CHAPTER 2
REVIEW OF LITERATURE AND THEORETICAL FRAME WORK

2.1 INTRODUCTION

Credit risk management has attracted considerable attention over the past decade, particularly since the 1997 financial crisis. The research has been mainly concerned with credit scoring and credit control of large financial institutions from developed markets. This literature review chapter is framed to discuss the qualitative and quantitative aspects of credit operations and risk management including the definition of credit operations, credit risk, the cause of credit risk, the importance of credit risk management, credit risk management models, and the current research debate in these areas. The review also attempts to reveal the development of the subject and highlight the research gap in the area of credit operation and risk management of financial institutions.

After the formulation of research problem, the researcher undertook an extensive literature survey related to the problem. The earlier studies, which are relevant to the present study, were carefully reviewed. The researcher devoted sufficient time for this work. This indeed helped to have a better understanding of the perspectives of the research problem. By reviewing various theoretical works and empirical studies, the researcher was able to identify the research gaps in order to fill in those gaps of information in his work. In this regard, an attempt was made to review various theoretical
and empirical studies to facilitate the present study. The scholar is presenting the review of literature in chronological order from the latest to the oldest under year wise subheading.

2.2 SUMMARY OF THE LITERATURES

2.2.1 Studies Conducted in 2016

Kabir Hassan et al. (2016), in this study, they investigated changes in banks' Capital Adequacy Ratio (CAR) under different stress scenarios and examine the results by comparing conventional banks to participation banks in Turkey. Their results reported that the capital adequacy ratio of the banks declines substantially given the stress scenarios. They found that participation banks in Turkey suffer more in declined capital adequacy ratio compared to conventional banks. Our findings reveal that participation banks in Turkey are more sensitive to sudden changes in exchange rates and increased non-performing loans. However, this sensitivity is in regards to capital adequacy, not profit. Overall, our study shows the effect of stress in the banking sector by contributing to the existing literature.

Reza Raei et al. (2016), the effect of banks' credit portfolio diversification on return on asset, return on equity and credit risk is investigated in this study. The sample is comprised of seven banks listed in Tehran Stock Exchange (TSE) whose data has been accessible between the years 2009 and 2014. According to the type of data and analysis methods, panel data multivariate regression method was used in this study. Results show that there is a significant relationship between credit portfolio diversification and risk; furthermore, it is the size that influences Return On Equity (ROE) and Return On Asset (ROA) of banks and in fact, there is no statistically significant relationship between use of diversification strategy in banks’ credit folio and their ROA and ROE.
2.2.2 Studies Conducted in 2015

Jamshidi Khezeli et al. (2015), the central purpose of this paper is to examine the relationship between credit risk and liquidity risk with the performance of the branches of Bank in Kermanshah province. In this study, to evaluate the performance and the ranking of the branches, Select the optimal model and then identify the relationship between credit and liquidity risks on the performance of the branches of Bank of Kermanshah the two approaches Parametric-based economy and Nonparametric based on mathematical optimization is used. In this context, the Mellat banks Kermanshah province, which has 20 branches as the population of the study, 90 to 92 years were studied. Research findings indicate differences in both parametric and nonparametric in evaluating the performance rating of the bank and Comparative advantage of (SFA parametric) compared to (MEA nonparametric) is. The findings also suggest that there is a significant relationship between credit risk and liquidity risk in the performance of the branches of Mel-lat bank of Kermanshah and Liquidity risk is also greater impact on the performance of the branches.

Sufi Faizan Ahmed & Qaisar Ali Malik (2015), the main aim of the paper is to evaluate the influence of credit risk management practices on Loan Performance (LP) while taking the Credit Terms and Policy (CTP), client appraisal, Collection Policy (CP) and Credit Risk Control (CRC) as the dimensions of the credit risk management practices. For statistical evaluation, the primary data in cross sectional form has been taken into consideration. The data is collected from the managerial level credit risk management staff of microfinance banking sector. Multiple regression analysis has been used for empirical relationship evaluation of the credit risk management practices on the performance of loan. The results of the analysis are showing that the credit terms and client appraisal have positive and significant impact on the
LP, while the CP and CRC have positive but insignificant impact on LP. The study is helpful for the management to enhance the LP by focusing on the dimension of the credit risk management practices used in the study. Future aspects of the research have also been taken into account and elaborated.

Felix Sabeza1 et al. (2015), this research assessed the relationship between credit risk management and banks’ profitability. The guided objectives were the following; to examine how credit risk mitigation system is applied by BPR Ltd, to find out problems faced by credit risk managers of BPR Ltd in managing credit risk, and to evaluate the relationship between credit risk management and financial performance of BPR Ltd. This study is expected to be significant to all Rwandan banking sectors, University of Rwanda, Future researchers, and the general public. The study used BPR Ltd Nyagatare branch as a sample to represent other commercial banks in Rwanda, out of 150 staff of Nyagatare branch the researcher took a sample of 50 respondents to represent others. The researcher used a descriptive and analytical research based on both qualitative and quantitative data. Primary data was obtained by extracting information from questionnaires designed to get answers from different respondent composed of BPR Ltd staff from different level. Secondary data were collected from books, journals, newspapers and internet materials. In research data is presented in form of tables, graphics while analysis and interpretation were based on frequencies and percentages. The research found that BPR Ltd has a credit management system though it needs to be reviewed and adopted more to current Rwandan environment. The research found that there is a direct relationship between credit risk management and profitability of commercial banks. The research recommended that BPR Ltd should review and improve its credit policy and adopt it to Rwandan market and context and BPR Ltd should provide continuous training and updates to its staffs.
Mohsen Heydari & Mohamadreza Abdoli (2015), the main purpose of the research to study the effect of credit risk management and capital adequacy on financial performance of business banks from 2009 to 2014. The statistical population of the research is all state and private banks and final sample volume is 25 banks based on available information. In this research, amount of loans, previous maturity of credits, loss reserve on loans and previous maturity of credits, liquidity ratio and capital adequacy of banks were used to study their effects on the performance of banks (return on asset). The results of data analysis using multivariate - linear regression at 95% confidence level indicated that there is a negative relationship between loss reserve on loans and previous maturity of credits and banks’ performance. On the other side, the results indicated that there is a positive relationship between liquidity ratio and capital adequacy ratio with banks’ performance.

Festus M Epetimehin & Obafemi Fatoki (2015), Operational risk in inherent in all financial products, activities and processes and systems and the effective management of operational risk is paramount importance for every financial institution board and senior management. With globalization and deregulation of financial markets, increased competition combined with the advent of high-end, innovative, sophisticated technology tremendous changes have taken place in the products distribution channels and serviced delivery mechanism of financial sector. These have introduced more complexities into the operations and consequently the risk partners and profiles of the sector have also become complex, diverse and catastrophic. The New Capital Adequacy Framework of most of most financial institutions requires them to study the regulatory frame work related to operational risk management. A research was conducted on 150 employees from different financial institutions, such as banks, insurance, stockbrokers and microfinance companies. Analysis of Variance (ANOVA) was used to test the hypothesis and response of respondents was analyzed through the use of Statistical
Package for Social Science (SPSS). The result showed that operational risk management effects have positive effects on the financial development and growth in the financial sector.

Rim Ben Selma Moknia et al. (2015), the purpose of the study is to investigate the current risk management practices of Islamic and conventional banks in the MENA region. The study is based on a survey of 47 banks, including 24 conventional and 23 Islamic banks. The collected data were analysed using descriptive statistics and t-tests. The findings indicate that banks in MENA region have effective risk strategies and effective risk management frameworks in place. Furthermore, the findings reveal that credit risk is considered the most important for both conventional and Islamic banks followed by liquidity risk. Finally, both conventional and Islamic banks continue to rely on traditional credit risk mitigation tools. These findings have significant contributions to the literature by comprehensively clarifying and critically analysing the current state of risk management among the Islamic banks and conventional banks located in the MENA region.

Asha Singh (2015), this paper examines the effect of credit risk management on private and public sector banks in India. Credit risk occurs when customers default or fail to comply with their obligation to service debt, triggering a total or partial loss. The primary cause of credit risk is poor credit risk management. When banks manage their risk better, they will get advantage to increase their performance (return). For this purpose researcher has taken one dependent Return On Asset (ROA) and two independent variables Capital Adequacy Ratio (CAR) and Non-Performing Assets (NPAs). The ROA is performance indicator. The CAR and NPAs is credit risk management indicator. Researcher has applied two way regression model.

Stephen I Dugguh & Joseph Diggi (2015), the objective of their study is to review the strategies adopted by financial service institutions in
Nigeria with particular reference to commercial banks with a view of proffering solutions for a more effective, efficient, and profitable operations. The paper reviews relevant literature on risk management, strategies and reduction. It found that risk is one of the greatest challenges confronting commercial banks in recent time in Nigeria. The paper recommends ways of making these strategies more effective and urges management to give top priority in hedging and managing risks in commercial banks.

