Credit risk management of conventional banks and Islamic banks in Bangladesh

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Abstract
This paper examines credit risk management (CRM) process of both conventional banks (CBs) and Islamic banks (IBs) in Bangladesh. A set of structured questionnaires has been used in the investigation process. The study incorporates perceived opinions of 96 credit officers working for 17 CBs, and 5 IBs in Bangladesh. This study has found that the risk officers of private commercial banks in Bangladesh are competent in overall credit risk management process. Further, it has also found a significant difference between the credit officers working for CBs, and IBs on understanding and managing credit risk, and credit risk identification, however, no significant difference has been observed in credit risk assessment, credit risk monitoring and controlling, and CRM practices.

Keyword Bangladesh, Conventional banks, Credit risk, Credit risk management

Paper type Research paper

1. Introduction

Credit risk is the most important banking risks[1] (Al-Tamimi & Al-Mazrooei, 2007; Noman, Chowdhury, Chowdhury, Kabir & Pervin, 2015; Noman, Pervin, Chowdhury & Banna, 2015; Noman, 2015). Because, poor lending quality or failure of prudent credit risk management (CRM) is identified as the main reason of the recent 2008-09 Global Financial Crisis (GFC), which started with the failure of Lehman Brothers in United States (US) and spilled-over to other US banks, and also elsewhere in the world, which eroded not only the profitability and capitalization of the banks, but also caused to fail many banks in both emerging and matured countries (Kraft & Jankov, 2005; GAO, 2013; Shahabuddin, Noman, & Pervin, 2013; Noman, Gee, &

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Isa, 2017; Noman, A. H. M., Gee, C. S., & Isa, 2018). Despite the banking industry of Bangladesh shown resilience during the GFC, the non-performing loan ratio[2] of the commercial banks has increased in recent years from just 2.9 percent in 2011 to 10.0 percent in 2014 (Bangladesh Bank, 2015); while entrepreneurs cannot easily borrow due to rigid standard of the banks. Under the circumstance, effective CRM is highly warranted for reducing commercial banks problem loan and credit risk (Basel, 1999; Noman, Hossain & Pervin, 2015; Noman, Gee, Isa & Syed, 2015). The banking industry requires to develop a proper framework in order to ensure that banks not only identify and assess credit risk to avoid adverse selection and moral hazard problems, but also to monitor and control it. However, despite a few studies investigated overall risk management practices in recent studies (Al-Tamimi & Al-Mozrooei, 2007; Hasan, 2009; Alam & Masukujjaman, 2011; Tafri, Rahman & Omar, 2011; Khalid & Amjad, 2012; Hussain & Al-Ajmi, 2012), the investigation credit risk management process is ignored albeit it is needed for defending a bank from the burden of problem loans but also shielding a financial system from the financial crisis. Recognizing this importance, this paper investigates CRM process of commercial banks in Bangladesh, where both conventional and Islamic banking systems are being practiced. By investigating the perceived opinions from 96 credit officers from 17 CBs and 5 IBs, this study contributes to the banking literature by examining the divergency in CRM process between CBs and IBs in Bangladesh.

Section two presents relevant literature reviews. Section three discusses research methodology, section four presents analysis and findings of the estimates, and fifth section highlights a summary of findings of the study.

2. Literature review

Efficient risk management is tightly linked with bank performance and stability (Noman, Gee & Isa, 2018). Because, high profit-making intensity exacerbates risk taking behavior of the banks which makes the banking system instable (Noman, Gee & Isa, 2017). A number of recent empirical studies have emphasized on banking risk management. Such as, Ellul & Yerramilli (2011), and Ouamar (2013) found that adoption of effective risk management promotes bank performance, and reduces banks' risk-taking behavior. In the similar vein, Aebi, Sabato and Schmid, (2012)

