PART III

INDEX OF CREDIT MANAGEMENT EFFICIENCY

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In this part, the last objective of the study viz., to develop an appropriate model for measuring the efficiency of credit management function in commercial banks has been dealt with.

The first chapter of the part deals with the nature of the data, the components of Credit Management Efficiency, viz., Profit Efficiency, Advances Efficiency, Disbursement Efficiency, Time Efficiency and Recovery Efficiency and the methodology adopted.

In the second chapter, the test of the hypotheses and the analysis of the results pertaining to Profit Efficiency, Advances Efficiency, Time Efficiency, Disbursement Efficiency and Recovery Efficiency have been done. The chapter also contains the method of the Index of Profit Efficiency, the Index of Advances Efficiency, the Index of Time Efficiency, the Index of Disbursement Efficiency and the Index of Recovery Efficiency. At the end of the chapter, the practical application of the ICME Model has been illustrated on the basis of the available data relating to 28 commercial banks operating in the public sector in India.

CHAPTER 8

COMPONENTS OF CREDIT MANAGEMENT EFFICIENCY

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Section I

Nature of the Data

In this study, secondary data relating to 28 commercial banks in the public sector, viz., the State Bank of India, its 7 associates, the 14 commercial banks nationalised in 1969 and the 6 others nationalised in 1980 have been used.

The following is the key to the Code names.

Sr. No.	Banks	Code
1.	State Bank of India	SBI
2.	STATE BANK OF Patiala	PATLA
3.	State Bank of Hyderabad	HYDER
4.	State Bank of Bikaner and Jaipur	B.K. and J.P.
5.	State Bank of Travancore	TRVCR
6.	State Bank of Mysore	MYSOR
7.	State Bank of Saurashtra	SRSTR
8.	State Bank of Indore	INDOR
9.	Bank of Baroda	BRODA
10.	Bank of India	INDIAN
11.	Punjab National Bank	PNB
12.	Central Bank of India	CNTRL
13.	Canara Bank	CANRA
14.	Syndicate Bank	SYNDI
15.	INDIAN OVERSEAS BANK	IOB

contd..

Sr. No.	Banks	Code
16.	United Commercial Bank	UCO
17.	Union Bank of India	UNION
18.	United Bank of India	UNTED
19.	Indian Bank	INDIN
20.	Allahabad Bank	ALAHA
21.	Bank of Maharastra	MAHA
22.	Dena Bank	DENA
23.	Andhra Bank	ANDHR
24.	Punjab and Sind Bank	PN and SB
25.	New Bank of India	NEW BK
26.	Vijaya Bank	VIJYA
27.	Oriental Bank of Commerce	ORNTL
28.	Corporation Bank	CORPN

In the absence of the complete data pertaining to 1982-83, only those of 1981 have been selected from the yearly publication of the Indian Banks' Association viz., 'Financial Analysis of Banks 1981'. The reason for using secondary data is that the banks individually do not give any data to outsiders. What is important here is to illustrate the techniques for determining the Index of Credit Management Efficiency and for that it was felt that secondary data can be used without any methodological lapse.

Since the availability of data was the main problem, only a cross section data have been used. The data pertain to the following selected ratios.

Selected Ratios

14 ratios were initially selected, classified into five groups viz., Earning ratios, Expense ratios, Profit ratios, Social factors and Advances ratios as detailed below :

1. Earning Ratios

X_1 = Interest and Discount/working funds

X_2 = Interest and Discount/total advances

X_3 = Spread/working funds

X_4 = Spread/total advances

2. Expense Ratios

X_5 = Interest paid/working funds

X_6 = Total expenses/working funds

3. Profit Ratios

X_7 = Profit/earnings

X_8 = Profit/Spread

X_9 = Profit/Interest paid

X_{10} = Profit/Interest earned

X_{11} = Profit/Working funds.

4. Social Factors

X_{12} = Priority Sector Advances/Total Bank Credit

X_{13} = DIR Loans/Total Bank Credit.