Manas Chakrabarti (2015), the study makes an overall evaluation on the risk analysis and its management in Indian banks in the context of Basel committee recommendation on capital accord. To be specific, the main objectives of the study are: To explain the need for risk management in any financial institution and to describe various types of risks in banking sectors. To explain various risk management techniques and its process, where to examine the role of RBI over risk management in Indian banks. The Paper reveals that Risk is an opportunity as well as a threat and has different meanings for different users. The performance of a bank from the viewpoint of profitability is not very meaningful unless the same is accounted for along with the risk. After economic liberalization, the banks were free to introduce new products and free to charge price their products with varying risk associated with the instrument. Thus, the banking industry is exposed to different risks which can adversely affect its profitability and financial health. Therefore, risk analysis and its management have emerged as a new and challenging area in banking business. Reform process and the guidance of Basel Committee have directed the Indian banking industry in the right path so far risk management is concerned. They have adopted best structures, processes and technologies available worldwide and have moved from strength to strength.
Ivana Weissova et al. (2015), the present contribution deals with the issue of credit risk and rating, which is one of the useful tools for measuring to credit risk. Rating and credit risk are closely linked. In general, we can define credit risk as the probability of loss from a debtor’s default. While rating is like a meter, by which it should be possible to compare two borrowers and determine, which of them has more likely, that in the end he pays for his obligation. In the rating process are systematic processed information about enterprise’s developments from its past and the future outlook. The rating of the enterprise is carried out by taking into account quality criteria (“soft facts”) and quantitative criteria (“hard facts”). Hard facts are calculated from the financial statements of the company through the implementation of financial-economic analysis. So, hard facts provide a reliable statement about of the financial stability of the company and its financial health. The values of indicators which are achieved are combined according to their significance and then they are transferred to the internal rating scale. Then this value is used to express quantitative rating of enterprise. Present contribution is going to deal with calculation of hard facts and quantitative criteria for rating measurement. Rating assignment is going to be carried out on a model example. Hard facts are going to be determined based on the financial statements of the selected company and the rating is going to be assigned according to the rating scale which is going to be established for model example.

Norlida Abdul Manaba et al. (2015), the aims of this study are to investigate the determinants of credit risk and to examine the impact of earnings management on credit risk prediction. The results showed that the liquidity ratio was significant in determining credit risk before and after earnings management was adjusted. Meanwhile, the productivity ratio was significant in the unadjusted model, while the profitability ratio was significant in the adjusted model. The overall percentage of correct prediction
showed that the unadjusted model predicted better than the adjusted model. This study provides knowledge about the effect of earning management on bankruptcy prediction.

Faridah Najuna Mismana et al. (2015), the purpose of this paper is to investigate the determinants of credit risk in the case of Malaysia Islamic banks. Using a yearly bank level data from 1995 to 2013, this paper utilizes the fixed effect model to provide empirical evidences on Islamic banks credit risk in Malaysia. The empirical results demonstrate that a few bank-specific variables do significantly influence credit risk of Malaysia Islamic banks. The findings show that financing quality and capital ratio demonstrate consistent results regardless of specification and estimation models. The inclusion of ownership status also suggests that there is a significant difference between the local and foreign ownership Islamic banks.

Marco Ruiza et al. (2015), this paper proposes a tool that is both pragmatic and conceptually sound, which allows to improve the assessment of credit risk for foreign reserves managers and complements the information produced by the rating agencies. The tool we propose uses three different credit risk models in order to identify the issuers that have a high, moderate, or low probability of having a ratings downgrade below the minimum accepted rating, within the issuers that meet the minimum rating requirements. The signals from the tool are built from market and fundamental information of each issuer. Additionally there is a proposal for a framework to turn the outputs from the model into investment decisions.

Siekelova Ann et al. (2015), in their study mentioned that Credit risk management was not so necessary, while sales of deferred payment has begun to dominate the prompt payment. The existence of receivables has become a necessity in the area of functional and effective market economy. Most of the receivables in the company have the form of trade credit.
Therefore credit management as the management of trade credit has become very important. Insolvency four out of ten companies in the Slovak Republic is due to the delay or any payment of their receivables. Credit managers address important issues during their daily activities: the level of indebtedness enterprises, which is due to the sale of invoice, the increase of indebtedness should be supported or stopped, the ability and willingness of customers to pay their commitments properly and timely, appropriately set criteria for individual credit segments of customers or if it is necessary to make a decision of choosing an effective tool for debt recovery. Article highlights to a correlation between the amount of receivables in the company and its solvency and underlines the importance of credit management and its principal activities. We will use the methods of formal logic such as analysis, synthesis and interpretation. The intention is to draw up basic theoretical principles for determining the credit limit for individual customers in the company.

Kollar Boris et al. (2015), the main aim of this paper is to present basic characteristics of Credit Metrics model and its model application. The importance of accurate credit risk quantification is growing nowadays in global economy just like in local economies. Credit Metrics approach is designed to measure the risk of credit loss caused by changes in the creditworthiness of borrowers. Loss does not occur only in the case of counterparty's default, but also upon its transition into worse rating category. The output of this model, however, is the entire distribution function of portfolio value. We will present application of this method for single bond. For this purpose we will use analytical method. We will use methods of formal logic such as: analysis, synthesis, deduction and comparison. The result will be comprehensive overview of Credit Metrics results under the conditions of local economy. We will also mention test results of various renowned agencies, which reflect the accuracy of this model.
Ivana Weissova et al. (2015), the present contribution deals with the issue of credit risk and rating, which is one of the useful tools for measuring to credit risk. Rating and credit risk are closely linked. In general, we can define credit risk as the probability of loss from a debtor’s default. While rating is like a meter, by which it should be possible to compare two borrowers and determine, which of them has more likely, that in the end he pays for his obligation. In the rating process are systematic processed information about enterprise’s developments from its past and the future outlook. The rating of the enterprise is carried out by taking into account quality criteria (“soft facts”) and quantitative criteria (“hard facts”). Hard facts are calculated from the financial statements of the company through the implementation of financial-economic analysis. So, hard facts provide a reliable statement about of the financial stability of the company and its financial health. The values of indicators which are achieved are combined according to their significance and then they are transferred to the internal rating scale. Then this value is used to express quantitative rating of enterprise. Present contribution is going to deal with calculation of hard facts and quantitative criteria for rating measurement. Rating assignment is going to be carried out on a model example. Hard facts are going to be determined based on the financial statements of the selected company and the rating is going to be assigned according to the rating scale which is going to be established for model example.

Hussam Musa et al. (2015), the subject of their article is to present tradition approach to credit risk and its estimation for selected banks in Slovakia for period 2013. This article presents basic approach to economic capital and VAR of the three largest banks in Slovak market. Formation of economic capital is also conditioned by the structure of the client portfolio and loan volumes of individual groups according to the degree of risk.
Boris Kollár et al. (2015), the main aim of their article is to compare basic characteristics and mutual comparison of two basic credit risk models. Namely we will compare Merton and KMV models. There is significant increase of credit risk importance in global economy and also in business sector nowadays. We focus on differences in computational procedures, individual credit risk modelling techniques, as well as the variability in input parameters, used for risk quantification. The result will be comprehensive overview of these models differences as well as the presentation of basic recommendations for their usage along with the mention of their advantages and disadvantages. We will also mention test results of various renowned agencies, which reflect the accuracy of these models.

Erika Spuchlakova et al. (2015), Credit risk or default risk involves inability or unwillingness of a customer or counterparty to meet commitments in relation to lending, trading, hedging, settlement and other financial transactions. The Credit Risk is generally made up of transaction risk or default risk and portfolio risk. The portfolio risk in turn comprises intrinsic and concentration risk. The credit risk of a bank’s portfolio depends on both external and internal factors. The external factors are the state of the economy, wide swings in commodity/equity prices, foreign exchange rates and interest rates, trade restrictions, economic sanctions, Government policies, etc. The internal factors are deficiencies in loan policies/administration, absence of prudential credit concentration limits, inadequately defined lending limits for Loan Officers/Credit Committees, deficiencies in appraisal of borrowers’ financial position, excessive dependence on collaterals and inadequate risk pricing, absence of loan review mechanism and post sanction surveillance, etc. This paper points out the measurement, hedging and monitoring of the credit risk.
Tomas Kliestik & Juraj Cug (2015), Credit risk presents the probability of loss that the company incurs in the event of a business partner (the counterparty) default. The default may occur if the liabilities are not met under the terms of the contract which in turn results into the loss of the company (the creditor). Specifically, the liabilities arose from the credit, trade or investment activities, payment system and trade settlement. Difficulties in credit risk modelling arise due to the fact that the company default is not a frequent phenomenon but it occurs mainly unexpectedly. However, if the default occurs, it often causes the creditors major losses which size cannot be quantified in advance. The issue of modelling and quantification of credit risk is the subject of interest of many studies, scientific articles and publications. The access of individual authors to the present issue is diverse and so the methodology used for this purpose is not uniform. The present contribution will address the analysis and comparison of four basic approaches of description, but especially the quantification of credit risk: Credit Risk+, Credit Metrics, Merton model and Credit Grades. The comparison will be made on the basis of the computer performance, the applicability to different types of companies (public or non-public tradable), the volatility of credit events, the correlation of credit events occurrence, the required input data, currency of data and such like. Conclusions and recommendations for the application of the various approaches in specific situations will be parts of the contribution.