argued that the banks where chief risk officer reports directly to the board of directors by-passing the line supervisor or other entities perform well in risk management during crisis. Similarly, in another study, Ayayi (2012) reported that sound risk management framework relies on the adoption of both qualitative and quantitative risk management tools, and practices of the good governance in risk management. On the other hand, Al-Tamimi and Al-Mozrooei (2007), Hussain and Al-Ajmi, (2012) argued that risk management practice is the function of risk identification, assessment, and monitor and control. With respect to the management of credit risk, Basel (1999) proposed that management of credit risk should ensure proper environment of risk management, where board of directors endorses credit policy and strategy, and senior managers implement those, operate under an effective credit granting system establishing well defined credit approval criteria; maintain a sound credit portfolio administration; and then measure, and monitor the process from time to time to ensure proper control over credit risk. In this issue, Noman, Gee, Isa and Syed, (2015) argued that CRM framework should incorporate identification of potential credit risk, assessment of that risk by using prudent risk grading models, and then monitor the borrowers' operations by suitable means, and finally ensure control over the risk to reduce or avoid that risk.

With respect to banking risk identification methods Al-Tamimi (2002) identified that financial statement analysis and branch manager's inspection are mostly used methods in identifying banking risk. In another study, Al-Tamimi and Al-Mozrooei (2007), and Hassan (2009) identified that most commonly used risk identification methods are financial statement analysis along with risk survey, risk manager's inspection, physical inspection or auditing. In addition, Hussain and Al-Ajmi, (2012) identified the process analysis, and internal communication are also commonly used risk identification methods. Past empirical studies also mentioned that divergent techniques are also used in the analysis of credit risk. Such as, Hussain and Al-Ajmi, (2012) identified that most commonly used techniques in analyzing credit risk include benchmarking, credit worthiness analysis, credit scaring, collateral requirements.

With respect to the system of credit risk management, Richard, Chijoriga, Kaijage, Peterson and Bohman (2008) claimed that the system is mainly based on credit strategy and policy, where, technology and staff quality are used as supportive factors, and the operational environment determines its proper implementation. On the other hand, Crouhy, Galai & Mark (2006).

Claimed that an expert system considers both quantitative and qualitative information in assessing borrowers' credit risk. Yet, Strischek

(2009) found that the most popular borrowers' credit risk assessing tools used in expert system is 'five Cs' demonstrating character, capital, cash flow, collateral and condition. Fatemi and Fooladi (2006), found that the main objective of the implementation of credit risk model is counterparty credit risk identification and mitigation.

In investigating management of credit risk, suggested that all Bangladeshi banks should identify borrowers' credit risk using credit risk grading score sheet. With respect to the strategies of CRM, Ho and Yusoff (2009) identified that most popular strategies for Malaysian banks include credit reminder, risk mitigation, credit culture, credit criteria, loan diversification, and staff training. In this connection, Noman, Hossain & Pervin (2015) found that collateralization, accurate loan pricing and third-party guarantee are more popular strategies in Bangladesh. On the other hand, Selvarajan and Vadivalagan (2013) proposed that Indian banks should objectively conduct both pre and post credit investigations, closely monitor the accounts of borrowers, regularly conduct factory and site visit, adopt useful credit monitoring and controlling tools, and also provide consultancy and technical services to the borrowers from time to time in order to improve loan quality of the commercial banks.

Despite the conventional banks and Islamic banks render analogues services to the economic sectors in a country, both types of banks are divergent on principles and philosophies. Such as, Islamic banks are operated based on Shariah laws, where interest, uncertainty, and gambling on banking operations are strongly prohibited, rather profit and loss sharing, and also risk sharing between banks and entrepreneurs are highly encouraged. Yet, both types of banks are exposed to the similar risks in their operations (Hussain & Al-Ajmi, 2012). However, Khan and Ahmad (2001) argued that Islamic banks encounter a unique banking risk due to their structures of assets and liability, and shariah compliance. On the other hand, Hassan (2009), and Iqbal and Mirakhor (2011) proposed that both types of banks may use the same structure for managing their credit risk. But, Tafri, Rahman and Omar (2011) identified from Malaysian bank that both CBs and IBs are divergent in stress test results, market value risk, application of the tools of credit risk mitigation, and operational risk management. Further, Hussain and Al-Ajmi (2012) for Bahrain banks identified that risk exposure of Islamic banks is higher than conventional banks, and risk understanding and risk management of both types of banks are also different. Thus, based on the above literature review, we may consider the following research question, and research hypothesis:

Q1: Whether the conventional banks and Islamic banks divergent in CRM process?
Null hypothesis:

H_0: There is no significant difference between CBs and IBs regarding understanding and managing credit risk, credit risk identification, assessment, monitoring, controlling, and CRM practices.

