Chapter I
INTRODUCTION

It is well documented in finance literature that there exists a positive association between the level of financial sector development and long-run growth, since the pioneering statistical work of Goldsmith\(^1\) (1969). Governments in developing countries, however, recognized the need to strengthen the financial system and to set up conditions favourable for financial development only since the end of 1970s (Berthelemy, J. C. and Varoudakis, A.)\(^2\) (1996). In India, the financial sector reforms were initiated in 1991. The core objectives of these reforms have been strengthening the financial sector and improving the functioning of the financial markets. As part of the reforms, the Narasimham Committee–I (NC-I) was appointed under the chairmanship of Sh. M. Narasimham in 1991. A number of reform measures as per the recommendations of NC-I were initiated in April 1992 to minimise the distortions impinging upon the efficient and profitable functioning of banks. Though these reforms succeeded in improving the performance and competitiveness of Indian banks, because of the cataclysmic changes taking place in the world economy towards globalization the need to initiate a second phase of banking sector reforms was felt. Thus, Narasimham Committee–II (NC-II) was appointed in 1998, again under the chairmanship of Sh. M Narasimham. As per the recommendations of NC-II the second phase of banking sector reforms were initiated in April 1999. These reforms have been continuously regulating the banking system in India and have brought about a paradigm shift in the way in which banking business is carried out in India. These reform measures in India have had the key success of “maintenance of financial stability through a period marked by repeated financial crises across the world” (RBI)\(^3\) (2009).

\(^3\) Reserve Bank of India (RBI), Trend and Progress of Banking in India, 2008-’09, p.13.
1.1. Risk Management and Technology Adoption in Indian Banks

One of the most important developments in connection with the banking sector reforms in India has been the implementation of a number of regulatory norms stipulated by the RBI. These regulatory norms are targeted at management of different risks faced by the banks, generally based on the norms stipulated by Basel Committee on Banking Supervision (BCBS) – the international banking regulatory authority. On the one hand, risk management has become more complex and on the other it has become a competitive tool as well, because “Risk management has become a more complex practice with the evolution of credit risk models that provide decision makers with insight or knowledge that would not otherwise be readily available, thus giving them a competitive edge” (RBI)⁴ (2008).

Another notable feature has been the large scale adoption of technology by banks in India, for enhanced operational efficiency, customer service and competitiveness. The Information Technology Act of 1999 (IT Act, 1999) has given a new dimension to this trend. In spite of the appreciable performance of Indian banks in the reforms regime, there have been growing challenges towards keeping the system abreast of the global developments, particularly the compliance with the prudential norms stipulated by BCBS. Of late, it has been observed, “Nonetheless the balance sheets of scheduled commercial banks (SCBs) shrank and their financial performance decelerated suggesting that the Indian banking system was not completely insulated from the effects of the slowdown of the India economy” (RBI)⁵ (2009). Risk management and technology adoption in banks, both being mutually inter-dependent, are going to be the determinants of operational efficiency and competitiveness banks in India in the days to come, as RBI remarks, “Innovations involving complexity and sophistication of products and services, coupled with profitability and competitive considerations, have changed the dimensions of risks faced by banks” (RBI)⁶ (2009).

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⁴ Reserve Bank of India (RBI), *Trend and Progress of Banking in India*, 2007-’08, p. 47.
⁶ Reserve Bank of India (RBI), *Trend and Progress of Banking in India*, 2008-’09, p.15 & 17.
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1.2. **Basel Accord and Risk Management Systems in Banks in India**

The initial Accord of BCBS (ie. Basel – I) developed in 1988 established the minimum capital requirement standards for bank credit exposures. In 1996, the initial Accord was extended to include market risk that banks incur in their Trading Account. Afterwards, in 1999 the BCBS brought out a consultative paper on New Capital Adequacy Framework and this was further followed by the second and third packages in January 2001 and April 2003. The new document released in June 2004 (viz. Basel – II) has been exerting further pressures on banks world over, by requiring them to hold capital to offset risks. In July 2009, the Basel– II norms were further tightened and the Basel Committee issued a series of standards for higher capital for the trading book as it was recognised that the existing Basel II framework seriously underestimated the capital needs for the trading book (RBI)\(^7\) (2009).

