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Strategic Financial Management in Financial Firms: Risk Impacts on Intellectual Capital and Competitive Advantage in Banking Sector

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Competitive advantage, intellectual capital, performance, risk exposure

ABSTRACT

A fundamental question in corporate strategy and industrial organization is how strategic financial management decisions affect firm performance. While existing literature extensively analyzes the non-financial firm perspectives of strategic financial management, there is very little work on how risk impacts intellectual capital and competitive advantage in financial firms. From a performance perspective, risk management can ensure sustainability and longevity in a business. From a practical perspective, survival in any industry also requires establishing and maintaining a competitive advantage. By analyzing risk impacts on intellectual capital and competitive advantage, this framework can be explored. The sample for this study consists of all commercial banks listed in Pakistan, Bangladesh, and Sri Lanka. The time frame of analysis is from 2008 to 2018. For dependent variables, this study determines the impact of risk exposure, measured as insolvency risk and credit risk. Insolvency risk is calculated by Z-Score (return on assets + capital ratio)/standard deviation of return on assets. Credit risk is measured as total equity divided by net loans, and impaired loans divided by gross loans. Intellectual capital is to be measured by Pulic's Value Added Intellectual Capital (VAIC) while competitive advantage is measured as firm specific profits. For robustness measure of bank performance is CAMELS rating, value is to be measured as Tobins Q. Control variables in this study include firm level controls – leverage and firm size, industry level controls- industry concentration, and country level controls – GDP per capita. The results of this study have both theoretical and practical implications.

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INTRODUCTION

In financial institutions, the primary business is risk management- to serve the intermediary role while determining the best combination of investments to manage risk on all fronts (Sadiq & Mushtaq, 2015). Therefore, any strategy pursued by a bank will directly impact its performance and profitability (Alhassan, 2015; Wang et. al, 2021).

The banking industry operates on the basic strategy of risk management – balancing the benefits and costs of risk exposure to ensure business continuity. As such, changes in strategic approaches will likely effect the level of productivity, achieved efficiency, profitability and stability (Alhassan, 2015; T. Khan, Sadiq, & Mushtaq, 2017). The current environment of the banking sector, its higher level of competitiveness and changing customer demands have shifted earnings from interest-based income to non-interest income.

Previous research shows two theoretical lenses to be adopted when determining the impact of risk on banks' intellectual capital, keeping in mind both bank-specific, industry-specific, and macroeconomic variables. These are the competition fragility perspective and the competition stability perspective. In the competition fragility perspective, banks in more competitive environments take on higher levels of risk to increase performance and profitability. Therefore, there is a positive impact of higher levels of competition on bank risk (Berger, Hasan, & Zhou, 2009; Carletti & Hartmann, 2003; Demsetz, Saidenberg, & Strahan, 1996; Keeley, 1990). Alternatively, the competition stability theory posits that lower levels of competition in the industry allow banks to charge higher margins and fees from customers which increases the likelihood of default. On the other hand, higher levels of competition force banks to charge more competitive fees and lower margins while seeking low risk clientele, fundamentally decreasing the likelihood of default (Boyd & De Nicolo, 2005; De Nicoló & Loukoianova, 2007).

Albaity et al. (2019) determine the impact of competition on banks' stability listed in the MENA region. For a timeframe of 2006 to 2015, they control financial inclusion, productivity, and macroeconomic instability. They also incorporate bank-level controls, such as size efficiency, diversification, and leverage. Findings show that banks that tend to face lower competition levels have higher profitability and are exposed to lower levels of credit risk and insolvency risk. When considering this phenomenon across Islamic banks and conventional banks, the effect is more pronounced in the preceding category (Albaity, Mallek, & Noman, 2019; Alhassan, 2015). This directly connects the need to determine the impact of risk exposure on performance in intellectual capital, competitive advantage, and banking performance.

Previous literature's empirical results indicate that large banks have the incentive to hold more loans thus have a larger financing gap ratio. However, over the limit point, the effect of size becomes negative. Thus, the effect of size on liquidity risk is non-linear. Banks with much less risky liquid assets and risky liquid assets can reduce their liquidity risk. Besides, banks depend heavily on external funding to face more severe liquidity problems. Thus, banks should diversify their funding sources to reduce liquidity risk.

The global financial crisis represents the starting point of short-term and long-term challenges for the global banking industry. In particular, the post GFC period is characterized by higher liquidity risk levels, as banks adopt more conservative policies in terms of lending. The main reason for this change in exposure to liquidity risk is that under the conditions of imperfect information or increased market tension, the likelihood of lending of excess funds decreases and the scope to diversify (Freixas, Parigi, & Rochet, 2000).

This study ascertains that risk is determined from two perspectives – insolvency risk measured by Z-score and credit risk as proposed by Trad et al. (2017) and Mollah et al. (2017) and subsequently utilized in Khan et al. (2019) (Mollah, Hassan, Al Farooque, & Mobarek, 2017; Trad, Trabelsi, & Goux, 2017). This study utilizes Pulic's Value Added Intellectual Capital (VAIC) to measure intellectual capital and its subcomponents. This model measures value creation through three sub-categories; human capital, structural capital, and physical capital. This is the most popular model utilized in various studies on intellectual capital (Pulic, 2000). Competitive advantage is identified as returns above industry average, as (Villalonga, 2004). Control variables include size, leverage, concentration, and GDP per capita. As a secondary aspect of this research, the three frameworks are tested against standard performance measures, including Tobin's Q and CAMELS.

This paper contributes to practical policy in two ways. Firstly, it shows the prevalence of risk exposure and intellectual capital profiles across banking sectors and their subsequent impact on intellectual capital and competitive advantage. As such, policymakers can address which components of risk and intellectual capital require additional management to increase performance. Secondly, this research also shows if and to what extent banks' risk exposure affects intellectual capital and competitive advantage and modify risk management strategies over time to attain the necessary effects. The detailed identification of risk components would also indicate operational plans to increase or modify intellectual capital, competitive advantage, and performance aspects.

Research Gap

While existing literature extensively analyzes the non-financial firm perspectives of strategic financial management, there is very little work on risk impacts on intellectual capital and competitive advantage in the banking sector. From performance perspective, intellectual capital development and its associated resources can ensure sustainability in business. From practical perspective, survival in any industry also requires maintaining competitive advantage. These two things, together, can be done through a strategy of value addition and value creation. Risk management strategies are a long-term approach that would directly affect the development or deterioration of intellectual capital and competitive advantage. Therefore, by analyzing risk results on intellectual capital and competitive advantage, this framework can be explored.

