

# Reframing of Financial Risk Modeling in Public Sector Cooperative Financial Institutions of Punjab dealing in Agricultural Credit

Mirza Muhammad Ali Baig\* and Ahmad Raza Bilal†

## Abstract:

*The rationale of this study investigated the risk management practices (RMP) of agricultural banking. Therefore evidences reserved from the Punjab Provincial Cooperative Bank Limited (PPCBL). For precision two fold techniques for gathering of data used; from formal questionnaires and individual interviews using judgmental sampling. Various econometric and statistical tools applied to test hypotheses. Findings reveal the regressive approach of the management and staff towards Risk Management. So comprehensive policy is required to reframe it including training of overall staff about Basel Accord and risk-averse mechanism. PPCBL has a network of 09 Zones all over Punjab Province. Agricultural Credit has a vital role in agro-based economy of Punjab Province. So, the remodeling of RM in PPCBL is duly favorable for regulators, academicians, management, farmer communities as well as Cooperative Societies. It is deemed as a first study to empirically explore the RM in Agricultural Credit of Punjab.*

**Keywords-** Non-Performing Loans; Delinquency Ratio of Bank; Basel Regulations; Operational-Liquidity And Credit Risk Modeling, Punjab, Pakistan

## Introduction

In the developing country like Pakistan the Agricultural Sector is the major contributor to the GDP of economy. According to Bureau of Statistics Government of Pakistan ([www.pbs.gov.pk](http://www.pbs.gov.pk)), it provides 19.50 percent of GDP as 59.46 percent of the population belong to rural sector, which employs 42.30 percent of labor force. Food sector is the sole contribution of export earnings to the tune of 17.76 percent of GDP. Similarly 56 percent of raw-material received for agro-based industry like textile, sugar and tanneries from this sector. Financing is one of the important components for the progress and development of any sector. So to flourish the financial needs of agricultural sector the different

---

\* Mirza Muhammad Ali Baig, PhD Scholar, Business Administration Department, Superior Group of Colleges (Univ.), Lahore, Pakistan Email: [ali.baig@ztbl.com.pk](mailto:ali.baig@ztbl.com.pk)

† Prof. Dr. Ahmad Raza Bilal, Business Admin. Department, Superior Univ. Lahore, Pakistan. Email: [arb@superior.edu.pk](mailto:arb@superior.edu.pk)

banks of Pakistan have granted loans (Burki, 2007). The statistics showed 598.3 billion rupees disbursed in agricultural credit during FY-2015-16 that is nearby 100 percent of the annual target of 600 billion rupees assigned by the State Bank of Pakistan. Pakistan is an agro-based economy so for the reason Punjab Provincial Cooperative Bank Limited-(PPCBL) played a vital role as a specialized cooperative financial institution in Punjab, which contributes to the development of agriculture through disbursement of credit in different schemes under long, medium and short term needs of the farmers. It disbursed 90.97 billion rupees covering 89.2 percent of annual target of 102 billion of rupees assigned by the government of Pakistan (SBP, 2016). Risk is the biggest factor involved in any type of financing especially in agricultural sector due to various tangible and intangible reasons. Agriculture establishes the prime sector of Punjab's economy. Mainstream of population is either directly or indirectly engaged with this sector. It subsidizes about 24 percent of Gross Domestic Product (GDP) and amounts for half of working labor force and is the biggest source of foreign exchange earnings. It nourishes whole urban and rural populace. Considering its prominence, organizers and policy developers are used to keen to have valid area and production statistics of agricultural crops in the due course of time. The statistics of Agricultural Credit Development Loan for the FY-2010-11 depicts that the advances by all the banks in Punjab touched PKR 5065.07M. Wherein the total number of borrowers served by Cooperatives in Punjab are 25330 and disbursed amount for PKR 4717.180M. The progressive recovery reaches to PKR 5240.099 (PBS, 2016)

Therefore the Tanninen (2013) states the Credit risk as Default risk means the occurrence of loss due to the inability of borrowers to pay back. The Business Dictionary.Com estimates that the probability of threat may be avoided through preemptive. In the words of (Burt, 2001) the Risk is the chance than an occasion may be taken placed. Burki (2007) states that the risk is the possibility of definite loss of earning or equity. Drollette(2009) describes that the risk can be termed as a possibility of harmony of inauspicious outcomes due to tentative and imperfect knowledge in making judgment. As defined by Hardaker (2004), Bukenya & Chembezi (2006) and Nair (2009) the agricultural risk can be of two types as Localized Risk, which influence the life of farmer or the lender in case of either death or illness of a person. The second type of risk is called "Highly Correlated Risk", which carries the risks that affect whole the society. According to Ngathou (2006) the Risk is an innate component of trade and societal life. The exposure of risk can be minimized in financial institutions by implementing well organized risk management practices (RMPs). The Banks and Monetary

Institutions are deemed to be the backbone industries of any nation. Therefore this study is actually dealing with Banks role in the theoretical lens of Rational Banking Practices. Therefore in the words of Carey(2001) the management of risk in Monetary Organization is desperately needed than any other sector of economy. The major duty and responsibility of financial institution is to maximize its profit. The Risk can be bifurcated into two types' vis-à-vis Systematic risk related to whole economy or overall market as well as unsystematic risk in banking industry. The Risk Mitigation and Transmission techniques can be adopted to minimize the systematic risk. Santomero and Oldfield (1997) stated some essential risk-mitigation strategies: 1. A simple trading activities may be applied to minimize the risks. 2. Risk may be transferred to other participants; and 3. Active management of risk at banks level is called a Risk Acceptance approach.

Hakim (2005) pointed out after implementation of effective risk management tools the performance as well as the returns of any organization can be increased. This is the reason why risk management practices are dire in need for the healthy life of financial institutions (Carey, 2001). Neaime (2005) defines that the financial institutions of Pakistan adopt Ratio of Capital Adequacy as per the prevailing standards of Basel II.

The Basel II is used by way of a technique in lending decision and makes the spirit crystal clear to administer the risk in an efficient manner(Rob, 1999). In the words of Calem (1999) that the Commission on banking control had dispensed a paper that claimed the nature of credit based on most of the risky loans also pointed out by Shafiq and Nasr (2010)that the Pakistan Banking has faced different types of risk regarding risk of market, foreign exchange, liquidity and credit respectively due to the economic volatility of the nation. The financial institutions are very well experienced in the exposure of credit risk regarding wide variety of loans. The Credit Risk is equally applicable on loans and other financial activities such as transactions related to interbank, trade financing, forex, financial future, swaps, bonds, equities, options, extension of pledges, transactions settlements and guarantees respectively. After close comparison of Islamic as well as Conventional Banking there are many areas of Risks, which need further investigated with regard to Agricultural Credits. On the basis of said discussion the ongoing research addresses the purposes as under: 1. for dealing numerous risks the Pakistani banks used to adopt different Risk Management Practices and Techniques. 2. To examine the practices in risk management with reference to agricultural credit. 3. To improve the

weaker area of risk management practices on the basis of these studies, findings, suggestions and recommendations respectively.

