

A comparative study of Islamic and conventional banks' risk management practices: empirical evidence from Pakistan

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Abstract While conventional bank risk management practices are well documented in the literature, there is limited research devoted at comparing the risk management practices of Islamic and conventional banks and how the recent financial crisis affected the approach taken in each banking model to manage the risks. In this paper, we use self-administered questionnaire to collect data from 150 bank senior managers and risk specialists from Pakistani conventional and Islamic banks to identify the main contributing factors to their risk management practices after the 2007–2008 financial crisis. The study results reveal that risk identification, risk assessment and analysis, credit risk analysis and risk governance are the most efficient and influential variables in explaining the risk management practices of Islamic banks, while understanding risk management, credit risk analysis and risk governance are the most significant and contributing variables in the risk management practices of conventional banks. Differences are also observed between Islamic and conventional banks in their liquidity risk analysis and risk governance.

The results presented in this study are likely to benefit bank managers, investors, regulators and policymakers as they will serve them as guide when developing, reformulating and overseeing the bank(s) existing risk management practices.

Keywords Islamic banks · Conventional banks · Risk management practices · Liquidity risk analysis · Risk governance · Pakistan

Introduction

For many years, consensus existed between academics, practitioners and regulators that effective risk management is pivotal to the success of modern banks, conventional or Islamic (see [1, 19, 30, 39, 48, 54]). This has made developing a comprehensive approach in dealing with different risk exposures in banks a necessity [Akkizidis and Khandelwal 2007, 51]. Such view has been fully endorsed by the Basel Committee on Banking Supervision which introduced a number of accords (Basel I, Basel II and Basel III) to support risk management in banks worldwide.

Bank risk management received further attention after the recent financial crisis as many scholars held the view that the failure of many financial institutions during this crisis was due to inadequate risk management practices in banks [27, 29, 49]. Research also shows that prior to the financial crisis the interdependence between banking risks and bank governance structure was inadequate [2]. Policy documentations by the Basel Committee on Banking Supervision and Financial Services Authority, for example, outlined the need to set an effective governance structure alongside an inclusive risk management framework [11]. Using structured questionnaire, this study captures all

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aspects of bank risk management practices including those emerging after the financial crisis, such as governance. This enables us to identify areas that directly contribute to weak risk management practices in the banks surveyed.

The research also contributes to our understanding of risk management practices in Islamic banks, which remains under investigated as most academic research focuses on conventional banks (i.e. [18, 47, 52]). Published financial data have shown that Islamic banks were more resilient to the recent financial crisis as demonstrated by the steady growth in their asset size and number of providers [4]. By the end of 2015, the total assets of Islamic banks reached USD2.5 trillion with 375 Islamic financial institutions operating worldwide (World Islamic Banking 2015). In Pakistan, which is the subject of this research investigation, the asset base of Islamic banks is estimated at USD9.6 billion in 2014, which constitute more than 10% of the nation overall banking assets [57, 58].

The study results reveal that risk identification, risk assessment and analysis, credit risk analysis and risk governance are the most contributing factors to the risk management practices of Islamic banks, whereas understanding risk management, credit risk analysis and risk governance are the most significant and contributing variables in conventional banks' risk management practices. Islamic banks are found to be weak in liquidity risk analysis, risk monitoring and reporting and their overall understanding of the risk management practices. In contrast, risk assessment and analysis is the most inadequate area in conventional banks.

The remainder of the article is organised as follows. "Literature review" section outlines the main developments in banking risk management practices as informed by the existing literature. The conceptual framework is then discussed in "Conceptual framework" section. The research methodology and data are explained in the subsequent section. In "Data analysis and discussion" section, we present and discuss the study findings. The final section concludes the paper and provides directions for future research.

Literature review

Risk management is a process that entails different fundamentals and steps. Bhattacharya [14, p. 22] states that the process of risk management should cover at least seven areas: (1) risk identification; (2) risk measurement; (3) risk analysis and evaluation; (4) risk monitoring; (5) risk control; (6) risk mitigation; and (7) risk avoidance. While Institute of Bankers Malaysia [31] report suggests that the risk management process should include four steps: risk identification, risk assessment and measurement, risk control and mitigation and risk monitoring.

Basel Committee on Banking Supervision [13, p. 1] asserts in its "principles for enhancing corporate governance" that an independent risk management body needs to be in place to ensure a proper risk management framework is implemented across the organisation. The body should also take the responsibility of ensuring that the risk profile is within the set limits and approved by the board of directors. The line of responsibility entails risk identification, risk measurement, monitoring of risks, setting recommendations and strategies to mitigate each type of risk and reporting on risk exposure to senior management.

Questionnaire is among the widely used method to investigate banks' risk management practices. Al-Tamimi [9], Al-Tamimi and Al-Mazrooei [8], Shafiq and Nasr [53], Hassan [28], Khalid and Amjad [39], and Hussain and Al-Ajmi [30] used questionnaire to investigate risk management practices of banks operating in UAE, Brunei Darussalam, Bahrain and Pakistan. The results of Al-Tamimi and Al-Mazrooei [8] revealed that UAE banks are efficient in identifying, assessing, analysing and monitoring risks but differences do exist between local and foreign banks in their capacity to assess, analyse and monitor the risks. Hassan [28] finds that risk management practices of Islamic banks in Brunei Darussalam are strongly aligned across risk identification, risk analysis and assessment. The results presented by Hussain and Al-Ajmi [30] indicate that banks operating in Bahrain are efficient in identifying, assessing, analysing and monitoring risks. However, Islamic and conventional banks do differ in the way they understand and manage risks, mainly because Islamic banks are required to comply with Sharia rules.

