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Intellectual Capital Disclosure and Financial Performance Nexus in Islamic and Conventional Banks in the GCC Countries

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Abstract

Purpose: This paper aims to comparatively examine the impact of the intellectual capital performance on the financial performance of Islamic and conventional banks in the GCC countries by classifying intellectual capital as human capital, knowledge creation, and innovation processes.
Design/methodology/approach: Along with the theoretical discussion in essentialising the rationale for intellectual capital formation through Islamic norms, the empirical analysis is formulated through the data generated by disclosure analysis using a panel of five GCC countries examining 408 annual reports from 19 Islamic and 23 conventional banks covering 2010-2019 period. In the analysis of the generated data, both fixed and random effects regression models are utilised.
Findings: The findings suggest that Islamic banks perform better than conventional banks in creating intellectual capital through knowledge creation, human capital, intellectual contribution. While the intellectual capital disclosure index and its pillars are significant for Islamic banks, these variables are not significant for the conventional banks in the GCC countries.
Research Limitations/implications: Considering that disclosed information may not reflect actual experience and performance, factual data could also be utilised to overcome potential shortcomings of disclosure generated data.
Practical Implications: This paper demonstrates that Islamic banks in the GCC have been successful in their intellectual capital performance, whereby they seem to be performing in line with the Islamic ontology. In addition, the disclosure items utilised in this study may guide the Islamic and conventional banks in the process of preparing their annual reports. Importantly, they may use these items as benchmarks in further developing their intellectual capital performance for better financial performance.
Originality/Value: This paper essentialises knowledge development and innovation for Islamic banks through the Islamic cognitive system rather than as a requirement of the market mechanism. Secondly, a comparative analysis between Islamic and conventional banks is presented by acknowledging the peculiarities of Islamic banks in the methodology and disclosure index.

Keywords: Intellectual capital disclosure; Financial performance; Islamic banks; the GCC

1. Introduction

Apparent within recent changes to the global economy are differences between modern and traditional approaches to value creation processes, as seen through a complex, dynamic and competitive environment, which prioritises a knowledge-based economy providing sustained advantages to economic and financial actors (Wei Kiong Ting and Hooi Lean, 2009). Therefore, this ongoing transformation has affected people, firms, banks, financial institutions, and each segment of markets. Consequently, as a reflection of a knowledge economy, intellectual capital has started to play a significant role as "the invisible balance sheet" (Rezaei and Mousavi, 2015), which has more value for organisations than physical assets in this changing global economy.

In the modern economy, with sophisticated financial offerings, intellectual capital is also at the centre of the banking sector. The rationale for highly intellectual capital in the banking sector emerges from instituting intellectually homogeneous practices and dependency on the intensive knowledge-based nature of banking and finance (Ismail and Karem, 2011). The measurement of intellectual capital performance in banks or elsewhere has been debated in searching for the most appropriate methods due to increased innovation, human capital, and technology. To respond to such measurement issues, in this study, the measurement of intellectual capital efficiency is framed through the intellectual capital concept and its indicators supported by the disclosure analysis.

This paper, hence, aims at evaluating the impact of the intellectual capital of Islamic and conventional banks in the form of human capital, knowledge creation, and innovation processes on their financial performance in the GCC countries through a theoretical exploration and empirical examination. The main data for the empirical analysis is generated through disclosure analysis using 408 annual reports from a panel of 19 Islamic and 23 conventional GCC banks for the period of 2010-2019. The significance of this paper lies in the formulation of a conceptual narrative to explicate the importance of Islamic intellectual capital in terms of Islamic ontology and epistemology, whereby it aims to rationalise as to why Islamic banks should be at the forefront of intellectual capital formation. This approach assists with presenting paradigms related to intellectual capital concerning the realm of ‘what ought to be’ in an Islamic banking system, whereby an Islamic understanding of knowledge and intellectual capital is presented to evaluate the modern understanding of an Islamic approach. Therefore, this paper

argues that Islamic banks should perform well in intellectual capital compared to conventional banks.

As for the organisation and the contents of this paper, an Islamic understanding of creating knowledge and human capital is articulated in Section 2. Section 3 presents the conceptual framework of the study to clarify the intellectual capital formation in Islam and conventional formation. Section 4 develops hypotheses through a survey of empirical research. Section 5 presents the research methodology, including content analysis, creating disclosure items, and econometric models. Finally, section 6 presents the detailed findings, and Sections 7 and 8 present a general discussion and conclusion.

2. Essentialising Islamic Intellectual Capital Formation

The constituted theory of Islamic finance and its practice has emerged from and operates according to the values, norms and principles derived from the knowledge revealed through Qur'an and its articulation (*hadith*) and practises (*sunnah*) by the Prophet of Islam. Hence, rather than observation-based theory and institution, Islamic finance is entirely a knowledge-based emergence, which essentialises the importance of knowledge as a base and its development as an intellectual capital formation. Thus, due to the essential nature of knowledge in emancipating and empowering individuals for development purposes for their *falah* (salvation and happiness) in this world and hereafter.

Within such a framework, *tawhid* or 'complementarity for unity' forms the basis of the Islamic cognitive system in the sense everything in the universe complements each other to reach unitarity. Within this cognitive system, individuals are expected to develop themselves through the *tazkiyah* (growing in harmony with other stakeholders) process by essentialising 'growth in harmony' through articulating the knowledge base of Islam in their everydayness. This should also help other stakeholders' growth so that the *tazkiyah* process can effectively achieve the 'development towards perfection path' or *rububiyah*. As *rububiyah* requires development in compliance with the Islamic knowledge system in every aspect of life, including economic, political, religious, and social spheres (Asutay, 2007b). This is expected to lead the individual to *falah* or salvation, which is expected to lead to *ihsani* social capital or 'growth of beneficence and equity' through the socialising process, whereby *ihsan* works as an equilibrium mechanism for justice between different segments of the society as well as defined as perfection level in

the tasks and actions one is charged with as part of *rububiyah* or development process for perfection (Naqvi, 1994; Asutay, 2007a).

In this cognitive system of the Islamic moral economy, every individual is expected to develop their knowledge, talents, and skills to actualise human qualities as part of the development path suggested by *tazkiyah* and *rububiyah*. Through such a process, human beings are expected to develop society and their environment for the sake of God (Hashi and Bashiir, 2009), leading to *ihsani* social capital. This is because Muslims believe that empowerment through intellect, free will, and knowledge through the Islamic cognitive system aims to discover the best of the world to develop societies and to serve human beings (Bakir *et al*., 2015; Hashi and Bashiir, 2009).

Through the *ihsani* social capital, the knowledge and its practice are expected to affect every sphere of life, including economic and financial organisations. This process results in the expansion of knowledge articulation at the organisational and societal levels. Thus, knowledge and its embeddedness and affirmation in the form of intellectual development is an essential part of an Islamic moral economy system, as the individual and organisational development in Islam requires a learnt and informed nature. Consequently, modern Islamic institutions are also expected to contribute to the advancement, including knowledge development, by increasing human capabilities. As Asutay (2010) identifies, Islamic financial institutions represent a novel knowledge system, which is transferred to other parts of the world to help them to develop *Shari'ah*-compliant finance. Therefore, as modern organisations, Islamic banks are expected to essentialise and institutionalise intellectual capital and human capital, which is explored in detail in the empirical part of this paper, in the following sections.