The key motive of this study is to determine the strategies to reframe Operational Risk Modeling, Credit & Liquidity Risk Management, risk-averse mechanism as well as the importance of Basel-Standards with special reference Agricultural Credit Progression in Punjab Provincial Cooperative Bank Limited during Democratic Governments (2008-2018). Considering the above referred purposes the appended below research questions have been formulated, designed, explored and established respectively:

- RQ1. What are the exploratory presumptions for the practices pertained to risk management an evidence from PPCBL?
- RQ2. What are the derivations covering risk factors and whether the PPCBL has remodeled its risk management philosophy to control its ongoing financial catastrophes?
- RQ3. What importance needs to be drawn on the framework of Basel-III after infertility of the previous accords to safeguard the financial disasters?

Following objectives are established to elaborate the above research questions:

1. To appraise and identify the philosophy of risk management in PPCBL;
2. To appraise and reframe of risk modeling using personal interviews of PPCBL officials;
3. To explore the risk-averse mechanism in PPCBL;
4. To observe the response of High-ups under the guidance of Basel Accord regarding RM framework in lieu of Basel-III standards;

#### **Literature Review**

Meor Ayub (2006) states that the Risk Management is a way forward practice engaged in decision making on regular and timely basis. [...]. The Financial Risk Management is a four processes series as per Banking Supervision Committee of Basel Accord (BCBS, 2001) that is identification of events in broader classes of Operational, Credit, Liquidity, Market and other risks. It may be further sub-divided as the risk model for the valuation of data, timely reporting and supervising of risk assessments, the senior management to control these risks. It can be observed form the definition that the basic risk management structure comprised of four important pillars of Risk Management. And these include risk identification, risk measurement, risk mitigation and risk monitoring and reporting respectively. On the whole there are three major kinds of banking like hazard or pure risk, financial and non-financial risk respectively. The financial risk is further segregated into the following

types of risks pertained to market, credit, liquidity, interest rate, foreign exchange, solvency and capital adequacy respectively. The non-financial risk is deemed as operational risk. According to Rosman (2009) the research structure is a Risk Management Practices and the classification of Risk Management Processes. The structure defines the relationship of four features of risk management process and risk management practices as: 1. Understanding Risk and Risk Management (URM). 2. Risk Identification (RI). 3. Risk analysis and assessment (RAA) 4. Risk Monitoring (RM). Punjab Provincial Cooperative Bank Limited (PPCBL) (<http://www.ppcbl.com.pk/>) is the leading financial organization dealing in the growth and progress of agriculture by expanding loaning facilities as well as through awareness of modern technology. The reformation of the then ADBP is being taken place with the aim to uplift the rural as well as agriculture sector by maximizing yield of the farm, restructuring the organizational credit and increasing revenue generation tendency of community pertained to farmers in individual capacity as well as cooperative societies. The movement of Cooperative had been commenced by the government of India with the depiction of the Cooperative. The problems of rural gratitude was addressed vide Credit Societies (CCS) Act 1904. The Central Cooperative Banks had been established at every tehsil and district level similarly the Punjab Provincial Cooperative Bank Limited (PPCBL) was assimilated in 1924 as one of the esteemed organizations to meeting fund based requirements of cooperative societies and CCB's. The PPCBL has completed its 93 years of banking services to the cooperatives this year and it's the only cooperative bank in Pakistan. The Punjab Provincial Cooperative Bank Limited has been established under Cooperative Societies Act 1925 (VII of 1925). The bye-laws of the bank has whereby reincorporated vide PPCBL Act, 2010.

PPCBL is survived due to its uniqueness as cooperative bank with the network of 151 branches all over Punjab Province. It has sought the status of Scheduled Bank vide State Bank of Pakistan's orders during 1955. Currently PPCBL is passing through the stage of restructuring at every level of operations, human resources, infrastructure and financials through sketching out a belligerent and novel business plan. The vision and mission of the PPCBL is not only to maintain its original traits as Cooperative facilitation but also practicing its indulgence in Commercial and Corporate Banking Solutions with special reference to rural community.

Main objectives of the PPCBL covers mobilization of deposit from cooperative societies, individuals, government institutions, public, semipublic, private entities and financial institutions. Provision of credit

facilities to the farmers, customers in individual capacities, agriculture sector, agro-based allied industry and commercial entities. Fund based and non-fund based financial facilitation to the members of the cooperative societies and other borrowing stakeholders including corporate bodies as well as individuals. Furnishing of basic banking facilities including Online Banking, Remittances, Foreign Remittances and Mobile Banking Facilities to the stakeholders and clients of the bank. Similarly the focused business strategy with loyal team of professionals to be best in providing quality service according to the business needs of customers (PPCBL, 2017).

Angelopoulos and Mourdoukoutas (2001) state that if we keenly observe the behavior and features of the wide spread banking structure, we may observe that the risk management is a sense towards risk and results related to it. According to Niinima Ki (2004) the level of competition on bank risk taking has been observed through the framework and the size of market wherein the competition is taking place. It further states that in case of monopoly of financial institution with reference to credit market then there may be no effect of insurance of deposit on risk taking. Wetmore (2004) investigated that there is a strong correlation of advances to the primary deposit ratio of enormous scale financial organizations and the liquidity risk and described that the regular advance to basic deposit ratio showed increasing trend with the passage of time during this research study, which shows a revolution in the management practices between asset and liability regarding monetary organizations. Bagdi and Khambata (2003) explored Off-Balance-Sheet (OBS) Credit Risk all over 20 large Banks of Japan. The key outcomes of this study defined that four top level banks are extensively using financial derivatives regarding loan commitments as a basic foundation of Credit Risk Management surrounded by conventional OBS instruments. Al-Tamimi (2002) emphasized that the UAE based Monetary Institutions used to apply Risk Management Techniques relating to different types of risks. The research study defined that the major problem of the commercial banks of UAE was the risk related to credit. The research interprets that the main technique in investigating risk identification is the critical analysis of financial statements by the managers. The techniques adopted in risk management as per this research were formulating principles, credit scoring, analysis of credit worthiness, security, indemnity and risk rating the research study further determined the keenness of the Monetary Organization of United Arab Emirate to practice latest and suffice tools of risk management and extracted the acceptance of traditional credit policy. It is further investigated by Saurina and Salas (2002), which applied the group data

to compute the problematic factors pertained to loans of Commercial as well as Saving Banks of Spain as they have defined the credit risk in banking sector of Spain during the period 1985 to 1997 after studying both macro and microeconomic level variables of the bank. According to Santomero and Oldfield (1997) the management of risk in banks and monetary organizations is based on four steps of integrated risk management techniques: 1. The Reports & Standards to be established, 2. the obligation of situation, restrictions and policies (that is existing exposure, limits of the credit and arrangement application), 3. The composition of self-dealing policies and related strategies, and 4. The establishment of incentive policies as well as Compensation plans on the basis of performance respectively.

