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# Momentum Investment Strategies, Corporate Governance, and Firm Performance: An Analysis of Islamic Banks

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**Momentum Investment Strategies, Corporate Governance, and Firm Performance: An Analysis of Islamic Banks**

**Abstract**

**Purpose** – *The purpose of this paper is to empirically examine the effect of investments in organizational resources and corporate governance features on market-based performance of Islamic banks (IBs).*

**Design/methodology/approach** – *The required data to calculate different constituents of banks’ investment strategies and governance mechanism is hand collected from 268 annual reports. Different regression models are used to determine the impact of investment in human and structural capital and corporate governance features on market performance of IBs.*

**Findings** – *The paper finds investments in knowledge resources (human capital, in particular) to have a significant positive impact on the market value of IBs. The results further reveal that IBs’ strategy to rely on long-term human capital accumulation can be seen as idiosyncratic problem-solving knowledge capital. Based on market measure, the paper finds role duality to have a significant positive impact while size of advisory board to have the opposite effect on market value.*

**Research limitations** – *This study include IBs only and ignore other Islamic financial services providers such as Takaful (insurance) companies. The study leaves this chasm to be filled by the future researchers.*

**Practical implications** – *The findings may serve as a useful input for both Islamic bankers and regulators to apply knowledge management in their institutions. Furthermore, the dominant role of human capital also provides insight to managers with respect to business performance levers.*

**Originality/value** – *The main contribution of this paper is to provide insight into the Islamic bank business model using a unique hand collected data set, to identify the effect of investments in organizational resources and bank governance on market value in pre-, during- and after-financial crisis.*

**Keywords** *Islamic bank business model; momentum investment strategies; governance mechanism; ambidextrous organisational resources; market value; agency theory.*

**Paper type** *Research paper*

## 1. Introduction

Ethical equity providers, known as the Islamic financial institutions (IFIs) came into existence to provide cooperative banking solutions as they strive to conduct their operations in an ethical manner with an ethical identity (Haniffa and Hudaib 2007). However, such institutions were generally perceived to be the financial intermediaries that merely mimicking the conventional banking model, until recently when the financial meltdown caused by the recent financial crisis brought the financial world to its knees. The failure of conventional financial intermediaries resulted in a freeze of global credit markets and required government interventions on an inclusive scale (see Erkens *et al.* 2012) while the IFIs were largely immune from the economic meltdown (Hasan and Dridi, 2010). The intensity of the crisis has led to academics and policy makers alike expressing concerns about the merits of *laissez-faire* capitalism (Chen *et al.* 2014) and flawlessness of the centuries old orthodox banking model. As a consequence, an emerging body of literature has attempted to identify and examine how macro- and micro-economic factors may have impact on banks' performance (see inter alia Athanasoglou *et al.* 2008, Dietrich and Wanzenried 2011, Beltratti and Stulz 2012, Garcia-Appendini and Montoriol-Garriga 2013).

Conversely, researchers point to the advantages of Islamic way of banking and how it helped contain the adverse impact on profitability and market valuation. Beck *et al.* (2013), for instance, note that the risk sharing principle and real economic transactions backed by tangible asset in Islamic banking business model, suggests clear differences in the funding and activity structures of Islamic and conventional financial institutions that helped the former outperform the latter during the financial crisis (*also see* Johnes *et al.*, 2014). Likewise, Hasan and Dridi (2010) observes that the credit and asset growth of Islamic finance were at least twice higher than that of conventional banks during the global financial crisis. This is confirmed by the World Islamic Banking Competitiveness Report 2012–2013 (Nazim

and Bennie 2012) which submits that the Islamic banking and finance grew at the rate of 15-20 per cent during the last decade and the total assets held by the Islamic banks have doubled to US\$ 2 trillion during the same period. Recent empirical studies also suggest that Islamic finance industry remained stable (Čihák and Hesse 2010, Elnahass *et al.* 2014) and efficient (Majid *et al.* 2010, Bourkhis and Nabi 2013) maintained better asset quality (Beck *et al.* 2013) and lower loan default rates (Baele *et al.* 2014).

While these studies are clearly important, they do not explain the determinants of profitability and market valuation for IFIs. Islamic banking is mainly engaged in relationship lending and Ongena and Smith (2001) suggests that long-term bank borrower relationships are crucial for relationship banking to create value. Relationships are developed through interaction between different social actors, therefore, a warm touch of human capital is essential to build and thrive trust amongst the social actors. This signifies the role of human capital in services industries such as banks. Arguably, the human capital of Islamic finance industry is ambidextrous as employees generally possess the contemporary knowledge of economics as well as the divine knowledge to perform their duties in accordance with the Islamic jurisprudence. In concert human capital cannot work alone hence, requires structural support. Thus, human and structural capital is necessary to create value. This argument is in line with the economic perspective (see Bhagwati 2011), which argues that erudite human capital and strongly-normative structural capital are essential to determine the market behaviour. Yet there is no empirical evidence on how human and structural capital helped IFIs in sustaining strong market value during the crisis. Against this background, the goal of this paper is to fill this chasm by empirically examining the proportionate effects of human and structural capital on market value of IFIs, measured by Tobin's Q.

## 2. Background

The world has witnessed various evolutionary stages in the field of banking and finance. Recently, an overall slowdown in the financial markets around the globe had been observed during the recent financial meltdown. The financial crisis shook the foundations of the centuries old financial system and has shed doubts on the proper functioning of conventional banking model. There have been calls for radical changes in the existing financial system. While radical transformation may threaten the profitability and survival of existing incumbent conventional financial institutions, it may also bring a cohort of new opportunities and powerful new players i.e. Islamic financial institutions into the limelight as a possible and viable alternative. While the financial crisis gave Islamic finance an opportunity to prove their resilience, it also highlighted the need to address important challenges facing Islamic finance industry. IFIs came into existence to provide ethical/cooperative financial solutions to the society at large therefore; such institutions are expected to be more efficient in creating value for the stakeholders.

