Chapter VI

Risk Management

6.1 Introduction

Insurance is the business of risk; insurance companies are exposed to various risk by holding risk of policyholders and confronting various risk in its operation. Risk management is a tool to identify potential losses, prioritize risks, and find appropriate solutions to mitigate or eradicate the risks. The present chapter describes risk management concept in life insurance companies along with different risk management practices followed by the selected life insurance companies with respect to various risk exposures in the context of regulatory risk management prescriptions.

6.2. Risk

***"In this world nothing can be said to be certain, except death and taxes"* – Benjamin Franklin**

In fact, the whole life is surrounded by uncertainty except death and taxes. Yet there is some uncertainty about these two phenomena: no one can be sure when s/he will die, and tax rules and rates are frequently changed. Traditionally, risk has been defined in terms of uncertainty. Based on this concept, risk is defined as uncertainty concerning the occurrence of a loss. There is no single, universally accepted definition of the word risk. Economist, experts in finance, different authors and actuaries often make a distinction between risk and uncertainty. Uncertainty is a broad term, all risks are uncertain, but all uncertain events are not a risk. Those events for which the probability of occurrence of a loss is mathematically calculable on the basis of past experience may be known as risk whereas probability of occurrence of loss cannot be assign to such statistical measures due to their unique nature of occurrence of events are only uncertainty (Insurance Institute of India, 2003).

Risk word has been derived from the Latin word RESICUM which means stone or cut of the firm land in respect of difficulty at sea. Risk is often considered in terms of chances or probability of loss. In the insurance world the term risk refers to the peril against which precaution is to be undertaken. With reference to insurance business risk may be described in four different situations:

Risk as a cause: it is something that can cause harm or loss to life and property. For example, fire, theft, storm etc. it is conceived as perils.

Risk as an object: it can also be defined as exposure of loss to insured objects like factory, car, house, and ship which are exposed to damage and loss.

Risk as a likelihood: from this viewpoint, risk is conceived in terms of chance or probability of loss. For example, leaving the key in a car results in a high risk of theft or locking the car and keeping in garage results lower risk of theft.

Risk as a hazardous condition: from this viewpoint, the condition, or physical characteristics itself may cause or exacerbate a loss. For example, use of storage of flammable materials near to a source of heat could create high risk of occurrence of fire or explosion.

6.3. Risk Management

In business, sometimes the outcomes may be pleasant like growth, profit, and success, while sometimes the outcomes may be unpleasant with loss and failure. It depends upon the nature of the business, the risk involved and the mode of operation. Life insurance is a business surrounded by risk and uncertainty in which a risk management approach is a tool to control unforeseen circumstances towards growth, stability, and profitability (Hussanie & Joo, 2019).

Risk management is concerned with the planning, organising, and controlling of activities and resources in order to minimize the impact of uncertain events (Sharma & Ghalavand, 2015).

The process of risk management involves identification, analysis, and economic control of risks to increase the assets or earning capacity of an enterprise. The risk management performs three important functions.

1. Identification of various risk to which the insurer is exposed to.
2. Analyse the degree to which the insurer in vulnerable to the various source of risks.
3. Assign economic values to these exposures.

6.4. Objectives of Risk Management

Some important objectives of risk management are enumerated as below.

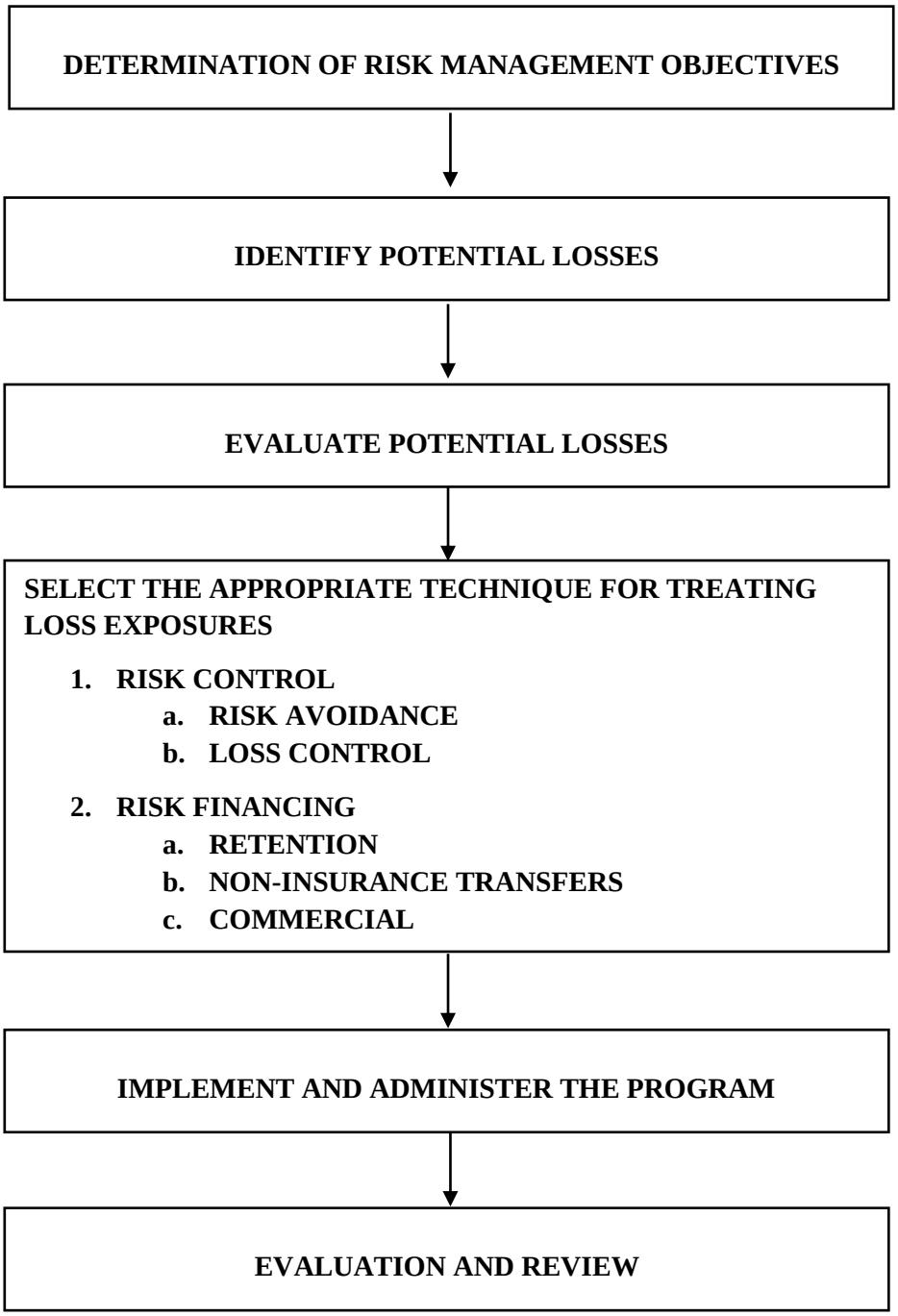
1. Identification sources of hazard to which the firm is exposed to
2. Estimation of the probability of the number and size of potential losses
3. Consideration of various techniques and methods to cope up with these risks
4. Implementation of selected techniques and methods
5. Periodical examination of the results achieved through these techniques and methods.

6.5. Risk Management Process

Risk management is a process that scrutinizes the loss exposures faced by an organisation and select the most appropriate techniques for handling such exposures. A scientific approach towards risk management of pure risks involves the following steps in logical sequence.

The first and most important step is to determine the objectives of risk management without which the insurer cannot manage the risk properly.

Figure 6.1. Risk Management Process



Source: (ICAI, 2008)

Identify Potential Losses:

Identification of potential losses provides foundation for risk management. It necessitates a thorough understanding of the organisation, the market in which it operates, as well as changes in the legal, social, economic, political, and climatic environments. Checklists, financial statements, flowcharts, on-site inspections, interactions with people, contract analysis, and statistical records of losses are some of the approaches used to identify risks.

Evaluation of Potential Losses:

At this point, pure risks can be evaluated as a frequency of loss with the analysis of size and severity of loss. As a part of overall risk, evaluation of potential losses measures the degree of risk. In order to quantify the risk, Value at risk (VaR) is the most appropriate tool.

Selection of appropriate techniques for treating loss exposures:

An insurer must choose acceptable procedures for treating loss exposures after identifying and evaluating prospective losses. Risk control and risk financing are two types of risk management approaches.

All measures aimed at avoiding or controlling the likelihood of a loss-producing event are referred to as risk control. On the other hand, risk financing is concerned with financing of the risk remaining after the implementation of risk control measures.

Risk Financing includes risk retention, non-insurance transfer and commercials.

