

**A UNI-VARIATE AND MULTIVARIATE NON-PARAMETRIC ANALYSIS:  
DISTINCTION BETWEEN CONVENTIONAL BANKS AND  
ISLAMIC BANKS IN CREDIT RISK MANAGEMENT PROCESSES**

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**ABSTRACT**

The paper analyses the perceptions of the 96 credit officers from 17 conventional and 5 Islamic banks of Bangladesh in order to identify the distinction in credit risk management processes. The investigation process uses descriptive statistics and both Mann Whitney U test as univariate approach and Binary Logistic Regression as multivariate approach to identify the differences in credit risk management processes between conventional and Islamic banks in Bangladesh. The findings reveal that there is a significant perceived difference between conventional banks and Islamic banks in credit risk identification, assessment, understanding the risk and risk management practices. The study also finds that the respondents of conventional banks are more sensitive in overall risk management control system where as Islamic banks are more careful in credit risk identification, monitoring and controlling processes.

**KEY WORDS**

Credit Risk; Binary Logistic Regression; Mann Whitney U test; risk management control system; Bangladesh.

**1. INTRODUCTION**

Commercial banks as financial institutions play an important role in financial resource mobilization in developing economy where borrowers' access to capital market is inadequate (Greuning and Bratanvic, 2003; Richard et al. 2008). Intermediation function of commercial banks gives rise to different types of risks with different magnitudes and level of effect on bank performance (Gestel and Baesens, 2009). Credit risk is found to be the most important factor that contribute to commercial banking risk (Al-Tamimi and Al-Hazrooei, 2007; Hassan, 2009; Alam and Masukujjaman; 2011; Mileris Hassan and Al-Ajmi, 2012). More than 50 percent of total risk elements of a bank (Bangladesh Bank, 2005) and more than 80 percent of Balance sheet items are related to

that risk (Hennie, 2003). Moreover, this risk most likely causes banking losses (Bo, et al., 2005) and also recognizes as primary reason of banking crises experienced by both developed and developing countries in recent years. (Hennie, 2003; Gup and Kolari, 2005; Kraft and Jankov 2005; Hakenes and Schnabel, 2010; Chaplinska, 2012; Mileris, 2012; Romanova, 2012; GAO, 2013).

Credit risk arises from banks' lending operations (Basel, 2000). It starts in the application stage and increases in the approval, monitoring and controlling stage if credit risk management guideline is weak or incomplete (Brown Bridge, 1998; Richard et al. 2008). Recognizing the effect of credit risk and providing an extensive approach for managing this risk, the Basel Committee on Banking Supervision adopted the Basel I Accord in 1988, followed by the Basel II Accord in 2004 and in recent years by the Basel III accord (Ouamar, 2013). However, credit operations of conventional banks and Islamic banks are different due to Shariah<sup>1</sup> compliance. Particularly, unlike conventional banking principle, Shariah compliance does not allow Islamic banks to charge interest and deal doubtful financial transactions rather to perform financial transactions based on risk sharing or profit and loss sharing. This makes Islamic banks to expose higher credit risk and resulting survival of this type banks depends on adoption of effective credit risk management process. Because the loss that an Islamic bank realizes due to poor credit risk management is ultimately shifted to the depositors. On the other hand, Islamic scholars developed different loan products complying Shariah law for Islamic banks which are similar with conventional banks replacing interest payment.

Recognizing the importance of the credit risk for the both types of banks, the study aims to discern credit risk management of process of two banking systems in Bangladesh. The study considers Bangladesh as it is a developing country in South Asia which brought liberalization and launched Islamic banking system in 1980s and made significant improvement in risk management, profitability and stability in last decades (Muhiuddin & Jahan, 2013). However, aftermath of capital market shock in 2010 the dependency of bank borrowing in the country has increased and at the same time Commercial bank's nonperforming loan ratio<sup>2</sup> increased from 2.9 percent in 2011 to 6.6 percent in 2013 (Bangladesh Bank, 2013). Under the circumstance, the Commercial banks must need to develop a means to ensure that they not only assess the credit risk to avoid adverse selection but also to avoid moral hazard.