Applying both primary and secondary data, Shafiq and Nasr [53] investigated risk management practices of Pakistani commercial banks. They found monitoring of risk as the most influential variable in risk management practices of the commercial banks. However, when regression analysis is applied separately on each variable, understanding risk management, risk identification, risk assessment, credit risk analysis showed a significant and positive relationship with risk management practices alongside risk monitoring. The results obtained by Shafiq and Nasr also revealed differences between public sector commercial banks and private local banks in terms of understanding risk and risk monitoring. In a later study by Khalid and Amjad [39], they confirmed that risk monitoring, understanding risk and tools of risk management, and credit risk analysis are most influential variables in risk management practices of Islamic banks operating in Pakistan.

In an international study by Ahmad et al. [6], which included Pakistan, UAE and Bahrain, they found a number of differences in what is considered to be the most important factors underpinning the banking risk management practices in the three countries. In Bahrain, it is



revealed that understanding of risk management mechanisms, risk assessment and evaluation, identification of risk and credit risk analysis all have significant statistical relationship with banks' risk management practices. But the risk monitoring has exhibited a positive and insignificant relationship with banks' risk management practices. The results obtained for UAE show that understanding risk management tools, risk identification, risk assessment and analysis all have a positive and significant relationship with banks' risk management practices. Nevertheless, understanding methods of risk management are found to be the most influential variable for the UAE banks. The results of Pakistani banks revealed that having good grasp of risk management techniques, risk assessment and analysis, identification of risk, risk monitoring and credit risk analysis has significant statistical relationship with bank risk management practices.

The liquidity crisis of 2007–2008 has further intensified research carried out by international professional bodies on banking risk management practices. KPMG [40], for example, reports the results of a survey conducted by the Economist Intelligence Unit (EIU) in 2008 based on data collected from 500 senior managers who are directly involved in risk management from the leading banks around the world. The results presented in this report indicate weaknesses in risk governance, lack of expertise at the board and senior level, and weak communication and reporting lines between business units and functions of the major global banks.

Governance has also emerged as a main area of weakness in banking institutions in a number of academic studies. Sarens and Christopher [50], for example, find that the absence of solid corporate governance plan on risk management and internal control leads to less developed risk management methods and to weaker internal control. They also report that risk control, independence and ability of board members, compensation system for executives and the way strategy is defined, are the areas where the governance mechanism is weak and these factors collectively have contributed to the recent subprime crisis.

Likewise, a number of policy documents issued by national and international financial authorities have outlined the need to set-up a comprehensive risk management framework and to reconsider the current governance structure used by banks (i.e. [12, 22, 33]). The regulatory bodies also suggest keeping risk on highest level of the bank's agenda. Sabato [49] concurs with such view and recommends empowering the Risk Committee and chief risk office responsibility in the over sighting of bank risk exposures.

In this study, we have incorporated risk governance and liquidity risk analysis as additional two variables in the bank risk management model with aim to provide

empirical evidence on their relevance to the approach currently applied in banking risk management. We also provide in-depth analysis and detailed comparison of the risk management practices and procedures of Islamic and conventional banks that operated in Pakistan by the time of the survey in 2014.

Conceptual framework

Many studies published by well-known international bodies highlight the weak risk governance as the main contributing factor to the 2007–2008 financial crisis [23, 34, 40, 44, EIU 2009; SSG 2009]. This argument is further supported by group of scholars (see [2, 15, 27, 29, 49]). The consensus among the scholars is that poor governance is leading to lack of confidence of stakeholders in bank's ability to manage its asset and liabilities which has triggered the liquidity crisis of 2007. The crisis then served as a means in creating systematic risk which lead to the spread of the crisis across borders [27]. A study by Derwall and Verwijmeren [21] has also provided empirical evidence supporting the notion that good governance contributes directly to minor systematic risk (see also [7] on further analysis of the relationship between bank governance and systemic risk).

Liquidity risk is considered as another significant factor which directly contributed to the financial crisis. Jenkinson [37], for instance, stated that the crisis has highlighted clear weaknesses in the banks' liquidity risk management. This has undermined the financial stability of the banking industry and the economy as whole. Liquidity risk is also perceived as an important risk under Basel III principles (see [25]). The Basel III accord has introduced minimum leverage ratio and two liquidity standards for banks (liquidity cover and net stable funding ratios) to ensure that the liquidity risk of banks is adequately managed.

To test if the above views are correct in relation to risk governance and liquidity risk, this study extends the banking risk management practices model suggested by Al-Tamimi and Al-Mazrooei [8] and incorporated these two very important risk factors in the research model, which is then applied to conventional and Islamic banks operating in Pakistan at the time of the study survey.

Besides liquidity and governance risk, other researchers (i.e. [6, 8, 28, 30, 39, 48, 53]) have included understanding risk and risk management (URRM), risk identification (RI), risk assessment and analysis (RAA), risk monitoring and reporting (RMR), credit risk analysis (CRA) as the main determinants of bank risk management practice model. Therefore, we have included all these factors (URRM, RI, RAA, RMR and CRA) and added liquidity risk analysis (LRA), risk governance (RG) and bank type into the final



Table 1 Study data reliability

	No. of items	Cronbach's alpha	No. of variables	Cronbach's alpha
Overall bank	86	0.941	8	0.894
Islamic banking data	86	0.946	8	0.931
Conventional banking data	86	0.936	8	0.854

The statements used in the questionnaire were based on the 7-Likert scale and were coded as follows: Strongly Disagree = 1; Disagree = 2; Somewhat Disagree = 3; Undecided = 4; Somewhat Agree = 5; Agree = 6; and Strongly Agree = 7

research model. The full function of risk management practices (RMP) which we tested empirically in this study is as follows: $RMP = f(URRM, RI, RAA, RMR, CRA, LRA, RG, \text{bank type})$.

