to TA rises, the OPM falls. The greater use of CL to finance total assets is indicative of aggressive working capital financing policy. The results thus indicate a negative impact of aggressive working capital financing policy on OPM and that firms in the industry should try to reduce the CLTAR to the extent possible.

Liquidity measured in terms of RTCAR has a negative impact on OPM and indicates that as the investment in Receivables in proportion to Current Assets increase there is a decline in profitability.

CBBTCAR and ALR have positive impact on OPM and indicate that as the liquidity improves, the OPM is likely to improve. In addition, CBBTCAR explains 23.6% variation in OPM which is highest amongst the significant variables and hence is an important determinant of OPM. Thus firms in Non Financial Service Industry should maintain sufficient liquidity to increase their profitability.

TABLE – 7.4

Results of Simple Linear Regression for OPM: Non Financial Service Industry

Independent Variable	Indicators	R^2	Intercept	Slope	t-Statistic	p-value
Size	LnS	0.030	-8.973	1.386	1.548	0.126
	LnTA	0.083	-30.525	2.409	2.634**	0.010
Leverage	LTDTAR	0.003	19.599	-5.312	-0.471	0.639
	TDTAR	0.066	29.321	-24.104	-2.336**	0.022
Working Capital Policy	CLTAR	0.055	25.372	-25.566	-2.120**	0.037
	CATAR	0.003	20.449	-4.059	-0.448	0.655
	CANFAR	0.002	19.434	-0.458	-0.417	0.678
	CLCAR	0.001	19.264	-0.792	-0.200	0.842
	NWCCAR	0.000	18.477	0.760	0.193	0.848
Liquidity	ITCAR	0.029	21.254	-32.693	-1.527	0.131
	RTCAR	0.156	37.904	-38.729	-3.778*	0.000
	CBBTCAR	0.236	6.649	59.009	4.873*	0.000
	PETCAR	0.031	15.394	39.669	1.570	0.120
	LATCAR	0.001	18.314	4.377	0.209	0.835
	MSTCAR	0.000	18.576	1.380	0.066	0.947
	CR	0.004	16.994	0.745	0.534	0.595
	QR	0.033	13.881	2.274	1.613	0.111
	ALR	0.174	11.600	10.065	4.028*	0.000
Efficiency	TATR	0.108	26.733	-9.878	-3.047*	0.003
	CATR	0.029	21.872	-1.430	-1.510	0.135
	WCTR	0.001	18.605	0.020	0.216	0.829
	ITR	0.021	16.662	4.701E-5	1.229	0.223
	IHP	0.056	21.601	-0.192	-2.138**	0.036
	RTR	0.000	18.343	0.056	0.178	0.859
	CBTR	0.070	22.551	-0.177	-2.394**	0.019
	ACP	0.006	20.210	-0.012	-0.707	0.482
	CTR	0.009	18.379	0.005	0.822	0.414
	APP	0.023	20.384	-0.032	-1.352	0.180
	OC	0.013	20.894	-0.015	-0.997	0.322
	NTC	0.001	19.170	-0.005	-0.222	0.825

Critical Values of "t"

Degrees of Freedom	Probability (Alpha)	Table Value – t
77	0.01	2.660
77	0.05	2.000

* Results significant at 1% level of significance ** Results significant at 5% level of significance

Efficiency ratios TATR, CBTR and IHP are observed to have significant negative impact on OPM. The increase in TATR leads to decline in OPM which is an unusual finding. Further, rise in CBTR also leads to decline in OPM. However, low cash balances for a given level of sales would result to high CBTR and thus it is concluded that higher liquidity leads to higher profitability and is in line with the results of CBBTCAR and ALR.

In addition a decline in IHP results to rise in OPM. Thus, the results point out towards the fact that the faster the conversion of inventories to sales, the lower is the investment required in the inventories and higher are the profits and therefore the firms in Non Financial Service Industry should make efforts to reduce IHP to earn more profits.

B. Simple Linear Regressions for NPM

From the perusal of Table 7.5, it is observed that only 10 variables of the selected 30 have significant impact on NPM of which results of 7 ratios *viz,* LnTA, TDTAR, RTCAR, CBBTCAR, ALR, IHP and CBTR are common with OPM and hence the explanation for these thereat holds good for NPM also.

Size measured in terms of LnS also has a significant positive impact on NPM indicating that as the total assets base of firms in Non Financial Service Industry increases, the NPM is likely to improve. ***Liquidity measured in terms of QR*** also has a positive impact on NPM and is an important determinant of NPM as it explains the highest variation amongst all the significant variables, *i.e.,* 27.6%. Further ***Efficiency measured in terms of APP*** has a negative impact on NPM indicating that as the length of APP increases NPM declines.

C. Simple Linear Regressions for ROTA

From the perusal of Table 7.6 it is observed that 13 ratios covering all the broad groups have a significant impact on ROTA. Both the ***indicators of firm size*** have positive impact on ROTA indicating that firms with higher investments in total assets as well as high turnover are earning higher return on total assets in the Non Financial Service Industry. Further, LnS explains the highest variation in ROTA, *i.e.,* 24.7% amongst all the significant ratios and thus is an important determinant of ROTA.

Both the indicators of Leverage have negative impact on indicating that as the utilization of debt increases ROTA decreases. ***Working Capital Policy measured in terms of CATAR*** has a positive impact on ROTA indicating that with increased investments in CA in proportion to total assets ROTA improves. Further, ***CLCAR*** has a negative impact on ROTA indicating that as the proportion of CL to CA increases, there is decline in ROTA. ***Further both, ITCAR*** and ***IHP*** have negative impact on ROTA indicating that as the investment in inventories increase and with increased holding of inventories, ROTA declines. ***CBBTCAR and QR*** have positive impact on ROTA indicating that with increase in liquidity, profitability improves. The negative impact of ***OC*** indicates that as the length of OC declines, ROTA improves. Further

CTR and ***TATR*** have positive impact on ROTA. The results indicate that with rise in TATR and CTR, ROTA is likely to increase. Thus with improved efficiency in total asset utilization as well as timely payments of dues, the firms in Non Financial Service Industry can improve their ROTA.

TABLE – 7.5

Results of Simple Linear Regression for NPM: Non Financial Service Industry

Independent Variable	Indicators	R^2	Intercept	Slope	t-Statistic	p-value
Size	LnS	0.072	-25.469	1.780	2.438**	0.017
	LnTA	0.092	-33.329	2.124	2.799*	0.006
Leverage	LTDTAR	0.025	12.339	-12.998	-1.396	0.167
	TDTAR	0.213	25.981	-36.038	-4.561*	0.000
Working Capital Policy	CLTAR	0.033	14.345	-16.400	-1.612	0.111
	CATAR	0.032	4.798	11.875	1.596	0.114
	CANFAR	0.014	8.428	0.950	1.044	0.300
	CLCAR	0.048	14.900	-6.353	-1.967	0.053
	NWCCAR	0.048	8.529	6.331	1.971	0.052
Liquidity	ITCAR	0.031	12.248	-27.831	-1.559	0.123
	RTCAR	0.148	25.648	-31.412	-3.655*	0.000
	CBBTCAR	0.201	0.785	45.465	4.402*	0.000
	PETCAR	0.010	8.521	18.439	0.865	0.390
	LATCAR	0.000	9.916	1.543	0.088	0.930
	MSTCAR	0.015	8.926	18.734	1.086	0.281
	CRS	0.022	6.645	1.519	1.316	0.192
	QR	0.276	2.630	10.564	5.412*	0.000
	ALR	0.127	2.187	3.736	3.344*	0.001
Efficiency	TATR	0.017	12.706	-3.264	-1.150	0.254
	CATR	0.022	12.407	-1.054	-1.330	0.187
	WCTR	0.001	9.986	0.019	0.249	0.804
	ITR	0.041	8.463	8.024E-5	1.735	0.087
	IHP	0.067	12.719	-0.175	-2.348**	0.021
	RTR	0.000	9.776	0.045	0.177	0.860
	ACP	0.010	11.625	-0.012	-0.868	0.388
	CBTR	0.063	13.090	-0.140	-2.255**	0.027
	CTR	0.024	9.653	0.007	1.369	0.175
	APP	0.050	12.162	-0.039	-2.024**	0.046
	OC	0.018	12.238	-0.015	-1.179	0.242
	NTC	0.000	9.765	0.003	0.142	0.887

Critical Values of "t"

Degrees of Freedom	Probability (Alpha)	Table Value – t
77	0.01	2.660
77	0.05	2.000

* Results significant at 1% level of significance ** Results significant at 5% level of significance

TABLE – 7.6

Results of Simple Linear Regression for ROTA: Non Financial Service Industry

Independent Variable	Indicators	R^2	Intercept	Slope	t-Statistic	p-value
Size	LnS	0.247	-25.557	1.881	5.024*	0.000
	LnTA	0.166	-21.138	1.621	3.915*	0.000
Leverage	LTDTAR	0.116	14.797	-16.062	-3.184*	0.002
	TDTAR	0.125	18.923	-15.754	-3.324	0.001
Working Capital Policy	CLTAR	0.000	12.034	-0.308	-0.052	0.958
	CATAR	0.102	6.630	12.065	2.959*	0.004
	CANFAR	0.035	10.494	0.861	1.682	0.097
	CLCAR	0.050	14.774	-3.686	-2.007**	0.048
	NWCCAR	0.048	11.096	3.601	1.970	0.052
Liquidity	ITCAR	0.053	13.605	-20.801	-2.071**	0.042
	RTCAR	0.046	16.925	-10.004	-1.933	0.057
	CBBTCAR	0.137	7.605	21.364	3.497*	0.001
	PETCAR	0.003	11.471	5.865	0.482	0.631
	LATCAR	0.009	12.614	-8.392	-0.847	0.400
	MSTCAR	0.014	11.353	10.113	1.029	0.307
	CR	0.017	10.271	0.754	1.144	0.256
	QR	0.103	9.377	3.674	2.972*	0.004
	ALR	0.048	9.213	1.304	1.964	0.053
Efficiency	TATR	0.072	8.827	3.826	2.436**	0.017
	CATR	0.001	11.736	0.097	0.212	0.0832
	WCTR	0.004	12.022	-0.026	-0.582	0.562
	ITR	0.041	8.463	6.024E-5	1.735	0.087
	IHP	0.108	13.897	-0.127	-3.059*	0.003
	RTR	0.020	10.911	0.181	1.255	0.213
	ACP	0.033	13.621	-0.013	-1.622	0.109
	CBTR	0.030	13.175	-0.055	-1.539	0.128
	CTR	0.141	11.421	0.010	3.553*	0.001
	APP	0.022	12.751	-0.015	-1.314	0.193
	OC	0.049	14.036	-0.014	-1.992**	0.050
	NTC	0.041	13.904	-0.021	-1.824	0.072

Critical Values of "t"

Degrees of Freedom	Probability (Alpha)	Table Value – t
77	0.01	2.660
77	0.05	2.000

* Results significant at 1% level of significance ** Results significant at 5% level of significance

D. Simple Linear Regressions for EAT/TA

From the perusal of Table 7.7 it is observed that only 7 variables significantly affect EAT/TA of which 4 ratios *viz,* LTDTAR, TDTAR, CATAR and CTR are common with ROTA and hence, the interpretations thereat holds good for EAT/TA too.

CANFAR representing working capital policy is also observed to positively affect EAT/TA indicating that by increasing the proportion of CA to Net fixed assets

EAT/TA improves. Further, ***RTCAR*** has a negative impact indicating that with decline in investment in receivables the EAT/TA is likely to improve. ***ITR*** has a positive impact on EAT/TA indicating that with increased efficiency in inventory management EAT/TA increases.

TABLE – 7.7

Results of Simple Linear Regression for EAT/TA: Non Financial Service Industry

Independent Variable	Indicators	R^2	Intercept	Slope	t-Statistic	p-value
Size	LnS	0.019	-2.032	0.429	0.666	0.512
	LnTA	0.000	4.930	0.065	0.095	0.925
Leverage	LTDTAR	0.317	9.830	-15.032	-3.268*	0.003
	TDTAR	0.247	12.834	-14.980	-2.746*	0.012
Working Capital Policy	CLTAR	0.053	3.955	11.413	1.130	0.270
	CATAR	0.211	2.484	12.211	2.478**	0.021
	CANFAR	0.085	5.655	1.227	2.671*	0.009
	CLCAR	0.021	7.514	-1.287	-0.706	0.488
	NWCCAR	0.021	6.227	1.287	0.706	0.488
Liquidity	ITCAR	0.000	6.382	-1.386	-0.099	0.922
	RTCAR	0.332	14.356	-17.556	-3.380*	0.003
	CBBTCAR	0.131	3.110	13.600	1.864	0.075
	PETCAR	0.023	5.277	12.068	0.732	0.472
	LATCAR	0.060	5.528	12.672	1.209	0.239
	MSTCAR	0.022	5.847	7.273	0.717	0.481
	CR	0.085	3.481	1.502	1.457	0.159
	QR	0.089	3.628	1.518	1.495	0.149
	ALR	0.142	4.459	2.565	1.954	0.063
Efficiency	TATR	0.032	5.217	1.940	0.878	0.389
	CATR	0.001	6.389	-0.050	-0.136	0.893
	WCTR	0.000	6.247	-0.002	-0.063	0.951
	ITR	0.197	7.045	8.183E-5	4.138*	0.000
	IHP	0.058	7.943	-0.112	-1.189	0.247
	RTR	0.015	5.690	0.080	0.596	0.557
	ACP	0.018	7.336	-0.009	-0.652	0.521
	CBTR	0.046	9.106	-0.063	-1.913	0.059
	CTR	0159	7.214	0.010	3.814*	0.000
	APP	0.019	8.419	-0.013	-1.223	0.225
	OC	0.022	9.022	-0.009	-1.318	0.192
	NTC	0.009	8.591	-0.009	-0.855	0.395

Critical Values of "t" and "F"

Degrees of Freedom	Probability (Alpha)	Table Value – t
77	0.01	2.660
77	0.05	2.000

* Results significant at 1% level of significance ** Results significant at 5% level of significance

E. Simple Linear Regressions for RONW

From the perusal of Table 7.8 it is observed that LEV, WCP and Liquidity have no significant impact on RONW. Of the 30 explanatory variables, only 4 are observed to significantly affect RONW and includes 2 variables related to size, *i.e., **LnS, LnTA,*** and remaining 2 relate to inventory, *i.e., **IHP and ITR*** which are common with ROTA and EAT/TA and hence the interpretations thereat holds good here also.

TABLE – 7.8

Results of Simple Linear Regression for RONW: Non Financial Service Industry

Independent Variable	Indicators	R^2	Intercept	Slope	t-Statistic	p-value
Size	LnS	0.100	-25.781	2.052	2.918*	0.005
	LnTA	0.070	-21.816	1.810	2.410**	0.018
Leverage	LTDTAR	0.040	17.996	-16.112	-1.783	0.078
	TDTAR	0.001	16.281	-2.570	-0.295	0.769
Working Capital Policy	CLTAR	0.000	15.211	-0.257	-0.025	0.980
	CATAR	0.018	11.354	8.589	1.172	0.245
	CANFAR	0.009	13.913	0.726	0.814	0.418
	CLCAR	0.082	13.355	2.338	0.725	0.471
	NWCCAR	0.007	15.709	-2.371	-0.739	0.462
Liquidity	ITCAR	-0.004	16.309	-14.675	-0.831	0.408
	RTCAR	0.001	16.058	-1.840	-0.202	0.840
	CBBTCAR	0.015	12.667	12.170	1.085	0.281
	PETCAR	0.001	14.657	5.917	0.283	0.778
	LATCAR	0.013	16.487	-17.068	-1.008	0.318
	MSTCAR	0.001	14.830	5.284	0.311	0.757
	CR	0.001	14.292	0.381	0.334	0.739
	QR	0.005	13.549	0.759	0.651	0.517
	ALR	0.010	13.762	1.970	0.883	0.380
Efficiency	TATR	0.040	11.129	4.911	1.790	0.077
	CATR	0.012	13.449	0.754	0.968	0.336
	WCTR	0.005	15.266	-0.046	-0.604	0.548
	ITR	0.057	14.073	8.304E-5	2.052**	0.044
	IHP	0.110	18.511	-0.220	-3.089*	0.003
	RTR	0.017	13.470	0.291	1.171	0.245
	ACP	0.024	17.604	-0.019	-1.386	0.170
	CBTR	0.000	15.455	-0.007	-0.109	0.914
	CTR	0.045	14.627	0.010	1.901	0.061
	APP	0.003	13.952	0.021	0.255	0.801
	OC	0.039	18.348	-0.022	-1.775	0.080
	NTC	0.054	18.882	-0.046	-1.141	0.265

Critical Values of "t" and "F"

Degrees of Freedom	Probability (Alpha)	Table Value – t
77	0.01	2.660
77	0.05	2.000

* Results significant at 1% level of significance ** Results significant at 5% level of significance

7.4.2 Results of Stepwise Regression

In para 7.4.1, an attempt was made to identify the independent variables affecting to various measures of profitability, when independent variables are taken individually. In this para an attempt is made to identify the group of variables jointly affecting the selected measures of profitability. For this purpose, the grouping could have been carried out one by one. However, to carry out the process in more systematic manner, the use of stepwise regression is made and the process is carried out through SPSS. For all the selected five measures of profitability *i.e.,* OPM, NPM, ROTA, EAT/TA and RONW, the results of regressions are presented in one single table, *i.e.,* Table 7.9 instead of five tables to have a clear and comparative view of results. Moreover, in this table only the final model which explained the highest variation in a particular measure of profitability is reported for preciseness and lucidity. The results of Stepwise Regressions are presented in Table 7.9 for all the profitability measures. The same is followed for the stepwise regression carried to examine the impact of WCM, LEV and Size on PROF for industry-wise classification.

From the perusal of Table 7.9, it is observed that ***CBBTCAR and TATR*** together explain 27.6% variation ***in*** **OPM**. However, in case of **NPM**, four variables *viz,* ***ALR, LnTA, IHP and RTCAR*** explain 40% variation. When, **ROTA** is taken as the measure of profitability, the explanatory variables change with 6 variables, *viz,* ***LnS, TDTAR, CTR, NTC and LATCAR*** explaining 44.9% variation. When EAT/TA is taken as the measure of profitability, the first three variables as in ROTA remains whereas the last two are replaced. Thus, ***LnS, TDTAR, CTR, TATR, ALR and NWCCAR*** jointly explain 53.9% variation in **EAT/TA.** In case of **RONW,** ***IHP and LnS*** explains 14.6% variation. Further, the VIF Statistics also indicates no multicollinearity amongst the independent variables.

Size measured in terms of LnTA positively influences NPM thereby indicating that with increased investments in Total assets which leads to expansion of organization the profitability of the firms in Non Financial Service Industry increases. It supports the premise that "large organizations enjoy the benefits of the economies of scale"[4]. Thus firms with large size in Non Financial Service Industry are more profitable which is consistent with the findings of Afza and Nazir[5], Vahid *et al*[6], Al-Mwalla[7], and Hayat and Bhatti[8], Nassirzadeh and Rostami[9] but inconsistent with the results of Falope and Ajilore[10] and Khan *et al*[11].

Size measured in terms of LnS positively influences three measures of profitability, i.e., ROTA, EAT/TA and RONW and indicates that with increase in sales turnover the profitability of the firms in Non Financial Service Industry increases which is a very obvious phenomenon too which is consistent with the findings of Wang[12], Deloof[13], Padachi[14], Tereul and Solano[15], and many more[16-25] whereas inconsistent with the results of Enqvist *et al*[26].

It is observed that ***Leverage measured in terms of TDTAR has a significant negative impact on two measures of profitability*** *i.e.,* **ROTA and EAT/TA** which indicates that as the leverage in terms of Total Debt increases, ROTA and EAT/TA declines thereby supporting the Pecking Order Hypothesis of Myers and Majluf[27] and is consistent with the findings of Rajan and Zingales[28], Ogundipe[33], Pouraghajan and Emamgholipourarchi[34], Bagchi and Khamrui[35], Yucel and Kurt[36] and Bieniasz and Golas[37], and many more[5,6,8,9,13,16,18,19,20,22,23,24,26,29,30,31,32].

Working Capital Policy measured in terms of NWCCAR is observed to have significant negative impact on EAT/TA and indicates that with increase in NWCCAR, the EAT/TA would decline and *vice-versa.* A high NWCCAR is indicative of conservative working capital financing policy pursued by a firm and thus it can be concluded that there is a negative impact of conservative working capital financing policy on the post tax returns measured in terms of Total assets of firms in Non Financial Service Industry. The reason can be understood as "Long term interest rates normally exceeds short-term rates because of reduced flexibility of long term borrowing relative to short-term borrowing. In fact, the effective cost of long term debt may be higher than the cost of short-term debt, even when short-term interest rates are equal to or greater than long term rates[38]". Further, "the justification of higher cost of long-term financing can be found in the **liquidity preference theory** which says that since lenders are risk averse and risk generally increases with the length of lending time (because it is more difficult to forecast the more distant future), most lenders would prefer to make short-term loans. The only way to induce these lenders to lend for longer periods is to offer them higher rates of interest[39]". Thus the results indicate that pursuing an aggressive working capital financing policy which is a risky proposition is profitable for firms in Non Financial Service Industry and establishes the positive risk-return relationship in WCM of the Non Financial Service Industry. The negative influence of conservative working capital financing policy on profitability is inconsistent with the results of Afza and Nazir[5], Vahid *et al*[6], Al Mwalla[7] Azhar and Saad[30], Al Shubiri[40]and Al-Shubiri[41].

Liquidity represented by ***CBBTCAR has a positive impact on OPM*** which indicates that as cash balances increase there is increase in OPM which is not consistent with the traditionally accepted norms as cash is considered to be the most unproductive asset. However, this result can be justified on the grounds that the ultimate aim of any entity is to convert inventories into sales and earn cashflows. The conversion of inventories into sales would lead to not only increase in profits but also increase in cashflows.

Liquidity represented by ***RTCAR has a negative impact on NPM*** which indicates that increased blockage of funds in receivables will lead to decline in NPM. It is justified as increased receivables do increase sales but simultaneously increases the probability of bad debts leading to increased credit risk and loss of revenue. Thus, increased investments in receivables indicate a liberal credit policy as well as blocked liquidity. Hence, the firms in Non Financial Service Industry can increase their operational earnings by reducing blockage of funds in receivables and pursuing a reasonable credit policy.

Liquidity represented by ***LATCAR has a negative impact on ROTA*** which indicates that as the proportion of loans and advances increase, it leads to decline in profitability. It is also very obvious as the money blocked in loans and advances is unproductive and which can be put to productive use by reducing blockage of funds in loans and advances and hence, the profitable firms in Non Financial Service Industry pursue a policy of maintaining lower level of loans and advances in the current assets structure.

Liquidity represented by ***ALR has a positive impact on NPM and EAT/TA.*** ALR is an indicator of absolute liquidity and its positive influence on profitability indicates that as the cash balances in proportion to CL increase the profitability also increases. This is a very logical phenomenon, *i.e.,* as the inventory and receivables gets converted into cash balances, the profitability is bound to increase. Further, the positive influence of liquidity on profitability indicates that efficient liquidity management results to increase in profitability and are consistent with the findings of Khan and Sajjad[42].

Efficiency represented by ***IHP has a negative impact on NPM and RONW*** and indicates that high IHP will result to lower profitability and *vice-versa*. Low IHP indicates lower investment in inventory, leading to higher liquidity and thus higher profitability. Thus it is concluded that by shortening the IHP the firms in Non Financial Service Industry can create value for their shareholders by increasing their post tax returns and supports the findings of Khan *et al*[11] and Quayyum[43].

Efficiency represented by ***NTC has a negative impact on ROTA*** which indicates that as the length of NTC increases it will have a declining effect on ROTA. Thus, firms in Non Financial Service Industry can enhance their ROTA by reducing the length of NTC and support the findings of Kaddumi and Ramadan[20].