- Risk Retention refers to the retention of losses either fully or partially through internal way. It can be said that more risk less retention and less risk more retention.
- Non-insurance transfers are a risk transfer technique in which risk exposure and potential financial losses are shifted to a third party (not an insurer) who is better positioned to control losses.
- Commercials is a risk-transfer approach that transfers risk from one party (individual or business) who is unwilling or unable to take the risk to another party who is willing and able to carry the risk.

Based on above techniques George E. Rejda has suggested a matrix for selection of appropriate methods for handling losses. The matrix classifies the various loss exposures on the basis of frequency and severity.

Table 6.1 Risk Management Matrix

Type of Loss	Frequency of Loss	Severity of loss	Appropriate Risk Management Technique
1	Low	Low	Retention
2	High	Low	Loss Control and Retention
3	Low	High	Insurance
4	High	High	Avoidance

Source: (Rejda & McNamara , 2016)

Risk analysis, risk management, and risk financing are all interconnected. The steps outlined above will assist insurers in identifying business risks. It can be assessed whether to avoid or eliminate risk based on the significance of the danger. When an organization's risk exposure reaches its maximum capacity, it must either transfer or mitigate the risk (Insurance Institute of India, 2003).

Implement & administer the programme and Evaluation & Review:

As regards life insurance companies, there is a separate area in the management structure for risk management, but no specific structure has been defined by the regulatory body. The role of risk manager and their place in management structure varies from organisation to organisation. However, the primary responsibility of risk manager is to identification of risk, particularly in a multi-national corporation, much of that task may devolve upon local management. Insurers must certainly obtain local cooperation and advice regarding risk exposures within their own area of operation.

The risk management process requires continuous evaluation and review to manage the risk. The risk manager needs to implement and monitor the risk management programme in a timely manner to achieve the business objectives and make the risk management programme effective.

6.6. Enterprise Risk Management (ERM)

The traditional risk management was limited in scope to pure loss exposures, including property, liability, and personal related risks. Since the 1990s many businesses have expanded scope of their risk management programmes by including speculative financial risks. Gradually some large organisations have taken up the initiative in expansion of their risk management programmes. This includes strategic implications of all the risks faced by the organisation, which is known as Enterprise Risk Management (Cater, Kapel , & McConnell, 2009).

Over the past few years, enterprise- wide- risk management has acquired a holistic view of the total risk management. It has more focused on core business process with

more sophisticated analytical tools and risk management technologies. ERM is a step towards a more defined and formalised risk management (Gupta, 2016).

According to RIMS (Risk and Insurance Management Society): "ERM is the culture, processes and tools to identify strategic opportunities and reduce uncertainty. ERM is a comprehensive view of risk from both operational and strategic perspectives and is a process that supports the reduction of uncertainty and promotes the exploitation of opportunities."

In India, IRDA had initially introduced corporate governance guidelines vide circular dated on 5th August 2009 and implemented by insurers with effect from 1st April 2010. These circular mandated insurers to establish risk management committee and compliance policies for internal control as well as to protect the interest of policyholders. However, IRDA has revised the corporate governance guidelines due to the replacement of companies act 1956 with the companies act 2013. These guidelines were applicable from 1st April 2016.

Insurers must establish a separate Risk Management Committee to implement the company's risk management strategy, according to guidelines released from time to time in the goal of developing a solid risk management system and mitigation methods. The risk management function is overseen and supervised by the Chief Risk Officer (CRO), who has a clearly defined job. The risk management committee develops an effective risk management framework and makes recommendations to the board of directors for the organization's policies and operations. Following functions are performed by the Risk Management Committee.

- Establish risk tolerance levels and evaluate the costs and rewards of risk exposure.
- Examine a company's risk reward performance and make sure it's in line with the policy's overall goals.
- Discuss and examine optimum risk management methods in the industry, and provide advice to the appropriate functions.
- Perform specialised analysis and quality evaluations to assist the board in the proper functioning of the risk management system.
- Maintain a consolidated view of the company's risk profile, including insurance risk, market risk, credit risk, liquidity risk, operational risk, compliance risk, legal risk, and reputation risk.

- Provide advice and recommendations on corporate strategy, mergers and acquisitions.
- Review the company's solvency situation on a regular basis.
- Keep track of and review business continuity updates on a regular basis.
- Establishing a policy and framework for fraud detection.
- Monitor the application of the anti-fraud policy to ensure that fraud is effectively deterred, prevented, detected, and mitigated.

Generally, risk management part is handled by the actuaries in all companies.

There is a significant synergy between the function of audit committee and the risk management committee. Both committees work intently for internal control including risk register, risk prevention and risk mitigation strategy. The operations of these two committees are explained together by using figure 6.2.

Figure 6.2 Operation of Risk Management and Audit Committee

Source: (ICSI)

6.7. Comparative Risk Management Framework

There is a linkage between risk and financial returns, it is necessary to make an analytical assessment of the risk to succeed in the business. McKinsey analysed that the better their ERM systems, the better insurers performed financially (McKinsey, 2014). In last decade, ERM framework proposed by committee of sponsoring

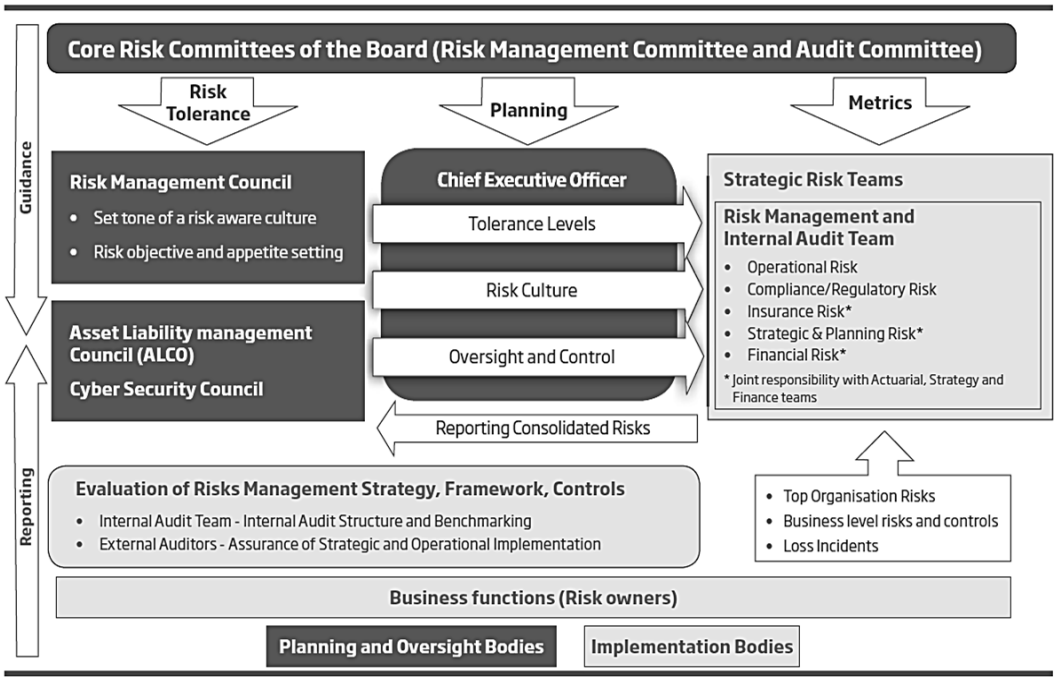
organisation of the Treadway Commission (COSO) has emerged to be the most preferred practice for managing risks in a coordinated manner across an enterprise. Various risk management framework has been developed and use globally.

The board and management should develop a strong risk management governance framework to manage the risk and increase the financial performance. The risk management practices vary from company to company. In accordance with the objective of the present study, comparison of risk management framework for all selected companies has been conducted as follows.

HDFC Life:

HDFC's ERM framework consists of a comprehensive set of processes that have been implemented at a grassroots level across all functions supporting the core business and shared services. These practices have been implemented uniformly by audit committee and risk management committee together, which is reflected in below figure 6.3.

Figure 6.3 ERM Framework at HDFC



Source: Annual Report of HDFC

HDFC has exposed to different types of risks originating from both internal as well as external sources. The risk categories addressed through the ERM framework are reported as follows:

1. Operational Risk
2. Compliance/ Regulatory Risk

3. Strategy and Planning Risk
4. Insurance Risk
5. Financial Risk: It includes the following nature of risk
    a. Market Risk
    b. Liquidity Risk
    c. Credit Risk
    d. Assets Liabilities Mismatch Risk

ERM committee manage and control the risks by applying the procedures with risk identification, analysis & assessment, and operational loss database. Company has used following strategies to reduce the risks such as risk avoidance, risk transfer, risk mitigation and risk acceptance. The company can determine the degree of risk tolerance with the help of risk management council, asset liability management council and cyber security council.

HDFC has started separate Risk Monitoring and Controlling Unit to protect the interest of all stakeholders and to determine misconduct and fraud risks. This unit design and implement various anti-fraud programmes and control over the activities of the enterprise.