Data and research methodology

The study adopts a quantitative research approach using self-administered questionnaire. Applying questionnaire as a survey approach is considered most appropriate technique for obtaining primary data [16, 59]. It is also an economical way of collecting data from a potentially large number of respondents allowing for statistical analysis of the study results [17, 42]. This research methodology is in line with many studies conducted on risk management practices in emerging markets (see, for example, [8, 28, 30, 39, 53]).

The questionnaire was distributed to the selected banks' branch managers, senior credit managers, senior management (including bank vice president, financial controller, credit risk officer, group chief of commercial and retail banking, area credit risk manager, regional manager) and experts from the risk management department of the Islamic and conventional banks operating in the city of Lahore (Pakistan). These individuals were selected to complete the questionnaire as they were considered to be the ones who have the relevant knowledge on banks' risk management practices.

The data were collected from 12 conventional banks, 5 full-fledged Islamic banks and 7 conventional banks with Islamic windows. The sample size included 150 respondents comprising 75 respondents from each type banking category. Initially, 180 questionnaires were distributed to the banks' relevant employees, out of which 162 questionnaires were returned. In total, 12 questionnaires were eliminated because of missing data. The final response rate was 83.3%.

Previous literature on bank risk management practices (i.e. [8, 28]) and the study research objectives were fully observed in the preparation of the questionnaire. The items and statements included in the questionnaire have also been carefully selected. The final version of questionnaire consisted of 9 sections: (1) describing company's profile; (2)

understanding risk and risk management (URRM); (3) risk identification (RI); (4) risk assessment and analysis (RAA); (5) risk management practices (RMP); (6) risk monitoring and reporting (RMR); (7) credit risk analysis (CRA); (8) liquidity risk analysis (LRA); and (9) risk governance (RG).

Statistical measures including *R*-square and *F*-statistics were used to check the validity of the study data. The reliability of the data was verified by applying Cronbach's alpha to each variable. Cronbach's alpha helped to measure internal consistency of the results within a given scale. Data are considered reliable if coefficient value is equal or greater than 0.70 [20, 26, 45, 46]. Table 1 presents the reliability analysis of data based on type of bank, i.e. Islamic and conventional bank. As exhibited in the table, the overall data are reliable as Cronbach's alpha value is greater than 0.70.

The study data were analysed in twofold. First, the descriptive statistics are computed to estimate the differences in the characteristics of the two types of banks, Islamic and conventional banks, in terms of carrying out their risk management practices and process. Second, inferential statistics, including correlation matrix, regression analysis and Mann–Whitney *U* test, were used in examining the strength and direction of relationship of the independent and dependent variables built-in the study regression model. The Mann–Whitney *U* test was also applied to determine whether differences exist between conventional and Islamic banks in terms of their risk management practices and if these differences are significant or not. The inferential statistics enable researchers to make deductions and to draw conclusions from the study results [41]. In addition, Spearman's rho correlation is adopted to provide further check on the direction and strength of the relationship among the study variables.

Data analysis and discussion

This section provides an in-depth analysis of the study results. The analyses are presented based on the statements included in the study questionnaire. The first area examined is related to understanding of risk and bank risk management. As exhibited in Table 2, the mean response to the nine statements covering this area is 5.8504 for



Table 2 Bank managers response to understanding risk and risk management statements

Statements	Islamic banks		Conventional banks	
	Mean	SD	Mean	SD
1 There is a common understanding of risk management across the bank	5.7067	0.6733	5.6533	0.7621
2 Risk management responsibility is clearly set out and understood throughout the bank	5.7067	0.7492	5.8667	0.7593
3 Risk management policy is communicated down the line and well understood by all bank-concerned parties	5.7600	0.6943	5.7467	0.8557
4 Accountability for risk management is clearly set out and understood throughout the bank	5.8667	0.8274	5.8400	1.0531
5 Risk management is important for the success and performance of the bank	6.2933	0.53960	6.3200	0.5963
6 Application of the most sophisticated techniques in risk management is pivotal in the bank	5.7467	0.63869	5.6533	0.9514
7 The objective of your bank is to expand the applications of the use of advanced risk management technique	5.0267	1.5419	5.4533	1.1185
8 It is significant for your bank to emphasise on continuous review and evaluation of the techniques used in risk management	6.2800	0.7270	6.1467	0.7831
9 The bank applies risk management techniques with the aim to reduce its costs or expected losses	6.1333	0.7039	5.9733	1.0523
Average	5.8356		5.8504	

conventional banks and 5.8356 for Islamic banks. The overall average does not, however, show any significant differences in the responses of Islamic and conventional banks. The highest mean is given to statement 5 (risk management is important for the success and performance of the bank) in which Islamic banks had a score of 6.2933 with a SD of 0.5396 and conventional banks had a result of 6.3200 with a SD of 0.5963. The lowest mean is given to statement 7 (the objective of your bank is to expand the applications of the advanced risk management technique). The average score for Islamic banks and conventional banks for this statement is 5.0267 and 5.4533, respectively. This result supports the notion that conventional banks are more likely to expand their existing risk management techniques than Islamic banks.