RBI has been insisting on banks for implementation of various regulatory norms, in tune with the international norms stipulated by BCBS. For instance, RBI had initially stipulated a Capital Adequacy Ratio (CAR) of 8% and later on raised the same to 9% as per the BCBS norms. Similarly, stringent accounting norms for provisioning, income recognition and asset classification were introduced. The norms for NPA (non performing assets) categorization has been tightened with effect from 01 April 2005 whereby ‘3 months’ criterion has been adopted. Because of these ongoing regulatory pressures, fierce competition, and dwindling profit margins banking business has become growingly competitive, both from the perspectives of regulatory compliance and operational efficiency.

RBI has already issued directives to banks for putting in place an Integrated Risk Management (IRM) system, which primarily comprises of three subsystems viz. (i) Credit Risk (ii) Market Risk (iii) Operational Risk. Credit Risk Management has got a vital role in the risk management architecture of any bank. Accordingly, in compliance with the RBI directives all the SCBs (scheduled commercial banks) in India have

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\(^7\) Reserve Bank of India (RBI), *Trend and Progress of Banking in India, 2008–09*, p.5.
adopted the Standardised Approach (SA) for credit risk, Basic Indicator Approach (BIA) for operational risk and Standardised Duration approach for market risk for computing their capital requirements under the revised framework. (RBI)\(^8\) (2009).

1.3. **Technological Advancements and Banking Sector in India**

As already noted, the paradigm shift in Indian banking in the reforms era and the need for putting in place robust risk management architecture as per Basel norms have posed formidable challenges to the banks in India. In view of the utmost significance of maintaining competitiveness in customer service, to take advantage of enhanced productivity and complying with the requirements of Basel-II, banks have been giving high priority to embrace advanced technology. Reddy, Y. V\(^9\) (2002) has observed, “Technical advances have resulted in accelerated pace of innovations and complexities in financial products besides the multi-fold increase in volumes and turnover”. In a more recent study Bhasin, T. M\(^10\) (2008) observed, “age-old business processes must be revisited and fine tuned in line with the state-of-the-art banking softwares” for improving the ROI (return on investment) and also “major investments in IT in the banking sector during the next five years would be required to meet the regulatory and compliance requirements”. It is widely recognized that banks with advanced technology platforms are having higher employee and branch productivity, better customer service, and are in a position to keep themselves abreast of changes because of enhanced competitiveness. Moreover, technology can play a catalytic role in improving the efficiency of the risk management system especially the credit risk management.

1.4. **Relevance and Significance of the Study**

Banking system is the backbone of any economy. Enhanced performance and financial stability of banks is growingly important for banks in the deregulated era for their survival and growth. Equally important is the need for an integrated risk management

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\(^8\) Reserve Bank of India (RBI), *Trend and Progress of Banking in India, 2008-'09*, p.137.


system, in conformity with the norms prescribed by international agencies like BCBS. Advanced technology can play a vital role in enhancing the operational efficiency of banks and effective risk management, particularly credit risk – the most critical risk.

Maintaining productivity and competitiveness in operations is the hallmark of success in modern banking. This is more relevant in respect of public sector banks (PSBs) and old private sector banks (OPBs) because these banks – which are ‘traditional’ in nature – are endowed with lesser level of technology in their operations compared with their two counterparts, viz. foreign banks (FBs) and new generation private sector banks (NPBs). Thus, the former two groups, PSBs and OPBs, have to face the challenges of competition in the globalised regime to an extent much larger than the FBs and NPBs.