MAX Life:

Max life insurance company has robust risk management framework covering overall approach to mitigation risk based on the 'Three Lines of Defence' model with a clear segregation of roles and responsibilities.

First Line: Business managers are part of the first line of defence, responsible for assessing the risk environment and maintaining effective controls to mitigate or minimise risk. Second Line: The risk management and compliance functions are part of the second line of defence. Third Line: The internal audit function, which is overseen by the audit committee, is the third line of defence, it provides independent assurance to board.

The appointed actuary in his/her fiduciary function, aided by statutory auditors and regulatory scrutiny, is also considered to constitute an extra third line of defence.

The risk management framework ensures the level of risk acceptance on the basis of risk-taking capacity and level of capital adequacy. Risk management strategy has been developed through risk acceptance, risk avoidance and/or mitigation. Company has appointed The Risk, Ethics and Assets Liability Management (REALM)

committee for the supervision of risk management activities. It reviews the appropriateness and adequacy of the risk management strategy in the company.

Operationally independent risk management function is headed by a chief risk officer. Following are the Key Risk exposures reported by the company.

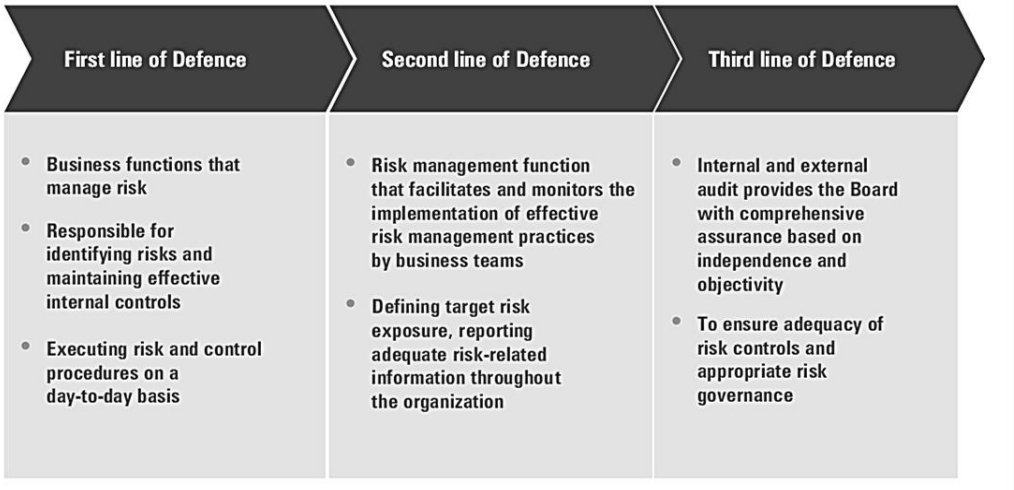
1. Strategic Risk:
2. Insurance Risk
3. Investment Risk
4. Operational Risk
5. Other Emerging Risk

Other Emerging Risk is related with operating models, which continue to evolve based on contemporary technologies, stakeholder preferences as well as regulatory requirements. This type of risk is somewhat related with compliance/regulatory risk in HDFC.

ICICI Life:

ICICI has instituted an enterprise risk management framework that specifics the governance and management of all aspects of risks they face. The company has adopted three lines of defence risk management framework with the main responsibilities as follows.

Figure 6.4. Risk Management framework and key responsibility of ICICI



Source: Annual Report 2016-17

The Risk governance framework of the company comprises the Board Risk Management Committee (BRMC), the Executive Risk Committee (ERC) and its supporting committees. They approved risk policy details identification, measurement, monitoring and control standards relating to the various individual risks. Following risks are reported by the company through this committees:

1. Investment Risk
    a. Market Risk
    b. Credit Risk
    c. Liquidity Risk
2. Insurance Risk
3. Operational Risk

The key mitigation approaches for the investment risks comprises product approval process, assets liability management and exposure limits defined for company in accordance with IRDA guidelines. Insurance Risk are mitigated through product approval process, reinsurance, underwriting & claim controls, experience analysis and aligning key performance indicators. As regards operational risk, the company uses various mitigation plans for high-risk items. The company actively promoting risk awareness culture, proactive and reactive approach to manage fraud, outsourcing risk, business continuity management, information security, and whistle blower policy that facilitates reporting of observed branches.

Kotak:

Kotak has a compliance policy and Risk Management Framework to ensure that suitable measures are taken to mitigate risks in various functions of the company and to proactively manage risks at all levels. The risk management framework enables risks to be identified, assessed, controlled, and monitored consistently, objectively, and holistically. The various risk with respect to mitigation strategy as covered under the current risk management framework are as follows.

1. Investment Risks
    a. Market Risk
    b. Credit Risk
    c. Liquidity Risk
2. Insurance Risk
3. Operational Risk

The companies are trying to put minimise all risks. The Assets Liability Management Committee (ALM) and credit committee were formed by the investment committee. ALM conducts periodic audits of its asset liability management plan, investment risk management plan, and other relevant risks. The credit committee, on the other hand, approves each investee company's credit limit as well as the first investment.

Insurance risks are related with mortality, morbidity, persistency, and expense risk which are mitigated with using various techniques.

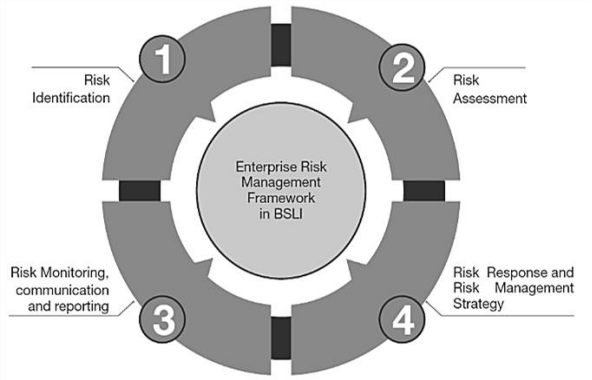
Kotak has established operational risk management framework to manage, control and mitigate operational risks. This committee reviews the top risks, mitigations implemented, and progress made by risk management function too.

Birla:

Birla has a robust business continuity framework to ensure resumption of time sensitive activities within defined timeframe at defined levels. It was first insurance company in India to be certified against the BS25999 (British Standard Institution) standard and successfully got transitioned to ISO 22301(Globally Accepted Standard on Business Continuity). ISO is an independent non-governmental international organisation that brings together experts to share knowledge and develop voluntary consensus-based market relevant international standards that support innovation and provide solutions to global challenges. The corporation has put up mechanisms to regularly monitor its experience with metrics such as policy lapses, premium persistency, maintenance charges, and investment returns that affect the value of benefits supplied in the products through its risk management policies.

ERM Framework comprises the following areas:

Figure 6.5. ERM framework and process of Birla



Source: Annual Report 2016-17

The risk management framework above highlights four steps in risk management which includes risk identification, risk assessment, risk monitoring, communicating & reporting, and risk response & risk management strategy. Birla has framed various risk policies such as product design and pricing policy, underwriting and liability management policy, investment policy, valuation policy, operational risk management policy, fraud reporting, assets liability management policy, anti-money laundering policy etc. to govern and implement effective risk management practices.

Birla has an Enterprise Risk Management (ERM) Framework covering procedures to identify, assess and mitigate the various key business risks such as.

- Strategic Risk
- Operational Risk
- Investment Risk
- Insurance Risk
- Assets Liability Management Risk

The company has implemented adequate safeguards to mitigate all above risks. It has framed various strategy to deal, various risks in the business.

SBI:

To identify, analyse, and mitigate its critical business risks, SBI Life has built a rigorous risk management system. To integrate risk management with strategic business objectives and define the organization's total risk appetite, the company developed a risk appetite framework.

SBI has certified Company's Business Continuity Management System (BCMS) under ISO 22301 and Information Security Management System (ISMS) under ISO 27001 for smooth operation of business and mitigate the Information Technological and related risks. In the year 2015 Company won 'Golden Peacock Award' for Risk Management.

Risk management operations are integrated with the company's business objectives in the Risk Management framework, which serves as the foundation for compliance, monitoring, and reporting. Strategic risk assessment and capital planning, governance, risk universe, and risk awareness have all been emphasised more in the risk management framework.