The responses to statements on risk identification indicate that risk management line of responsibility is better understood by conventional banks' staff than those of Islamic banks. This can be attributed to Islamic banks applying more complicated risk techniques as they need to deal with different types of risks inherited in their financial products, whereas responses to statement 9 reveal that Islamic banks are better in applying their risk management techniques to reduce costs and expected losses. This is mainly attributed to the size of Islamic banks' portfolio which is smaller compared to conventional banks. The results obtained for statement 8 are complementary to those related to statement 9 as they indicate that Islamic banks place more emphasis on continuous review and evaluation of risk management techniques which ultimately help them cut their losses.

Table 3 exhibits the mean and SD of Islamic and conventional banks responses to the six statements on risk identification. The overall mean value of conventional banks

attained in this area (5.4867) is higher than the one attained for Islamic banks (5.2489). The highest mean in the case of Islamic banks is given to statement 2 with score of 6.1867, while conventional banks had their highest mean under statement 1 with score of 6.3333. The lowest response is given to statement 3 in which Islamic banks had a mean value of 3.4667 compared to 3.5733 in conventional banks. The low score attained by Islamic banks in this area is due to being exposed to *Sharia* compliance-related risks which are hard to identify or measure by bank managers.

Table 4 shows the mean and SD of responses to statements on risk assessment and analysis. The overall mean value of the responses to the seven statements is higher in Islamic banks (5.9143) compared to conventional banks (5.8362). Islamic banks highest mean value was given to statement 3 (6.2533), whereas the highest mean value (6.1200) in conventional banks was given to statement 4. Results of statements 1, 2, 3 and 5 show higher mean value for Islamic bank compared to conventional banks, whereas the results of statements 4 and 7 exhibit higher mean value for conventional banks than Islamic banks. These results are mainly attributed to the variation in the strategic direction of the two banking models, conventional banks are highly emphasising on wealth creation, while Islamic banks focus more on ensuring their activities' permissibility and if they are deemed acceptable according to the *Sharia* law.

Table 5 presents the responses' mean and SD to the fourteen statements on "risk management practices". The overall mean attained for conventional banks on these statements (5.9964) is higher than the one attained for Islamic banks (5.7493). This indicates that conventional banks, in general, have better risk management practices than Islamic banks. Considering each statement separately



Table 3 Responses to statements on risk identification

Statements	Islamic banks		Conventional banks	
	Mean	SD	Mean	SD
1 The bank conducts a comprehensive and systematic identification of its risks in line with the bank's overall aims and objectives	6.0400	0.7959	6.3333	0.6224
2 Risk identification is a continuous process in the bank at transactional and portfolio levels	6.1867	0.8002	6.3067	0.6570
3 The bank finds it difficult to identify and prioritise its main risks	3.4667	1.5538	3.5733	1.9602
4 Changes in risk are recognised and identified with the bank's rules and responsibilities	5.4667	0.9054	5.8000	1.0654
5 Your bank is aware of the strengths and weaknesses of the risk management systems of the other banks	4.3067	1.4884	4.8933	1.5384
6 Your bank has developed and applied procedures for the systematic identification of investment opportunities	6.0267	0.7706	6.0133	0.8620
Average	5.2489		5.4867	

Table 4 Responses to statements on risk assessment and analysis

Statements	Islamic banks		Conventional banks	
	Mean	SD	Mean	SD
1 Your bank assesses the likelihood of risk occurrence	6.0800	0.5872	5.7200	1.1337
2 Your bank assesses risks by using qualitative analysis methods (e.g. high, moderate, and low)	5.3600	1.2262	5.2400	1.4781
3 Your bank assesses risk by using quantitative analysis method	6.2533	0.9167	6.0133	1.2246
4 Your bank analyses and evaluates the opportunities that it has to achieve objectives	5.9867	0.7442	6.1200	0.6358
5 Your bank's response to analyse risk includes an assessment of the costs and benefits of each relevant risk	5.8800	0.6567	5.8400	0.7359
6 Your bank's response to analyse risk includes prioritising of risk and selecting those that need an application of active management	6.0400	0.6665	6.0400	0.6459
7 Your bank's response to analyse risk includes prioritising risk treatments where there are resource constraints on risk treatment implementation	5.8000	0.6367	5.8800	0.6142
Average	5.9143		5.8362	

Islamic banks had the highest mean score value for statement 10 (6.3867), whereas the highest mean value for conventional banks is given to statement 4 (6.3867). These results demonstrate clear variation in the way each type of banks prioritise their objectives in terms of managing their risks; performance is the main goal for conventional banks, while flexibility is the paramount objective for Islamic banks.

The lowest mean value is given to statement 7 in which Islamic banks had score of 4.7333 and conventional banks result was 5.2800. The result of Islamic bank's mean responses to statement 6 is also low which indicate that Islamic banks are not efficient enough in providing risk management training to its staff as well as emphasising on recruiting talented risk specialists. The mean responses to statements 11, 12 and 13 show that both groups of banks give full consideration to Basel accord on how to make risk management efficient in their day-to-day lending and

investment activities. Results of statement 1 also show that respondents of both banking groups agree that their risk management policy clearly defines the roles and responsibilities of the different bank functions. Likewise, respondents from the two banking models have close views on the clarity of their risk management procedures and the way they communicate to the bank staff. Finally, the results obtained for statement 14 indicate that overall conventional banks staff are more satisfied with their risk management practices compared to Islamic banks.