The impending study conducted by Nasr and Shafiq (2010) for determination of customary risk management practices those may be equally considered and implemented in the banks of Pakistan. The data for this study has been gathered from both the sources that are primary as well as secondary respectively. And the conclusion was the momentous difference between government as well as private sectors financial institutions. Furthermore to that the financial soundness indicator varies from bank to bank. So far as the implication of risk management is concerned it has been observed that the level of understanding of each individual employee is different about risk management practices. And this gap can be overcome by the introduction of on the job trainings of the staff within an organization for examining the details how universal monetary organizations intensified their Risk Management abilities to cope with the universal monetary crises. The Economist Intelligence Unit (2010) held extensive survey of 346 global level high-ups in finance. Outcomes depicted that just to the account of 40 percent of the contenders (realizing the significance of risk management) had efficiently adapted Risk Management Skills in their monetary organizations; wherein the plenty of correspondents were at the initial stage to hold down the risk intimidations and uplift risk prevailing mechanisms. Signifying authoritarian effects of Basel-III risk management structure, Fitch's attempts [ . . . ] (Financial Times, 2012) pointed out the compliance of Basel- III requirements, the assets base of 29 largest global monetary organizations for amounting to 47 trillion US\$ (as a district) required to maintain a capital of 566 billion US\$. After the vacuity of Basel-I and Basel-II autocratic frameworks to overstep from the latest monetary crisis.

Atkinson, Wignall and Bundell (2010) examined valuable performance of Basel-III capital proposal to find out the basic authoritarian issues of the financial institutions. According to Jessop &

Harms (2012) the index insurance is considered as a new innovation in agriculture insurance. In this technique the disbursement to the peasant is interconnected with the doorstep facility. So when the index passes that doorstep disbursement to the grower is taken placed without having any additional amount of expenditure or loss as the case may be. Fissaha (2009) stated that the government can establish special contingences reserves for disaster relief management regarding compensation of small farmers at the time of catastrophe. These emergencies reserves safe guard the farmers from unhealthy situation and crisis. Jessop & Harms (2012) state that the there are various methods to manage the Policy Risk. The need of the day is that the introduction and establishment of different rules, regulations, policies and procedure by the government for both the sectors the owners of the agricultural land as well as the agriculture as a whole. The security as a collateral used in agricultural credit is the agricultural land and the financing may be increased with the establishment of more compact policies and procedures. The institutional reforms are a burning issue, which can be resolved through proper planning and legislation by the government. It has been concluded from the review of above said literature that the requirement of all the financial organizations to adopt the risk management practices around the globe. Agricultural Credit has a vital role in Agro-based economy of Pakistan. Under the helm of State Bank of Pakistan different public and private sector banks have been granted yearly target for disbursement especially that of PPCBL as a single specialized financial institution dealing in Agricultural Credit. So being a monopolist in Agricultural Credit the PPCBL has been selected to extend research in examining and exploring the Risk Management culture of the bank on the bases of different variables derived from previous studies to find out the impact of the implementation of following figurative aspects that is understanding management, risk identification, assessment of risk and analysis, monitoring of risk, Operational risk analysis, Liquidity risk analysis, Market risk, risk governance, risk management practices and credit risk analysis (Sania et al 2012; Bilal et al 2013; Asma 2016). The profit is efficient and receptive to the credit as well as insolvency risks respectively. The risk management practices are the prerequisite for unbeatable monetary liberalization. Punjab Provincial Cooperative Bank Limited is primarily faced credit risk; loans and agricultural financing are major cause of this type of risk. Analysis of the financial statement by the manager of the branch as well as credit officers respectively may be the prime source applied for risk identification. The suitable weight assigned to the risk for an Off-Balance Sheet Figures may differ from institution to institution and organization to organization respectively.

Referring the findings of obtainable fiction, this study is deployed to determine the avant-garde variations in the democratic regime of 2008-2018 in Punjab Provincial Cooperative Bank Limited. Referring to gratify the objectives of study, the appended below hypotheses were established to discover the evidences of reframing of risk management:

- **H1.** URM, ARA, RI, LRA, ORA, RMR have optimistic relationships with RM practices in PPCBL.
- **H2.** There are no evidential deviations in PPCBL to take causal computations on pivotal banking risks derived from the previous studies.
- **H3.** The reframing of risk management practice and it has a consequential influence on potential RM policies in PPCBL.
- **H4.** Adoption of Basel-III standards may have evidential impact on reframing of risk management in PPCBL.

#### **Introduction to Study Population**

The PPCBL is the only specialized Cooperative Bank working under the Act of Government of Punjab dealing in Agricultural Finance, SME and Micro financing to the individual as well as the cooperative societies within the vicinity of Punjab Province. The Bank comprised of the moderately wider network of 151 branches and serving more than 0.165M borrowers as per Development Finance Review June, 2015. The staff strength of PPCBL is 1856 comprising of permanent staff of 1126 employees, Temporary/Contractual basis 575 and Daily Wage/Other 155 (SBP & PPCBL, 2016).

#### **Sampling, collection of data, assessment and analysis**

The sample of the study has based upon PPCBL a public sector specialized financial institution dealing in SMEs, Micro financing and agricultural credit within Punjab Province of Pakistan. To certify a profound thoughtfulness in this research study, bi-dimensional technique for the collection of data was used that is through closed ended questions by distributing formal questionnaires to the field staff pertained to branches as well as the regions all over Punjab Province. Secondly through open ended questions during personal interviews from the experienced members of the Head Office and Zonal Offices staff. Respondents have been selected on the basis of their relevant experiences in branch banking operations, credits and administration. Judgmental sampling technique has been used on convenience basis in this research related pilot study. A questionnaire was developed after due modification on the basis of scale items of study conducted by (Bilal *et al.* 2013 and Asma 2016). All the questions are measured on seven point likert-scale

## Emerging Issues in Economics and Finance

ranging from strongly disagree, disagree, disagree somewhat, undecided, agree somewhat, agree and strongly agree. Questionnaire was pre-tested on the basis of standardized reliability and validity, which had later been reformed according to the response key post employees. A small sample size of 150 questionnaires were circulated to different branches, which are nominated for credit appraisal in agricultural financing. Similarly monitoring the Operational as well as Credit Risk Management. To certify the uniformity of the research study personal interviews of the respondents were conducted with the interval of two months after getting the empirical results through SPSS to test significance level on the basis of two different techniques. The Missing Value Analysis by using multiple-imputation technique for getting regression, correlation and other statistical outcomes has been adopted in SPSS for replacement and imputation of missing values at 7.1% of data for homogenous population. Research Questions and Hypotheses-An Empirical Findings

The Table (I) defined the average of responses on the nine questions about URM is 4.73. Undoubtedly no reasonable difference found between the highest and lowest average of these questions, but one thing is clear that the respondents have given positive response to the first exogenous variable depicting the common understanding of RM across the PPCBL.