Erika Spuchlakova & Juraj Cug (2015), this paper deals with the methods for estimating credit risk parameters from market prices, e.g. Probability of Default (PD) and Loss Given Default (LGD). Precise evaluation of these parameters is important not only for bank to calculate their regulatory capital but also for investors to price risky bonds and credit derivatives. In this paper, we introduced reduced-form analytical methods for the calculation of LGD to pricing Credit Default Swaps. Reduced-form credit
risk models were introduced as a reaction to structural approach, especially trying to decrease informational difficulty when modelling credit risk. In the reduced form approach, the market value of defaulted bonds is the same as in the fraction recovered from the exposure at default. We use the face value convention, which Hull & White (2000) presented in their model which extended recovery of face value convention for coupon bonds.

2.2.3 Studies Conducted in 2014

Sartaj Hussain & Mohammad Shafi (2014), Operational risk, in general, is inherent in every human activity and as such is akin to banking as well. It arises from a wide range of activities like acts of frauds, errors, negligence, violations, events of technological failures, process deficiencies, systems flaws, acts of terrorists and vandalism, natural disasters, like floods, earthquakes etc. Increased potential of operational risk during the last three decades witnessed in the form of some mega bank failures like Barings, LTCM and Daiwa has brought it under the capital adequacy ambit imposed by banking regulatory bodies across the world. In the times to come, Operational risk regulation is believed to be the next frontier of efficiency enhancement and value creation in the banks. Unlike other risks covered under regulatory capital regime (like credit and market risk), operational risk has attracted huge controversy surrounding its diverse nature which comprises of its definition, causes, management approaches, measurement models and imposition of regulatory capital charge. The current paper attempts to review various such issues concerning and confronting the operational risk management thought in banking industry.

Proshenjit Ghosh et al. (2014), Credit Risk Management holds a positive relationship with credit monitoring, reliability and assurance factors. All these factors play vital role in the mitigation process of credit risks. Risk mitigation process starts from sourcing loan applications and the loan
application goes through several screening process where reliability and assurance factors are very much important. Here, knowledge of practical world and product program are very much essential to identify risks associated with loan proposals. Bank deals with a systematic lending procedure which follows an straightforward policy. This type of policy helps the analysts to analyse loan proposals very easily. But there are some weak points of this straightforward policy and guidelines. This procedure denies any type of exceptional proposals which may have better creditworthiness and repayment capacity. Business is lost in these situations which are treated as opportunity cost. In a word, credit risk management is all about ensuring repayment capability of the customers who are provided loans and advances. Minimizing Credit Risk is subject to proper framework of risks and justification with historical trend and other assurance factors.

Datey & Tiwari (2014), The Reserve Bank of India is a member of BASEL committee based in Basel, Switzerland. Basel III norms are the guidelines which are framed by this committee. The main aim of Basel III is to overcome the loopholes of previous norms and to tighten up the banking system all over the world. The three pillars of Basel II still standing in Basel III i.e. Capital requirement, Supervisory Review and Market discipline. Basel III focus towards the risk in banking sector. It aims to fill up the gaps in Basel II guidelines. These guidelines will ensure that the banks are sufficiently capitalized, have better liquidity and are ready to manage all types of risks, thereby strengthening the banks transparency. The Basel III norms are notified by RBI on May 2012, made effective from January 2013 in a phased manner and will be implemented fully from 31st March 2018. The components of Basel III are Capital Ratio Targets, RWA Requirements and Liquidity standards.
Ayodele & Alabi (2014), the research paper examined the risk management in the Nigerian banking industry. First bank of Nigeria PLC was used as the case study being the oldest and the biggest bank out of the twenty-three (23) banks currently operating in Nigeria economy. The data used for the study were collected majorly from primary source through the distribution of questionnaires to respondents in the bank. Simple percentages were used to analyse the respondents’ responses to each of the question while Chi-square (x2) and the Analysis of Variance statistic (ANOVA) were used to test the stated hypothesis. The analysis revealed that risk in the likelihood of fraud and forgery, operational risk, market risk and system risk abound in the Nigeria banking operations which needed to be managed appropriately in order to improve performances and profitability of the banks. Based on the research findings, it was discovered that Nigeria banking operations are affected more by credit risk and operational risk than market risk. Fraud and forgeries also play adverse role in banking daily operations. However, the risk management techniques put in place by the banks have really curbed or reduced the various risks confronting Nigeria banks. It was therefore recommended among others that Nigeria government should strengthen the legal framework for the enforcement of loans repayment from borrowers to banks upon loan maturity. And that financial regulator must adopt risk management approach that is in complete compliance with international standards focusing on the financial and operational risks faced by banks so as to guide against any risks associated with the banking operations and existence.

Sartaj Hussain & Mohammad Shafi (2014), the study was conducted to assess and analyse the present framework and management practices of the selected Bank towards operational risk and to examine the overall progress made by the Bank in the area of ORM at the Bank under study given the regulatory necessities. The study remained limited to the
analysis of perception and framework of the management of Operational Risk at the Bank. Operational risk management, a new and emerging area in banks everywhere particularly in Indian Banks, the current study restricted its scope to survey top executives and the risk professionals of the bank only to assess the present status and framework of operational risk in the selected organization.

Gikundi Nicholas Maina et al. (2014), the nature of Operational risk is complex and dynamic. Unlike credit and market risk, the operational risk is largely internal to banks, difficult to assess and has the potential to wipe out the very existence of the organisation (Jorion 2005). Today risk managers believe that about 30% of the risk a financial institution runs is due to operational losses (Cruz 2003). The study adopted a descriptive approach with 54 individuals in the lending process from 10 commercial banks in Kakamega Town. Data was collected using questionnaires as the main instruments. The researcher used Statistical Package for Social Sciences (or SPSS software) version 19” in coming up with the statistical analysis for the study. Data was put on laggard scale of 1- 5, coded and entered into the computer system and then analysed by use of descriptive statistics and ordinal regression analysis with the aid of SPSS. Thereafter, data will be presented in the form of tables and equations. Operation risks were found to be significant in commercial bank performance in Kakamega Town. From the results its evident that compliance, systems, character and culture have a strong positive correlation with profitability on the other hand fraud was found to be negatively correlated. From the regression results 0.295 is the partial regression coefficient of compliance this implies that with influence of other explanatory variables held constant any increase in compliance by one unit will lead to 0.295 changes in profitability and in the same direction. While 0.102 is the partial regression coefficient of system this shows that with influence of other explanatory variables held constant any increase in
compliance by one unit will lead to 0.102 changes in profitability and in the same direction. 0.365 is the partial regression coefficient of character this shows that with influence of other explanatory variables held constant any increase in compliance by one unit will lead to 0.365 changes in profitability and in the same direction. While 0.308 is the partial regression coefficient of culture this shows that with influence of other explanatory variables held constant any increase in compliance by one unit will lead to 0.308 changes in profitability and in the same direction. This therefore implies that if there is noncompliance in commercial banks their profitability will be affected negatively by the same magnitude. As per the anova analyses I therefore accept alternative hypothesis given $F (5, 53) = 17.205$ P.

Swaranjeet Arora (2014), this paper examined credit risk measurement practices in public and private sector banks of India. Credit risk measurement is crucial because weakness in credit risk measurement and management have been identified to be a part of the major reasons behind banking difficulties. The present study identifies factors that determine credit risk measurement in different commercial banks in India. This study explored the phenomenon from different perspectives and revealed that credit worthiness analysis, collateral requirements, credit rating models and credit risk mitigation tools are the key components that contributes to credit risk measurement in banks. It was identified that single-name credit risk measurement and portfolio credit risk measurement are the most important aspects of credit risk measurement in Indian banks. From the descriptive and analytical results, it can be concluded that Indian banks efficiently measure credit risk. The results also indicate that there is a significant difference between the Indian public and private sector banks in single-name credit risk measurement while, these banks do not significantly differ in portfolio credit risk measurement aspect. The results also indicate that single name credit risk measurement is better in new private sector and foreign banks as compared to public sector banks and old Private sector. This reflects that in order to
improve credit risk analysis measurement system in banks, efforts should be made to improve credit worthiness analysis and emphasis should be given to improve credit rating and scoring models.