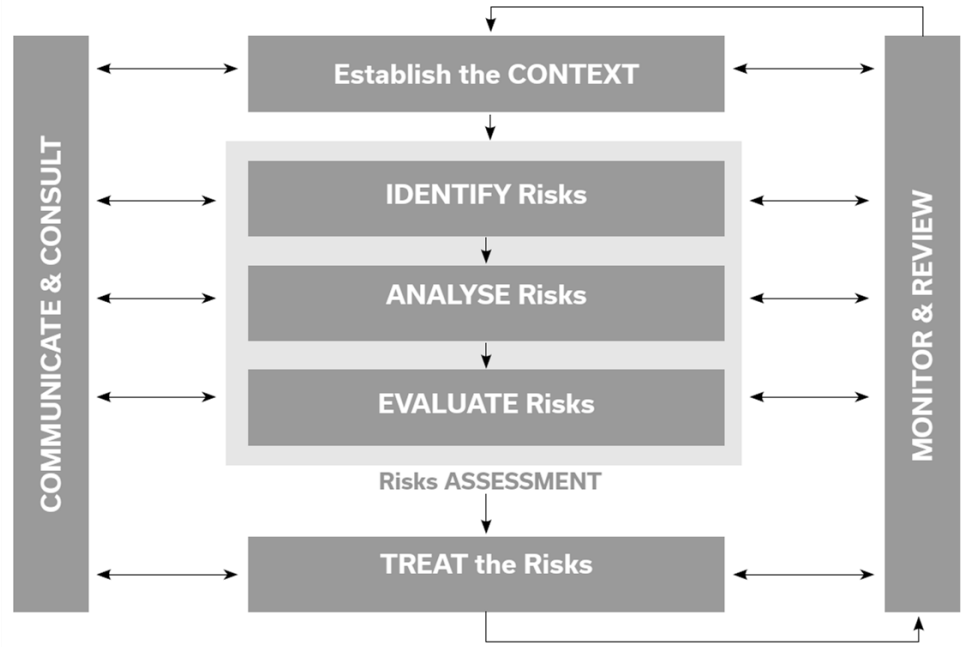
SBI has conducted various strategic risk assessment activities, for identification, assessment, mitigation, monitoring and controlling the risks. Company is using Internal Capital Adequacy Assessment Process (ICAAP) document for Capital planning too.

Time to time various committees of company has discussed the ongoing risk management issues in accordance with corporate governance guidelines issued by IRDA. The company has put in place adequate safeguard to mitigate operational risk, market risk, and insurance risk. It has arranged various training programmes,

workshops, seminars, conferences, quizzes, and compendium of loss incidents to sensitize and aware people in the organisation about risk management.

Process of ERM has been depicted in below figure 6.6

Figure 6.6. ERM Process of SBI



Source: Annual Report 2016-17

The risk management process above manages and controls various risk by applying the procedures with risk identification, analysis, and evaluation on continuous basis. On the other hand, the company also treats various risks by implementing different policies to mitigate it. Insurance, market, compliance, outsourcing, fraud, information security, and business continuity management policies all assist the risk management policy. Risk mitigation strategy framed by the companies are reviewed by the different committees.

The various risks exposed by SBI are as follows on which they have devised a mitigation strategy:

- Market Risk
- Credit Risk
- Liquidity Risk
- Morbidity and Mortality Risk
- Operational Risk
- Persistency Risk
- Expense Risk

Bajaj:

Risk management process, solvency evaluation, capital in decision making, and risk appetite framework are all part of Bajaj's risk management framework. Bajaj manages

risk via a methodical approach that finds, analyses, mitigates, and monitors risks in accordance with its declared risk appetite. The risk governance structure of the company includes two major committee i.e., Risk Management Committee (RMC) and the Executive Risk Committee (ERC). Company has identified key risks and their mitigation strategy to achieve their objectives. The key risks exposed are as follows:

- Market Risk
- Assets Liability Management Risk
- Credit Risk
- Liquidity Risk
- Operational Risk
- Insurance / Business Risk

Company has identified various types of risks in each category and discussed overall risk exposure and strategy to mitigate the same. The risk mitigation strategies adopted by the company in each risk are as follows.

Market risk and asset liability management risk are reduced by maintaining a targeted debt-to-equity ratio that is subject to IRDA investment laws, as well as active management based on ALM output.

Credit risk is mitigated by investing in securities with minimum acceptable credit rating and reviewing change in credit rating.

Liquidity risk is monitored by maintaining short term obligations through minimum mix of liquid assets.

Operational risk is mitigated by a system of internal audit and fraud prevention.

Insurance/ business risk is to be mitigated by executing risk and reward plan for mortality, persistency, expenses, and new business.

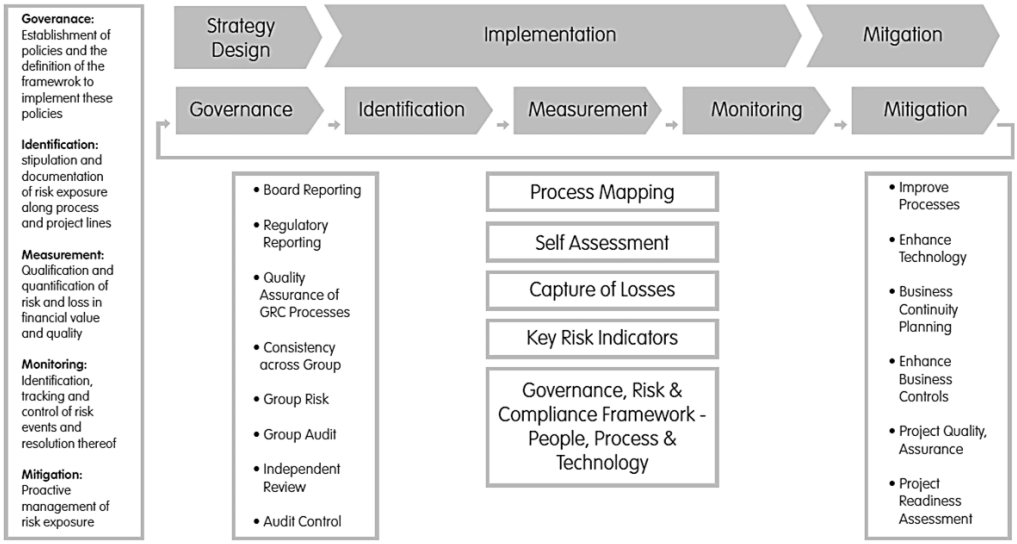
Reliance:

Reliance has taken various innovative steps towards implementation of enterprise risk management. The company has established independent risk organisational structure and control committee to examine and review risk management processes, compliance, and audit related issues on quarterly basis.

Company effectively mitigates various risk by using technology and analytical approaches, methods and models that identify trends, risks, or potential regulatory violations. It has framed SAS based predictive analytical model for pro-active detection of fraudulent claims which contains regression analysis of 35 variables.

Reliance is rated 'AAAefs' by Brickworks rating, for the highest degree of Enterprise-wide Risk Management capabilities and financial strength to meet ongoing policyholder obligations. For Business continuity company has achieved - Business Continuity Management System (BCMS), ISO 22301:2012 certification and for information security management system (ISMS), ISO 27001:2013 certification. Risk Management Framework of company is based on Committee of Sponsoring Organisations (COSO) ERM framework.

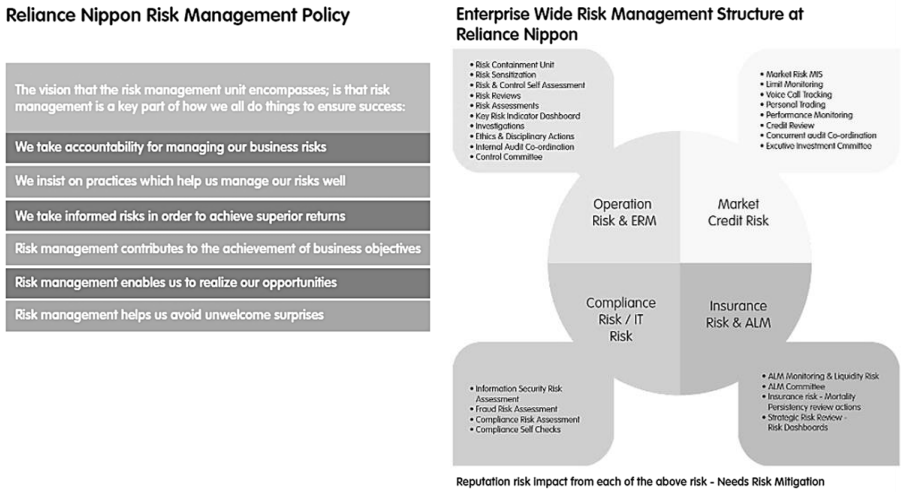
Figure 6.7 Reliance ERM Integrated Risk Management Framework using COSO Model.



Source: Annual Report 2016-17

The figure 6.7 above highlights the comprehensive ERM integrated risk management framework using COSO model. For integrated assessment and effective monitoring, the organisation has automated critical processes in compliance, audit, and risk.