The study uses total 96 structured questionnaires surveyed on credit risk offices of 17 conventional banks and 5 Islamic banks in Bangladesh. The study uses mean rank, Mann Whitney U test and Binary logistic Regression in the investigation process. Higher mean rank of all of the constructs indicates that conventional banks are more sensitive to credit risk management process. Mann Whitney U test reports that there is a significant difference between Islamic bank and conventional banks in credit risk identification, credit risk assessment and analysis, understanding of credit risk management and credit risk management practices. Moreover, Binary logistic regression reveals that credit officers of Islamic banks have higher tendency in credit risk identification and credit risk

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<sup>1</sup> Shariah is a legal frame-work to regulate every aspect of human life which come from saying of Allah (SWT) and customs of Prophet (PBH)

<sup>2</sup> Percentage of Nonperforming loan to total assets which is considered as a proxy of credit risk.

assessment processes; whereas, credit officer of conventional banks have higher tendency in understanding credit risk and risk management process and credit risk management practices.

Second section of the paper reviews relevant literatures. Third section presents research methodology, fourth section discusses analysis and finds and finally conclusion is presented in the fifth section.

## 2. LITERATURE REVIEW

Credit risk management in the banking industry involves the process of identification of risk issues, assessment of risks by using borrowers financials and sophisticated models, monitor the activities of defined risk issues, and implementation of controlling measures by senior management to avoid or reduce the undesirable consequences of risks; and the process is implemented within the operational and strategic structure of the bank (Rechard et al., 2008, Tafri et al., 2011). Basel (1999a) guided that effective credit risk management requires establishing an appropriate credit risk environment where board of directors approves credit policy and strategy and senior management implements these; operating under sound credit granting process by establishing well defined credit granting criteria; maintaining an appropriate credit administration of credit portfolio; measurement and monitoring process and ensuring adequate control over the risk.

A good number of empirical studies have been conducted recently focusing on banking risk management. Ellul and Yerramilli (2011) and Ouamar (2013) found that banks can improve performance and reduce risk only by implementing a sound risk management structure. Aebi et al. (2013) concluded that the bank in which chief risk officer directly reports to board of directors other than Chief executive officers or other entities do better risk management and performance during financial crisis. Whereas, Ayayi (2012) reported that credit risk management depends on implementation of good governance practices and application of quantitative and qualitative risk management tools. However, Al-Tamimi and Al Mozrooei, 2007; Hassan, 2009; Hussain and Al-Amji, 2012 considered that risk management practices is the function of risk identification, risk assessment, risk monitoring and control.

Regarding risk identification method of commercial banks Al-Tamimi (2002) found that most important methods are inspection by branch manager and financial statement analysis. Another study of Tamimi and Al Mozrooei, (2007) and also Hassan (2009) discovered that inspection by risk manager, audits or physical inspection, financial statement analysis and risk survey are mostly used risk identification method of risk officers. Besides, process analysis and internal communication are also used as important risk identification method as found by Hussain and Al-Amji, (2012). There are different methods used in credit risk analysis. Among the others Hussain and Al-Amji, (2012) discovered that credit worthiness analysis, benchmarking, credit scaring, risk taking and collateral requirement are used as credit risk analysis technique.

In relation to credit risk management system, Richard et al. (2008) revealed that credit policy and strategy made up credit risk management system, quality of staff and technology are considered as facilitating factors and the implementation of the system

depends on the environment in which a bank is operating. Crouhy et al. (2006) identified that expert system considering both qualitative and quantitative information of the borrower is the most traditional approach for assessing credit risk of the borrower.

However, Strischek (2009) shown that 'five Cs' system is the most popular expert system to assess credit risk of the borrowers, where 'five Cs' are character, cash flow, capital, collateral and condition. Fatemi and Fooladi (2006), in a survey on US based large financial institutions, found that the main purpose of credit risk model utilization is counterparty credit risk mitigation followed by counterparty risk identification.

Rahman (2011) in his study of credit risk management argued that every individual bank in Bangladesh should use Credit Risk Grading (CRG) score sheet to identify the counter party credit risk before funding to the client's business. In study on credit risk management strategies on Malaysian financial institutions Ho and Yusoff (2009) found that loan diversification, risk mitigation, credit reminder, credit criteria, credit culture and staff training are the most popular strategies. Most recently Selvarajan and Vadivalagan (2013) suggested to Indian banking industry for improving assets quality of commercial banks that pre and post credit evaluation of loan approval should be done objectively and close monitoring of the borrowers' account, site and factory visit are to be done regularly; banks also must give due importance to apply right credit monitoring and controlling mechanism and banks also provide technical and consultancy service to the borrowers whenever require.