Table 6 exhibits the mean responses to bank risk monitoring and reporting nine statements. The results reveal minimal differences between the two banking categories in this area with mean value of 5.9482 for Islamic banks and 5.9630 for conventional banks. The highest mean value (6.1067) in Islamic banks is attained for statements 1 and 8, whereas conventional highest mean value (6.1067) is given



Table 5 Responses to statements on bank risk management practices

Statement number		Islamic banks		Conventional banks	
		Mean	SD	Mean	SD
1	The bank risk management policy clearly defines the roles and responsibilities carried out across its various functions	6.0000	0.7352	6.1733	0.6012
2	One of the objectives of the bank is having an effective risk management policy	5.2533	1.3161	5.9600	0.7248
3	The bank is highly effective in continuously reviewing its risk management strategies and performance	5.9467	0.9137	6.1333	0.6003
4	The executive management of the bank regularly reviews the bank's performance in managing its business risk	6.2000	0.5927	6.3867	0.5903
5	The bank risk management procedures and processes are documented and provide clear guidance to staff about managing risks	5.4533	1.0817	5.7867	0.9485
6	The bank policy encourages training programmes in the risk management-related areas	4.9333	1.5275	5.8933	0.7635
7	The bank emphasises on the recruitment of highly qualified people in risk management	4.7333	1.3288	5.2800	1.0725
8	The bank risk management policy is effectively communicated across the bank	5.6800	0.7562	5.6667	0.9909
9	The bank has a comprehensive risk management process which entails identifying, evaluating, measuring, monitoring, reporting and controlling all its risks on a timely manner	6.2000	0.7352	6.3200	0.6186
10	The bank risk management strategy is flexible enough to deal swiftly and adequately with all risks	5.3200	1.2644	5.4400	1.0557
11	Implementation of Basel II and Basel III Accord has improved the efficiency and risk management practices in the bank	6.1067	0.9237	6.2000	0.5927
12	The bank has successfully implemented the risk management principles of Basel Committee and guidelines provided by the central bank in this area	6.0933	0.5243	6.1600	0.5462
13	The bank assesses the adequacy of its capital and liquidity on the basis of its risk profile, market and macro-economic conditions	6.1733	0.6232	6.2933	0.5875
14	The level of risk management practices of the bank is considered to be excellent	5.7600	0.9703	5.9733	0.6969
	Average	5.7493		5.9964	

Table 6 Responses to statements on risk monitoring and reporting

Statements	Islamic banks		Conventional banks		
	Mean	SD	Mean	SD	
1	Monitoring the effectiveness of risk management is an integral part of routine management reporting in the bank	6.1067	0.5345	5.8800	0.6358
2	Level of control by the bank is appropriate for the risks that it faces	5.8133	0.8806	5.9467	0.6127
3	Reporting and communication processes within the bank support the effective management of risks	5.9467	0.6757	5.9467	0.6344
4	The bank continuously evaluates the effectiveness of its existing controls and risk management responses	5.8400	0.7173	5.8533	0.6301
5	The bank response to risk includes action plans in implementing decisions about identified risk	5.8400	0.6786	5.9733	0.5688
6	Bank managers continuously monitor the implementation of risk management policies and make necessary adjustments	5.9600	0.7959	6.1067	0.6056
7	The bank managers regularly monitor the effectiveness of the risk management policies and procedures	5.9600	0.6865	6.0400	0.6459
8	The bank organisational structure enables monitoring and control over the business risks taken	6.1067	0.7635	6.0933	0.6189
9	The Chief Risk Officer takes the full responsibility over risk monitoring in the bank	5.9600	0.9363	5.8267	1.0574
	Average	5.9482		5.9630	

to statement 6. The lowest mean value is given to statement 2 for Islamic banks (5.8133), while conventional banks' lowest mean (5.8267) is given to statement 9. These results indicate that more emphasis needs to be placed on risk control in the case of Islamic banks, while increasing the level of accountability for the Chief Risk Officer should be a priority in the case of conventional banks.

Table 7 shows the mean responses of the 10 statements on credit risk analysis. The results indicate that the overall mean value of conventional banks (6.3520) is slightly higher than that of Islamic banks (6.2987). The highest mean value for Islamic banks (6.5067) is attained under statement 2 which indicates that they place high emphasise on evaluating client's character, financial condition and ability to back the loan with good quality assets. On the other hand, the highest mean value for conventional bank (6.5067) is given to statement 4 pointing to the importance of risk management policy in dictating the bank overall credit policy.

The results also show that bank managers pay high attention to credit risk analysis as the mean value in this area is greater or closer to 6 in most statements. This can be explained by the size of the loan portfolio in Pakistani-based banks where securities are less utilised in income-generating activities. Therefore, managing credit risk is considered to be pivotal in preventing or reducing possible bank losses. As also evidenced in the results obtained for statements 2, 5 and 9, both banking groups are cautious of their borrowers' creditworthiness at both the ex ante and ex post stages of the lending process. Such approach is considered to enable banks to develop better credit risk profile for their clients, to identify problem loans and speed their recovery.

Table 8 exhibits the mean responses to 11 statements on liquidity risk analysis. The results indicate that the overall mean value of Islamic banks (6.0424) is higher than conventional banks (5.9455). This finding supports the view that Islamic banks are more cautious about liquidity risk than their conventional counterparts. Previous research by Islam and Chowdhury [35], Ika and Abdullah [32], Jaffar and Manarvi [36] and Usman and Khan [61] presented similar findings. The lack of investment opportunities for Islamic banks is perceived as the main factor preventing Islamic banks from using their liquidity sensibly as well as from diversifying their portfolio.