3. Intellectual Capital Formation and Firm Financial Performance

The term intellectual capital refers to a knowledge generation and formation process and outcomes within organisations. Therefore, the intellectual capital of organisations arises from an accumulation of extensive knowledge through distribution of employees' knowledge and contributions (Hang Chan, 2009). However, the term intellectual capital can be expanded through the distribution of stakeholders, participants, and executives that are all related to human knowledge in the form of human capital. Furthermore, intellectual capital is a broader term than human capital by also consisting of structural capital (Hang Chan, 2009, Edvinsson, 1997).

Regarding the measurement of intellectual capital, as identified by several models since the 1950s, it comprises human capital, structural capital, and capital employed. However, in the late 1990s, Pulic (1998; 2004) developed the VAIC model, which focuses on two components of intellectual capital contributing to value creation, namely human capital and structural capital. Besides, Pulic (2004) argues that the value creation efficiency of organisations can be measured both in physical (capital employed) and non-physical (human and structural capital) terms instead of focussing only on intangible assets in measuring the value creation of organisations. On the other hand, Rehman *et al*. (2011) have focussed on relational capital (customer and supplies relations) instead of capital employed by arguing that 'intangible' by nature does not contain any financial value in the disclosure studies. Therefore, the term 'relational capital' is used in this study to measure intellectual capital disclosure rather than capital employed.

Human capital consists of people contributing to organisations through their capabilities, experience and success, which are at the centre of each organisation as the primary source of creating economic value (Puntillo, 2009; Alipour, 2012). Furthermore, more qualified and efficient personnel means better efficacy for organisations and increased value-added efficiency (Rehman *et al*., 2011). In this regard, to manage such efficiency, human capital is needed to contain some components within itself, such as technical knowledge, education, motivation, experience, and skills (Beattie and Thomson, 2007).

Structural capital is another significant component of intellectual capital consisting of all non-human knowledge assets in organisations that facilitate employees to perform at maximum efficiency. It includes systems, databases, copyrights, patents, rules, and policies, which are all critical for the decision-making process in any organisation (Rehman *et al*., 2011; Bontis, 1998, Calabrese *et al*., 2013; Mehralian *et al*., 2013; Alipour, 2012). This type of capital also refers to knowledge that is captured and institutionalised within organisations' process, structure, and culture, which is a subset of its explicit knowledge (Alipour, 2012). Therefore, it is possible to divide the structural capital as innovation capital, such as software, brands, patents, and organisation processes, such as culture, vision, mission, fundamental values and principles, and strategies (Puntillo, 2009).

Relational capital refers to the knowledge that helps develop relationships between organisations and external partners, such as customers and suppliers. Therefore, this kind of

capital relates to the value of an organisation's image, brand, and reputation as invisible assets that all affect external partners (Shamsudin and Yian, 2013).

4. Literature Review and Hypothesis

4.1. Theoretical Framework on Intellectual Capital: Resource-based Theory

Intellectual capital is linked to non-material sources embedded within firms that also contribute to economic growth; therefore, such a perspective and change in the economy has led to the emergence of new theories and methods for valuing and measuring intangible resources (Andriessen, 2004: 3). Therefore, economists (*see*: Barney, 1991; Andriessen, 2004; Priem and Butler, 2001; and Barney and Clark, 2007) have sought theories to develop a scientific foundation to account for such changes in the economy, such as, resource-based theory, agency theory, an organizational learning theory that closely relate to a 'knowledge economy'. Therefore, intangible assets (henceforth, intellectual capital in this research) help to measure and value the contribution of firms and organisations in the area of intellectual capital. Furthermore, resource-based theory shows how intangible and financial resources related to knowledge stimulate financial performance, in this case, within the banking sector (Al-Musali and Ku-Ismail, 2016, p. 527). Therefore, the resource-based theory is a better theory to provide a basis for analysing intellectual capital in the banking sector.

The resource-based theory provides the advantage to firms and organisations through its possession of incomparable material, human, and organisational sources that help to create value related to capital and strategies that all need to be valuable, rare, inimitable, and non-substitutable (Barney, 1991; Priem and Butler, 2001; Barney and Clark, 2007). From this perspective, contenders considering resource-based capital have focused on understanding the empirical application of the theory and its impact on a firm's or organisation's performance (Barney, 1996, p. 469). In addition, resource-based theory considers intellectual capital that assists firms in gaining a sustainable competitive advantage and physical and financial capital. Consequently, to understand the impact of intellectual capital on the financial performance of banks, it is necessary to consider knowledge, experiences, skills, innovation, culture, and human capital (Al-Musali and Ku-Ismail, 2016; Nawaz and Haniffa, 2017; Rezaei and Mousavi, 2015; Abhayawansa and Abeysekera, 2008).

In this sense, the GCC countries represent one of the best examples of examining the relationship between intellectual capital and financial performance, as they are financially

developed and have knowledge-based economic policies for the post-petroleum era. While the intellectual capital generated by the GCC banks may not be sufficient to provide a competitive edge, their foreign institutional shareholders contribute to their intellectual capital through their experience, technological and organisational capabilities (Al-Musali and Ku-Ismail, 2012, p. 120).

4.2. Literature Survey and Hypothesis Development

Although there are several studies on disclosure analysis of intellectual capital in different sectors and samples (*see:* Mamun and Aktar, 2021; Bhatia and Mehrotra, 2016; Li *et al*., 2008; Mubaraq and Haji, 2014; Kamath, 2007; Sharma and Dharni, 2017), the case of Islamic banks is quite rare in the literature (*see*: Belal *et al*., 2018; Damayanti and Budiyanawati, 2014; Haji and Mubaraq, 2012). In addition to the disclosure analysis of the relationship between intellectual capital and financial performance, several studies are using the VAIC model in Islamic banks (*see*: Buallay and Madbouly, 2020; Ousama *et al*., 2019; Buallay, 2019; Buallay and Hamdan, 2018). However, in terms of studies about intellectual capital and financial performance, studies based on the disclosure analysis are rare compared to those based on the actual data through the VAIC estimation method. Therefore, this study extends the empirical analysis by examining the impact of the disclosed information of intellectual capital on the financial performance of the GCC Islamic and conventional banks to fill the observed gap in the literature.

It is also important to note that in formulating the model, this study extends the variables used in the practice of intellectual capital disclosure (ICD) for conventional banks by developing an intellectual capital disclosure index (ICDI) for Islamic banks through applying Islamic terminology to respond to the peculiarities of Islam on intellectual capital. This will provide a more nuanced and, hence, Islamically composite index for examining intellectual capital disclosure in Islamic banks' annual reports.

This study develops four main hypotheses to explore and examine the relationship between ICD and the financial performance of banks in the GCC countries by comparing conventional and Islamic banks. The rationale for these hypotheses is explained as follows along with the hypotheses' statements:

ICD and financial performance: Intellectual capital helps to increase organisational performance through its representative of knowledge, skills, experience, relationship with

customers and business partners and training that all help an organisation be competitive and manage performance (Sullivan, 1998). It is expected that ICDI, as the totality of human capital disclosure index (HCDI), structural capital disclosure index (SCDI), and relational capital disclosure index (RCDI), should positively impact organisational performance at both management and financial level (*see*: Li *et al*., 2008; Sharma and Dharni, 2017; Damayanti and Budiyanawati, 2014). Therefore, the following hypothesis is tested in this study:

> *H_1: There is a significant positive relationship between ICDI and the financial performance of each type of bank in the GCC countries*

In addition, it is important to test each of the ICDI components as to whether they are significant for the financial performance of the sampled banks.