TABLE – 7.9

Results of Stepwise Regression for all Profitability Measures: Non Financial Service Industry

Independent Variable	R^2	Adj. R^2	Intercept	Slope	t-Statistic	p-value	F-Statistic	VIF Statistics
Dependent Variable – OPM								
CBBTCAR	0.295	0.276	13.856	53.491	4.491*	0.000	15.879* (0.000)	1.035
TATR				-7.443	-2.522**	0.014		1.035
Dependent Variable – NPM								
ALR	0.431	0.400	-17.481	8.537	4.263*	0.000	13.999* (0.000)	1.287
LnTA				1.582	2.471**	0.016		1.090
IHP				-0.158	-2.510**	0.014		1.121
RTCAR				-16.795	-2.004**	0.049		1.369
Dependent Variable – ROTA								
LnS	0.484	0.449	-9.542	1.595	4.858*	0.000	13.718* (0.000)	1.066
TDTAR				-16.379	-4.165**	0.000		1.107
CTR				0.006	2.498**	0.015		1.086
NTC				-0.022	-2.522**	0.014		1.074
LATCAR				-16.210	-2.184**	0.032		1.022
Dependent Variable – EAT/TA								
LnS	0.574	0.539	-20.948	1.582	5.322*	0.000	16.181* (0.000)	1.229
TDTAR				-16.158	-3.699*	0.000		1.923
CTR				0.004	2.005**	0.049		1.150
TATR				3.448	3.160*	0.002		1.161
ALR				3.047	2.714*	0.008		1.916
NWCCAR				-3.709	-2.337**	0.022		1.857
Dependent Variable – RONW: Model – 1								
IHP	0.168	0.146	-14.344	-0.179	-2.504**	0.014	7.685* (0.001)	1.065
LnS				1.616	2.301**	0.024		1.065

Critical Values of "t"

Degrees of Freedom	Probability (Alpha)	Table Value – t
60 to 120	0.01	2.358
60 to 120	0.05	1.658

Critical Values of "F"

Degrees of Freedom	N	Probability (Alpha)	Table Value – F
1	77	0.01	7.08
2	76	0.01	4.98
3	75	0.01	4.13
4	74	0.01	3.65
5	73	0.01	3.34
6	72	0.01	3.12

* Results significant at 1% level of significance ** Results significant at 5% level of significance

Efficiency represented by ***TATR has a negative impact on OPM whereas a positive impact on EAT/TA***. The negative impact of TATR on OPM is a very unusual finding.

However its positive impact on EAT/TA indicates that as the total asset utilization efficiency improves the post tax returns on total assets of firms in Non Financial Service Industry also improves.

Efficiency represented by ***CTR is observed to influence two measures of profitability, i.e., ROTA and EAT/TA positively*** indicating that higher the CTR, higher the profitability and *vice-versa.* High CTR indicates that the payables of the firms in Non Financial Service Industry are settled frequently and as the frequency increases the profitability increases. The possible reason for the same can be that as the company pays off their payables regularly and timely, the reputation of the firm is maintained in the market and ensures timely and uninterrupted supplies which further helps in the process of uninterrupted provision of services to the customers. Thus from these results it can be inferred that profitable firms settle their dues timely.

7.4.3 Summary of Results of Simple and Stepwise Regressions

A summary of the results of Simple and Stepwise Regressions is prepared and presented in Table 7.10 to have a comparative view of the significant indicators of the explanatory variables. Thus, on examining the results of Simple and Stepwise Regressions in the Non Financial Service Industry, the following observations can be made:

- Profitability measured in terms of OPM is affected by CBBTCAR (Liquidity) and TATR (Efficiency). However LnTA, TDTAR, CLTAR, RTCAR, ALR, IHP and CBTR which were observed to be significant in Simple Linear Regression are eliminated in Stepwise Regression.
- Profitability measured in terms of NPM is affected by LnTA (Size), ALR, RTCAR and IHP (Liquidity). However LnS, TDTAR, CBBTCAR, QR, APP and CBTR which were observed to be significant in Simple Linear Regression are eliminated in Stepwise Regression.
- Profitability measured in terms of ROTA is affected by LnS (Size), TDTAR (Leverage), CTR (Efficiency), NTC and LATCAR (Liquidity). However LnTA (Size), LTDTAR (Leverage), CATAR, CLCAR (Working Capital Policy), ITCAR, CBBTCAR, QR, IHP, OC (Liquidity) and TATR (Efficiency) which were observed to be significant in Simple Linear Regression are eliminated whereas NTC and LATCAR which were not significant in Simple Linear Regression are included in the Stepwise Regression.
- Profitability measured in terms of EAT/TA is affected by LnS, TDTAR, CTR, TATR, ALR and NWCCAR. However LTDTAR (Leverage), CATAR, CANFAR

- (Working Capital Policy), RTCAR (Liquidity) and ITR (Efficiency) which were observed to be significant in Simple Linear Regression are eliminated whereas LnS, TATR, ALR and NWCCAR which were not significant are observed to be significant in Stepwise Regression.
- Profitability measured in terms of RONW is affected by IHP and LnS. However LnTA and ITR which were observed to be significant in Simple Linear Regression are eliminated in Stepwise Regression.

TABLE 7.10

Summary Table for Results of Simple and Stepwise Linear Regressions: Non Financial Service Industry (All 79 Companies)

Sr. No.	Independent Variables	Indicators	Regression Model	Dependent Variable: Profitability Ratios				
				OPM	NPM	ROTA	EAT/TA	RONW
1	Size	LnS	Simple	---	+ve**	+ve*	---	+ve*
			Stepwise	---	---	+ve*	+ve*	+ve**
		LnTA	Simple	+ve*	+ve*	+ve*	---	+ve**
			Stepwise	---	+ve**	---	---	---
2	Leverage	LTDTAR	Simple	---	---	–ve*	–ve*	---
			Stepwise	---	---	---	---	---
		TDTAR	Simple	–ve**	–ve*	–ve*	–ve*	---
			Stepwise	---	---	–ve**	–ve*	---
3	Working Capital Policy	CLTAR	Simple	–ve**	---	---	---	---
			Stepwise	---	---	---	---	---
		CATAR	Simple	---	---	+ve*	+ve**	---
			Stepwise	---	---	---	---	---
		CANFAR	Simple	---	---	---	+ve*	---
			Stepwise	---	---	---	---	---
		CLCAR	Simple	---	---	–ve**	---	---
			Stepwise	---	---	---	---	---
		NWCCAR	Simple	---	---	---	---	---
			Stepwise	---	---	---	–ve**	---
4	Liquidity	ITCAR	Simple	---	---	–ve**	---	---
			Stepwise	---	---	---	---	---
		RTCAR	Simple	–ve*	–ve*	---	–ve*	---
			Stepwise	---	–ve**	---	---	---
		CBBTCAR	Simple	+ve*	+ve*	+ve*	---	---
			Stepwise	+ve*	---	---	---	---
		PETCAR	Simple	---	---	---	---	---
			Stepwise	---	---	---	---	---
		LATCAR	Simple	---	---	---	---	---
			Stepwise	---	---	–ve**	---	---
		MSTCAR	Simple	---	---	---	---	---
			Stepwise	---	---	---	---	---
		CR	Simple	---	---	---	---	---
			Stepwise	---	---	---	---	---
		QR	Simple	---	+ve*	+ve*	---	---
			Stepwise	---	---	---	---	---
		ALR	Simple	+ve*	+ve*	---	---	---
			Stepwise	---	+ve*	---	+ve*	---

TABLE 7.10 **(Continued...)**

Summary Table for Results of Simple and Stepwise Linear Regressions: Non Financial Service Industry (All 79 Companies)

Sr. No.	Independent Variables	Indicators	Regression Model	Dependent Variable: Profitability Ratios				
				OPM	NPM	ROTA	EAT/TA	RONW
5	Efficiency	TATR	Simple	–ve*	---	+ve**	---	---
			Stepwise	–ve**	---	---	+ve*	---
		CATR	Simple	---	---	---	---	---
			Stepwise	---	---	---	---	---
		WCTR	Simple	---	---	---	---	---
			Stepwise	---	---	---	---	---
		ITR	Simple	---	---	---	+ve*	+ve**
			Stepwise	---	---	---	---	---
		IHP	Simple	–ve**	–ve**	–ve*	---	–ve*
			Stepwise	---	–ve**	---	---	–ve**
		RTR	Simple	---	---	---	---	---
			Stepwise	---	---	---	---	---
		ACP	Simple	---	---	---	---	---
			Stepwise	---	---	---	---	---
		CBTR	Simple	–ve**	–ve**	---	---	---
			Stepwise	---	---	---	---	---
		CTR	Simple	---	---	+ve*	+ve*	---
			Stepwise	---	---	+ve**	---	---
		APP	Simple	---	–ve**	---	---	---
			Stepwise	---	---	---	---	---
		OC	Simple	---	---	–ve**	---	---
			Stepwise	---	---	---	---	---
		NTC	Simple	---	---	---	---	---
			Stepwise	---	---	–ve**	---	---

+ve indicates positive impact; **–ve** indicates negative impact
---- indicates Not Significant
* Indicates significance at 1% level ** Indicates significance at 5% level

SECTION – V

In this section firm level analysis based on industry wise classification is carried out to identify the indicators of WCM, LEV and Size that affects the profitability of firms in the selected three major industries, *viz,* Hotels and Restaurant Industry, ITes Industry and Transport Services Industry and the results are presented in the same order.

7.5 Impact of WCM, LEV and Size on Profitability in Hotels and Restaurant Industry (25 Companies)

The results of Simple Linear Regressions and Stepwise Regression for Hotels and Restaurant Industry are presented and analyzed in this section. The results of Simple Linear Regressions for each measure of profitability are presented separately in Tables

7.18 to 7.22. Also the interpretation is made first for OPM followed by NPM, ROTA, EAT/TA and RONW. After that, the results of Stepwise Regressions are presented in Table 7.23. Further a comparative summary of results of Simple as well as Stepwise Regressions is presented in Table 7.24 after discussing the result of Stepwise Regressions.

Three firms belonging to Hotels and Restaurant Industry had zero inventories throughout the study period due to which ITR was as high as infinity which vitiates the results of entire industry. Therefore, simple linear regression on ITR is conducted for 22 of the 25 firms in order to understand if, at all it has a significant impact on any of the profitability measures. However, in order to maintain consistency ITR is not entered in the model for Stepwise Regression. Further, due to zero inventories, IHP of these three firms is considered to be zero. Thus, for these companies OC = ACP as IHP is zero and therefore regressions for IHP, OC and NTC (simple and stepwise) were carried out as observations were available for all 25 companies.

7.5.1 Results of Simple Linear Regressions on OPM, NPM, ROTA, EAT/TA and RONW

A. Simple Linear Regressions for OPM as well as NPM

Table 7.11 and Table 7.12 details the result of Simple Linear Regression for OPM and NPM respectively. Since, the results for both the measures of profitability are similar the results are interpreted for both of them together.

From the perusal of Tables 7.11 and 7.12, it is observed that none of the indicators of Firm size and LEV have significant impact on OPM as well as NPM. Further it is observed that out of 30 explanatory variables, only 6 in case of OPM and 7 in case of NPM are found to be significantly explaining variations in these measures.

From the perusal of Table 7.11 it is observed that none of the indicators of WCP have significant impact on OPM. ***However, CATAR*** has a significant positive impact on NPM which indicates that as the CATAR increases the profitability in terms of NPM increases. The increase in CATAR is indicative of conservative working capital investment policy thereby indicating its positive influence on NPM of firms in Hotels and Restaurant Industry and that managers of firms in the industry should maintain sufficient levels of current assets in the total assets structure to improve NPM.

Liquidity measured in terms of RTCAR, CBBTCAR, CR, QR and ALR have significant affect on OPM as well as NPM.

Liquidity measured in terms of RTCAR has a negative impact on OPM as well as NPM which indicates that as the investment in Receivables in proportion to Current

Assets increase there is a decline in OPM and NPM. Thus, the managers of firms in Hotels and Restaurant Industry should take measures to reduce its blocked investments in Receivables by making efforts for prompt collections to lower the loss of revenues due to bad debts which would lead to efficient receivables management as well as improvement in operational profitability.

TABLE 7.11

Results of Simple Linear Regression for OPM: Hotels and Restaurant Industry

Independent Variable	Indicators	R^2	Intercept	Slope	t-Statistic	p-value
Size	LnS	0.001	17.057	0.373	0.135	0.894
	LnTA	0.007	-0.032	1.201	0.413	0.684
Leverage	LTDTAR	0.110	33.187	-37.543	-1.683	0.106
	TDTAR	0.116	43.392	-43.564	-1.735	0.096
Working Capital Policy	CLTAR	0.003	21.891	11.747	0.267	0.792
	CATAR	0.104	12.988	36.501	1.637	0.115
	CANFAR	0.052	20.248	4.062	1.120	0.274
	CLCAR	0.011	28.164	-3.989	-0.512	0.613
	NWCCAR	0.011	24.174	3.989	0.512	0.613
Liquidity	ITCAR	0.006	26.335	-22.416	-0.377	0.709
	RTCAR	0.285	56.169	-69.146	-3.030*	0.006
	CBBTCAR	0.248	5.891	79.441	2.755*	0.011
	PETCAR	0.007	21.882	29.327	0.415	0.682
	LATCAR	0.049	20.444	48.528	1.084	0.290
	MSTCAR	0.000	24.182	1.334	0.031	0.976
	CR	0.184	6.859	9.421	2.280**	0.032
	QR	0.199	7.534	9.668	2.392**	0.025
	ALR	0.323	12.772	16.418	3.313*	0.003
Efficiency	TATR	0.038	29.043	-8.961	-0.957	0.348
	CATR	0.053	28.953	-1.734	-1.137	0.267
	WCTR	0.034	24.678	0.147	0.893	0.381
	ITR#	0.274	28.731	-0.191	-2.748**	0.012
	IHP	0.018	28.164	-0.302	-0.657	0.518
	RTR	0.009	26.125	-0.266	-0.464	0.647
	ACP	0.005	21.764	0.021	0.351	0.729
	CBTR	0.046	27.363	-0.137	-1.053	0.303
	CTR	0.005	25.527	-0.079	-0.334	0.741
	APP	0.032	30.037	-0.107	-0.874	0.391
	OC	0.003	22.060	0.016	0.274	0.787
	NTC	0.023	20.610	0.046	0.733	0.471

Critical Values of "t"

Degrees of Freedom	Probability (Alpha)	Table Value – t
23	0.01	2.807
23	0.05	2.069
#20	0.01/0.05	2.086/2.845

* Results significant at 1% level of significance ** Results significant at 5% level of significance

TABLE 7.12

Results of Simple Linear Regression for NPM: Hotels and Restaurant Industry

Independent Variable	Indicators	R^2	Intercept	Slope	t-Statistic	p-value
Size	LnS	0.008	-7.400	1.000	0.424	0.676
	LnTA	0.008	-9.195	1.044	0.418	0.680
Leverage	LTDTAR	0.110	33.187	-37.543	-1.683	0.106
	TDTAR	0.116	43.392	-43.564	-1.735	0.096
Working Capital Policy	CLTAR	0.010	8.349	17.720	0.471	0.642
	CATAR	0.168	-0.333	39.681	2.153**	0.042
	CANFAR	0.080	7.649	4.326	1.412	0.171
	CLCAR	0.032	17.546	-5.746	-0.870	0.393
	NWCCAR	0.032	11.799	5.746	0.870	0.393
Liquidity	ITCAR	0.000	12.031	-1.218	-0.024	0.981
	RTCAR	0.351	42.287	-65.802	-3.530*	0.002
	CBBTCAR	0.190	-1.867	59.628	2.324**	0.029
	PETCAR	0.008	9.812	26.015	0.430	0.671
	LATCAR	0.056	8.403	44.738	1.170	0.254
	MSTCAR	0.012	10.804	19.950	0.537	0.596
	CR	0.270	-6.133	9.775	2.916*	0.008
	QR	0.275	-4.928	9.738	2.953*	0.007
	ALR	0.356	1.584	14.773	3.564*	0.002
Efficiency	TATR	0.004	13.294	-2.576	-0.315	0.755
	CATR	0.025	14.699	-1.027	-0.774	0.447
	WCTR	0.019	12.188	0.094	0.663	0.514
	ITR	0.306	17.529	-0.197	-2.967*	0.008
	IHP	0.018	15.192	-0.253	-0.642	0.527
	RTR#	0.000	12.080	-0.023	-0.047	0.963
	ACP	0.004	10.045	0.015	0.307	0.761
	CBTR	0.017	13.529	-0.071	-0.627	0.537
	CTR	0.002	11.194	0.045	0.222	0.827
	APP	0.062	18.787	-0.127	-1.231	0.231
	OC	0.002	10.326	0.012	0.231	0.819
	NTC	0.031	8.254	0.046	0.863	0.397

Critical Values of "t"

Degrees of Freedom	Probability (Alpha)	Table Value – t
23	0.01	2.807
23	0.05	2.069
#20	0.01/0.05	2.086/2.845

* Results significant at 1% level of significance ** Results significant at 5% level of significance

Liquidity measured in terms of CBBTCAR, CR, QR and ALR has positive impact on OPM, NPM and indicates that as the liquidity increases, OPM and NPM improves. Further, ALR is observed to be an important determinant for both OPM and NPM with 32.3% variation in OPM and 35.6% variation in NPM being explained by ALR. Thus, firms in Hotels and Restaurant Industry should strive to maintain sufficient liquidity to improve OPM and NPM.

Current Asset Management Efficiency measured in terms of ITR has a ***negative impact*** on OPM as well as NPM which is an unusual finding indicating that higher ITR will result in decline in OPM and NPM. High ITR has two implications: *i)* Efficient Inventory Management and liquid inventories which is an ideal and good situation, and *ii)* Overtrading situation wherein a given level of sales is supported by very low level of inventory which is situation of concern. Thus, the negative impact of ITR on OPM and NPM is pointing towards the 2nd case where in the firms in Hotels and Restaurant Industry are operating with lower level of inventories which results to lesser sales and therefore lower profitability. Also, as noted by Blinder and Maccini[3], "Inventories can be held for display purposes; as unavoidable "pipeline" inventories; to improve production scheduling; to smooth production in the face of fluctuating sales; to minimize stock-out costs; to speculate on or hedge against price movements; to reduce purchasing costs by buying in quantity; to shorten delivery lags, and so on". Thus, it can be concluded that although being in the Service industry, the Hotels and Restaurant Industry still has to maintain a reasonable level of inventory to provide effective hospitality services which ensures smooth and efficient functioning of the firms in the industry. Also, the reduction in level of inventory beyond a reasonable level would result to decline in OPM and NPM.

B. Simple Linear Regressions for ROTA as well as EAT/TA

Tables 7.13 and 7.14 details the results of Simple Linear Regression for ROTA and EAT/TA respectively. Since, the results for both the measures of profitability are similar; the results are interpreted for both of them together.

From the perusal of Tables 7.13 and 7.14, it is observed that only 4 variables each explain significant variations in ROTA and EAT/TA. Moreover, none of the indicators of ***Size and Current Asset Management Efficiency*** have significant impact on ROTA or EAT/TA.

Further, ***Leverage measured in terms of LTDTAR has a*** significant negative impact on ROTA, EAT/TA which indicates that with increase in use of long term debt there is decline in profitability measured in terms of ROTA as well as EAT/TA. In addition, ***TDTAR*** has a significant negative impact on EAT/TA. From these results it is concluded that utilizing higher long term as well as total debt will hamper the returns on total assets of the firms in Hotels and Restaurant Industry.

TABLE 7.13

Results of Simple Linear Regression for ROTA: Hotels and Restaurant Industry

Independent Variable	Indicators	R^2	Intercept	Slope	t-Statistic	p-value
Size	LnS	0.034	-2.943	0.715	0.904	0.376
	LnTA	0.003	6.284	0.227	0.267	0.792
Leverage	LTDTAR	0.250	14.817	-16.539	-2.768*	0.011
	TDTAR	0.141	17.050	-14.040	-1.945	0.064
Working Capital Policy	CLTAR	0.097	7.015	19.206	1.572	0.130
	CATAR	0.194	6.401	14.515	2.351**	0.028
	CANFAR	0.070	9.525	1.375	1.312	0.203
	CLCAR	0.008	11.863	-1.002	-0.440	0.664
	NWCCAR	0.008	10.862	1.002	0.440	0.664
Liquidity	ITCAR	0.000	10.994	-1.209	-0.070	0.945
	RTCAR	0.323	20.796	-21.480	-3.316*	0.003
	CBBTCAR	0.167	6.488	19.009	2.147**	0.043
	PETCAR	0.048	9.128	21.668	1.074	0.294
	LATCAR	0.042	9.853	13.095	0.999	0.328
	MSTCAR	0.005	10.650	4.155	0.327	0.746
	CR	0.023	9.106	0.962	0.729	0.474
	QR	0.026	9.119	1.019	0.784	0.441
	ALR	0.083	9.189	2.421	1.438	0.164
Efficiency	TATR	0.037	9.506	2.577	0.943	0.356
	CATR	0.000	10.976	-0.035	-0.076	0.940
	WCTR	0.000	10.879	-0.001	-0.021	0.983
	ITR#	0.106	12.265	-0.049	-1.537	0.140
	IHP	0.059	12.999	-0.140	-1.203	0.241
	RTR	0.015	10.189	0.099	0.592	0.560
	ACP	0.041	12.892	-0.017	-0.988	0.333
	CBTR	0.002	11.085	-0.009	-0.231	0.819
	CTR	0.034	11.864	-0.061	-0.898	0.378
	APP	0.001	11.158	-0.005	-0.141	0.889
	OC	0.059	13.653	-0.020	-1.196	0.244
	NTC	0.057	12.603	-0.021	-1.177	0.251

Critical Values of "t"

Degrees of Freedom	Probability (Alpha)	Table Value – t
23	0.01	2.807
23	0.05	2.069
#20	0.01/0.05	2.086/2.845

* Results significant at 1% level of significance ** Results significant at 5% level of significance

Working Capital Policy measured in terms of CATAR has a positive impact on both ROTA and EAT/TA *i.e.,* with rise in CATAR there will be rise in profitability measured in terms of ROTA and EAT/TA. These results are common with NPM and hence the interpretations thereat holds good here also.

The negative impact of RTCAR on ROTA and EAT/TA is common with the results of OPM and NPM and indicates that as the investment in Receivables in proportion to

Current Assets increase there is a decline in profitability. Further, RTCAR explains the highest variation in ROTA (32.3%) and EAT/TA (33.2%) and thus is an important determinant of ROTA and EAT/TA. Thus, firms in the Hotels and Restaurant Industry should take measures to reduce its amount blocked in Receivables to improve profitability. ***Liquidity measured in terms of*** CBBTCAR positively influences ROTA thereby indicating that higher liquidity is accompanied with rise in ROTA.