In both banking groups, the highest mean value is given to statement 8. This result indicates that the asset and liability management committee is at the forefront in determining the bank policies on liquidity risk and in ensuring that the bank evaluation in this area is properly executed, whereas the lowest mean value is given to statement 11 as bank managers seem to give less attention to the use of Value at Risk (VaR) as a method to measure market risk. This finding is quite surprising taking into account the importance of market risk as one of the main risk pillars of Basel III Accord, and banks are supposed to implement sophisticated techniques in dealing with this type of risk.

Most responses on liquidity risk analysis yielded a mean value of 6 which indicates that respondents consider the principles of liquidity risk analysis as imperative for an effective risk management in the bank. Senior managers in both banking groups express full due diligence to factors affecting liquidity risk and devise strategy that enable the

Table 7 Responses to statements on credit risk analysis

Statements	Islamic banks		Conventional banks	
	Mean	SD	Mean	SD
1 The bank undertakes credit worthiness analysis before granting loans	6.2667	0.5773	6.3067	0.6570
2 The bank conducts thorough analysis of the client's characters, capacity, collateral, capital and conditions before granting loans	6.5067	0.5294	6.4667	0.6224
3 The bank classifies borrowers according to their riskiness	5.9733	0.6969	6.4400	0.5982
4 The bank credit policy commensurate with its overall risk management policy	6.2000	0.5927	6.5067	0.6232
5 The bank obtains information about the borrowers from credit information bureau	6.2800	0.6053	5.9600	0.7059
6 The bank sets credit limits by type of borrowers, economic sectors and geographical locations to avoid concentration of credit	6.3867	0.5669	6.4000	0.8542
7 Credit risk is monitored on a regular basis and reported to bank senior management.	6.4800	0.5291	6.3200	0.6401
8 The bank has a credit risk management committee to oversee its different credit risk exposures	6.2800	1.4571	6.4400	0.6826
9 The credit administration of the bank ensures proper approval, completeness of documents, receipt of collateral and approval of exceptions before credit disbursement	6.3200	0.5732	6.4400	0.5751
10 The bank board periodically reviews the credit risk strategy and credit policy.	6.2933	0.6529	6.2400	0.5890
Average	6.2987		6.3520	



Table 8 Responses to statements on liquidity risk analysis

	Statements	Islamic banks		Conventional banks	
		Mean	SD	Mean	SD
1	Liquidity is a key determinant of the bank financial soundness	5.9200	0.6098	6.1333	0.7039
2	The bank "Management Board" defines liquidity risk strategy, and its tolerance for liquidity risk based on the recommendation made by the Treasury and Risk Committee	6.1467	0.6716	5.9067	1.0023
3	Bank managers give due consideration to external and internal factors posing liquidity risk while formulating the liquidity policy	6.1200	0.6770	6.3200	0.7005
4	The current bank's policy clearly defines the bank liquidity strategy (short and long term)	6.2667	0.6844	6.1867	0.6301
5	The bank liquidity policy is flexible enough to deal with the unusual liquidity pressures	5.6533	0.9078	5.6533	0.8300
6	Board of Directors and Senior Managers regularly review the liquidity policy of the bank	6.0667	0.7039	6.2000	0.6778
7	Asset Liability Management Committee comprises of senior managers from each key area of the bank operations	6.2267	0.6692	6.2800	0.6273
8	Asset Liability Management Committee is responsible for reviewing and recommending liquidity risk policies in the bank	6.2933	0.6930	6.4400	0.5982
9	The bank has always identified the tools to meet its liquidity requirements	6.1467	0.5857	6.2400	0.6543
10	Stress Testing and Scenario Analysis plays a central role in the liquidity risk management framework of the bank	6.0400	0.9647	5.2267	1.4101
11	The bank Stress Testing is based on sophisticated risk management techniques including Value at Risk (VaR) and option-based models	5.5867	1.0792	4.8133	1.5218
	Average	6.0424		5.9455	

bank to efficiently manage its cash resources and meet both its predictable and unpredictable liquidity demands.

Table 9 shows the mean responses based on 18 statements on bank risk governance. The results indicate that the mean value attained by conventional banks in this area (5.8744) is slightly higher than the one achieved by Islamic banks (5.6983). This is attributed to the effectiveness of conventional banks' board of directors and Risk Committees in exercising their role in managing and monitoring bank risks (see statements 1–3) as well as having better information disclosure that aid directors in their day-to-day decision-making (see statement 18a). The only area in which Islamic banks had score far higher than conventional banks is in internal auditors' independence and their accountability to the board of directors. The small size of Islamic banks is the likely reason why it is easier for the board of directors to monitor the duties carried out by the bank internal auditors.

The results attained for statements 8 and 9 indicate that the Chief Risk Officer is having a weak role in overseeing banking risks and reporting to the Risk Committee in both conventional and Islamic banks. This finding is in line with Sabato [49] concluding remarks that one of the contributing factors to the recent financial crisis is the limited role played by Chief Risk Officers in properly administering banking risks.

Islamic banks' respondents gave low score to statement 2 which point to less knowledge by board of directors of the banking industry and its risks. This is an alarming result particularly as found by Hashagen et al. [27] and Ard and Berg [10] that lack of relevant banking knowledge has directly contributed to the recent credit crisis in banks. Another area in which Islamic banks seem to be struggling is on the remuneration disclosure of their board and senior managers (see statement 18b). The lack of disclosure is likely to result in less confidence of other key stakeholders in the operations and performance of Islamic banks.