Human capital disclosure and financial performance: Human capital items such as employee's capabilities, knowledge, training, learning, know-how, and education in the variable definition section can be recognised as an organisation's most valuable resource that makes human capital the main source affecting the organisational performance (Curado *et al*., 2011). Therefore, the expectation is that the performance in human capital disclosure should be significant for the financial performance of banks (*see*: Bhatia and Mehrotra, 2016; Mubaraq and Haji, 2014). Therefore, it is hypothesised that:

> *H_{1a}: There is a significant positive relationship between HCI and the financial performance of each type of bank in GCC countries.*

Structural capital and financial performance: Structural capital is also known as internal capital comprising processes, routines, structural capital, corporate structure, copyrights, patents, and trademarks. It is suggested, among others, by Bontis (1998) that structural capital can be considered as a mechanism and structure of an organisation that affects human capital in terms of intellectual capital. However, in the organisation, this kind of capital can be used by employees as they are not removable from the organisation, such as corporate culture and structure that embodies and supports human capital (Edvinsson, 1997). Therefore, the expectation is that a higher level of structural capital disclosure is better for the financial performance of an organisation (Mubaraq and Haji, 2014). It is, consequently, hypothesised that:

H_{1b}: There is a significant and positive relationship between SCI and the financial performance of each type of bank in GCC countries.

Relational capital and financial performance: Relational capital refers to the relationship of the organisations with their employees and external stakeholders, such as customers or corporate partners, and external capital related to trust, brand, image, business collaboration, customer service, environmental effects, and contracts (Edvinsson and Malone, 2007; Bozzolan *et al*., 2003). In addition, these items can be related to the image and branding of the organisation among its customers and in the market. Therefore, it is expected that high levels of relational capital contribute to organisations' corporate and financial performance (Mubaraq and Haji, 2014). Accordingly, the following hypothesis is developed to be tested in this study:

H_{1c}: There is a significant and positive relationship between RCI and the financial performance of each type of bank in GCC countries.

5. Research Methodology

The empirical process pursued in this section started with the data generation process, for which an ICDI is constructed, which is discussed in the following section and presented in the variable definition. Following this, ICDI is measured using a coding method to the banks' annual reports covering the 2010-2019 years through content analysis. After constituting an ICDI data set, this research employs correlation analysis to examine any correlation between the ROA/ROE and ICDI and its components. This is followed by fixed and random effect analysis selected by the Hausman test to locate the relationship between ROA/ROE and ICDI, its pillars, and control variables in the sampled GCC banks.

5.1. Data Generation through Content Analysis

Regarding data generation, content analysis is used to generate data from the annual reports of the sampled bank. Content analysis is defined as "a research technique for making replicable and valid inferences from text (or other meaningful matters) to the contexts of their use" (Krippendorff, 2004, p. 18). Content analysis can be summarised as analysis of periodical and stable published information by institutions, groups, society, and banks, such as annual reports, using different methods like 'word coding method'.

There are several reasons why content analysis can be used as a data collection method. One of the most important points related to this study is that "content analysis reflects cultural patterns

of groups, institutions, or societies; reveals the focus of individual, group, institutional, or societal attention" (Weber, 1990, p. 9). Accordingly, these definitions and features make content analysis an effective tool in this research, which is analysing annual reports to gather data on intellectual capital and to evaluate banks through some econometric techniques that are explained in detail below.

Content analysis in this study provides repeatability and valid inferences from the data generated from the annual reports of the sampled banks in the GCC countries. The disclosure index used in this study includes 43 disclosure items for conventional banks, with an additional ten more disclosure items for Islamic banks, resulting in 53 index items for Islamic banks. For the Islamic bank disclosure index, additional disclosure items were included in addition to the common disclosure items to reflect the peculiarities of Islamic banks. The common items can be rationalised on the ground of possessing the same organisational structure and institutional logic as conventional banks. In developing the disclosure items, the existing and grounded studies (Bhatia and Mehrotra, 2016; Li *et al*., 2008; Mubaraq and Haji, 2014; Haji and Mubaraq, 2012; Sharma and Dharni, 2017; Damayanti and Budiyanawati, 2014; Platonova *et al*., 2018) were utilised.

5.2. Empirical Modelling

Panel data analysis is commonly preferred in banking type to deal with time series. It also reduces bias in the analysis (Greene, 2012; Hsiao, 2007). This paper applies the Hausman test to select the appropriate model from random-effects and fixed-effects models to capture the effect of 'intellectual capital disclosure index', 'human capital index', 'structural capital index', and 'relational capital index' on the financial performance of each type of banks in the GCC countries.

Equation 1 shows the general equation for model being examined in this study.

$$\boldsymbol{Y_{i,t} = \alpha_0 + \beta_1 X_{i,t} + \beta_2 X_{i,t} DB_{i,t} + \sum_{a=1}^{n} \gamma_a C_{i,t} + \varepsilon_{i,t}\ (\nu_i)} \qquad (1)$$

where $Y_{i,t}$ is the dependent variable, consisting of *ROA* and *ROE* as the financial performance of bank *i* at time *t*. $X_{i,t}$ is the main independent variables, consisting of *ICDI* (Intellectual Capital Disclosure Index), *HCI* (Human Capital Index), *SCI* (Structural Capital Index), *RCI* (Relational Capital Index) to measure the index of bank *i* at time *t*, which will be included in the equation one by one, resulting in eight different equations. $X_{it}DB_{it}$ are the interaction variables between

the indices (*ICDI*, *HCI*, *SCI*, and *RCI*) and dummy variable of bank types, differentiated by Islamic banks and conventional banks. It is likely that interaction variables will be particularly useful in capturing any differences between Islamic and conventional banks through affecting individual variables. The interaction variables will also be included in different equation, resulting in eight different equations. $C_{i,t}$ are control variables, such as total asset growth (*Bank_Size)*, equity growth (*Equity*), loan growth (*Loan*), bank concentration (*Bank_Conc*), and the operation age of banks (*Age*) for bank *i* at time *t*, also GDP growth (*GDP*) and knowledge economy index (*KEInx*) for country where bank *i* operates at time *t*. Considering the combination of dependent variables with the main independent variables and interaction variables, this study, consequently, have 34 different equations to estimate.

This study employs both fixed-effects models and random-effects model, the former assumes a correlation between the error of a specific entity and dependent variables. In this respect, it removes the effect of time-invariant characteristics (Stock and Watson, 2015). In addition, $\varepsilon_{i,t}$ is the error term, which is the residual as a whole, where the residual is a combination of cross-section and time series. For the random-effects models, it will have ν_i that is the individual residual, which is the random character of a unit of observation.

5.3. Variable Definition

The data relating to the measurement of the intellectual capital level of banks through disclosure analysis were collected by annual reports of banks. All the data for financial variables were assembled from Orbis Bank Focus (Bankscope) database and Fitch Connect, including ROA, ROE, total assets, total equities, loans, and bank concentration. Data for the age of banks were also collected from Bankscope, and annual reports of banks and for GDP, credit risk for individual countries, and Knowledge-Economy Index or KEI were assembled from the World Bank.

Dependent Variable

To examine whether ICDI has a significant impact on the financial performance of banks in the GCC countries, *ROA* is considered as the dependent variable, which refers to the efficiency of available assets to create profits. It is calculated through the net profit of banks before tax divided by average total assets (Beck *et al*., 2005; Khan *et al*., 2017; Abedifar *et al*., 2013).