Many studies relating to the performance of PSBs (Raul, R. K. and Ahmed, J. U.; Garai, S. C. et al; Uppal, R. K and Pooja; Kaur, G. and Kaur, N etc.) in the reforms era have suggested that their performance in respect of profitability, asset quality, productivity etc. are on the rise. An empirical study (involving SB Group banks, other PSBs and FBs) has identified, inter alia, priority sector advances as the major determinant of profitability of PSBs. (Saveeta and Verma, S.) (Technology as a variable has not been considered in the above study). A more recent macro level study of various bank groups (PSBs, OPBS, NPBs and FBs) has considered technology variable also and has observed that non-interest income of banks has significantly improved by technology adoption (Arora, S. and Kaur, S.) (2008).

Empirical studies that consider technology in general and that with respect to OPBs in particular are very scarce; and are nil with reference to Kerala-based OPBs (KOPBs). Here, it may be stated that the state of Kerala in the Indian union has got an enviable track record of private sector banking right from the nineteenth century. Even in the early 1980s, as high as 8 OPBs were based in this small state. However, because of pressures of competition and inadequacy of risk management systems (eg. Nedungadi Bank Ltd. was merged with Punjab National Bank in 2004 and Lord Krishna Bank Ltd. with Centurion Bank of Punjab Ltd. in 2007) some of these banks have been merged with stronger ones. The number has gradually fallen to just 4. It is believed that this number may fall further, as many such mergers are anticipated in future causing the disappearance of smaller-sized private banks. In view of the foregoing, because of:

(i) the utmost significance of banking sector for the economic development of any nation, and hence the vital need for high operational efficiency and robust risk management systems for the individual players in the banking system;

(ii) the lack of research studies on comparative performance of KOPBs;

(iii) the lack of empirical studies at the micro level, of the risk management and operational efficiency with special reference to OPBs in India in the reforms era;

(iv) lack of research studies that focus on technology and its impact on operational efficiency and risk management in OPBs, particularly at the micro level; and

(v) special significance of Kerala in respect of private sector banking in India, and the current situation of gradual vanishing of KOPBs because of competitive pressures and inadequacy of risk management systems;

it is relevant to make an empirical study of the risk management systems in Indian banks with special reference to the Kerala-based OPBs, to study the relative financial performance of the Kerala-based OPBs and the major determinants of superior performance, and lastly to test the impact, if any, of technological changes on operational efficiency and risk management in these banks. This research work is an effort in the above direction and is expected to bridge the research gap as noted above.

Technology in Banks and Its Impact on Operational Efficiency and Risk Management
1.5. Statement of the Research Problem

Enhanced operational efficiency and competitiveness is a prerequisite for survival and growth of any bank in the ongoing era of financial deregulation. This is particularly so for smaller sized banks among the ‘traditional’ VII banks viz. PSBs and OPBs. Many OPBs in India have already succumbed to the pressures of competition. In respect of Kerala state in particular which has got an enviable track-record of private banking, the total number of private sector banks has fallen from 8 in the 1980s to just 4 in 2007 and the number may fall further. In 2000s itself, two banks have disappeared (Nedungadi Bank Ltd. in 2004 and Lord Krishna Bank Ltd. in 2007). One of the existing KOPB viz. Catholic Syrian Bank (CSB) is already a takeover target of another KOPB viz. Federal Bank (FB) since 2008. History of Kerala banking for the last few decades point to the growing vulnerability of KOPBs, including very established players. The financial soundness of these banks has, hence, got a vital role in ensuring their continued survival and growth.

In the above context, advanced technology as an enabler of enhanced productivity, operational efficiency and competitiveness in banking business has got a crucial role to play. It has got a significant role in improving the profitability of banks by reducing the operating costs, hence improving operational efficiency and competitiveness, apart from improving customer service. Besides, technology can enhance the effectiveness of risk management systems in banks, particularly management of credit risk— the most critical type of risk. As such, technology has got a vital role in deciding the survival and growth of banks. In view of the foregoing, considering the need to maintain high level of financial soundness for the financial intermediaries like banks, the special role of technology in enhancing their profitability and operational efficiency, this study seeks to answer the following research questions:

(i) What is the current status regarding the financial soundness of KPOBs vis-à-vis other OPBs in India? Whether the financial soundness of KPOBs is comparable with the average for all OPBs? How does it compare with the ‘Best in the Class’?
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(ii) What is the current status of the risk management systems existing in India, particularly in the context of Basel-II norms? How do KOPBs compare with the general situation in respect of all SCBs, OPBs and NPBs in India?