Though both conventional and Islamic banks provide similar type of services to the public and private sectors, there are some difference in the principles between the types of banks. Islamic banks require complying with Islamic Shariah law in which riba is prohibited and profit and loss sharing is allowed. However, both types of banks expose similar types of major banking risk (Hussain and Al-Ajmi, 2012). Khan and Ahmad (2001) in their study found that Islamic banks face a new and unique type of risk as a result of assets and liability structure and compliance with Shariah requirements. Iqbal and Mirakhor (2011) stated that the same risk management framework is applicable to both the types of bank which is similar to the findings of Hassan (2009). But, Tafri et al. (2011) found in an empirical study on Malaysia that there are significant difference in between conventional and Islamic bank in Market value at risk, stress testing result, credit risk mitigation methods and operational risk management tools. The study conducted by Hussain and Al-Ajmi (2012) on Bahrain found that Islamic banks face higher extent of risk than conventional counterparts and understanding of risk and risk management of this type of bank is significantly different from other type of bank.

### **3. METHODOLOGY**

#### **3.1 Instrument**

The study is based on the questionnaire survey method. A revised form of questionnaire used by Al-Tamimi and Al-Mazrooei (2007), Hassan (2009), Fun Ho and Yusoff (2009) and Hussain and Al-Ajmi (2012) is used to study credit risk management process of commercial banks operating in Bangladesh. The questionnaire is divided in two parts. First part contains the information regarding the respondents in which six closed ended questions were included based on nominal scale. Second part contains the

statements to capture the different aspects of credit risk management of commercial bank. This part covers 41 statements based ordinal scale where eleven statements regarding understanding credit risk and credit risk management, five statements regarding credit risk identification, eight statements regarding credit risk assessment and analysis, five statements regarding credit risk monitoring and controlling and twelve statements regarding credit risk management practices. Here respondents are requested to specify their level of agreement in each statement on a five point Likert scale. The respondents were classified into conventional and Islamic bank. The reason of classification is to determine whether there is any difference between conventional and Islamic bank in credit risk management processes. The author asked a panel of six experts containing two academicians, two researchers and two professors to assess the content validity of the questionnaire. The questionnaire was modified as per their recommendations after the first draft.

### 3.2 Sample Selection

There are 56 commercial banks operating in Bangladesh where 4 are nationalized commercial banks (NCB), 39 local private commercial banks (PCB), 9 foreign commercial banks (FCB) and 4 specialized commercial banks (SB). Target population includes local private commercial banks as per the objective of the study because no nationalized commercial bank, foreign commercial banks and specialized banks are operating under Islamic banking system. Out of 39 local private commercial banks 9 banks have started their operations in the last quarter of 2013; therefore, newly established banks were excluded from the consideration. The study considered those banks having total assets more than US1000 million as on September 2012. The sample included 17 conventional banks and 5 Islamic banks<sup>3</sup> (see Table-1). The study was conducted on the branch offices of commercial banks located in Chittagong as Chittagong is the commercial capital as well as port city of Bangladesh and this city contributes lion share to Bangladesh economy.

The target population was those credit officers who actively involved in credit risk management; therefore, questionnaires were distributed to branch managers of the commercial banks and who were requested to distribute to officers working in the credit department. The authors distributed total 154 questionnaires (seven questionnaires in each bank), out of which 117 questionnaires were received. The screening process excluded 21 questionnaires due to high missing data and remaining 96 questionnaires were retained of which 66 from conventional banks and 30 from Islamic banks. The response rate of the questionnaire was 64 percent. A non-response bias test was conducted. The comparison of early 20 and late 20 questionnaires shown that there were no chance of non- response bias.

