

The Moderating Role of Intellectual Capital between Relationship of Bank Specific Factors and Credit Risk of Islamic Banks: Evidence from Pakistan

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Abstract

Purpose- The Objective of this study is to investigate the moderating role of Intellectual Capital between the relationship of Bank internal factor and Credit Risk in Islamic banks of Pakistan.

Design/Methodology- Panel data are obtained from annual reports of 4 Islamic banks of Pakistan from the period 2006 to 2017. These are analyzed using hierarchical regression techniques, via Eviews 9 software.

Findings- The results showed that intellectual capital significantly moderates the relationship of bank internal variable and credit risk in Islamic banks in Pakistan.

Practical Implications- The study found that Intellectual Capital is a very important driver for credit risk. The investment in Intellectual Capital may lower the credit risk which will further help in the growth and sustainability of the bank and hence the growth in the economy. The results of the study will be useful for bank management, policy maker, and regulator and academia for future research.

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Introduction

A financial intermediary such as banks provides a facility of credit and other transaction to firms, household, investors which ultimately lead to boosting the economic activities in a country (Baily & Elliott, 2013). On the other hand, the global financial sector has undergone more than 100 crises over the past three decades (Stiglitz & Stiglitz, 2003). Many researchers such as Hassan and Kayed (2009); Nor and Ahmad (2015) argued that the unethical and moral hazard issues such as risk mismanagement, debt default, imprudent mortgage loan, inadequate transparency, human frailty, and complex financial instrument are the major reason behind the crisis. These crises have enforced that ethics issues are linked to the survival of the financial system. The Islamic financial system, based on Sharia principles and ethical standards flourished as a feasible choice to commercial banks in the global financial market. According to Islamic Finance Development report of 2018, the Islamic finance industry comprised 1,389 full-fledged Islamic financial institutions and windows. Islamic banking accounted for 71%, or US\$ 1.7 trillion, of the industry's total assets in 2017.

According to Khan and Ahmed (2001), the major challenges faced by Islamic banking is a credit risk. This problem will occur when clients fail to fulfill their financing obligation completely in the stipulated time period of the financing. Moreover, Chapra (2008) highlighted that although Islamic banking is considered the better intermediation channel yet it could not get away from incurring excessive non-performing loan which causes credit risk. This phenomenon suggests that there are still pertinent new factors that need to be examined except those covered in past research. Sultan (2008) suggested that among the new factors, intellectual capital is considered the most important issue He argued that lack of skills, knowledge and incompetence workforce will lead to higher operational and credit risks which stifle the Islamic banks' growth potential. He further argued that lack of human inefficiency at the credit assessment, analysis and screening may result in deterioration in the quality of a loan in Islamic banks which further leads to accumulation of NPL which causes credit risk. Meanwhile, Karim, Chan, and Hassan (2010) found that high credit risk leads to many problems such as a reduction in cost efficiency, inefficiency and low growth in the financial sector which further affects the whole economy.

Pakistan is one of those countries that strive hard to promote Islamic banking to stabilize the economy. In 2016, the total number of branches of Islamic banks in Pakistan was 2146 compared to 150 in 2007 (Islamic Banking Bulletin, 2015). The rising demand for Islamic banks, therefore, leads us to explore this avenue. Credit risk caused by a non-performing loan which is about 4% is relatively on the higher side in Islamic banks in Pakistan as compared to other Islamic banks (CR is around 3 %) in other countries such as Malaysia. Although this ratio is comparatively low from the conventional banks as currently according to World Bank statistics, 2017 their ratio is 8.7%. The accumulation of high credit risk leads to bank failures which lower down the economic growth. Hence there need to further deeply explored.

The knowledge-based asset or Intellectual Capital (IC) are becoming the driving force in the new economy to get a competitive advantage and creating a difference between book value and market value (Ghosh & Maji, 2014). Furthermore, according to Ulrich (1998), there are three important aspects to include IC in the service industry like banks; Human Capital (increasing demand for the knowledge-based workforce), Customer Capital (importance of customer relations) and Structural Capital (the growing importance of innovation and learning).