TABLE 7.14

Results of Simple Linear Regression for EAT/TA: Hotels and Restaurant Industry

Independent Variable	Indicators	R^2	Intercept	Slope	t-Statistic	p-value
Size	LnS	0.019	-2.032	0.429	0.666	0.512
	LnTA	0.000	4.930	0.065	0.095	0.925
Leverage	LTDTAR	0.317	9.830	-15.032	-3.268*	0.003
	TDTAR	0.247	12.834	-14.980	-2.746*	0.012
Working Capital Policy	CLTAR	0.053	3.955	11.413	1.130	0.270
	CATAR	0.211	2.484	12.211	2.478**	0.021
	CANFAR	0.073	5.135	1.134	1.343	0.192
	CLCAR	0.021	7.514	-1.287	-0.706	0.488
	NWCCAR	0.021	6.227	1.287	0.706	0.488
Liquidity	ITCAR	0.000	6.382	-1.386	-0.099	0.922
	RTCAR	0.332	14.356	-17.556	-3.380*	0.003
	CBBTCAR	0.131	3.110	13.600	1.864	0.075
	PETCAR	0.023	5.277	12.068	0.732	0.472
	LATCAR	0.060	5.528	12.672	1.209	0.239
	MSTCAR	0.022	5.847	7.273	0.717	0.481
	CR	0.085	3.481	1.502	1.457	0.159
	QR	0.089	3.628	1.518	1.495	0.149
	ALR	0.142	4.459	2.565	1.954	0.063
Efficiency	TATR	0.032	5.217	1.940	0.878	0.389
	CATR	0.001	6.389	-0.050	-0.136	0.893
	WCTR	0.000	6.247	-0.002	-0.063	0.951
	ITR#	0.083	7.200	-0.035	-1.349	0.192
	IHP	0.058	7.943	-0.112	-1.189	0.247
	RTR	0.015	5.690	0.080	0.596	0.557
	ACP	0.018	7.336	-0.009	-0.652	0.521
	CBTR	0.002	6.388	-0.006	-0.189	0.851
	CTR	0.007	6.603	-0.022	-0.390	0.700
	APP	0.016	7.211	-0.018	-0.610	0.548
	OC	0.030	7.851	-0.012	-0.842	0.409
	NTC	0.014	6.935	-0.008	-0.565	0.578

Critical Values of "t"

Degrees of Freedom	Probability (Alpha)	Table Value – t
23	0.01	2.807
23	0.05	2.069
#20	0.01/0.05	2.086/2.845

* Results significant at 1% level of significance ** Results significant at 5% level of significance

C. Simple Linear Regressions for RONW

From the perusal of Table 7.15 it is observed that of the 30 explanatory variables only 2 significantly affect RONW. The variables related to ***Size, Leverage, Liquidity and Current Asset Management Efficiency have no significant impact on RONW.***

TABLE 7.15

Results of Simple Linear Regression for RONW: Hotels and Restaurant Industry

Independent Variable	Indicators	R^2	Intercept	Slope	t-Statistic	p-value
Size	LnS	0.025	41.083	-1.382	-0.765	0.452
	LnTA	0.027	45.951	-1.526	-0.799	0.433
Leverage	LTDTAR	0.004	13.893	5.008	0.320	0.752
	TDTAR	0.015	10.461	10.526	0.599	0.555
Working Capital Policy	CLTAR	0.006	12.815	11.273	0.387	0.702
	CATAR	0.001	15.658	-1.857	-0.119	0.906
	CANFAR	0.000	15.166	-0.082	-0.033	0.974
	CLCAR	0.164	5.199	10.093	2.127**	0.044
	NWCCAR	0.164	15.293	-10.093	-2.127**	0.044
Liquidity	ITCAR	0.078	10.176	52.945	1.396	0.176
	RTCAR	0.012	19.442	-9.440	-0.531	0.601
	CBBTCAR	0.000	15.155	-0.303	-0.014	0.989
	PETCAR	0.008	16.754	-20.162	-0.440	0.664
	LATCAR	0.010	13.948	14.465	0.478	0.637
	MSTCAR	0.004	15.561	-8.531	-0.296	0.770
	CR	0.036	20.202	-2.771	-0.931	0.362
	QR	0.031	19.492	-2.548	-0.864	0.396
	ALR	0.002	15.610	-0.751	-0.188	0.852
Efficiency	TATR	0.000	15.336	-0.470	-0.074	0.941
	CATR	0.007	13.969	0.412	0.398	0.694
	WCTR	0.026	14.837	-0.087	-0.790	0.438
	ITR#	0.040	11.072	0.075	0.917	0.370
	IHP	0.020	17.885	-0.186	-0.686	0.499
	RTR	0.026	13.015	0.294	0.782	0.442
	ACP	0.029	18.951	-0.032	-0.832	0.414
	CBTR	0.011	14.084	0.044	0.503	0.620
	CTR	0.030	17.178	-0.131	-0.841	0.409
	APP	0.003	13.952	0.021	0.255	0.801
	OC	0.038	20.169	-0.037	-0.955	0.349
	NTC	0.054	18.882	-0.046	-1.141	0.265

Critical Values of "t"

Degrees of Freedom	Probability (Alpha)	Table Value – t
23	0.01	2.807
23	0.05	2.069
#20	0.01/0.05	2.086/2.845

* Results significant at 1% level of significance ** Results significant at 5% level of significance

Working Capital Policy represented by CLCAR has a positive impact and NWCCAR has a negative impact on RONW which indicates that increased use of CL to finance

CA would improve RONW whereas increased use of NWC to finance CA will result to decline in RONW. Thus, managers of firms in Hotels and Restaurant Industry can create shareholder value by utilizing more of current liabilities to fund their working capital requirements as compared to net working capital

7.5.2 Results of Stepwise Regression

The results of Stepwise Regressions for all the profitability measures, *i.e.,* OPM, NPM, ROTA, EAT/TA and RONW are presented in Table 7.16

From the perusal of Table 7.16, it is observed that 41.3% variation in ***OPM*** is explained by ALR and CTR. However, when NPM is taken as the measure of profitability CTR is replaced with RTCAR and both RTCAR and ALR explain 43.2% variation in NPM. Further, RTCAR and IHP explain 43.6% and 44.5% variation respectively in ROTA and EAT/TA. When RONW is taken as the measure of profitability, only CLCAR which is an indicator of Working Capital Policy is found to be significantly explaining 12.8% variation in RONW. The VIF Statistics also indicates no multicollinearity amongst the independent variables.

Liquidity measured in terms of ALR has a positive impact on OPM as well as NPM, *i.e.,* as the ALR increases OPM and NPM both increase. ALR is an indicator of absolute liquidity and its positive impact on profitability indicates that as the cash balances increase the profitability also increases.

CTR is observed to have a negative impact on OPM, i.e., as the CTR increases the OPM declines and *vice-versa* which means that as the frequency of payment to creditors increase there is decline in profitability of Hotels and Restaurant Industry. Thus, managers of firms in Hotels and Restaurant Industry can increase their profitability by slowing the payments to the extent possible to improve OPM.

Liquidity measured in terms of RTCAR has a negative influence on three measures of profitability, i.e., NPM, ROTA as well as EAT/TA which indicates that as the proportion of receivables to current assets increase there is decline in profitability of firms in Hotels and Restaurant Industry. This is a very logical finding as increased blockage of funds in receivables indicates a liberal credit policy as well as blocked liquidity along with the probability of credit risk. Thus, managers of firms in Hotels and Restaurant Industry should try to reduce their investment in receivables to improve their profitability.

IHP has a negative influence on ROTA as well as EAT/TA and indicates that high IHP results to lower profitability and *vice-versa*. The results are very logical as low IHP indicates lower investment in inventory and thereby leading to lower working capital requirements which is possible only through efficient inventory management. Thus, it is concluded that the efficient inventory management leads to higher profitability in Hotels and Restaurant Industry and support the findings of Deloof[4], Tereul and Solano[6], Samiloglu and Dermiguines[7], Falope and Ajilore[8], Karaduman *et al*[9], and many more[10 to21] but inconsistent with the findings of Chowdhury and Amin[44] and Ali[23]. ***Working Capital Policy measured in terms of CLCAR positively influences RONW*** indicating that with increased use of short term funds to finance the current assets the profitability in terms of RONW can be increased. A high CLCAR signifies an aggressive working capital financing policy and thus the results indicate a positive influence of aggressive working capital financing policy on RONW of the Hotels and Restaurant Industry which is inconsistent with the findings of Al Shubiri[40], Al-Shubiri[41], Hussain *et al*[19] and Pouraghajan and Emamgholipourarchi[34].

TABLE – 7.16

Results of Stepwise Linear Regression for all Profitability Measures:
Hotels and Restaurant Industry

Independent Variable	R^2	Adj. R^2	Intercept	Slope	t-Statistic	p-value	F-Statistic	VIF Statistics
Dependent Variable – OPM								
ALR	0.462	0.413	16.545	22.000	4.325*	0.000	9.451*	1.269
CTR				-0.479	-2.385**	0.026	(0.001)	1.269
Dependent Variable – NPM								
ALR	0.479	0.432	25.337	10.066	2.323**	0.030	10.121*	1.293
RTCAR				-44.333	-2.283**	0.032	(0.001)	1.293
Dependent Variable – ROTA								
RTCAR	0.482	0.435	25.947	-25.180	-4.219*	0.000	10.238*	1.060
IHP				-0.266	-2.596**	0.016	(0.001)	1.060
Dependent Variable – EAT/TA								
RTCAR	0.508	0.463	18.737	-20.703	-4.412*	0.000	11.364*	1.060
IHP				-0.227	-2.808*	0.010	(0.000)	1.060
Dependent Variable – RONW								
CLCAR	0.164	0.128	5.199	10.093	2.127**	0.044	4.523**	1.000

Critical Values of "t" and "F"

t-test			F-test, Degrees of Freedom = 1		
DF	Probability (Alpha)	Table Value – t	N	Probability (Alpha)	Table Value – F
23	0.01*	2.807	23	0.01*	7.88
23	0.05**	2.069	23	0.05**	4.28
t-test			F-test, Degrees of Freedom = 2		
22	0.01*	2.819	22	0.01*	5.72
22	0.05**	2.074	22	0.05**	3.44

* Results significant at 1% level of significance ** Results significant at 5% level of significance

7.5.3 Summary of Results of Simple and Stepwise Regressions of Hotels and Restaurant Industry

A summary of the results of Simple and Stepwise Regressions is prepared and presented in Table 7.17 to have a comparative view of the significant indicators of the explanatory variables in Simple and Stepwise Regressions for each measure of profitability of the Hotels and Restaurant Industry. Thus, following observations can be made from the perusal of Table 7.17:

- Profitability measured in terms of OPM is affected by ALR (Liquidity) and CTR (Efficiency). *However* RTCAR, CBBTCAR, CR, QR, and ITR which were observed to be significant in Simple Linear Regression are eliminated whereas CTR which was not found to be significant is observed to be significant in Stepwise Regression.
- Profitability measured in terms of NPM is affected by ALR and RTCAR (Liquidity). *However* CBBTCAR, CR, QR, and ITR which were observed to be significant in Simple Linear Regression are eliminated in Stepwise Regression.
- Profitability measured in terms of ROTA and EAT/TA is affected by RTCAR and IHP (Liquidity). *However* LTDTAR, CATAR and CBBTCAR which were observed to be significant in Simple Linear Regression on ROTA whereas LTDTAR, TDTAR and CATAR observed to be significant in Simple Linear Regression on EAT/TA are eliminated and IHP which was not significant earlier is observed to be significant in Stepwise Regression.
- Profitability measured in terms of RONW is affected by CLCAR (Working Capital Policy). *However,* NWCCAR, which was observed to be significant in Simple Linear Regression is eliminated in Stepwise Regression.

TABLE 7.17

Summary Table for Results of Simple and Stepwise Linear Regressions: Hotels and Restaurant Industry

Sr. No.	Independent Variables	Indicators	Regression Model	Dependent Variable: Profitability Ratios				
				OPM	NPM	ROTA	EAT/TA	RONW
1	Size	LnS	Simple	---	---	---	---	---
			Stepwise	---	---	---	---	---
		LnTA	Simple	---	---	---	---	---
			Stepwise	---	---	---	---	---
2	Leverage	LTDTAR	Simple	---	---	–ve*	–ve*	---
			Stepwise	---	---	---	---	---
		TDTAR	Simple	---	---	---	–ve*	---
			Stepwise	---	---	---	---	---
3	Working Capital Policy	CLTAR	Simple	---	---	---	---	---
			Stepwise	---	---	---	---	---
		CATAR	Simple	---	+ve**	+ve**	+ve**	---
			Stepwise	---	---	---	---	---

TABLE 7.17 (Continued...)

Summary Table for Results of Simple and Stepwise Linear Regressions: Hotels and Restaurant Industry

Sr. No.	Independent Variables	Indicators	Regression Model	Dependent Variable: Profitability Ratios				
				OPM	NPM	ROTA	EAT/TA	RONW
3	Working Capital Policy	CANFAR	Simple	---	---	---	---	---
			Stepwise	---	---	---	---	---
		CLCAR	Simple	---	---	---	---	+ve**
			Stepwise	---	---	---	---	+ve**
		NWCCAR	Simple	---	---	---	---	–ve**
			Stepwise	---	---	---	---	---
4	Liquidity	ITCAR	Simple	---	---	---	---	---
			Stepwise	---	---	---	---	---
		RTCAR	Simple	–ve*	–ve*	–ve*	–ve*	---
			Stepwise	---	–ve**	–ve*	–ve*	---
		CBBTCAR	Simple	+ve*	+ve**	+ve**	---	---
			Stepwise	---	---	---	---	---
		PETCAR	Simple	---	---	---	---	---
			Stepwise	---	---	---	---	---
		LATCAR	Simple	---	---	---	---	---
			Stepwise	---	---	---	---	---
		MSTCAR	Simple	---	---	---	---	---
			Stepwise	---	---	---	---	---
		CR	Simple	+ve**	+ve*	---	---	---
			Stepwise	---	---	---	---	---
		QR	Simple	+ve**	+ve*	---	---	---
			Stepwise	---	---	---	---	---
		ALR	Simple	+ve*	+ve*	---	---	---
			Stepwise	+ve*	+ve**	---	---	---
5	Efficiency	TATR	Simple	---	---	---	---	---
			Stepwise	---	---	---	---	---
		CATR	Simple	---	---	---	---	---
			Stepwise	---	---	---	---	---
		WCTR	Simple	---	---	---	---	---
			Stepwise	---	---	---	---	---
		ITR	Simple	–ve**	–ve*	---	---	---
			Stepwise	---	---	---	---	---
		IHP	Simple	---	---	---	---	---
			Stepwise	---	---	–ve**	–ve**	---
		RTR	Simple	---	---	---	---	---
			Stepwise	---	---	---	---	---
		ACP	Simple	---	---	---	---	---
			Stepwise	---	---	---	---	---
		CBTR	Simple	---	–ve**	---	---	---
			Stepwise	---	---	---	---	---
		CTR	Simple	---	---	---	---	---
			Stepwise	–ve**	---	---	---	---
		APP	Simple	---	---	---	---	---
			Stepwise	---	---	---	---	---
		OC	Simple	---	---	---	---	---
			Stepwise	---	---	---	---	---
		NTC	Simple	---	---	---	---	---
			Stepwise	---	---	---	---	---

+ve indicates positive impact; –ve indicates negative impact

--- indicates NOT SIGNIFICANT

* Indicates significance at 1% level ** Indicates significance at 5% level

7.6 Impact of WCM, LEV and Size on Profitability in ITc1 Industry (20 Companies)

The results of Simple Linear Regressions and Stepwise Regression for ITc1 Industry are presented and analyzed in this section. The results of Simple Linear Regressions for each measure of profitability are presented separately in Tables 7.18 to 7.22. Also the interpretation is made first for OPM followed by NPM, ROTA, EAT/TA and RONW. After that, the results of Stepwise Regressions are presented in Table 7.23. Further a comparative summary of results of Simple as well as Stepwise Regressions is presented in Table 7.24 after discussing the result of Stepwise Regressions.

Three companies belonging to ITc1 Industry have zero inventories throughout the study period due to which ITR was as high as infinity which vitiates the results of entire industry. Therefore, simple linear regression on ITR is conducted for 17 of the 20 companies in order to understand if, at all it has a significant impact on any of the measures of profitability of ITc1 Industry. However, in Stepwise Regression in order to maintain consistency ITR is not entered in the model. Further, due to zero inventories, IHP of these three companies is considered to be zero. Thus, for these companies OC = ACP as IHP is zero and therefore regressions for IHP, OC and NTC (simple and stepwise) were carried out as observations were available for 20 companies.

7.6.1 Results of Simple Linear Regressions on OPM, NPM, ROTA, EAT/TA and RONW

A. Simple Linear Regressions for OPM

It can be observed from the perusal of Table 7.18 that out of the 30 indicators selected to examine their impact on OPM, only 4 are observed to have significant impact. These 4 variables are ITCAR, CBBTCAR, IHP and CBTR. Thus 2 ratios each pertain to broad groups of liquidity and efficiency. Of these, two ratios relate to inventory and remaining two ratios related to cash.

Both **ITCAR** and **IHP** have ***negative impact*** on OPM which indicates that as the proportion of inventory to CA increases OPM will go down. Similarly as the inventory holding period increases, OPM will decline. Both the findings are quite logical.

Moreover, **CBBTCAR** as a measure of liquidity is found to have a ***positive impact*** on OPM, *i.e.,* as CBBTCAR increases, the OPM also improves. However, **CBTR** is found to have a ***negative impact*** on OPM conveying thereby that as CBTR increases OPM declines. This seems to be an unusual finding. However, when there are low cash balances for high sales turnover, the CBTR would be very high which indicates lower liquidity. Thus, lower liquidity leads to lower profitability and is in line with

CBBTCAR. Further, CBTR explains 46.1% variation in OPM and thus is an important determinant of OPM.

Further, LEV, WCP and Firm Size have no significant impact on OPM of firms in ITes Industry.

TABLE – 7.18

Results of Simple Linear Regression for OPM: ITes Industry

Independent Variable	Indicators	R^2	Intercept	Slope	t-Statistic	p-value
Size	LnS	0.087	-18.185	1.684	1.308	0.207
	LnTA	0.173	-38.162	2.646	1.940	0.068
Leverage	LTDTAR	0.080	14.636	26.749	1.248	0.228
	TDTAR	0.107	24.639	-19.689	-1.466	0.160
Working Capital Policy	CLTAR	0.176	24.400	-24.158	-1.960	0.066
	CATAR	0.020	24.152	-12.354	-0.600	0.556
	CANFAR	0.002	17.427	-0.263	-0.196	0.847
	CLCAR	0.027	20.015	-5.835	-0.707	0.488
	NWCCAR	0.027	14.176	5.654	0.701	0.493
Liquidity	ITCAR	0.367	22.448	-133.626	-3.231*	0.005
	RTCAR	0.165	33.854	-31.487	-1.889	0.075
	CBBTCAR	0.431	2.360	75.936	3.691*	0.002
	PETCAR	0.126	13.368	40.042	1.609	0.125
	LATCAR	0.013	17.953	-20.682	-0.494	0.627
	MSTCAR	0.001	16.860	-3.209	-0.097	0.923
	CR	0.038	12.875	1.254	0.843	0.410
	QR	0.049	12.517	1.411	0.966	0.347
	ALR	0.186	10.210	7.500	2.030	0.057
Efficiency	TATR	0.114	24.840	-6.963	-1.522	0.145
	CATR	0.097	25.069	-4.380	-1.394	0.180
	WCTR	0.040	17.186	-0.107	-0.865	0.398
	ITR#	0.226	14.028	5.626E-5	2.090	0.054
	IHP#	0.249	19.327	-0.246	-2.446**	0.025
	RTR	0.008	14.601	0.518	0.387	0.703
	ACP	0.124	20.209	-0.022	-1.595	0.128
	CBTR	0.461	27.426	-0.699	-3.926*	0.001
	CTR	0.124	15.547	0.007	1.593	0.129
	APP	0.118	18.388	-0.026	-1.553	0.138
	OC	0.138	20.234	-0.020	-1.695	0.107
	NTC	0.120	22.673	-0.056	-1.567	0.135

Critical Values of "t"

Degrees of Freedom	Probability (Alpha)	Table Value – t
18	0.01*	2.878
18	0.05**	2.101
#15	0.01*/0.05**	2.131*/2.947**

* Results significant at 1% level of significance ** Results significant at 5% level of significance

B. Simple Linear Regressions for NPM

From the perusal of Table 7.19, it is observed that of the 30 indicators, only 13 have significant impact on NPM. However, all these 13 ratios belong to all the 5 groups indicating that Firm Size, LEV, WCP, Liquidity and WCME have significant impact on NPM of firms in IT$_{es}$ Industry.

Both the indicators of Firm Size have positive impact on NPM indicating that as LnS and LnTA increases, NPM improves.

The measure of Leverage – TDTAR has a negative impact on NPM indicating that as the Total Debt of firms in IT$_{es}$ Industry increases NPM declines and *vice-versa.* From these results it is concluded that utilizing higher levels of debt is not profitable for the IT$_{es}$ Industry.

Working Capital Policy measured in terms of ***CLTAR, CLCAR and NWCCAR*** have significant impact on NPM and all the three represent the current asset financing policy. CLTAR and CLCAR have a negative impact whereas NWCCAR has a positive impact on NPM which indicates that as the use of current liabilities to finance Current Assets is increased there is a decline in NPM. However by increasing NWC to finance the current assets, the NPM improves. Greater use of working capital to finance the current assets is indicative of conservative working capital financing policy. Thus, by pursuing conservative working capital financing policy firms in IT$_{es}$ Industry can improve NPM.

Both ITCAR and ***IHP*** have ***negative impact*** on NPM indicating that with increased blockage of funds in inventory the NPM declines which is very logical.

CBBTCAR and ***ALR*** which are the measures of liquidity have ***positive impact*** on NPM thereby indicating that as the cash balances increases the NPM increases. However, ***CBTR*** has a ***negative impact*** on NPM conveying that as the CBTR increases the NPM goes down. And as already discussed in *sub para A*, these three ratios indicate a positive impact of liquidity on NPM. Further, ***CBTR*** explains 53% variation in NPM and is also an important determinant of NPM.

Further, ***OC and APP*** negatively influences NPM indicating that smaller the length of OC and APP higher is the NPM and *vice versa.* The negative influence of APP is consistent with the view that profitable firms pay their bills timely.

Thus, managers of firms in IT$_{es}$ industry can create value for shareholders and increase profitability by shortening OC and APP.

TABLE – 7.19

Results of Simple Linear Regression for NPM: ITes Industry

Independent Variable	Indicators	R^2	Intercept	Slope	t-Statistic	p-value
Size	LnS	0.310	-45.236	2.748	2.842*	0.011
	LnTA	0.384	-59.018	3.409	3.353*	0.004
Leverage	LTDTAR	0.008	12.122	-7.464	-0.388	0.702
	TDTAR	0.354	24.204	-31.011	-3.142*	0.006
Working Capital Policy	CLTAR	0.206	18.852	-22.605	-2.162**	0.044
	CATAR	0.060	0.202	18.639	1.070	0.299
	CANFAR	0.023	9.276	0.747	0.650	0.524
	CLCAR	0.243	20.370	-15.114	-2.403**	0.027
	NWCCAR	0.239	5.243	14.654	2.375**	0.029
Liquidity	ITCAR	0.397	16.813	-120.178	-3.446*	0.003
	RTCAR	0.031	18.013	-11.771	-0.758	0.458
	CBBTCAR	0.492	-1.594	70.113	4.172*	0.001
	PETCAR	0.004	12.093	-6.448	-0.281	0.782
	LATCAR	0.026	13.171	-24.801	-0.690	0.499
	MSTCAR	0.006	10.865	9.327	0.329	0.746
	CR	0.145	5.250	2.118	1.748	0.098
	QR	0.165	5.084	2.232	1.885	0.076
	ALR	0.405	3.407	9.554	3.498*	0.003
Efficiency	TATR	0.037	15.590	-3.405	-0.826	0.420
	CATR	0.079	18.140	-3.405	-1.241	0.231
	WCTR	0.031	12.005	-0.082	-0.764	0.455
	ITR#	0.199	10.290	5.426E-5	1.933	0.072
	IHP#	0.368	14.415	-0.258	-3.239*	0.005
	RTR	0.006	13.060	-0.383	-0.331	0.745
	ACP	0.196	13.476	-0.024	-2.095	0.051
	CBTR	0.530	21.582	-0.647	-4.504*	0.000
	CTR	0.174	10.471	0.007	1.947	0.067
	APP	0.265	13.863	-0.033	-2.551**	0.020
	OC	0.216	15.482	-0.022	-2.225**	0.039
	NTC	0.063	15.352	-0.035	-1.097	0.287

Critical Values of "t"

Degrees of Freedom	Probability (Alpha)	Table Value – t
18	0.01*	2.878
18	0.05*	2.101
#15	0.01*/0.05**	2.131*/2.947**

* Results significant at 1% level of significance ** Results significant at 5% level of significance

C. Simple Linear Regressions for ROTA

Table 7.20 details the results of Simple Linear Regression for ROTA and it is observed that of the selected 30 variables, only 7 variables have significant on ROTA of which 2 belong to the broad group of Firm Size, 3 to the Liquidity group and remaining 2 are Efficiency measures.

Both the indicators of Firm Size have significant impact on ROTA indicating that as sales and total assets increase, the ROTA and EAT/TA improves. Further, LnS explains 43.1% variation in ROTA and is an important determinant for ROTA.

Both CBBTCAR and ***ALR*** have positive impact on ROTA which is common with OPM and NPM and therefore the interpretations thereat holds good here also indicating positive influence of liquidity on ROTA.

Further 2 measures relate to inventory, *viz,* ITCAR and IHP. **ITCAR** has a negative impact whereas **ITR** has a positive impact on ROTA which indicates that as the proportion of ITCAR increases, ROTA declines and higher is the turnover of inventories higher will be the ROTA. Both these ratios convey that with improvement in inventory profitability improves. **CTR** has a positive impact on ROTA which indicates that as CTR increases, ROTA also increases.

C. Simple Linear Regressions for EAT/TA

Table 7.21 details the results of Simple Linear Regression for EAT/TA and it is observed that of the selected 30 variables, only 11 variables have significant on EAT/TA. Of these, 11 variables, 7 are common with ROTA and therefore the interpretations thereat holds good here also.

However, Firm size in terms of LnS explains 45.7% variation in EAT/TA and also is an important determinant for EAT/TA.

TDTAR has ***negative impact*** on EAT/TA indicating that as the Total Debt of ITes Industry increases EAT/TA declines and *vice-versa.* From these results it is concluded that utilizing higher levels of debt is not profitable for the firms in ITes Industry as also observed for NPM.

Working Capital Policy measured in terms ***of CATAR, and NWCCAR*** have a positive impact whereas ***CLCAR*** has a negative impact on EAT/TA. The positive impact indicates that as the proportion of current assets in total assets structure increases EAT/TA improves. Similarly when more NWC is utilized to finance CA, the EAT/TA improves. However as CLCAR increases the EAT/TA declines and therefore firms in ITes Industry should pursue a conservative current asset investment and financing policy to improve profitability.

CBTR is observed to have a negative impact on EAT/TA indicating that as CBTR rises, EAT/TA falls and *vice-versa.* The high CBTR would result on account of lower cash balances against higher sales volume and thus, lower liquidity is not profitable for firms in ITes Industry.