3. Methodology

Research design

In order to investigate CRM process of Bangladeshi banks, a questionnaire-survey method has been applied in this study. Particularly, it has used a modified version of semi structured questionnaire applied by Hassan (2009), Hussain and Al-Ajmi (2012), and Noman, Gee, Isa and Syed (2015). The questionnaire was decomposed into two segments. First segment included six closed-end questions designed on nominal scale to capture demographic profiles of the respondents. Second segment included different statements to identify the various aspects of CRM process of the banks. The preceding segment included 41 statements designed on interval scale, where eleven statements demonstrated understanding and managing credit risk, five statements demonstrated identification of credit risk, seven statements demonstrated assessment of credit risk, five statements demonstrated monitoring, and controlling of credit risk, and finally twelve statements demonstrated the overall CRM practices of the banks. The respondents were requested to figure out their level of agreement on a five-point Liker scale, where, lowest point indicated strongly disagree, and highest point indicated strongly agree on each statement. In order to achieve research objective of divergency in CRM process between CBs and IBs, the respondents were sorted to the credit risk officers working for CBs and IBs in Bangladesh. In order to ensure content validity of the questionnaire, the author verified it by a six-member experts panel containing with two professors, two researchers and two practitioners. Finally, a modified version of the questionnaire was used to collect the data from the risk officers working for both CBs and IBs in Bangladesh.

Sampling selection

The commercial banking sector is formed with 56 banks in Bangladesh, including 4 public banks, 4 specialized banks, 39 local banks in private sector and 9 foreign banks. This study focused on commercial banks in private sector complying with its objective. This is because, only private sector banks are operated adopting both conventional interest based

system and Islamic shariah based system, and other types of banks (such as, public banks, specialized banks and foreign banks) are operated adopting only conventional system. Besides, among the local banks in the private sector, 7 banks are full-fledged IBs, and 16 CBs also practice Islamic banking through either Islamic banking branch or Islamic banking window. Further, among 39 commercial banks in private sector, 9 banks started their activities in 2013. Thus, these 9 banks have been considered as new banks and excluded from the coverage. Furthermore, this study included the banks whose total assets exceeded US$1000 million in the end of 2012. As a result, the sample of the study has become 22 banks decomposing to 17 CBs and 5 IBs (see Appendix A). It is noted that the conventional banks which also practices Islamic banking through Islamic banking branch or window are considered as conventional banks.

As the target population of this study was those who directly involved in CRM, the required number of questionnaires were provided to the branch manager, and requested him to forward the questionnaires to the credit officers working at his branch. Indeed, in conducting the questionnaire survey, this study selected the branch offices of the commercial banks situated in Chittagong city considering it as a port city as well as commercial capital of Bangladesh which contributes lion share to her economy. The researcher circulated total 154 sets of questionnaires 117 of which were retuned by the respondents with 76 percent response rate. The researcher eliminated 21 questionnaires in the screening process due to the presence of high missing values. Finally, 96 questionnaires were considered in investigation process from 66 CBs, and 30 IBs. A non-response bias-test was conducted, and found presence of no non-response bias comparing early 20, and late 20 questionnaires.

In order to ensure reliability of the items, Cronbach's alpha was tested. It measures internal consistency of the variables or how closely related a set of items (Selltiz, Wrightsman & Cook, 1976). According to the rule of thumb, alpha value greater than 7.0 is well acceptable indicator of reliability of the variables (Nunnally, 1978). This study found that Cronbach's alpha of understanding and managing credit risk was 0.96, identification of credit risk was 0.739, assessment of credit risk was 0.939, monitoring and controlling of credit risk was 0.97, overall CRM practices was 0.90. Therefore, the results demonstrate the reliability of the data which used in the investigation process.

Analysis of demographic characteristics of the respondents

Table 1 presents demographic characteristics of the respondents. It demonstrates 87.5 % of the respondents came from male and 12.5 % of the respondents came from female credit officers.