Existing studies on intellectual capital test its impact on fundamental measures of performance. A wide variety of studies exist in terms of risk, mainly focusing on determinants of risk and risk exposure in the banking sector. Once again, they consider this perspective from a fundamental performance perspective. Only one prior study was identified by Al-Bannany (2008) connecting intellectual capital and risk, which only analyzes banks listed in the UK.

Additionally, the financial services sector has evolved considerably in the last decade, with the constant challenges of new technologies and services, increased regulatory scrutiny, and ever-changing customer demands. Deterioration of asset quality and capitalization challenges continues to plague this industry, as wave after wave of transformation is expected faster than ever paces. To survive these revolutions, banks will have to focus on three key areas: increase investments in technology and infrastructure, invest in analytics for better customer connect and defenses against risk exposures, and tackle cyber risks in the digital age. From a strategic perspective, facing and overcoming these challenges requires a methodical exploration of intellectual capital, competitive advantage, and risk exposure in the banking sector.

Therefore, a significant gap that needs to be filled in the existing literature addresses the impact of resource intangibility, risk, and diversification on intellectual capital and competitive advantage.

LITERATURE REVIEW

There are two main perspectives when considering the measurement of risk. The macro perspective of risk determines external factors that impact risk exposure, such as political, legal, and societal factors (Borio, 2003). On the other hand, the micro perspective of risk determines the internal factors, such as firm characteristics and strategic decisions that impact risk exposure.

The complexity of identifying financial stability conceptually leads to different ways of quantifying such stability for an empirical work. The widely used indicator at the micro-level is the Z-score (Altman 1968, Altman et al.1977, Boyd and Graham 1986, Hannan and Hanweck 1988, and Uhde and Heimeshoff 2009). This reflects the probability of default in the banking system. However, this indicator suffers from several limitations. The Z-score is based purely on an accounting and auditing framework, and hence it does not consider other sources of risk such as the sensitivity of market risk or management risk (Čihák et al. 2012 and Creel et al. 2015). Iannotta (2007) used loan loss provision (LLP) to total loans as a proxy for banking credit risk. At a macro-level, Loayza and Ranciere (2006) utilised the standard deviation of private credit to GDP to capture financial fragility. In addition, Hollo et al. (2012) developed a financial stability measurement through a composite indicator of systemic stress (CISS).

Many studies have examined the influence of banks' business models on financial stability. Altunbas et al. (2011) stated that banks' business models that shape an aggressive credit growth and large balance sheets may face distress, conversely, any bank business model that is based on high deposits coupled with significant diversification of assets is less likely to face financial distress. Likewise, Ayadi et al. (2012) argue that retail-oriented banks are more profitable and stable, compared with other types of financial institutions.

The debate about the effect of bank size on financial stability has also gained much attention since it was evidenced that the crisis originated in the large global banks has spread the source of financial distress across many countries. The agency theory suggests that managers who run large banks can gain private benefits and obtain more compensation (Jensen 1986 and Gabaix and Landier 2008). By this perspective, it is possible to observe a negative relationship between bank size and financial stability. On the other hand, the stewardship theory presents a manager as an inherently trustworthy person, and it is unlikely that such a person misappropriates a bank's resources (Davis et al., 1997). It is also argued that a large bank may reflect structural convenience, which may reinforce financial stability (Donaldson and Davis, 1991). This suggests that a sensitivity to regulatory shocks may vary according to banks size.

Demirg et al. (1998) studied the determinants of banking distress across developing and emerging countries. They discovered that structural characteristics of the financial system together with a weak macroeconomic environment play key roles in increasing the probability of financial distress, especially in less developed countries. Further, Čihák et al. (2012) and Wen and Yu (2013) find that there are significant variations in the relationship between financial depth and financial stability across high-income and low-income countries. It is argued that this is due to the different propagation of financial distress and the sources of stress. Weak early

warning indicators in emerging economies are also said to influence the variations of the financial stability and the related determinants (Babecký et al., 2014;)

Very few studies cover the impact of intellectual capital on risk. Ghosh and Maji (2015) analyze risk and intellectual capital in the banking sector in India and find that intellectual capital and credit risk exposure have an inverse relationship in the banking sector. In addition, human capital has a positive but insignificant impact of financial stability. Onumah and Duho (2019) found that intellectual capital and human capital efficiency positively and significantly affect financial stability.

Nevertheless, structural capital efficiency and capital employed efficiency affect financial stability negatively and insignificantly. As regards studies on the determinants of intellectual capital, El-Bannany (2008) employed data on the UK banking industry from 1999 to 2005 and found that among other variables, risk, profitability, barriers to entry, efficiency, and the efficiency in the investment in intellectual capital are relevant factors that determine intellectual capital performance. Onumah and Duho (2019) employed a data set of 29 banks covering 2000 to 2014 in Ghana. They found that research and development intensity, the efficiency of investment in intellectual capital, leverage, operational risk, insolvency risk, profitability, and diversification are relevant factors that determine banks' intellectual capital performance.

Although the studies attempted to draw the nexus between the two variables, they did not either use a quantitative measure for intellectual capital, or the income or asset diversification indices. Moreover, some of these studies were not done in the banking industry, and considering the banking business's services nature, which is accompanied by a higher focus on intellectual capitals (knowledge-based assets), a study is warranted.

Despite an increase in studies in this area, current studies failed to explore the implications of intellectual capital on banks' diversification strategy. This study seeks to fill the dearth in literature by examining this nexus in the context of an emerging (frontier) economy.

METHODOLOGY

Data and Sampling

This research utilizes secondary data extracted from annual reports of commercial banks listed on primary stock exchanges of the SAARC region. The selection of countries is based on a three-pronged approach; economic income classification (as per World Bank), regional classification (as per World Bank), and banking system. The economic income classification is developing economies, the regional classification is SAARC, and the banking system is the existence of a dual banking system (both Islamic banking and conventional banking simultaneously exist in the banking system). The time frame for analysis is from FY2008-FY2018. The eleven-year time frame allows adequate observations to study the various aspects proposed in the research objective. As no centralized database exists, it must be collected from company annual reports. This study uses panel data analysis, determining econometric methodology as per the nature of data and variables. The sample size allows the researcher to determine the prevalence of intangible assets, risk exposure, and diversification strategies over time. Furthermore, a ten-year time frame will allow a clear understanding of intangible assets, risk exposure, and diversification profiles in the selected sample.