Table 10 shows the study model regression results of Islamic banks. The model is estimated in order to investigate the effect of all independent variables (URRM, RI, RAA, RMR, CRA, LRA and RG) on RMP of Islamic banks. As indicated by the value obtained for R-square, 75.9% of the variation in the dependent variable is due to the explanatory variables (i.e. URRM, RI, RAA, RMR, CRA, LRA and RG) and the remaining 24.1% variation is due to other factors. F value is also significant at 1% and hence we can say that overall model is a good fit.

The beta values indicate that RAA, CRA and RG are the main independent variables contributing to RMP. The results also reveal that RI, RAA, CRA and RG have a positive relationship with RMP. Hence, an increase in these explanatory variables results in better RMP. In addition,



Table 9 Responses to statements on risk governance

	Statements	Islamic banks		Conventional banks	
		Mean	SD	Mean	SD
1	The board of directors approves and oversees the bank risk management framework, policies and processes	5.8267	1.0183	6.0800	0.6928
2	The bank board of directors has relevant knowledge of the banking industry and risk management	5.2000	1.2080	5.6800	0.9885
3	The board of director formulates and defines the mandate and responsibilities of board-level committees (Risk Committee; Audit committee) which deal with risk governance	5.8000	0.5694	6.0933	0.7008
4	Risk management committee members of the bank are independent and qualified	6.2933	0.8182	6.2533	0.6386
5	The bank risk management committee provides sufficient policies and guidelines on how to manage different risks	6.1467	0.6716	6.2133	0.6836
6	The Risk Committee reviews and recommends risk strategy to board of directors and oversees the implementation of risk management framework	6.0533	0.6954	6.1467	0.5376
7	The Chief Executive Officer develops and recommends the overall business strategy, risk strategy, risk appetite statement and risk tolerance	5.5867	1.2954	5.7333	0.7228
8	The Chief Risk Officer oversees the risk management functions of the bank	4.3867	1.8808	4.9333	1.7578
9	The Chief Risk Officer develops, monitors and reports on the bank risk metrics	4.0400	1.9413	4.8933	1.7977
10	The internal auditors ensure that risk management processes are in compliance with the bank policies	5.8933	0.6487	5.9200	0.6928
11	The internal auditors evaluate the effectiveness and efficiency of the bank risk management processes	5.9467	0.7514	5.8933	0.7635
12	The internal auditors are independent and directly accountable to the board of directors	6.4000	0.9004	6.2667	0.5773
13	The central bank has an effective role in the supervision of the bank risk management process	5.7867	0.9766	5.9733	0.7347
14	The bank board and senior managers review internal audit reports, prudential reports and external experts report as a part of the bank risk governance framework	6.0400	0.7248	6.2133	0.6429
15	The bank compensation policies and practices are consistent with its corporate culture, long-term objectives, strategy and control environment	5.8267	0.7046	5.8267	0.9497
16	The bank avoids compensation policies that create incentives for excessive risk taking	5.4667	1.1310	5.6000	1.0266
17	The bank is governed in a transparent manner	5.9867	0.6876	5.9200	1.0102
18	The bank discloses information on:				
	(a) Financial and operating results	6.0933	1.1528	6.4267	0.5966
	(b) Remuneration of board of directors and senior managers	5.4933	1.2010	5.5467	1.4265
	Average	5.6983		5.8744	

Table 10 Regression results of Islamic banks

	Constant	URRM	RI	RAA	RMR	CRA	LRA	RG	
B	-1.017	-0.274	0.182	0.615	-0.047	0.510	-0.078	0.231	$R^2 = 0.759$
SE	0.858	0.201	0.093	0.155	0.170	0.110	0.195	0.136	$F = 30.151$
<i>t</i> value	-1.185	-1.363	1.948	3.978	-0.276	4.635	-0.401	1.689	$Sig = 0.000$
Sig.	0.240	0.177	0.056***	0.000*	0.784	0.000*	0.690	0.096***	

* Significant at 1%; ** significant at 5%; *** significant at 10%

the *t* value results show that RAA, CRA, RI are statistically significant at 1%, while RG is statistically significant at 10%.

Table 11 exhibits the study model regression results of conventional banks. The value of R^2 indicates that 65.2% of the variation in RMP is due to URRM, RI, RAA, RMR,



Table 11 Regression results of conventional banks

	Constant	URRM	RI	RAA	RMR	CRA	LRA	RG	
B	0.486	0.260	0.076	-0.081	0.123	0.176	0.121	0.252	R ² = 0.652
SE	0.563	0.104	0.074	0.077	0.174	0.103	0.098	0.114	F = 17.902
<i>t</i> value	0.862	2.506	1.030	-1.060	0.705	1.714	1.236	2.203	Sig. = 0.000
Sig	0.392	0.015*	0.307	0.293	0.483	0.091**	0.221	0.031*	

* Significant at 5%; ** significant at 10%

CRA, LRA and RG and remaining 34.8% variation is due to other factors. The *F*-statistics is significant at 1%, and therefore the model under study is considered to be a good fit. The beta values show that URRM, RI, RMR, CRA, LRA and RG all have a positive relationship with RMP. RAA is the only indicator with negative relationship with RMP. This is unlike what is observed in Islamic banks in which URRM, RMR and LRA have negative correlation with RMP. These findings point to an overall better risk management practices in conventional banks than Islamic banks. Conventional banks' weakest risk management area is in risk assessment and analysis. This can be explained by the size of conventional banks portfolio which is larger than Islamic banks and therefore makes the evaluation of their risk portfolio more complicated.