TABLE – 7.20

Results of Simple Linear Regression for ROTA: ITes Industry

Independent Variable	Indicators	R^2	Intercept	Slope	t-Statistic	p-value
Size	LnS	0.431	-49.566	3.274	3.692*	0.002
	LnTA	0.378	-52.608	3.415	3.310*	0.004
Leverage	LTDTAR	0.037	19.279	-153923	-0.832	0.416
	TDTAR	0.184	27.294	-22.568	-2.015	0.059
Working Capital Policy	CLTAR	0.043	21.462	-10.438	-0.901	0.380
	CATAR	0.163	-0.865	31.094	1.873	0.077
	CANFAR	0.007	16.791	0.426	0.364	0.720
	CLCAR	0.166	25.440	-12.606	-1.891	0.075
	NWCCAR	0.131	13.357	10.984	1.651	0.116
Liquidity	ITCAR	0.204	21.890	-86.874	-2.146**	0.046
	RTCAR	0.012	22.222	-7.531	-0.476	0.640
	CBBTCAR	0.246	8.690	50.117	2.426**	0.026
	PETCAR	0.023	19.311	-14.928	-0.650	0.524
	LATCAR	0.060	20.577	-38.387	-1.076	0.296
	MSTCAR	0.071	15.640	32.576	1.176	0.255
	CR	0.029	15.229	0.962	0.738	0.470
	QR	0.038	14.951	1.084	0.845	0.409
	ALR	0.194	12.394	6.677	2.081**	0.052
Efficiency	TATR	0.099	11.400	5.673	1.406	0.176
	CATR	0.041	13.293	2.491	0.881	0.390
	WCTR	0.068	18.745	-0.122	-1.144	0.268
	ITR#	0.275	15.420	7.005E-5	2.386**	0.031
	IHP#	0.182	20.119	-0.183	-2.000	0.061
	RTR	0.070	12.966	1.319	1.167	0.258
	ACP	0.087	20.724	-0.016	-1.308	0.207
	CBTR	0.126	23.037	-0.319	-1.614	0.124
	CTR	0.239	16.799	0.008	2.378**	0.029
	APP	0.091	19.455	-0.020	-1.342	0.196
	OC	0.097	20.750	-0.015	-1.391	0.181
	NTC	0.069	22.114	-0.037	-1.157	0.262

Critical Values of "t"

Degrees of Freedom	Probability (Alpha)	Table Value – t
18	0.01*	2.878
18	0.05**	2.101
#15	0.01*/0.05**	2.131*/2.947**

* Results significant at 1% level of significance ** Results significant at 5% level of significance

TABLE – 7.21

Results of Simple Linear Regression for EAT/TA: ITes Industry

Independent Variable	Indicators	R^2	Intercept	Slope	t-Statistic	p-value
Size	LnS	0.457	-54.529	3.295	3.895*	0.01
	LnTA	0.440	-60.949	3.600	3.763*	0.001

TABLE – 7.21 (Continued...)

Results of Simple Linear Regression for EAT/TA: ITes Industry

Independent Variable	Indicators	R^2	Intercept	Slope	t-Statistic	p-value
Leverage	LTDTAR	0.107	15.534	-26.383	-1.465	0.160
	TDTAR	0.348	25.938	-30.332	-3.100*	0.006
Working Capital Policy	CLTAR	0.084	18.176	-14.269	-1.288	0.214
	CATAR	0.205	-7.187	34.048	2.153**	0.045
	CANFAR	0.024	11.252	0.758	0.669	0.512
	CLCAR	0.272	22.762	-15.770	-2.591**	0.018
	NWCCAR	0.236	7.374	14.373	2.357**	0.030
Liquidity	ITCAR	0.190	17.156	-81.968	-2.054	0.055
	RTCAR	0.012	17.615	-7.371	-0.477	0.639
	CBBTCAR	0.284	3.713	52.552	2.670**	0.016
	PETCAR	0.077	15.748	-26.723	-1.225	0.236
	LATCAR	0.033	15.363	-27.620	-0.781	0.445
	MSTCAR	0.102	10.709	38.019	1.429	0.170
	CR	0.063	9.463	1.379	1.102	0.285
	QR	0.074	9.298	1.474	1.198	0.247
	ALR	0.295	6.702	8.049	2.745*	0.013
Efficiency	TATR	0.026	10.213	2.851	0.697	0.495
	CATR	0.000	13.273	0.159	0.056	0.956
	WCTR	0.054	14.145	-0.107	-1.017	0.322
	ITR#	0.275	12.793	6.273E-5	2.386**	0.031
	IHP#	0.142	15.324	-0.158	-1.727	0.101
	RTR	0.008	11.908	0.430	0.376	0.711
	ACP	0.051	15.551	-0.012	-0.986	0.337
	CBTR	0.267	20.598	-0.454	-2.563**	0.020
	CTR	0.231	12.330	0.008	2.328**	0.032
	APP	0.073	14.770	-0.017	-1.194	0.248
	OC	0.060	15.616	-0.012	-1.072	0.298
	NTC	0.018	15.575	-0.018	-0.573	0.574

Critical Values of "t"

Degrees of Freedom	Probability (Alpha)	Table Value – t
18	0.01	2.878
18	0.05	2.101
#15	0.01/0.05	2.131/2.947

* Results significant at 1% level of significance ** Results significant at 5% level of significance

D. Simple Linear Regressions for RONW

Table 7.22 details the results of Simple Linear Regression for RONW and it is observed that only ***firm size*** measured in terms of ***LnS, LnTA*** has a significant impact on RONW of ITes Industry. These 2 indicators are common with ROTA and EAT/TA and therefore interpretations thereat holds good for RONW too. Further, LnS explains 41.1% variation in RONW and is its important determinant.

Further, LEV, WCP, Liquidity and CAME have no significant impact on RONW.

TABLE – 7.22

Results of Simple Linear Regression for RONW: ITeS Industry

Independent Variable	Indicators	R^2	Intercept	Slope	t-Statistic	p-value
Size	LnS	0.411	-72.109	4.584	3.542*	0.002
	LnTA	0.353	-75.378	4.734	3.137*	0.006
Leverage	LTDTAR	0.001	22.355	3.791	0.136	0.894
	TDTAR	0.062	30.302	-18.814	-1.092	0.289
Working Capital Policy	CLTAR	0.029	26.611	-12.338	-0.737	0.471
	CATAR	0.146	-3.079	42.162	1.753	0.097
	CANFAR	0.000	22.750	-0.037	-0.022	0.983
	CLCAR	0.132	32.043	-16.153	-1.657	0.115
	NWCCAR	0.102	16.639	13.891	1.432	0.169
Liquidity	ITCAR	0.104	26.517	-88.941	-1.444	0.166
	RTCAR	0.000	22.919	-0.517	-0.023	0.982
	CBBTCAR	0.066	15.625	37.342	1.132	0.272
	PETCAR	0.003	23.285	-7.996	-0.240	0.813
	LATCAR	0.115	27.541	-75.976	-1.531	0.143
	MSTCAR	0.056	19.502	41.515	1.037	0.314
	CR	0.016	19.627	1.008	0.536	0.599
	QR	0.021	19.291	1.152	0.620	0.543
	ALR	0.075	17.561	5.941	1.205	0.244
Efficiency	TATR	0.135	11.458	9.467	1.673	0.112
	CATR	0.076	13.286	4.845	1.218	0.239
	WCTR	0.002	22.787	-0.028	-0.180	0.860
	ITR#	0.109	20.840	6.077E-5	1.354	0.196
	IHP#	0.141	25.185	-0.231	-1.717	0.103
	RTR	0.065	15.570	1.816	1.117	0.279
	ACP	0.070	26.011	-0.020	-1.162	0.261
	CBTR	0.024	25.753	-0.201	-0.672	0.510
	CTR	0.093	21.471	0.007	1.361	0.190
	APP	0.072	24.372	-0.025	-1.186	0.251
	OC	0.070	26.011	-0.020	-1.162	0.261
	NTC	0.020	26.179	-0.037	-0.611	0.549

Critical Values of "t"

Degrees of Freedom	Probability (Alpha)	Table Value – t
18	0.01	2.878
18	0.05	2.101
#15	0.01/0.05	2.131/2.947

* Results significant at 1% level of significance ** Results significant at 5% level of significance

7.6.2 Results of Stepwise Regression

The results of Stepwise Regressions for all the profitability measures, *i.e.,* OPM, NPM, ROTA, EAT/TA and RONW is presented in Table 7.23

From the perusal of Table 7.23, it is observed that ***CBTR, LTDTAR*** and ***ACP*** jointly explain 67.1% variation in ***OPM***. However, when NPM is taken as a measure of profitability, CBTR remains whereas the other two are excluded and three new indicators enter the model. ***CBTR, LnS, ITCAR*** and ***RTR*** jointly explain 82.1% variation in ***NPM*** indicating their greater importance for determining the NPM. However when **ROTA** is taken as a measure of profitability **LnS** remains and the remaining three variables are excluded and **WCTR** is included in model. Both of them explain 59.1% variation in ROTA. Further, when EAT/TA is taken as a measure of profitability, the same variables remain and TDTAR is added. ***LnS, WCTR and TDTAR*** jointly explain 69.1% variation in ***EAT/TA***. Further, ***LnS. RTR and CLCAR*** jointly explain 59.1% variation in ***RONW***. The VIF Statistics also indicates no multicollinearity amongst the independent variables.

Efficiency represented by CBTR has a negative impact on OPM as well as NPM indicating that with as CBTR increases, OPM and NPM declines. The negative impact of high cash turnover indicates that the sales of firms in ITes Industry is supported by very low level of cash. Thus low liquidity results to lower profitability.

ACP has a negative impact on OPM which indicates that as the number of days' collections increases it results to decline in profitability and that shorter the length of ACP higher will be the OPM. Thus, the results implicates that liberal credit policy is detrimental to the profitability and the managers of firms in ITes Industry can maximize their and operating profitability by efficiently reducing the length of ACP. This result agrees with the findings of Deloof[13], Nobanee and Alhajjar[45] and Afeef[46].

Leverage represented by LTDTAR has a positive impact on OPM which indicates that as long term debts increase, OPM improves which is an unusual finding as leverage should affect the post tax returns. However, it is in line with the Static Tradeoff Theory which states that more profitable firms have lower expected bankruptcy costs and higher tax benefits (Jensen[47]) and implies that the firms in ITes Industry prefer to use more debt as compared to equity in their financial structure which is beneficial also as reflected by the positive impact of Leverage on profitability.

Size measured in terms of LnS positively influences the four measures of profitability, i.e., NPM, ROTA, EAT/TA and RONW and indicates that with increase in sales turnover the profitability of the firms in ITes Industry increases. It is in line with the premise that "large organizations enjoy the benefits of the economies of scale"[4]. Thus firms with large size in ITes Industry are more profitable which is consistent with the findings of Deloof[13], Padachi[14] and many more[5,9,12-18,20-25] but inconsistent with the results of Enqvist *et al*[26].

TABLE – 7.23

Results of Stepwise Regression for all Profitability Measures: ITes Industry

Independent Variable	R^2	Adj. R^2	Intercept	Slope	t-Statistic	p-value	F-Statistic	VIF Statistics
Dependent Variable – OPM								
CBTR	0.742	0.694	32.738	-0.783	-5.918*	0.000	15.358* (0.000)	1.026
NTC				-0.060	-2.874*	0.011		1.021
LTDTAR				32.827	2.683**	0.016		1.035
Dependent Variable – NPM								
CBTR	0.820	0.786	-8.679	-0.473	-5.026*	0.000	24.263* (0.000)	1.134
IHP				1.859	-3.448*	0.003		1.200
LnTA				-64.418	2.160**	0.046		1.317
Dependent Variable – ROTA								
LnS	0.634	0.591	-61.210	3.893	5.131*	0.000	14.738* (0.000)	1.076
WCTR				-0.219	-3.073**	0.007		1.076
Dependent Variable – EAT/TA								
LnS	0.740	0.691	-46.191	3.279	4.769*	0.000	15.173* (0.000)	1.224
WCTR				-0.166	-2.658**	0.017		1.143
TDTAR				-17.464	-2.471**	0.025		1.163
Dependent Variable – RONW								
LnS	0.656	0.591	-68.925	4.186	3.665*	0.002	10.155* (0.001)	1.185
RTR				3.886	3.272*	0.005		1.288
CLCAR				-17.320	-2.188**	0.044		1.476

Critical Values of "t" and "F"

t-test			F-test, Degrees of Freedom = 1		
DF	Probability (Alpha)	Table Value – t	N	Probability (Alpha)	Table Value – F
18	0.01	2.807	18	0.01	8.29
t-test			F-test, Degrees of Freedom = 2		
17	0.01	2.898	17	0.01	6.11
17	0.05	2.110	17	0.05	3.59
t-test			F-test, Degrees of Freedom = 3		
16	0.01	2.921	16	0.01	5.29
16	0.05	2.120	16	0.05	3.24
t-test			F-test, Degrees of Freedom = 4		
15	0.01	2.947	15	0.01	4.89
15	0.05	2.131	15	0.05	3.06

* Results significant at 1% level of significance   ** Results significant at 5% level of significance

Liquidity represented by ITCAR has a negative impact on NPM which indicates that increased investment in inventories will lead to decline in NPM. Thus, firms in ITes

Industry can increase their operational earnings by efficiently managing their inventories through reduced investment in inventories.

Efficiency represented by RTR is observed to influence two measures of profitability, i.e., NPM and RONW positively and it indicates that with increased efficiency in receivables management profitability (NPM and RONW) can also be increased which would further lead to increase in shareholder's wealth and support the findings of Ahmed[48].

Efficiency represented by WCTR has a negative impact on ROTA and EAT/TA which indicates that increase in WCTR would lead to decline in profitability measured in terms of ROTA and EAT/TA. A low level of NWC supporting a given level of sales turnover would lead to high WCTR and thus, the firms in ITes Industry can improve profitability by utilizing higher NWC for operating sales.

Further, TDTAR has negative impact on EAT/TA which indicates that increased use of leverage in terms of Total Debt will lead to decline in post tax returns measured in terms of total assets and supports the Pecking Order Hypothesis of Myers and Majluf[27]. These results are consistent with the findings of Rajan and Zingales[28], Samiloglu and Dermiguines[29], Enqvist *et al*[26], Hayajneh and Yassine[18], Karaduman *et al*[20], Ali[16], Azhar and Saad[30], Hayat and Bhatti[8] and Afza and Nazir[5].

Working Capital Policy measured in terms of CLCAR is observed to have negative impact on RONW which indicates that as the CLCAR increases, RONW declines, *i.e.*, as the firms utilize more of current liabilities to finance the current assets, the profitability would decline and *vice–versa*. Similar result is also obtained for firms in Hotels and Restaurant Industry. Thus, it is inferred that aggressive working capital financing policy negatively influences RONW and is consistent with the findings of Al Shubiri[40], Al-Shubiri[41], Hussain *et al*[19] and Pouraghajan and Emamgholipourarchi[34].

7.6.3 Summary of Results of Simple and Stepwise Regressions of ITes Industry

A summary of the results of Simple and Stepwise Regressions is prepared and presented in Table 7.24 to have a comparative view of the significant indicators of the explanatory variables for each measure of profitability of the ITes Industry. Thus, following observations can be made from the perusal of Table 7.24:

- Profitability measured in terms of OPM is affected by ACP (Liquidity), LTDTAR (LEV) and CBTR (Efficiency). However ITCAR, CBBTCAR and IHP which were observed to be significant in Simple Linear Regression are eliminated whereas ACP and LTDTAR which were not found to be significant are observed to be significant in Stepwise Regression.

TABLE 7.24								
Summary Table for Results of Simple and Stepwise Linear Regressions: ITeA Industry								
Sr. No.	**Independent Variables**	**Indicators**	**Regression Model**	**Dependent Variable: Profitability Ratios**				
				OPM	**NPM**	**ROTA**	**EAT/TA**	**RONW**
1	Size	LnS	Simple	—	+ve*	+ve*	+ve*	+ve*
			Stepwise	—	+ve*	+ve*	+ve*	+ve*
		LnTA	Simple	—	+ve*	+ve*	+ve*	+ve*
			Stepwise	—	—	—	—	—
2	Leverage	LTDTAR	Simple	—	—	—	—	—
			Stepwise	+ve*	—	—	—	—
		TDTAR	Simple	—	–ve*	—	–ve*	—
			Stepwise	—	—	—	–ve**	—
3	Working Capital Policy	CLTAR	Simple	—	–ve**	—	—	—
			Stepwise	—	—	—	—	—
		CATAR	Simple	—	—	—	+ve**	—
			Stepwise	—	—	—	—	—
		CANFAR	Simple	—	—	—	—	—
			Stepwise	—	—	—	—	—
		CLCAR	Simple	—	–ve**	—	–ve**	—
			Stepwise	—	—	—	—	–ve**
		NWCCAR	Simple	—	+ve**	—	+ve**	—
			Stepwise	—	—	—	—	—
4	Liquidity	ITCAR	Simple	–ve*	–ve*	–ve**	—	—
			Stepwise	—	–ve*	—	—	—
		RTCAR	Simple	—	—	—	—	—
			Stepwise	—	—	—	—	—
		CBBTCAR	Simple	+ve*	+ve*	+ve**	+ve**	—
			Stepwise	—	—	—	—	—
		PETCAR	Simple	—	—	—	—	—
			Stepwise	—	—	—	—	—
		LATCAR	Simple	—	—	—	—	—
			Stepwise	—	—	—	—	—
		MSTCAR	Simple	—	—	—	—	—
			Stepwise	—	—	—	—	—
		CR	Simple	—	—	—	—	—
			Stepwise	—	—	—	—	—
		QR	Simple	—	—	—	—	—
			Stepwise	—	—	—	—	—
		ALR	Simple	—	+ve*	+ve**	+ve*	—
			Stepwise	—	—	—	+ve*	—
5	Efficiency	TATR	Simple	—	—	—	—	—
			Stepwise	—	—	—	—	—
		CATR	Simple	—	—	—	—	—
			Stepwise	—	—	—	—	—
		WCTR	Simple	—	—	—	—	—
			Stepwise	—	—	–ve*	–ve**	—

TABLE 7.24 (Continued...)

Summary Table for Results of Simple and Stepwise Linear Regressions:
ITeA Industry

Sr. No.	**Independent Variables**	**Indicators**	**Regression Model**	**Dependent Variable: Profitability Ratios**				
				OPM	**NPM**	**ROTA**	**EAT/TA**	**RONW**
5	Efficiency	ITR	Simple	—	—	+ve**	+ve**	—
			Stepwise	—	—	—	—	—
		IHP	Simple	**–ve****	**–ve***	—	—	—
			Stepwise	—	—	—	—	—
		RTR	Simple	—	—	—	—	—
			Stepwise	—	+ve**	—	—	+ve*
		ACP	Simple	—	—	—	—	—
			Stepwise	**–ve****	—	—	—	—
		CBTR	Simple	**–ve***	**–ve***	—	**–ve****	—
			Stepwise	**–ve***	**–ve***	—	—	—
		CTR	Simple	—	—	+ve**	+ve**	—
			Stepwise	—	—	—	—	—
		APP	Simple	—	–ve**	—	—	—
			Stepwise	—	—	—	—	—
		OC	Simple	—	–ve**	—	—	—
			Stepwise	—	—	—	—	—
		NTC	Simple	—	—	—	—	—
			Stepwise	—	—	—	—	—

+ve indicates positive impact; –ve indicates negative impact

— indicates NOT SIGNIFICANT

* Results significant at 1% level of significance ** Results Significant at 5% level of significance

- Profitability measured in terms of NPM is affected by ITCAR (Liquidity), LnS (Size), CBTR and RTR (Efficiency). However LnTA, TDTAR, CLTAR, CLCAR, NWCCAR, ALR, ITCAR, CBBTCAR, ACP, OC and APP which were observed to be significant in Simple Linear Regression are eliminated in Stepwise Regression.
- Profitability measured in terms of ROTA is affected by LnS (Size) and WCTR (Efficiency). However LnTA, ITCAR, CBBTCAR, ALR and CTR which were observed to be significant in Simple Linear Regression are eliminated and WCTR which was not significant is observed to be significant in Stepwise Regression.
- Profitability measured in terms of EAT/TA is affected by TDTAR (LEV), LnS (Size) and WCTR (Efficiency). Further LnTA, CATAR, NWCCAR, CBBTCAR, ALR, CBTR and CTR which were observed to be significant in Simple Linear Regression are eliminated and WCTR which was not found to be significant is observed to be significant in Stepwise Regression.
- Profitability measured in terms of RONW is affected by CLCAR (Working Capital Policy), RTR (Efficiency) and LnS (Size). However LnTA which was observed to be significant in Simple Linear Regression is eliminated and RTR and CLCAR which were not significant are observed to be significant in Stepwise Regression.

7.7 Impact of WCM, LEV and Size on Profitability in Transport Services Industry (16 Companies)

The results of Simple Linear Regressions and Stepwise Regression for Transport Services Industry are presented and analyzed in this section. The results of Simple Linear Regressions for each measure of profitability are presented separately in Tables 7.25 to 7.29. Also the interpretation is made first for OPM followed by NPM, ROTA, EAT/TA and RONW. The results of Stepwise Regressions for all the measures of profitability are presented in Table 7.30. A comparative summary of results of Simple and Stepwise Regressions is presented in Table 7.31 after discussing the result of Stepwise Regressions.

7.7.1 Results of Simple Linear Regressions on OPM, NPM, ROTA, EAT/TA and RONW

A. Simple Linear Regressions for OPM

From Table 7.25, it can be observed that out of the 30 explanatory variables only 7 variables explain variations in OPM in a significant manner wherein, LnTA explains variation in OPM to a highest extent, *viz,* 48.8%. Sales size also has a significant impact on OPM conveying thereby that as the asset base or sales size of a company expands, OPM improves.

Three ***Working Capital Policy*** ratios, *i.e.,* CLTAR, CATAR and CANFAR have a negative impact on OPM which indicates that as the three of them rises, OPM declines. A high CATAR and CANFAR indicate conservative working capital investment policy whereas a high CLTAR indicates aggressive working capital financing policy. From this it can be inferred that firms in Transport Services Industry can improve their OPM by pursuing a conservative working capital financing policy and an aggressive working capital investment policy. *Amongst the 9 liquidity ratios,* ***RTCAR*** is found to have a significant negative impact on OPM indicating that as the proportion of receivables in the Current Assets increases the OPM reduces. However, ***CBBTCAR*** has a positive impact on OPM indicating that higher cash balances leads to improvement in OPM.

Amongst the Current Asset Management Efficiency ratios, only **TATR** was found to be significant explaining 41.5% variation in OPM. It was unusual to find negative impact of TATR on OPM.

B. Simple Linear Regressions for NPM

From Table 7.26 it is observed that only five ratios *viz,* ***LnS, LnTA, CLTAR, RTCAR and CBBTCAR*** have significant impact on NPM. Further, all of them are found to be common with OPM and hence, the interpretations thereat holds good here also. However, in case of NPM, LnTA explains 45.3% variation.

TABLE – 7.25

Results of Simple Linear Regression for OPM: Transport Services Industry

Independent Variable	Indicators	R^2	Intercept	Slope	t-Statistic	p-value
Size	LnS	0.273	-60.843	3.769	2.293**	0.038
	LnTA	0.488	-82.296	4.739	3.657*	0.003
Leverage	LTDTAR	0.242	8.523	42.840	2.114	0.053
	TDTAR	0.001	18.406	-2.323	-0.108	0.916
Working Capital Policy	CLTAR	0.417	35.325	-70.190	-3.165*	0.007
	CATAR	0.449	38.492	-45.576	-3.380*	0.004
	CANFAR	0.329	24.818	-4.684	-2.619**	0.020
	CLCAR	0.013	14.051	5.227	0.434	0.671
	NWCCAR	0.013	19.278	-5.227	-0.434	0.671
Liquidity	ITCAR	0.002	16.756	10.566	0.181	0.859
	RTCAR	0.265	35.894	-35.817	-2.245**	0.041
	CBBTCAR	0.362	6.125	46.678	2.818*	0.014
	PETCAR	0.019	14.383	39.914	0.526	0.607
	LATCAR	0.065	21.559	-76.182	-0.983	0.343
	MSTCAR	0.001	17.699	-6.326	-0.140	0.891
	CR	0.005	18.954	-0.685	-0.271	0.790
	QR	0.008	19.547	-1.025	-0.328	0.748
	ALR	0.046	14.253	3.660	0.817	0.428
Efficiency	TATR	0.415	31.425	-14.528	-3.150*	0.007
	CATR	0.008	20.010	-1.196	-0.338	0.741
	WCTR	0.004	18.311	-0.185	-0.244	0.811
	ITR	0.094	18.891	-0.003	-1.206	0.248
	IHP	0.005	18.084	-0.055	-0.260	0.798
	RTR	0.202	11.352	0.958	1.883	0.081
	ACP	0.157	27.066	-0.086	-1.617	0.128
	CBTR	0.079	22.245	-0.250	-1.092	0.293
	CTR	0.090	20.214	-0.110	-1.173	0.260
	APP	0.005	16.040	0.033	0.253	0.804
	OC	0.125	25.572	-0.065	-1.412	0.180
	NTC	0.143	23.448	-0.070	-1.528	0.149

Critical Values of "t"

Degrees of Freedom	Probability (Alpha)	Table Value – t
14	0.01	2.977
14	0.05	2.145

* Results significant at 1% level of significance ** Results significant at 5% level of significance

TABLE – 7.26

Results of Simple Linear Regression for NPM: Transport Services Industry

Independent Variable	Indicators	R^2	Intercept	Slope	t-Statistic	p-value
Size	LnS	0.325	-55.159	3.123	2.595**	0.021
	LnTA	0.453	-63.231	3.465	3.402*	0.004

TABLE – 7.26 (Continued...)