### 3.3 Measuring Reliability of Data

Cronbach's alpha is employed to assess reliability of the measures as it estimates the difference in scores of different variables attributed to the random errors (Selltiz et al., 1976). According to Nunnally (1978) an alpha value more than or equal to 0.7 is judged as an acceptable indicator of reliability of the measures. Here, cronbach's alpha for

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<sup>3</sup> Besides 7 full-fledged Islamic banks, 16 conventional private commercial banks also operate Islamic banking through Islamic banking window or Islamic banking branch, these were considered as conventional bank.

understanding credit risk and risk management is 0.96, credit risk identification is 0.739, credit risk assessment is 0.939, credit risk monitoring and controlling is 0.97 and credit risk management practices is 0.90. The results of Cronbach's alpha indicate that the data collected from the respondents through questionnaire survey are highly reliable.

### 3.4 Data Analysis Tool

We applied both Mann Whitney U test as univariate technique and Binary Logistic Regression as multivariate technique to discern between conventional banks and Islamic banks in their credit risk management processes.

#### Mann Whitney U test (Univariate analysis)

MW-U is a non-parametric test of difference of central tendency of data. Instead of mean, MW-U tests the difference of median of the two groups, which offers number of advantages over using parametric tests (Hollander & Wolfe, 1973). MW-U test is more robust than parametric t test in case of assumption of normality is violated. It also works well if the data are skewed for its less sensitivity for outliers and extreme values. Moreover, considering the nature of scale (ordinal) of the variables used in the study MW-U is more appropriate choice than parametric tests.

#### Logistic regression (Multivariate analysis)

In order to discern the two banking system towards various aspects of credit risk management process, we ran the binary logistic regression (BLR). Essentially, a classifying technique, BLR categorize cases in analysis in to two groups based on the probabilities estimated by the maximum likelihood method. If the model returns  $p < 0.5$  for a case, the case is assigned into a group 0, otherwise 1. The logistic Regression equation can be written as:

$$\ln\left(\frac{\pi}{1-\pi}\right) = \alpha + \beta_1 X_1 + \beta_2 X_2 + \dots + \beta_n X_n \quad (1)$$

where  $(\pi)$  is the probability that an event would occur, and  $(1-\pi)$  is the probability of event's non-occurrence.  $\left(\frac{\pi}{1-\pi}\right)$  is described as the ratio probability of occurrence to non-occurrence of an event of interest, and is called odds. After log transformation and some algebraic manipulations, it can be shown that odds are instrumental to determine the membership of a particular case to a particular group. There can be two possible outcomes. First, if odds are less than 1 (i.e.  $\pi < (1-\pi)$ ), the case is grouped in group 0. In case the inverse holds, then the case is assigned to group 1.

Equation 2 shows how the probabilities  $(\pi)$  are calculated in BLR.

$$\pi = \frac{e^{\alpha + \beta_1 X_1 + \beta_2 X_2 + \dots + \beta_n X_n}}{1 + e^{\alpha + \beta_1 X_1 + \beta_2 X_2 + \dots + \beta_n X_n}} \quad (2)$$

The BLR model applies Hosmer and Lameshow test as a test of overall significance. Cox and Snell, and Nagelkerke, are applied as a measure of explaining proportion of variation in dependent variable due to the specified explanatory variables. Predictive efficiency of the model is assessed through classification table.

BLR analysis was run on the dichotomous variable BANKSYS assuming value 1 for Islamic bank and 0 for conventional bank. We created five constructs related to risk encompassing various perceptual dimensions of credit risk management. These included credit risk identification, credit risk assessment and analysis, credit risk monitoring and

control, credit risk management practice, and understanding risk and risk management. The scores on individual item/question under each dimension from conventional and Islamic bank respondents were summed up and converted into these broader constructs.

Missing values were observed in some cases which were excluded for the final analysis, resulting in the sample size of 80. Hair et al. (2009) recommends at least 10 observations per parameter estimated as minimum sample requirement for logistic regression. Our sample was adequate to meet this condition.

### **3.5 Analysis of the Characteristics of the Respondents**

Total 96 questionnaires have been processes for determining the credit risk management process of commercial banks in Bangladesh. Out of the total respondents 87.5 percent was male and remaining was female. The questionnaires were answer primarily by the bankers occupying mostly middle management position and above, and majority of the respondents (70.8 percent) possess experience more than five years and longer period. All respondents have higher academic degree. The majority of the respondents worked for conventional banks percentage of which as 68.8 percent and remaining was worked for Islamic banks. Nevertheless, 97.9 percent respondents had training on banking credit risk management. Overall, we assure that the study conducted on the respondents who have sufficient knowledge about credit risk management process of their banks.