Table 8.1 : The Selected Ratios

Sr. No.	X_1	X_2	X_3	X_4	X_5	X_6	X_7	X_8	X_9	X_{10}	X_{11}	X_{12}	X_{13}	X_{14}
1	7.99	13.48	1.66	2.80	6.33	9.22	1.70	6.20	1.57	1.25	0.10	38.70	1.37	50.25
2	6.22	12.46	1.51	3.01	4.72	7.09	0.31	1.48	0.47	0.36	0.22	46.35	1.28	49.93
3	6.39	12.58	1.99	3.92	4.40	7.64	0.23	0.89	0.40	0.28	0.17	44.11	1.13	50.75
4	7.88	14.23	2.79	5.04	5.09	9.10	0.50	1.63	0.89	0.57	0.45	38.83	1.03	55.35
5	7.13	13.53	2.22	4.22	4.91	7.93	0.60	2.15	0.98	0.67	0.48	43.15	1.12	52.67
6	8.08	14.33	2.74	4.85	5.34	9.05	0.52	1.74	0.89	0.59	0.47	39.56	1.32	56.40
7	8.05	13.99	2.72	4.72	5.34	8.08	0.33	1.10	0.56	0.37	0.30	37.43	0.96	57.54
8	8.43	14.21	2.62	4.41	5.81	9.82	0.37	1.38	0.62	0.43	0.36	37.97	0.80	59.31
9	8.22	15.75	1.74	3.33	6.48	8.82	1.77	9.12	2.45	1.93	1.59	39.56	1.27	52.19
10	8.04	13.83	1.56	2.69	6.47	8.82	1.52	8.69	2.10	1.69	1.36	39.49	1.11	58.11
11	7.29	13.82	1.86	3.52	5.44	7.66	1.60	6.70	2.29	1.70	1.24	39.06	1.52	52.72
12	7.82	13.74	2.23	3.91	5.59	8.38	1.26	4.80	1.91	1.37	1.07	38.34	1.82	56.90
13	7.65	14.33	2.41	4.52	5.24	8.10	1.99	6.83	3.15	2.15	1.65	37.13	0.59	53.41
14	8.13	13.68	2.08	3.50	6.05	8.57	1.14	4.77	1.64	1.22	0.99	38.75	1.15	59.40
15	7.58	12.67	2.21	3.69	5.37	8.09	1.76	6.55	2.70	1.91	1.45	39.13	1.47	59.84
16	7.99	13.09	1.55	2.54	6.44	8.58	2.33	13.23	3.18	2.56	2.05	37.30	1.07	61.04
17	7.59	13.80	2.54	4.61	5.06	8.25	1.55	8.11	2.56	1.71	1.30	36.85	1.15	55.04
18	7.67	15.46	2.23	4.49	5.44	8.00	1.01	3.65	1.50	1.06	0.81	32.66	0.43	49.61
19	8.98	15.20	2.13	3.61	6.84	9.59	0.91	4.15	1.29	0.97	0.88	33.84	0.56	59.04
20	8.24	15.65	2.36	4.49	5.88	8.81	1.57	5.96	2.40	1.71	1.41	35.86	0.95	52.68
21	8.15	15.07	2.18	4.03	5.97	8.55	1.38	5.49	2.00	1.46	1.20	41.49	0.89	54.07
22	8.62	15.61	2.64	4.79	5.97	9.20	0.78	2.74	1.21	0.84	0.72	36,69	0.84	55.20

contd...

Table 5.1 Contd...

Sr. No.	X_1	X_2	X_3	X_4	X_5	X_6	X_7	X_8	X_9	X_{10}	X_{11}	X_{12}	X_{13}	X_{14}
23	7.47	13.93	2.05	3.82	5.43	7.72	2.943	11.43	4.31	3.13	23.39	39.90	0.70	53.62
24	8.58	14.09	2.36	3.87	6.22	9.52	0.59	2.39	9.10	0.66	0.56	42.64	1.17	60.86
25	7.79	14.81	2.40	4.56	5.39	8.47	1.63	5.84	2.60	1.80	1.40	34.06	1.23	52.58
26	8.47	17.12	3.34	6.75	5.13	9.08	0.50	1.37	0.89	0.54	0.45	36.52	0.92	49.45
27	7.70	14.71	2.84	5.43	4.85	7.79	1.62	4.53	2.65	1.67	1.29	32.47	0.82	52.30
28	6.28	13.98	1.86	4.14	4.42	7.04	3.20	12.53	5.26	3.70	2.32	39.77	0.66	44.87

Notes : 1. Data are in percentage

2. For the Serial Number, refer to the one given in the key to the code name so to disclose the name of the concerned bank.