Questions	Mean	SD
There is a Common understanding of risk management across PPCBL	3.69	2.17
Risk management responsibility is clearly set out and understood throughout the bank.	4.23	1.84
Risk management policy is communicated down the line and well understood by all concerned parties (risk takers, risk reviewers etc.)	3.90	1.69
Accountability for risk management is clearly set out and understood throughout PPCBL	4.01	1.88
Risk Management is important for the success and performance of the PPCBL.	5.69	1.43
Application of the most sophisticated techniques in risk management is vital.	5.51	1.52
The objective of PPCBL is to expand the applications of the advanced risk management technique.	4.62	1.82
It is significant for PPCBL to emphasize on continuous review and evaluation of the techniques used in risk management.	5.23	1.57
Applications of risk management techniques reduce costs or expected losses.	5.72	1.35
Average	4.73	

*Source: Derived from Bilal et al (2013) and Asma (2016).*

This predictor comprised of seven items scale to determine that PPCBL staff concerning to the Risk Assessment and Analysis. The result of respondents have been reported in Table (II)

**Emerging Issues in Economics and Finance**

**Table 2 Assessment of Risk and Analysis (ARA)**

Questions	Mean	SD
PPCBL assesses the likelihood of risk occurrence.	4.90	1.46
PPCBL assesses risks by using qualitative analysis method (e.g. high, moderate and low)	4.50	1.41
PPCBL assesses risk by using quantitative analysis method.	4.69	1.40
PPCBL analyzes and evaluates the opportunities that it has to achieve objectives.	4.69	1.28
PPCBL's response to analyzing risk includes an assessment of the costs and benefits of each relevant risk.	4.49	1.36
PPCBL's response to analyzing risk includes prioritizing of risk and selecting those that need an application of active management.	4.60	1.42
PPCBL's response to analyzing risk includes prioritizing risk treatments where there are resource constraints on risk treatment implementation.	4.59	1.33
Average	4.71	

*Source: Derived from Bilal et al (2013) and asma (2016)*

The consolidated mean defined therein was 4.71 with the highest and lowest values as 4.99 and 4.49 respectively.

**Table 3 Risk Identification (RI)**

Questions	Mean	SD
PPCBL carries out a comprehensive and systematic identification of its risk relating to each of its declared aims and objectives.	4.69	1.69
Risk identification is a continuous process in PPCBL at transactional and portfolio levels.	4.76	1.48
The PPCBL finds it difficult to identify, and prioritize its main risk.	4.05	1.70
Changes in risk are recognized and identified with the PPCBL's rules and responsibilities.	4.71	1.30
PPCBL is aware of the strengths and weaknesses of the risk management systems of the other banks.	4.32	1.65
PPCBL has developed and applied procedures for the systematic identification of investment opportunities.	4.41	1.64
Average	4.50	

*Source: Derived from Bilal et al (2013) and asma (2016)*

The Risk Identification has fundamental importance in Risk Management Process. The Table (III) determined six dimensional scale of RI, which stated consolidated mean of 4.50. The lower values of SD showed the data points are near to average and the higher value of SD depicted the far from mean.

The Table (IV) investigated the average of nine items of scales as 4.90 with highest mean value as 5.15 and 4.60 the lowest respectively. The lowest mean showed that the PPCBL's staff feedback to risk comprises action plans in employing decisions about identified risk, which is in contrast to the previous studies led by Al-Tamimi and Al-

**Emerging Issues in Economics and Finance**

Mazrooei (2007), Hassan (2009) and Ahmad (2013) respectively. It mean that the strategy making and action planning of PPCBL is slow in instigating decisions regarding identification of risk.

**Table 4 Risk Monitoring and Reporting (RMR)**

Questions	Mean	SD
Monitoring the effectiveness of risk management is an integral part of routine management reporting in PPCBL.	5.10	1.49
Level of control by the PPCBL is appropriate for the risk that it faces.	4.89	1.28
Reporting and communication processes within PPCBL support the effective management of risks.	4.91	1.34
The PPCBL's response to risk includes an evaluation of the effectiveness of the existing controls and risk management responses.	4.79	1.25
The PPCBL's response to risk includes action plans in implementing decisions about identified risk.	4.60	1.37
Management of PPCBL monitors implementation of risk management policy and make necessary adjustments.	5.15	1.07
Management of PPCBL regularly monitors the effectiveness of risk management system.	4.67	1.43
The organizational structure of PPCBL strengthens monitoring and control over risks being taken.	4.68	1.53
Chief Risk Officer/Risk Management function is responsible for risk monitoring within your bank-(PPCBL).	4.80	1.36
Average	4.90	

*Source: Derived from Bilal et al (2013) and asma (2016)*

For the evaluation of risk pertained to transactions vide Table (V), Credit Risk Analysis is one of the prime segments to sterilize related risks. The predictor comprised of ten items of scale. The reported average of CRA concept was 5.43 that determined the controlling officials of risk in this bank's study were very vigilant in their analysis and assessment of risk. The highest mean was second question that every loan has be critically scrutinized before disbursement and this shows the same result as derived by the previous study conducted by Bilal et al. (2013). Whereas the lowest mean value comprised of 5.02 regarding credit risk review committee to administer credit risk management role. So overall evaluation about CRA showed that the management is dedicatedly involved in observing all the parameters of credit risk before issuance of loan.