The primary pursuit of business is to create and maintain value (O'Cass and Ngo 2011). The concept of value added, which refers to the overall value creation efficiency of all resources a firm possesses, is increasingly viewed as an important variable in assessing performance (Biondi and Rebérioux 2012). Various authorities argue that value creation in the knowledge intensive sectors such as the banking industry require investments in multidimensional knowledge resources (Watson and Holland 2010, Chen *et al.* 2014). Watson and Holland (2010) reveals how investments in multiple organizational resources impact on the value creation process in banking whereas Chen *et al.* (2014, p. 566) regards 'knowledge-based intangibles as the primary sources of sustainable competitive advantage in banking'. Generally, researchers agree that knowledge assets such as human capital play a crucial role in generating firm performance (Purcell *et al.* 2008, Swart and Kinnie 2013).

Human capital is at the core of previous research in which an emerging body of research demonstrates that investments in human capital relate positively with firm's value creation process (Dakhli and De Clercq 2004, Youndt and Snell 2004, Hsu 2007, Crook *et al.* 2011, Chang 2015). At the same time, with the advent of knowledge economy, nourishment of knowledge workers have become necessary for firms to gain and sustain competitive advantage in the market (Hislop 2013). Swart (2006), however, suggests a distinction between 'firm-specific and industry-specific' human capital investments. The latter refers to the investments in knowledge held by individuals, which can be exchanged within a specific industry (Kang and Snell 2009) i.e. knowledge of contemporary finance that can be exchanged within banking sector being conventional or Islamic. Whereas the former refers to the investments in knowledge embedded in employees that provides an organization with a unique product or service and not easy to replicate by the competitors (Kim and Gong 2009) i.e. a lively example is of Shariah-knowledge. Swart (2006) however, observes that organizations tend to invest in firm-specific human capital resources as workers become affiliated with the firm, thereby sacrificing mobility opportunities. Islamic banks are ambidextrous organizations as they offer alternative banking solutions while not violating the divine guidelines. Such organizations needs to invest equally in both firm- and industry-specific human capital as employees are needed to excel in both economic- and Shariah-knowledge.

Human capital cannot work alone and rely on other supporting mechanisms such as structural or organizational capital resources (Wright *et al.* 2001, Swart 2006). Most of the research is exclusively focused on the management of human capital or what Collings and Mellahi (2009) called, the talent management and have ignored the multidimensional nature of knowledge-assets, in particular, it does not take into account how human capital is managed alongside other complementary knowledge assets i.e. structural capital (Swart and

Kinnie 2013). Kang and Snell (2009, p. 70-71) classified structural capital into two further categories (i) mechanistic-structural capital, related to codified knowledge that is then leveraged through organisational structures, systems, databases, manuals and patents and (ii) organic-structural capital that focuses on the informal aspects of organisational life as expressed in know-how and tacit routines. IFIs are committed to provide ethical banking solutions to a broader society and at the same time use different structural capital i.e. IT system to provide swift solutions to its clients. Therefore, such institutions are expected to invest in both mechanistic- and organic-structural capital.

To synthesize, the empirical evidence draws attention to the multidimensional nature of knowledge assets that enable a firm to sustain competitive advantage in the market place. However, the empirical evidence on the investment strategies in various organisational resources, in the time of economic malaise, in the context of Islamic finance industry is omitted in the literature. The recent financial crisis not only pushed the investors to adopt momentum strategies but the institutions especially, banks also reacted in the similar way. Since Islamic banks possessed strong financial and market performance during the financial crisis therefore, it is imperative to examine their investment strategies, using the lens of momentum investment strategies that helped them sustain their growth.

Jegadeesh and Titman (1993) added this new twist of 'momentum strategies' to the investment strategies literature. The popularity of this approach has grown to the extent that momentum investing constitutes a distinct, well-recognized style of investment in the United States and other equity markets (see Grinblatt *et al.* 1995, Chan *et al.* 1996). In the present study, the concept of momentum strategies has broader implications and not merely subject to stock investment strategies to determine the market behaviour. The concept is used to determine if institutions (IFIs, in this case) also react by adopted momentum strategies when faced with crisis and how such strategies affect their market value.



3. Development of hypotheses

The resource-based view of the firm argues that differences in profitability across organizations can be explained by differences in their portfolio of resources and how these resources are articulated (Wernerfelt 1984). According to Barney (1991) the resource-based theory recognises tangible and intangible assets as critical factors in generating sustainable competitive advantage necessary for the creation of superior business performance. Human and structural capital are recognized as the two distinct resources for the success of an organization (Edvinsson and Malone 1997). The former is grounded on the knowledge created and stored by a firm’s employees, while the latter is based on the embodiment, empowerment and supportive infrastructure of human capital. Hsu and Wang (2012) simplifies that human capital can leave the firm whenever it desires since the firm does not own it. Structural capital, on the other hand, is knowledge that has been converted into something owned by the firm (e.g. a patent). The implementation of structural capital relies on human capital and the quality of human capital determines the quality of structural capital. Taken the argument together, it is imperative to analyze how investments in both human and structural effect on firms’ market valuation.

3.1 Human capital investment and firm value

Dotzel *et al.* (2013) states that investments in human capital is a critical organisational capability which corresponds directly to the propensity to service innovativeness to satisfy customer needs and improve firm value. Likewise, Colombo and Grilli (2005) suggest that firms with greater investments in human capital (*i.e.* training, education or remuneration) are likely to have better entrepreneurial judgment and as long as human capital continues to be

developed, staff can improve their job performance and ultimately improve the firm's performance (Hsu 2007). Organisational studies endorse these claims (see Dakhli and De Clercq 2004, Boselie *et al.* 2005). Grant (1991), proposed the knowledge-based view, emerged from resource-based view (RBV), pointing to the knowledge embedded in knowledge workers as the ultimate source of competitive advantage for organisations. Recent meta-analytic evidence of the literature on strategic management suggests that human capital shapes firm's market value (see Crook *et al.* 2011).