As for the second dependent variable, ROE is also used to measure the impact of intellectual capital on the financial performance of banks in the GCC countries. It measures a bank's profitability concerning the equity and is calculated by dividing net income by shareholders' equity (Beck *et al*., 2005; Khan *et al*., 2017; Abedifar *et al*., 2013).

Independent Variables

ICDI: This study measures the ICDI to examine the intellectual capital performance of banks in the GCC countries, consisting of three elements: HCI, SCI, and RCI. It is important to specify and categorise each ICD item from a broad perspective so that an efficient measurement of intellectual capital indicators through the disclosure model can be achieved.

ICDI value is measured by using the following formula (adapted from Haniffa and Hudaib, 2007):

$$ICDI_j = \frac{\sum_{i=1}^{n_j} X_{ij}}{n_j} \qquad (2)$$

where,

n_j = number of items for j_{th} bank,

n_j = 53 for Islamic banks; 43 for conventional banks

X_{ij} = 1 if i_{th} item disclosed, 0 if i_{th} item not disclosed, so that $0 \leq ICDI_j \leq 1$.

HCD Index: As depicted in Table 1, HCDI consists of 16 items for conventional banks and 17 items for Islamic banks to capture the particularities and distinctiveness of Islamic banks.

Table 1. Human Capital Disclosure Items

Type	Items	Sources
CB and IB	Employee Communication/Team Work/synergy	Palacios-Marqués and Garrigós-Simón (2003); Bhatia and Mehrotra (2016); Chahal and Bakshi (2016); Curado *et al*. (2011); Li *et al*. (2008); Kamath (2017); and Mubaraq and Ahmed Haji (2014)
CB and IB	Knowledge Sharing	Palacios-Marqués and Garrigós-Simón (2003); Bhatia and Mehrotra (2016); Chahal and Bakshi (2016); Curado *et al*. (2011); Kamath (2017); and Mubaraq and Ahmed Haji (2014)
CB and IB	Professional Qualification	Palacios-Marqués and Garrigós-Simón (2003); Bhatia and Mehrotra (2016); Chahal and Bakshi (2016); Curado *et al*. (2011); Ishak and Al-Ebel (2013); Kamath (2017); Li *et al*. (2008); and Mubaraq and Ahmed Haji (2014).
CB and IB	Training and Education	Platonova *et al*. (2018); Bhatia and Mehrotra (2016); Chahal and Bakshi (2016); Curado *et al*. (2011); Ishak and Al-Ebel (2013); Kamath (2017); Li *et al*. (2008); Mubaraq and Ahmed Haji (2014); and Sharma and Dharni (2017)
CB and IB	Conference Organisation/ Sponsorship	Platonova *et al*. (2018)
CB and IB	Competitive Salary	Platonova *et al*. (2018)
CB and IB	Safety and Health at Work	Bhatia and Mehrotra (2016); Chahal and Bakshi (2016); Kamath (2017); and Mubaraq and Ahmed Haji (2014)
CB and IB	Reward for Employee (Remunerations)	Platonova *et al*. (2018) and Kamath (2017)
CB and IB	Employee Satisfaction / Appreciation	Platonova *et al*. (2018); Bhatia and Mehrotra (2016); Chahal and Bakshi (2016); Curado *et al*. (2011); Mubaraq and Ahmed Haji (2014); and Sharma and Dharni (2017)
CB and IB	Employee Voice Opinions/survey	Bhatia and Mehrotra (2016); Chahal and Bakshi (2016); Kamath (2017); and Mubaraq and Ahmed Haji (2014)
CB and IB	National Employee Policy	Author's own
CB and IB	Employee Age	Bhatia and Mehrotra (2016); Li *et al*. (2008); and Mubaraq and Ahmed Haji (2014)
CB and IB	Number of Employees	Platonova *et al*. (2018); Bhatia and Mehrotra (2016); Curado *et al*. (2011); Li *et al*. (2008); and Mubaraq and Ahmed Haji (2014);
CB and IB	Employee involvement with community	Li *et al*. (2008)
CB and IB	Employee know-how	Bhatia and Mehrotra (2016); Ishak and Al-Ebel (2013); Chahal and Bakshi (2016); Curado *et al*. (2011); Kamath (2017); Li *et al*. (2008); Mubaraq and Ahmed Haji (2014); and Sharma and Dharni (2017)
CB and IB	Meeting Attendance	Author's own
IB	Training given to staff on Islamic banking fundamentals	Platonova *et al*. (2018)

SCD Index: As seen in Table 2, SCDI is measured by 13 items in conventional banks and 17 items for Islamic banks.

RCD Index: As shown in Table 3, the RCDI value is measured through disclosure analysis based on a 14 items-based index for conventional banks and 19 items for Islamic banks.

Table 2. Structural Capital Disclosure Items

Type	Items	Sources
CB and IB	Corporate culture	Bhatia and Mehrotra (2016); Chahal and Bakshi (2016); Curado *et al*. (2011); Ishak and Al-Ebel (2013); Kamath (2017); Li *et al*. (2008); and Mubaraq and Ahmed Haji (2014)
CB and IB	Corporate Philosophy	Bhatia and Mehrotra (2016); Curado *et al*. (2011); Ishak and Al-Ebel (2013); Kamath (2017); Li *et al*. (2008); and Mubaraq and Ahmed Haji (2014)
CB and IB	Transparency	Chahal and Bakshi (2016); and Mubaraq and Ahmed Haji (2014)
CB and IB	Leadership/pioneer	Bhatia and Mehrotra (2016); Chahal and Bakshi (2016); Curado *et al*. (2011); Kamath (2017); Li *et al*. (2008); and Mubaraq and Ahmed Haji (2014)
CB and IB	Patent	Palacios-Marqués and Garrigós-Simón (2003); Bhatia and Mehrotra (2016); Curado *et al*. (2011); Ishak and Al-Ebel (2013); Kamath (2017); Mubaraq and Ahmed Haji (2014); and Sharma and Dharni (2017);
CB and IB	Copyright	Bhatia and Mehrotra (2016); Ishak and Al-Ebel (2013); Kamath (2017); Mubaraq and Ahmed Haji (2014); and Sharma and Dharni (2017)
CB and IB	Trademark	Bhatia and Mehrotra (2016); Curado *et al*. (2011); Kamath (2017); Mubaraq and Ahmed Haji (2014); and Sharma and Dharni (2017)
CB and IB	Research and Development	Palacios-Marqués and Garrigós-Simón (2003); Bhatia and Mehrotra (2016); Chahal and Bakshi (2016); Curado *et al*. (2011); Kamath (2017); Li *et al*. (2008); Mubaraq and Ahmed Haji (2014); and Sharma and Dharni (2017)
CB and IB	IT Infrastructure	Bhatia and Mehrotra (2016); Chahal and Bakshi (2016); Curado *et al*. (2011); Ishak and Al-Ebel (2013); Kamath (2017); Li *et al*. (2008); Mubaraq and Ahmed Haji (2014); and Sharma and Dharni (2017)
CB and IB	Innovation	Palacios-Marqués and Garrigós-Simón (2003); Bhatia and Mehrotra (2016); Chahal and Bakshi (2016); Curado *et al*. (2011); Kamath (2017); Li *et al*. (2008); Mubaraq and Ahmed Haji (2014); and Sharma and Dharni (2017)
CB and IB	Quality Standard	Palacios-Marqués and Garrigós-Simón (2003); Curado *et al*. (2011); and Li *et al*. (2008)
CB and IB	Atmosphere is supportive	Chahal and Bakshi (2016); Bhatia and Mehrotra (2016); and Kamath (2017)
CB and IB	Product Development	Platonova *et al*. (2018); Chahal and Bakshi (2016); and Sharma and Dharni (2017)
IB	Reputable *Shariah* Board	Author's own
IB	Islamic Management Philosophy	Adapted from: Bhatia and Mehrotra (2016); Curado *et al*. (2011); Ishak and Al-Ebel (2013); Kamath (2017); Li *et al*. (2008); and Mubaraq and Ahmed Haji (2014)
IB	Reference to Innovation through Islamic Rules	Platonova *et al*. (2018)
IB	Purification of the Prohibited Income	Author's own