**Table 5 Credit Risk Analysis (CRA)**

Questions	Mean	SD
PPCBL undertakes a credit worthiness analysis before granting loans.	5.55	1.51
Before granting loans PPCBL undertake a specific analysis including the client's characters, capacity, collateral, capital and conditions.	5.77	1.20
Borrowers are classified according to a risk factor (risk rating) in PPCBL.	5.50	1.21
Credit Policy commensurate with the overall risk management policy.	5.41	0.99

### Emerging Issues in Economics and Finance

PPCBL obtains information about the borrowers from credit information bureau.	5.60	1.26
Management of PPCBL has set out credit limits for different client segments, economic sectors, geographical locations etc. to avoid concentration of credit.	5.42	1.11
Credit risk is monitored on regularly basis and reported to senior management.	5.30	1.22
PPCBL has credit risk management committee to oversee credit risk management function.	5.02	1.43
Credit administration ensures proper approval, completeness of documents, receipts of collateral and approval of exceptions before credit disbursement.	5.39	1.19
Board periodically reviews the credit risk strategy and credit policy.	5.21	1.29
Average	5.43	

*Source: Derived from Bilal et al (2013) and asma (2016)*

The Table (VI) investigated that the item of scale comprised of five questions having consolidated mean value as 5.24; which showed that the respondents have good awareness about Operational Risk Analysis. The highest mean value as 5.50 with lowest SD as 0.99 pertained to higher management of the bank identifies, apprehends and has clearly demarcated classes of operational risk applicable to PPCBL. Whereas the lowest mean value as 4.97 with highest SD value of 1.39 defined that there is comparatively slow mechanism at PPCBL regarding regularly prepares periodic report of operational risk; which can be improved through induction of technological advancement as well as implementation of Basel-III regulations as the bank is still prevailing on Basel-II Accord.

**Table 6 Operational Risk Analysis (ORA)**

Questions	Mean	SD
There is a proper set of rules and guidelines for managing operational risk available in PPCBL.	5.39	1.24
Board and executive management of the bank recognizes, understands and has defined all categories of operational risk applicable to their institution.	5.50	0.99
Senior management of the PPCBL transforms the strategic direction given by the board through operational risk management policy.	5.23	1.07
The PPCBL has contingency and business continuity plans to ensure its ability to operate as going concern and minimize losses in the event of severe business disruption.	5.02	1.31
The PPCBL regularly prepares periodic report of operational risk.	4.97	1.39
Average	5.24	

*Source: Derived from Bilal et al (2013) and asma (2016)*

The far-reaching merits can be attained through effective risk management and that is considered as the key aspect of the whole process of risk management. Table (VII) reported the average of means as 4.71 for fifteen scale of questions. The highest mean value of question

### Emerging Issues in Economics and Finance

eight as 5.30 assumed the development phase of PPCBL's restructuring in the era of democratic governments of (2008-2018) for the implications of risk-averse mechanism and Basel-II regulations under the directions of State Bank of Pakistan. Establishment of separate Risk Management Department in addition to Internal Audit Department defined that how much PPCBL fascinated about examining, up-grading and validating risk management conventions to implement Risk filtration system (RFS) for effective activation of system. Over all observation about RMP showed that there is no big difference in mean values, which in turns showed that the respondents have fair-perception about risk management.

**Table 7 Risk Management Practices (RMP)**

Questions	Mean	SD
Risk management policy of the PPCBL clearly defined the roles and responsibilities of various functionaries of the bank.	5.01	1.72
One of the objectives of PPCBL is effective risk management.	5.30	1.26
PPCBL is highly effective in continuous review/ feedback on risk management strategies and performance.	4.54	1.60
Executive management of PPCBL regularly reviews the bank's performance in managing its business risk.	5.05	1.63
PPCBL's risk management procedures and processes are documented and provide guidance to staff about managing risks.	4.72	1.61
PPCBL's policy encourages training programs in the risk management and ethics area.	4.82	1.45
PPCBL emphasizes the recruitment of highly qualified people with knowledge of risk management.	4.36	1.74
Risk management policy is communicated from top to down level in PPCBL.	4.36	1.67
PPCBL has a comprehensive risk management process (including Board and Senior Management) oversight to identify measure, evaluate, monitor, report and control all material risks on timely basis.	4.74	1.55
PPCBL finds it too risky to invest funds in one specific sector of the economy.	4.35	1.56
Risk management strategy of PPCBL is flexible enough to deal swiftly and adequately with all risks.	4.88	1.36
Application of Basel II and Basel III Accord will improve the efficiency and Risk Management Practices in the PPCBL in general and particularly in your bank.	4.70	1.43
PPCBL is successfully implementing the Basel Committee and Central Bank guidelines/principles in regard to risk management.	4.35	1.55
PPCBL assesses the adequacy of their capital and liquidity in relation to their risk profiles, market and macro-economic conditions.	4.55	1.40
I consider the level of Risk management Practices of PPCBL to be excellent.	4.30	1.71
Average	4.71	

*Source: Derived from Bilal et al (2013) and asma (2016)*

**Regression & Correlation analysis and findings**

The regression results illustrated in the table pertained to empirical study model. The value of Durbin-Watson (D-W) showed the assessment as 2.040; tolerance was not lower than 0.221 and variance information factor (VIF) was not higher than 4.75 except in RAA, which exist non-existence of the autocorrelation and multicollinearity issue in record except in one of the constructs as (RAA) with minor difference from the prescribed criteria Hence the reliability showed relatively satisfactory having Cronbach alpha full-fills the condition of  $(0.698 \leq 0.70)$  to interpret the findings. The results showed that all the predictors' variables as Risk Identification (RI), Risk Monitoring and Reporting (RMR), Credit Risk Analysis (CRA), Operational Risk Analysis (ORA). However the Understanding Risk Management (URM) as well as Assessment of Risk& Analysis (ARA) were optimistic having positive values, but insignificant in this research study model. Regression outcomes defined RI as most dominant variables with Beta-value ( $\beta$ ) as 0.359 that was the highest amongst all other variables in this research study followed by RMR, ORA, RAA, URM and CRA. The value of Coefficient of determination  $R^2$  has been rationalized by Adj.  $R^2$  to avoid an over-optimistic observation of model fit. In the Regression model the value of adj.  $R^2$  determined 85.0 percent, which further testified that how strongly multiple-exogenous variables have an impact on Risk Management Practices in PPCBL. The interpretation of this study has been derived from Bilal et al (2013) with some needful contradiction with reference to insignificance of (URM) & (RAA) as predictors respectively, which is due to mediocre Sample size of this research study.