In the knowledge-based economy, in the knowledge-based sector such as banks, the importance of IC has gone up considerably. However, its role in managing the credit risk has given less attention by Basel committee, banks and even previous researchers except for some work by (Ghosh & Maji, 2014). The knowledge skills, professional experience, and imaginative mind play an important role in the success of credit activities. This



helps and enables them for proper identification and analysis of early warning signals at the early stage of the loan proposal. In addition, consist of the information system, database, process, patents, copyrights, and relationship with others to support the human resources this will help in attracting the new customers and retaining the existing. Thus, human capital and structural capital in the tough competitive environment help to attain the stability and solvency of banks. Many studies are carried out on the IC in relation to performance and profitability, however less attention has been given on the relationship of IC with credit risk particularly in Islamic banking except for a study by (Nawaz, Nor, & Habiba, 2019) on the relationship IC with credit risk in the conventional banks of Pakistan highlighted that IC is a significant and main driver of credit risk. This present study will enhance the literature of this relationship on the Islamic banks in Pakistan.

Against this background, this study contributes to the existing literature in several ways. The IC studies are mainly carried out in performance related (Al-Musali & Ismail, 2014; Haris, Yao, Tariq, Malik, & Javaid, 2019; Meles, Porzio, Sampagnaro, & Verdoliva, 2016; Mondal & Ghosh, 2012; T. Nawaz & Haniffa, 2017; Ozkan, Cakan, & Kayacan, 2017; Wei Kiong Ting & Hooi Lean, 2009; Yalama, 2013). However, less attention has been given to the relationship of IC with credit risk, particularly in Islamic banking. Hence this study aims to investigate empirically the relationship of IC with credit risk. Moreover, the study also introduces IC as a moderator variable in the relationship of bank-specific (Profitability, Liquidity, Loan Growth, and Operational Efficiency) variable and Credit Risk. Following research questions are derived from the above discussion.

Do internal factors (Operating Efficiency, Loan growth, Liquidity, and Profitability) influence credit risk of Islamic banks of Pakistan?

Does intellectual capital moderate the relationship between internal factors (Operating Efficiency, Loan growth, Liquidity, and Profitability) and credit risk of Islamic banks of Pakistan?

The rest of the paper is organized as in section 2.0 the related literature is reviewed and followed by Methodology in section 3.0. Section 4.0 carries the findings of the study and the conclusion is discussed in section 5.0.

Literature Review

The roots of Islamic banks in Pakistan are new and at its infant stage. The efforts started in early 1980. However, the first Islamic bank was established in 2000 named "Meezan Bank". Currently, there are five full-fledged Islamic Banks are working in Pakistan. Moreover, all conventional banks are providing their Islamic counters. Islamic banks are growing at 13%. However, they also faced many challenges. Many mergers took place in the last five days.

Islamic law prohibits Islamic banks from conducting debt instruments based on business transactions. Furthermore, one of the reasons why credit risk is higher than the conventional bank is that credit risk management techniques are limited in practical use. Conventional banks mostly used techniques such as speculative methods, including credit default swaps, options, and futures for credit risk reduction. However, Islamic banks have an obligation to compensate for the borrower's full financing if there is a case of borrower negligence. Islamic banks are therefore riskier than traditional banks and thus they have no unethical practices of credit risk mitigation (Bourkhis & Nabi, 2013; Sundararajan & Errico, 2002).

While studying the relationship of credit risk with the performance the researcher such as Ahmed, Akhtar, and Usman (2011); Khan and Ahmed (2001); M. Nawaz et al. (2012) argued that credit risk affects the performance

and profitability of the banks. Therefore, credit risk performing decisions are very important for long-run stability and growth of the banks.

In addition, the relationship between credit risk and performance of commercial banks in Nigeria is examined by Samuel (2015). It shows that the relationship between credit risk and commercial bank performance is negative and significant. Nor and Ahmad (2015) revealed that impaired NPL financing reduces bank profitability and growth that ultimately impacts the country's economic growth.

Berger and DeYoung (1997) illustrate the connections between bank-specific factors and focus on indicators of efficiency and problem loans. In particular, Berger and Young formulate possible mechanisms, "namely' bad luck," bad management," skimping' and' moral hazard,' which relate efficiency and adequacy of capital." They conclude that declines in measured cost efficiency generally lead to higher future problem loans. Furthermore, Ariff and Khalid (2000) stressed that a bank's internal or bank-specific weaknesses, such as weak credit policy, loan assessment, credit screening, imprudent lending, and moral hazard activities, could result in credit risk.