Table 1: The Characteristics of the respondents of sample survey.

Attributes	Frequency	%
Gender:		
Male	84	87.5
Female	12	12.5
Length of experience:		
< 5 years	28	29.2
5 years - 10 years	46	47.9
> 10 years	22	22.9
Position of respondent at banks:		
Top level	10	10.4
Mid level	80	83.3
Junior level	6	6.3
Highest academic qualification:		
Professional (Accounting, finance)	5	5.2
Master	88	91.7
Graduation	3	3.1
Other		
Type of Banking license:		
Conventional retail and corporate	66	68.8
Islamic retail and corporate	30	31.3
Banking training on Credit risk:		
Yes	94	97.9
No	2	2.1

The 83.3 % of the respondents held mid-level managerial positions, and 70.8 % of them possessed experiences of 5-10 years. All respondents were highly qualified with 91.7 % of them had masters. In addition, 68.8 % of the respondent came from CBs and 31.3 % came from IBs. Besides, 97.9 % respondents mentioned that they were provided with training on CRM. Therefore, it could be assured that the survey was conducted on credit officers who possessed adequate knowledge on CRM.

4. Analysis of CRM process of the commercial banks in Bangladesh

The following sub-sections discuss the CRM process of the commercial banks in Bangladesh.

Understanding, and managing credit risk

In order to ensure effective CRM at the bank, members of board of directors, top management, and credit officers require to understand and

conscious about the importance of CRM for promoting profitability and defending solvency of the bank. Understanding and managing aspects credit risk were captured with 11 statements in the questionnaire. The descriptive statistics and the t-statistics of the responses are shown in Table 2. The mean response of all groups to the statements ranges from 4.33 to 4.89 with an overall average of 4.61 which exceeds the mid-point of five-point Likert scale. The positive responses to the statements indicate that bankers have a good understanding over credit risk, and its effect on the bank performance.

Table 2: Response to statements about understanding and managing credit risk

No.	Questions	Combined		CBs		IBs		t-test
		Mean	SD	Mean	SD	Mean	SD	
1	CRM is commonly understood at the bank	4.64	0.65	4.67	0.64	4.57	0.68	0.70
2	CRM responsibilities are properly set-out, and clearly understood at the bank	4.69	0.60	4.74	0.54	4.57	0.73	1.33
3	CRM accountabilities are properly set-out, and clearly understood at the bank	4.71	0.63	4.74	0.59	4.63	0.72	0.78
4	CRM is tightly connected with bank's performance and success.	4.89	0.41	4.88	0.45	4.90	0.31	-0.240
5	Its imperative to use sophisticated tools in CRM.	4.10	0.88	4.06	0.93	4.20	0.81	-0.711
6	The board, and senior management understand stress testing.	4.59	0.71	4.64	0.69	4.50	0.73	0.88
7	Bank requires to continuously evaluate and review CRM tools.	4.67	0.66	4.77	0.58	4.43	0.77	2.40**
8	Use of CRM tools reduces	4.55	0.74	4.65	0.69	4.33	0.80	1.94*
9	costs and expected losses. Bank plans to extend the use of advanced CRM tools.	4.36	0.84	4.36	0.85	4.37	0.81	-0.016
10	My bank uses sophisticated CRM strategies.	4.63	0.67	4.79	0.51	4.27	0.83	3.78**
11	My bank developed an effective CRM structure (process, infrastructure, and policies)	4.53	0.73	4.70	0.61	4.71	0.34	3.51**
	Average	4.61	0.67	4.68	0.63	4.50	0.68	4.01**

**5% level of significant
*10% level of significant
SD = standard deviation

The highest mean was found in fourth statement, where bankers judged managing credit risk as vital for promoting the performance and success of the bank. The lowest mean was found in the fifth statement regarding the importance of the application of sophisticated tools which is highly needed for effective CRM. The descriptive statistics indicate that bank credit officers in Bangladesh are aware of credit risk and they are also capable of managing it effectively.