Table 8 Defining Reliability Analysis of the Exogenous and Endogenous Variables

Sr. No.	Risk Measurement Variables	Cronbach's $\alpha$
1.	5.1 Understanding Risk Management (URM)	0.751
2.	5.2 Risk Assessment and Analysis (RAA)	0.903
3.	5.3 Risk Identification (RI)	0.698
4.	5.4 Risk Monitoring and Reporting (RMR)	0.867
5.	5.5 Credit Risk Analysis (CRA)	0.889
6.	5.6 Operational Risk Analysis (ORA)	0.778
7.	5.7 Risk Management Practices (RMP)	0.887

*Source: Derived from Bilal et al (2013) and Asma*

The regression results found out the concurrent influence of Risk Management Practices Agricultural Credit evidenced from PPCBL. The

## Emerging Issues in Economics and Finance

findings determined that all the defined exogenous variables have optimistic positive association with conventional significance level. The RI with highest value of ( $\beta = 0.359$ ,  $p = 0.000$ ), followed by other predictors as RMR ( $\beta = 0.340$ ,  $p = 0.000$ ), ORA as ( $\beta = 0.170$ ,  $p = 0.009$ ), RAA as ( $\beta = 0.044$ ,  $p = 0.453$ ), URM as ( $\beta = 0.016$ ,  $p = 0.751$ ) and CRA as ( $\beta = 0.094$ ,  $p = 0.075$ ) respectively; hence H1 is validated. The Regression model  $R^2$  having value 0.870 depicting that expounded variation of 87.0 percent with adjusted  $R^2$  expanded value of 85.9 percent is due to influence of exogenous variables on endogenous variable. The research study outcomes discovered that all selected exogenous variables have significant involvement on risk management process in PPCBL. Furtherance to which all constructs have duly effective and far-reaching impact on eventual Risk Management Policies. Therefore H2 and H3 are fully supportive. The table showed the F-value of 135.590 with significant level of 0.000, which is larger enough to highlight that concurrent influence of exogenous variables was significantly noticeable to the variance of efficient risk management process.

Table 9 Regression Analysis

Variables	COLLINEARITY		STATISTICS		ANOVA		STATISTICS	
	Un-stand. $\beta$	SE	Stand. $\beta$	Tolerance	VIF	t	Sig. level	
(Constant)	0.553	0.220				2.670	0.009**	
URM	0.016	0.052	0.016	0.338	2.970	0.296	0.751	
RI	0.359	0.054	0.313	0.434	2.312	6.862	0.000**	
RAA	0.044	0.064	0.049	0.178	5.641	0.678	0.453	
ORA	0.170	0.063	0.130	0.409	2.449	2.701	0.009**	
RMR	0.340	0.067	0.330	0.223	4.531	5.142	0.000**	
CRA	0.094	0.058	0.095	0.336	2.991	1.790	0.075*	
$R^2$	0.870							
Adj. $R^2$	0.859							
F.Stat	135.590	@Sig. F-Change 0.000						
Durbin-Watson	2.040							

Note: Significant at: \*  $\leq 5$  and \*\*  $\leq 1$  percent levels

Table 10 Correlations

	1	2	3	4	5	6	7	8
Understanding Risk Management	1							
Risk Identification	.643**	1						
Risk Assessment and Analysis	.775**	.739**	1					
Risk Management Practices	.712**	.735**	.832**	1				
Operational Risk Analysis	.434**	.384**	.607**	.668**	.642**	1		
Risk Monitoring and Reporting	.654**	.512**	.739**	.823**	.796**	.701**	1	
Credit Risk Analysis	.451**	.370**	.493**	.615**	.668**	.677**	.758**	1

\*\* . Correlation is significant at the 0.01 level (2-tailed).  
 \*\*. Convergent Validity

The matrix of correlation is basically a table showing the correlation coefficients between different sets of variables. Wherein, each variable shows its relationship with other variable. The one on diagonal of the table means the correlation between a variable and it is always and equal to one. In other words the correlation matrix is called symmetric matrix. The most common correlation is Pearson's Correlation Coefficient that compares the two ratio variables. In this research model the values comprised of Pearson's Correlations Coefficient showing positive significant correlation between all the exogenous variables in order to test Convergent Validity.

**Empirical analysis of theoretical framework**

Results of the regression along with personal survey through interviews with Operations and Credit Officers of the PPCBL were in the line with hypotheses of research and verified that:

H1. The judgments retrieved from statistical analysis determined that URM, RAA, RI, ORA, CRA, and RMR have optimistic relationships with Risk Management Practices in PPCBL, hence H1 is accepted; wherein personal survey through face to face as well as telephonic interviews envisaged that PPCBL has also dedicated on some auxiliary risks pertained to ongoing challenges likewise Technology risk, reputational risk and settlement risks respectively Bilal et al. (2013).

H2. The PPCBL is a specialized financial institution dealing in agricultural credit in contrast to other conventional and Islamic banks based on the previous studies Sania and Shehla, (2012). So no significant difference found as the results of the study conducted at 5 percent level of significance. Therefore H2 is accepted.

H3. The establishment of separate Risk Management Department during the ear of democratic government (2008-2018) for implementation & adoption of Basel-II regulations seems that bank has a vision and mission to remodel its risk management nomenclature to cope with financial risk. So H3 is accepted.

H4. The findings based on personal interviews as well as from the demographic statistics through frequencies analysis envisaged that the branch banking operations and credit staff desire to have formal training sessions about Risk Management and Basel Accord Therefore H4 substantiated.

Undoubtedly the PPCBL has gained reasonable endeavor regarding establishment of RM department and adoption of technological advancement through information system, but the pace of this restructuring process is slow due the fact of regressive approach.

The Econometric Model of this research study has been derived from the literature based on the previous studies conducted by the researchers with slight moderation in inducted exogenous variables for the only endogenous variable the RMP (Blundell et al 2010; Al-Tamimi et al. 2007;Shehla et al. 2012;Bilal et al. 2013 and Asma 2016) respectively.

(\*)  $RMP = f(UMR, RI, RAA, RMR, ORA, CRA)$ . (*Econometric Model*)

Finding based on personal interviews and survey of bank's profiles; it has been observed that the risk management is undoubtedly adopted and implemented, but due to lack of proper coordination and timely follow-up between Human Resources Department, Training Management Department, Risk Management Department and trickle down to branch operations and credit department respectively the risk management has been taken for granted. So 92.8 percent respondents believe in "One-size-fit-for-all" strategy for improvement in prevailing set up. Similarly comprehensive training plan is required regarding training on operational risk mitigation as Anti-Money Laundering (AML), Terrorists Financing (TF), Know your Customer (KYC), Customer Due Diligence (CDD), Market Cheques (MCs), Non-blood references, External Risk Rating (ExRR), Internal Risk Rating (InRR), Risk Modeling (RMod), Direct Customer Calls (DCC) before realization of payment of heavy amounts cheques through clearing, Management Information System checks (MIS), Payment System Risk (PSR), Security and system access (SSA) monitoring of transactions. As far as Credit Risk Monitoring is concerned the trainings need to be developed as relationship name clearance (RNG), Analysis of Cash Flow (AOCF), Ratio Analysis like EPS, Leverage, Liquidity, Acid-Test, Basic Fact Sheet (BFS), Credit risk ratings (CRR), third party cheques in case of tripartite agreement, Repayment behavior from previous financial institution, Electronic Credit Information Bureau (eCIB) reporting from State Bank of Pakistan, Associated firms and sponsors credibility reporting, Collateral clearance analysis (CCA) and Marketability of Product.