In the case of IFIs human capital is important as employees are expected to not only have conventional knowledge and skills related to the provision of such services but also having good knowledge on Shariah as this will enhance the credibility and reputation of IFIs in the market place. The knowledge embedded in the human capital employed by the IFIs is valuable, rare, and isolated from imitation or substitution. The resource-based view of the firm gives rise to the following hypothesis:

*H<sub>1</sub>: There is a significant positive association between investments in human capital and market performance of IFIs based on Tobin's Q*

### **3.2 Structural capital investment and firm value**

Structural capital provides an environment, which enables an organization to create and leverage knowledge. Florin *et al.* (2003) argue that an organization with strong investment tendency in structural capital will have a supportive culture that encourages employees to try and learn new knowledge. Likewise, De Brentani and Kleinschmidt (2004) reports that an organization's operation processes and the organizational commitment of sufficient resources have a significant impact on performance. A similar suggestion is of Youndt and Snell (2004), who found investments in structural capital to be typically associated with financial returns and Tobin's Q. Finally, Hsu and Wang (2012) posit that structural capital *i.e.* operations,

procedures and the processes of knowledge management, propels organizations' value creation activities which have a positive effect on their market value.

IFIs adopt different structural process and system to track and record their transactions, hence, requires development and investment in the structural processes that will enhance their performance. In a pioneering study Nolan (1994) found structural capital *i.e.* technological capabilities to be a significant differentiator of bank's superior performance in the mid-1980s. Furthermore, IFIs adopt a rare structural mechanism, which is not imitated by its conventional rivals. This argument is in line with the resource-based view of the firm, which attributes superior economic performance to organizational resources and capabilities (Bharadwaj 2000). Since RBV explicitly recognizes the importance of tangible and intangibles, it offers a significant opportunity to explore these theoretical complementarities in examining the relationship between investments in structural resources and market valuation of IFIs. Therefore, the next of hypothesis is as follows:

*H<sub>2</sub>: There is a significant positive association between investments in structural capital and market performance of IFIs based on Tobin's Q*

**3.3 Corporate governance and firm value**

The main theoretical framework for the vast majority of corporate governance research is represented by the agency theory (Shleifer and Vishny 1997, Dalton *et al.* 2003). Agency models generally imply that managers and shareholders tend to have divergent interests (Salama and Putnam 2013) and as a result when monitoring is lax, managers may pursue corporate strategies that are not in the best interest of shareholders (Jensen and Meckling 1976, Jensen 1986). Recent empirical studies examining the relationship between governance and performance in the banking sector have submitted mixed results (see Adams and Mehran

2012, Aebi *et al.* 2012, Wintoki *et al.* 2012, Pathan and Faff 2013). This merits for further investigation.

### 3.3.1 Board size

While there are suggestions for finding an association between board size and corporate performance (Provan 1980, Kidwell and Bennett 1993, Goodstein *et al.* 1994), no consensus exists, as to the direction of this association. Agency theory tenets generally argue for smaller boards reasoning that as size increases control and monitoring functions are impaired (Judge and Zeithaml 1992, Dalton *et al.* 1999). Alternatively, the advocates of stakeholder perspective generally argue that a larger board allows greater balance, thereby, promoting more effective decision making while increasing harmony between a firm's stakeholders.

The available empirical evidence on the subject matter has provided mixed evidence as to the direction of this association. Individual director incentives to acquire information (Bushman and Smith 2001) and low monitoring of managers (Cerbioni and Parbonetti 2007) have been observed in large boards which affect negatively on firm performance. Similarly, Hermalin and Weisbach (2001) argue that larger board is to affect negatively on firm performance because of coordination costs and free-rider problems. In contrast, others (see Jensen 1994, Khanchel 2007) argue that small boards are deemed to augment firm monitoring capabilities. Hence, the debate is still lively. The analysis suggest that board size is mainly determined by various factors such as firm size, firm opacity and industry type (Pathan 2009, Jizi *et al.* 2014).

Although IFIs conform Islamic jurisdiction yet, like any other bank, they are subject to extensive financial regulations (Grove *et al.* 2011), with this background, workload considerations are of ultimate importance. Therefore, it is expected that larger boards will be

better able to advice on both Shariah- and contemporary-finance related issues. Hence, larger boards are expected to relate positively with market valuation of IFIs.

*H<sub>3a</sub>: There is a significant positive association between board size and market performance of IFIs based on Tobin's Q*

**3.3.2 Board composition**

Board composition is defined as the proportion of outside directors to the total number of directors, thereby making a distinction between executive and non-executive directors (Haniffa and Cooke 2002). From a theoretical perspective, the premise of resource-dependence theory is that non-executive directors provide firms with links to the external environment due to their expertise, prestige and contacts. Whereas the agency theory proposes that non-executive directors are needed on the board to monitor and control the action of executive directors due to their opportunistic behaviour. They are, therefore, expected to be more successful in directing management towards long-term firm value enhancing activities (Jizi *et al.* 2014) such as nourishing human and developing structural capital.

The link between board composition and firm performance has been well researched, where studies have found a strong association between higher proportions of independent directors on the board and firm performance (e.g., Byrd and Hickman 1992, Pathan and Faff 2013). In the context of Islamic banks, the monitoring and advisory functions by non-executive directors may not be as important as the role played by the SSB who legitimise the activities of the bank. As such, having more non-executive directors add cost to the bank and in turn, may have a negative effect on performance. On the other hand, non-executive directors may have expertise in certain operational areas as well as social and business networks and contacts that the banks need to achieve their strategic objectives. Hence, the next hypothesis is stated as follows:

*H<sub>3b</sub>: There is a significant association between board composition and market performance of IFIs based on Tobin's Q*

### **3.3.3 Leadership structure (role duality)**

The impact of duality on corporate performance is of interest to advocates of various schools of thought (see Hambrick and Mason 1984, Dalton and Kesner 1985, Patton and Baker 1987). Prior research on corporate governance suggest that the board's monitoring efficiency is enhanced when the CEO has limited power in influencing the board's agendas and actions (Yermack 1996, Lehn and Zhao 2006). Further studies suggests that a dual CEO may hide crucial information easily (Krishnan and Visvanathan 2009), crave for favourable board appointments (Haniffa and Cooke 2002), and ultimately have confrontations with NEDs (Dey 2008).