Results of Simple Linear Regression for NPM: Transport Services Industry

Leverage	LTDTAR	0.110	5.108	21.957	1.316	0.209
	TDTAR	0.018	13.474	-8.344	-0.513	0.616
Working Capital Policy	CLTAR	0.349	22.128	-48.784	-2.740*	0.016
	CATAR	0.205	20.700	-23.361	-1.897	0.079
	CANFAR	0.189	19.932	-2.697	-1.805	0.093
	CLCAR	0.042	14.045	-7.039	-0.780	0.449
	NWCCAR	0.042	7.006	7.039	0.780	0.449
Liquidity	ITCAR	0.016	8.472	21.067	0.478	0.640
	RTCAR	0.316	25.028	-29.728	-2.543**	0.023
	CBBTCAR	0.326	1.547	33.638	2.600**	0.021
	PETCAR	0.049	6.074	48.017	0.846	0.412
	LATCAR	0.027	11.686	-37.192	-0.619	0.546
	MSTCAR	0.000	9.727	-1.795	-0.052	0.959
	CR	0.011	7.872	0.755	0.394	0.699
	QR	0.010	7.668	0.906	0.382	0.708
	ALR	0.124	5.762	4.588	1.407	0.181
Efficiency	TATR	0.232	17.627	-8.252	-2.055	0.059
	CATR	0.016	12.508	-1.289	-0.481	0.638
	WCTR	0.000	9.819	-0.037	-0.064	0.950
	ITR	0.058	10.554	-0.002	-0.930	0.368
	IHP	0.000	9.751	-0.009	-0.058	0.954
	RTR	0.147	5.749	0.620	1.553	0.143
	ACP	0.207	18.107	-0.075	-1.913	0.076
	CBTR	0.047	12.504	-0.146	-0.829	0.421
	CTR	0.028	10.856	-0.047	-0.540	0.533
	APP	0.003	10.404	-0.020	-0.201	0.844
	OC	0.152	16.541	-0.055	-1.585	0.135
	NTC	0.137	14.168	-0.052	-1.490	0.158

Critical Values of “t”

Degrees of Freedom	Probability (Alpha)	Table Value – t
14	0.01	2.977
14	0.05	2.145

* Results significant at 1% level of significance ** Results significant at 5% level of significance

C. Simple Linear Regressions for ROTA

From the perusal of Table 7.27, it is observed that of the 30 explanatory variables only 7 significantly influence ROTA. Further LEV and WCP have no significant impact on ROTA.

Both the indicators of Firm Size have significant impact on ROTA which indicates that as the total assets base as well as sales turnover of the firms in Transport Services Industry increases ROTA improves.

TABLE – 7.27

Results of Simple Linear Regression for ROTA: Transport Services Industry

Independent Variable	Indicators	R^2	Intercept	Slope	t-Statistic	p-value
Size	LnS	0.428	-39.145	2.449	3.238*	0.006
	LnTA	0.342	-31.591	2.057	2.697*	0.017
Leverage	LTDTAR	0.003	11.180	2.327	0.193	0.850
	TDTAR	0.006	13.123	-3.175	-0.284	0.781
Working Capital Policy	CLTAR	0.022	13.779	-8.274	-0.555	0.588
	CATAR	0.099	16.9332	-11.124	-1.243	0.234
	CANFAR	0.225	14.868	-2.009	-2.014	0.064
	CLCAR	0.007	12.920	-2.008	-0.320	0.754
	NWCCAR	0.007	10.911	2.008	0.320	0.754
Liquidity	ITCAR	0.070	13.304	-30.118	-1.029	0.321
	RTCAR	0.118	18.090	-12.412	-1.369	0.193
	CBBTCAR	0.290	6.448	21.700	2.394**	0.031
	PETCAR	0.164	7.208	60.208	1.657	0.120
	LATCAR	0.003	11.196	8.338	0.201	0.844
	MSTCAR	0.164	13.707	-35.514	-1.655	0.120
	CR	0.043	14.017	-1.016	-0.790	0.442
	QR	0.037	14.180	-1.168	-0.731	0.477
	ALR	0.002	11.324	0.396	0.167	0.870
Efficiency	TATR	0.001	12.059	-0.413	-0.132	0.897
	CATR	0.080	7.825	1.954	1.104	0.288
	WCTR	0.072	9.562	0.396	1.044	0.314
	ITR	0.014	11.969	0.000	-0.444	0.663
	IHP	0.131	13.687	-0.150	-1.452	0.169
	RTR	0.457	6.989	0.748	3.434*	0.004
	ACP	0.337	19.044	-0.066	-2.665**	0.018
	CBTR	0.000	11.472	0.009	0.076	0.940
	CTR	0.092	13.174	-0.058	-1.192	0.253
	APP	0.000	11.460	0.005	0.075	0.941
	OC	0.332	18.640	-0.055	-2.640**	0.019
	NTC	0.341	16.557	-0.056	-2.690**	0.018

Critical Values of "t"

Degrees of Freedom	Probability (Alpha)	Table Value – t
14	0.01	2.977
14	0.05	2.145

* Results significant at 1% level of significance ** Results significant at 5% level of significance

Liquidity represented by CBBTCAR has a positive impact on ROTA as also observed in case of OPM and NPM. Hence, liquidity has a positive influence on ROTA. ***Efficiency represented by RTR has a positive impact whereas ACP has a negative impact*** on ROTA. The results indicate that as RTR increases ROTA also increases. RTR explains 45.7% variation in ROTA which is highest and thus is an important determinant of ROTA. Further, ***ACP, OC and NTC negatively influences ROTA***

indicating that as the length of collection period, operating cycle, and net trade cycle reduces, the ROTA improves thereby indicating that efficient WCM has a positive influence on ROTA.

D. Simple Linear Regressions for EAT/TA

From the perusal of Table 7.28, it is observed that only 7 explanatory variables significantly influence EAT/TA.

TABLE – 7.28

Results of Simple Linear Regression for EAT/TA: Transport Services Industry

Independent Variable	Indicators	R^2	Intercept	Slope	t-Statistic	p-value
Size	LnS	0.371	-30.543	1.791	2.873*	0.012
	LnTA	0.336	-27.067	1.602	2.660**	0.019
Leverage	LTDTAR	0.000	6.619	-0.079	-0.008	0.993
	TDTAR	0.071	10.645	-8.758	-1.031	0.320
Working Capital Policy	CLTAR	0.112	10.400	-14.815	-1.325	0.206
	CATAR	0.088	10.510	-8.240	-1.165	0.263
	CANFAR	0.167	8.778	-1.361	-1.676	0.116
	CLCAR	0.073	9.749	-5.009	-1.052	0.311
	NWCCAR	0.073	4.740	5.009	1.052	0.311
Liquidity	ITCAR	0.013	7.155	-10.111	-0.427	0.676
	RTCAR	0.262	14.132	-14.531	-2.230**	0.043
	CBBTCAR	0.374	1.956	19.353	2.894*	0.012
	PETCAR	0.115	3.672	39.654	1.350	0.198
	LATCAR	0.005	6.146	8.237	0.253	0.804
	MSTCAR	0.058	7.559	-16.585	-0.927	0.370
	CR	0.000	6.612	-0.004	-0.004	0.997
	QR	0.000	6.388	0.100	0.078	0.939
	ALR	0.068	5.062	1.830	1.014	0.328
Efficiency	TATR	0.024	7.987	-1.427	-0.588	0.566
	CATR	0.015	5.123	0.661	0.459	0.653
	WCTR	0.030	5.545	0.200	0.656	0.523
	ITR	0.025	6.928	0.000	-0.596	0.561
	IHP	0.039	7.478	-0.065	-0.758	0.461
	RTR	0.399	3.174	0.549	3.052*	0.009
	ACP	0.297	12.054	-0.048	-2.432**	0.029
	CBTR	0.003	7.010	-0.021	-0.214	0.834
	CTR	0.033	7.318	-0.027	-0.694	0.499
	APP	0.008	7.279	-0.017	-0.325	0.750
	OC	0.259	11.444	-0.038	-2.212**	0.044
	NTC	0.227	9.743	-0.036	-2.027	0.062

Critical Values of "t"

Degrees of Freedom	Probability (Alpha)	Table Value – t
14	0.01	2.977
14	0.05	2.145

* Results significant at 1% level of significance ** Results significant at 5% level of significance

Further, WCP and LEV have no significant impact on EAT/TA. Of the significant variables, 6 variables *viz,* LnS, LnTA, CBBTCAR, RTR, ACP, OC and NTC are observed to be common with ROTA and hence the interpretations for these ratios thereat holds good here also.

Further, in case of EAT/TA, RTR explains 39.9% variation. ***Liquidity measured in terms of RTCAR*** has a negative impact on EAT/TA indicating that as the share of receivables in current assets increase, the EAT/TA reduces which is in line with negative impact of ACP and positive impact of RTR.

E. Simple Linear Regressions for RONW

From the perusal of Table 7.29, it is observed that only 5 variables, *viz,* LnS, LnTA, ACP, OC and NTC significantly influence RONW. Also, it is observed that all these five variables are common with ROTA and hence the interpretations thereat holds good here also. Except that in case of RONW, NTC is an important determinant explaining the highest variation in RONW, *i.e.,* 43.9%.

Hence, managers of firms in Transport Services Industry can create shareholder value by reducing the length of ACP, OC and NTC and expanding their business either through asset base or through sales size.

TABLE – 7.29

Results of Simple Linear Regression for RONW: Transport Services Industry

Independent Variable	Indicators	R^2	Intercept	Slope	t-Statistic	p-value
Size	LnS	0.369	-69.044	3.296	2.860*	0.013
	LnTA	0.275	-54.648	3.189	2.306**	0.037
Leverage	LTDTAR	0.109	7.090	25.756	1.308	0.212
	TDTAR	0.037	5.920	14.012	0.737	0.473
Working Capital Policy	CLTAR	0.021	15.968	-13.971	-0.542	0.596
	CATAR	0.082	20.644	-17.416	-1.116	0.283
	CANFAR	0.134	16.672	-2.682	-1.473	0.163
	CLCAR	0.027	16.601	-6.709	-0.625	0.542
	NWCCAR	0.027	9.892	6.709	0.625	0.542
Liquidity	ITCAR	0.046	14.675	-41.882	-0.818	0.427
	RTCAR	0.018	16.707	-8.336	-0.505	0.622
	CBBTCAR	0.082	7.618	19.861	1.115	0.284
	PETCAR	0.120	5.817	88.889	1.380	0.189
	LATCAR	0.015	10.560	32.943	0.462	0.651
	MSTCAR	0.165	15.943	-61.646	-1.665	0.118
	CR	0.035	16.065	-1.585	-0.711	0.489
	QR	0.032	16.435	-1.875	-0.678	0.509
	ALR	0.003	13.119	-0.870	-0.212	0.835
Efficiency	TATR	0.000	12.099	0.297	0.055	0.957
	CATR	0.123	3.039	4.177	1.399	0.184

TABLE – 7.29

Results of Simple Linear Regression for RONW: Transport Services Industry

Independent Variable	Indicators	R^2	Intercept	Slope	t-Statistic	p-value
Efficiency	WCTR	0.194	6.451	1.120	1.837	0.087
	ITR	0.013	12.902	-0.01	-0.427	0.676
	IHP	0.156	16.208	-0.282	-1.606	0.130
	RTR	0.146	7.829	0.730	1.548	0.144
	ACP	0.380	25.943	-0.120	-2.931*	0.011
	CBTR	0.046	9.021	0.171	0.821	0.425
	CTR	0.034	13.969	-0.060	-0.698	0.497
	APP	0.016	10.207	0.056	0.479	0.639
	OC	0.378	25.250	-0.102	-2.919*	0.011
	NTC	0.439	21.985	-0.110	-3.307*	0.005

Critical Values of "t"

Degrees of Freedom	Probability (Alpha)	Table Value – t
14	0.01*	2.977
14	0.05**	2.145

* Results significant at 1% level of significance ** Results significant at 5% level of significance

7.7.2 Results of Stepwise Regression

The results of Stepwise Regressions are presented in Table 7.30 for all the profitability measures, *i.e.,* OPM, NPM, ROTA, EAT/TA and RONW.

On observing the results of stepwise regressions for **OPM and NPM**, it is found that for both these profitability ratios, LnTA and CLTAR are the significant explanatory variables. These two variables explain approximately 71% variations in OPM and 61% variation in NPM. Further, the results indicate that as the total assets base of the firms in Transport Services Industry increases OPM and NPM are likely to improve. . It is in line with the premise that "large organizations enjoy the benefits of the economies of scale"[4] and is consistent with the findings of Deloof[13], Afza and Nazir[33] and Nassirzadeh and Rostami[9] but inconsistent with the results of Khan *et al*[15].

Further, CLTAR has a negative influence on OPM and NPM indicating that with higher utilization of CL to finance TA, the OPM and NPM are likely to fall. Thus, managers of firms in Transport Services Industry should always try to reduce the proportion of CL to TA.

On further examining the results of stepwise regressions it is observed that RTR and LnS explains 58.6% variation in **ROTA**. When **EAT/TA** is taken as a measure of profitability, LnS is eliminated and 2 new variables, *viz,* CLCAR and CANFAR enter the model and they jointly explain 69.1% variation in EAT/TA. The VIF Statistics also indicates no multicollinearity amongst the independent variables.

In case of **RONW** only 1 variable, *i.e.,* NTC is observed to explain 41.1% variation which is an indicator of Efficiency

TABLE – 7.30

Results of Stepwise Linear Regression for all Profitability Measures: Transport Services Industry

Independent Variable	R^2	Adj. R^2	Intercept	Slope	t-Statistic	p-value	F-Statistic	VIF Statistics
Dependent Variable – OPM: Model - 1								
LnTA	0.748	0.709	-52.052	3.991	4.133*	0.001	19.306* (0.000)	1.047
CLTAR				-56.657	-3.661*	0.003		1.047
Dependent Variable – NPM: Model – 1								
LnTA	0.663	0.611	-42.536	2.954	3.481*	0.004	12.795* (0.001)	1.047
CLTAR				-38.769	-2.851**	0.014		1.047
Dependent Variable – ROTA: Model – 1								
RTR	0.641	0.586	-27.784	0.552	2.774**	0.016	11.595* (0.001)	1.171
LnS				1.735	2.577**	0.023		1.171
Dependent Variable – EAT/TA: Model – 1								
RTR	0.753	0.691	12.468	0.552	4.249*	0.001	12.182* (0.001)	1.084
CLCAR				-10.814	-3.730*	0.003		1.191
CANFAR				-1.576	-2.990**	0.011		1.216
Dependent Variable – RONW: Model – 1								
NTC	0.755	0.694	43.034	-0.125	-5.003*	0.000	12.314* (0.001)	1.119
CLCAR				-23.216	-3.555*	0.004		1.261
CANFAR				-3.194	-2.809**	0.016		1.181

Critical Values of "t" and "F"

t-test			F-test, Degrees of Freedom = 1		
DF	Probability (Alpha)	Table Value – t	N	Probability (Alpha)	Table Value – F
14	0.01	2.977	14	0.01	8.86
14	0.05	2.145	14	0.05	4.60
t-test			F-test, Degrees of Freedom = 2		
13	0.01	3.012	13	0.01	6.70
13	0.05	2.160	13	0.05	3.81
t-test			F-test, Degrees of Freedom = 3		
12	0.01	3.055	12	0.01	5.95

* Results significant at 1% level of significance ** Results significant at 5% level of significance

Size measured in terms of LnS positively influences ROTA and indicates that with increase in sales turnover the profitability of the firms in Transport Services Industry increases which is consistent with the findings of Nassirzadeh and Rostami[9], Sabunwala[24] and many more[5,12,14,15,21,23-25].

Efficiency represented by RTR positively influences ROTA and EAT/TA indicating that with increased efficiency in receivables management profitability (ROTA and EAT/TA) can be increased. From the results it can also be inferred that profitable firms manage their receivables efficiently.

Working Capital Policy measured in terms of CLCAR and CANFAR is observed to have negative impact on EAT/TA of Transport Services Industry. *CLCAR signifies* the extent of current assets financed by current liabilities and thus indicates the type of working capital financing policy pursued by a firm. A high ratio is indicative of conservative approach whereas a low ratio is indicative of aggressive approach followed by an enterprise. The results indicate that as the *CLCAR* increases, EAT/TA declines, *i.e.,* as the firms utilize more of current liabilities to finance the current assets, the profitability would decline and *vice–versa* which implies a negative influence of aggressive working capital financing policy on profitability. This negative influence of aggressive working capital financing on profitability is consistent with the results of Afza and Nazir[5], Vahid *et al*[6], Al Mwalla[7], Azhar and Saad[30], Al Shubiri[40] and Al-Shubiri[41]. *CANFAR* indicates the nature of working capital investment policy pursued by a firm with high ratio indicative of conservative approach whereas a low ratio of aggressive approach pursued by a firm. The results indicate that as the CANFAR increases, EAT/TA declines, *i.e.,* as the firms increase investments in current assets in proportion to net fixed assets, EAT/TA falls. This result indicates a negative influence of conservative working capital investment policy on profitability and is consistent with the findings of Vahid *et al*[6] but inconsistent with the results of Afza and Nazir[5], Azhar and Saad[30], Al Shubiri[40], Al Mwalla[7], and Al-Shubiri[41].

Thus, the managers of firms in Transport Services Industry should make a higher use of long term funds in the form of net working capital to finance the current assets, *i.e.,* pursue a conservative working capital financing policy which should be balanced by an aggressive working capital investment policy, *i.e.*, by maintaining low level of current assets in the asset structure.

WCME represented by NTC has a negative impact on RONW which indicates that as the length of NTC increases it will have a declining effect on RONW. Thus, firms in Transport Services Industry can create Shareholder Value by reducing the length of NTC and these results support the findings of Azam and Haider[49].

7.7.3 Summary of Results of Simple and Stepwise Regressions of Transport Services Industry

A summary of the results of Simple and Stepwise Regressions is prepared and presented in Table 7.31 to have a comparative view of the significant indicators of the explanatory variables in Simple and Stepwise Regressions for each measure of profitability of the Transport Services Industry.

TABLE 7.31

Summary Table for Results of Simple and Stepwise Linear Regressions: Transport Services Industry

Sr. No.	Independent Variables	Indicators	Regression Model	Dependent Variable: Profitability Ratios				
				OPM	NPM	ROTA	EAT/TA	RONW
1	Size	LnS	Simple	+ve**	+ve**	+ve*	+ve*	+ve*
			Stepwise	NS	NS	+ve**	NS	NS
		LnTA	Simple	+ve*	+ve*	+ve*	+ve**	+ve**
			Stepwise	+ve*	+ve*	NS	NS	NS
2	Leverage	LTDTAR	Simple	NS	NS	NS	NS	NS
			Stepwise	NS	NS	NS	NS	NS
		TDTAR	Simple	NS	NS	NS	NS	NS
			Stepwise	NS	NS	NS	NS	NS
3	Working Capital Policy	CLTAR	Simple	–ve*	–ve*	NS	NS	NS
			Stepwise	–ve*	–ve**	NS	NS	NS
		CATAR	Simple	–ve*	NS	NS	NS	NS
			Stepwise	NS	NS	NS	NS	NS
		CANFAR	Simple	–ve**	NS	NS	NS	NS
			Stepwise	NS	NS	NS	–ve*	NS
		CLCAR	Simple	NS	NS	NS	NS	NS
			Stepwise	NS	NS	NS	–ve*	NS
		NWCCAR	Simple	NS	NS	NS	NS	NS
			Stepwise	NS	NS	NS	NS	NS
4	Liquidity	ITCAR	Simple	NS	NS	NS	NS	NS
			Stepwise	NS	NS	NS	NS	NS
		RTCAR	Simple	–ve**	–ve**	NS	–ve**	NS
			Stepwise	NS	NS	NS	NS	NS
		CBBTCAR	Simple	+ve*	+ve**	+ve**	+ve*	NS
			Stepwise	NS	NS	NS	NS	NS
		PETCAR	Simple	NS	NS	NS	NS	NS
			Stepwise	NS	NS	NS	NS	NS
		LATCAR	Simple	NS	NS	NS	NS	NS
			Stepwise	NS	NS	NS	NS	NS
		MSTCAR	Simple	NS	NS	NS	NS	NS
			Stepwise	NS	NS	NS	NS	NS
		CR	Simple	NS	NS	NS	NS	NS
			Stepwise	NS	NS	NS	NS	NS
		QR	Simple	NS	NS	NS	NS	NS
			Stepwise	NS	NS	NS	NS	NS
		ALR	Simple	NS	NS	NS	NS	NS
			Stepwise	NS	NS	NS	NS	NS
5	Efficiency	TATR	Simple	–ve*	NS	NS	NS	NS
			Stepwise	NS	NS	NS	NS	NS
		CATR	Simple	NS	NS	NS	NS	NS
			Stepwise	NS	NS	NS	NS	NS
		WCTR	Simple	NS	NS	NS	NS	NS
			Stepwise	NS	NS	NS	NS	NS
		ITR	Simple	NS	NS	NS	NS	NS
			Stepwise	NS	NS	NS	NS	NS
		IHP	Simple	NS	NS	NS	NS	NS
			Stepwise	NS	NS	NS	NS	NS

TABLE 7.31 **(Continued...)**

Summary Table for Results of Simple and Stepwise Linear Regressions: Transport Services Industry

Sr. No.	Independent Variables	Indicators	Regression Model	Dependent Variable: Profitability Ratios				
				OPM	**NPM**	**ROTA**	**EAT/TA**	**RONW**
5	Efficiency	RTR	Simple	NS	NS	**+ve***	**+ve***	NS
			Stepwise	NS	NS	**+ve****	**+ve***	NS
		ACP	Simple	NS	NS	**–ve****	**–ve****	**–ve***
			Stepwise	NS	NS	NS	NS	NS
		CBTR	Simple	NS	NS	NS	NS	NS
			Stepwise	NS	NS	NS	NS	NS
		CTR	Simple	NS	NS	NS	NS	NS
			Stepwise	NS	NS	NS	NS	NS
		APP	Simple	NS	NS	NS	NS	NS
			Stepwise	NS	NS	NS	NS	NS
		OC	Simple	NS	NS	**–ve****	**–ve****	**–ve***
			Stepwise	NS	NS	NS	NS	NS
		NTC	Simple	NS	NS	**–ve****	NS	**–ve***
			Stepwise	NS	NS	NS	NS	**–ve***

+ve indicates positive impact; –ve indicates negative impact
* Indicates significance at 1% level ** Indicates significance at 5% level

Thus, following observations can be made from the perusal of Table 7.31:

- Profitability measured in terms of OPM and NPM are affected by LnTA (Size) and CLTAR (Working Capital Policy). However LnS, CLTAR, CATAR, CANFAR, RTCAR, CBBTCAR and TATR observed to be significant in Simple Linear Regression on OPM are eliminated in Stepwise Regression. *Similarly*, LnS, RTCAR and CBBTCAR observed to be significant in Simple Linear Regression on NPM are eliminated in Stepwise Regression.
- Profitability measured in terms of ROTA is affected by LnS (Size) and RTR (Efficiency). However LnTA, CBBTCAR, ACP, OC and NTC observed to be significant in Simple Linear Regression are eliminated in Stepwise Regression..
- Profitability measured in terms of EAT/TA is affected by RTR (Efficiency), CLCAR and CANFAR (Working Capital Policy). However LnS, LnTA, RTCAR, CBBTCAR, ACP and OC observed to be significant in Simple Linear Regression are eliminated whereas CLCAR and CANFAR which were not significant are observed to be significant in Stepwise Regression.
- Profitability measured in terms of RONW is affected by NTC (Liquidity). Further LnS, LnTA, ACP and OC observed to be significant in Simple Linear Regression are eliminated in Stepwise Regression.

CONCLUSIONS

In this Chapter the impact of Sales on Working Capital; Impact of WCL on ROTA as well as Impact of Liquidity, LEV, Working Capital Policy, CAME and Size on Profitability was examined by running Simple Linear Regressions and Stepwise Regressions. The conclusions based on analysis and findings are presented here. The conclusion for impact of sales on working capital is given followed by impact of WCL on ROTA and then the conclusions are given for each measure of profitability for stepwise regression for all industries.

A. Impact of Working Capital on Sales

It is concluded that Sales is an important determinant of working capital and the results support the premise of Pandey[1] and findings of Mallick & Sur [2].