Figure 6.8 Risk Management Policy and Structure of Reliance



Source: Annual Report 2016-17

Above figure 6.8 shows a snapshot of risk management policies and structure of Reliance. Various risks monitored by companies are as follows:

- Market Risk
- Credit Risk
- Information Technology Risk
- Insurance Risk
- Operational Risk

Commonly Risks exposed through ERM framework in selected private life insurance companies are as follows

- Operational Risk: The possibility of losing money as a result of insufficient or failed internal procedures, people, systems, or external events, including legal risk.
- Regulatory/Compliance Risk: This is linked to non-compliance with regulatory, judicial, and legislative mandates and norms, which can result in fines and penalties.
- Strategy and Planning Risk: This category of risk includes external and internal factors that affect strategic objectives and strategic plan deviations relating to product, distribution models, regulatory, and legislative changes.
- Insurance Risk: Risk arising due to adverse movement of mortality, persistency, morbidity, and expense rates.
- Financial Risk/ Investment Risk: It includes the following nature of risk:
    - Market Risk: It has to do with negative market price movement across asset classes and investment positions.
    - Liquidity Risk: It is market liquidity, and it indicates an asset's inability to be liquidated; financing liquidity risk is the inability to satisfy obligations when they are due.
    - Credit Risk: Loss risk stemming from the possibility that a counterparty would default or fail to meet commitments in accordance with agreed-upon terms..
    - Assets Liabilities Mismatch Risk: Risk due to uncorrelated/ unmatched movement in the asset and liability cash flows on existing business and risk of future premiums being invested at low interest rates.

6.8. Key Financial Indicators

In the present study, four ratios namely conservation ratio, persistency ratio, claim ratio, and retention ratio have been analysed in respect of the selected life insurance companies for the period under consideration. These ratios are indicators of financial health and risk management practices.

Actuaries and underwriters are in the root of life insurance business. Policy making, pricing decisions and maintenance of the existing customers are the key challenges of actuaries and underwriters. Conservation ratio and persistency ratio are associated with maintaining the existing business. These are the indicators of underwriting risk and actuarial risk.

The main objective of the underwriters is to help in determining the expected loss potential of proposed insured and selecting a price in line with the expected loss. Claim ratio is associated with expected loss and pricing of the product, any change in it will shout for the underwriting risk. On the other hand, retention ratio is closely associated with reinsurance risk (Akotey & Abor, 2013).

6.8.1. Conservation Ratio

It is the ratio of Renewal Premium of current year (net of service tax) to Total Premium of previous year (net of service tax), in which total premium includes single premium, renewal premium and first year premium. In general practice, companies report this ratio segment wise, but the average of all segments is considered to know the overall situation in accordance with the purpose of the study as follows.

Table: 6.2 Conservation Ratio

Years	HDFC	MAX	ICICI	Kotak	Birla	SBI	Bajaj	Reliance
2007-08	88.63	83.00	77.60	64.00	79.67	79.60	73.00	61.38
2008-09	60.23	82.00	68.80	61.00	73.00	60.47	68.00	61.19
2009-10	65.98	72.00	66.36	70.50	56.00	62.94	55.66	64.50
2010-11	66.91	73.00	72.64	70.50	66.00	73.39	59.00	53.25
2011-12	69.98	81.00	60.10	79.52	70.37	76.10	59.33	52.86
2012-13	78.95	82.00	68.43	76.59	58.25	68.07	63.90	55.33
2013-14	79.45	80.67	67.93	71.96	73.74	71.95	53.04	58.50
2014-15	84.27	79.67	75.71	72.10	82.89	84.63	62.63	64.33
2015-16	80.65	86.67	88.46	83.11	64.71	82.85	59.40	71.00
2016-17	75.70	86.00	84.70	83.33	57.65	86.73	62.06	70.14
Average	**75.08**	**80.60**	**73.07**	**73.26**	**68.23**	**74.67**	**61.60**	**61.25**
CV	**11.99**	**5.97**	**11.89**	**10.21**	**13.66**	**12.05**	**9.42**	**10.48**

Source: Compiled from public disclosures of selected companies

Table 6.2 above highlights conservation ratio of selected companies for the period consideration. Ideally, Conservation ratio should be near to 100% and the downward trend in the ratio indicates lapse of new business.

In practice it is not possible to maintain at 100% due to variation in single premium, first year premium and renewal premium. This is a big challenge for the underwriters to frame the policy in such a way that it will attract the customers for taking more life products and provide allied benefits to retain with the company. This ratio is somewhat associated with actuarial risk and underwriting risk. A lower ratio indicates higher actuarial risk and underwriting risk.

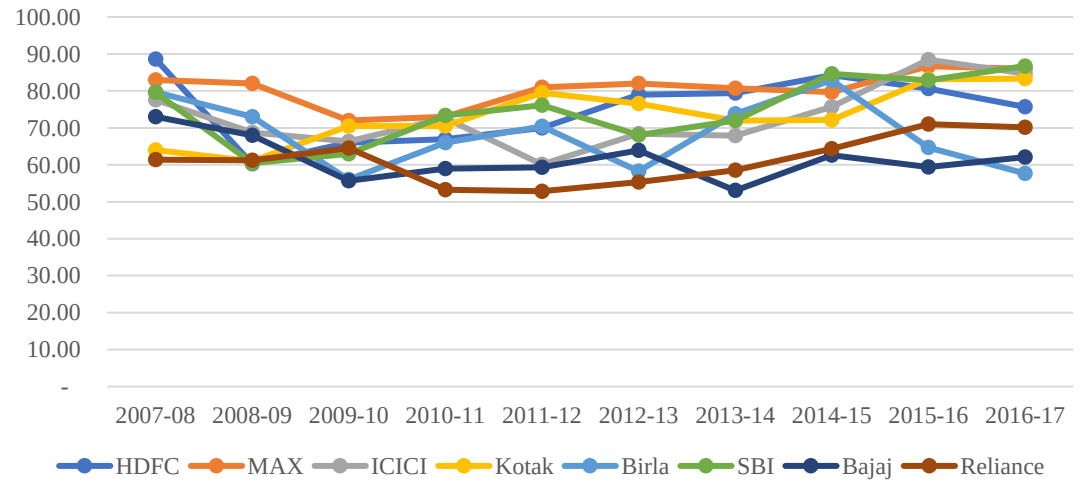
As regards average conservation ratio, Max has witnessed highest 80.60% with low variance. It indicates that the company has managed to enhance their new business every year with maintaining existing business. HDFC, SBI, ICICI, and Kotak have reported average conservation ratio at about 75% during the study period.

On the other hand, Birla, Bajaj and Reliance have experienced lower average conservation ratio i.e., below 70%.

Looking at the data in more detail, it has been observed that some segments experienced more than 90% conservation ratio and some segments experienced significantly lower conservation ratio. All the segments are important, but companies generally focused more on some specific segments to increase the revenue.

The chart 6.1 below confirms the similar trend in selected companies in terms of conservation ratio. All the selected companies recorded Conservation ratio between 50% to 90% during the study period.

Chart: 6.1. Conservation Ratio



Source: Computed

6.8.2. Persistency Ratio

Persistency ratio helps to understand renewal policy of the company. It is measured in different intervals of 13 months, 25 months, 37 months, and 61 months.

Present study has taken persistency ratio for the 13th month as reported by the companies in their public disclosure time to time. It is calculated as 1- lapse ratio of 13th month, in which lapse ratio is calculated based on policies or premium.

Higher the ratio indicates better satisfaction with product portfolio, customer service, post sales service, product utility, returns on their product, customer loyalty etc.

Table: 6.3 Persistency Ratio

Years	HDFC	MAX	ICICI	Kotak	Birla	SBI	Bajaj	Reliance
2007-08	78.41	79.00	87.30	70.00	93.40	88.44	84.00	77.40
2008-09	59.00	76.00	80.20	67.00	87.60	92.69	67.00	61.17
2009-10	57.00	68.00	72.70	67.78	84.00	58.89	52.31	51.20
2010-11	81.17	70.00	75.80	66.14	83.00	68.81	56.31	52.70
2011-12	81.57	75.00	77.00	70.73	82.12	71.77	62.30	55.90
2012-13	75.70	76.00	71.40	66.45	81.32	67.42	60.22	53.50
2013-14	69.00	76.00	71.50	81.54	59.95	72.11	61.60	59.90
2014-15	73.26	77.00	79.00	80.90	62.17	73.60	67.60	57.90
2015-16	78.88	78.80	82.40	82.01	64.69	80.69	62.90	59.30
2016-17	80.88	80.04	85.70	82.64	71.45	81.07	68.20	64.80
Average	**73.49**	**75.58**	**78.30**	**73.52**	**76.97**	**75.55**	**64.24**	**59.38**
CV	**12.33**	**5.09**	**7.25**	**9.87**	**15.03**	**13.50**	**13.32**	**12.78**

Source: Compiled from public disclosures of selected companies

Table 6.3 above highlights persistency ratio of selected companies for the period under consideration.