Where there are arguments that role duality diminishes board independence (Cerbioni and Parbonetti 2007), reduces flexibility of boards of directors (Krause *et al.* 2014) and consequently reduces the possibility that boards can properly execute their oversight role (Mollah and Zaman 2015). However, the management of IFIs conforms the concept of *Shura* (consultation) in which the [dual]CEO is under increased scrutiny of all board members. Therefore, the CEOs will maintain high ethical standards and good faith to their stakeholders. Hence, combining the role of CEO and board's chairman may help the management to make swift decisions. Accordingly, role duality is expected to be positively associated with market valuation of IFIs.

*H<sub>3c</sub>: There is a significant positive association between role duality and market performance of IFIs based on Tobin's Q*

3.3.4 Shariah supervisory board (SSB) size

The most notable variation in corporate governance structure of Islamic finance is the presence of Shariah advisors (Graiss and Pellegrini 2006) who specialize in Islamic law and jurisprudence with a background of economics and finance. Zaher and Kabir (2001, p.159) contrasting the Islamic and conventional banks notes that:

“Under the Islamic financing system, investments or financing is targeted to the specific needs of the entity. Financiers or investors will need to satisfy themselves as to the reliability of the project, their lease rentals or the return promised in any financing deal. The investors and financiers have to exercise due diligence and careful monitoring of their investment. There is not much room for raising a variety of unsecured debts that are not targeted to the specific needs of borrowers.”

The ethical underpinning, overseen by the SSB is a distinguishing feature of Islamic banks as stressed by the founding father of Islamic banking (Uusmani 2002) who simplifies the role of SSB in Islamic banks. SSB exists to provide the management an opportunity to identify operational issues with the Shariah advisors and seek their advice on specific issues in the light of divine law. The prime obligations of SSB are; 1) to ensure the Shariah-compliance of all contracts offered by IFIs, 2) to help IFIs mitigate the effects of potential risk through due diligence by abiding the ethical foundations of Islamic moral economy, and 3) to perform Shariah-audit to satisfy the stakeholders as it does not operate as an *ex-post* compliance medium (Safieddine 2009, Ahmed 2013).

In a recent empirical study Mollah and Zaman (2015) found SSB to be positively associated with performance. In the presence of a larger board, a large-sized SSB is less likely to add value as the advising obligations are shared by the board members. Furthermore, the market may perceive a larger SSB as an expense and put negative value to it. Therefore, SSB size is expected to be negatively associated with the market value of IFIs.

*H<sub>3d</sub>: There is a significant negative association between SSB size and market performance of IFIs based on Tobin's Q*

#### 4. Methodology, variables and data

##### 4.1 Sample

Initially 174 banks were identified as “Islamic Banks” in the Bankscope database, meaning these institutions conduct their operations in accordance with Shariah. These banks were further verified using different sources *i.e.* web-search, central banks’ available data and other public resources. After eliminating banks with insufficient financial and/or corporate governance information, a sample comprising of 67 individual IFIs and 268 firm-year observations for the fiscal years 2006–2009 was selected. This time period was selected primary because this study also aims to examine the impact of the financial crisis. In doing so, 268 annual reports were used to hand collect the required data. A complete list of the sampled Islamic banks including corresponding countries is provided in Appendix I.

Considerable empirical evidence suggests that investments in organizational resources and strong corporate governance mechanisms have positive effects on the market valuation of banks. Following the prior bank performance literature (Sierra *et al.* 2006, Caprio *et al.* 2007, Hasan and Dridi 2010, Jordan *et al.* 2011), Tobin's Q is used to measure market valuation of IFIs. Tobin's Q is computed as the sum of market capitalization and book value of liabilities divided by total assets. Given the least transparency in Islamic banks (Haniffa and Hudaib 2007), it was fairly challenging to develop proxy to measure investments in human and structural capital.

[INSERT TABLE 1 ABOUT HERE]

Previous studies conducted in the context of conventional financial institutions have reported a positive relationship between HCI and bank performance (Doucouliagos *et al.* 2007).



Following these studies, total investments in human capital (HCI) is calculated as natural logarithm of total staff training and recruitment costs. It is argued to be a better measure than employee turnover because financial resources are deemed essential for long-term human capital accumulation through training and recruitment programmes (Crook *et al.* 2011). Similarly, investments in structural capital are reported to have systematic effect on firms' market value (Sydler *et al.* 2014). Structural capital investments are generally measured using R&D expenditures (Bandeiral and Afonso 2010) or technological (*i.e.* IT) expenditures (Coombs and Bierly 2006). Given the nature of this study where financial data is used, combining R&D and IT expenditures is a suitable proxy to measure investments in structural capital. Table 1 provides the summary of operationalization of all the variables included in the model whereas the conceptual framework is illustrated in Figure 1.

**[INSERT FIGURE 1 ABOUT HERE]**

Several control variables have also been used in the model to account for the potentially confounding effects of bank-specific characteristics. The control variables used in the main regressions are:

- (i) Firm-size, proxied by the natural logarithm of total capital,
- (ii) Level of risk, using leverage as a proxy,
- (iii) Firm-complexity was measured using total number of existing subsidiaries (SUB),
- (iv) Listing status, dichotomous, yes/no,
- (v) Type of auditor, dichotomous, yes/no, and
- (vi) Operating region is calculated as 1 if the bank is based in Gulf-region, 0 otherwise.

The selected variables have been informed by the previous studies (see Majid *et al.* 2010, Parashar and Venkatesh 2010, Beltratti and Stulz 2012, Erkens *et al.* 2012, Berger and Bouwman 2013).

## 5. Empirical results and analysis

### 4.1 Descriptive statistics

Table 2 reports descriptive statistics for selected firm characteristics, including mean, standard deviation, minimum, maximum, skewness and kurtosis for all variables used in the main analysis. Overall market performance of sampled IFIs is sound as indicated by Tobin's Q with a mean of 0.79 with a minimum and maximum values of 0.22 and 1.09 respectively, the positive values suggesting high level of confidence amongst the investors in IFIs.