(iii) What are the major determinants of profitability of KOPBs? Which are the factors to be focused for enhanced financial performance? Whether the position of KPOBs in this regard is comparable with that of OPBs in general and also NPBs?

(iv) What are the major factors that determine the operational efficiency of KOPBs? Which are the factors determining sound operational efficiency? Whether the position of KPOBs in this regard is comparable with OPBs and NPBS in general?

(v) What is the role of non-interest income on (a) Profitability?, and (b) Efficiency?

(vi) Whether directive credit policy of the government (like, Priority sector advances) has adversely affected the profitability or operational efficiency of KOPBs?

(vii) Whether the intensity of rural (including semi-urban) branches in the total network of KOPBs adversely affecting their profitability and efficiency?

(viii) Whether technology has got any role in improving the financial performance and operational efficiency of KOPBs? If so, how?

(ix) What could be the strategies to be adopted for enhanced operational efficiency and risk management, particularly in the context of technological changes?

1.6. Objectives of the Study

(i) To make an overall study of the risk management systems prevalent in commercial banks in India in the reforms era with focus on Basel–II requirements.

(ii) To make a detailed study of the risk management systems of the Kerala-based OPBs (KOPBs) with special reference to credit risk management and compliance with Basel – II requirements.

(iii) To make an analysis of the relative performance of OPBs in India applying CAMEL (Capital adequacy, Asset quality, Management, Earning quality and Liquidity) method, and to benchmark the KOPBs with the industry average, ‘best in the class’ among the OPBs etc.
(iv) To make a comparative analysis of the profitability and operational efficiency of KOPBs and to identify the major determinants of their relative superiority in profitability and operational efficiency.

(v) To ascertain the significance of the relationship between the level of technology adoption and operational efficiency and risk management of KOPBs.

(vi) To suggest meaningful strategies for development of more effective credit risk management systems in banks, with special reference to OPBs in India.

1.7. Hypotheses of the Study

(i) The financial soundness of KOPBs measured in terms of CAMEL scores is significantly lower than that of the ‘Best in the Class’ score among the OPBs.

(ii) The financial soundness of KOPBs is significantly lower than the average of OPBs.

(iii) Non-interest income is a significant determinant of profitability of KOPBs measured in terms of Operating Profit Ratio (OPR).

(iv) Non-interest income is a significant determinant of operational efficiency of KOPBs measured in terms of Net Interest Margin (NIM).

(v) Share of priority sector advances in the total advances adversely affects the profitability of KOPBs measured in terms of Operating Profit Ratio (OPR).

(vi) Share of priority sector advances in the total advances adversely affects the operational efficiency of KOPBs measured in terms of Net Interest Margin (NIM).

(vii) Share of rural (and semi-urban) branches in the branch network adversely affects the profitability of KOPBs measured in terms of Operating Profit Ratio (OPR).

(viii) Share of rural (and semi-urban) branches in the total branch network adversely affects the operational efficiency of KOPBs measured in terms of Net Interest Margin (NIM).

(ix) Technological change (ie. higher end technology) reduces the Net Interest Margin (NIM) of KOPBs.

(x) Technological change (ie. higher end technology) enhances the Non Interest Margin (NOM) of KOPBs.
1.8. Research Methodology

1.8.1. Collection of Data

Primary Data: The primary data are collected by way of in-depth interviews with the principal officers of the respective banks using a carefully drafted Interview Schedule. Thus, officers who are in charge of the management of credit risk and other types of risks as per the risk management architecture stipulated by the Reserve Bank of India (RBI) are approached to collect the information regarding the risk management system. Likewise, the officers in charge of technology management are approached to collect information as to the level of technology adoption, investments in technology, and its trend over the years.