B. Impact of Working Capital Leverage on ROTA

It is concluded that ROTA is sensitive to the change in current asset investment policy and that working capital leverage is operational in the Non Financial Service Industry as well as Hotels and Restaurant *and* ITes Industry. However it is observed that in Transport Services Industry the ROTA is not sensitive to the change in current asset investment policy. Further it is concluded that firms in Non Financial Service Industry as well as Hotels and Restaurant *and* ITes Industry are affected by the working capital risk whereas *vice-versa* is the case for Transport Services Industry.

C. Impact of Size, LEV, WCP, Liquidity and WCME on Profitability of Non Financial Service Industry (All 79 companies)

- It is concluded that Firm Size measured in terms of LnS positively influences ROTA, EAT/TA and RONW whereas LnTA influences NPM indicating that firm size is an important determinant of profitability of these firms except OPM.
- It is concluded that Leverage measured in terms of TDTAR has a negative impact on ROTA and EAT/TA.
- It is concluded that there is a negative impact of conservative working capital financing policy, *i.e.,* NWCCAR on EAT/TA and by following an aggressive approach to current asset financing the managers of firms in Non Financial Service Industry can improve their post tax returns on total assets.
- It is concluded that RTCAR and LATCAR has a negative impact on NPM and ROTA respectively and that by reducing blockage of funds in receivables and Loans & advances, firms can improve their profitability. It is also concluded that CBBTCAR has positive influence on OPM, ALR on NPM as well as EAT/TA indicating positive impact of liquidity on profitability.

- It is also concluded that there is a positive influence of efficiency represented by CTR on ROTA and EAT/TA indicating that the firms in the industry can increase their profitability by ensuring timely settlement of their dues.
- It is concluded that TATR has a positive impact on EAT/TA. Further, IHP has a negative impact on NPM and RONW indicating that managers of firms in Non Financial Service Industry can create shareholder value and increase operational profitability by reducing the length of IHP. Further NTC has a negative influence on ROTA indicating that through overall efficiency of WCM the NTC can be reduced which would lead to rise in ROTA.

D. Impact of Size, LEV, WCP, WCME and Liquidity on Profitability of Hotels and Restaurant Industry (25 Companies)

- It is concluded that ALR positively influences OPM and NPM indicating the positive influence of liquidity on profitability. Further a negative impact of RTCAR on NPM, ROTA and EAT/TA indicates that increased investments in receivables which is an indicator of liberal credit policy results to decline in profitability.
- It is also concluded that there is a negative influence of efficiency represented by CTR on OPM and the firms in the industry can increase their profitability by slowing the payments and lengthening their payment period
- It is concluded that inventory management in the Hotels and Restaurant Industry is efficient and leads to improvement in ROTA and EAT/TA.
- Aggressive working capital financing policy is observed to positively influence the RONW and it is concluded that managers of firms in Hotels and Restaurant Industry can increase their profitability by utilizing more of short term funds as compared to long term funds to finance the current assets.

E. Impact of Size, LEV, WCP, WCME and Liquidity on Profitability of ITes Industry (20 Companies)

- It is concluded that Size measured in terms of LnS has a positive impact on NPM, ROTA, EAT/TA and RONW. Thus firms with large size in are more profitable.
- It is concluded that TDTAR has a negative impact on EAT/TA and that firms in ITes Industry should reduce their debt component to earn higher profitability.
- It is concluded that CBTR has a negative influence on OPM, NPM which indicates that the firms in ITes Industry should maintain reasonable level of cash balances in order to maintain a profitable position.
- It is concluded that there is a negative impact of ITCAR on NPM and so firms in ITes Industry can increase their profitability and operational profitability by efficiently managing their inventories through reduced investment in inventories.

- It is concluded that ACP has a negative influence on OPM whereas RTR has a positive influence on NPM and RONW indicating that through shorter collection period and prompt collection efforts the firms in ITes Industry can improve their profits and create shareholder value. Further it is concluded that efficient receivables management positively influences profitability.
- It is concluded that there is negative impact of WCTR on ROTA and EAT/TA indicating that increased use of working capital to fund the current assets is not good for the profitability of the business. Thus, the ITes Industry should take measures to utilize more of short term funds to support their sales and finance their current assets. This result is confirmed by a negative impact of conservative working capital financing policy on profitability.

E. Impact of Size, LEV, WCP, WCME and Liquidity on Profitability of Transport Services Industry (16 companies)

- It is concluded that LnTA has a positive impact on OPM, NPM whereas LnS has a positive impact on ROTA indicating that larger firms in Transport Services Industry are reaping the benefit of economies of scale resulting to positive impact on profitability.
- It is concluded that there is a positive impact of efficient receivables management (RTR) on ROTA, EAT/TA and so firms in Transport Services Industry can increase their profitability through prompt collection efforts.
- It is concluded that there is a negative impact of aggressive working capital financing policy (CLTAR, CLCAR) on OPM, NPM and EAT/TA and thus firms in Transport Services Industry should utilize more of working capital to fund their current assets. Further, a negative impact of conservative working capital investment policy (CANFAR) is also observed on EAT/TA of the firms in Transport Services Industry. Thus firms in Transport Services Industry can increase profitability by reducing their investments in current assets and maintaining lower level of current assets in the total asset structure as also by funding major part of its current assets through working capital, *i.e.,* long term funds.
- It is concluded that managers of firms in Transport Services Industry can create shareholder value by reducing the length of net trade cycle which further indicates lower investment in current assets and confirms the negative influence of conservative working capital investment policy observed on profitability.

Overall from the analysis it is observed that different measures of liquidity, LEV, WCP, Firm Size and Efficiency distinctively affect the different measures of profitability. However, it is understood that efficient liquidity and working capital management is bound to have a positive influence on profitability and *vice-versa.*

As this chapter presented the last stage of analysis, the next chapter presents the ***"Major Findings, Conclusions and Suggestions"*** based on the empirical examination carried out in Chapters 5, 6 and 7.

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CHAPTER 8
FINDINGS, CONCLUSIONS AND SUGGESTIONS

In this chapter, the major findings of this study have been summarized and conclusions based on the study are presented. For the purpose of systematic presentation, the chapter is divided into 7 sections. Section 1 gives a brief of Indian Services Sector; Section 2 presents the background of study along with main objectives and hypothesis of the study; Section 3 briefs the methodology adopted; Section 4 presents the major findings and conclusions which is segmented as per the phases of empirical analysis; Section 5 presents suggestions based on findings; Section 6 gives the limitations of the study and Section 7 gives suggestions for further research in the related area.

8.1 Growth of Indian Service Sector: A Brief

Services Sector has come to the core of every developed economy with an overall share of 67.8 % in world GDP. The services sector across the globe has been playing a dominant role in the growth of economies, especially in high income economies which have transited to services-led economies[1]. Its growing importance in the world economy is indisputable with rising trend in contribution to world GDP.

India's performance in terms of services GDP is not only above that of other emerging developing economies, but also very close to that of the top developed countries. Among the top 12 countries with highest overall GDP in 2010, India ranked 8th. India's services sector has been resilient even during the tumultuous years of the global economic crisis maintaining a steady growth of around 10 per cent. This happened even when overall GDP growth dipped sharply to 6.7 per cent in 2008-09[1]. Despite the slowing down of economic growth for the fiscal year 2011-12, the Indian Services Sector continued to be a star performer as its share in GDP climbed from 58% in 2010-11 to 59% in 2011-12 with a growth rate of 9.4%[2]. Various services *viz,* Trade, Health, Hotels and Restaurant, Communication Services, IT and IT enabled services, Transport Services, Recreational Services *etc.* are driving the Indian Services Sector. Indian Services Sector has emerged as a dominant sector in terms of both contribution as well as growth. This sector is a growth engine not only for the national economy but also for many states. It is also the major FDI-attracting sector. Indian Services Sector is considered to be an uncharted sea with plenty of opportunities with great future prospects as well as new challenges with many untold stories and unfolded mysteries. This sector is envisaged to take the Indian growth story to the next level of development phase.

8.2 Rationale of the Study

Working capital management has become the subject of wide interest amongst academicians, researchers and practitioners across the globe. The contribution of short term financial management is of prime importance for any and every business activity as it is major revenue generating activity and in absence of efficient WCM the health and survival of an entity is put to test. "Inadequacy of working capital is a symptom, and sometimes an excuse of business failure.[3]" According to Companies Act, 2002 a *Sick Industrial Company* means "an industrial company which has *i)* Accumulated losses in any financial year equal to 50 per cent or more of its average net worth during four years immediately preceding such financial year; or *ii)* Failed to repay its debts within any three consecutive quarters on demand made in writing for its repayment by a creditor or creditors of such company." Thus, inefficient management of working capital is one of the major factors leading to industrial sickness and hence cause of concern as well as matter demanding greater vigilance. The effective and efficient WCM contributes not only to the survival and earnings of an entity in the short run but also to the *i) Long term solvency* – as if a firm is able to honor current obligations, its credibility and capability to raise funds from the market eases which further contributes to the good health of the business as well as its growth; and *ii) Growth* – Sales is considered to be the barometer of growth which is facilitated by fixed assets but materialized only through the interplay of current assets and current liabilities of a firm which makes the short term financial management an inevitable and significant aspect of financial management for an enterprise. Thus, WCM decisions are synonymous with the liquidity as well as operational profitability decisions and therefore, there has been much debate on how these liquidity decisions influence the profitability on an entity, *i.e.,* positively or negatively?

Studies of Azam and Haider[4], Hayajneh and Yassine[5], Kaddumi and Ramadan[6], Bieniasz and Golas[7] have found positive influence of liquidity on profitability which rests on the premise that only through sufficient levels of current assets, an entity can generate revenue from sales. However, studies of Azhar and Saad[8], Sen and Oruc[9], Nassirzadeh and Rostami[10] have found negative influence of liquidity on profitability which rests on the premise that funds blocked in current assets are unproductive till realized but as the funds have a cost, so no revenue against cost influences the profitability negatively. Further, liquidity measures were observed to affect different measures of profitability differently.

In light of the growing debate and unresolved puzzle it was considered apt to carry out "A Study on Some Important Aspects of Working Capital Management in Selected Indian Industries" wherein, for the purpose of inquiry, Service Industry is selected due to its growing significance in context of India as well the world economy which would help in understanding the nature of WCM in the Service Industries. Further, it was difficult to find an empirical study examining all the important aspects of working capital management *viz* current asset and current liabilities structure, nature of working capital requirements, liquidity management, efficiency of WCM, working capital policy, working capital leverage as well as impact of Sales on Working Capital; impact of WCL on ROTA and impact of WCM on the profitability of the Service Sector and so through present study an attempt has been made to examine all these aspects for the Non Financial Service Industry by employing firm level data. This study would contribute to the existing literature by providing an insight to the WCM of the Non Financial Service Industry in Indian context.

The main objective of the study has been to understand the WCM of the Non Financial Service Industry through examination of trends and patterns in current asset and current liabilities structure as well as operating and net trade cycle; WCM policy, WCM efficiency, WCL and WCM risk as also to examine the impact of Sales on Working Capital; WCL on ROTA; and impact of liquidity, working capital management, efficiency and risk on profitability by undertaking empirical analysis at firm level as well as industry level *i.e.,* by grouping of the sample companies in respective 6 constituent industries of Indian Non Financial Service Sector.

For the purpose of undertaking this study, the selected sample of 79 Non Financial Service Sector companies in India represented 6 industries. The period of the study is 15 years starting from the year 1995-96 to 2009-10.

To test the hypothesis of the study (As mentioned in Chapter 4), total **40** measures were examined. Of these, 33 measures related to WCM were categorized into ***five*** major heads *viz, i)* Working Capital Policy, *ii)* Current Asset Structure Ratios, *iii)* Current Liabilities Structure Ratios, *iv)* Current Asset Management Efficiency Ratios, and *v)* Operating Cycle Variables have been applied in this study over and above **5** measures of Profitability and **2** measures of Leverage.

In this study, **30 independent variables** were selected to study the impact of WCM (Policy, Liquidity and Efficiency), Firm Size and LEV on ***five*** measures of profitability of 79 sample firms belonging to Indian Non Financial Service Industry as well as the major 3 industry groups. The list of all the WCM, PROF and LEV ratios along with their abbreviations as also the list of Independent variables along with their indicators, definition and abbreviation is presented in Tables 4.6 and 4.7 respectively.

8.3 Methodology Adopted

The present study had carried out empirical analysis in three stages and research methodology adopted for the same to test the main hypotheses of the study is briefed in the following paras.

First Stage of Analysis: Analysis of Trends

Trend Analysis: The general trends in 40 ratios relating to WCM, LEV and PROF of 79 Service Sector companies in India as well as the industry wise trends have been studied by calculating year wise mean of WCM, LEV and Profitability Ratios for the period 1994-95 to 2009-10. The Descriptive statistics, *i.e.,* Standard Deviation and Coefficient of Variation were also computed to support the analysis.

Time Trends in WCM, LEV and PROF (Trends over a period of time): To study the time trends in WCM, LEV and Profitability of Selected 79 Non Financial Service Sector Companies, the "Method of Least Squares" is applied. In the first step, to examine whether the selected 40 ratios exhibit a significant linear trend, the *Linear Trend Model* is applied and in the second step, *Quadratic Trend Model* was applied to examine if the Quadratic Trend is applicable to ratios which did not exhibit linear trend. Test of significance like t-test, F-test, p value, Durbin – Watson (D statistic) have also been applied to test the hypothesis.

Second Stage of Analysis – Analysis of Variances: To examine variations, if any, in the selected ratios of WCM, LEV and PROF Single Factor Analysis of Variance (ANOVA) is applied. This technique is applied to serve three fold objectives of examining variations, *viz, i)* To examine the variations between the industries and between the years *ii)* To examine variations between the companies of the NFSI as well as for 5 industry groups; and *iii)* To examine the variations between the years for the NFSI as well as for individual 5 service industry groups. ANOVA for Communication Services Industry was not conducted as there were only 2 firms in the industry.

Third Stage of Analysis – Impact of Sales on Working Capital; Impact of Working Capital Leverage on ROTA; Impact of Firm Size, Leverage, Liquidity, Working Capital Policy and Efficiency on Profitability: In this study, to examine the impact of sales on working capital; impact of working capital leverage on ROTA; and impact of certain variables related with Liquidity, WCP, WCME, Firm Size and LEV on measures of PROF, firm level analysis is applied in two ways: *i)* By taking all the 79 sample companies without further industry classification and *ii)* The same analysis is carried out again at firm level but within given class of industry, for *e.g.* Hotels and Restaurant Industry. Further, for conducting firm level empirical analysis based on industry-wise classification, three major industry groups, *viz,* Hotels and Restaurant Industry, ITeS Industry and Transport Services Industry having at least 15 member companies were selected which is necessary for conducting stepwise regression analysis and only these three industries satisfied the criterion of 10 data points.

Firstly, the impact of sales on working capital is examined. *Secondly* the impact of Working Capital Leverage on ROTA is examined. *Thirdly,* the impact of 5 independent variables on PROF is examined, wherein as a *first step*, simple linear regression on each indicator of selected independent variables one at a time for each measure of Profitability is conducted. In the *second step* Stepwise Regressions are carried out to identify the variables that explain the highest variation in selected measures of profitability simultaneously eliminating the problem of multicollinearity as stepwise regression method eliminates those independent variables that are highly correlated considering the values of Variance Inflationary Factor (VIF) and Tolerance Limit. VIFs for each regression run are also reported.

Having briefed the methodology the succeeding paras presents the major findings of the study and conclusions drawn based on empirical analysis which is followed by Suggestions.

8.4 Major Findings and Conclusions

The major findings of the study are presented here for each stage of empirical analysis, *i.e., **firstly*** for Trend Analysis, ***secondly*** for Analysis of Variances and ***finally*** for Empirical Examination of impact of Sales on Working Capital, Working Capital Leverage on ROTA as well as impact of LEV, Size, WCP, Liquidity and WCME on 5 measures of Profitability is presented.

8.4.1 Major Findings and Conclusions: Trend Analysis

The overall trends in WCM, LEV and PROF ratios were observed by taking industry average on yearly basis. Five different aspects of WCM, along with LEV and PROF were analyzed. The mean values of all the 40 ratios over a period of time for all the industries are presented in Table 8.1.

Further, the major findings of overall trends are presented in Table 8.2 for each aspect studied for all the industries to enable a comparative analysis and quick review of the WCM in the Non Financial Service Industry.

TABLE 8.1

SUMMARY OF INDUSTRY WISE TRENDS IN WCM, LEV AND PROF RATIOS

Sr. No.	Category & Name of Ratio	Name of the Service Industry						
		Service (All 79 Co.s)	Hotels (25 Co.s)	ITes (20 Co.s)	Transport (16 Co.s)	Health (7 Co.s)	Comm. (2 Co.s)	Misc Services (9 Co.s)
Leverage and Working Capital Policy Ratios								
1	LTDTAR	0.18	0.24	0.073	0.21	0.23	0.08	0.17
2	TDTAR	0.44	0.44	0.396	0.47	0.45	0.44	0.49
3	CLTAR	0.26	0.20	0.323	0.26	0.22	0.36	0.32
4	CATAR	0.44	0.31	0.61	0.48	0.33	0.62	0.43
5	CLCAR	0.76	0.98	0.58	0.63	0.80	0.60	0.83
6	NWCCAR	0.24	0.02	0.42	0.37	0.20	0.40	0.17
7	WCL	0.48	0.33	0.70	0.50	0.35	0.65	0.44
8	CANFAR	1.68	0.99	3.09	1.59	0.64	3.87	1.04
Current Asset Structure Ratios								
9	ITCAR	0.08	0.09	0.04	0.05	0.16	0.01	0.12
10	RTCAR	0.50	0.46	0.55	0.52	0.39	0.40	0.55
11	CBBTCAR	0.20	0.23	0.19	0.24	0.19	0.23	0.11
12	PETCAR	0.08	0.08	0.08	0.07	0.07	0.23	0.08
13	LATCAR	0.08	0.08	0.06	0.06	0.15	0.09	0.10
14	MSTCAR	0.06	0.06	0.08	0.06	0.04	0.04	0.05
Current Liabilities Structure Ratios								
15	TCCLR	0.32	0.31	0.34	0.32	0.35	0.31	0.32
16	DACECLR	0.08	0.09	0.09	0.05	0.02	0.12	0.10
17	PCLR	0.22	0.23	0.25	0.24	0.19	0.32	0.15
18	STBBCLR	0.12	0.12	0.10	0.12	0.21	0.05	0.14
19	CFCCLR	0.10	0.12	0.05	0.12	0.07	0.05	0.13
20	OCLCLR	0.16	0.13	0.17	0.15	0.16	0.15	0.16
Liquidity Ratios								
21	CR	2.23	1.85	2.98	2.32	1.80	1.81	1.91
22	QR	2.10	1.73	2.90	2.16	1.57	1.79	1.73
23	ALR	0.70	0.71	0.85	0.84	0.51	0.45	0.33
Current Asset Management Efficiency Ratios and Operating Cycle Variables								
24	TATR	0.82	0.54	1.18	0.97	0.78	0.49	0.62
25	CATR	2.25	2.71	1.93	2.24	2.86	0.79	1.54
26	WCTR	4.43	2.63	5.30	5.30	10.30	2.09	2.84
27	ITR	47.07	21.10	74.71	40.08	16.23	48.46	18.99
28	IHP	10 days	14 days	12 days	14 days	23 days	8 days	28 days
29	RTR	5.76	7.03	3.89	6.25	9.31	2.34	3.54
30	ACP	132 days	121 days	166 days	113 days	69 days	259 days	148 days
31	CBTR	20.86	22.66	15.47	19.68	28.23	6.91	28.13
32	CTR	54.12	16.02	161.97	26.20	12.25	6.23	13.17
33	APP	54 days	54 days	69 days	39 days	41 days	76 days	52 days
34	OC	143 days	140 days	178 days	127 days	92 days	267 days	175 days
35	NTC	89 days	86 days	109 days	88 days	51 days	190 days	123 days

TABLE 8.1 (Continued...)

SUMMARY OF INDUSTRY WISE TRENDS IN WCM, LEV AND PROF RATIOS

Sr. No.	Category & Name of Ratio	Name of the Service Industry						
		Service (All 79 Co.s)	Hotels (25 Co.s)	ITeA (20 Co.s)	Transport (16 Co.s)	Health (7 Co.s)	Comm. (2 Co.s)	Misc. Services (9 Co.s)
Profitability Ratios								
36	OPM	18.66%	24.26%	17.02%	17.33%	7.81%	24.60%	17.08%
37	NPM	10.04%	11.92%	11.57%	9.62%	1.12%	10.99%	8.31%
38	ROTA	11.95%	10.88%	18.10%	11.66%	7.50%	10.88%	9.38%
39	EAT/TA	7.73%	6.25%	13.58%	6.60%	2.62%	6.25%	4.91%
40	RONW	15.14%	15.09%	22.29%	12.39%	7.88%	14.50%	10.77%

Comm. refers to Communication Services Industry.

TABLE 8.2

MAJOR FINDINGS OF TREND ANALYSIS

Sr. No.	Ratio	Description	Name of Industry
		LEVERAGE	
1	TDTAR	Conservative Debt Financing Policy.	Non Financial Service Industry as well as all the 6 Industry groups
2	LTDTAR	Long term debt formed major component of Total Debt.	Hotels and Restaurant Industry and Health Services Industry
3	CLTAR	Short term debt formed major component of Total Debt.	Non Financial Service Industry ITeA Industry; Transport Services Industry; Communication Services Industry and Miscellaneous Services Industry.
		WORKING CAPITAL POLICY	
4	CATAR	Conservative Current Asset Investment Policy.	Non Financial Service Industry ITeA; Transport Services; Communication Services Industry and Miscellaneous Services Industry.
		Moderate Current Asset Investment Policy.	Hotels and Restaurant Industry and Health Services Industry
5	CLCAR, NWCCAR & CLTAR	Aggressive Current Asset Financing Policy.	Non Financial Service Industry and all its constituent industry groups.
		WORKING CAPITAL LEVERAGE	
6	WCL	ROTA is sensitive to the current asset investment policy indicating inherent working capital risk in the asset structure.	Non Financial Service Industry as well as all its constituent industry groups.
		Industries least affected by WCL.	Transport Services and Health Services Industry
		ITeA followed by Communication Services Industry is very sensitive to the changes in the CA investment policy amongst all the Non Financial Service Industry groups.	
		CURRENT ASSET STRUCTURE	
7	RTCAR	Receivables formed the major share in the current asset structure.	Non Financial Service Industry as well as all its constituent industry groups.

TABLE 8.2 (Continued...)

MAJOR FINDINGS OF TREND ANALYSIS

Sr. No.	Ratio	Description	Name of Industry
8	ITCAR	Inventory had a very low proportion in the current asset structure.	Non Financial Service Industry (8%); Communication Services (2%); ITes (4%), Transport Services (5%), Hotels and Restaurant (9%), Health Services (12%) and Miscellaneous Services (14%).
CURRENT LIABILITIES STRUCTURE			
9	TCCLR	Trade Credit formed the major share in the current liabilities structure.	Non Financial Service Industry as well as all its constituent industry groups.
10	TCCLR, CFCCLR, PCLR, OCLCLR	Among CL, the Spontaneous source of short term finance is noted to be dominating the current liabilities structure.	Non Financial Service Industry as well as all its constituent industry groups.
LIQUIDITY POSITION			
11	CR, QR & ALR	Sound Liquidity and Short term Solvency position.	Non Financial Service Industry as well as Hotels and Restaurant Industry.
		Excess Liquidity	ITes Industry and Transport Services Industry.
		Tight fisted liquidity position with risk of technical insolvency.	Health Services Industry and Communication Services Industry
CURRENT ASSET MANAGEMENT EFFICIENCY			
12	TATR and CATR	Efficient management of Total Assets and Current Assets.	Non Financial Service Industry as well as Hotels and Restaurant; ITes Transport Services and Health Services Industry.
13	WCTR	Utilization of low level and at times negative NWC for supporting sales.	Non Financial Service Industry as well as all its constituent industry groups.
14	CBTR, ITR, IHP, RTR and ACP	Efficient Inventory & Cash Management. Improving but unsatisfactory receivables management with a scope to improve credit management.	Non Financial Service Industry as well as all its constituent industry groups.
15	CTR and APP	Prompt payment of dues resulting to good reputation and is considered as the possible cause for easy access to short term funds which has resulted to heavy reliance on current liabilities to finance the current assets.	Non Financial Service Industry as well as all its constituent industry groups. However, in case of Communication Services as well as Miscellaneous Services Industry it is observed that gradually the industry is delaying payments to creditors.
16	OC and NTC	Long Operating and Net Trade Cycle indicating greater working capital requirements	Non Financial Service Industry as well as all its constituents.
PROFITABILITY POSITION			
17	OPM,NPM, ROTA, EAT/TA, RONW	The industry is not able to provide stable returns to its investors.	Non Financial Service Industry as well as all its constituent industry groups

8.4.2 Major Findings and Conclusions: Time Trend Analysis

As already discussed the Linear and Quadratic Trend Model is applied to examine the time trends in WCM, LEV and PROF ratios. The summary of the results of time trend analysis is presented in Table 8.3.