[INSERT TABLE 2 ABOUT HERE]

As for the continuous independent variables, it can be seen that the average mean of HCI and SCI are 2.99 and 0.71 respectively, suggesting that sampled IFIs were generally efficient in maintaining market valuation through investments in human and structural capital. Among governance-specific variables, board size has a mean of 2.15 while the minimum and maximum values for non-executive directors on the board and SSB size are 0.1 to 1 and 2 to 7 respectively, indicating the governance diversity across Islamic finance industry. Interestingly, role duality (1 if the board's chairman and CEO is the same person, 0 otherwise) has a mean of 0.15, suggesting that role duality is not common in sampled IFIs. As for firm-related control variables, the average size of sampled IFI is 14.35. The minimum 4.37 and maximum 77.99 values suggest risk trends in IFIs. Similar trends can be observed for firm-complexity, measured by number of existing subsidiaries.

4.2 *Correlation analysis*

Spearman correlations matrix and VIF-tests is used to test for the existence of multicollinearity between the examined independent variables. Table 3 presents correlation results between the dependent variable, Tobin’s Q, and the independent variables. Tobin’s Q is positively related with HCI (at 1% level) and SCI (at 5% level), indicating that investments in human- and structural-capital enhance firm’s market valuation.

[INSERT TABLE 3 ABOUT HERE]

None of the governance-specific variables is found to be associated with the market-based performance of IFIs. As for firm-specific variables, firm-size relate positively and significantly with Tobin’s Q. While observing the relationships between governance-specific variables and firm-related variables, no multicollinearity can be seen. Heteroscedasticity was also tested using White’s test. The results do not suggest a threat of heteroscedasticity.

4.3 *Multivariate analysis*

Before running the regression, an analysis of residuals was conducted, plots of the studentised residuals against predicted values and they indicate no problems of homoscedasticity and linearity. Residuals of standard tests on skewness and kurtosis indicated some problem with the normality assumption for three of the variables and these variables were transformed accordingly using natural logarithm to get the best fit. To examine the effects of investments in human and structural capital and corporate governance (CG) features on the market value of IFIs, alternative versions of the following panel regression specification were estimated:

$$\text{PERF} = \alpha + \beta_1 \text{HCI} + \beta_2 \text{SCI} + \beta_3 \text{GOV} (\ln \text{BSize} + \text{NED} + \ln \text{SSB} + \text{Duality}) + \beta_4 \text{FIRM} (\ln \text{FSIZE} + \text{Risk} + \text{SUB} + \text{Listing} + \text{Big4} + \text{Region}) + \varepsilon \quad \text{Eq. (1)}$$

Where PERF denotes the performance measure (Tobin's Q), GOV includes all measures of corporate governance-variables, and FIRM includes all firm-specific control variables.

#### ***4.3.1 What is the impact of investment in human and structural and corporate governance on market value of IFIs?***

Table 4 reports the estimation results of alternative versions of Eq. 1 with Tobin's Q as the dependent variable. Models 1 and 2 are parsimonious versions of Eq. 1.

**[INSERT TABLE 4 ABOUT HERE]**

Focusing first on the results of model 1, reported in the third column of Table 4, the estimated coefficients for HCI is positively and statistically significant with Tobin's Q at the 1% level, thereby suggesting that investments in human capital improve IFI's market value. Therefore, consistent with the hypothesis ( $H_1$ ) the estimates indicate that investments in human capital have positive effect on market value of IFIs. Thus hypothesis ( $H_1$ ) is supported. Results from model 2, reported in fourth column of Table 4, indicates a significant positive relationship at 10% level between investment in structural capital and Tobin's Q. Thus hypothesis ( $H_2$ ) is supported with relatively less statistical significance.

In contrast, among governance-related variables, board size role duality relate positively with market value of IFIs at 10% and 1% level respectively. Thus hypotheses ( $H_{3a}$  &  $H_{3c}$ ) are supported. Similarly, the statistical significant at 1% level negative relationship between SSB and Tobin's Q in both models support hypothesis ( $H_{3d}$ ). The insignificant relationship between NED and Tobin's Q lends no support to hypothesis ( $H_{3b}$ ). The estimated coefficients for firm-specific control variables are highly significant thus, indicating that

market valuation increases with firm size, listing status, and type of auditor and decreases with level of risk, firm complexity and operating region.

**4.4 Further analysis**

Recent empirical evidence suggest that Islamic banks remain stable during the recent global financial crisis (see Hasan and Dridi 2010). This has attracted increased attention on Islamic way of banking. Academics and policy makers alike point to the advantages of Islamic way of banking and how it helped contain the adverse impact on profitability during the crisis. Hasan and Dridi (2010) further observe that the credit and asset growth of Islamic finance were at least twice higher than that of conventional banks during the global financial crisis. Therefore, it is imperative to perform a segregate analysis on the selected IFIs to examine the impact of financial crisis and highlight the business strategies of Islamic banks. Accordingly, the sample is divided into three different times before crisis (2006), during crisis (2007-2008) and after crisis (2009). Year 2007-2008 are selected as during crisis period given the diversity of the sample which includes from 26 different countries around the globe with varying end of year dates.

**4.4.1 Does investment in human and structural capital and governance mechanism have similar impact on market value of IFIs at all times?**

Table 5 presents the regression results for the effects of investments in human and structural capital and corporate governance mechanisms on market value of IFIs before-, during- and after-crisis. As above, alternative versions of Eq. 1 are used with Tobin’s Q as the dependent variable, where Models 1 and 2 are parsimonious versions of Eq. 1.

**[INSERT TABLE 5 ABOUT HERE]**

Results from model 1, reported in the second, third and fourth columns of Table 5 shows that the estimated coefficients for HCI are positively and statistically significant with market value of IFIs at all times i.e. before-, during- and after-crisis thereby suggesting that investments in human capital improves IFI's market value, especially during the crisis. These results suggest that IFIs maintained and sustained their market value during the crisis by constantly investing in their knowledge resources such as human capital.

On the other hand, results from model 2, reported in fifth, sixth and seventh columns of Table 5 respectively, indicates significant positive relationship (at 1% level) between investment in structural capital and Tobin's Q only before and during the crisis. The insignificant relationship after the crisis period suggests that investments in structural capital may have increased as Islamic banking industry grew in terms of total assets during the crisis (Hasan and Dridi 2010). However, the impact of these investments is not imminent.