Table 3. Relational Capital Disclosure Items

Type	Items	Sources
CB and IB	Business collaboration and partnership	Palacios-Marqués and Garrigós-Simón (2003); Bhatia and Mehrotra (2016); Ishak and Al-Ebel (2013); Kamath (2017); Li *et al*. (2008); Mubaraq and Ahmed Haji (2014); and Sharma and Dharni (2017)
CB and IB	Customer relations/service	Palacios-Marqués and Garrigós-Simón (2003); Bhatia and Mehrotra (2016); Kamath (2017); Li *et al*. (2008); Mubaraq and Ahmed Haji (2014); and Sharma and Dharni (2017)
CB and IB	Customer loyalty	Bhatia and Mehrotra (2016); Curado *et al*. (2011); Kamath (2017); Mubaraq and Ahmed Haji (2014); and Sharma and Dharni (2017)
CB and IB	Branding	Bhatia and Mehrotra (2016); Curado *et al*. (2011); Kamath (2017); Li *et al*. (2008); Mubaraq and Ahmed Haji (2014); and Sharma and Dharni (2017)
CB and IB	Customer feedback	Bhatia and Mehrotra (2016); Chahal and Bakshi (2016); and Mubaraq and Ahmed Haji (2014)
CB and IB	Customer satisfaction	Platonova *et al*. (2018); Bhatia and Mehrotra (2016); Chahal and Bakshi (2016); Kamath (2017); Mubaraq and Ahmed Haji (2014); and Sharma and Dharni (2017)
CB and IB	Goodwill	Bhatia and Mehrotra (2016); Mubaraq and Ahmed Haji (2014); and Sharma and Dharni (2017);
CB and IB	Contribution to economic development	Platonova *et al*. (2018)
CB and IB	Market/Sector preferences	Bhatia and Mehrotra (2016); Curado *et al*. (2011); Ishak and Al-Ebel (2013); Kamath (2017); Li *et al.* (2008); Mubaraq and Ahmed Haji (2014); and Sharma and Dharni (2017)
CB and IB	Company reputation and image	Curado *et al.* (2011); Ishak and Al-Ebel (2013); Kamath (2017); and Li *et al*. (2008)
CB and IB	Trust	Author's own
CB and IB	Value-added service	Kamath (2017)
CB and IB	Social and economic well-being of the local communities	Platonova *et al*. (2018)
CB and IB	Reduce time to solve problem/saving time	Author's own
IB	Regularly used Islamic contracts	Adapted from: Bhatia and Mehrotra (2016); Kamath (2017); Li *et al.* (2008); and Mubaraq and Ahmed Haji (2014)
IB	Islamic brand and image	Author's own
IB	Use of fixed income securities	Author's own
IB	Use of variable income securities	Author's own
IB	Information provision to customers on *zakat* and *zakat* calculation service'	Platonova *et al.* (2018)

In addition, Table 4 presents the *control variables* utilised with their description:

Table 4. Control Variables

Variable	Definition
Bank Size	Assets Growth
Equities	Equity Growth
Loans	Loan Growth
Bank Concentration	Percentage of top-three bank total assets to all bank total assets to proxy for bank concentration level
Age	Bank's operation year. If the operation years of the bank is between 0 and 3 years, it is scored as 0, and it refers to the bank as an emerging bank. If the operation years are between 4 and 7 years, it is scored as 1 and refers to the bank as a young bank. If the operation years are between 8 and 20 years, it is scored as 2 and refers to the bank as a middle-aged bank. Finally, if the operation years are over 20 years, it is scored as 3 and refers to the bank as a mature bank
Credit Risk	Domestic Credits
GDP	GDP Growth
Knowledge-Economy Index	This variable was created and estimated by the World Bank only for 1995, 2000, and 2012. However, this is estimated for the rest of the years in this study, with the method used by the World Bank to complete the time series in a consistent manner. This index consists of four pillars: economic incentive and institutional regime; innovation and technologies adoption; education and training; and information and communication infrastructure.

5.4. Sample Banks

As depicted in Table 5, the sample in this research consists of 19 Islamic banks and 23 conventional banks from the GCC countries. The criterium for the sampling is based on the availability of annual reports and being banks based in the GCC countries. Despite being part of the GCC, Omani Islamic banks were excluded, as the full-fledged Islamic banking experience in Oman is very recent; and therefore, including Oman would have reduced the panel observation.

Table 5. Sampled Banks

Countries	Islamic Banks	Conventional Banks
Bahrain	Al Salam Bank Bahrain Islamic Bank Al Baraka Bahrain ABC Islamic Bank Kuwait Finance House Bahrain	Ahli United Bank Arab Banking Cooperation Gulf International Bank Bank of Bahrain and Kuwait Khaleeji Commercial Bank National Bank of Bahrain
Kuwait	Ahli United Bank Kuwait Kuwait Finance House Boubyan Bank Kuwait International Bank Warba Bank	Gulf Bank Al Ahli Bank of Kuwait Commercial Bank of Kuwait
Qatar	Qatar Islamic Bank Masraf Al Rayan QIIB	Qatar National Bank Commercial Bank of Qatar Doha Bank Al Khaleeji Commercial Bank Ahli Bank
Saudi Arabia	Al Rajhi Banking and Investment Alinma Bank Al Jazira Bank Bank Al Bilad	Riyad Bank Banque Saudi Fransi Saudi British Bank Alawwal Bank
UAE	Emirates Islamic Bank Al Hilal Bank	Emirates NBD Bank Abu Dhabi Commercial Bank First Gulf Bank Mashreqbank Union National Bank
Total	19	23

6. Econometrics Analysis

This section proceeds with an econometric analysis for the impact of ICD scores on the financial performance of the sampled banks. Table 6 presents the descriptive statistics for the variables included in the model.