TABLE 8.3

SUMMARY OF TIME TREND ANALYSIS FOR ALL INDUSTRIES

Sr. No.	Category & Name of Ratio	Name of the Service Industry						
		Service (All 79 Co.s)	Hotels (25 Co.s)	IT (20 Co.s)	Transport (16 Co.s)	Health (7 Co.s)	Comm. (2 Co.s)	Misc Services (9 Co.s)
Leverage and Working Capital Policy Ratios								
1	LTDTAR	Q (–,+)	Q (+,–)	Q (–,+)	–VE*	Q (–,+)	Q (–,+)	NT
2	TDTAR	Q (–,+)	Q (+,–)	Q (–,+)	–VE*	+VE*	Q (–,+)	Q (+,–)
3	CLTAR	+VE**	+VE**	NT	–VE**	Q (+,–)	Q (–,+)	–VE**
4	CATAR	Q (–,+)	Q (–,+)	–VE*	–VE**	+VE*	–VE*	Q (–,+)
5	CLCAR	Q (+,–)	NT	+VE**	NT	NT	Q (–,+)	Q (–,+)
6	NWCCAR	Q (–,+)	NT	–VE**	NT	NT	Q (+,–)	Q (+,–)
7	WCL	Q (–,+)	NT	–VE*	NT	+VE*	–VE*	+VE*
Current Asset Structure Ratios								
8	ITCAR	–VE*	Q (+,–)	Q (–,+)	–VE*	NT	Q (–,+)	Q (–,+)
9	RTCAR	–VE*	–VE*	Q (–,+)	–VE*	–VE**	NT	–VE*
10	CBBTCAR	NT	NT	NT	+VE*	Q (–,+)	Q (+,–)	+VE**
11	PETCAR	+VE*	+VE*	+VE*	NT	Q (+,–)	+VE*	+VE*
12	LATCAR	Q (+,–)	–VE*	Q (+,–)	NT	Q (+,–)	Q (–,+)	Q (+,–)
13	MSTCAR	Q (+,+)	+VE*	Q (+,–)	+VE*	Q (+,–)	+VE*	+VE*
Current Liabilities Structure Ratios								
14	TCCLR	–VE*	–VE*	–VE*	+VE*	+VE*	–VE*	–VE*
15	DACECLR	Q (+,–)	Q (+,–)	Q (+,–)	+VE*	+VE*	NT	Q (+,–)
16	PCLR	Q (–,+)	Q (–,+)	Q (+,–)	Q (–,+)	Q (–,+)	Q (+,–)	+VE*
17	STBBCLR	NT	NT	Q (–,+)	Q (+,–)	Q (+,–)	NT	Q (–,+)
18	CFCCLR	Q (+,–)	NT	Q (–,+)	Q (+,–)	–VE**	–VE**	Q (+,–)
19	OCLCLR	Q (–,+)	Q (–,+)	Q (–,+)	Q (–,+)	–VE**	+VE*	Q (–,+)
Liquidity Ratios								
20	CR	–VE*	NT	–VE*	+VE**	Q (–,+)	Q (+,–)	NT
21	QR	–VE*	NT	–VE*	+VE*	Q (–,+)	Q (+,–)	+VE**
22	ALR	+VE*	+VE*	NT	+VE*	Q (–,+)	Q (+,–)	Q (–,+)
Current Asset Management Efficiency Ratios and Operating Cycle Variables								
23	TATR	NT	+VE**	–VE*	–VE*	+VE*	Q (–,+)	NT
24	CATR	Q (+,–)	Q (+,–)	NT	Q (+,–)	–VE**	Q (–,+)	NT
25	WCTR	NT	NT	NT	Q (+,–)	NT	N T	N T
26	ITR	+VE*	+VE*	Q (+,–)	+VE*	NT	Q (+,–)	+VE*
27	IHP	Q (–,+)	–VE*	Q (–,+)	Q (–,+)	NT	Q (–,+)	Q (–,+)
28	RTR	+VE*	+VE*	+VE*	+VE*	NT	NT	+VE*
29	ACP	NT	–VE**	NT	Q (–,+)	NT	NT	–VE*
30	CBTR	NT	+VE**	Q (–,+)	–VE*	–VE**	Q (–,+)	NT
31	CTR	NT	Q (+,–)	NT	NT	NT	–VE*	+VE*
32	APP	NT	–VE*	NT	Q (–,+)	+VE**	Q (–,+)	–VE*

TABLE 8.3 (Continued...)

SUMMARY OF TIME TREND ANALYSIS FOR ALL THE INDUSTRIES

Sr. No.	Category & Name of Ratio	Name of the Service Industry						
		Service (All 79 Co.s)	Hotels (25 Co.s)	ITeA (20 Co.s)	Transport (16 Co.s)	Health (7 Co.s)	Comm. (2 Co.s)	Misc. Services (9 Co.s)
33	OC	–VE**	–VE*	NT	Q (–,+)	NT	NT	–VE*
34	NTC	–VE*	NT	–VE**	Q (–,+)	Q (–,+)	NT	–VE*
Profitability Ratios								
35	OPM	Q (–,+)	Q (–,+)	Q (–,+)	NT	–VE*	–VE*	+VE**
36	NPM	NT	NT	Q (–,+)	NT	–VE*	Q (+,–)	+VE**
37	ROTA	NT	NT	NT	NT	NT	–VE*	+VE**
38	EAT/TA	NT	NT	NT	NT	NT	–VE*	+VE**
39	RONW	NT	NT	NT	NT	NT	–VE*	+VE**

* Results significant at 1% level of significance   ** Results significant at 5% level of significance

NT indicates NO TREND;   +VE indicates a positive linear trend;   –VE indicates a negative linear trend

Q (+,–) indicates a quadratic trend rising at falling rate

Q (–,+) indicates a quadratic trend falling at rising rate

Comm. refers to Communication Services Industry.

The conclusions drawn from the results of Time Trend Analysis are discussed in the following paras for each group for all the industries.

1. Leverage and Working Capital Policy

It is concluded that there is a **decline in utilization of total debts** by the firms in *Non Financial Service Industry* which is due to decline in utilization of long term debts. Similar conclusion is also drawn for ITeA Industry. However, in case of *Hotels and Restaurant, Miscellaneous Services* and *Health Services Industry* an **increase in utilization of total debts** is found. The reason for the same is attributed to increase in utilization of long term as well as short term debts for Hotels and Restaurant Industry whereas in case of Health Services Industry it is the fall in LTD as well as rise in CL. It is concluded that there is **decline in utilization of long term as well as short term debt** resulting to decline in total debt for financing the total assets in the *Transport Services Industry* as well as *Communication Services Industry*. Further, in case of *ITeA Industry* and *Communication Services Industry* it is concluded that there is **increased preference for and reliance on the owned funds to finance the total assets**.

It is concluded that firms in the *Non Financial Service Industry* **prefer short term funds to long term funds for working capital financing**. Similar conclusion is drawn for *Hotels and Restaurant Industry* and *ITeA Industry*.

It is concluded that the firms in *Non Financial Service Industry* are **pursuing an aggressive current asset financing policy** by reducing its NWC and relying more on CL. Similar conclusion is drawn for *Hotels and Restaurant Industry, ITeA Industry* and *Health Services Industry*. However, for firms in *Miscellaneous Services Industry* and

Communication Services Industry, it is concluded that they are **gradually adopting conservative approach of working capital financing**.

It is concluded that the firms in *Non Financial Service Industry* are reducing investments in current assets in an attempt to do away with excess liquidity and **gradually adopting aggressive working capital investment policy**. Similar conclusion is drawn for *Hotels and Restaurant Industry, ITes Industry, Transport Services Industry, Communication Services Industry* and *Miscellaneous Services Industry*. However, in case *of Health Services Industry*, it is concluded that the firms in the industry are **gradually adopting a conservative current asset investment policy** through increased investments in current assets.

It is concluded that the **working capital leverage** of the *Non Financial Service Industry* is declining at increasing rate which indicates that there is decline in sensitivity of ROTA due to change in level of current asset investment for the *Non Financial Service Industry* over the study period. Further there is a **decline in sensitivity of ROTA** due to change in level of current asset investment of firms in ITes Industry and Communication Services Industry whereas **rise in WCL** is found in case of *Health Services Industry* and *Miscellaneous Services Industry*. However, there is **no significant trend in working capital leverage** of the *Hotels and Restaurant Industry* and *Transport Services Industry*.

2. Current Asset Structure

It is concluded that there is **decline in blockage of funds in inventory** over the study period leading to liquidity in asset structure as also improvement in inventory management of the *Non Financial Service Industry* and all its constituent industry groups **except** *Hotels and Restaurant* and *Health Services Industry*. In case of *Hotels and Restaurant Industry*, it is concluded that firms are **investing cautiously and judiciously in inventories**. Further, in case of the *Health Services Industry*, it is concluded that firms **follow** a **uniform policy with respect to investment in inventories**. May be that looking to the industry requirement, holding 16% inventory is the ideal standard in the industry and there may be no need to further curtail it. Hence, the level of inventory has remained stable over a period of time.

It is concluded that there is **decline in blockage of funds in receivables** leading to liquidity in asset structure as also improvement in receivables management over the study period of firms in *Non Financial Service Industry* and all its constituent industry groups **except** *Communication Services Industry* where it is concluded that there is no significant change in the policy of the industry with respect to investments in receivables.

It is concluded that there is **an increased blockage of funds in Loans & Advances** over the period under study by firms in *Non Financial Service Industry* as well as *ITes, Health Services and Miscellaneous Services Industry.* However, **a decline in Loans & Advances** is found for *Hotels and Restaurant* and *Communication Services Industry* indicating improvement in liquidity of current assets structure in these two industries.

It is also concluded that the **decline observed in proportion of current assets to total assets is due to** decline in inventories and receivables for firms of *Non Financial Service Industry* as well as firms in *ITes, Transport Services* and *Miscellaneous Services Industry.* However in case of *Hotels and Restaurant Industry* the cause is attributed to decline in RTCAR and LATCAR. Further no significant change in share of Loans and Advances is observed for firms in *Health Services Industry.*

It is concluded that there is **increased blockage of funds in Prepaid Expenses** as a component of current asset of firms in *Non Financial Service Industry* and all its constituent industry groups.

It is concluded that there is **rise in the cash balances** of the firms in *Transport Services Industry, Miscellaneous Services Industry* as well as *Communication Services Industry* which is attributed to declining inventories and receivables for the former two industries whereas inventories and loans and advances for the latter. However, a **fall in cash balances** of firms in *Health Services Industry* is attributed to rise in share of Loans & Advances and Prepaid Expenses.

It is concluded that there is a **rising trend of investing idle excess cash in marketable securities** by firms in *Non Financial Service Industry* and all its constituent industry groups which implies systematic and efficient cash management of the industry.

3. Current Liabilities Structure

Over the study period, it is concluded that there is **reduced reliance on Trade Credit** as a proportion of CL as well as source of financing CA by firms in *Non Financial Service Industry* and all its constituent industry groups except *Health Services Industry.*

Also, it is found that over the study period, **DACE has emerged as a source of financing CA** as evident by increased use of the same by firms in *Non Financial Service Industry* as well as all its constituent industry groups except for *Communication Services Industry.*

The policy of firms in *Non Financial Service Industry* with respect to **STBB as a** proportion of CL as well as source of financing CA has remained stable over a period of time which is also found for *Hotels and Restaurant Industry* and *Communication Services Industry* whereas in case of *Transport Services Industry* and *Health Services Industry* an increased preference for STBB is found.

Further, **Provisions** as a component of CL is used to create liquidity to finance CA by firms in *ITes Industry*, *Miscellaneous Services Industry* and *Communication Services Industry*.

4. Liquidity

It is concluded that there is **an improvement in liquidity management** of the firms in *Non Financial Service Industry* over the study period. Similar conclusion is drawn for ITes Industry. However, in case of *Hotels and Restaurant Industry,* it is concluded that over the study period the policy of the industry with respect to the proportion of current assets as well as quick assets to CL has remained same.

Further, there is a **good short term solvency** of the firms in *Non Financial Service Industry* due to increase in proportion of cash assets to current liabilities. Similar conclusion is drawn for *Hotels and Restaurant Industry* whereas in case of *ITes Industry* the absolute liquidity position has not undergone significant change.

In case of *Transport Services Industry* as well as *Communication Services Industry,* it is concluded that there is **an increased liquidity as well as better short term solvency of firms** in these industries which is attributed to declining share in inventory as well as receivables and rising share of cash balances as well as marketable securities with PETCAR and LATCAR being constant (as no significant trend is observed in these two ratios). In case of *Miscellaneous Services Industry,* an increased liquidity of current assets is found due to reduction in inventory investment but the absolute liquidity position has deteriorated.

However, in case of *Health Services Industry,* it is concluded that liquidity position of firms in the industry is deteriorating.

5. Current Asset Management Efficiency

It is concluded that over the period under study there is an **improvement in total asset utilization** of firms in *Hotels and Restaurant* and *Health Services Industry*. However, in case of *ITes Industry*, *Transport Services Industry* and *Communication Services Industry,* it is concluded that there is **deterioration in the total asset utilization** of firms in the industry over the study period.

It is concluded that there is **substantial improvement in the management of inventory** of firms in the *Non Financial Service Industry* and the inventory management has become more efficient over the period under study with increased liquidity of inventories coupled with reduced risk of illiquidity. Similar conclusions are drawn for *Hotels and Restaurant Industry*, *ITeS Industry, Transport Services Industry, Communication Services Industry* and *Miscellaneous Services Industry*.

It is concluded that there is an **improvement in receivables management** and that the firms in *Non Financial Service Industry* are gradually shifting to a controlled credit and collection policy. Similar conclusions are drawn for *Hotels and Restaurant Industry, ITeS Industry, Transport Services Industry* and *Miscellaneous Services Industry*.

It is concluded that there is **no significant change in utilization of NWC** for operating sales in the *Non Financial Service Industry*. Similar conclusions are drawn for *Hotels and Restaurant Industry*, *ITeS Industry*, *Communication Services Industry* and *Miscellaneous Services Industry*. However, in case of *Transport Services Industry,* it is concluded that there is an **improvement in the efficiency with which NWC** is utilized for operating sales.

It is concluded that the **cash management** of firms in the *Hotels and Restaurant Industry* is **efficient and improved** over the study period leading to better utilization of cash resources which is attributed to improved inventory and receivables management that has lead to more liquid asset structure. However, cash management of firms in the *ITeS; Transport Services; Health Services* and *Communication Services Industry* has deteriorated over the study period.

It is concluded that there is **improvement in the efficiency of current asset management** of the firms in *Non Financial Service Industry* which is attributable to improved inventory and receivables management. Similar conclusions are drawn for *Hotels and Restaurant Industry* and *Transport Services Industry*. However, in case of *Health Services Industry* and *Communication Services Industry,* **current asset management efficiency of firms has deteriorated** over the study period.

It is concluded that firms in the *Hotels and Restaurant; Transport Services* and *Miscellaneous Services Industry* are **repaying their bills/creditors more frequently** over the study period. However, in case of *Health Services Industry* and *Communication Services Industry,* it is concluded that firms in the industry have gradually slowed down payment of its dues over the study period leading to increased APP

It is concluded that the **length of OC and NTC** of firms in *Non Financial Service Industry* **has reduced** over the study period which signifies reduced working capital investments as well as quick realization of working capital investments in cash respectively. Both these further signify improvement in WCME of firms in the industry over the study period. Similar conclusions are drawn for *Transport Services Industry* and *Miscellaneous Services Industry*. However, in case of *Hotels and Restaurant Industry* there is reduction only in the duration of OC whereas in case of *ITes Industry* and *Health Services Industry,* the duration of NTC only has declined over the study period.

6. Profitability

It is concluded that the profitability position of the *Non Financial Service Industry* has deteriorated for the period under study indicating fall in the operational efficiency. Similar conclusion is also drawn for *Hotels and Restaurant Industry, ITes Industry* and *Health Services Industry*. However, in case of *Transport Services Industry* it is concluded that there is no significant change (*i.e.,* improvement or deterioration) in its profitability position. Further, it is concluded that there is a significant improvement in the profitability position of firms in the Miscellaneous Services Industry.

8.4.3 Findings and Conclusions: Analysis of Variances

The Analysis of Variances was carried out to examine the differences, if any, Between the industries, Between the Companies and Between the years for the selected 40 WCM, LEV and PROF Ratios. A summary of results for between the industries as well as between the years for these industries is presented in Table 8.4; that of between the companies in Table 8.5 and for between the years in Table 8.6. The conclusions drawn based on the analysis is thus presented in three segments.

I ANALYSIS OF VARIANCES BETWEEN NON FINANCIAL SERVICE INDUSTRIES AS WELL AS BETWEEN YEARS FOR ALL INDUSTRIES

It is concluded that **significant difference exists** between the Non Financial Service Industry groups relating to **utilization of debt financing as well as aggressive/conservative working capital investment and financing policies**. The industries also vary with respect to the **degree of Working Capital Leverage**. Moreover, it is concluded that *Non Financial Service Industries* maintain **different mix of current assets** except for MSTCAR. They also vary with respect to maintaining the **mix of current liabilities** as a source of financing the CA except TCCLR and OCLCLR. It is concluded that the selected industries in *Non Financial Service Sector* significantly differ in their approach towards **liquidity management**, **asset utilization efficiency, policies for management of inventory, cash and receivables**. It is concluded that the selected *Non Financial Service Industries* of India significantly differ in terms of their **profit earning ability** and manage their operations differently.

TABLE 8.4

SUMMARY OF SINGLE FACTOR ANOVA BETWEEN THE NON FINANCIAL SERVICE INDUSTRIES AND BETWEEN THE YEARS FOR ALL THE INDUSTRIES

Sr. No.	Category & Name of Ratio	Between the Industries	Between the Years for the Industries
Working Capital Policy and Leverage Ratios			
1	LTDTAR	Significant*	Not Significant
2	TDTAR	Significant*	Not Significant
3	CLTAR	Significant*	Not Significant
4	CATAR	Significant*	Not Significant
5	CLCAR	Significant*	Not Significant
6	NWCCAR	Significant*	Not Significant
7	CANFAR	Significant*	Not Significant
8	WCL	Significant*	Not Significant
Current Asset Structure Ratios			
9	ITCAR	Significant*	Not Significant
10	RTCAR	Significant*	Significant**
11	CBBTCAR	Significant*	Not Significant
12	PETCAR	Significant*	Not Significant
13	LATCAR	Significant*	Not Significant
14	MSTCAR	Not Significant	Significant*
Current Liabilities Structure Ratios			
15	TCCLR	Not Significant	Not Significant
16	DACECLR	Significant*	Not Significant
17	PCLR	Significant*	Not Significant
18	STBBCLR	Significant*	Not Significant
19	CFCCLR	Significant*	Not Significant
20	OCLCLR	Not Significant	Not Significant
Liquidity Ratios			
21	CR	Significant*	Not Significant
22	QR	Significant*	Not Significant
23	ALR	Significant*	Not Significant
Current Asset Management Efficiency Ratios and Operating Cycle Variables			
24	TATR	Significant*	Not Significant
25	CATR	Significant*	Not Significant
26	WCTR	Not Significant	Not Significant
27	RTR	Significant*	Not Significant
28	ACP	Significant*	Not Significant
29	CBTR	Significant*	Not Significant
30	CTR	Not Significant	Not Significant
31	APP	Not Significant	Not Significant
Profitability Ratios			
32	OPM	Significant*	Not Significant
33	NPM	Significant*	Not Significant
34	ROTA	Significant*	Not Significant
35	EAT/TA	Significant*	Not Significant
36	RONW	Significant*	Not Significant

* Significant at 1% level of significance ** Significant at 5% level of significance

It is concluded that there exists **no significant variations** in the mean of selected parameters of WCP, LEV, Current Asset Structure (except RTCAR and MSTCAR), Current Liabilities Structure, Liquidity, Efficiency, Profitability as well as Operating Cycle Variables **over the study period**. These results indicate that the policies for managing working capital of the *Non Financial Service Industry groups* have remained consistent over the period under study excepting those related to receivables and investment in marketable securities.

II ANALYSIS OF VARIANCES BETWEEN COMPANIES

1. Leverage, Working Capital Policy and Working Capital Leverage

It is concluded that there exists significant difference between the companies of *Non Financial Service Industry* with respect to use of debt financing and working capital policy. Similar conclusions are drawn for *Hotels and Restaurant Industry, ITes Industry, Transport Services Industry, Health Services Industry and Miscellaneous Services Industry.*

It is also concluded that the differences between companies of *Non Financial Service Industry* are greater with respect to use of long term debt to finance the total assets as compared to the total debt position. Similar conclusions are drawn for firms in *Hotels and Restaurant Industry, Transport Services Industry and Health Services Industry.* However, in case of *ITes Industry* and *Miscellaneous Services Industry* differences are greater with respect to the total debt position as compared to use of long term debt to finance the total assets which is due to higher differences in use of Current Liabilities to finance the total assets.

TABLE 8.5

SUMMARY OF SINGLE FACTOR ANOVA
BETWEEN THE COMPANIES OF ALL THE INDUSTRIES

Sr. No.	Category and Name of Ratio	Name of the Service Industry					
		Service (All 79 Co.s)	Hotels (25 Co.s)	ITes (20 Co.s)	Transport (16 Co.s)	Health (7 Co.s)	Misc Services (9 Co.s)
Working Capital Policy and Leverage Ratios							
1	LTDTAR	S*	S*	S*	S*	S*	S*
2	TDTAR	S*	S*	S*	S*	S*	S*
3	CLTAR	S*	S*	S*	S*	S*	S*
4	CATAR	S*	S*	S*	S*	S*	S*
5	CLCAR	S*	S*	S*	S*	S*	S*
6	NWCCAR	S*	S*	S*	S*	S*	S*
7	CANFAR	S*	S*	S*	S*	S*	S*
8	WCL	S*	S*	S*	S*	S*	S*

TABLE 8.5 (Continued...)

SUMMARY OF SINGLE FACTOR ANOVA
BETWEEN THE COMPANIES OF ALL THE INDUSTRIES

Sr. No.	Category and Name of Ratio	Name of the Service Industry					
		Service (All 79 Co.s)	Hotels (25 Co.s)	ITes (20 Co.s)	Transport (16 Co.s)	Health (7 Co.s)	Misc Services (9 Co.s)
Current Asset Structure Ratios							
9	ITCAR	S*	S*	S*	S*	S*	S*
10	RTCAR	S*	S*	S*	S*	S*	S*
11	CBBTCAR	S*	S*	S*	S*	S*	S*
12	PETCAR	S*	S*	S*	S*	S*	S*
13	LATCAR	S*	S*	S*	S*	S*	S*
14	MSTCAR	S*	S*	S*	S*	S*	S*
Current Liabilities Structure Ratios							
15	TCCLR	S*	S*	S*	S*	S*	S*
16	DACECLR	S*	S*	S*	S*	S*	S*
17	PCLR	S*	S*	S*	S*	S*	S*
18	STBBCLR	S*	S*	S*	S*	S*	S*
19	CFCCLR	S*	S*	S*	S*	S*	S*
20	OCLCLR	S*	S*	S*	S*	S*	S*
Liquidity Ratios							
21	CR	S*	S*	S*	S*	S*	S*
22	QR	S*	S*	S*	S*	S*	S*
23	ALR	S*	S*	S*	S*	S*	S*
Current Asset Management Efficiency Ratios and Operating Cycle Variables							
24	TATR	S*	S*	S*	S*	S*	S*
25	CATR	S*	S*	S*	S*	S*	S*
26	WCTR	NS	S*	NS	S*	NS	NS
27	ITR	NC$^{\$}$	NC$^{\$}$	NC$^{\$}$	NC$^{\$}$	S*	NC$^{\$}$
28	IHP	NC$^{\$}$	NC$^{\$}$	NC$^{\$}$	NC$^{\$}$	S*	NC$^{\$}$
29	RTR	S*	S*	S*	S*	S*	S*
30	ACP	S*	S*	NS	S*	S*	S*
31	CBTR	S*	S*	S*	S*	S*	S*
32	CTR	NS	S*	NS	S*	NS	S*
33	APP	NS	S*	NS	S*	NS	S*
34	OC	NC$^{\$}$	NC$^{\$}$	NC$^{\$}$	NC$^{\$}$	S*	NC$^{\$}$
35	NTC	NC$^{\$}$	NC$^{\$}$	NC$^{\$}$	NC$^{\$}$	S*	NC$^{\$}$
Profitability Ratios							
36	OPM	S*	S*	S*	S*	S*	S*
37	NPM	S*	S*	S*	S*	S*	S*
38	ROTA	S*	S*	S*	S*	S*	S*
39	EAT/TA	S*	S*	S*	S*	S*	S*
40	RONW	NS	NS	NS	S*	NS	NS

* Indicating significant results at 1% level of significance

** Indicating significant results at 5% level of significance

NS indicate results being NOT SIGNIFICANT.