As for governance-related variables, it is interesting to note that board size (during crisis) and role duality (before and during crisis) relate significantly with Tobin's Q. This may imply that market perceived larger boards and centralisation of the lead roles (*i.e.* combining both CEO and Chairman's role) may assist in making swift decisions special, at times of distress. Similar trends can be observed for firm-specific control variables.

## 6. Discussion of findings

Overall results depict that investments in organizational resources *i.e.* human and structural capital are positively associated with market value of IFIs. Thus, consistent with the research hypotheses, the results suggest that investments in human and structural capital may have spurred the market value of IFIs even further.

Hypothesis 1, which expected investment in human capital (HCI) to be positively related to market value of IFIs, is supported. These findings are in line with the previous research into the relationship between HCI and firm's market value (Boselie *et al.* 2001, Bosma *et al.* 2004, Dakhli and De Clercq 2004, Colombo and Grilli 2005, Subramaniam and Youndt 2005, Crook *et al.* 2011, Rafiki *et al.* 2014). These findings indicate that IFIs are complex organizations so as their stock of human capital. However, these banks invest in their human capital base which reflects positively on their market valuation. A passable interpretation of this relationship is that newly developed services must not violate divine guidelines, therefore, consistent with Dotzel *et al.* (2013), it is argued that service innovativeness in Islamic finance is enabled primarily by HCI, which effects positively on their market value. This interface finds support in the earlier studies (i.e., Watson and Holland 2010, Mention and Bontis 2013, Chen *et al.* 2014), who reported that investment in human capital contributes both directly and indirectly to business performance in the banking sector.

Hypothesis 2, which expected investment in structural capital to be positively associated with market value of IFIs, is also supported for the combined data. These findings are in line with the previous research, which suggested that investments in structural capital *i.e.* IT leads to higher market valuation of banks (Nolan 1994, De Brentani and Kleinschmidt 2004, Hsu 2007, El-Bannany 2008, Hsu and Wang 2012). To the contrary, the separate analysis of IFIs suggests no significant association between SCI and market value during- and after-crisis. A plosive explanation of the given result is that Islamic finance industry is growing rapidly (Bader *et al.* 2008, Ernst and Young 2013, Baele *et al.* 2014, Johnes *et al.* 2014), hence, acquiring both tangible and intangible structural capital resources. The cost of such acquisition is higher at the moment; therefore, it is reflected as insignificant in the

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2  
3 results. However, over the time, once Islamic finance industry will reach the stability stage,  
4  
5 investments in structural capital are expected to relate positively with the market value of IFIs.  
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8 On the other hand, similar to the earlier research (e.g., Fahlenbrach and Stulz 2011,  
9  
10 Aebi *et al.* 2012, Beltratti and Stulz 2012), a few interesting interactions between  
11  
12 governance-specific features and market value of IFIs are observed. Contrary to the earlier  
13  
14 studies of Adams and Mehran (2003) and Adams and Mehran (2005), who found larger  
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16 boards to be positively related to the market value of commercial banks based on Tobin's Q,  
17  
18 no statistically significant relationship between board size, NED and market value of IFIs was  
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20 observed. However, SSB-size relates negatively with the market value of FFIBs, suggesting  
21  
22 that market does not favour the larger SSB in the presence of large-sized governing board.  
23  
24 Similarly, role duality was predicted to be positively associated with the market value of IFIs,  
25  
26 the possible explanation for the positive result is that dual CEOs might have an incentive to  
27  
28 limit their bank's risk exposure against the interests of short-term oriented shareholders  
29  
30 (Laeven and Levine 2009, Barry *et al.* 2011, Jizi *et al.* 2014).  
31  
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35 With regards to the control variables, firm size (positively) and level of risk  
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37 (negatively) relate with both sets of IFIs. This suggests that the market valuation of IFIs  
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39 increases with firm-size and decreases with level of risk. This is in line with the previous  
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41 studies in the context of Islamic financial institutions (see Bashir 1999, Čihák and Hesse  
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43 2010, Majid *et al.* 2010). Overall the results indicate that in the wake of the financial crisis,  
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45 IFIs may have adopted momentum investments strategies as they continue to invest in their  
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47 organisational resources *i.e.* human and structural capital which in turn helped them sustain  
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49 their growth momentum. Equally, the insights into Islamic banking business model suggest  
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51 that IFIs have also consistently invested in knowledge resources human capital in particular  
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53 which helped them retain the brain to coup with robust growth.  
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7. Conclusion

The main contribution of this paper is to examine the impact of investments in knowledge-resources *i.e.* human and structural capital on market value of 67 Islamic financial institutions (IFIs) operating in twenty-six different countries worldwide for the period of 2006–2009, while controlling for two sets of variables *viz.* governance-specific and firm-specific. Results indicate a significant positive relationship between investment in human capital and market value of IFIs, based on Tobin’s Q. Overall findings in the context of Islamic banks are consistent with previous research in the context of conventional banks, which posit that the best performing banks are those that have tendency to invest in their knowledge-resources, in particular, human capital.

Given the divergent nature of the present study, which provides evidence from a hitherto under-researched topic *i.e.* Islamic banking and finance, the observed findings have sensible economic interpretations. First, investment in human capital helps IFIs to maintain higher market valuation. Second, the paper argues that IFI’s strategy to rely on long-term human capital accumulation can be seen as idiosyncratic problem-solving knowledge capital. Arguably, investments in knowledge-resources *i.e.* human capital are the ultimate source of competitive advantage for IFIs.

Islamic finance is still a rapidly evolving area, and new research is clearly needed to understand the key dynamics of such way of banking in the networked economy. The paper offers a novel insight into the Islamic banking business model and draws the attention to the increasingly important role that knowledge resources (*i.e.* human capital) play in it. It suggests that existing Islamic banking business model should be further developed in a conceptually richer world of intangibles, knowledge and information. In particular, the analysis suggests substitutability between investment in organizational resources and market value of IFIs and illuminates some of the reasons for this.