Kimasar Faith et al. (2014), this study aimed to examine the usage of the CRB within commercial banks in Nakuru Sub County in the context of loan advancement and recovery. The objective of the study was to analyse the role of CRB on credit scoring among selected commercial banks in Nakuru Sub County. The study was based on the moral hazard and the adverse selection theories. The study was based on the survey descriptive research design, and both qualitative and quantitative research approaches. The primary data was collected by use of structured questionnaires. The secondary data was gathered from peer reviewed and published journals and from regulatory authorities such as the Central Bank of Kenya (CBK). A sample size of 55 respondents was drawn from selected commercial banks in Nakuru Sub County using stratified random sampling method. The exact number of respondents per bank was determined through the bank’s market share. Both the inferential and descriptive statistics were derived through the use of SPSS Version 21 and findings were presented in tables. The study established that, CRB reports were being used for both secured and unsecured personal and business lending by all (100%) commercial banks. The CRB reports were used in credit scoring to prevent over borrowing and over-committing the customers’ pay slips. The use of the CRB report in credit scoring had positive results on loan default rates as 70.8% of the respondents indicated that customers exerted more efforts in paying their credit facility to avoid being listed. The study recommended the use of white CRB information as a basis of offering preferential credit rates to customers. The study also recommended the use of CRB listing in legal proceedings to enable faster paying times. The commercial banks should educate their customers more on the effects of CRB listings and the general operations of the CRB.
Hussain Ali Bekhet & Shorouq Fathi Kamel (2014), this paper proposes two credit scoring models using data mining techniques to support loan decisions for the Jordanian commercial banks. Loan application evaluation would improve credit decision effectiveness and control loan office tasks, as well as save analysis time and cost. Both accepted and rejected loan applications, from different Jordanian commercial banks, were used to build the credit scoring models. The results indicate that the logistic regression model performed slightly better than the radial basis function model in terms of the overall accuracy rate. However, the radial basis function was superior in identifying those customers who may default.

Shuai Li et al. (2014), in their study analysed the relationship between the default probability and the probability of the occurrence of moral hazard of individuals and the impact of moral hazard to individual credit risk mechanism from the theoretical level. The results show that: (1) the bank loan rates have strong effects on both the moral hazard of personal loan and credit risk. (2) The relationship of the probability of the occurrence of moral hazard of individuals and the default rate of individuals is generally non-linear. However, there is a constraint interval of the default rate. When that interval is determined, the probability of the occurrence of moral hazard of individuals and the default rate of individuals has linear relationship, and the bigger the interval is, the smaller probability of the occurrence of moral hazard is.

2.2.4 Studies Conducted in 2013

Thirupathi Kanchu & Manoj Kumar (2013), risk Management is the application of proactive strategy to plan, lead, organize, and control the wide variety of risks that are rushed into the fabric of an organizations daily and long-term functioning. Like it or not, risk has a say in the achievement of our goals and in the overall success of an organization. Present paper is to make an attempt to identify the risks faced by the banking industry and the
process of risk management. This paper also examined the different techniques adopted by banking industry for risk management. To achieve the objectives of the study data has been collected from secondary sources i.e., from Books, journals and online publications, identified various risks faced by the banks, developed the process of risk management and analysed different risk management techniques. Finally it can be concluded that the banks should take risk more consciously, anticipates adverse changes and hedges accordingly, it becomes a source of competitive advantage, and efficient management of the banking industry.

Mahadeva Murthy & Pathi (2013), in everyday life, risk is about undesired unpleasant, and at times disastrous prospective events associated with human action or inaction. Banking is becoming complex, compounded by exploding technological capabilities expanding product offerings and deregulation of competition. In other words, banking is a business of risk. For this reason, efficient risk management is extremely required. The Indian banking system is better prepared to adopt Basel II than it was for Basel I. The Basel II Accord had led the banks to new prudential norms like capital adequacy and identification of bad debts. Recently many banks have appointed senior managers to oversee a formal risk management function. The effective risk management lies with the ability to gauge the risks and to take appropriate measures. In the light of this, an analysis was carried out to highlight the NPAs position of SBI and associates and also capital adequacy ratio after the implementation of Basel II Accord to focus on the risk management practices in State Bank of India (SBI) and associates for the period of six years from 2007-08 to 2012-13. Hence an efficient risk management system is the need of time.

Barati Masoud et al. (2013), this study, investigates the relationship between some banking ratios such as cash to asset ratio, size of bank, capital
adequacy and debt to equity with liquidity, operational and credit risks. Financial data was collected from 10 Iranian banks from 2006 to 2011. Regression methods for data analyzing was used and the results shown that capital adequacy had a inverse relationship and debt to equity ratio had an positive relationship with credit risk that there weren’t any relation between another variables with credit risk. The capital adequacy had a positive relationship with liquidity risk, as well as the cash to asset ratio, sizes of banks and debt to equity ratio had an inverse relationship with liquidity risk. On the other hand, the cash to asset ratio, sizes of banks and capital adequacy had a inverse statistically significant relationship with operational risk. The regression results reports that there weren’t any relation between the debts to equity ratio and operational risk.

Anwarul Islam et al. (2013), the main objective of the study is to compare risk management practices of the selected conventional and Islamic banks. A total number of 14 private banks (7 are of interest based and 7 are of interest free) have been selected for the study purpose. For the purpose of collection of data, a total number of fourteen respondents taking one from each bank have been chosen. The main findings of the study are: i) there exists variation as regards the level of awareness and concernedness in respect of various types of risks between conventional and Islamic banks, ii) there appears to be a gap between the conventional and Islamic banks in the practices of risk identification, iii) there also exists variation between the conventional and Islamic banks in understanding of risk and risk management practices, iv) the conventional banks attach more importance to the advanced techniques of risk management as well as risk mitigation. But the Islamic banks give more importance to the traditional practice mainly and v) a number of problems has been facing in risk management practices by the respondents. Of theses the major ones are: lack of qualified and experienced personnel, poor loan recovery and lack of market information as regards bank
risk. Of the suggestions mentioned by the respondents for the removal of the problems; settings central MIS, moral persuasion of the borrowers, long term guideline of the central bank, modern loan monitoring system are the major suggestions.

Rekesh Cutia (2013), operational risk is inherent in all banking products, activities and processes and systems and the effective management of operational risk is of paramount importance for every bank’s board and senior management. With globalization and deregulation of financial markets, increased competition combined with the advent of high-end, innovative, sophisticated technology tremendous changes have taken place in the products distribution channels and service delivery mechanism of the banking sector. These have introduced more complexities into the banking operations and consequently the risk patterns and profiles of the industry have also become complex, diverse and catastrophic. The New Capital Adequacy Framework of the Reserve Bank of India requires bank to maintain capital explicitly towards operational risk. This paper tries to study the various methodologies used by the banks in their operational risk management activity and to study the regulatory framework related to operational risk management.

Adeusi et al. (2013), risk management issues in the banking sector do not only have greater impact on bank performance but also on national economic growth and general business development. The bank’s motivation for risk management comes from those risks which can lead to under performance. This study focuses on the association of risk management practices and bank financial performance in Nigeria. Secondary data sourced was based on a 4year progressive annual reports and financial statements of 10 banks and a panel data estimation technique adopted. The result implies an inverse relationship between financial performance of banks and doubt loans,
and capital asset ratio was found to be positive and significant. Similarly it suggests the higher the managed funds by banks the higher the performance. The study concludes a significant relationship between banks performance and risk management. Hence, the need for banks to practice prudent risks management in order to protect the interests of investors.

Changzhi Liang et al. (2013), defining the dependence structure through a set of common factors reflecting the macro-economic situation, this model reveals the intrinsic correlation between credit risk and market risk. We derive the integration process with factor copula and generate common factors by performing a principal component analysis on 4 different macro-economic indicators that GDP. In the empirical study, 15 Chinese listed banks are chosen to construct the model. The results are compared with that of elliptical copulas and Archimedean copulas, we find that factor copula gives a more prudential result in risk integration.

Galyna Chornous & Ganna Ursulenko (2013), this study is devoted to the problems of improving the banking risk management, taking into account the new regulatory and technological requirements based on the use of modern technology and combining the latest achievements in artificial intelligence, numerical mathematics, statistics and information technology. The paper analyses the characteristics of banking risks, the main methods of assessment used in practice. The authors propose new prospective approaches to assessment, based on the most modern methods of data analysis, identify prospective directions for banking information system improvement and suggest the possibility of their implementation. The example of Ukrainian banks shows the main problems of using new approaches to risk assessment and its information support. The article proposes the ways to overcome them.

Ali Said (2013), the present paper examined the correlation between risks and efficiency within Islamic banks in the MENA area. This
paper used three stages of analyses. The first stage consisted of measuring the efficiency of those banks by employing the nonparametric technique, Data Envelopment Analysis (DEA) while the second stage involved analysing risks by measure credit, operational, and liquidity risks using financial ratios. The third stage would be employing Pearson Correlation Coefficients to examine the correlation between credit, operational, liquidity risks to efficiency for the period of 2006 to 2009. The study results have revealed credit risk has negative relationship to efficiency, while operational risk has found to be negatively correlated to efficiency too. The liquidity risk showed insignificant correlation to efficiency in Islamic banks in MENA area.