The resource-based theory perceives that the fundamental tools which give high value and commutative edge are intangible resources such as intellectual capital. According to Barathi Kamath (2007); Bontis (1996); Sveiby (1997) IC is classified into four components namely human, structural, and customer capital. Similarly, the IC was classified into four parts in another study: human, client, innovation, and the process by (Wang & Chang, 2005). Different methods have been adopted to measure the IC. However, Pulic (2000), got more popularity. This characterizes IC into three parts: capital efficiency utilized (CEE), human capital efficiency (HCE) and structural capital efficiency (SCE) segments. In existing literature, some studies such as (Barathi Kamath, 2007; Bontis, 1996; Joshi, Cahill, & Sidhu, 2010; Meles et al., 2016; Mondal & Ghosh, 2012; T. Nawaz & Haniffa, 2017), utilized the VAIC model. This study will also use the VAIC model for calculation of IC.

Based on the literature reviewed of IC, it is retrieved that most of the studies on conducted in relation to performance, however, less attention is given to its connection with credit risk. Although, the credit process requires more intellectual efforts of staff at the time of loan proposal, screening, and analysis stage. Hence this study attempts to unveil the relationship of IC with the credit risk in context to Islamic Banks in Pakistan. It further enhances the related literature by introducing IC as a moderating variable in the relationship of Bank specific variable (LIQ, ROA, OE, and LGR) and credit risk.

Methodology

The secondary data was collected from the annual statements of four Islamic banks through State Bank of Pakistan (SBP). The period of the study is 2006 to 2017. There are many local and international events in the financial markets took place in this period. The Pulic model is used to measure the IC. The independent variables consisted of four internal factors (LIQ, LGR, ROA, and OE,) and the moderating factor, Intellectual Capital (IC). The dependent variable was a credit risk. Fixed effect model and the hierarchical regression model are used.

Hypotheses

H1: There is significant and a negative relationship between (1) liquidity ratio, (2) Profitability ratio, (3) Operational Efficiency, and (4) loan growth and credit risk.

H2: The influence of internal factors, namely, liquidity ratio, profitability ratio, operational efficiency and loan growth on credit risk is moderated by intellectual capital.

Multiple Regression Models

$$CR_{it} = \alpha_0 + \beta_1 OE_{it} + \beta_2 LGR_{it} + \beta_3 LIQ_{it} + \beta_4 ROA_{it} + \epsilon_{it} \quad (1)$$

Hierarchical Moderated Multiple Regression Model

$$CR_{it} = \alpha_0 + \beta_1 OE_{it} + \beta_2 LGR_{it} + \beta_3 LIQ_{it} + \beta_4 ROA_{it} + \beta_5 IC_{it} + \beta_6 OE_{it} * IC_{it} + \beta_7 LGR_{it} * IC_{it} + \beta_8 LIQ_{it} * IC_{it} + \beta_9 ROA_{it} * IC_{it} + \epsilon_{it} \quad (2)$$

Where

| | | |
|-----------------|---|------------------------------------|
| α | = | constant |
| i | = | bank |
| t | = | time period |
| ϵ_{it} | = | Error term of bank i on time t |
| OE | = | Operating Efficiency |
| LGR | = | loan growth |
| LIQ | = | liquidity ratio |
| ROA | = | profitability |

Moderating variable:

| | | |
|----|---|----------------------|
| IC | = | Intellectual Capital |
|----|---|----------------------|

Results and Findings

Diagnostic tests for heteroscedasticity, autocorrelation and panel data test were performed and results are given in Table 1.

Table 1 - Diagnostic Test

| Test | (Prob> F) |
|--|-----------|
| Homoscedasticity/Heteroscedasticity Test | 0.000 |
| Auto-correlation Test | 0.000 |
| Panel Data Test(Hausman Test) | 0.000 |

Note: * $p < 0.05$, ** $p < 0.01$

The diagnostic test of Breusch-Pagan was used to check the heteroskedasticity. The result s rejects the null hypothesis, an indication for the presence of heteroscedasticity in the model. Gujarati and Porter (2010) Suggested applying White Heterosexastic Test for fixing this issue. Similarly, Wooldridge test was performed to identify the problem of autocorrelation in panel data. The Hausman test was conducted for regression analysis. Based on the result the fix effect model was selected appropriately for regression analysis. In addition, hierarchical regression was conducted to determine the impact of independent variables (LIQ, LGR, OE, and LIQ) on dependent variables (CR) and the influence of intellectual capital (IC) as a moderator on the relationship of internal factors and credit risk.