Variable Description

Risk

This study utilizes two measures of risk exposure – insolvency risk as measured through stability and credit risk. Both conventional banks and Islamic banks are exposed to these two risks.

This study employs the definition of insolvency risk defined as bank stability, that is, Z-Score following Cihak and Hesse, (2010); Demirguc-Kunt and Detragiache, (2002); Maechler, Mitra, and Worrell, (2005). Z-score test measure risk is recommended based on prior research and directly relates to the bank's insolvency. Z-score represents the number of standard deviations by which the returns on assets must decrease to incur a loss (a negative return).

This study utilizes two measures to measure credit risk: Total Equity/Net Loans adapted from Trad et al. (2017) and Impaired Loans/Gross loans adapted from Mollahet. al. (2017). These financial ratios are considered the main measures to identify signs of increased financial vulnerability and assess banks' resilience against financial shocks.

Control Variables

Bank Size

Bank size is generally used to measure economies or diseconomies of scale in the banking industry. We assume that as the bank size becomes larger, the bank would be more stable. The cost differences may cause a positive relationship between size and bank performance if significant economies of scale (Bourke, 1989; Molyneux & Thornton, 1992; Goddard et al., 2004). Also, as Short (1979) argues, size is closely related to capital adequacy since relatively large banks tend to raise less expensive capital and, hence, appear more profitable. In previous studies, some studies have found scale economies for large banks (Berger & Humphrey, 1997; Altunbaş et al., 2001; Athanasoglou et al., 2008; Kosmidou, 2008), while others have found diseconomies for larger banks (Kosmidou et al., 2005). However, Eichengreen and Gibson (2001) indicated that the effect of a growing bank's size on profitability might be positive up to a specific limit. Beyond this point, the effect of size could be harmful due to bureaucracy. Thus, the relationship may be expected to be non-linear. Like previous studies, we use the natural logarithm of the bank's total assets (SIZE) to proxy size.

Concentration Ratio

Regarding industry concentration, we use the Herfindahl Hirschman Index. The Herfindahl-Hirschman Index (HHI) is a commonly accepted measure of market concentration. It is calculated by squaring each firm's market share competing in a market and then summing the resulting numbers. It can range from close to zero to 10,000. Besides, the higher the value is, the lesser competition they have. According to the structure-conduct-performance (SCP) hypothesis, banks in highly concentrated markets tend to collude and thus earn monopoly profits (Short, 1979; Gilbert, 1984; Molyneux et al., 1996). Previous studies indicated that collusion might cause higher interest rates to spread (higher interest rates being charged on loans and lower interest rates being paid on deposits) and higher fees being charged (Goddard et al., 2001).

GDP per Capita

To capture the macroeconomic environment's effect, the macroeconomic variable used is the annual GDP per capita (GDP). GDP is a measure of total economic activity within an economy. Higher economic growth encourages banks to lend more and permits them to charge higher margins and improve their assets. Previous studies found that economic growth positively affects the bank's performance (Athanasoglou et al., 2008). Thus, GDP is expected to have a positive impact on bank performance.

Dependent Variables

Value Added Intellectual Capital

Pulic (2000) quantified the value addition from intellectual capital and physical capital components and proposed the VAIC model, which accounts for the total resource base of organizations and does not solely rely on physical capital.

The first step in calculating the VAIC involves quantifying value addition, which is the difference between output, measured as sales revenue, and input, measured as total operational expense excluding employee cost.

VA= output - Input

The second step involves calculating the human capital. Pulic (2000) uses total employee cost as the best proxy for human capital.

HC = Total Employee cost

The next step refers to quantifying the value addition from each unit of employee cost.

HCVA= VA/HC

The fourth step involves quantifying the value addition from structural capital. Structural capital is obtained by deducting total employee costs from value addition.

SC= VA-HC

Since structural capital and human capital have an inverse relationship, the value-added efficiency of structural capital is quantified slightly differently from the value-added efficiency of human capital.

SCVA = SC/VA

Now that the value-added efficiency of human and structural capital is quantified, adding both give value-added efficiency of intellectual capital.

ICVA= HCVA + SCVA

Once the value-added efficiency of physical capital is calculated, the sum of both is the measure the value-added efficiency from firms' complete resource base. Physical capital is calculated as total net assets less any intangible assets.

PC = Non-Current Assets + Current Assets – Intangible Assets – Current Liabilities

The value-added efficiency of physical capital is quantified the same way as the value-added efficiency of human capital.

PCVA = VA/PC

Thus, VAIC is the sum of value-added efficiency of physical capital, structural capital, and human capital.

VAIC = PCVA + ICVA

Competitive Advantage

A firm's competitive advantage (disadvantage) is the degree to which it outperforms (underperforms) its competitors. If performance is measured by profitability, the difference between a firm's profitability and the average profitability of its industry is thus a direct indicator of its competitive advantage. (Villalonga, 2004).

Robustness Analysis – Dependent Variables

Tobin's Q

A company's primary goal is profit maximization – this is often used synonymously with shareholder wealth maximization. These two goals are used as one as the value of a company increases; it logically translates into an increase in share value, translating into a benefit for the shareholder. The wealth of shareholders and companies is presented by the market price of shares, which reflects investment decisions, funding (financing), and asset management. Therefore, we use Tobin's Q as a dependent variable in this study for performance.

CAMELS

Although a non-unique set of indicators exists, the CAMELS indicators appear to have a significant capacity to assess banks' soundness with the combination of indicators (Wanke et al., 2016). Regulators and supervisors employ this combination's financial dimensions to assess banks' overall health (Avkiran and Cai 2012, Wanke et al. 2015, Wanke et al. 2016, Buch et al. 2016 and Calabrese et al. 2017).

The components of CAMELS are as follows: Capital adequacy (C) is captured by total equity to total assets and treated as a desirable output. It should be maximized when more equity is conducive to less financial distress. Asset quality (A) is captured by non-performing loans (NPLs) to total loans, which is undesirable and should be minimized. Similarly, management efficiency (M) has a proxy in operating assets to total assets and is regarded as an undesirable input. However, earnings quality (E) has a proxy in the form of return on assets (ROA) and return on equity (ROE) and is maximized as a desirable output. Liquidity (L) is another desirable output with a proxy in liquid assets to short-term liabilities. Sensitivity to market risk (S) is measured by bank assets to sector assets (Wanke et al., 2016).