NC$^{\$}$ refers to NOT COMPUTED. Some of the companies have NIL inventory in some years and hence it was not possible to examine the variances in ITR and IHP and resultantly variances in OC and NTC could not be examined for between the companies as well as between the years. Hence, for the 4 industries, 4 ratios *viz,* ITR, IHP, OC and NTC are excluded from analysis. Therefore, it could not be taken for the Non Financial Service Industry, *i.e.,* 79 companies taken as a whole.

It is concluded that firms in *Non Financial Service Industry* pursue **different in the current asset investment policy**. Similar conclusions are drawn for firms of *Hotels and Restaurant Industry, ITes Industry, Transport Services Industry and Miscellaneous Services Industry.*

It is concluded that firms in *Non Financial Service Industry* **differ in use of current liabilities and net working capital for financing** their current assets. Similar conclusions are drawn for firms of *Hotels and Restaurant Industry, ITes Industry, Transport Services Industry, Miscellaneous Services Industry and Health Services Industry*. It is concluded that firms in *Non Financial Service Industry* pursue different aggressive/conservative working capital investment and financing policies. Similar conclusions are drawn for firms of its 5 constituent industry groups *viz, Hotels and Restaurant Industry, ITes Industry, Transport Services Industry, Miscellaneous Services Industry and Health Services Industry.*

It is concluded that the companies of *Non Financial Service Industry* significantly vary with respect to degree of Working Capital Leverage which is on account of diverse current asset investment policy pursued by firms. Similar conclusions are drawn for its ***five*** constituent industry groups.

2. Current Asset Structure

It is concluded that there exists significant difference between the companies of *Non Financial Service Industry* with respect to current asset component mix. Similar conclusions are drawn for firms of all the 5 constituent industry groups.

3. Current Liabilities Structure

It is concluded that companies of *Non Financial Service Industry* differ significantly with respect to means of current liabilities structure ratios and maintain different mix of current liabilities as a source of financing the current assets. Similar conclusions are drawn for firms of all the 5 constituent industry groups.

4. Liquidity Management

It is concluded that the companies of *Non Financial Service Industry* differ significantly in liquidity management. Similar conclusions are drawn for firms of all the 5 constituent industry groups.

5. Current Asset Management Efficiency

It is concluded that companies of *Non Financial Service Industry* **differ** in management of **current assets and total assets utilization efficiency** and **distinctively manage their cash**. Similar conclusions are drawn for firms of all the 5 constituent industry groups.

It is concluded that firms in *Non Financial Service Industry* follow **similar approach in managing their net working capital**. Similar conclusions are drawn for firms of *ITes, Miscellaneous Services and Health Services Industry*. However, firms in *Hotels and Restaurant* and *Transport Services Industry* manage NWC distinctively.

It is concluded that firms in *Non Financial Service Industry* **pursue different credit and collection policy**. Similar conclusions are drawn for firms in *Hotels and Restaurant; Transport Services; Health Services* and *Miscellaneous Services Industry*.

It is concluded that firms in *Non Financial Service Industry* follow **similar approach for managing their payables**. Similar conclusions are drawn for firms of *ITes and Health Services Industry*. However, firms in *Hotels and Restaurant, Transport Services* and *Miscellaneous Services Industry* follow different approaches in managing their payables.

6. Profitability

It is concluded the companies of *Non Financial Service Industry* differ in terms of their profitability position and operational efficiency. Similar conclusions are drawn for firms of all the 5 constituent industry groups. Further, no significant variations are observed in RONW for all the industries except Transport Services Industry.

III ANALYSIS OF VARIANCES BETWEEN YEARS

The results of Single Factor ANOVA for between the years of firms in Non Financial Service Industry is summarized and presented in Table 8.6.

TABLE 8.6

SUMMARY OF SINGLE FACTOR ANOVA BETWEEN THE YEARS FOR ALL THE INDUSTRIES

Sr. No.	Category & Name of Ratio	Name of the Service Industry					
		Service (All 79 Co.s)	Hotels (25 Co.s)	ITes (20 Co.s)	Transport (16 Co.s)	Health (7 Co.s)	Misc. Services (9 Co.s)
Working Capital Policy and Leverage Ratios							
1	LTDTAR	NS	NS	NS	NS	NS	NS
2	TDTAR	NS	NS	NS	NS	S**	NS
3	CLTAR	NS	NS	NS	NS	S*	NS
4	CATAR	NS	NS	NS	NS	NS	NS
5	CLCAR	NS	NS	NS	NS	NS	NS
6	NWCCAR	NS	NS	NS	NS	NS	NS
7	CANFAR	NS	NS	NS	NS	NS	NS
8	WCL	NS	NS	NS	NS	NS	NS
Current Asset Structure Ratios							
9	ITCAR	S**	NS	S*	NS	NS	NS
10	RTCAR	S*	NS	S**	NS	NS	NS
11	CBBTCAR	NS	NS	NS	S**	NS	NS
12	PETCAR	S*	S*	S**	NS	NS	NS
13	LATCAR	NS	NS	S**	NS	NS	NS
14	MSTCAR	S*	NS	S*	NS	NS	NS

TABLE 8.6 (Continued...)

SUMMARY OF SINGLE FACTOR ANOVA BETWEEN THE YEARS FOR ALL THE INDUSTRIES

Sr. No.	Category & Name of Ratio	Name of the Service Industry					
		Service (All 79 Co.s)	Hotels (25 Co.s)	IT$_{es}$ (20 Co.s)	Transport (16 Co.s)	Health (7 Co.s)	Misc. Services (9 Co.s)
Current Liabilities Structure Ratios							
15	TCCLR	NS	NS	NS	NS	NS	NS
16	DACECLR	S*	NS	S*	NS	NS	NS
17	PCLR	NS	NS	NS	NS	NS	NS
18	STBBCLR	NS	NS	NS	NS	NS	S*
19	CFCCLR	NS	NS	NS	NS	NS	NS
20	OCLCLR	NS	NS	NS	NS	NS	NS
Liquidity Ratios							
21	CR	NS	NS	S**	NS	NS	NS
22	QR	NS	NS	S**	NS	NS	NS
23	ALR	NS	NS	NS	S*	S**	S*
Current Asset Management Efficiency Ratios and Operating Cycle Variables							
24	TATR	NS	NS	NS	NS	NS	NS
25	CATR	NS	NS	NS	NS	NS	NS
26	WCTR	NS	NS	NS	NS	NS	NS
27	ITR	NC$^{\$}$	NC$^{\$}$	NC$^{\$}$	NC$^{\$}$	NS	NC$^{\$}$
28	IHP	NC$^{\$}$	NC$^{\$}$	NC$^{\$}$	NC$^{\$}$	NS	NC$^{\$}$
29	RTR	NS	NS	NS	NS	NS	NS
30	ACP	NS	NS	NS	NS	NS	NS
31	CBTR	NS	NS	NS	NS	NS	NS
32	CTR	NS	NS	NS	NS	NS	NS
33	APP	NS	NS	NS	NS	NS	NS
34	OC	NC$^{\$}$	NC$^{\$}$	NC$^{\$}$	NC$^{\$}$	NS	NC$^{\$}$
35	NTC	NC$^{\$}$	NC$^{\$}$	NC$^{\$}$	NC$^{\$}$	NS	NC$^{\$}$
Profitability Ratios							
36	OPM	S*	NS	NS	NS	NS	S*
37	NPM	S*	NS	NS	NS	NS	S*
38	ROTA	S*	S*	NS	NS	NS	S*
39	EAT/TA	S*	S*	NS	NS	NS	S*
40	RONW	NS	NS	NS	NS	NS	NS

* Significant results at 1% level of significance ** Significant results at 5% level of significance

NS indicate results being NOT SIGNIFICANT.

NC$^{\$}$ refers to NOT COMPUTED. Some of the companies have NIL inventory in some years and hence it was not possible to examine the variances in ITR and IHP and resultantly variances in OC and NTC for between the companies as well as between the years. Hence, for the 4 industries, 4 ratios *viz,* ITR, IHP, OC and NTC are excluded from analysis. Therefore, it could not be taken for the Non Financial Service Industry, *i.e.,* 79 companies taken as a whole.

A. Non Financial Service Industry

It is concluded that there are changes in the composition of CA structure of *Non Financial Service Industry* over the study period which is mainly caused due to changes in receivables, inventories, prepaid expenses and marketable securities of which highest variation is for MSTCAR. In addition, DACE as a proportion to CL have varied over the study period. Further, there have been significant changes in the profitability and operational efficiency of firms over the study period. Further for remaining 27 ratios no significant variations between the years are observed.

B. Hotels and Restaurant Industry

It is concluded that Hotels and Restaurant industry is unable to maintain its profitability consistently and operational efficiency (except ROTA and EAT/TA) over the study period. Also PETCAR has varied over the study period. However the remaining 33 ratios have not shown significant variations over the study period.

C. ITes Industry

It is concluded that there were no significant variations in the means of selected parameters of WCP, LEV, CL Structure except DACECLR, Profitability, CAME Ratios and Operating Cycle Variables over the study period. However, variations are observed for CA Structure Ratios except CBBTCAR and Liquidity ratios except ALR.

D. Transport Services Industry

It is concluded that there have been significant changes in CBBTCAR in the Transport Services Industry over the study period which has affected the liquidity ratio ALR. For remaining 34 ratios no significant variations are observed between years.

E. Health Services Industry

It is concluded that there have been significant changes in CLTAR as a source of total asset financing in the Health Services Industry over the study period, which has lead to significant variations in total debt position as represented by TDTAR. Significant changes are also observed in ALR. For the remaining 37 ratios no significant variations is observed.

F. Miscellaneous Services Industry

It is concluded that there have been significant changes in STBBCLR as a source of current asset financing in the Miscellaneous Services Industry over the study period. Also variations are observed in ALR of the study period. Further, the industry was unable to maintain its profitability (except RONW) consistently. In the remaining 30 ratios no significant variations were observed.

8.4.4 Findings and Conclusions: Impact of Sales on Working Capital

The impact of Sales on Net working Capital is examined through simple linear regression. ***Sales had a positive impact on NWC*** of the firms in *Non Financial Service Industry* as well as its three constituent major industry groups. It was concluded that the working capital requirements of the companies in the Service Industry in terms of net working capital are highly affected by the level of sales. This result supports the premise, "there is a direct relationship between a firm's growth and its working capital needs. As sales grow, the firm needs to invest more in inventories and debtors" Pandey[11]. Thus, Sales is found to be an important determinant of working capital and supports the findings of Mallick & Sur[12].

8.4.5 Findings and Conclusions: Impact of WCL on ROTA

The impact of WCL on ROTA is also examined through simple linear regression and it was found that WCL affects the ROTA of firms in *Non Financial Service Industry* as well as *Hotels and Restaurant* and *ITes Industry* indicating that ROTA is sensitive to changes in the current assets investment. However, in case of *Transport Services Industry* it was found that ROTA is not sensitive to change in current asset investment policy of the firms. Further it is concluded that firms in *Non Financial Service Industry* as well as *Hotels and Restaurant and ITes Industry* are affected by the working capital risk whereas *vice-versa* is the case for Transport Services Industry.

8.4.6 Findings and Conclusions: Impact of WCM, LEV and Size on PROF

In order to examine the impact of WCM, Size and LEV on PROF, simple linear regression is applied to know the impact of individual indicators on measures of PROF. Further, stepwise linear regression technique is applied to find out the best fit model which accounts for highest variation in profitability. The findings and conclusions as derived from the Stepwise Regression for each measure of profitability are presented. The summary of industry wise results is presented in Table 8.5.

A. Impact of Size, LEV, WCP, Liquidity and WCME on Profitability of Non Financial Service Industry (All 79 companies)

- It is concluded that Firm Size measured in terms of LnS positively influences ROTA, EAT/TA and RONW whereas LnTA influences NPM indicating that firm size is an important determinant of profitability of these firms except OPM.
- It is concluded that Leverage measured in terms of TDTAR has a negative impact on ROTA and EAT/TA.
- It is concluded that there is a negative impact of conservative working capital financing policy, *i.e.,* NWCCAR on EAT/TA and by following an aggressive approach to current asset financing the managers of firms in Non Financial Service Industry can improve their post tax returns on total assets.
- It is concluded that RTCAR and LATCAR has a negative impact on NPM and ROTA respectively and that by reducing blockage of funds in receivables and Loans & advances, firms can improve their profitability. It is also concluded that

CBBTCAR has positive influence on OPM, ALR on NPM as well as EAT/TA indicating positive impact of liquidity on profitability.

- It is also concluded that there is a positive influence of efficiency represented by CTR on ROTA and EAT/TA indicating that the firms in the industry can increase their profitability by ensuring-timely settlement of their dues.
- It is concluded that TATR has a positive impact on EAT/TA. Further, IHP has a negative impact on NPM and RONW indicating that managers of firms in Non Financial Service Industry can create shareholder value and increase operational profitability by reducing the length of IHP. Further NTC has a negative influence on ROTA indicating that through overall efficiency of WCM the NTC can be reduced which would lead to rise in ROTA.

B. Impact of Size, LEV, WCP, WCME and Liquidity on Profitability of Hotels and Restaurant Industry (25 Companies)

- It is concluded that ALR positively influences OPM and NPM indicating the positive influence of liquidity on profitability. Further a negative impact of RTCAR on NPM, ROTA and EAT/TA indicates that increased investments in receivables which is an indicator of liberal credit policy results to decline in profitability.
- It is also concluded that there is a negative influence of efficiency represented by CTR on OPM and the firms in the industry can increase their profitability by slowing the payments and lengthening their payment period
- It is concluded that inventory management in the Hotels and Restaurant Industry is efficient and leads to improvement in ROTA and EAT/TA.
- Aggressive working capital financing policy is observed to positively influence the RONW and it is concluded that managers of firms in Hotels and Restaurant Industry can increase their profitability by utilizing more of short term funds as compared to long term funds to finance the current assets.

C. Impact of Size, LEV, WCP, WCME and Liquidity on Profitability of ITes Industry (20 Companies)

- It is concluded that Size measured in terms of LnS has a positive impact on NPM, ROTA, EAT/TA and RONW. Thus firms with large size in are more profitable.
- It is concluded that TDTAR has a negative impact on EAT/TA and that firms in ITes Industry should reduce their debt component to earn higher profitability.
- It is concluded that CBTR has a negative influence on OPM, NPM which indicates that the firms in ITes Industry should maintain reasonable level of cash balances in order to maintain a profitable position.

- It is concluded that there is a negative impact of ITCAR on NPM and so firms in IT_{e1} Industry can increase their profitability and operational profitability by efficiently managing their inventories through reduced investment in inventories.
- It is concluded that ACP has a negative influence on OPM whereas RTR has a positive influence on NPM and RONW indicating that through shorter collection period and prompt collection efforts the firms in IT_{e1} Industry can improve their profits and create shareholder value. Further it is concluded that efficient receivables management positively influences profitability.
- It is concluded that there is negative impact of WCTR on ROTA and EAT/TA indicating that increased use of working capital to fund the current assets is not good for the profitability of the business. Thus, the IT_{e1} Industry should take measures to utilize more of short term funds to support their sales and finance their current assets. This result is confirmed by a negative impact of conservative working capital financing policy on profitability.

D. Impact of Size, LEV, WCP, WCME and Liquidity on Profitability of Transport Services Industry (16 companies)

- It is concluded that LnTA has a positive impact on OPM, NPM whereas LnS has a positive impact on ROTA indicating that larger firms in Transport Services Industry are reaping the benefit of economies of scale resulting to positive impact on profitability.
- It is concluded that there is a positive impact of efficient receivables management (RTR) on ROTA, EAT/TA and so firms in Transport Services Industry can increase their profitability through prompt collection efforts.
- It is concluded that there is a negative impact of aggressive working capital financing policy (CLTAR, CLCAR) on OPM, NPM and EAT/TA and thus firms in Transport Services Industry should utilize more of working capital to fund their current assets. Further, a negative impact of conservative working capital investment policy (CANFAR) is also observed on EAT/TA of the firms in Transport Services Industry. Thus firms in Transport Services Industry can increase profitability by reducing their investments in current assets and maintaining lower level of current assets in the total asset structure as also by funding major part of its current assets through working capital, *i.e.*, long term funds.
- Managers of firms in Transport Services Industry can create shareholder value by reducing NTC.

TABLE 8.7

SUMMARY OF INDUTRY WISE RESULTS OF STEPWISE REGRESSION

Dependent Variable: OPM	
Name of Industry	Significant Explanatory Variables
Non Financial Service Industry	CBBTCAR, (TATR)
Hotels & Restaurant Industry	ALR, (CTR)
ITes Industry	LTDTAR, (ACP), (CBTR)
Transport Services Industry	LnTA, (CLTAR)
Dependent Variable: NPM	
Name of Industry	Significant Explanatory Variables
Non Financial Service Industry	ALR, LnTA, (IHP), (RTCAR)
Hotels & Restaurant Industry	ALR, (RTCAR)
ITes Industry	LnS, (ITCAR), (CBTR), RTR
Transport Services Industry	LnTA, (CLTAR)
Dependent Variable: ROTA	
Name of Industry	Significant Explanatory Variables
Non Financial Service Industry	LnS, (TDTAR), CTR, (NTC), (LATCAR)
Hotels & Restaurant Industry	(IHP), (RTCAR)
ITes Industry	LnS, (WCTR)
Transport Services Industry	LnS, RTR
Dependent Variable: EAT/TA	
Name of Industry	Significant Explanatory Variables
Non Financial Service Industry	LnS, (TDTAR), CTR, TATR, ALR, (NWCCAR)
Hotels & Restaurant Industry	(IHP), (RTCAR)
ITes Industry	LnS, (TDTAR), (WCTR)
Transport Services Industry	RTR, (CLCAR), (CANFAR)
Dependent Variable: RONW	
Name of Industry	Significant Explanatory Variables
Non Financial Service Industry	(IHP), LnS
Hotels & Restaurant Industry	CLCAR
ITes Industry	LnS, RTR, (CLCAR)
Transport Services Industry	(NTC)
Brackets indicate negative impact and other than bracket have positive impact	

8.5 Suggestions based on Findings

◈ The receivables management of all the *Non Financial Service Industry* and especially *Communication Services Industry* needs attention and improvement which can be done by analyzing the reasons for such a high backlog of receivables and restricting the credit policy. If restricting credit policy affects the sales then speedy and efficient collection policy is suggested. This would lead not only to the liquidity of the current asset structure but also result to increase in cash balances leading to lower requirements of working capital thereby squeezing the operating cycle and in turn the net trade cycle of the concerns.

- Further firm size has a positive impact on profit measured in one form or the other excepting Hotels and Restaurant Industry. Hence, it is suggested that firms in Non Financial Service Industry, and Transport Services Industry should focus on enhancing sales and or base of total assets for improving their earnings. Firms in ITes Industry are suggested to focus on sales growth for better earnings.
- Further, all the industries are suggested to focus on receivables management either by reducing its proportion in current asset structure or by enhancing the efficiency through prompt collection efforts and restricted credit policy.
- Further firms in Transport Services Industry and ITes Industry are suggested to rely more on long term funds as compared to CL for financing their CA for improving earnings.

8.6 Limitations of the Study

Profitability of a firm is affected by various macro economic factors like GDP Growth rate, Inflation, Efficiency of Financial Markets, Fiscal Policies with respect to Taxation, Exchange Rates, Legal and Regulatory Environment, Demand of the product or services, Competition in the market *etc.* The impact of these factors was considered to be constant while examining the impact of WCM on Profitability of the selected sample which can be considered to be a limitation of this study.

8.7 Scope for Further Research

- A study examining the impact of macro-economic variable in terms of GDP growth can also be included while analyzing the impact of WCM on Profitability to understand its influence on profitability.
- The measures of risk related to WCM can be reviewed and taken to examine the impact of WCM risk on profitability of the firms.
- Further, a comparative analysis of WCM of Indian Non Financial Service Industry with the Non Financial Service Industry of any other world economy, for *e.g.*, China, Brazil, United States, United Kingdom or France *etc.* can be made to understand the country wise differences, if any, with respect to WCM.
- Specific studies examining the impact of Cash Holdings of a firm on Corporate Value can also be undertaken.

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APPENDIX – I

INDUSTRY WISE LIST OF COMPANIES IN INDIAN NON FINANCIAL SERVICE INDUSTRY

Hotels and Restaurant Industry

Sr. No.	Name of Company
1	Advani Hotels & Resorts (India) Ltd.
2	Benares Hotels Ltd.
3	Best Eastern Hotels Ltd.
4	C H L Ltd.
5	Cindrella Hotels Ltd.
6	E I H Associated Hotels Ltd.
7	E I H Ltd.
8	Fomento Resorts & Hotels Ltd.
9	Gujarat Hotels Ltd.
10	Hotel Leelaventure Ltd.
11	India Tourism Devp. Corpn. Ltd.
12	Indian Hotels Co. Ltd.
13	International Travel House Ltd.
14	Jindal Hotels Ltd.
15	Mac Charles (India) Ltd.
16	Oriental Hotels Ltd.
17	Ras Resorts & Apart Hotels Ltd.
18	Royale Manor Hotels & Inds. Ltd.
19	Sagar Tourist Resorts Ltd.
20	Savera Industries Ltd.
21	Sinclairs Hotels Ltd.
22	Thomas Cook (India) Ltd.
23	U P Hotels Ltd.
24	Velan Hotels Ltd.
25	Viceroy Hotels Ltd.

ITeS Industry

Sr. No.	Name of Company
1	Aditya Birla Minacs I T Services Ltd.
2	C M C Ltd.
3	California Software Co. Ltd
4	Elnet Technologies Ltd.
5	Hexaware Technologies Ltd.
6	Informed Technologies India Ltd.
7	Infosys Technologies Ltd.
8	Jetking Infotrain Ltd.
9	K L G Systel Ltd.
10	Mastek Ltd.
11	Melstar Information Technologies Ltd.
12	N I I T Ltd.
13	Nucleus Software Exports Ltd.
14	Oracle Financial Services Software Ltd.
15	Polaris Software Lab Ltd.
16	R S Software (India) Ltd.
17	S P S International Ltd.
18	Tata Elxsi Ltd.
19	Tech Mahindra Ltd.
20	Wipro Ltd.

Transport Services Industry

Sr. No.	Name of Company
1	A B C India Ltd.
2	Blue Dart Express Ltd.
3	Chowgule Steamships Ltd.
4	Container Corpn. of India Ltd.
5	Dredging Corpn. of India Ltd.
6	Frontline Corporation Ltd.
7	Great Eastern Shipping Co. Ltd.
8	Inter State oil Carrier Ltd.
9	Jagson Airlines Ltd.
10	Mercator Lines Ltd.
11	Patel Integrated Logistics Ltd.
12	S E R Industries Ltd.
13	Sanco Trans Ltd.
14	Seamec Ltd.
15	Sical Logistics Ltd.
16	Varun Shipping Co. Ltd.

Health Services Industry

Sr. No.	Name of Company
1	A D S Diagnostic Ltd.
2	Apollo Hospitals Enterprise Ltd.
3	Chennai Meenakshi Multispeciality Hospital Ltd.
4	Dr. Agarwal'S Eye Hospital Ltd.
5	Kovai Medical Center & Hospital Ltd.
6	Secunderabad Healthcare Ltd.
7	Sharma East India Hospitals & Medical Research Ltd.

Communication Services Industry

Sr. No.	Name of Company
1	Mahanagar Telephone Nigam Ltd.
2	Tata Communications Ltd.

List of Companies belonging to Miscellaneous Services Industry on next page

APPENDIX – I

INDUSTRY WISE LIST OF COMPANIES IN INDIAN NON FINANCIAL SERVICE INDUSTRY

Miscellaneous Services Industry

Sr. No.	Name of Company
1	Aegis Logistics Ltd.
2	Ashco Niulab Inds. Ltd
3	Choksi Laboratories Ltd.
4	Country Club (India) Ltd.
5	Hindustan Housing Co. Ltd.
6	Kemp & Co. Ltd.
7	Rishabh Digha Steel & Allied Products Ltd.
8	Sanghvi Movers Ltd.
9	United Van Der Horst Ltd.

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23rd August, 2012

To,
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&
Ms. Sumita J. Shroff
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Faculty of Commerce, The Maharaja Sayajirao University of Baroda, Vadodara.

Sub: Acceptance of Research Paper for Publication in "Management Trends"

Madam,

I am happy to inform you that, your joint research paper entitled "**STUDY OF WORKING CAPITAL MANAGEMENT IN INDIAN HOTEL INDUSTRY**" has been accepted for publication in the journal of Management Trends. Your research paper will publish in June – 2012 (Vol. 9, No.1) issue of Management Trends (ISSN – 0973-9203).

Thanking you.

Yours truly,

(Dr. Pratasinh Chauhan)
Chief Editor
Management Trends