Secondary Data: These are collected from authentic secondary sources like the publications of the RBI, Indian Banks’ Association (IBA), Indian Institute of Banking & Finance (IIBF) etc. Besides, national journals like ‘Bank Quest’ and ‘IBA Bulletin’; and international journals like ‘The Banker’ and ‘The Economist’ etc. are also used.

1.8.2. Sample Design

The study focuses on all Kerala-based OPBs, viz. OPBs registered in the state of Kerala and as such the method is census method and sampling procedure is not relevant. All Kerala-based OPBs are studied individually, case by case.

1.8.3. Analytical Tools

These include various techniques of financial, economic and statistical analysis, particularly tools and techniques of econometric analysis. Tools of financial analysis like ratio analysis, statistical tools like ANOVA, and econometric tools like regression analysis are used. Computer Software packages like SPSS are used for analysis of data.

1.9. Utility of the Study

The research findings have extensive use for micro level policy decisions, especially those relating to technological investments and financial and operational strategies. At the macro level, informed decisions on desirable regulatory guidelines are facilitated.
1.10. **Period of the Study**

The study covers a period of ten consecutive financial years starting from the financial year 1999-'00 and ending at the financial year 2008-'09.

1.11. **Limitations of the Study**

(i) The impact of technological changes in financial performance and risk management alone are focused in this study. The impact on customer service, marketing of banking products etc. are not considered.

(ii) Only the financial aspects of the banks as quantified using various ratios and other financial parameters are considered for comparative performance analysis and benchmarking. Aspects like goodwill, brand equity etc. are not covered.

1.12. **Scope for Further Explorations**

There is ample scope for further explorations in the research problem stated earlier. Some of these include, inter alia, the following:

(i) Study of the impact of technology on customer service and customer loyalty.

(ii) Study of the impact of technology on the effectiveness of marketing of bank products and implementing a CRM (customer relationship management) system.

(iii) Study of the role of technology in management of market and operational risks.

1.13. **Chapter Scheme**

Chapter I: Introduction. This chapter includes the significance and relevance of the study, the research problem, objectives of the study, hypotheses of the study, research methodology, utility of the study, limitations of the study and chapter scheme.

Chapter II: Review of Literature. This chapter makes a detailed review of the relevant literature on banking studies, particularly those relating to performance analysis, risk management, technology adoption etc.

Chapter III: Theoretical Framework. This chapter contains the discussion on the underlying theory behind the research work, viz. the determinants of superior performance, models that can quantify the financial performance and stability of banks,
role of technology in enhancing the operational efficiency and effectiveness of the risk management system etc.

Chapter IV: Research Design. This chapter gives a detailed discussion on the research design that is employed for this study. Models like ‘CAMEL’, various financial ratios used and their definitions, econometric models used and their definitions etc. are included in this chapter.

Chapter V: Indian Banking in the Globalised Era: Imperatives of Technology Adoption and Basel–II Compliance. The chapter contains a review of the transformation that has taken place in Indian banking in the globalised era with special to (i) adoption of modern technology for competitiveness and cost effectiveness, and (ii) compliance with the international regulatory norms like Basel–II for integrative risk management.

Chapter VI: Banking in Kerala. This chapter makes a detailed review of the banking sector in the state of Kerala, from a historical perspective. The current status of Kerala’s private sector banking and also a brief profile of the four KOPBs under detailed study are included in this chapter.

Chapter VII: Performance of OPBs in India and Benchmarking the KBOBs. This chapter deals with a comparative analysis of the performance of all OPBs in India using ‘CAMEL’ model. Detailed analysis of the KOPBs vis-à-vis their status with reference to other OPBs, including benchmarking them with ‘Best in the Class’ are covered in this chapter.

Chapter VIII: Profitability and Efficiency of KOPBs and Their Determinants: An Econometric Study. In this chapter, an attempt is made to make an analysis of the profitability and efficiency of KOPBs and also to identify the major determinants of superior performance in respect of profitability and operational efficiency.