Table 2 - The Moderating Effects of Intellectual Capital on Internal Factors and Credit Risk for Islamic Banks in Pakistan

| Variable | Model 1 | | Model 2 | | Model 3 | |
|-------------------|---------|---------|---------|---------|---------|---------|
| | B | P Value | B | P Value | B | P Value |
| OE | 9.830 | 0.440 | -0.005 | 0.003 | -0.002 | 0.277 |
| LIQ | 0.127 | 0.132 | 0.215 | 0.249 | -0.260 | 0.367 |
| LGR | -0.371 | 0.004 | -0.410 | 0.708 | 0.125 | 0.688 |
| ROA | -1.470 | 0.001 | -0.265 | 0.000 | -1.580 | 0.095 |
| IC | | | 0.007 | 0.043 | 0.009 | 0.297 |
| IC*OE | | | | | 0.007 | 0.426 |
| IC*LIQ | | | | | 0.270 | 0.049 |
| IC*LGR | | | | | -0.322 | 0.048 |
| IC*ROA | | | | | -0.820 | 0.049 |
| Adj. R Square | | 0.867 | | 0.918 | | 0.946 |
| Sig. F Statistics | | 0.000 | | 0.000 | | 0.000 |
| F Statistics | | 17.070 | | 35.120 | | 43.390 |

Model 1

In model 1, dependent variables (LIQ, ROA, OE, and LGR) were found to be significant at the level of 0.0000 with a value of R2 adjusted from 0.8667. Of the four, two predictors, LGR ($\beta = -0.3717$, $P = 0.004$), ROA ($\beta = -1.476$, $P = 0.001$) were found significant.

Model 2

In model 2, Intellectual Capital (IC) is introduced as moderating variable. The results shown in Table 4 show that this model is significant at the level of 0.0000 with adjusted R2 9182. There were four predictors found to be significant, OE ($\beta = -0.0005$, $P = 0.03$), LGR ($\beta = -0.023$, $P = 0.000$), ROA ($\beta = -2.65$, $P = 0.000$) and IC ($\beta = 0.007$, $P = 0.004$) However LIQ and LGR are insignificant.

Model 3

It describes the results of interactions (OE, LIQ, LGR, ROA, IC, IC * OE, IC * LIQ, IC * LGR, and IC * ROA) used to investigate the impact of intellectual capital on CR of Islamic banks in Pakistan. The result shown in Table shows that this model 3 becomes significant at the level of 0.000 with adjusted R2 0.9457. The model could explain 94.57 percent variation in CR. Three interaction variables such as IC * LIQ, IC * LGR, and IC * ROA were found significantly affecting the relation of an internal factor with credit risk .

Conclusion

This study is an attempt to investigate the impact of intellectual capital on the credit risk of Islamic Banks in Pakistan. In the context of the knowledge economy, IC is considered as a primary factor for organizational success. Perhaps, this is most likely to be true in the services sector such as banks. There are many empirical shreds of evidence in support of this view however; most studies have found such impact on performance-related studies of firms. Nevertheless, credit risk has not been tested to capture the role of IC in managing it. Therefore, this study is an effort in this regard, particularly in Islamic banks in Pakistan. The study found that IC is a significant determinant of credit risk in Islamic Banks in Pakistan. The focus on IC, particularly in Islamic banks, is also very necessary due to the nature of products, process and transaction natures. Based on our findings and the consistent high problem of credit risk in Pakistani banks, it is suggested that banks should build an efficient structure of intellectual capital (human capital, structural capital and relation capital) to reduce and mitigate the credit risk to increase the long term sustainability of the banks. There are many methods to

measure IC. The study has used the Pulic Model to measure, however, result may differ in other methods. Future researches are recommended to explore the component of intellectual capital among other bank related factors.

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