Swaranjeet Arora (2013), the present study has indicated that Credit Worthiness analysis and Collateral requirements are the two important factors for analysing Credit Risk. From the descriptive and analytical results, it can be concluded that Indian banks efficiently manage credit risk. The results also indicate that there is a significant difference between the Indian Public and Private sector banks in Credit Risk Analysis. Credit Risk Analysis is better in Old Private sector banks and New Private Sector banks, as compared to State Bank of India and its associates and other public sector banks. This reflects that in order to improve Credit Risk Analysis system in banks, efforts should be made to train the employees so as to improve their understanding of credit risk, proper credit risk identification, measurement, monitoring and control system should be implemented throughout the bank and in the process due emphasis is required to be given to Credit Worthiness analysis and Collateral requirements.

Nevine Sobhy Abdel Megeid (2013), the paper states that the lowering of the banks' standalone credit assessments is driven by their relatively weak capital buffers in the context of Egypt's currently challenging operating environment. Egypt's banking sector faces increasing liquidity
challenges, evidenced by a reduction in the banking system's core liquid assets to 17 percent of total assets at December 2011, from 23 percent a year earlier. However, despite the system's liquidity challenges, Egyptian banks continue to benefit from sound funding profiles due to high levels of deposits, which amounted to 75 percent of total assets at the end of December 2011. The outlook on Egypt's banking system to somehow negative, underpinned by weak economic growth prospects and a negative investment climate. In view of government financing needs stemming from its large budget deficit (equivalent to 10 percent of GDP in fiscal year 2012); it is expected for banks to further increase their already significant sovereign exposures. During 2011, Egyptian banks' government debt holdings increased to 550 percent of equity, from 430 percent in December 2010, linking banks' credit profiles directly to the credit risk of the sovereign. It is also expected that the banks' asset-quality metrics will deteriorate over the outlook period, with the ratio of non-performing loans to gross loans reaching 15 percent-18 percent by the end of 2013. Downwards pressure could result from (1) Weakening of the sovereign's credit-risk profile; (2) Rapid asset-quality deterioration; and/or (3) A material change in the banks' funding and liquidity positions, caused by deposit outflows.

Khalil Elian Abdelrahim (2013), the study aims at investigating determinants, challenges and developing means of credit risk managements at Saudi Banks. The methodology is descriptive and analytical using "CAMEL" Model for analyzing performance of credit risk management. The study concluded that liquidity has significant strong positive impact beside bank size which has significant strong negative impact on effectiveness of credit risk management. While other variables of capital adequacy, asset quality, management soundness and earning have insignificant impact on effectiveness of credit risk management. The challenges facing effectiveness credit risk management in sequent importance are: weak corporate
governance, low quality of assets, little credit diversification; not conducting serious financial analysis; not charging risk premium on risky loans, corruption of credit officers; priority of profitability at expense of safety and priority of loan guarantees at expense of capacity of repayment. Means of developing effectiveness of credit risk management in sequent importance are: training of credit officers; improving assets quality; strengthening corporate governance; professional analysis of customer's financial position and having access to Credit Bureau's information. The study recommends an overall strategy for effective credit risk management of Saudi Banks based on enhancing capital adequacy, upgrading asset quality, strengthening management soundness, increasing earnings, having adequate liquidity and reducing sensitivity to market risk besides hedging credit risk; having adequate provisions for doubtful credit; renegotiating loan terms, transferring credit risk to a third party, extending credit maturity and lowering interest rate on insolvent loan.

2.2.5 Studies Conducted in 2012

Gakure et al. (2012), financial risk in a banking organization is possibility that the outcome of an action or event could bring up adverse impacts. Such outcomes could either result in a direct loss of earnings / capital or may result in imposition of constraints on bank’s ability to meet its business objectives. The purpose of this study was to investigate the effect of credit risk management techniques on the performance of unsecured bank loans by commercial banks in Kenya.

Asim Abdullah et al. (2012), the paper evaluates firm’s level aspects which have more influence on the Credit risk managing of domestic and foreign banks in Pakistan. Secondary data for the period of 2001 to 2010
is used, taken from various data sources. Augmented Dickey Fuller test is
used for checking stationary, while for long run relationship Johansson’s Co
tegration test is used. Linear regression model is used for coefficients
analysis with OLS techniques. The result of R2 shows that the model is best
fit for both Domestic and Foreign banks. Bank size have positive and
significant relationship with credit risk in domestic banks and positive and
insignificant in foreign banks. Liquid assets and credit risk have positive and
insignificant relationship in domestic banks and negative and significant in
foreign banks. Based on the findings of the study it is recommended that
credit risk may be minimize if (i) size of the banks maintain with a specify
limit and (ii) increase liquidity of the banks.

Njogo & Bibiana Oluchukwu (2012), Risk Management is the
identification, assessment, and prioritization of risks followed by coordinated
and economical application of resources to minimize, monitor, and control the
probability and/or impact of unfortunate events. It introduces the idea that the
likelihood of an event happening can be reduced, or its consequences
minimized. The banking industry is a highly regulated industry with detailed
and focused regulators. This is because of the risks associated with it. And
these risks, if not properly assessed and prioritized, time can be wasted in
dealing with it. At the same time, spending too much time assessing and
managing unlikely risks can divert resources that could be used more
profitably. This paper discussed the recent development in the Nigeria
banking industry and also out lined the Risk factors in the Banking industry
and some principles/steps used in handling them. Also highlighted are some
software used in managing Risk in the Banking industry.

Shahbaz Haneef et al. (2012), the aim of this study is to investigate
the impact of risk management on non- performing loan and profitability of
banking sector of Pakistan. Five banks were selected for data collection and
whole data was secondary in nature. The result of this study reveals that there is no proper mechanism for risk management in banking sector of Pakistan. Study also concluded that non-performing loans are increasing due to lack of risk management which threatens the profitability of banks. This study provides suggestion that banking sector can avoid their nonperforming loans by adopting methods suggested by state bank of Pakistan.

Gyamfi (2012), one fundamental problem faced by the Microfinance industry in Ghana during the period 2003-2007 was the technique adopted for credit risk management by the Microfinance Firms (MFFs). This problem prompted this deductive study which was to assess the effectiveness of the techniques adopted by the MFFs to manage their credit risks during that period. The research examined the effectiveness of the techniques used by the firms. It was carried out with the support of a 5-member team from the Institute of Professional Studies, Accra, who assisted during the data collection phase of the study. The study was conducted using 20 Micro-firms in Accra which were randomly selected. The study established that the small MFFs were more vulnerable to credit risk than the bigger firms. The study came out with the recommendations that the MFFs should invest in computerised systems that would enable them compute and assess on a continuous basis, their credit risks track records and generate reports on credits granted. The firms should encourage their clients to insure against risk that might affect their businesses, invest in quality manpower so that they could assess their clients efficiently and help in managing their clients risk bearing portfolio. It was also recommended that the continuous use of written policies that guided most of the firms on credit granting should be encouraged by all the firms.

Kolapo et al. (2012), the study carried out an empirical investigation into the quantitative effect of credit risk on the performance of commercial banks in Nigeria over the period of 11 years (2000-2010). Five
commercial banking firms were selected on a cross sectional basis for eleven years. The traditional profit theory was employed to formulate profit, measured by Return on Asset (ROA), as a function of the ratio of Non-Performing Loan to LOAN & ADVANCES (NPL/LA), ratio of Total Loan & Advances to Total Deposit (LA/TD) and the ratio of Loan Loss Provision to Classified Loans (LLP/CL) as measures of credit risk. Panel model analysis was used to estimate the determinants of the profit function. The results showed that the effect of credit risk on bank performance measured by the Return on Assets of banks is cross-sectional invariant. That is the effect is similar across banks in Nigeria, though the degree to which individual banks are affected is not captured by the method of analysis employed in the study. A 100 percent increase in non-performing loan reduces profitability (ROA) by about 6.2 percent, a 100 percent increase in loan loss provision also reduces profitability by about 0.65 percent while a 100 percent increase in total loan and advances increase profitability by about 9.6 percent. Based on our findings, it is recommended that banks in Nigeria should enhance their capacity in credit analysis and loan administration while the regulatory authority should pay more attention to banks’ compliance to relevant provisions of the Bank and other Financial Institutions Act (1999) and prudential guidelines.