According to the Table 6, ROA as a dependent variable presents the generated profit for the sampled banks with a mean value of 1.35. The mean value of the ROE is 10.23. ICDI statistics shows a mean value of 0.55 that shows the sampled banks are moderately efficient in generating the value. The components of ICDI, namely HCDI, SCDI, and RCDI, have mean values of 0.43, 0.54, and 0.67, respectively, that present the indicators relating to the ICDI performance. Therefore, each variable has a balanced impact on ICDI, although RCDI is more effective than the other components

Table 6. Descriptive Statistics

Variable	Obs	Mean	Std. Dev.	Min.	Max.
ROA	408	1.349926	0.9258811	-4.26	4.08
ROE	408	10.22848	6.75988	-30.87	26.18
ICDI	408	0.5462745	0.1412417	0.13	1
ICDIxIB	408	0.2580882	0.3024824	0	1
ICDIxCB	408	0.2881863	0.2785213	0	0.88
HCI	408	0.4276471	0.1643163	0.06	1
HCIxIB	408	0.2083823	0.262418	0	1
HCIxCB	408	0.2192647	0.2230313	0	0.83
SCI	408	0.5422059	0.1407702	0.09	1
SCIxIB	408	0.2558333	0.3003958	0	1
SCIxCB	408	0.2863726	0.2765247	0	0.97
RCI	408	0.6692892	0.1899521	0.11	1
RCIxIB	408	0.3101716	0.3626157	0	1
RCIxCB	408	0.3591176	0.3576523	0	1
Size	406	9.810197	13.59883	-30.56	84
Equity	408	7.696997	15.0361	-50.75963	175.4266
Loan	406	15.18399	75.60357	-39.04	1302.8
Bank_Conc	408	58.7628	16.13737	10.6809	87.28088
Age	408	2.647059	0.6134778	0	3
GDP	408	3.555174	3.728516	-4.712106	19.59233
Credit_Risk	342	65.42365	18.2794	34.10073	105.1871
KEInx	408	1.477059	0.8319068	0.26	3.84

Table 7. Correlation Matrix

Variable	ROA	ROE	ICDI	ICDIxIB	ICDIxCB	HCI	HCIxIB	HCIxCB	SCI	SCIxIB	SCIxCB	RCI	RCIxIB	RCIxCB
ROA	1.0000													
ROE		1.0000												
ICDI	0.0409	0.1478	1.0000											
ICDIxIB	-0.1492	-0.1894	0.3518	1.0000										
ICDIxCB	0.1785	0.2744	—	—	1.0000									
HCI	0.0171	0.0981	—	—	—	1.0000								
HCIxIB	-0.1294	-0.1637	—	—	—	0.5098	1.0000							
HCIxCB	0.1613	0.2596	—	—	—	—	—	1.0000						
SCI	0.0127	0.0984	—	—	—	0.5315	—	—	1.0000					
SCIxIB	-0.1639	-0.2028	—	—	—	—	—	—	0.3336	1.0000				
SCIxCB	0.1784	0.2611	—	—	—	—	—	—	—	—	1.0000			
RCI	0.0660	0.1685	—	—	—	0.5346	—	—	0.6660	—	—	1.0000		
RCIxIB	-0.1426	-0.1857	—	—	—	—	—	—	—	—	—	0.2656	1.0000	
RCIxCB	0.1779	0.2766	—	—	—	—	—	—	—	—	—	—	—	1.0000
Size	0.0642	0.0382	-0.1336	0.1122	-0.1854	-0.0314	0.1264	-0.1683	-0.1243	0.1214	-0.1883	-0.1706	0.0894	-0.1819
Equity	0.2142	0.2418	-0.0570	-0.0260	-0.0008	-0.0120	-0.0063	-0.0014	-0.0485	-0.0316	0.0095	-0.0790	-0.0347	-0.0084
Loan	-0.1236	-0.1180	-0.1857	0.0208	-0.1145	-0.0979	0.0301	-0.1055	-0.1789	0.0271	-0.1160	-0.1865	0.0101	-0.1115
Bank_Conc	-0.0495	-0.0202	0.1039	0.0530	-0.0045	0.0297	0.0359	-0.0199	0.1459	0.0620	0.0062	0.1005	0.0573	-0.0024
Age	0.2163	0.2729	0.1267	-0.2314	0.3084	0.0273	-0.2306	0.2853	0.1974	-0.2182	0.3258	0.1156	-0.2292	0.2912
GDP	0.2846	0.1528	-0.2701	-0.1301	0.0034	-0.1651	-0.1295	0.0296	-0.2554	-0.1279	0.0095	-0.2588	-0.1243	-0.0170
Credit_Risk	-0.3378	-0.1821	0.1392	0.0656	-0.0003	-0.0093	0.0413	-0.0543	0.1891	0.0707	0.0183	0.1741	0.0764	0.0187
KEInx	0.2042	0.2667	0.1369	-0.0708	0.1432	-0.0810	-0.1130	0.0714	0.1671	-0.0613	0.1461	0.2431	-0.0453	0.1773

Table 7. (continued)

	Size	Equity	Loan	Bank_Conc	Age	GDP	Credit_Risk	KEInx
Size	1.0000							
Equity	0.1998	1.0000						
Loan	0.4444	-0.0120	1.0000					
Bank_Conc	0.1015	-0.0404	-0.0173	1.0000				
Age	-0.3867	-0.0448	-0.3043	-0.0421	1.0000			
GDP	0.1584	0.0509	0.0530	0.0503	-0.0652	1.0000		
Credit_Risk	-0.2091	-0.0966	-0.1186	0.3232	0.0441	-0.5601	1.0000	
KEInx	-0.0623	-0.0287	-0.0504	-0.2437	0.0804	-0.2367	0.2142	1.0000

As for the correlation matrix, Table 7 presents an acceptable correlation relationship between ICDI and its components, and ROA and ROE with a positive but rather weak relationship except for Islamic bank interaction variables, which have a negative relationship. Control variables also have a moderate correlation with ROA and ROE.

According to the regression results in Table 8, 'ICDI' is not significant for ROA, as the financial performance of all samples, contrary to what is commonly assumed in the literature (*see*: Li *et al*., 2008; Sharma and Dharni, 2017; Damayanti and Budiyanawati, 2014). In addition, when Islamic banks are included in the model with the interaction variable, it is not also significant for all banks. In model 1c, the ICDI interaction variable is positive and significant at the 10% level when considering only Islamic banks. However, as seen in model 1d, the interaction variable for conventional banks is not significant for financial performance.

When all sub-pillars in model 2a are taken into account together, none of the variables has a significant impact on ROA. On the other hand, when the variables are individually analysed, HCI has a significant positive relationship at 10% in all bank samples (Bhatia and Mehrotra, 2016; Mubaraq and Haji, 2014). Neither Islamic banks nor conventional banks are significant in this model. Regarding SCI, it is not significant for ROA in all models as opposed to the literature (Mubaraq and Haji, 2014). As for RCI, it is significant at a 10% level and has a positive impact on financial performance when examining the Islamic interaction variable alone (Mubaraq and Haji, 2014).

Control variables relating to financial data in banks are largely significant in each model. While Bank_size and equity have a positive and significant relationship with ROA, Loan and Bank_Conc have a negative and significant relationship. The operating ages of banks, on the other hand, are significant in the models mainly in which HCI was examined only. These results are as expected.

Table 8. Regression Results (ROA)