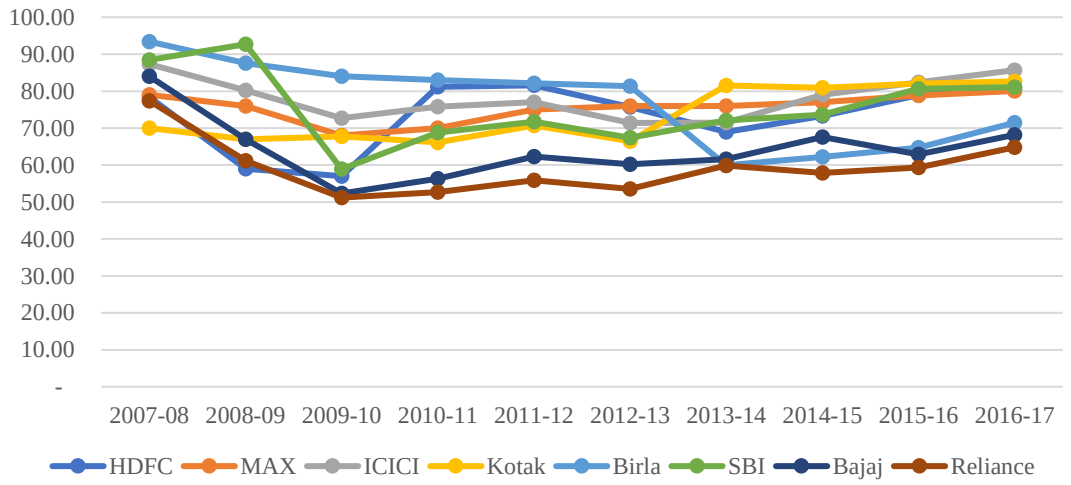
As regards average persistency ratio, ICICI witnessed highest 78.30% ratio indicating high satisfaction to the customers and good product portfolio. Likewise, Birla, Max, SBI, Kotak and HDFC has reported average about 75% ratio.

On the other hand, Bajaj has recorded average 64.24% persistency ratio and Reliance has recorded lowest average 59.38% persistency ratio during the study period.

Looking at the table in more detail, high persistency ratio has been noted in the initial two years and in the last two years of the study period.

All the selected companies have faced competition during the study period. However, companies have also gradually improved their service and product portfolios during the period of study. It is difficult to maintain a business with consistency over a period of time. Underwriters are constantly facing market risks.

Chart: 6.2. Persistency Ratio



Source: Computed

The chart 6.2 above confirms the similar trend in selected companies in terms of persistency ratio. All the selected companies recorded persistency ratio between 50% to 60% during the study period.

6.8.3. Claim Ratio

Generally, claim ratio is calculated in non-life insurance but the present study has used it in life insurance to measure efficiency of underwriters. It is the ratio of claim incurred to gross premium. As regards life insurance claims, it includes death, maturity, surrenders and withdrawals. The claim ratio of both life and non-life has been steadily rising over the years but increase in the ratio of life insurance is higher than that of non-life insurance companies. The reason behind it is high surrender and withdrawal rates, under-pricing or excessive expenditure etc. It may call underwriting profits as a percentage of gross premium.

Lower the ratio better the underwriting efficiency and higher the ratio lower underwriting efficiency. Higher ratio ensures adequacy and efficiency of claim management by insurance companies. However, excessive higher ratio is and indicator of under-pricing of life insurance products.

Insurance underwriters determine the extent of risk coverage to be offered to the client and the corresponding premium to be charged and the consequent risk to be accepted. If claims over premium arise in normal conditions, it will affect the profitability of the business.

Table: 6.4 Claim Ratio

Years	HDFC	MAX	ICICI	Kotak	Birla	SBI	Bajaj	Reliance
2007-08	10.32	5.01	14.86	15.53	13.19	6.24	8.75	5.04
2008-09	12.24	5.72	14.37	10.37	14.14	5.50	7.12	3.15
2009-10	19.10	12.12	43.62	17.32	20.68	8.43	23.03	10.50
2010-11	31.44	21.28	59.23	34.82	34.07	22.60	51.87	30.61
2011-12	28.95	26.98	60.30	48.85	45.96	35.98	73.42	50.13
2012-13	34.42	37.63	98.15	64.16	70.14	74.55	134.98	136.85
2013-14	38.65	40.27	97.15	68.65	75.84	81.76	145.08	123.08
2014-15	55.04	42.87	80.00	58.76	72.07	63.71	136.78	134.32
2015-16	50.13	34.14	64.75	45.93	76.12	50.30	84.75	96.51
2016-17	50.61	35.03	66.94	44.50	81.28	45.33	99.79	77.66
Average	**33.09**	**26.11**	**59.94**	**40.89**	**50.35**	**39.44**	**76.56**	**66.79**
CV	**48.11**	**54.75**	**48.79**	**50.91**	**55.35**	**72.10**	**69.18**	**80.88**

Source: Computed & collected data from public disclosures of selected companies

Table 6.4 above shows claim ratio of selected companies for the period under consideration. Overall, it has been observed that in the initial two years of the study period ratio in all selected companies was considerably low. Since then, there has been a noticeable increase observed due to increase in claim with premium.

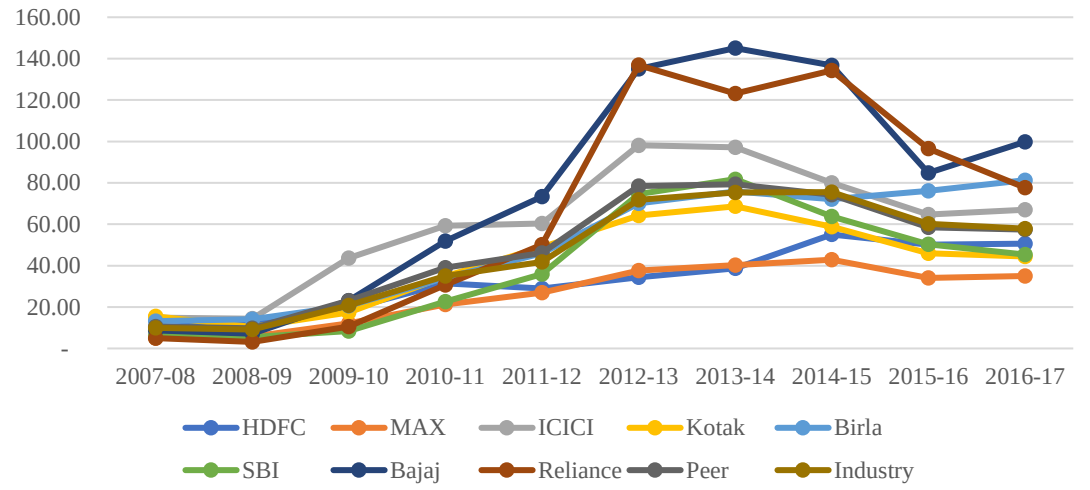
As regards average claim ratio, Max has reported lowest 26.11%. It can be interpreted that the company has formulated a policy to deal with claims in any adverse situation or its business may be comparatively less or both.

HDFC has reported 33.09% average claim ratio during the period of the study. SBI and Kotak has reported average claim ratio near to 40% during the study period.

Due to the large premium base and claim ICICI has reported 59.94% average claim ratio. Birla has reported 50.35% average claim ratio during the period of study.

On the other hand, Bajaj and Reliance have reported high average claim ratio 76.56% and 66.79% respectively during the period under consideration. It has been noted that during the year 2012-13 to 2014-15, amount of benefits paid was higher than that of premium income in both companies. These significantly increased in benefit payments mainly due to surrender payments under unit linked policies. However, it was before the new linked guidelines with mandatory three-year lock-in period.

Chart: 6.3 Claim Ratio



Source: Computed

The chart 6.3 above confirms the similar trend in selected companies in terms of claim ratio. Overall high fluctuations have been observed in all selected companies during the year 2012-13 to 2014-15.

6.8.4. Retention Ratio

Retention ratio has already been calculated and interpreted in chapter IV as a key financial indicator in financial soundness under reinsurance and actuarial issues (CARAMEL). Risk retention ratio reflects the overall underwriting strategy of the insurer. It describes the extent of risk proportion passed onto the reinsurers.

Overall, based on outcomes of this ratio, selected companies are found to retain the major proportion of the risk i.e., about 99% and pass on a negligible about 1% to reinsurers. In other words, the life insurers passed on to reinsurers only about 1 % of the total direct premium on an average. It can be said that reinsurance risk is lower in all selected company.

6.9 Testing of Hypothesis

Objective: To Study risk management practices as regards various risk exposures in the context of regulatory risk management prescriptions.

The current chapter has analysed risk management practices with regards to four key financial indicators in the selected companies for ten consecutive years. An attempt has been made to examine the significant differences between the companies selected in terms of four key financial indicators to understand their risk management practices. Accordingly, hypotheses have been framed are as under.

Null Hypothesis:

1. Ho: There is no significant difference in Conservation Ratio among selected companies.
2. Ho: There is no significant difference in Persistency Ratio among selected companies.
3. Ho: There is no significant difference in Claim Ratio among selected companies.
4. Ho: There is no significant difference in Retention Ratio among selected companies.

Alternative Hypothesis:

1. H1: There is significant difference in Conservation Ratio among selected companies.
2. H1: There is significant difference in Persistency Ratio among selected companies.
3. H1: There is significant difference in Claim Ratio among selected companies.
4. H1: There is significant difference in Retention Ratio among selected companies.