Shahbaz Haneef et al. (2012), the aim of this study is to investigate the impact of risk management on non-performing loan and profitability of banking sector of Pakistan. Five banks were selected for data collection and whole data was secondary in nature. The result of this study reveals that there is no proper mechanism for risk management in banking sector of Pakistan. Study also concluded that non-performing loans are increasing due to lack of risk management which threatens the profitability of banks. This study provides suggestion that banking sector can avoid their non-performing loans by adopting methods suggested by state bank of Pakistan.
Asia Samreen & Farheen Batul Zaidi (2012), this research study summarizes the loan evaluation method known as credit scoring. Credit scoring is a technique that helps banks decide whether to grant credit to applicants who apply to them or not. The main objective of the research was to evaluate credit risk in commercial banks of Pakistan using credit scoring models. The requirement of credit scoring models by commercial banks of Pakistan to assess the creditworthiness of individuals was described. A credit scoring model was developed called as Credit Scoring Model for Individuals (CSMI), which can be used by commercial banks to determine the creditworthiness of individual borrowers requesting for personal loans. The CSMI was explained along with a detailed look at different credit scoring models. The results of the developed credit scoring model were compared with the other statistical credit scoring techniques known as logistics regression and discriminant analysis. Type I and type II errors had been calculated for all the credit scoring models used. The results show that the proposed model “CSMI” has more accuracy rate with no errors as compared to LR and DA. Also, several suggestions for further research were presented.

2.2.6 Studies Conducted in 2011

Muneesh Kumar et al. (2011), a mature Credit Risk Management (CRM) framework determines to a great extent the strength of banking system in general and financial performance of a bank in particular. Evaluation of maturity of CRM framework however, suffers from a lack of reliable measure for this purpose. The CRM index for commercial banks, as proposed here attempts to provide a quantitative measure of management practices based on predefined benchmark practices that CRM efforts should aim to develop and follow. Based on the computation of the CRM index scores for thirty-three commercial banks in India, an attempt has been made to validate the index by relating their CRM index scores with their nonperforming advances ratios.
Naveed Ahmed et al. (2011), this study aims to determine the firm’s level factors which have significantly influence the risk management practices of Islamic banks in Pakistan. For this purpose, the current study selects credit, operational and liquidity risks as dependent variables while size, leverage, NPLs ratio, capital adequacy and asset management are utilize as explanatory variable for the period of four years from 2006 to 2009. The results indicate that size of Islamic banks have a positive and statistically significant relationship with financial risks (credit and liquidity risk), whereas its relation with operational risk is found to be negative and insignificant. The asset management establishes a positive and significant relationship with liquidity and operational risk. The debt equity ratio and NPLs ratio have a negative and significant relationship with liquidity and operational risk. In addition, capital adequacy has negative and significant relationship with credit and operational risk, whereas it is found to be positive and with liquidity risk.

Josiah Aduda & James Gitonga (2011), Banks operate in an environment of considerable risks and uncertainty. Credit risk has always been a vicinity of concern not only to bankers but to all in the business world because the risks of a trading partner not fulfilling his obligations in full on due date can seriously jeopardize the affairs of the other partner. Credit risk management in banks has become more important not only because of the series of financial crisis that the world has experienced in the recent past, but also the introduction of Basel II Accord. The objective of the study was to establish the relationship between credit risk management and profitability in commercial banks in Kenya. Both qualitative and quantitative methods were used in order to fulfill the main purpose of the study. A regression model was used to do the empirical analysis. The results obtained from the regression model show that there is an effect of credit risk management on profitability at a reasonable level. The findings and analysis reveal that credit risk management has an effect on profitability in all the commercial banks analysed.
Saidur Rahman (2011), the banks in Bangladesh have started undertaking a number of quantitative and qualitative measures to understand the risks involve in credit or chance of default which may come from the failure of counterparty or obligor (client) to fulfil his/her commitments as per agreed terms and contractual agreement with the bank. Traditionally, a bank gives emphasis on collateral in funding to the clients whereas in the concept of modern banking a bank keenly feels to measure the business risk over the security risk for ensuring the timely repayment of invested funds. Now-a-days a banker likes to adopt a number of sophisticated financial techniques in credit appraisal process with a view to assessing the borrower’s business as well as financial position rigorously. The use of sophisticated techniques for measuring the financial, business and other risks is yet to be established in the banking operations very fast due to the advent of computer based technologies. In some cases, the rate of adoption of analyzing tools and techniques is highly remarkable in credit operation. This attitude of the bankers has been changed by introducing quality training and reinforcing sophisticated financial as well as risk grading techniques. A strong database is the demand of the day for the proper application of the much-demanded credit risk management guidelines along with effective risk grading system.

Sreedevi & Ven (2011), the paper explains Credit risk management is not an ‘off-the-shelf product. It is a ‘whole-time’ and ‘organization-wide’ function. Common-sense dictates that people responsible for targets under business-growth are ill suited to address ‘risk’ inherent to credit and its management. Credit risk management should therefore be separated form and sufficiently be independent of the business lines. Risk Management can be defined as systematic identification and analysis of the various loss exposures faced by a firm/individual and the best methods of treating the identified loss exposures consistent with the firms’/individuals’ objectives. The choice of appropriate strategies for control of credit risk by individual banks depends on their priorities and risk appetites.
2.2.7 Studies Conducted after 2010 Onwards

Hulusi Inanoglu & Michael Jacobs (2009), a challenge in enterprise risk measurement for diversified financial institutions is developing a coherent approach to aggregating different risk types. This has been motivated by rapid financial innovation, developments in supervisory standards (Basel 2) and recent financial turmoil. The main risks faced - market, credit and operational – have distinct distributional properties, and historically have been modeled in differing frameworks. We contribute to the modeling effort by providing tools and insights to practitioners and regulators. First, we extend the scope of the analysis to liquidity and interest rate risk, having Basel Pillar II of Basel implications. Second, we utilize data from major banking institutions’ loss experience from supervisory call reports, which allows us to explore the impact of business mix and inter-risk correlations on total risk. Third, we estimate and compare alternative established frameworks for risk aggregation (including copula models) on the same data-sets across banks, comparing absolute total risk measures (Value-at-Risk – VaR and proportional diversification benefits-PDB), Goodness-of-Fit (GOF) of the model as data as well as the variability of the VaR estimate with respect to sampling error in parameter. This benchmarking and sensitivity analysis suggests that practitioners consider implementing a simple non-parametric methodology (Empirical Copula Simulation- ECS) in order to quantify integrated risk, in that it is found to be more conservatism and stable than the other models. We observe that ECS produces 20% to 30% higher VaR relative to the standard Gaussian Copula Simulation (GCS), while the Variance-Covariance Approximation (VCA) is much lower. ECS yields the highest PDBs than other methodologies (127% to 243%), while Archimadean Gumbel Copula Simulation (AGCS) is the lowest (10-21%). Across the five largest banks we fail to find the effect of business mix to exert a directionally consistent impact on total integrated diversification benefits. In the GOF tests, we find mixed results, that in many cases most of the copula methods exhibit
poor fit to the data relative to the ECS, with the Archimadean copulas fitting worse than the Gaussian or Student-T copulas. In a bootstrapping experiment, we find the variability of the VaR to be significantly lowest (highest) for the ECS (VCA), and that the contribution of the sampling error in the parameters of the marginal distributions to be an order or magnitude greater than that of the correlation matrices

Romzie Rosman (2009), this paper proposes a research framework on risk management practices and the aspects of risk management processes. The four important aspects of risk management processes are: (1) understanding risk and risk management; (2) risk identification; (3) risk analysis and assessment; and (4) risk monitoring. Conceptual and empirical literatures are explained to suggest the conceptual model. The framework suggests that there is a positive relationship between the aspects of risk management processes and risk management practices. Then, the discussions are used to generate research hypotheses to suggest the relationships. Hence, further research can prove empirically the relationships and provide contribution in the area of Islamic banking.

Usha Janakiramani (2008), this paper assesses in detail the status of operational risk management in the Indian banking system in the context of Basel II. The expected coverage of banking assets and the approach adopted for operational risk capital computation is compared broadly with the position of the banking system in Asia, Africa and the Middle East. A survey conducted on twenty two Indian banks indicates insufficient internal data, difficulties in collection of external loss data and modelling complexities as significant impediments in the implementation of operational risk management framework in banks in India. The survey underscores the need to devote more time and resources if banks desire to implement the advanced approach under Basel II.
Mohamed Ali Elgari (2003), the concept of risk was well known in ancient societies. Even in financial decisions, people knew very well that lending to someone who is bankrupt has a high probability of losing the money as compared to a debtor with good standing. Nevertheless, risk became an important tool of decision-making when it became possible to measure it and to assign values to different situations. This paper argues that the concept of risk mentioned by jurists in their studies on the theory of contract has nothing to do with the concept of risk as known in modern financial studies. Such a distinction is important because when jurists refer to certain "risky" contracts and render them unacceptable from the Shari'ah point of view, some practitioners of Islamic finance take it as referring to risk in the jargon of finance. That is not correct. We should benefit from the great advances in studying risk and risk management techniques in finance. However, we have to develop our own theory that deals with the unique concept of risk from an Islamic perspective.