Study results limitations

The section discusses the main limitations of the study results and how they may differ under other national or international economic settings. During the time frame of the interviews (2013–2014), Pakistan economy was characterised by lack of foreign direct investment, decline in exports, high level of inflation, sharp decline in the value of home currency and poor business climate. This had negative consequences on the growth and profitability of the banking sector and its overall risk profile. Therefore, the elements considered as significant in the bank risk identification, assessment, monitoring and reporting are likely to be influenced by bank managers' perceptions of the effect of each economic factor on the national banking industry. In other countries exhibiting better economic environment, bank managers may give different rank to the statements covered in this study on bank risk management.

The risk management of the banks covered in this study is also affected by the rules set by the national central bank on capital requirements and lending to the Pakistan government, which was running with huge amount of fiscal deficit. During the time frame of the study survey, the capital adequacy requirement for the banks has tightened up with banks expected to have 10% capital to risk-weighted assets ratio. The banks involved in financing the government deficit had high loan-to-asset ratio. This has

resulted in weak financial position of a number of banks, such as the National Bank of Pakistan, which led to an increase in their risk exposure and ultimately influenced the approach and priorities these banks have considered in managing the risks. In countries with different banking conditions, banks, conventional or Islamic, may follow other methods and strategies to manage their risks.

The banking regulatory model adopted in a country is another important factor that determines the significance of each bank risk management area included in the study survey. In Pakistan, the central bank has a devoted Islamic banking division or department dealing with Islamic banks [60]. In Malaysia, in contrast, there are specific regulations on Islamic financial institutions although Islamic banks coexist with conventional banks. In countries such as Saudi Arabia, United Arab Emirates and the UK, a single regulatory framework is applied to all banks regardless if they are conventional or Islamic [55]. In other countries like Iran and Sudan, the whole banking system is considered to be Islamic. This has direct implications on instruments that Islamic banks can use to manage certain risks such as liquidity and governance risk. Abdullah et al. [3] notes that applying the same regulatory framework on conventional and Islamic banks results in the negligence of the type and nature of risks facing each banking model which are imperative in determining the right tools to use in order to ensure an effective risk management in the bank. On the whole, the Malaysian model is found to result in less liquidity constraints for Islamic banks as the central bank offers them what is perceived to be a more flexible non-interest (*Sharia* compliant) form of lending (see for instance [62]).

The bank risk management is also subject to the type of governance structure applied in the institution. In a study by Mollah et al. [43], using random effect GLS and two-step GMM methods covering 14 Muslim countries, they found that Islamic banks governance structure enables them to take more risks and attain higher performance. The governance structure used by either Islamic or conventional banks in this study is likely to have some differences to the one observed in other countries, Muslim or non-Muslim, and ultimately have an effect on how risks are identified, analysed, monitored and reported by the banking institution.



The effect of the recent financial crises is considered as key limitation in studies using surveys as research method to examine risk management in conventional or Islamic banks (see for example [5]). Such notion also applies to this study but under different market conditions as the financial crises have already come to an end. The post-financial crises is characterised by major changes in banking regulations with risk management being the main target area to improve banks' financial resilience. The Basel III accord, in particular, placed further requirements on bank risk governance and liquidity standards which bank managers are now required to fulfil.

Besides surveys, other research methodologies tend to generate different results when comparing Islamic to conventional banks level of risk or their risk management practices. Kabir et al. [38] find that when applying market based measures, such as distance to default, Islamic banks exhibit less credit risk than conventional banks. However, when accounting measures are used instead, i.e. Z score and non-performing loan ratio, Islamic banks show high credit risk compared to conventional banks. In a study by Sorwar et al. [56], they revealed that applying univariate method of analysis produces no differences between Islamic and conventional bank in terms of their risk. In contrast, when multivariate analysis is adopted, Islamic banks display less risk than conventional banks particularly during the recent financial crisis. Having different levels of risk has wider implications on how the bank analyses, measures, monitors or reports its risks. For example, Sorwar et al. [56] suggest using Expected Shortfall instead of VaR as methodology to measure market risk in the case of Islamic banks. Therefore, the findings presented in this study are to complement the results obtained using other methodologies on bank risk management by outlining the areas that bank senior managers and risk specialist consider as the most or least important in managing risks in Islamic and conventional banks.

Conclusions

The study empirically investigated the risk management practices of Islamic and conventional banks in Pakistan. The research results show that risk identification, risk assessment and analysis, credit risk analysis and risk governance are the most efficient and influential variables in explaining the risk management practices of Islamic banks. On the other hand, understanding risk management, credit risk analysis and risk governance are the most significant and contributing variables in the risk management practices of conventional banks. Differences are also observed in Islamic and conventional banks' liquidity risk analysis and risk governance.

Islamic banks are found to be weak in their overall understanding of the risk management practices, liquidity risk analysis, risk monitoring and reporting, whereas risk assessment and analysis is the most inadequate risk management part in conventional banks. Therefore, training bank staff to be more proficient in these areas is a necessity for better risk management practices in the two banking models. The role of the Chief Risk Officer also needs to be strengthened to have a better overseeing of the bank risks. In addition, the level of monitoring and information disclosure should be reinforced for better risk governance in the case of Islamic banks. Finally, we recommend that bank senior managers to further investigate why these aspects of the risk management process are not positively associated with the risk management practices as there may be unique factors to the bank risk management inadequacy.

The main study limitation is the time frame of the data collection and status of the national economy which during this time may have implications on the bank managers' perceptions of the significance of each area of the risk management process. For future research, we propose applying the research model used in this study to other countries where Islamic banks are also prominent such as Malaysia and Saudi Arabia to draw any comparison with the results presented in this article. The statements used as parameters of risk management practices can also be extended to other areas and taxonomies such as those related to wealth maximisation and bank regulatory framework.

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