In order to make a comparison between the perceptions of the respondents working for CBs and IBs regarding understanding and managing credit risk, the sample was separated into two sub-sample groups. The average response scores of sub-samples demonstrate that the respondents working for conventional banks have greater understanding and managing capacity of credit risk. Further, t-statistics suggests that there is a significant difference between the respondents in understanding and managing credit risk, which is consistent with the findings of Hussain and Ajmi (2012).

Credit risk identification

CRM process begins with the credit risk identification. The failure of identifying credit risk makes CRM process abortive. In order to determine credit risk identification of the banks, five statements were included in the questionnaire. The descriptive statistics, and the value of t-statistics are shown in Table 3. The average scores of individual statements exceed the mid-point on the five-point Likert scale, and the overall average score is 4.49 which indicates that both CBs and IBs in Bangladesh are capable of identifying credit risk as per their published aims and objectives. Here, third statement obtained the highest average value of 4.64, indicating that banks are capable of recognizing and identifying the changes in risk by banks' rules and responsibilities, followed by the statement one with an average value of 4.59 indicating that commercial banks in Bangladesh follow a systematic and comprehensive credit risk identification process. However, the commercial banks in Bangladesh not able to develop a systematic procedure for identifying the investment opportunities, given in lowest mean score (4.34) of the responses.

In testing the hypothesis, the t-value indicates that there is a significant difference between CBs and IBs in credit risk identification at 5% level of significant, which is different to the findings of Al-Tamimi and Al-mazrooei (2007), Hussain and Ajmi (2012). Between the sub-sample groups, the respondents working for CBs found more efficient in credit risk identification than that of IBs in Bangladesh.

Table 3: Response to statements about identification of credit risk

No.	Questions	Combined		CBs		IBs		t-test
		Mean	SD	Mean	SD	Mean	SD	
1	My bank identifies credit risk systematically as per it's aims and objective	4.59	0.76	4.62	0.74	4.53	0.82	0.522
2	My bank does not face difficulty in identifying credit risk.	4.41	1.00	4.53	.83	4.13	1.29	1.823*
3	The rules and responsibilities of the banks identify and recognize the changes in risks.	4.64	0.84	4.61	.91	4.70	0.65	2.65
4	My bank fully aware of credit management system of other banks	4.45	1.08	4.53	1.07	4.27	1.11	1.11
5	My bank applies a systematic procedure for identifying investment opportunities	4.34	0.96	4.47	0.85	4.07	1.14	2.40*
	Average	4.49		4.52		4.34		2.54**

**5% level of significant
*10% level of significant
SD = standard deviation

Credit risk assessment and analysis

In order to know the perceptions of the respondents concerning credit risk assessment in Bangladesh, seven statements were included in the questionnaire, and the descriptive statistics and t-statistics value are shown in Table 4. The table shows that the average responses of the statements is 4.32, suggesting that credit officers are efficient assess and analyze credit risk of the commercial banks in Bangladesh. Risk rating of the applicants and borrowing capacity of the borrowers are the most important issues in credit risk assessment and analysis.

The average score of the Table 4 demonstrates that the qualitative judgment of the credit officers is also important in the assessment and analysis of credit risk. Further, the average response of credit officers working for CBs is higher than those of IBs. On the other hand, an insignificant t-statistics suggests that there is no significant difference between CBs and IBs on credit risk assessment and analysis, which is also consistent with the findings of Al-Tamimi and Al-mazrooei (2007), Hussain and Ajmi (2012).

Table 4: Responses to the statements regarding assessment, and analysis of credit risk

No.	Questions	Combined		CBs		IBs		t-test
		Mean	SD	Mean	SD	Mean	SD	
1	The borrowers at my bank are sorted on the basis of risk factors.	4.69	0.72	4.73	0.74	4.60	0.67	0.41
2	Borrowers are analyzed using five C's (capital, collateral, character, condition and capacity)	4.51	0.93	4.60	0.86	4.33	1.06	0.21
3	The borrowing capacity of borrowers is analyzed before approving credit.	4.55	0.88	4.59	0.88	4.47	0.90	0.53
4	Sufficient collaterals are essential on credit approval.	4.27	1.12	4.27	1.71	4.27	1.01	.98
5	The collaterals are also imperative for extending credit, and approving transactions.	4.16	1.12	4.21	1.09	4.03	1.21	0.49
6	My bank reduces the credit limit of the defaulted clients.	3.93	1.36	3.91	1.41	3.97	1.27	0.84
7	My bank asks the borrowers to follow certain agreement of credit approval.	4.35	1.03	4.39	0.98	4.27	1.17	0.61
	Average	4.35		4.38		4.27		0.729