Huey-Yeh Lin & Hsiao-Yi Chang (2015), in recent decades, governments worldwide have lifted restrictions on financial businesses and banks to encourage financial liberalization, which has led to a surge in the emergence of banks. However, these banks are generally small in scope and provide similar services. To solve the problem of an excessively high number of banks and to evolve Taiwan into a regional financial center, the Taiwanese government began to encourage the domestic banking industry to adopt a financial holdings model of management. In addition, the Taiwanese government introduced the Basel Accords for the management of risk; the objectives are to use financial holdings management and risk management to elevate the operational performance of banks and facilitate bank differentiation. In this study, we investigated whether financial holdings management improved the operational performance of banks. A total of 30 Taiwanese listed or over the-counter banks were selected as the study sample and divided into two categories (i.e., “financial holding subsidiary banks” and
“independent banks without financial holdings”) according to their operational method. The study explored whether the effects of risk management factors on the operational performance of banks differed between the two operational methods. The empirical results showed that the banks could enhance their operational performance by managing risks and that the effects of the risk management factors on their operational performance differed between the two operational methods. Many operational performance indicators showed that financial holding subsidiary banks outperformed independent banks. The results of this study can serve as a reference for government departments when promoting and formulating international financial strategies.

2.3 SUMMARY AND KNOWLEDGE GAP

Every bank generates their revenue through credit operations and service charges collected from their customers. The banks used to give different kinds of credits (i.e. Loan schemes) such as business loans, home loans, personal loan, vehicle loan, gold loan, etc. hence the success of their business rests on how efficiently they are able to collect the credit amount from their customers as per the EMI schedule. From the above conceptual as well as empirical review, it is clearly understood that credit operations and risk management plays a vital role in profitability, operational efficiency and financial performance of the Banking industry. The review of literature includes various studies related to credit operations and risk management conducted in Indian banks and also banks in other countries. It also includes the studies like credit risk management and bad debt controlling, impact of credit risk management on profitability and financial performance of the banks, evaluation of the credit risk management policies and practices, etc. Hence based on the Review of Literature presented above the researcher has identified the following research gap.
• There are only few researches were conducted in India, in the area of Credit operations and Risk management among Private and Nationalized banks.

• It is also observed that there is very few researches were attempted to reveal the interesting insights about credit risk mitigation and management practices adopted by the Private and Nationalized banks in Chennai city, Tamil Nadu.

• There is no prior research conducted in IDBI bank by combining the dimensions credit risk management strategies and its impact on organizational performance.

Hence, the conceptual model was developed to test the relationship between the credit risk management strategies and its impact on organizational performance in IDBI bank. This study also focuses on evaluation of Credit Risk management practices adopted by the IDBI bank in employees’ point of view and draw the insights from it.

2.4 THEORETICAL FRAMEWORK

2.4.1 Introduction

This chapter gives introduction to the two core concepts in the present research study, namely, credit operation and credit risk management. Here this chapter covers the following concepts of risks, types of risk in banking sector, credit risk and credit risk management. Moreover it deals with conceptual model designed by researcher for evaluating impact of credit operation and credit risk management on organizational performance are presented in this chapter.
2.4.2 **Risk - Definition**

A risk can be defined as an unplanned event with financial consequences resulting in loss or reduced earnings (Vasavada et al. 2005). An activity which may give profits or result in loss may be called a risky proposition due to uncertainty or unpredictability of the activity of trade in future. In other words, it can be defined as the uncertainty of the outcome. Risk refers to ‘a condition where there is a possibility of undesirable occurrence of a particular result which is known or best quantifiable and therefore insurable’ (Periasamy 2008). Risk may mean that there is a possibility of loss or damage which, may or may not happen.

Risks may be defined as uncertainties resulting in adverse outcome, adverse in relation to planned objective or expectations (Kumar et al. 2005). In the simplest words, risk may be defined as possibility of loss. It may be financial loss or loss to the reputation/image (Sharma 2003). Although the terms risk and uncertainty are often used synonymously, there is difference between the two (Sharan 2009). Uncertainty is the case when the decision-maker knows all the possible outcomes of a particular act, but does not have an idea of the probabilities of the outcomes. On the contrary, risk is related to a situation in which the decision-maker knows the probabilities of the various outcomes. In short, risk is a quantifiable uncertainty.

2.4.3 **Type of Risks**

Risk may be defined as ‘possibility of loss’, which may be financial loss or loss to the image or reputation. Banks like any other commercial organisation also intend to take risk, which is inherent in any business. Higher the risk taken, higher the gain would be. But higher risks may also result into higher losses. However, banks are prudent enough to identify measure and price risk, and maintain appropriate capital to take care of any eventuality. The major risks in banking business or ‘banking risks’, as commonly referred, are listed below:
2.4.3.1 Liquidity risk

The liquidity risk of banks arises from funding of long-term assets by short-term liabilities, thereby making the liabilities subject to rollover or refinancing risk (Kumar et al. 2005). It can be also defined as the possibility that an institution may be unable to meet its maturing commitments or may do so only by borrowing funds at prohibitive costs or by disposing assets at rock bottom prices. The liquidity risk in banks manifest in different dimensions –

(a) **Funding Risk**

Funding Liquidity Risk is defined as the inability to obtain funds to meet cash flow obligations. For banks, funding liquidity risk is crucial. This arises from the need to replace net outflows due to unanticipated withdrawal/non-renewal of deposits (wholesale and retail).

(b) **Time Risk**

Time risk arises from the need to compensate for non-receipt of expected inflows of funds i.e., performing assets turning into non-performing assets.
(c) **Call Risk**

Call risk arises due to crystallisation of contingent liabilities. It may also arise when a bank may not be able to undertake profitable business opportunities when it arises.

2.4.3.2 **Interest Rate Risk**

Interest Rate Risk arises when the Net Interest Margin or the Market Value of Equity (MVE) of an institution is affected due to changes in the interest rates. In other words, the risk of an adverse impact on Net Interest Income (NII) due to variations of interest rate may be called Interest Rate Risk (Sharma 2003). It is the exposure of a Bank’s financial condition to adverse movements in interest rates. IRR can be viewed in two ways – its impact is on the earnings of the bank or its impact on the economic value of the bank’s assets, liabilities and Off-Balance Sheet (OBS) positions. Interest rate Risk can take different forms. The following are the types of Interest Rate Risk.

(a) **Gap or Mismatch Risk**

A gap or mismatch risk arises from holding assets and liabilities and Off-Balance Sheet items with different principal amounts, maturity dates or re-pricing dates, thereby creating exposure to unexpected changes in the level of market interest rates.

(b) **Yield Curve Risk**

Banks, in a floating interest scenario, may price their assets and liabilities based on different benchmarks, i.e., treasury bills’ yields, fixed deposit rates, call market rates, MIBOR etc. In case the banks use two different instruments maturing at different time horizon for pricing their assets
and liabilities then any non-parallel movements in the yield curves, which is rather frequent, would affect the NII. Thus, banks should evaluate the movement in yield curves and the impact of that on the portfolio values and income.

(c) **Basis Risk**

Basis Risk is the risk that arises when the interest rate of different assets, liabilities and off-balance sheet items may change in different magnitude. For example, in a rising interest rate scenario, asset interest rate may rise in different magnitude than the interest rate on corresponding liability, thereby creating variation in net interest income. The degree of basis risk is fairly high in respect of banks that create composite assets out of composite liabilities. The loan book in India is funded out of a composite liability portfolio and is exposed to a considerable degree of basis risk. The basis risk is quite visible in volatile interest rate scenarios (Kumar et al. 2005). When the variation in market interest rate causes the NII to expand, the banks have experienced favourable basis shifts and if the interest rate movement causes the NII to contract, the basis has moved against the banks.

(d) **Embedded Option Risk**

Significant changes in market interest rates create the source of risk to banks’ profitability by encouraging prepayment of cash credit/demand loans, term loans and exercise of call/put options on bonds/ debentures and/ or premature withdrawal of term deposits before their stated maturities. The embedded option risk is experienced in volatile situations and is becoming a reality in India. The faster and higher the magnitude of changes in interest rate, the greater will be the embedded option risk to the banks’ Net Interest Income. The result is the reduction of projected cash flow and the income for the bank.
(e) **Reinvested Risk**

Reinvestment risk is the risk arising out of uncertainty with regard to interest rate at which the future cash flows could be reinvested. Any mismatches in cash flows i.e., inflow and outflow would expose the banks to variation in Net Interest Income. This is because market interest received on loan and to be paid on deposits move in different directions.

(f) **Net Interest Position Risk**

Net Interest Position Risk arises when the market interest rates adjust downwards and where banks have more earning assets than paying liabilities. Such banks will experience a reduction in NII as the market interest rate declines and the NII increases when interest rate rises. Its impact is on the earnings of the bank or its impact is on the economic value of the banks’ assets, liabilities and OBS positions.