## **4. ANALYSIS**

Test of differences between Islamic and Conventional banks' perceptions on each aspect of credit risk was performed. We ran the non-parametric Mann Whitney U test (MW), for its less stringent distributional assumption about the underlying population, and better ability of handling skewed data. MW results are thus more robust in case parametric statistical assumptions are violated.

The individual items in each category of credit risk management process were summed into construct capturing understanding credit risk and risk management, credit risk identification, credit risk assessment and analysis, credit risk monitoring and controlling and credit risk management practices. We detected the tendency of higher scores on all credit risk constructs showing higher sensitivity among conventional bank officials regarding credit risk. The result of MW-U test reported in table-2. Significantly different attitudes found towards understanding credit risk and risk management, credit risk identification, credit risk assessment and credit risk management practices prevailed between the two banking systems. Conventional banks showed higher trends throughout.

### **4.1 Credit Risk Identification (CRI)**

Credit risk management process starts with the CRI and failure of which makes it impossible to manage the risk. Five statements were included in the structured questionnaire to capture credit risk identification aspect of the Conventional banks in Bangladesh. On CRI, Conventional banks (mean rank = 51.67) seems to be more aware and cautious in their approach than Islamic banks (mean rank = 41.53). The difference, however, is statistically significant at 10% level which contradict with the findings of Al-Tamimi and Al-mazrooei (2007), Hussain and Ajmi (2012).

#### **4.2 Credit Risk Assessment and Analysis (CRAA)**

The next step in the credit risk management process is CRAA after CRI has been done. In order to know the perception of the bankers regarding CRAA process eight statements were listed in the questionnaire. The mean rank response of all eight statements of Conventional banks is 53.48 which is higher than that of Islamic banks (37.55), which provides the evidence of higher efficiency of the conventional banker regarding credit risk assessment and analysis of commercial banks in Bangladesh. To test the hypothesis, the U statistics shows that there is a significant difference at 1% level of significant in credit risk assessment and analysis between the respondents working for both conventional banks and Islamic banks which is divergent from the findings of Al-Tamimi and Al-mazrooei (2007), Hussain and Ajmi (2012).

#### **4.3 Credit Risk Monitoring and Controlling (CRMC)**

The goal of CRMC is to ensure that credit risk exposures are within the desire level and dealt properly. To capture this aspect of credit risk management, five statements were included in the questionnaire. Conventional mean rank of credit risk monitoring (CRMC) is 50.42, and the same for Islamic banks is 44.28. These difference is insignificant statistically, showing no difference between Islamic and conventional banks ( $U = 863.5$ ,  $p = .27$ ). This finding is similar to the findings Al-Tamimi and Al-mazrooei (2007), Hussain and Ajmi (2012).

#### **4.4 Understanding of credit risk and credit risk management (UCRM)**

Board members, top management and credit executives need to understand and aware of credit risk and its effect on bank performance for ensuring effective credit risk management at the bank. To capture the UCRM aspects, 11 statements were included in the questionnaire. The sample was divided into two groups, those working for Conventional banks and those working for Islamic banks, to compare their perceptions regarding UCRM. It is found that mean ranks of Conventional banks (45.90) exceeds that of Islamic banks (31.50) which means that understanding and awareness level and credit risk management capability of conventional banker is higher than Islamic bank. The long historical background and structured risk management control system make conventional banks to create more risk awareness among the risk officer. The U-statistics indicates that there is a significant difference between Conventional banks and Islamic banks at 5 percent level of significance regarding understanding and managing credit risk which is similar to the findings of Hussain and Ajmi (2012) and Al-Tamimi and Mazhrooei (2007).

#### **4.5 Credit Risk Management Practices (CRMP)**

CRMP may be regarded as the most important feature of credit risk management. A bank may have proper credit risk management framework, effective credit risk management strategies, skilled manpower; these do not mean that the bank is managing credit risk effectively. There is a gap between expected credit risk management and actual risk management practices which may lead a bank to failure. To capture credit risk management practices of local private banks in Bangladesh 12 statements were included in the questionnaire. Credit risk management practices looks to be in better quality in Conventional banks (mean rank = 53.68) than Islamic banks (37.10). The divergence were significant ( $U = 648.000$ ,  $p < .01$ ) which is different from the findings of Hussain and Ajmi (2012).