Source : Compiled from 'Financiall Analysis of Banks 1981-82' - Indian Banks' Association, Bombay.

5. Advances Ratios

X_{14} = Total Advances/Total Working Funds

The corresponding data are given in Table 8.1.

On the basis of Table 8.1 , the data were entered in the computer machine IBM 380 of the M.S. University of Baroda for the necessary calculations which have been given in the subsequent sections.

Section II

Components of Credit Management Efficiency

The components of Credit Management Efficiency can be divided into two parts : quantitative and qualitative.

I - Quantitative Components

1. Profit Efficiency

Any organisation including a public sector bank has to necessarily make profit in order to survive. May be the priority given to 'profit' differs from public to private companies. In a private company, the main objective among others is the maximisation of profit: while in a public company this objective is given a second priority.

Varsha Varde and Sampat Singh[39] have determined the profit equation as :

$$P = (R - K) - [(M + O) - C]$$

39. Varsha Varde and Sampat Singh. Profitability of Commercial Banks, p. 5.

Where as P = Profit

R = Total Interest Earned

K = Total Interest Paid

M = Total Manpower Expenses

O = Total Other Expenses, and

C = Total Non-Interest Income.

Our problem in this study is not to determine arithmetically the profit, rather what we aim at is, among the set of the selected ratios, to know those ratios which are meaningfully correlated to the profit so as to formulate an appropriate model for forecasting the Profit Efficiency of banks. However, the Varsha Varde and Sampat Singh's profit equation gives a basic idea of the problem.

In our study, the Profit Efficiency is measured by the ratio Profit Margin/Working Funds. Since one ratio is not enough to make a correct judgement, it was felt to widen the scope and study other ratios as per the list of the selected ratios already given in Section I.

The Credit Manager, when determining the contribution of credit management in the profitability of his bank, is mainly interested in the evaluation of three ratios., Advances/Working Funds, Interests earned on Advances/Total Earnings and Profit/Earnings.

The Advances/Working Funds ratio indicates the utilisation of bank funds. A bank which has a high ratio is utilising maximum its funds (i. e. deposits

and borrowings). Due to the interests to be paid on deposits and borrowings, the Working Funds should be utilised efficiently.

The Interest and Discount/Total earnings ratio enables the bankers to know the contribution of advances in the total bank earnings. Its decline is an alarming signal and the credit manager should find the causes of its decline.

In case two banks have the same advances - working funds ratio, the one which has the highest Interest and Discount/Total Earnings ratio is operating more profitably.

The Profit/Total Earnings ratio is another important determinant of Profit Efficiency. If, at a particular time, two banks have the same advances - Working Funds ratio and the same Interest and Discounts/Total Earnings ratio, the most profitable is , the earnings being the same, the one which has the greatest profit - Earning ratio. In other words, the one which has the greatest Profit Margin. And since the Profit Margin is nothing but the difference between earnings and expenses, the bank which has a control on its expenses is likely to be the most profitable. The Profit - Earning ratio can also be termed as expenditure control ratio.

Our purpose in studying the Profit Efficiency is not to integrate all the determinants of profitability of a bank, rather it is a means to combine maximum utilisation of resources, earnings from advances and the control on expenses and thereby to identify the banks which are managing efficiently their credit in terms of Profit Efficiency.

2. Advances Efficiency

In actual practice, advances are divided into two parts : advances to traditional sectors and advances to priority sectors. The Advances Efficiency is measured in terms of the percentage of advances to the priority sectors since bankers generally satisfy the requirements of the traditional sectors. Therefore, the bank which is giving 40 % of its total bank credit to the priority sectors is fulfilling the national credit allocation policy in India.

3. Recovery Efficiency

The Recovery Efficiency is one of the most important determinants of credit management efficiency. In getting back their money, bankers increase the earnings through the interests paid on advances by borrowers and consequently, the Profit Margin also increases. On the contrary, if the borrowers do not repay their credit, then the profit margin will go down and this situation will affect the whole profitability of the bank.