Econometric Model

El-Bannany (2008) stated that:

[. . .] if the choice of whether the variables should be included in the fundamental equation in linear form, or non-linear forms such as logarithms or square roots, is not clear from the theory, then the approach which can be adopted is to choose the form which best fits the data.

Choosing between dynamic panel data or Normal (Static) Panel data model depends on the dependent variable nature. Based on risk theory, the prior strategy significantly affects future strategy and exposure. Therefore, there is an inertia effect of the dependent variable in the proposed model. With 20 banks and 11 firm years, the panel data represents short panel data (greater number of years and fewer firms). Therefore, the best approach would be to utilize the

Generalized Method of Moments (GMM) model for estimation and analysis (Semykina& Wooldridge, 2010).
We use the GMM as a generic method to estimate our model's parameters to resolve this problem. GMM was proposed by Arellano and Bond (1991) and developed by Arellano and Bover (1995) and Blundell and Bond (1998) to solve the endogeneity problem in the independent variables using a series of instrumental variables generated by lagged variables (simultaneity bias problem of reverse causality and possible omitted variables).

For H1:

$IC = \beta_0 + \beta_1 Risk_{it} + \beta_2 Controls_{it} + \varepsilon$
$ComAdv = \beta_0 + \beta_1 Risk_{it} + \beta_2 Controls_{it} + \varepsilon$

For H2a:

$IC = \beta_0 + \beta_1 RiskIB_{it} + \beta_2 Controls_{it} + \varepsilon$
$ComAdv = \beta_0 + \beta_1 RiskIB_{it} + \beta_2 Controls_{it} + \varepsilon$

For H2b:

$IC = \beta_0 + \beta_1 RiskCB_{it} + \beta_2 Controls_{it} + \varepsilon$
$ComAdv = \beta_0 + \beta_1 RiskCB_{it} + \beta_2 Controls_{it} + \varepsilon$
The equations represent dynamic panel data model (Anderson & Hsiao, 1982) where a fixed effect approach is utilized to account for the potential correlation of regressor (IA) with the firm-specific components of the error term to account for all those intangibles that may not be explicitly indicated in the accounting variable but would still affect the outcome. This potential correlation may result in a Nickell bias (Nickell, 1981). There are three possible solutions to this problem: deviating from firm means and correcting the OLS estimates using the original formula (Waring, 1996; McGahan& Porter, 1999). Alternatively, it is possible to use first-differencing to eliminate the intercept and incorporate lagged exogenous regressors ($\Delta Xt-1$, $\Delta Xt-2$, ...) and predetermined variables ($\Delta yt-2$, ..., or $yt-2$, ...) as instruments for the lagged dependent variable ($\Delta yt-1$) (Anderson & Hsiao, 1982). Finally, it is also possible to use the generalized method of moments (estimator) (Arellano & Bond, 1991; Arellano &Bover, 1995). This method has proven higher levels of efficacy in comparison to the other two alternatives. In panel data research determining the impact of various firm-specific factors on value and performance, the GMM estimator has proven to be the most appropriate estimation method. In this study, the primary purpose is to test the proposed hypothesis; therefore, efficiency considerations are paramount. Unlike a dynamic panel GMM, the traditional econometric methods (ordinary least squares (OLS), fixed effect, and generalized effect) cannot overcome the endogeneity problem arising because of a causal relationship between the independent and dependent variables due to lagged dependent variables.
Risk strategies, performance, and profitability tend to persist over time, and bank profitability is affected by specific characteristics of banks that are not easy to identify or measure in an equation. This creates the problem of unobserved heterogeneity. For example, banks' performance can be affected by the management attitude toward risk, internal politics, or the managers' behaviors (Yao et al., 2018). If the influence of these characteristics and persistence of profitability is not considered, the calculated coefficients can be biased due to the correlation

between the error term and explanatory variables. Further, the inclusion of endogenous variables in an equation also produces biased results, e.g., equity to assets ratio can be higher for the most profitable banks because they retain more reserves, leading to an increase in future equity and profitability (Athanasoglou et al. 2008); and the board size might be determined by the firm performance.

Consequently, due to an unobserved fix effect and endogeneity, the use of the ordinary least square (OLS) method produces inconsistent and biased results. Therefore, following Yao et al. (2018), this study uses the Generalized Method of Moments (GMM), which was first used by Arellano and Bond (1991) for dynamic panel data. It allows lagged dependent variable on the left side and lag of all strictly exogenous variables to the right side to address the unobserved fix effect by differencing, the so-called difference GMM. It deals with serial correlation, endogeneity, unobserved heterogeneity and efficiently uses orthogonality conditions, thereby producing more consistent and unbiased results.

RESULTS AND DISCUSSION

Table 1 reports the descriptive statistics for the intellectual capital performance and independent variables selected in this study. Multicollinearity exists when independent variables correlate significantly with each other. The data set's multicollinearity was investigated by the correlation matrix of the independent variables shown in Table 2 and 3

Table 1

Variable	Obs	Mean	Std. Dev.	Min	Max
InsRisk	640	73.0773	330.287	-130.232	7621.1
CRisk1	659	0.175141	0.133494	-0.44739	1.357203
CRisk2	634	0.036897	0.288902	-3.06035	1.305059
ComAdv	707	-0.00114	1.305731	-13.2813	3.963807
VA	676	9216.04	12172.53	-15634.9	73837.75
HC	696	3306.37	4248.613	-392.785	30969.34
SC	676	5838.322	8570.256	-17168.7	59414.6
PC	711	206631.2	238904.9	-109591	1888960
HCVA	658	2.864841	3.483336	-13.0711	56.62615
SCVA	676	0.752694	1.798817	-11.8284	35.97894
ICVA	658	3.610769	3.861506	-11.9946	57.60849
PCVA	673	0.041865	0.057334	-0.70948	0.317216
VAIC	655	3.643373	3.876153	-11.9156	57.66377
Size	714	11.98749	1.11635	8.020158	14.88329
Lev	715	10.6741	8.787013	-168.216	62.47228
Lev2	714	8.28912	5.423708	-69.1715	40.22638
Concent	715	674.134	269.9674	0	1051.621
C	715	8.430437	9.466071	-89.0301	64.03647
A	678	0.036886	0.043815	-0.05506	0.287166