One implication is that future theoretical and empirical explorations of the economic role of intangibles, and CG-features, ought to pay attention to bank type (*i.e.* conventional or Islamic), bank size (as total assets held by Islamic banks are only a fraction to those held by conventional financial institutions) and the differences in bank incentives engendered by size heterogeneity, as well as to the time period. Another potential area for the future researchers is to focus on the theory and practice of Islamic banks in the context of governing guidelines both in the Shairah law and the governing standards issued by the Accounting and Auditing Organization for Islamic Financial Institutions (AAOIFI).

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Corporate Governance

**Table 1 Summary of operationalization of the variables**

Variable name	Acronym	Operationalization
<b>Dependent variables</b>		
Tobin's Q	Tobin's Q	[Market capitalization + Total liabilities]/Total assets
<b>Independent variables</b>		
<i>Ambidextrous firm resources</i>		
Human Capital Investment	HCI	Log of total staff training and recruitment costs
Structural Capital Investment	SCI	Log of total R&D and IT expenditures
<i>Governance-specific control variables</i>		
Board-size	lnBSize	Log of total number of directors on board
Board independence	NED	Proportion of non-executive directors to total board size
Shariah supervisory board (SSB) size	LnSSB	Log of total number of members of SSB
Role duality (CEO power)	Duality	Dummy; 1= role duality, 0 otherwise
<i>Firm-specific control variables</i>		
Bank size	LnFSize	Log of total assets
Level of risk	Risk	Total debt/Total equity
Firm complexity	SUB	Total number of existing subsidiaries
Listing status	List	Dummy; 1= listed, 0 otherwise
Type of auditor	BIG4	Dummy; 1= Big four, 0 otherwise
Operating region	Region	Dummy; 1 if the bank is located in Gulf region, 0 otherwise

**Table 2 Descriptive Statistics of Performance Measures and Continuous Independent Variables**

	Mean	Std. Dev.	Min.	Max.	Skew.	Kurt.
Tobin's Q	0.791	0.274	0.221	1.086	-1.105	2.955
HCI	2.993	1.827	-0.281	5.898	-0.356	2.338
SCI	0.710	0.209	0.267	1.052	-0.526	3.198
lnBSize	2.147	0.281	1.609	2.773	0.166	2.855
NED	0.697	0.263	0.1	1	-0.691	2.485
lnSSB	4.102	1.465	2	7	0.611	2.189
Duality	0.145	0.352	0	1	2.022	5.088
lnFSize	14.350	1.520	10.787	16.836	-0.736	2.844
Risk	40.745	21.765	4.369	77.986	0.168	2.018
SUB	5.953	6.832	0	20	1.007	2.663
Listing	0.484	0.501	0	1	0.063	1.004
BIG4	0.813	0.391	0	1	-1.601	3.564
Region	0.469	0.500	0	1	0.125	1.016

**Notes:** Tobin's Q = market capitalization + total liabilities / total assets. Human Capital Investment (HCI) = natural logarithm of total staff training and recruitment costs; Structural Capital Investment (SCI) = natural logarithm of total R&D and IT expenditures; Board-size (BSize) = log of total number of directors on board; Board-composition (NED) = fraction of non-executive directors on the board to total board size; Leadership structure (Role duality) = dichotomous, yes/no; Size of Shariah supervisory board (SSB) = log of total number of Shariah advisors; Firm-size (FSize) = log of total assets; Level of risk (Risk) = using leverage as proxy (total debt/ total assets); Firm-complicity (SUB) = total number of existing subsidiaries; Listing status (Listing) = dichotomous, yes/no; Type of auditor (BIG4) = big four vs. non-big four; and Operating region (Region) = 1 if the bank is based in Gulf-region, 0 otherwise.

**Table 3** Correlation Matrix

	<i>Tobin's Q</i>	<i>HCI</i>	<i>SCI</i>	<i>lnBsize</i>	<i>NED</i>	<i>lnSSB</i>	<i>Duality</i>	<i>lnFSize</i>	<i>Risk</i>	<i>SUB</i>	<i>Listing</i>	<i>BIG4</i>
HCI	0.3931***											
SCI	0.1625**	0.1643**										
lnBSize	0.1565*	0.1526*	-0.013									
NED	-0.038	-0.2211***	-0.1022	-0.3446***								
lnSSB	0.0795	0.1642**	0.0154	0.4481***	-0.1538*							
Duality	0.1689**	0.1717**	-0.0012	0.1982**	-0.2178***	0.1766**						
lnFSize	0.4208***	0.4336***	0.0243	0.2143***	-0.0469	0.369***	0.2138***					
Risk	-0.0589	0.2008**	-0.2053**	0.1802**	-0.0885	0.1565*	0.1959**	0.3281***				
SUB	0.0972	-0.0467	0.0435	0.0432	0.1103*	0.1431*	0.1885**	0.2514***	0.0207			
Listing	0.3167***	0.2011**	-0.0364	0.3071***	-0.1933**	0.2481***	0.1351*	0.2447***	0.1941**	0.3001***		
BIG4	-0.0619	-0.3473***	-0.2073***	-0.229***	0.467***	-0.1446	-0.2579***	-0.2122***	-0.0624	0.0539	-0.015	
Region	-0.0456	-0.1064*	-0.2621***	0.0512	0.1712**	-0.0545	-0.0967	-0.0926	-0.0711	-0.067	0.2173**	0.4512***

**Notes:** \*\*\* p<0.01, \*\* p<0.05, \* p<0.1.

**Table 4**

Cross-sectional OLS regression of Tobin's Q on HCI, SCI, and control variables for IFIs

	<b>Predicted Sign</b>	<b>Model 1</b>	<b>Model 2</b>
N		268	268
HCI	+	0.0401***	
SCI	+		0.148*
lnBSize	+	0.124*	0.114
NED	+	0.0714	0.0608
lnSSB	-	-0.0323***	-0.0335***
Duality	+	0.103***	0.113***
lnFSize	+	0.0718***	0.0894***
Risk	-	-0.00397***	-0.00350***
SUB	+/-	-0.00439**	-0.00634***
Listing	+/-	0.164***	0.184***
BIG4	+/-	0.135***	0.0990**
Region	+/-	-0.0969***	-0.0815**
Constant		-0.476**	-0.676***
Adj. $R^2$		0.371	0.330
$R^2$		0.3979	0.3589
F-value		14.53***	10.81***