Here, the Recovery Efficiency is measured by two ratios viz., the amount outstanding in sick industrial units and the non-recovery of advances (including traditional as well as priority sectors). In case two banks have the same Profit Efficiency and Advances Efficiency, the one which has less amount outstanding in sick industrial units and a low non-recovery ratio is managing more efficiently its credit.

II - Qualitative Components

1. Time Efficiency (T E)

The Time Efficiency is a function of the time taken between the receipt of the loan application of borrowers, its sanction and the first disbursement. In other words,

$$TE = F (R, S, FD)$$

Where as TE means Time Efficiency

R Stands for the time for the receipt of the borrower loan application,

S means the time of sanction, and

FD Stands for the First disbursement.

The time taken between R and FD is a very important factor because if it is too long, borrowers will be frustrated and therefore it may mean that the customer services are deteriorating. Many units in fact face financial problems at the initial stage of the implementation of their projects due mainly to the long time taken by banks in the post sanction disbursement leading thus the unit towards sickness. As a consequence, this variable is an important determinant of Credit Management Efficiency.

2. Disbursement Efficiency

The banker should disburse only the amount required for financing a borrower's project and be sure that the amount sanctioned is fully utilised. Any under-utilisation of the sanctioned amount/limit means loss of interests on advances since these interests

are calculated on the basis of the utilised amount. In other words, underutilisation of the credit facility means blockage of funds leading to lower profitability since these funds could have been used to finance other projects and therefore to maximise the profitability of the banks.

Finally, taking into consideration the main components of CME, we can formulate the model such as

$$CME = F(PE, AE, RE, TE, DE).$$

Whereas PE is the Profit Efficiency

AE means the Advances Efficiency

RE means the Recovery Efficiency

TE stands for the Time Efficiency

DE means the Disbursement Efficiency

and $$ICME = IPE + IAE + IRE + ITE + IDE$$

Whereas ICME = Index of Credit Management Efficiency

IPE = Index of Profit Efficiency

IAE = Index of Advances Efficiency

IRE = Index of Recovery Efficiency

ITE = Index of Time Efficiency

IDE = Index of Disbursement Efficiency

Because of the non-availability of data and/or the difficulties in quantifying the qualitative components only the Profit Efficiency and the Advances Efficiency have been taken into consideration for the

illustration of the practical application of the model.

Section III

Methodology Used

All the data needed were not available particularly for the non-recovery of advances in traditional as well as in priority sectors and for the qualitative components. This is because generally banks do not make such data available to outside researchers.

On the basis of the available data, the worthinesses of the hypotheses has been worked out.

In the sub-hypotheses of the study, it was stated that :

(i) $PE_1 = a_1 X_1$

(ii) $PE_2 = -a_2 X_2$

(iii) $PE_3 = a_3 X_3$

(iv) $PE_4 = -a_4 X_4$

(v) $PE_5 = a_5 X_5$

(vi) $PE_6 = -a_6 X_6$

(vii) $PE_7 = -a_7 X_7$, and

(viii) $AE_8 = a_8 X_8$

In order to check the worthinesses of these sub-hypotheses, computer programs were run in the computer machine of the M.S.University Computer Centre.