M	685	0.049299	0.772279	-13.3103	1.128455
E1	685	1.039505	1.429546	-11.3676	6.093946
E2	681	11.94968	19.11412	-204.713	182.4883
L	571	1.18807	13.41016	-1.71176	320.9999
S	715	0.035901	0.031975	-0.00401	0.171686
TQ	713	0.185596	0.469895	-3.20504	4.885242
GDP	695	2546.112	1587.917	615.78	5249.206

Table 2

	VAIC	HCVA	ICVA	SCVA	PCVA	ComAdv	IA	OIA	IAI	InsRisk	CRisk1	CRisk2	RDiv1	RDiv2	RDiv2a	RDiv2b	RDiv2c	ODiv1	ODiv2	ODiv3	Size	Lev	Concent	GDPper~e
VAIC	1.00																							
HCVA	0.69	1.00																						
ICVA	1.00	0.69	1.00																					
SCVA	0.68	-0.06	0.68	1.00																				
PCVA	0.17	0.33	0.16	-0.11	1.00																			
ComAdv	0.20	0.35	0.20	-0.08	0.54	1.00																		
IA	-0.06	-0.11	-0.06	0.03	0.04	-0.15	1.00																	
OIA	-0.02	-0.03	-0.02	0.00	0.01	-0.32	-0.01	1.00																
IAI	0.02	0.03	0.02	0.00	-0.01	0.00	-0.02	0.00	1.00															
InsRisk	-0.01	0.00	-0.01	-0.01	0.03	0.16	0.02	-0.01	-0.01	1.00														
CRisk1	0.14	0.26	0.15	-0.06	-0.02	0.10	0.10	-0.01	0.04	0.05	1.00													
CRisk2	0.10	0.03	0.09	0.10	0.07	0.09	0.02	0.12	0.01	0.02	-0.38	1.00												
RDiv1	0.19	0.09	0.19	0.17	-0.14	-0.17	0.09	0.18	-0.01	0.00	-0.01	0.03	1.00											
RDiv2	0.15	0.13	0.15	0.08	-0.22	-0.14	-0.04	-0.11	0.08	-0.07	0.00	0.08	-0.04	1.00										
RDiv2a	-0.09	-0.09	-0.09	-0.03	-0.04	-0.01	-0.04	0.06	0.00	-0.02	-0.06	0.06	0.04	-0.20	1.00									
RDiv2b	0.09	0.12	0.09	0.00	0.09	-0.03	-0.03	-0.01	-0.01	-0.01	-0.06	0.02	-0.06	-0.14	0.47	1.00								
RDiv2c	0.50	0.68	0.50	0.00	-0.01	-0.03	0.00	-0.06	0.00	0.00	0.29	0.00	0.02	0.10	-0.07	0.51	1.00							
ODiv1	0.02	0.04	0.02	-0.02	0.01	0.15	-0.01	-0.13	0.04	0.09	0.07	-0.03	-0.14	0.12	-0.02	-0.11	-0.02	1.00						
ODiv2	0.08	0.09	0.08	0.01	-0.02	-0.14	-0.15	0.06	-0.01	-0.11	-0.29	-0.04	0.00	-0.14	0.05	0.14	0.18	-0.44	1.00					
ODiv3	0.27	0.39	0.27	-0.03	-0.07	-0.07	0.10	0.00	0.04	-0.04	-0.07	0.06	-0.02	-0.02	0.00	0.04	0.45	0.30	0.41	1.00				
Size	0.20	0.32	0.20	-0.04	0.15	0.35	-0.11	-0.11	0.05	0.10	0.05	0.26	-0.15	0.18	-0.06	-0.03	0.17	0.44	-0.20	0.29	1.00			
Lev	-0.04	-0.11	-0.04	0.06	-0.43	-0.37	-0.04	-0.04	0.01	-0.06	-0.39	0.27	-0.07	0.33	0.08	0.09	0.18	0.23	0.14	0.40	0.17	1.00		
Con	-0.01	-0.02	-0.01	0.01	-0.06	-0.08	-0.03	0.04	0.03	0.02	0.39	-0.06	0.04	-0.12	0.06	0.02	0.18	0.19	-0.07	0.00	0.19	0.12	1.00	
GDP	-0.09	-0.12	-0.09	0.00	-0.03	-0.08	0.04	0.03	0.06	0.00	0.31	0.05	-0.01	-0.09	0.04	0.01	0.03	0.28	-0.19	-0.02	0.31	0.14	0.91	1.00