Chapter IX: Technology and Its Impact on Operational Efficiency and Risk Management: an Econometric Study. In this chapter, an analysis is made as to the role of technology in enhancing the operational efficiency and risk management in KOPBs.
Chapter X: Summary of Findings and Suggestions. This chapter concludes the study and makes a summary of the findings of the analyses done in the previous chapters, and also suggests a few strategies for enhanced operational efficiency and effective risk management in banks.

[Towards the beginning of the research report, Certificate of the Research Supervisor, Declaration by the Researcher, Contents, List of Tables and List of Figures are provided. Likewise, towards the end of the report, a detailed Bibliography and Annexure are appended]

REFERENCES


(10) Reserve Bank of India (RBI), Trend and Progress of Banking in India, for FY 1996-‘97 to FY 2008-’09.


Introduction

Technology in Banks and Its Impact on Operational Efficiency and Risk Management

I Public Sector Banks (PSBs) in India: These are commercial banks owned by the Government of India; either fully or with majority stake. These include State Bank of India and its seven associates (subsidiaries), together called State Bank group (SB group) banks. Another group is the set of 19 Nationalised Banks (NBs) which were originally private sector banks subsequently acquired by the Government of India as part of nationalisation. One more PSB viz. IDBI Bank emerged as the erstwhile new generation private sector bank has acquired its parent IDBI through a reverse merger process through an Act of the Parliament. Thus, as of 2009 there are totally 28 PSBs in India, representing 8 SB group banks, 19 NBs and IDBI Bank. PSBs are supposed to be ‘traditional’ in their structure and systems when compared with foreign banks (FBs) and new generation private sector banks (NPBs) in India, as the latter two are equipped with higher technological platforms and have lesser commitment towards priority sector (preferred sector) lending policies of the Government of India, unlike PSBs.

II Old Private Sector Banks (OPBs) in India: These are private sector banks which have been functioning even before the initiation of financial sector reforms in the early 1990s. They are different from the New Generation Private Sector Banks (NPBs) which have started functioning since the mid 1990s i.e. during the reforms regime. Like PSBs, OPBs are also supposed to be ‘traditional’ in their structure and systems when compared with foreign banks (FBs) and new generation private sector banks (NPBs) in India. Besides, like PSBs, OPBs also have equal commitment towards priority (preferred) sector lending policies of the Government of India.

III Foreign Banks (FBs) in India represent those banks registered in some other country but having branches or offices in India. FBs operate on much higher-end technological platform compared with PSBs and OPBs. Their commitment towards priority (preferred) sector lending policies of the Government is lower than PSBs and OPBs.

IV New generation private sector banks (NPBs) in India represent a few private sector banks which got registration during the reforms era (mid 1990s). They operate on high-end technological platforms (like FBs) and their commitment towards priority (preferred) sector lending policies of the Government of India is also lower, unlike PSBs and OPBs.

V State Bank Group: This denotes State Bank of India (SBI) – the largest commercial bank in India, a Public sector bank– and its 7 associates. Thus, there are 8 banks in the SB group.(See Note I, PSBs)

VI Kerala-based OPBs (KOPBs): These are OPBs (Old Private sector Banks) registered in the state of Kerala. At present (Dec. 2009) there are four such banks viz. Federal Bank Ltd., Catholic Syrian Bank Ltd., South Indian Bank Ltd., and Dhanalakshmi Bank Ltd.

VII ‘Traditional’ Banks: These are banks (i) that shoulder the legacies of special and preferred sector advances as per government of India directives from time to time, and (ii) equipped with lower-end technology. Both these features have an adverse impact on their profitability, operational efficiency and competitiveness. PSBs and OPBs fall under this group, in sharp contrast with NPBs and FBs. (See Notes I to IV above).

VIII Scheduled Commercial Banks (SCBs): These are banks included in the Schedule to the Banking Regulation Act, 1949 (BRA, 1949). These include PSBs, OPBs, NPBs, FBs and also Regional Rural Banks (RRBs). As of March 31, 2009 there are 87 SCBs other than RRBs.