TABLE 8.2 : Correlation Matrix - I

	X_1	X_2	X_3	X_4	X_5	X_6	X_7	X_8	X_9	X_{10}	X_{11}	X_{12}	X_{13}	X_{14}
X_1	1.0000	0.60282	0.39152	0.18085	0.77141	0.77338	-0.21137	-0.13510	-0.34962	-0.22647	-0.49853	-0.12741	0.60440	-0.10717
X_2	0.60282	1.0000	0.50533	0.57304	0.27829	0.40199	-0.1304110^{-1}	-0.9736510^{-1}	-0.4898810^{-1}	-0.5860601	-0.52142	-0.41160	-0.26086	$-0.47780\ 10^{-1}$
X_3	0.39152	0.50533	1.0000	0.94275	-0.28346	0.27286	-0.29505	-0.56622	-0.14909	-0.38062	-0.41632	-0.22938	-0.5921410^{-1}	-0.12331
X_4	0.18085	0.57304	0.94275	1.0000	-0.46392	0.8274010^{-1}	-0.18206	-0.48374	-0.16078	-0.26683	-0.39334	-0.31550	-0.37976	$-0.91299\ 10^{-1}$
X_5	0.77141	0.27829	-0.28346	-0.46392	1.0000	0.61793	-0.1644110^{-1}	0.25066	0.14002	0.2699510^{-1}	0.23012	0.2771210^{-1}	0.67185	$-0.24018\ 10^{-1}$
X_6	0.77338	0.40199	0.27286	0.827410^{-1}	0.61793	1.0000	-0.25455	-0.13480	0.2872910^{-1}	-0.22708	-0.36728	-0.5049510^{-1}	0.5394610^{-1}	0.15081
X_7	-0.21137	-0.1304110^{-1}	-0.29505	0.18206	-0.1644111^{-1}	0.25455	1.0000	0.89395	0.50413	0.96743	-0.20558	-0.20021	-0.23831	0.52934
X_8	-0.13510	-0.9736510^{-1}	-0.56622	-048374	0.25066	-0.13480	0.89395	1.0000	0.45912	0.94379	-0.11888	-0.6941410^{-1}	-0.42478	0.46816
X_9	0.3496210^{-1}	-0.4898810^{-1}	-0.14909	-0.16078	0.14002	0.2872910^{-1}	0.50413	0.45912	1.0000	0.51138	0.7196110^{-1}	-0.5545010^{-1}	0.8884010^{-1}	C.29020
X_{10}	-0.22647	-0.5860610^{-1}	-0.38062	-0.26683	0.2699610^{-1}	-0.22708	0.96743	0.94379	0.51138	1.0000	-0.19011	-0.15375	-0.2513	0.51929
X_{11}	-0.49853	-0.52142	-0.41632	0.39334	-0.23012	-0.36728	-020558	-0.11886	0.7196110^{-1}	-0.19011	1.0000	0.39067	-0.4688910^{-1}	$0.44132\ 10^{-1}$

Contd..

Table 8.2 : Contd...

	X_1	X_2	X_3	X_4	X_5	X_6	X_7	X_8	X_9	X_{10}	X_{11}	X_{12}	X_{13}	X_{14}
X_{12}	-0.12741	-0.41160	-0.22938	-0.31550	0.2771210^{-1}	-0.5049510^{-1}	-0.20021	-0.6941410^{-1}	-0.5545010^{-1}	-0.15375	0.39067	1.0000	0.28594	0.22909
X_{13}	0.60440	-0.26086	-0.5921410^{-1}	-0.37976	0.67185	0.53946	-0.23831	-0.4247810^{-1}	0.8884010^{-1}	-0.20513	-0.4688910^{-1}	0.28594	1.0000	-0.27106 10^{-1}
X_{14}	-0.10717	-0.4778010^{-1}	-0.12331	-0.9122910^{-1}	-0.2401810^{-1}	-0.15081	0.53934	0.46816	0.29020	0.51929	0.4413210^{-1}	-0.22909	$-0.771C610^{-1}$	1.0000

Note : D - 01 is replaced by 10^{-1}

XJ refers to the selected ratios (J = 1, ...14).

Before proceeding for the final equation, the correlation matrix obtained from the computer programs has to be thoroughly studied.

The first correlation matrix attempting to check the worthiness of the hypotheses is shown in Table 8.2 .

Table 8.2 could not help much in illustrating the worthiness of the hypotheses. But it gives a basic idea of the dimension of the complexity of the problem.

In this Table, if one studies only the correlation between X_{11} (i. e. Profit/working Funds) and the other remaining ratios, he realises that most of the sub-hypotheses were not sustained. This was explained by a high coefficient of correlation between (X_1, X_2), (X_1, X_5), (X_1, X_6), (X_1, X_{13}), (X_3, X_4), (X_5, X_6) (X_5, X_{13}), (X_7, X_8) (X_7, X_{10}) and (X_8, X_{10}).

We have assumed that all the ratios are independent and the only dependent ratio was X_{11} (i.e. profit Margin/working Funds).

But for the worthiness of the hypotheses, the phenomena of multi colinearity has to be avoided, otherwise a regression equation will be useless.

In order to eliminated the multi colinearity, many computer programs were run. Every program incorporating a set of ratios choosen from the 14 selected ratios.

It was only on the last program that satisfactory results were obtained on the basis of the following ratios.