Table 3

	TQ	C	A	M	E1	E2	L	S	IA	OIA	IAI	InsRisk	CRisk1	CRisk2	RDiv1	RDiv2	RDiv2a	RDiv2b	RDiv2c	ODiv1	ODiv2	ODiv3	Size	Lev	Con	GDP
TQ	1.00																									
C	0.10	1.00																								
A	-0.07	-0.03	1.00																							
M	-0.13	0.11	0.21	1.00																						
E1	0.13	-0.02	-0.22	-0.12	1.00																					
E2	0.06	0.01	-0.34	-0.11	0.79	1.00																				
L	0.15	0.18	-0.13	-0.73	0.19	0.07	1.00																			
S	0.05	-0.07	0.19	0.04	0.34	0.20	-0.05	1.00																		
IA	0.03	0.28	0.06	-0.07	-0.27	-0.16	0.06	-0.15	1.00																	
OIA	-0.01	0.00	0.09	0.03	-0.35	-0.14	-0.02	-0.07	-0.01	1.00																
IAI	-0.01	-0.02	0.07	-0.01	0.01	0.01	0.00	-0.01	-0.03	0.00	1.00															
InsRisk	0.00	0.03	0.06	0.04	0.08	0.04	0.00	0.19	0.06	-0.02	-0.01	1.00														
CRisk1	0.07	0.71	0.23	0.02	0.01	0.01	0.22	0.04	0.22	0.00	0.04	0.05	1.00													
CRisk2	-0.04	-0.64	0.28	-0.11	0.18	0.01	0.10	0.15	-0.22	0.13	0.02	0.03	-0.40	1.00												
RDiv1	-0.06	-0.04	0.07	-0.05	-0.19	0.04	0.04	-0.16	0.13	0.18	-0.01	0.00	-0.03	0.03	1.00											
RDiv2	0.02	-0.16	0.19	-0.05	-0.12	-0.19	0.08	0.07	0.05	-0.11	0.09	-0.07	-0.02	0.12	-0.04	1.00										
RDiv2a	-0.02	-0.07	0.03	0.01	-0.08	-0.05	-0.06	-0.06	-0.04	0.06	0.00	-0.03	-0.06	0.07	0.04	-0.20	1.00									
RDiv2b	-0.02	-0.08	-0.05	-0.09	-0.01	0.03	0.06	-0.06	-0.03	-0.01	-0.01	-0.01	-0.07	0.03	-0.06	-0.15	0.48	1.00								
RDiv2c	0.07	-0.04	-0.08	-0.39	0.00	0.03	0.38	0.02	-0.01	-0.05	0.00	0.00	0.21	0.00	-0.01	0.06	-0.05	0.57	1.00							
ODiv1	0.08	-0.16	0.28	0.07	0.11	0.09	-0.31	0.34	0.03	-0.13	0.05	0.10	0.08	-0.01	-0.15	0.11	-0.01	-0.12	-0.05	1.00						
ODiv2	-0.09	-0.19	-0.29	-0.05	-0.11	-0.04	-0.21	-0.15	-0.18	0.06	-0.01	-0.12	-0.34	-0.03	-0.01	-0.19	0.07	0.16	0.18	-0.39	1.00					
ODiv3	-0.01	-0.37	-0.12	-0.26	-0.10	0.05	-0.25	0.11	-0.01	0.01	0.04	-0.03	-0.15	0.02	-0.05	-0.05	0.03	0.04	0.36	0.33	0.46	1.00				
Size	0.01	-0.24	0.20	-0.07	0.37	0.26	-0.02	0.82	-0.23	-0.11	0.05	0.09	0.00	0.26	-0.16	0.21	-0.06	-0.04	0.11	0.49	-0.23	0.27	1.00			
Lev	-0.10	-0.57	0.30	-0.06	-0.34	-0.39	-0.17	-0.06	-0.13	-0.03	0.01	-0.06	-0.44	0.27	-0.08	0.35	0.08	0.09	0.14	0.24	0.18	0.40	0.15	1.00		
Con	-0.05	0.13	0.49	0.09	-0.07	-0.07	-0.02	0.17	-0.10	0.04	0.03	0.01	0.38	-0.09	0.02	-0.07	0.05	0.01	0.18	0.26	-0.08	-0.02	0.13	0.09	1.00	
GDP	-0.09	0.02	0.57	0.18	-0.02	0.00	-0.16	0.18	-0.09	0.02	0.06	-0.01	0.31	0.02	-0.03	-0.02	0.03	0.00	0.02	0.38	-0.21	-0.05	0.27	0.11	0.90	1.00

Results – Risk Exposure and Intellectual Capital

The results presented in Table 4 presents GMM results of the overall sample where VAIC, SCVA, ICVA, PCVA, and Competitive advantage are dependent variables. Insolvency risk, credit risk1, and credit risk2 are independent variables. Control variables include size, leverage, concentration, and GDP. In this case, the first hypothesis is accepted. While insolvency risk does not impact overall VAIC, it does have a minimal impact on PCVA and competitive advantage. Credit risk 2 has a positive impact on VAIC, all of its subcomponents except SCVA, and competitive advantage, in line with the principle of increase in financial vulnerability proposed by prior research (Trad et al., 2017; Khan et al. 2017).

When we divide our sample into two categories based on the type of bank, Islamic and Conventional, the impact of risk exposure on intellectual capital becomes clearer. For Islamic banks (Table 5), insolvency risk does not have any impact on overall intellectual capital but has a positive impact on HCVA, and PCVA subcomponents, in line with competition-stability theory as proposed by prior research (Ouerghi, 2014; Albaity et al., 2019). Credit risk 1 has a positive impact on HCVA, and PCVA in line with the principle of increase in financial vulnerability as proposed by prior research (Trad et al., 2017; Khan et al. 2017), and a negative impact on SCVA, in line with the principle of decrease in financial vulnerability as proposed by prior research (Mollah et al. 2017; Khan et al. 2017). Interestingly, credit risk 2 has a significant positive impact on all dependent variables for Islamic banks, in line with the principle of increased financial vulnerability proposed by prior research (Trad et al., 2017; Khan et al., 2017). For conventional banks (Table 6), the impact is less profound. Insolvency risk has a minimal/negligible impact on PCVA, and competitive advantage, while credit risk2 has a significant negative impact on competitive advantage, in line with the principle of decrease in financial vulnerability proposed by prior research (Mollah et al. 2017).

The results presented in Table 7 (overall) presents GMM results of robustness analysis overall sample where Tobin's Q and capital adequacy, asset management, management quality, earnings, liquidity, and sensitivity (CAMELS) are dependent variables. Insolvency risk, credit risk1, and credit risk2 are independent variables. Control variables include size, leverage, concentration, and GDP. In this case, the first hypothesis is accepted. The results show that insolvency risk has a minimal impact on earnings, liquidity, and sensitivity, while credit risk1 only significantly impacts capital adequacy and management quality. Credit risk2 has a more widespread impact on capital adequacy, asset management, earnings, and liquidity. This shows that credit risk does affect the overall performance of banks in this region. These results further reinforce the initial results for the impact on intellectual capital.

When we divide our sample into two categories based on the type of bank, Islamic and Conventional, the impact of risk exposure on value and performance becomes clearer. For robustness analysis of Islamic banks (Table 8), insolvency risk does not impact any dependent components, except asset management. Credit risk 1 positively impacts capital adequacy, asset management, management quality, and sensitivity. Credit risk1 negatively impacts efficiency and liquidity. Interestingly, credit risk 2 negatively impacts capital adequacy and liquidity but a significant positive impact on earnings. For the robustness analysis of conventional banks (Table 8), the impact is less profound. Insolvency risk has a minimal/negligible impact on earnings, liquidity, and sensitivity. Credit risk1 has a positive impact on capital adequacy and liquidity, while credit risk2 has a significant negative impact on capital adequacy and earnings and a positive impact on asset management. These results further reinforce the initial results for the

impact on intellectual capital.