The hypothetical statements quantified above are required to analyse using appropriate statistical test. However, the selection of appropriate statistical test is based on the sample characteristics of collected data.

Sample Characteristics:

Normality is one of the important aspects to decide which statistical method needs to be used for data analysis. In case of normally distributed data, parametric test is used, otherwise non-parametric test is used. There are different numerical and visual methods which can be used to check the normality of data. In the present study both approaches have been used to check the presence of normality in the data.

As a part of normality test, Kolmogorov-Smirnova is more appropriate in larger sample size ($\geq$ 50), whereas Shapiro-Wilk is appropriate in smaller as well as in larger sample sizes (Mishra et al., 2019). In accordance with the result of Kolmogorov-Smirnov and Shapiro-Wilk, significant value of Conservation ratio, claim ratio and retention ratio is less than 0.05. It denotes that normality is not present in the data of all these three ratios (Massey, 1951), (Shapiro & Wilk, 1965). Along with it, the visual inspection of their histograms, normal Q-Q plots and box plots

demonstrate that these three ratios were approximately not normally distributed. Hence, non-parametric test is to be performed on data related to three ratios.

However, significant value of persistency ratio is greater than 0.05 and the same was reflected in the visual inspection of their histograms, normal Q-Q plots and box plots. Altogether it demonstrates that normality is present in the data of persistency ratio. (Histograms, Q-Q plots and box plots are attached in Appendix III)

Table: 6.5 Normality Test

	Kolmogorov-Smirnov[a]			Shapiro-Wilk		
	Statistic	**df**	**Sig.**	**Statistic**	**df**	**Sig.**
Conservation Ratio	.095	80	.072	.967	80	.034
Persistency Ratio	.088	80	.197	.976	80	.140
Claim Ratio	.101	80	.042	.917	80	.000
Retention Ratio	.173	80	.000	.814	80	.000
a. Lilliefors Significance Correction						

Source: Computed

Based on sampling characteristics and result of normality test the present study has used One Way ANOVA for Persistency Ratio and Kruskal Wallis Test for Conservation Ratio, Claim Ratio and Retention Ratio. It compares more than two sample groups for selected companies for 10 consecutive years.

Testing of Hypothesis 1, 3 and 4

Outcomes of the Kruskal Wallis Test:

It determines statistically significant differences between eight companies for three ratios based on mean rank.

Table 6.6 Mean Rank

Company	**HDFC**	**MAX**	**ICICI**	**Kotak**	**Birla**	**SBI**	**Bajaj**	**Reliance**
Conservation Ratio	49.00	63.85	45.10	46.30	34.25	49.50	18.10	17.90
Claim Ratio	31.65	24.70	50.90	37.90	44.50	35.40	53.20	45.75
Retention Ratio	49.70	30.75	49.70	16.30	9.50	59.05	48.45	60.55

Source: Computed

In the present study, there are eight selected companies and number of years under consideration are ten. Accordingly, there are 80 observations in aggregate for each ratio. These 80 observations have been arranged in lower to higher order and given a rank from 1 to 80. Based on the rank obtained, average rank for each company has been calculated for each ratio, which can be identified as mean rank. In other words, mean rank is the average of the ranks for all observation within each company.

Company wise Mean Rank of each ratio is presented in table 6.6, which is useful for comparing risk management practices among selected companies.

As regards conservation ratio, Max has reported highest mean rank 63.85%, which indicates company has successfully retained their customer during the study period. However, SBI, HDFC, ICICI, and Kotak have reported mean rank in range from 45 to 50% during the study period. On the other hand, Birla has reported 34.25% mean rank and Bajaj and Reliance have reported significantly lower mean rank about 18% only.

As regards claim ratio, Max has reported lowest 24.70% mean rank indicating efficiency of underwriters. Contrary, Bajaj and ICICI have reported mean rank about 50% during the study period. On the other hand, HDFC, Kotak, and SBI have reported mean rank between 30 to 40%, whereas Birla and Reliance have reported 44.50% and 45.75% mean rank, respectively. Lower the ratio better the underwriters' assumptions and accurate actuaries' calculations.

As regards retention ratio, SBI and Reliance have reported higher mean rank between 56 to 60%, which reflects better risk retention capacity. However, Kotak and Birla have reported significantly lower mean rank i.e., less than 20% during the period under consideration. Higher mean rank indicates higher risk retention capacity of the company. On the other hand, HDFC, ICICI, and Bajaj have recorded mean rank about 49% and Max has reported mean rank about 30% during the study period.

Table 6.7 Test Statistics[a,b]

	Conservation Ratio	Claim Ratio	Retention Ratio
Chi-Square	33.426	12.477	48.534
Df	7	7	7
Asymp. Sig.	.000	.086	.000

a. Kruskal Wallis Test
b. Grouping Variable: Company

The table 6.7 illustrates the result of Kruskal-Wallis Test where in an assessment is made to calculate significant different values of all selected companies for each ratio. It determines significant difference among the companies selected for each ratio. In test statistics, Chi-square indicates chi-square statistic, Df indicates degree of freedom of the test and Asymp. Sig. indicates statistical significance of the test.

If statistically significant value of any variable is less than 0.05, null hypothesis is rejected. It indicates a significant difference among the selected companies. In present study significant value in case of Conservation Ratio and Retention ratio is less than

0.05. Hence, Null hypothesis is rejected in these two ratios. It denotes significant difference among the selected companies in these ratios.

On the other hand, significant value of claim ratio is 0.086, which is greater than 0.05. It denotes accept the null hypothesis and no significant difference in claim ratio among selected companies during the study period.

The present outcomes demonstrate a significant difference among selected companies in terms of conservation ratio and retention ratio. However, it does not identify pairs of companies having significant difference. Hence it is essential to analyse pairwise comparison. The table 6.8 below provides Company wise (pairwise) actual point of significant differences in respect of conservation ratio and retention ratio during the study period.

Table 6.8: Summary of Pairwise Comparison

Sample 1 – Sample 2	Adjusted Significance	
	Conservation Ratio	Retention Ratio
Reliance –Max	0.000	
Bajaj - Max	0.000	
Birla- Bajaj		0.005
Birla- HDFC		0.003
Birla- ICICI		0.003
Birla- SBI		0.000
Birla- Reliance		0.000
Kotak - HDFC		0.037
Kotak – ICICI		0.037
Kotak – SBI		0.001
Kotak - Reliance		0.001

Pairwise comparison evaluates relationship between pairs of companies' mean. Table 6.8 highlights only those pairs of companies' that differed significantly. In each ratio, eight selected companies have been compared with each other and analysed 28 pairs of companies and collectively it has analysed 56 pairs. Overall, 11 pairs have been identified out of 56 pairs having significant difference.

With respect to conservation ratio, it was observed that 2 out of 28 pairs have reported significant difference. It can be said that conservation ratio has been found significant difference only due to these two pairs i.e., Bajaj – Max and Reliance – Max. In case of retention ratio, 9 pairs out of 28 pairs have shown significantly different. However, looking at the pairs in detail, significant difference has been found only because of Birla and Kotak. Both these companies have reported lower mean rank and because of this they have made a significant difference with other companies.

The diagrams 6.1 and 6.2 demonstrate the overall picture of significant difference based on mean rank. The result demonstrated in the table 6.8 have been confirmed by following diagrams. Where black line presents no significant difference and light-yellow line presents significant difference, among the selected companies. (Detailed Pairwise comparison has been attached in in Appendix I)

Diagram 6.1 Retention Ratio

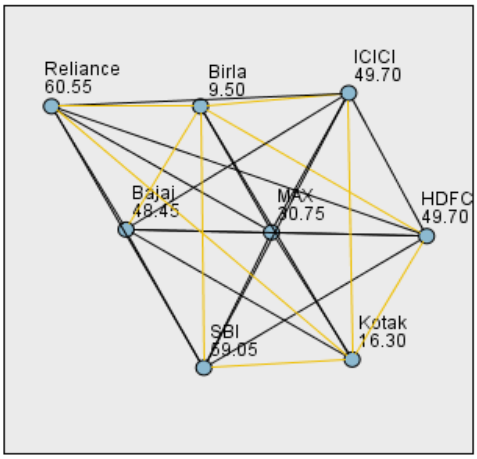
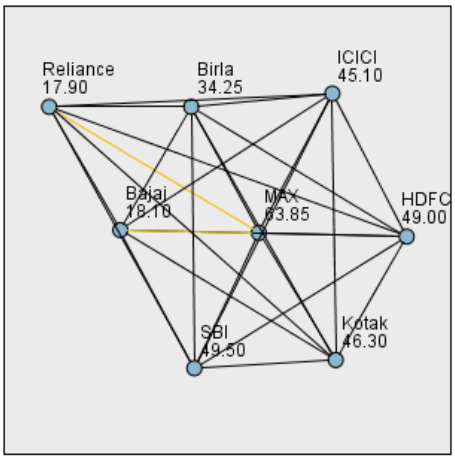


Diagram 6.2 Conservation Ratio



Testing of Hypothesis 2 (Persistency Ratio)

Table 6.9 ANOVA

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	3137.129	7	448.161	6.514	.000
Within Groups	4953.406	72	68.797		
Total	8090.535	79			

The table 6.9 above noted that p value of persistency ratio is less than 0.05. It signifies that null hypothesis is rejected and significant differences is present in persistency ratio among all selected companies during study period.