**Notes:** \*\*\* p<0.01, \*\* p<0.05, \* p<0.1.**Table 5**

Cross-sectional OLS regression of Tobin's Q on HCI, SCI and control variables for IFIs before-, during- and after-financial crisis

	<b>Model 1</b>	<b>Model 1</b>	<b>Model 1</b>	<b>Model 2</b>	<b>Model 2</b>	<b>Model 2</b>
<i>Period</i>	<i>Before-crisis</i>	<i>During-crisis</i>	<i>After-crisis</i>	<i>Before-crisis</i>	<i>During-crisis</i>	<i>After-crisis</i>
Year	2006	2007-2008	2009	2006	2007-2008	2009
N	67	134	67	67	134	67
HCI	0.0526**	0.0495***	0.0511**			
SCI				0.472***	0.228**	-0.149
lnBSize	0.124	0.217***	0.228	0.112	0.134	0.194
NED	-0.0211	0.0822	0.117	0.00991	0.0533	0.0159
lnSSB	-0.0466**	-0.0510***	-0.0542***	-0.0477**	-0.0299*	-0.0575**
Duality	0.111	0.0792	0.0617	0.113*	0.0936*	0.0595
lnFSize	0.0681*	0.0543***	0.0824***	0.0728*	0.0877***	0.107***
Risk	-0.00188	-0.00386***	-0.00603***	-0.00161	-0.00176	-0.00568***
SUB	-0.00396	-0.000331	-0.00529	-0.00307	-0.00815***	-0.00671*
Listing	0.115*	0.127***	0.216***	0.124*	0.172***	0.217***
BIG4	0.0856	0.169***	0.171**	0.0294	0.0777	0.103
Region	-0.0487	-0.0776*	-0.109	0.000699	-0.107*	-0.106
Constant	-0.488	-0.417*	-0.744**	-0.686	-0.781**	-0.658
Adj. $R^2$	0.318	0.380	0.428	0.341	0.377	0.373

**Notes:** \*\*\* p<0.01, \*\* p<0.05, \* p<0.1

## Appendices

## Appendix I

## List of Islamic banks included in the sample

<i>No.</i>	<i>Bank Name</i>	<i>Country</i>	<i>No.</i>	<i>Bank Name</i>	<i>Country</i>
1	ABC Islamic Bank	Bahrain	35	Hong Leong Islamic Bank Berhad	Malaysia
2	Albaraka Islamic Bank BSC	Bahrain	36	Maybank Islamic Berhad	Malaysia
3	Al-Salam Bank-Bahrain	Bahrain	37	Public Islamic Bank Berhad	Malaysia
4	Arcapita Bank BSC	Bahrain	38	Maldives Islamic Bank Pvt Ltd	Maldives
5	Bank Alkhair BSC	Bahrain	39	Jaiz Bank PLC	Nigeria
6	Citi Islamic Investment Bank	Bahrain	40	Albaraka Bank (Pakistan) Limited	Pakistan
7	First energy bank	Bahrain	41	BankIslami Pakistan Limited	Pakistan
8	Gulf Finance House BSC	Bahrain	42	Burj Bank Limited	Pakistan
9	International Investment Bank	Bahrain	43	Meezan Bank Limited	Pakistan
10	Investors Bank BSC	Bahrain	44	Standard Chartered Modaraba	Pakistan
11	Al-Arafah Islami Bank Ltd	Bangladesh	45	Al-Amanah Islamic Investment Bank of the Philippines	Philippines
12	First Security Islami Bank Ltd	Bangladesh	46	Masraf Al Rayan (QSC)	Qatar
13	ICB Islamic Bank Ltd	Bangladesh	47	Qatar International Islamic Bank	Qatar
14	Islami Bank Bangladesh Ltd	Bangladesh	48	Qatar Islamic Bank SAQ	Qatar
15	Shahjalal Islami Bank Ltd	Bangladesh	49	Al Rajhi Bank	Saudi Arabia
16	Social Islami Bank Ltd	Bangladesh	50	Alinma Bank	Saudi Arabia
17	Bank Islam Brunei Darussalam Berhad	Brunei Darussalam	51	Bank AlBilad	Saudi Arabia
18	Al-Tawfeek Co. for Investment Funds Ltd	Cayman Islands	52	Bank Al-Jazira	Saudi Arabia
19	Al Baraka Bank Egypt SAE	Egypt	53	Islamic Bank of Asia	Singapore
20	Arab Gambian Islamic Bank	Gambia	54	Albaraka Bank Limited	South Africa
21	Bank Syariah Mandiri	Indonesia	55	Al Shamal Islamic Bank	Sudan
22	Kourosh Parvizian	Iran	56	Albaraka Bank Tunisia	Tunisia
23	Islamic International Arab Bank	Jordan	57	Asya Katilim Bankasi AS-Bank Asya	Turkey
24	Boubyan Bank KSC	Kuwait	58	Turkiye Finans Katilim Bankasi AS	Turkey
25	First Investment Company	Kuwait	59	Abu Dhabi Islamic Bank	United Arab Emirates
26	Kuwait Finance House	Kuwait	60	Ajman Bank	United Arab Emirates
27	Rasameel Structured Finance Company KSC	Kuwait	61	Dubai Islamic Bank PJSC	United Arab Emirates
28	Al Baraka Bank SAL	Lebanon	62	Emirates Islamic Bank PJSC	United Arab Emirates
29	Affin Islamic Bank Berhad	Malaysia	63	Sharjah Islamic Bank	United Arab Emirates
30	Al Rajhi Bank (Malaysia) Berhad	Malaysia	64	Bank of London and The Middle East Plc	United Kingdom
31	Alkhair International Islamic Bank Berhad	Malaysia	65	European Islamic Investment Bank Plc	United Kingdom
32	Asian Finance Bank Berhad	Malaysia	66	Islamic Bank of Britain Plc	United Kingdom
33	Bank Islam Malaysia Berhad	Malaysia	67	Tadhamon International Islamic Bank	Yemen
34	Bank Muamalat Malaysia Berhad	Malaysia			

Figure 1 Conceptual framework