Besides in house training sessions at Staff College of PPCBL the bank needs to nominate the relevant employees as per their capability for getting trainings at other eminent institutions likewise Institute of Risk Management (IRM), Pakistan Institute of Management (PIMS), Institute of Bankers Pakistan (IBP), National Institute of Banking & Finance (NIBAF), ISO 31000, Omega Risk Management (ORM-LLC), Asia Risk Management Institute (ARiMI), Institute of Islamic Banking (IISB).

Respondents of PPCBL unanimously agreed on the appended below survey based on ten key risks selected on observational basis and

## Emerging Issues in Economics and Finance

---

derived the theme from previous study of Bilal et al. (2013) regarding significant screening of risk.

Table 11 Significant Review regarding Important Risks derived from Survey

Sr. no.	Risks	Degree of Acceptance
1	Operational Risk	0.761
2	Credit Risk	0.789
3	Compliance & Regulatory Risk	0.732
4	Reputational Risk	0.601
5	Interest Rate Risk	0.659
6	Repayment Risk	0.630
7	Settlement Risk	0.599
8	Legal Risk	0.721
9	Technology Risk	0.912

*Source: Findings of Personal Interviews technique (degree of significant acceptability: 0-1) derived from Bilal et al. (2014)*

---

Keeping in view the financial crunch of first decade of the ongoing century giving ultimatum to reframe banks' financial risk modeling with special reference to Operational, Credit and Liquidity risks to strengthen the affairs of bank. Al-Tamimi (2007), Bilal et al. (2013). During personal interviews from the Bank Officials along with critical examination of statistical findings, it has been concluded that the PPCBL is facing Operational as well as Technology Risks following therein the credit and liquidity risks; so the very many focus needs to be granted to remodel the risk strategy on the convention of "one-size-fit-all" to strengthen risk management of the bank. PPCBL is facing the liquidity distress, which can be minimized by injecting of adequate equity through share float and snatching of huge amount of deposits.

### **Conclusions and Limitations**

The conclusion of this study discovers the vision 2008-2018 of Democratic Government for Agricultural Credit through PPCBL resides the restructuring, technological advancement, deposit mobilization, establishment of Islamic window and floating of shares in capital market. But the partial fulfillment of this plan is due to regressive approach of management towards modern market trends, inefficiencies of employees union and unnecessary political influence. This study is confined to the judgments of financial risk modeling evidence from PPCBL with a prevailing and forthcoming financial and monetary challenges for agricultural credit sector. Pragmatic exploration is conducted in PPCBL that is a specialized financial institution having monopolistic role in the

economy of Pakistan regarding growth and development of agricultural credit.

### **Recommendations**

Consequent upon the vision 2008-2018 the bank has successfully established its Risk Management Department along with procedural manuals during 2012 after adoption of Basel-III regulations. But the results of this study concluded that the PPCBL is facing two major risks based on empirical findings as well as personal survey regarding Operational Risk Analysis (ORA) and Technology Risk Analysis (TRA) respectively. The indicated findings based on the survey of the PPCBL enduring to review internal SOPs. Adapting the recommendations of (Wignall et al 2010 and Bilal et al 2013), survey respondents were strongly recommended to renovate prevailing regulatory framework by switching over to Basel-III guidelines and reframe an inclusive “one-size-fits-all” strategy to cope with all the gaps in standing financial system of the bank, improve the training sessions of the operational and credit related staff regarding understanding of risk management, improve the assessment of risk and analysis system to imply efficient techniques to certify regulatory acquiescence to avoid probable monetary crises.

A prudent approach based on general perception has been derived from the personal survey of catering interviews from the key post executives of the bank that this is the year of cut-throat competition; the regulator as well as policy makers are of the view of Cost Minimization Strategy that leads to the maximization of bank's profitability, minimization of risks of default and efficient supervision of delinquency ratio (non-performing loans to the assets). For the better implementation of Risk Management regulations defined by the regulators; it is important that the inspection teams on the bank in shape of Internal Auditors, Management Inspection, Inspection and Compliant Unit need to be trained on modern lines better monitoring of operational and credit affairs prevailed in the branches of the bank. One of the eminent roadmap's regarding restructuring of the bank is to start Islamic banking operations as a vision for upcoming era of FY-2018-19.

### **Future Research**

Consequent upon this study model, forthcoming research can be conducted, enlarged and extended to the sample size covering total population of Zarai Taraqiati Bank Limited, Small and Medium Enterprise Bank Limited, Khushali Bank Limited or may have a comparative study between public sector and private sector banks dealing in agricultural credit, SMEs and micro financing for better

### **Emerging Issues in Economics and Finance**

---

understanding of risk management strategies for minimizing risks related to banking default for establishing institutional framework of Pakistani Bank pertained to Agricultural Credit in a profound and strengthen manner.

**References**

- Al-Tamimi, H. (2002). Risk management practices: an empirical analysis of the UAE commercial banks. *Finance India*, 16(3), 1045-57.
- ANDREI I.U. BEJAN, Andrei I.U. Bejan, Largest Eigenvalues and sample covariance matrices. Tracy-Widom and Painleve II: Computational Aspects and realization in S-Plus with applications.
- Angelopoulos, P., & Mourdoukoutas, P. (2001). *Banking Risk Management in a Globalizing Economy*. Quorum Books, Westport, CT.
- Asma, A. R. (2016). *A Comparative Study of Risk Management Practices between Islamic and Conventional Banks in Pakistan (ETHos)*, Cardiff Metropolitan University, London, UK.
- Bilal, A.R., Noraini, Bt A.T., & Mohd Noor Azli, A.K. (2013). Remodeling of risk Management in banking: evidence from the sub-continent and gulf. *The Journal of Risk Finance*, 14(5), 468-489.
- Blundell-Wignall, A. & Atkinson, P. (2010). Thinking beyond Basel III: necessary Solutions for capital and liquidity. *OECD Journal Financial Market Trends*, 2010,1-20.
- Burt, B., A. (2001). Definitions of risk. *Journal of dental education*, 65(10), 1007-1008.
- Burki, S. (2007). *Risk Management In Agricultural Finance (Research Report)*.
- Calem, P., & Rob, R. (1999). The impact of capital-based regulation on bank risk-taking. *Journal of Financial Intermediation*, 8(4), 317-352.
- Carey, A. (2001). Effective risk management in financial institutions: the Turnbull approach. *Balance Sheet*, 9(3), 24-27.
- Drollette, S. A. (2009). *Managing Financial Risk in Agriculture*, (March).
- Economist Intelligence Unit (2010), *After the Storm: A New Era for Risk Management In Financial Services*, EIU, available at: [www.sas.com/resources/whitepaper/wp\\_9196.pdf](http://www.sas.com/resources/whitepaper/wp_9196.pdf)
- Fauziah, H., Tafri, R., Rahman, A., & Normah, O. (2011). Empirical evidence on the risk Management tools practiced in Islamic and conventional banks. *Qualitative Research in Financial Markets*, 3(2), 86 – 104.
- Financial Times (2012). Fitch attempts to tally the cost of Basel III. *Financial Times*, available at: <http://ftalphaville.ft.com/blog/2012/05/17/1003371/fitch-attempts-totally-the-cost-ofbasel-iii/> (accessed May 25, 2012).
- Fissha, J. A. a. A. (2009). *Managing risk in financing agriculture*. Paper presented at the *Managing Risk In Financing Agriculture*, Johannesburg, South Africa.
- Finance (2016), Ministry of Finance: Govt. of Pakistan available at, [www.finance.gov.pk](http://www.finance.gov.pk)
- Hakim, S., & Neaime, S. (2005). Profitability and Risk Management in Banking: A Comparative Analysis of Egypt and Lebanon. *Money and Finance in the Middle East: Missed Opportunities or Future Prospects*, 6, 117-131.
- Hardaker, J. B. (Ed.). (2004). *Coping with risk in agriculture*. Cabi.