**5% level of significant
*10% level of significant
SD = standard deviation

Credit risk monitoring, and controlling

The goal of credit risk monitoring, and controlling is to assure that the risk exposures are within the expected limit and managed appropriately. The questionnaire included five statements to capture credit risk monitoring, and controlling aspect of CRM process. The descriptive statistics and t-statistics of the statements are presented in Table 5. The average responses of the five statements range from 4.56 and 4.17, with an overall average of 4.35 which is more than mid-point (3.00) of five point Likert Scale.

Table 5: Responses to the statements regarding credit risk monitoring and controlling.

No.	Questions	Combined		CBs		IBs		t-test
		Mean	SD	Mean	SD	Mean	SD	
1	Risk monitoring is a vital part of routined reporting.	4.18	1.07	4.24	1.04	4.03	1.13	0.39
2	My bank controls credit risk properly.	4.48	0.88	4.58	0.78	4.27	1.05	0.16
3	My bank practices credit reporting appropriately.	4.17	1.18	4.21	1.20	4.07	1.14	0.57
4	My bank responses to credit risk by evaluating the effectiveness of existing control, and risk management response.	4.56	0.82	4.58	0.86	4.53	0.73	0.81
5	My bank also responses to credit risk by forming appropriate strategy to mitigate risk.	4.38	.93	4.41	0.93	4.30	0.95	0.60
	Average	4.35		4.40		4.24		.795

**5% level of significant
*10% level of significant
SD = standard deviation

The results demonstrate that credit officers are perceived that there is an effective system for monitoring and controlling credit risk. Between the sub-sample groups, the mean response of CBs is higher than that of IBs regarding five components of credit risk monitoring, and control. The insignificant value of the t-statistics indicates that there is no significant difference between the groups regarding credit risk monitoring, and controlling, which is also consistent with the findings Hussain and Ajmi (2012).

Credit risk management practices

Credit risk management practice is considered as one of the most vital features of CRM (Noman, Gee, Isa, & Syed, 2015). Merely presence of an appropriate CRM structure, credit strategies, and trained manpower do not demonstrate that a bank is managing the credit risk appropriately. There could have a gap between expected CRM structure and actual credit risk management practices which might lead bank failure. Twelve statements were included in the questionnaire to know about the perceptions of credit officer regarding CRM practices at their bank. Table 6 shows the descriptive statistics and the t-statistics of the statements. The

average scores is 4.67, ranging from 4.85 to 4.46, suggesting that the commercial banks manage their credit risk effectively in Bangladesh.

Table 6: Responses to the statements regarding CRM practices.

No.	Questions	Combined		CBs		IBs		t-test
		Mean	SD	Mean	SD	Mean	SD	
1	Adoption of Basel II improves the efficiency of risk management at my bank	4.85	0.36	4.91	0.29	4.73	0.45	2.30**
2	My bank efficiency reviews CRM strategies and performance regularly.	4.73	0.53	4.73	0.57	4.73	0.45	-0.051
3	My bank documents the CRM procedures and processes, and provided to the credit officers as guideline.	4.77	0.51	4.82	0.46	4.67	0.61	1.35
4	My bank focuses on recruiting highly skilled people having the knowledge on risk management.	4.56	0.74	4.70	0.63	4.27	0.87	2.74**
5	My bank conducts trainings on risk management and business ethics.	4.67	0.63	4.67	0.64	4.67	0.61	0.00
6	Top management of my bank leads CRM from front.	4.56	0.61	4.58	0.61	4.53	0.63	0.31
7	CRM division and credit administration division works separately.	4.46	0.74	4.42	0.79	4.53	0.62	-0.70
8	Recovery and legal unit monitor the loan performance.	4.71	0.68	4.67	0.77	4.80	0.41	-0.89
9	My bank considers too risky to invest the whole fund of the bank in a particular sector.	4.65	0.67	4.76	0.55	4.40	0.81	2.51**
10	My bank encourages the borrowers to get rated by a credit rating agency.	4.73	0.57	4.82	0.52	4.53	0.63	2.32**
11	My bank uses CRM techniques as management techniques.	4.69	0.65	4.79	0.48	4.47	0.90	2.28**
12	My bank preserves provision and suspension of interest	4.63	0.67	4.61	0.74	4.67	0.48	-0.41
	Average	4.67		4.71		4.58		1.3