Table 4

Overall	VAIC	HCVA	SCVA	ICVA	PCVA	ComAdv
L.VAIC	0.096**					
-0.04	-0.04					
L.HCVA		0.109				
		-0.077				
L.SCVA			0.02			
			-0.021			
L.ICVA				0.089***		
				-0.032		
L.PCVA					0.18	
					-0.158	
L.ComAdv						0.496***
						-0.065
InsRisk	0	0	0	0	-0.000***	0.000***
	0	0	0	0	0	0
CRisk1	-1.264	1.573	0.879	-1.16	0.037	-1.53
	-4.861	-1.917	-1.829	-4.744	-0.033	-0.994
CRisk2	0.987**	1.054***	0.573	1.216***	0.027***	0.870**
	-0.414	-0.365	-0.413	-0.465	-0.008	-0.393
Size	-0.597	-1.302***	-0.577	-0.586	-0.029***	-0.046
	-0.903	-0.445	-0.493	-0.908	-0.007	-0.423
Lev	-0.239	0.016	-0.01	-0.235	-0.000*	-0.004*
	-0.286	-0.054	-0.012	-0.285	0	-0.002
Concent	-0.012***	-0.011***	-0.007	-0.013***	-0.000***	-0.002
	-0.003	-0.002	-0.006	-0.003	0	-0.002
GDPpercapi~e	0	0	0	0	0.000**	0
	-0.001	-0.001	0	-0.001	0	0
_cons	21.348***	24.191***	12.626	22.376***	0.421***	2.63
	-6.048	-4.088	-10.307	-6.175	-0.073	-4.148
N	364	369	406	369	401	435
chi2	180.6	112.2	11.81	125.8	142.5	206.8

Note: Coefficient is reported with standard error. Significance is denoted as follows: *** p <0.01, **p<0.05, *p<0.10. VAIC, SCVA, ICVA, PCVA, and Competitive advantage are dependent variables. Insolvency risk, credit risk1, and credit risk2 are independent variables. Control variables include size, leverage, concentration, and GDP.

Table 5

Islamic	VAIC	HCVA	SCVA	ICVA	PCVA	ComAdv
L.VAIC	-0.021					
	-0.024					
L.HCVA		0.091				
		-0.057				
L.SCVA			-0.219***			

			-0.042			
L.ICVA				0.100*		
					-0.059	
L.PCVA						0.062
						-0.057
L.ComAdv						
InsRisk	0.004*	0.004***	0	0.003	0.000***	
	-0.002	-0.002	-0.001	-0.003	0	-0.004
CRisk1	-0.619	1.434***	-1.902**	-0.541	0.042**	
	-0.95	-0.52	-0.758	-0.936	-0.019	-2.021
CRisk2	2.259***	1.520***	0.430***	1.975***	0.045***	0.803***
	-0.224	-0.18	-0.047	-0.203	-0.005	-0.175
Size	-1.120*	-0.453	-0.512***	-0.712	0.017	-0.808
	-0.576	-0.471	-0.118	-0.518	-0.011	-0.526
Lev	0.199***	0.100*	0.072***	0.117*	-0.004**	0.129**
	-0.07	-0.056	-0.014	-0.064	-0.002	-0.054
Concent	0.002	0.002*	0	0.001	0	-0.001
	-0.001	-0.001	-0.001	-0.001	0	-0.003
GDPpercapi~e	-0.002***	-0.002***	0	-0.002***	-0.000***	0
	0	0	0	0	0	0
_cons	18.685***	10.460**	6.292***	14.555***	-0.074	10.128
	-5.903	-4.747	-1.831	-5.204	-0.14	-7.327
N	71	75	78	75	74	78
chi2	60139.7	2818.4	1731.5	302.5	93056.5	2732.2

Note: Coefficient is reported with standard error. Significance is denoted as follows: *** p <0.01, **p<0.05, *p<0.10.

Table 6

Conventional	VAIC	HCVA	SCVA	ICVA	PCVA	ComAdv
L.VAIC	0.118***					
	-0.039					
L.HCVA		0.425***				
		-0.13				
L.SCVA			0.025			
			-0.02			
L.ICVA				0.107***		
				-0.034		
L.PCVA					0.192	
					-0.177	
L.ComAdv						0.423***
						-0.066
InsRisk	0	0	0	0	-0.000**	0.000***
	0	0	0	0	0	0
CRisk1	2.678	4.571	4.223	2.265	0.033	1.22

		-8.395		-3.336	-3.589		-8.376	-0.04	-1.019
CRisk2		0.86		3.124	-3.041		0.765	0.068	-7.212***
		-2.887		-2.457	-2.459		-2.962	-0.053	-0.957
Size		-0.859	-1.433**		-0.893		-0.921	-0.029***	-0.4
		-0.867		-0.588	-0.901		-0.874	-0.008	-0.296
Lev		-0.222		0.024	-0.01		-0.219	0	-0.003**
		-0.301		-0.054	-0.011		-0.299	0	-0.001
Concent	-0.014***		-0.011***		-0.007	-0.015***		-0.000***	0
		-0.003		-0.002	-0.006		-0.003	0	-0.002
GDPpercapi~e		0.001	0.001***		0		0.001	0.000***	0
		-0.001		-0.001	0		-0.001	0	0
_cons	23.777***		21.173***		15.976	25.265***		0.427***	5.166
		-5.735		-6.041	-14.715		-5.919	-0.095	-3.376
N		293		294	328		294	327	357
chi2		169.2		171.6	4.737		155.4	237.1	238.7

Note: Coefficient is reported with standard error. Significance is denoted as follows: *** p <0.01 , **p<0.05, *p<0.10.

Table 7

Overall	TQ	C	A	M	E1	E2	L	S
L.TQ	0.318***							
	-0.04							
L.C		0.006						
		-0.056						
L.A			0.515***					
			-0.119					
L.M				0.333***				
				-0.068				
L.E1					0.533***			
					-0.11			
L.E2						0.678***		
						-0.087		
L.L							0.278***	
							-0.086	
L.S								0.345*
								-0.18
InsRisk	0	0	0	0	0	0.001*	0.000*	0.000***
	0	0	0	0	0	-0.001	0	0
CRisk1	-0.227	30.367***	0.067	0.573***	-1.684	28.262	0.002	-0.006
	-0.679	-8.077	-0.047	-0.201	-1.291	-35.497	-0.186	-0.005
CRisk2	-0.022	-3.106**	0.023**	0.079	1.203*	10.010***	-0.032*	0.001
	-0.024	-1.514	-0.01	-0.048	-0.692	-2.967	-0.017	-0.001

Size	-0.304**	-2.166***	-0.006	0.071*	0.08	4.028	0.009	0.005***
	-0.153	-0.745	-0.005	-0.038	-0.62	-5.742	-0.054	-0.002
Lev	0.001	0.009	0	-0.001***	-0.002	0.124*	0.002***	0.000**
	-0.001	-0.007	0	0	-0.003	-0.074	0	0
Concent	-0.002	-0.002	0.000***	0	-0.007***	-0.103*	-0.001**	0
	-0.001	-0.004	0	0	-0.002	-0.06	0	0
GDPpercapi~e	0.000**	0	0	0	0	-0.004	-0.000**	-0.000***
	0	-0.001	0	0	0	-0.004	0	0
_cons	4.303*	30.846***	0.022	-0.784*	5.235	36.07	1.029	-0.024
	-2.53	-8.135	-0.047	-0.417	-6.218	-88.534	-0.783	-0.017
N	440	441	408	424	412	412	327	441
chi2	328.8	261.8	53.57	72.36	209.9	935.5	194.5	236.7

Note: Coefficient is reported with standard error. Significance is denoted as follows: *** p <0.01 , **p<0.05, *p<0.10.