However, it does not identify pairs of companies having significant difference. Hence it is essential to calculate post hoc study. The table 6.10 below illustrates Tukey HSD post hoc study to find out actual point of significant differences in respect of persistency ratio during the study period.

Table 6.10 Multiple Comparison (Post Hoc Study)

Tukey HSD

(I) Company	(J) Company	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval	
					Lower Bound	Upper Bound
HDFC	MAX	-2.09700	3.70937	.999	-13.6770	9.4830
	ICICI	-4.81300	3.70937	.897	-16.3930	6.7670
	Kotak	-.03200	3.70937	1.000	-11.6120	11.5480
	Birla	-3.48300	3.70937	.981	-15.0630	8.0970
	SBI	-2.06200	3.70937	.999	-13.6420	9.5180
	Bajaj	9.24300	3.70937	.216	-2.3370	20.8230
	Reliance	14.11000*	3.70937	.007	2.5300	25.6900
MAX	HDFC	2.09700	3.70937	.999	-9.4830	13.6770
	ICICI	-2.71600	3.70937	.996	-14.2960	8.8640
	Kotak	2.06500	3.70937	.999	-9.5150	13.6450
	Birla	-1.38600	3.70937	1.000	-12.9660	10.1940
	SBI	.03500	3.70937	1.000	-11.5450	11.6150
	Bajaj	11.34000	3.70937	.059	-.2400	22.9200
	Reliance	16.20700*	3.70937	.001	4.6270	27.7870
ICICI	HDFC	4.81300	3.70937	.897	-6.7670	16.3930
	MAX	2.71600	3.70937	.996	-8.8640	14.2960
	Kotak	4.78100	3.70937	.900	-6.7990	16.3610
	Birla	1.33000	3.70937	1.000	-10.2500	12.9100
	SBI	2.75100	3.70937	.995	-8.8290	14.3310
	Bajaj	14.05600*	3.70937	.007	2.4760	25.6360
	Reliance	18.92300*	3.70937	.000	7.3430	30.5030
Kotak	HDFC	.03200	3.70937	1.000	-11.5480	11.6120
	MAX	-2.06500	3.70937	.999	-13.6450	9.5150
	ICICI	-4.78100	3.70937	.900	-16.3610	6.7990
	Birla	-3.45100	3.70937	.982	-15.0310	8.1290
	SBI	-2.03000	3.70937	.999	-13.6100	9.5500
	Bajaj	9.27500	3.70937	.212	-2.3050	20.8550
	Reliance	14.14200*	3.70937	.007	2.5620	25.7220
Birla	HDFC	3.48300	3.70937	.981	-8.0970	15.0630
	MAX	1.38600	3.70937	1.000	-10.1940	12.9660
	ICICI	-1.33000	3.70937	1.000	-12.9100	10.2500
	Kotak	3.45100	3.70937	.982	-8.1290	15.0310
	SBI	1.42100	3.70937	1.000	-10.1590	13.0010
	Bajaj	12.72600*	3.70937	.021	1.1460	24.3060
	Reliance	17.59300*	3.70937	.000	6.0130	29.1730
SBI	HDFC	2.06200	3.70937	.999	-9.5180	13.6420
	MAX	-.03500	3.70937	1.000	-11.6150	11.5450
	ICICI	-2.75100	3.70937	.995	-14.3310	8.8290
	Kotak	2.03000	3.70937	.999	-9.5500	13.6100
	Birla	-1.42100	3.70937	1.000	-13.0010	10.1590
	Bajaj	11.30500	3.70937	.061	-.2750	22.8850
	Reliance	16.17200*	3.70937	.001	4.5920	27.7520

(I) Company	(J) Company	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval	
					Lower Bound	Upper Bound
Bajaj	HDFC	-9.24300	3.70937	.216	-20.8230	2.3370
	MAX	-11.34000	3.70937	.059	-22.9200	.2400
	ICICI	-14.05600*	3.70937	.007	-25.6360	-2.4760
	Kotak	-9.27500	3.70937	.212	-20.8550	2.3050
	Birla	-12.72600*	3.70937	.021	-24.3060	-1.1460
	SBI	-11.30500	3.70937	.061	-22.8850	.2750
	Reliance	4.86700	3.70937	.891	-6.7130	16.4470
Reliance	HDFC	-14.11000*	3.70937	.007	-25.6900	-2.5300
	MAX	-16.20700*	3.70937	.001	-27.7870	-4.6270
	ICICI	-18.92300*	3.70937	.000	-30.5030	-7.3430
	Kotak	-14.14200*	3.70937	.007	-25.7220	-2.5620
	Birla	-17.59300*	3.70937	.000	-29.1730	-6.0130
	SBI	-16.17200*	3.70937	.001	-27.7520	-4.5920
	Bajaj	-4.86700	3.70937	.891	-16.4470	6.7130
*. The mean difference is significant at the 0.05 level.						

Table 6.11 Summary of Multiple Subset Comparison of Persistency Ratio

Company – Company	Significant Value
Bajaj - ICICI	0.007
Bajaj – Birla	0.021
Reliance - HDFC	0.007
Reliance - Max	0.001

Company – Company	Significant Value
Reliance - ICICI	0.000
Reliance - Kotak	0.007
Reliance -Birla	0.000
Reliance - SBI	0.001

Table 6.11 above shows the summary of the table 6.10 consisting only those subsets due to which overall result of the hypothesis found significant difference.

As regards persistency ratio, 8 subsets presented in table 6.11 differ significantly. It can be said that due to these subsets' persistency ratio found significant difference among selected companies during the period under consideration. However, looking at the subset in detail, significant difference has been found only because of Reliance and Bajaj. Both these companies have reported lower mean rank and because of this they have made a significant difference with other companies.

Table 6.12 Homogenous Subsets

Company	N[a]	Subset for alpha = 0.05		
		1	2	3
Reliance	10	59.3770		
Bajaj	10	64.2440	64.2440	
HDFC	10		73.4870	73.4870
Kotak	10		73.5190	73.5190
SBI	10		75.5490	75.5490
MAX	10		75.5840	75.5840

Company	N[a]	Subset for alpha = 0.05		
		1	2	3
Birla	10			76.9700
ICICI	10			78.3000
Sig.		.891	.059	.897

Means for groups in homogeneous subsets are displayed.

a. Uses Harmonic Mean Sample Size = 10.000.

Table 6.12 above highlights different groups having similar mean. There are three different groups called subsets have been created using Tukey HSD post hoc test. Subset 1 consist of Reliance and Birla having similar mean score. Subset 2 includes Bajaj, HDFC, Kotak, SBI, Max while subset 3 includes all companies except Reliance and Bajaj. It indicates that all selected companies except Reliance and Birla having similar mean and there is no significant difference. Due to the low mean score of Reliance and Birla, it differs significantly from other companies and that resulted in overall significant difference among the selected companies.

The table 6.13 below summarised result of hypothesis testing. It clearly shows that the significant value of all ratios except claim ratio is less than 0.05, which indicates significant difference among selected companies in terms of Conservation ratio, persistency ratio and retention ratio. It has been verified from the above statistical calculation.

Table 6.13 Hypothesis Test Summary

No.	Null Hypothesis	Test	Sig.	Decision
1	No significant difference in Conservation Ratio among selected	Independent Samples Kruskal Wallis Test	.000	Reject the Null Hypothesis
2	No significant difference in Persistency Ratio among selected	One Way ANOVA	.000	Reject the Null Hypothesis
3	No significant difference in Claim Ratio among selected	Independent Samples Kruskal Wallis Test	.086	Accept the Null Hypothesis
4	No significant difference in Retention Ratio among selected	Independent Samples Kruskal Wallis Test	.000	Reject the Null Hypothesis

6.10 Summing up

The present chapter has made an attempt to understand the concept of risk and risk management with respect to life insurance business. Risk management is the continuous process to be aware of operational uncertainties to minimise the loss potential to a company. The study describes the risk management process in detail, from risk identification to review and evaluation. Moreover, various risk exposed to the selected companies and their risk management framework have been analysed. All the companies selected for the study have different strategies towards accepting, avoiding, or minimizing their risks.

Later, the risk management practices have been examined among selected companies with the help of conservation ratio, persistency ratio, claim ratio and retention ratio. It reveals that all selected companies are able to successfully sustain their business by handling their underwriting and actuarial risk.

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