2.4.3.3 **Market risk**

The risk of adverse deviations of the mark-to-market value of the trading portfolio, due to market movements, during the period required to liquidate the transactions is termed as Market Risk (Kumar et al. 2005). This risk results from adverse movements in the level or volatility of the market prices of interest rate instruments, equities, commodities, and currencies. It is also referred to as Price Risk. Price risk occurs when assets are sold before their stated maturities. In the financial market, bond prices and yields are inversely related. The price risk is closely associated with the trading book, which is created for making profit out of short-term movements in interest rates. The term Market risk applies to (i) that part of IRR which affects the price of interest rate instruments, (ii) Pricing risk for all other assets/ portfolio that are held in the trading book of the bank and (iii) Foreign Currency Risk.
(a) **Forex Risk**

Forex risk is the risk that a bank may suffer losses as a result of adverse exchange rate movements during a period in which it has an open position either spot or forward, or a combination of the two, in an individual foreign currency.

(b) **Market Liquidity Risk**

Market liquidity risk arises when a bank is unable to conclude a large transaction in a particular instrument near the current market price.

2.4.3.4 **Credit or default risk**

Credit risk is more simply defined as the potential of a bank borrower or counterparty to fail to meet its obligations in accordance with the agreed terms. In other words, credit risk can be defined as the risk that the interest or principal or both will not be paid as promised and is estimated by observing the proportion of assets that are below standard. Credit risk is borne by all lenders and will lead to serious problems, if excessive. For most banks, loans are the largest and most obvious source of credit risk. It is the most significant risk, more so in the Indian scenario where the NPA level of the banking system is significantly high (Sharma 2003).

In other words, Credit risk can be defined as ‘the potential that a contractual party will fail to meet its obligations in accordance with the agreed terms’. Credit risk is also variously referred to as **default risk**, **performance risk** or **counterparty risk**. These all fundamentally refer to the same thing: the impact of credit effects on a firm’s transactions.

Credit risk is defined as the possibility of losses associated with decrease in the credit quality of the borrower or the counter parties. In the
bank's portfolio, losses stem from outside default due to inability or unwillingness of the customer or the counter party to meet the commitments, losses may also result from reduction in the portfolio value arising from actual or perceived deterioration in credit quality.

There are three characteristics that define credit risk:

1. Exposure (to a party that may possibly default or suffer an adverse change in its ability to perform).

2. The likelihood that this party will default on its obligations (the default probability).

3. The recovery rate (that is, how much can be retrieved if a default takes place). Note that, the larger the first two elements, the greater the exposure. On the other hand, the higher the amount that can be recovered, the lower the risk.

Formally, we can express the risk as:

\[
\text{Credit risk} = \text{Exposure} \times \text{Probability of default} \times (1 - \text{Recovery rate})
\]

There are two variants of credit risk which are discussed below –

(a) **Counterparty Risk**

This is a variant of Credit risk and is related to non-performance of the trading partners due to counterparty’s refusal and or inability to perform. The counterparty risk is generally viewed as a transient financial risk associated with trading rather than standard credit risk.
(b) **Country Risk**

This is also a type of credit risk where non-performance of a borrower or counterparty arises due to constraints or restrictions imposed by a country. Here, the reason of non-performance is external factors on which the borrower or the counterparty has no control.

Credit Risk depends on both external and internal factors. The internal factors include

1. Deficiency in credit policy and administration of loan portfolio.

2. Deficiency in appraising borrower’s financial position prior to lending.

3. Excessive dependence on collaterals.

4. Bank’s failure in post-sanction follow-up, etc.

The major external factors –

1. The state of economy

2. Swings in commodity price, foreign exchange rates and interest rates, etc.

Credit Risk can’t be avoided but has to be managed by applying various risk mitigating processes –

1. Banks should assess the credit worthiness of the borrower before sanctioning loan i.e., credit rating of the borrower should be done beforehand. Credit rating is main tool of measuring credit risk and it also facilitates pricing the loan. By applying a
regular evaluation and rating system of all investment opportunities, banks can reduce its credit risk as it can get vital information of the inherent weaknesses of the account.

2. Banks should fix prudential limits on various aspects of credit – benchmarking Current Ratio, Debt Equity Ratio, Debt Service Coverage Ratio, Profitability Ratio etc.

3. There should be maximum limit exposure for single/ group borrower.

4. There should be provision for flexibility to allow variations for very special circumstances.

5. Alertness on the part of operating staff at all stages of credit dispensation – appraisal, disbursement, review/ renewal, post-sanction follow-up can also be useful for avoiding credit risk.

2.4.3.5 Operational risk

Operational risk is the potential financial loss as a result of breakdown in day to day operational processes. Operational risk can arise from failure to comply with policies, laws and regulations, from fraud or forgery. The risk arising from this type and nature of operational risk involve in the bank activities. These include direct and indirect laws resulting from inadequate of fail internal processes, people and systems or from external event (note operational risk in relation to the control environment is accesses within the relevant control sections). It may be defined as the risk of loss resulting from inadequate or failed internal process people and systems or because of external events.
Basel Committee for Banking Supervision has defined operational risk as ‘the risk of loss resulting from inadequate or failed internal processes, people and systems or from external events’. Thus, operational loss has mainly three exposure classes namely people, processes and systems. Managing operational risk has become important for banks due to the following reasons –

1. Higher level of automation in rendering banking and financial services

2. Increase in global financial inter-linkages

Scope of operational risk is very wide because of the above mentioned reasons. Two of the most common operational risks are discussed below –

(a) **Transaction Risk**

Transaction risk is the risk arising from fraud, both internal and external, failed business processes and the inability to maintain business continuity and manage information.

Compliance Risk

Compliance risk is the risk of legal or regulatory sanction, financial loss or reputation loss that a bank may suffer as a result of its failure to comply with any or all of the applicable laws, regulations, codes of conduct and standards of good practice. It is also called integrity risk since a bank’s reputation is closely linked to its adherence to principles of integrity and fair dealing.
2.4.3.6 Other risks

Apart from the above mentioned risks, following are the other risks confronted by Banks in course of their business operations (Kumar et al. 2005)

(a) Strategic Risk

Strategic Risk is the risk arising from adverse business decisions, improper implementation of decisions or lack of responsiveness to industry changes. This risk is a function of the compatibility of an organisation’s strategic goals, the business strategies developed to achieve those goals, the resources deployed against these goals and the quality of implementation.

(b) Reputation Risk

Reputation Risk is the risk arising from negative public opinion. This risk may expose the institution to litigation, financial loss or decline in customer base

Types of Risks in Banking Sector: In view of growing complexity of banks, business and the dynamic operating environment, risk management has become very significant, especially in the financial sector. Risk at the apex level may be visualized as the probability of a bank’s financial health being impaired due to one or more contingent factors. While the parameters indicating the bank’s health may vary from net interest margin to market value of equity, the factor which can cause the important are also numerous. For instance, these could be default in repayment of loans by borrowers, change in value of assets or disruption of operation due to reason like technological failure. While the first two factors may be classified as credit risk and market risk, generally banks have all risks excluding the credit risk and market risk as operational risk.
2.5 TOOLS FOR CREDIT RISK MANAGEMENT

The instruments and tools, through which credit risk management is carried out, are detailed below:

2.5.1 Exposure Ceilings

Prudential Limit is linked to Capital Funds – say 15% for individual borrower entity, 40% for a group with additional 10% for infrastructure projects undertaken by the group, Threshold limit is fixed at a level lower than Prudential Exposure; Substantial Exposure, which is the sum total of the exposures beyond threshold limit should not exceed 600% to 800% of the Capital Funds of the bank (i.e. six to eight times).

2.5.2 Review/Renewal

Multi-tier Credit Approving Authority, constitution wise delegation of powers, Higher delegated powers for better-rated customers; discriminatory time schedule for review/renewal, Hurdle rates and Bench marks for fresh exposures and periodicity for renewal based on risk rating, etc are formulated.

2.5.3 Risk Rating Model (RRM)

Set up comprehensive risk scoring system on a six to nine point scale. Clearly define rating thresholds and review the ratings periodically preferably at half yearly intervals. Rating migration is to be mapped to estimate the expected loss.
2.5.4 **Risk Based Scientific Pricing**

Link loan pricing to expected loss. High-risk category borrowers are to be priced high. Build historical data on default losses. Allocate capital to absorb the unexpected loss. Adopt the RAROC framework.

2.5.5 **Portfolio Management (PM)**

The need for credit portfolio management emanates from the necessity to optimize the benefits associated with diversification and to reduce the potential adverse impact of concentration of exposures to a particular borrower, sector or industry. Stipulate quantitative ceiling on aggregate exposure on specific rating categories, distribution of borrowers in various industry, business group and conduct rapid portfolio reviews.

2.5.6 **Loan Review Mechanism (LRM)**

This should be done independent of credit operations. It is also referred as Credit Audit covering review of sanction process, compliance status, review of risk rating, pickup of warning signals and recommendation of corrective action with the objective of improving credit quality. It should target all loans above certain cut-off limit ensuring that at least 30% to 40% of the portfolio is subjected to LRM in a year so as to ensure that all major credit risks embedded in the balance sheet have been tracked.