Table 8

Islamic									Conventional							
	TQ	C	A	M	E1	E2	L	S	TQ	C	A	M	E1	E2	L	S
L.TQ	0.366***								0.299***							
	-0.139								-0.04							
L.C		0.01								0.150***						
		-0.065								-0.055						
L.A			0.143**								0.633***					
			-0.072								-0.065					
L.M				0.129								0.355***				
				-0.094								-0.131				
L.E1					-0.08								0.448***			
					-0.059								-0.057			
L.E2						-0.014								0.559***		
						-0.107								-0.053		
L.L							0.141								0.230**	
							-0.093								-0.113	
L.S								0.470***								0.321*
								-0.111								-0.17
InsRisk	0	0.01	-0.000***	0	0	0.01	0	0	0	0	0	0	0	0.001*	0.000*	0.000***
	0	-0.009	0	0	-0.003	-0.016	0	0	0	0	0	0	0	0	0	0
CRisk1	-0.216	7.213*	0.070***	1.708***	-3.774***	-11.342	-0.856***	0.008**	-0.076	39.674***	0.011	0.266	1.856	77.834	0.288*	-0.008
	-0.25	-3.765	-0.025	-0.325	-1.425	-9.025	-0.143	-0.004	-0.858	-7.303	-0.035	-0.243	-1.148	-55.199	-0.157	-0.007
CRisk2	0.022	-3.540**	0.005	0.133	1.632***	9.547***	-0.065**	0	-0.308	-3.854*	0.120***	-0.042	-8.320***	-112.056	-0.092	-0.004
	-0.02	-1.542	-0.006	-0.083	-0.315	-2.333	-0.027	-0.001	-0.206	-2.34	-0.03	-0.066	-0.819	-77.406	-0.082	-0.005
Size	-0.413	5.289**	-0.028***	0.365*	-1.725***	-11.169**	0.11	0.004*	-0.364**	-1.971***	-0.001	0.048*	-0.025	2.106	0.009	0.005***
	-0.403	-2.435	-0.006	-0.192	-0.557	-4.855	-0.067	-0.002	-0.184	-0.743	-0.005	-0.027	-0.368	-5.692	-0.049	-0.002
Lev	0.044	-1.396***	0.004***	-0.023	0.243***	2.089***	-0.030***	0	0.001	0.007*	0	-0.001***	-0.002	0.103	0.001***	0.000***
	-0.039	-0.296	-0.001	-0.024	-0.073	-0.76	-0.008	0	-0.001	-0.004	0	0	-0.002	-0.071	0	0
Concent	-0.001	-0.002	-0.000**	0.001**	-0.004**	-0.027*	-0.001**	0	-0.002	-0.001	0	0	-0.006***	-0.104*	-0.001**	0
	-0.001	-0.005	0	0	-0.002	-0.015	0	0	-0.002	-0.004	0	0	-0.002	-0.059	0	0
GDPpercapi~e	0	-0.004**	0.000**	0	0	-0.001	0	-0.000**	0.000*	0.001	0	-0.000*	0	-0.004**	-0.000**	-0.000***
	0	-0.002	0	0	0	-0.002	0	0	0	-0.001	0	0	0	-0.002	0	0
_cons	4.118	-23.076	0.268***	-4.400**	22.986***	142.364***	0.769	-0.021	5.293*	23.325***	-0.014	-0.434	6.21	59.009	0.932	-0.019

	-3.986	-19.842	-0.057	-1.819	-6.656	-51.007	-0.755	-0.026	-3.151	-8.514	-0.051	-0.281	-4.035	-110.102	-0.796	-0.018
N	77	78	67	72	70	70	66	78	363	363	341	352	342	342	261	363
chi2	5579255	3336	27562.9	2217213	123.1	265.4	107748.7	7578.5	170	540.5	1484.2	56.54	593.7	2829.2	345.5	313.2

CONCLUSION

This paper empirically tests the hypothesis that risk exposure of banks' resources contributes to intellectual capital and competitive advantage. Further, it attempts to determine if the impact differs significantly across Islamic banks and conventional banks.

This paper contributes to the existing literature on bank capital and risk relationship by incorporating industry concentration as an explanatory variable in the model. Further, a myriad of empirical evidence sheds light on the critical role of various aspects of risk management and diversification strategy on each aspect of intellectual capital.

Insolvency risk does not have any impact on overall intellectual capital but has a positive impact on HCVA, and PCVA subcomponents, in line with competition-stability theory as proposed by prior research (Ouerghi, 2014; Albaity, et. al., 2019). Credit risk 1 has a positive impact on HCVA, and PCVA in line with the principle of increase in financial vulnerability as proposed by prior research (Trad et. al., 2017; Khan et. al. 2017), and a negative impact on SCVA, in line with the principle of decrease in financial vulnerability as proposed by prior research (Mollah, et. al. 2017; Khan et. al. 2017, Khan, et al., 2019). Interestingly, credit risk 2 has a positive significant impact on all dependent variables for Islamic banks, in line with the principle of increase in financial vulnerability as proposed by prior research (Trad et. al., 2017; Khan et. al. 2017).

Insolvency risk has a minimal/negligible impact on PCVA, and competitive advantage, while credit risk2 has a negative significant impact on competitive advantage, in line with the principle of decrease in financial vulnerability as proposed by prior research (Mollah, et. al. 2017; Khan et. al. 2019).

From a policy perspective these results indicate that banks that maintain more competitive positions are less likely to be exposed to insolvency risk. In addition, the long-term strategy of banks should be geared towards managing credit risk policies. This research indicates that Islamic banks should focus on long term credit risk management to improve competitive positioning and intellectual capital performance.

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