ROA	Model 1a	Model 1b	Model 1c	Model 1d	Model 2a	Model 3a	Model 3b	Model 3c	Model 3d
icdi	0.68371198	0.68281546							
icdiXib		-0.17569978	1.1379296*						
icdiXcb				-0.00222491					
HCI					0.5903116	0.68053489*	0.60844943		
hciXib							-0.05875709	0.27350598	
hciXcb									0.3166743
sci					-0.33920743				
sciXib									
sciXcb									
rci					0.38774473				
rciXib									
rciXcb									
Asset_growth	0.00662359*	0.00642453*	0.00738873*	0.00610129*	0.00684208*	0.00672024*	0.00650533*	0.00622784*	0.00612689*
Equity_growth	0 .0098867***	0.01020689***	0.00973167***	0.00989145***	0.009973***	0.00985639***	0.0101778***	0.01014905***	0.01020711***
Loan_growth	-0.00120374**	-0.00120874**	-0.0011194*	-0.0013253**	-0.0119311**	-0.0011757**	-0.00118122**	-0.00123532**	-0.00130625**
Bank_con	-0.0108312*	-0.00550295	-0.01022336	-0.01050007*	-0.01093608*	-0.0106568*	-0.00526425	-0.00499527	-0.00508246
age	0.14782772	0.23352611*	0.0997365	0.19140304	0.15238344	0.19010423	0.26182988*	0.26929462*	0.2567754*
Gdp-growth	0.04844708***	0.04724878***	0.04825641***	0.04303249***	0.04764159***	0.04655815***	0.04597118***	0.0437701***	0.04307811***
Credit_risk	-0.00588139*	-0.00749686**	-0.00590421*	-0.00565965	-0.00612241*	-0.00579779*	-0.00741708**	-0.00746633**	-0.0074113**
keinx	0.24172136***	0.25204246***	0.26231227***	0.25929656***	0.25445666***	0.25078658***	0.26476796***	0.27080942***	0.26651538***
Cons	1.0257729	0.56917954	1.1676984*	1.2398976*	1.0616556*	0.97327586	0.53947002	0.69594039	0.72778456
R^2	0.2362	0.2941	0.0988	0.2320	0.2348	0.2355	0.2885	0.2748	0.2886
N	341	341	341	341	341	341	341	341	341
Model	Fixed effects	Random effects	Fixed effects	Fixed effects	Fixed effects	Fixed effects	Random effects	Random effects	Random effects

Table 8. (Continued)

ROA	Model 4a	Model 4b	Model 4c	Model 4d	Model 5a	Model 5b	Model 5c	Model 5d
sci	0.27566188	-0.04835154						
sciXib		0.64965225	0.60663506					
sciXcb				-0.11439489				
rci					0.48633167	0.10213886		
rciXib						0.81927681	0.90201983*	
rciXcb								-0.05587844
Asset_growth	0.00622676*	0.00661321*	0.00659994*	0.00614225*	0.00655125*	0.00751428*	0.00755283*	0.00613865*
Equity_growth	0.0098536***	0.00989382***	0.00988743***	0.00990676***	0.00997324***	0.00976737***	0.00973596***	0.00987273***
Loan_growth	-0.00128197**	-0.00122779**	-0.00122715**	-0.00132479**	-0.00125537**	-0.00116538**	-0.0011654**	-0.00132344**
Bank_con	-0.01058072*	-0.01038165	-0.01040255*	-0.01045019*	-0.01099975*	-0.01073603*	-0.01064453*	-0.01045331*
age	0.17774912	0.15330006	0.15358309	0.18998321	0.12277565	0.07711941	0.08145088	0.19251621
Gdp-growth	0.04512546***	0.04580954***	0.04596774***	0.04272652***	0.04820269***	0.0488366***	0.04822825***	0.0427681***
Credit_risk	-0.00565364	-0.00581366*	-0.00580246*	-0.00568937*	-0.00608033*	-0.00615344*	-0.00610607*	-0.00563922
keinx	0.24867243***	0.26219731***	0.26027128***	0.26381193***	0.24613225***	0.26167423***	0.26495014***	0.261093***
Cons	1.1413423*	1.1925142*	1.1795638*	1.2687385*	1.1546979*	1.2407964*	1.2605156*	1.2503798*
R^2	0.2338	0.1646	0.1702	0.2242	0.2335	0.1141	0.1026	0.2274
N	341	341	341	341	341	341	341	341
Model	Fixed effects	Fixed effects	Fixed effects	Fixed effects	Fixed effects	Fixed effects	Fixed effects	Fixed effects

Note: (***) refers that p-value is significant at 1% level; (**) refers that p value is significant at 5% level; (*) refers that p value is significant at 10% level

With regard to macro data, control variables present expected results in each model. "KEInx" is mainly significant and positive in all models, which is important since human capital development, technology use, R&D expenditures, innovation, and economic incentives influence the financial performance of GCC banks. These results correspond to the national vision discourse in the GCC countries. Further, GDP has a significant positive relationship in all models, which also follows the expected pattern, since GDP growth is directly related to the performance of financial institutions due to the nature of business cycles. Lastly, credit risk has a significant and negative relationship, which is also an expected result.

In the models on which ROE is dependent, ICDI and its sub-pillars are more significant overall, as shown in Table 9. ICDI and its components are, therefore, more effective on ROE than ROA. Based on the econometric analysis, the relationship between ICDI and ROE is positive and significant at the 1% level (*see*: Li *et al*., 2008; Sharma and Dharni, 2017; Damayanti and Budiyanawati, 2014). Islamic bank interactions are positive and significant at 5% when ICDI and its interacted variables are analysed together. In the interaction variables created according to the type of banks, ICDI's Islamic bank interaction has a significant and positive impact at the 1% level, while conventional bank interaction is not significant. When all components are examined together, as in Model 7, there is a significant and positive relationship between RCI and ROE at the 10% level.

In models that examine each sub-component separately, HCI is positive and significant at the 1% level (Bhatia and Mehrotra, 2016; Mubaraq and Haji, 2014). The HCI variable is positive and significant at the 5% level when analysed along with the Islamic bank interaction. For models evaluating each bank type separately, the interacted HCI variable of Islamic banks positively affects ROE at 1%, but the interacted HCI variable of conventional banks is not statistically significant for ROE. When SCI and Islamic interacted SCI variables are considered together, the Islamic interacted SCI variable positively impacts ROE and is statistically significant at the 5% level.

Table 9. Regression Results (ROE)

ROE	Model 6a	Model 6b	Model 6c	Model 6d	Model 7a	Model 8a	Model 8b	Model 8c	Model 8d
icdi	9.5295307***	1.0763766							
icdiXib		16.046578**	16.988616***						
icdiXcb				-1.269481					
hci					0.37164922	0.63676943**	-0.48891689		
hciXib							14.957924**	14.46881***	
hciXcb									3.3738142
sci					-2.9928196				
sciXib									
sciXcb									
rci					6.3102853*				
rciXib									
rciXcb									
Asset_growth	0.03828046	0.04997927*	0.05022221*	0.03145522	0.04053371	0.03749234	0.0448572*	0.04483443*	0.03354175
Equity_growth	0.0734372***	0.0712422***	0.07111762***	0.0733382***	0.07959165***	0.07798826***	0.06980418***	0.06990071***	0.07860581***
Loan_growth	-0.00127977	0.00012079	0.00009986	-0.00297026	-0.00171393	-0.00188249	-0.00019892	-0.00018571	-0.0033816
Bank_con	-0.02236154	-0.01436281	-0.01361364	-0.01684649	-0.0109168	-0.00628148	-0.00734801	-0.00779656	-0.00370565
age	2.1662956*	1.4123383	1.405081	2.7528388*	2.5962774**	2.9565388***	1.9084168	1.9357977	2.8666359***
Gdp-growth	0.25234534**	0.25905404***	0.25485995***	0.17276009*	0.24877925**	0.21976788**	0.21845814**	0.21954682**	0.18637316*
Credit_risk	-0.00408227	-0.00478906	-0.00464262	-0.00085634	-0.01913031	-0.01619738	-0.00047557	-0.00058839	-0.01694781
keinx	1.3360427**	1.5959714***	1.6260898***	1.6160768***	1.6999055***	1.8272744***	1.5874582***	1.5813483***	1.8595497***
Cons	-2.2596107	-0.62941075	-0.35249595	1.0337295	-3.035516	-3.047864	-0.66961273	-0.80916775	-0.85946848
R^2	0.2670	0.0023	0.0010	0.2215	0.2943	0.2832	0.0170	0.0200	0.2864
N	341	341	341	341	341	341	341	341	341
Model	Fixed effects	Fixed effects	Fixed effects	Fixed effects	Random effects	Random effects	Fixed effects	Fixed effects	Random effects