- Hussein, A., Hassan, Al-Tamimi., Faris, M., Al-Mazrooei. (2007). Banks' risk management: a comparison study of UAE national and foreign banks. *The Journal of Risk Finance*, 8(4), 394 -409.
- Hussein, A., Hassan, Al-Tamimi. (2008). Implementing Basel II: an investigation of the UAE banks' Basel II preparations. *Journal of Financial Regulation and Compliance*, 16(2), 173 – 187.
- [http://www.sussex.ac.uk/its/pdfs/SPSS\\_Missing\\_Values\\_22.pdf](http://www.sussex.ac.uk/its/pdfs/SPSS_Missing_Values_22.pdf)
- [http://www.finance.gov.pk/survey/chapters\\_17/Pakistan\\_ES\\_2016\\_17\\_pdf.pdf](http://www.finance.gov.pk/survey/chapters_17/Pakistan_ES_2016_17_pdf.pdf)
- <http://www.pbs.gov.pk/content/agriculture-statistics>
- <https://www.linkedin.com/pulse/punjab-provincial-cooperative-bank-history-itself-aamir-khan/>
- <http://www.sbp.org.pk/SME/PDF/DFG/2016/DFR-June-2016.pdf>
- [http://www.pbs.gov.pk/sites/default/files/agriculture\\_statistics/publications/Agri\\_cultural\\_Statistics\\_of\\_Pakistan\\_201011/tables/Table105.pdf](http://www.pbs.gov.pk/sites/default/files/agriculture_statistics/publications/Agri_cultural_Statistics_of_Pakistan_201011/tables/Table105.pdf)
- [http://www.pbs.gov.pk/sites/default/files/agriculture\\_statistics/publications/Agri\\_cultural\\_Statistics\\_of\\_Pakistan\\_201011/tables/Table100.pdf](http://www.pbs.gov.pk/sites/default/files/agriculture_statistics/publications/Agri_cultural_Statistics_of_Pakistan_201011/tables/Table100.pdf)
- <http://www.statisticshowto.com/kaiser-meyer-olkin/>
- Jessop, R., & Harms, J. (2012). Creating Access to Agricultural Finance. *Creating Access to Agricultural Finance, International Journal of African and Asian Studies- An Open Access International Journal*, 5 2014.
- Khambata, D., & Bagdi, R.R. (2003). Off-balance-sheet credit risk of the top 20 Japanese banks. *Journal of International Banking Regulation*, 5(1), 57-71.
- Meor, Ayub. (2006). Risk management in the banking environment: a rating agency perspective. Paper presented at the Seminar on Risk Management in Islamic Financial Services, Marriot Hotel, K. Lumpur, April 25-26.
- Nair, A. (2009). *Financing Agriculture: Risks and Risk Management Strategies*, Johannesburg, South Africa.
- Naveed, A., & Kashif, Ur. R. (2013). Risk Management Practices and attitude of Pakistan Islamic Banking System employees. *African Journal of Business Management*.
- Nazir, S. M., & Daniel, A. (2012). Risk Management Practices: A Comparison of Conventional and Islamic Banks in Pakistan. *American Journal of Scientific Research*.
- Ngathou, I. N., Bukenya, J. O., & Chembezi, D. M. (2006). Managing agricultural risk: examining information sources preferred by limited resource farmers. *Journal of extension*, 44(6).
- Niinimaki, J., & JEcon. (2004). The Effects of Competition of Banks' Risk Taking. *Journal of Economics* March 2004, 81(3), 199-222.
- Oldfield, G.S., & Santomero, A.M. (1997). Risk management in financial institutions. *Sloan Management Review*, 39(1), 33-46.
- Oldfield, G. S., & Santomero, A. M. (1997). The place of risk management in financial Institutions. *Center for Financial Institutions Working Papers*.

- Paul, E., & Marius, H. (2011). Practices And Issues In Operational Risk Modeling Under BASEL II. *Lithuanian Mathematical Journal*, 51(2), 180–193
- PPCBL (2017), Punjab Provincial Cooperative Bank Limited, available at [www.ppcbl.com.pk](http://www.ppcbl.com.pk)
- PBS (2017), Pakistan Bureaus of Statistics, available at [www.pbs.gov.pk](http://www.pbs.gov.pk)
- Rosman, R. (2009). Risk management practices and risk management processes of Islamic banks: a proposed framework. *International Review of Business Research Papers*, 5(1), 242-54.
- Salas, V., & Saurina, J. (2002). Credit risk in two institutional regimes: Spanish commercial and savings banks. *The Journal of Financial Services Research*, 22(3), 203-16.
- Sania, K., & Shehla, A. (2012). Risk management practices in Islamic banks of Pakistan. *The Journal of Risk Finance*, 13(2), 148 – 159.
- SBP (2012-17), State Bank of Pakistan, available at [www.sbp.org.pk](http://www.sbp.org.pk)
- Shafiq, A., & Nasr, M. (2010). Risk Management Practices Followed by the Commercial Banks in Pakistan. *International Review of Business Research Papers*, 6(2), 308-325.
- Tahir, H., & Madiha, L. (2014). Credit Risk Management Practices Used by Banks in Agricultural Finance: A Case Study of Pakistan. *International Journal of African and Asian Studies*.
- Tanninen, M. (2013). Determinants of credit risk in secured loans—Evidence from the auto loan industry.
- Wetmore, J.L. (2004). Panel data, liquidity risk, and increasing loans-to-deposits ratio of large commercial bank holding companies. *American Business Review*, 22(2), 99-107.