#### 4.6 Analysis of Binary Logistic regression (BLR)

We run BLR to discriminate between Conventional banks and Islamic banks regarding the different aspects of CRM process of Conventional banks in Bangladesh. The results from BLR are summarized in Table 3. The Hosmer and Lemeshow test was statistically not significant ( $\lambda = 5.55, p = .475$ ) indicating that the model was a good fit. For robustness check, we ran the omnibus tests of model coefficients, which test the null hypothesis of no improvement on the predictive ability of the predictors. The tests were highly significant suggesting the efficacy of our model. Finally, our model's hit ratio was well over 85%. Specifically, our model correctly predicted 45 out of 50 cases (i.e. 90%) for conventional banks, and 24 of 30 cases (i.e. 80%) of Islamic banks.

All the above estimates suggest that perceptible dissimilarities exist between Islamic and conventional banks on CRI, CRAA, CRMC, CRMP and UCRM. However, CRAA of Conventional banks and Islamic banks are similar as both types of banks use similar credit risk assessment and analysis techniques. The model accurately predicted over all 80.50% cases (38.6% holders, 80% non-holders), showing an overall improvement of 5.3% over a null model which independent variable. The Cox and Snell and Nagelkerke statistics showed that our model accounted for 53% to 73% of the total variation between conventional and Islamic banks. We report values of Wald test to show the significance of individual predictor variables included in the model.

The coefficient of CRI and CRMC are significantly and positively related to the probability of a bank being an Islamic. This means that these two are the attributes which can significantly distinguish between the Islamic banks and Conventional banks, with higher tendency in CRI and CRMC attributed to the IB and lower tendency attributed to Conventional banks. Islamic banks maintain Shariah compliance in banking operations which differentiate them from Conventional banks. Shariah principles make the Islamic banks to avoid interest, speculative and illegitimate transactions rather to apply profit and loss sharing which expose to more credit risk. Therefore, Islamic banks are found more vigilant in first phase of credit risk management through better CRI and CRMC process. Moreover, Islamic banks complying Shariah make financial transaction backed by real economic sector to create tangible assets. Loan products<sup>4</sup> of Islamic banks are designed in such a way that they need to share credit risk with borrowers or partners. This makes Islamic banks more sensitive to deal with the credit risk and they try to keep the risk minimum at very first place.

On the other hand, the coefficients of CRMP and UCRM are negatively and significantly associated with Islamic banks. This implies that Conventional banks seem to believe more vigilant in second stage of risk dealing through their well-established understanding and risk management practice. Unlike, Islamic banks, Conventional banks need not to share risk with borrowers rather transfer risk to them through pre-decided interest rate. They focus more on understanding credit risk management and risk management practices.

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<sup>4</sup> Loan products of IBs are based on risk sharing modes which are *Musharakah* (Joint venture profit /loss sharing), *Mudarabah* or *Qirad* (Trusty profit/loss sharing), *Murabaha*, *Bai' Salam* (Agree upon profit/loss sharing) and/or leasing arrangements especially for equipment.

## 5. CONCLUSION

The paper aims to distinguish between conventional and Islamic banks in different aspects of credit risk management processes. The investigation process uses the perceptions of 96 credit officers collected through a set of structured questionnaire from 17 conventional banks and 5 Islamic banks in Bangladesh. Based on the nature of the variables the paper uses non parametric univariate and multivariate analysis techniques. The findings reveal that respondents of conventional banks found more sensitive toward all aspects of credit risk management process. However, the study found significant difference between the perceptions of respondents working for Islamic banks and conventional banks in terms of Credit risk identification, credit risk assessment, understanding credit risk and risk management process and credit risk management practice. It is further evident that Islamic banks are more vigilant in credit risk identification, monitoring and controlling process where as conventional banks are found vigilant in understanding the risk and risk management practices.