**5% level of significant
*10% level of significant
SD = standard deviation

Highest average score is found in first statement indicating that adoption of Basel II accord in the banking sector has brought a positive change in managing credit exposures, and improving lending decision

quality of the banks in Bangladesh. Insignificant value of t-statistics demonstrates that there is no significant difference between CBs and IBs in credit risk management practices in Bangladesh. This finding is similar to the finding of Hussain and Ajmi (2012). However, the individual t-statistics of some statements indicate there are significant difference between CBS and IBS in reviewing CRM strategies and performance, importance of recruiting qualified risk officers, diversification of loan portfolio, bank's initiative to encourage borrowers for rating by rating agencies and consideration of credit risk management strategies as management tools.

5. Summary of findings

This study investigated the CRM process of CBs and IBs in Bangladesh. Using a set of structured questionnaires, CRM data have been collected from 96 credit officers working for 17 CBs and 5 IBs in Bangladesh. The results of Cronbach's alpha ensure the reliability of the data collected from the credit officers using a set of structured questionnaires. In the investigation process, this study used descriptive statistics, and t-test for testing research hypothesis. It has come out with the following findings, firstly, the commercial banks are perceived to be efficient in credit risk identification, credit risk assessment and analysis, credit risk monitoring and controlling, and overall CRM practices. Secondly, the banks have an effective CRM structure, and efficient strategies for managing credit risk efficiently. Thirdly, bankers working for the CBs are found more capable of managing their credit risk. Fourthly, there is a significant difference between CBs and IBs in understanding and managing credit risk, and credit risk identification, however, no significant difference is found in credit risk assessment, credit risk monitoring and controlling, and CRM practices.

6. Areas for further research

Despite this study has covered most of the aspects of CRM, it could not cover the challenges that the banking sector faces in Bangladesh in managing their credit risk. This limitation can be addressed in future studies. Future study may also address the management of liquidity risk, because banking crisis starts with high liquidity risk which spills over to the other sectors of the economy, and becomes systematic financial crisis (Noman, Gee, & Isa, 2017). Additional research may also be conducted on the association between Basel III and CRM practices, because, policy makers and academics are still concerned about the effectiveness of Basel III in mitigating credit risk. Finally, this study could be replicated in another country using the same methodology. Divergent and exciting

findings may be observed due to divergency in market structure, regulatory framework, and macro-economic conditions.

Notes

1. Bangladesh Bank (2005) explains clearly the types of core banking risk.
2. This ratio is considered as a proxy of credit risk which is measured as a ratio of non-performing loan to gross loan.

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Appendix A

The sample local private commercial banks under study

Conventional Banks	Assets in million $US	Islamic Banks	Assets in million $US
Prime Bank Limited	2425	Islami Bank Bangladesh Limited	4651
United Commercial Bank Ltd	2034	Export Import Bank of Bangladesh Limited	1567
National Bank Limited	2029	Shahjalal Islami Bank Ltd	1294
Pubali Bank Limited	1922	Al-Arafah Islami Bank Ltd.	1290
Southeast Bank Limited	1902	First Security Islami Bank Limited	1093
AB Bank Ltd	1858		
BRAC Bank Limited	1722		
Dutch-Bangla Bank Limited	1476		
Bank Asia Limited	1422		
Eastern Bank Limited	1408		
Mercantile Bank Limited	1404		
City Bank Ltd	1388		
National Credit and Commerce Bank Ltd.	1265		
Dhaka Bank Limited	1260		
Uttara Bank Limited	1177		
IFIC Bank Limited-International Finance Investment and Commerce Bank Limited	1118		
Jamuna Bank Ltd	1050		

(Source: Bankscope database)