Table 9. (Continued)

ROE	Model 9a	Model 9b	Model 9c	Model 9d	Model 10a	Model 10b	Model 10c	Model 10d
sci	5.1122667	-1.9152601						
sciXib		14.090307**	12.386347***					
sciXcb				--3.2524959				
rci					7.5823653***	2.3267297		
rciXib						11.207446**	13.092338***	
rciXcb								2.7401897
Asset_growth	0.03333128	0.04171305	0.0411875	0.03217725	0.03801732	0.05119125*	0.05206954*	0.03238871
Equity_growth	0.07279997***	0.07367235***	0.07341942***	0.07393441***	0.07477812***	0.07196176***	0.0712463***	0.07886201***
Loan_growth	-0.0021705	-0.00099548	-0.00097007	-0.00295932	-0.00188387	-0.00065283	-0.00065327	-0.00351907
Bank_con	-0.01923451	-0.01491698	-0.01574456	-0.01630476	-0.02553404	-0.02192647	-0.01984211	-0.0038374
age	2.5202554*	1.9899798	2.0011909	2.7327348*	1.7036185	1.0790557	1.1777269	2.6979484***
Gdp-growth	0.21565821**	0.23049521**	0.23676154**	0.16807065*	0.25747322***	0.26614491***	0.25228657***	0.19112347*
Credit_risk	-0.00087916	-0.00434989	-0.00390602	-0.00183315	-0.00755012	-.00855027	-0.00747113	-0.01752289
keinx	1.3842658**	1.6776069***	1.6013149***	1.7102995***	1.3758648**	1.5884741***	1.6630996***	1.7957539***
Cons	-1.1003476	0.00951855	-0.50346283	1.5528965	-0.60258035	0.57521927	1.0244242	-0.51791565
R^2	0.2476	0.0077	0.0153	0.1808	0.2617	0.0085	0.0021	0.2892
N	341	341	341	341	341	341	341	341
Model	Fixed effects	Fixed effects	Fixed effects	Fixed effects	Fixed effects	Fixed effects	Fixed effects	Random effects

Note: (***) refers that p-value is significant at 1% level; (**) refers that p value is significant at 5% level; (*) refers that p value is significant at 10% level

Furthermore, in models considered bank types, the interaction variables of SCI in conventional banks are not statistically significant for ROE, whereas the interaction variables of SCI in Islamic banks have a positive and significant relationship at 1%. According to the models that use the RCI variable, the RCI that includes all banks does indeed have positive effects on ROE at a 1% level (Mubaraq and Haji, 2014). Additionally, when taken together with the Islamic interaction variable of the RCI, the interaction variable has a positive and significant relationship with ROE at the 5% level. For models considering the type of bank, the RCI variable with Islamic interaction has a positive and significant relationship with ROE at the 1% level, while RCI with conventional interaction is not significant.

For the control variables, it appears that equity has a statistically significant impact on ROE, while asset and age of operations have a partially significant impact and the loan has no statistically significant impact. Furthermore, GDP and the KEI have both a significant and positive impact on ROE. As a result, the impact of control variables on ROE is generally as expected; hence, this is a positive result for the analysis.

7. Discussion: Theoretical and Managerial Implications

As a theoretical implication, the findings show parallelism with the methodology of Islamic economics that prioritise knowledge creation and intellectual contribution, as explained in an earlier section under the conditions of the positive impact of intellectual capital on the financial performance of banks. Furthermore, analyses in this study show that interaction variables with Islamic banks are mainly statistically significant and have a positive relationship with financial performance. This result related to the ICDI of Islamic banks stands in sharp diverging from the findings of previous studies as mentioned earlier sections. Considering the way the Islamic disclosure index is analysed as well as the data collection, the paper demonstrates its originality from other studies. In particular, instead of examining Islamic and conventional banks separately, analysing them in a model with an interaction variable made this paper different from other studies. Accordingly, the findings of this study differ from those of previous studies. Moreover, these results are consistent with Islamic ontology, which emphasises human well-being and knowledge. Consequently, as a managerial implication, it can be suggested that Islamic banks should move into a more proactive sphere of product development beyond reverse engineering through conventional products in managing a progressive financial performance rather than disclosed performance, as this study found.

As regards to the practical and managerial implications, Islamic banks are expected to internalise and endogenize the knowledge production process as essentialised in Islamic ontology. In other words, the articulation of Islamic ontology necessitates a knowledge essentialisation process as part of the emergence and sustainability process. The knowledge essentialisation is coupled with the idea of using and sharing such a knowledge base and its products through the *ihsani* (beneficence for social equilibrium) process to improve the situation of individuals, organisations, and societies. Consequently, Islamic banks, as the main organisations of Islamic ontology in the financial markets, are expected to engage in sustained knowledge development process to advance their operations, whereby they can contribute to the development of Muslim societies and beyond, as Islamic ontology suggests continuous knowledge development for sustained growth and performance. In a managerial sense, Islamic banks should develop new capacities and capabilities, such as to develop new products in line with Islamic aspirations, to increase the level of R&D activities, to add innovative products, services, and structures, and to develop staff skills to sustain growth. By making such managerial decisions, Islamic banks will be able to extend their market penetration, since they will be able to develop authentic products that are likely to increase their customer base, as evident in their disclosure performance. In particular, Islamic banks have been pragmatist in their success so far; however, in their maturity, managers of the GCC Islamic banks need to realise the importance of intellectual capital for their sustained growth in order to gain competitive advantage. This is particularly important in the face of tightened liquidity in the GCC markets due to oil price decline, implying that Islamic banks in the GCC must develop their financial strength with their efforts, namely intellectual capital formation and innovation, rather than with the wind of the external environment and the liquidity rich business cycles.

Another important practical implication of this study refers to the nature of the data. In other words, it is important to draw attention to the distinction between the well-defined results produced by data sources for Islamic and conventional banks. Since this study is based on disclosed information, the question is whether the disclosed information reflects lived reality or not because disclosed information does not imply actual performance. In some cases, disclosed information may suggest better performance than actual information, as seen in this paper. Therefore, it is important to extend the research by conducting an analysis based on actual information to compare the results of this paper based on disclosed performance in the banks (Mergaliyev *et al*., 2019).

8. Conclusion

For the intellectual capital disclosure performance of the sampled banks, data was generated from annual reports through content analysis and examined by the constructed index items. Most models, including ROE as a dependent variable, show that ICDI and its pillars are significant determinants of financial performance. When compared to conventional interaction models, ICDI and its components with Islamic interaction are mainly significant determinants of financial performance. According to findings based on ICDI and its relationship with ROA as the financial performance of banks in the GCC region, Models 1-5 demonstrate that ICDI and its components are less significant. In comparison, Models 6-10 show more significant results when looking at ICDI and its pillars' relationship with ROE. Hence, it can be concluded that the ICDI and its components are of more importance for ROE than ROA. Furthermore, the independent variables are more prominent in Islamic banks than conventional banks, as determined by interaction variables.

Lastly, it is important to consider the importance of intellectual capital development in GCC countries as these countries aim to diversify their economies away from oil-based economies. Therefore, intellectual capital development remains a critical component of diversifying strategies, since these economies have integrated knowledge economy-related development into their strategies and visions, which emphasise innovation as a core strategy. It also pertains to the financial sector, which remains at the forefront of innovation strategies in product development and service delivery.

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