The paper tries to cover the credit risk management process in a developing country context. However, it did not focus on the challenges in risk management process. Future research can address the issue. Further research may also focus on the implication of Basel II on credit risk management. Subsequent research may also judge analyzing liquidity risk as poor liquidity might put a bank in liquidation. Finally, further study on different country using same methodology might give different and interesting result as risk management process is influenced by regulation, competition, organizational culture and economic condition.

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## APPENDIXES

**Table 1**  
**Sample Local Private Commercial Banks under Study**

<b>Conventional Banks</b>	<b>Assets in US\$ as of 2011</b>	<b>Islamic Banks</b>	<b>Assets in US\$ as of 2011</b>
Prime Bank Ltd	2,425	Islami Bank Bangladesh Ltd	4,651
United Commercial Bank Ltd	2,034	Export Import Bank of Bangladesh Ltd	1,567
National Bank Ltd	2,029	Shahjalal Islami Bank Ltd	1,294
Pubali Bank Ltd	1,922	Al-Arafah Islami Bank Ltd	1,290
Southeast Bank Ltd	1,902	First Security Islami Bank Ltd	1,093
AB Bank Ltd	1,858		
BRAC Bank Ltd	1,722		
Dutch-Bangla Bank Ltd	1,476		
Bank Asia Ltd	1,422		
Eastern Bank Ltd	1,408		
Mercantile Bank Ltd	1,404		
City Bank Ltd	1,388		
National Credit and Commerce Bank Ltd	1,265		
Dhaka Bank Ltd	1,260		
Uttara Bank Ltd	1,177		
IFIC Bank Ltd- International Finance Investment and Commerce Bank Ltd	1,118		
Jamuna Bank Ltd	1,050		

(Source: Bankscope Data Base)

**Table 2**  
**Mean Rank and U Statistics of Constructs of Credit Risk Management Process**

	<b>Banking System</b>	<b>N</b>	<b>Mean Rank</b>	<b>Sum of Ranks</b>	<b>MW-U statistic</b>
CRI	Conventional banks	66	51.67	3410.00	781.000 *
	Islamic banks	30	41.53	1246.00	
	Total	96			
CRAA	Conventional banks	66	53.48	3529.50	661.500***
	Islamic banks	30	37.55	1126.50	
	Total	96			
CRMC	Conventional banks	66	50.42	3327.50	863.500
	Islamic banks	30	44.28	1328.50	
	Total	96			
UCRM	Conventional banks	50	45.90	2295.00	480.000***
	Islamic banks	30	31.50	945.00	
	Total	80			
CRMP	Conventional banks	66	53.68	3543.00	648.000***
	Islamic banks	30	37.10	1113.00	
	Total	96			

\* MW-U value is significant at 10% significant level, \*\* MW-U value is significant at 5% level and \*\*\* MW-U value is 1% significant level. CRI stands for Credit risk identification, CRAA stands for credit risk assessment and analysis, CRMC stands for credit risk monitoring and controlling, UCRM stands for understanding credit risk and risk management process and CRMP stands for credit risk management practice.

**Table 3**  
**Binary Logistic Regression Output**

	<b>Estimates</b>		<b>Wald Test</b>	<b>Sig.</b>
	<b>B</b>	<b>Se</b>		
CRI	1.191	.419	8.080	.004***
CRAA	.127	.461	.076	.782
CRMC	2.100	.815	6.629	.010***
CRMP	-3.534	1.242	8.101	.004***
UCRM	-1.447	.489	8.746	.003***
C	201.488	64.663	9.709	.002***
<i>Hosmer and Lemeshow Test</i>		5.55 (sig = .475)		
<i>Pseudo R<sup>2</sup>: Cox &amp; Snell R Square</i>		53.3%		
<i>Pseudo R<sup>2</sup>: Nagelkerke R Square</i>		72.7%		
<i>N</i>		80		
<i>Hit ratio without model</i>		62.50%		
<i>Hit ratio with model</i>		86.30%		
Dependent variable BANKSYS (0 = Conventional Bank, 1 = Islamic banks)				
* value is significant at 10% significant level, ** value is significant at 5% level and *** value is 1% significant level. CRI stands for Credit risk identification, CRAA stands for credit risk assessment and analysis, CRMC stands for credit risk monitoring and controlling, UCRM stands for understanding credit risk and risk management process and CRMP stands for credit risk management practice.				