

# Impact of Characteristics of Board of Directors on Intellectual Capital Performance for Banks Listed in Gulf Markets

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This study aims at exploring the relationship between characteristics of board of directors (size, educational level, nationality, number of meetings) on intellectual capital performance for banks listed in the Gulf markets. The study was based on analysing annual reports of a sample of (86) banks for (5) five years from 2014 to 2018. The study also used the technique of correlation and regression to analyse the relationship among study variables. The results indicate that the size of board of directors is positively highly correlated with intellectual capital performance. In addition, this study finds an important positive correlation between educational level and intellectual capital performance. This supports the idea that diversity in educational level of board of directors reflects their varying degrees of knowledge and skills, affecting board of directors' ability to generate more or less creative solutions to solve complex problems. Furthermore, this is contrary to the expectations of theory of dependence on resources, where this study did not find any relationship between the nationality diversity of board of directors and intellectual capital performance in Gulf banks. Moreover, the study results show that the number of board of director meetings has a relationship with intellectual capital performance.

**Key words:** *Characteristics of board of directors, Size of board of directors, Diversity in educational level, Nationality diversity, Number of meetings and Intellectual capital performance.*

## Introduction

Intellectual capital (IC) is defined as a business asset that has become a crucial resource and an essential competitive advantage for companies (Rodrigues et al., 2017). It can be formed with various sources including people, market, organisation, technology and socio-economic environment. Furthermore, the IC can significantly increase a firm's value according to Hamdan et al., (2017) and Buallay (2017).

There is a consensus among researchers and practitioners in accounting field that with advent of knowledge-based economy, intellectual capital, rather than physical and financial capital, has become the main factor in driving the company's value and maintaining its competitive advantage.(Ahuja & Ahuja, 2012,Wang, 2011; Zeghal & Maaloul, 2010).

As a result of the increasing importance of intellectual capital, study of intellectual capital performance and its determinants has been identified as an important and attractive research area for many researchers. However, despite its importance, the study of determinants of intellectual capital performance is still in its early stages (Swartz & Firer, 2005; Saleh, Abdul Rahman & Hassan, 2009). There are only a few studies to address this issue. Recently, intellectual capital performance has received increasing interest in accounting studies. Several studies have examined relationships between characteristics of board of directors and intellectual capital in both developed and developing countries with political and economic stability, such as Britain (El-Bannany, 2008; Ho & Williams, 2003) Australia (Joshi et al., 2010) Malaysia (Abidin et al., 2009; Saleh et al., 2009) South Africa (Swartz & Firer, 2005; Ho & Williams, 2003; Williams, 2001; Williams, 2000) Gulf States (Al-Musalli & Ku Ismail, 2012)). There is no consensus among researchers on impacts of these factors on intellectual capital performance. Furthermore, in order to reach results that can be utilised and generalised, it is necessary to conduct the study in different environments, where there is political and economic stability, such as Arabian Gulf States. Consequently, this study aims to explore the relationship among the characteristics of board of directors (size, educational level, nationality "percentage of foreigners" and number of meetings) and intellectual capital performance of Gulf banks.

The previous studies examining relationships between corporate governance and intellectual capital performance focused only on non-financial companies and excluded financial companies such as banks, although banking sector is one sector that uses intellectual capital extensively (Kamath, 2007; Goh, 2003). Additionally, corporate governance is very important for banks due to its vital role in economy (Saidi, 2011a).

The Gulf Cooperation Council (GCC) countries were selected because of the favourable commercial environment, fair levels of competitiveness, low taxation, developed judicial

system, and a robust environment for investment. Currently, the banking sector plays an essential role in the growth of a country's national economy by enabling financial transactions.

Due to the competitive environment in the GCC countries, banks are required to become knowledge-intensive by considering IC's rather than implementing traditional bank transactions.

In addition, all limited studies on determinants of intellectual capital in the banking industry focused on developed countries, such as UK and Australia. The results of previous studies conducted in these countries cannot be generalised to developing countries, including Gulf States, because of differences between Gulf States and developed countries, particularly in terms of their culture, economy and legal framework. Thus, because of these differences, the researchers believe that a separate study is needed in the Gulf States.

The work is divided into the following sections. Section 1 is the introduction; the remaining part of this paper is divided into five sections: Section 2 discusses the literature review and develops the hypotheses; Section 3 presents the design and research methodology; Section 4 presents the empirical analysis results; and Section 6 presents the study's conclusion, recommendations and the scope for further research.

### **Measuring Intellectual Capital**

At present, there is no universally accepted measure of intellectual capital (Zeghal & Maaloul, 2010; Chan, 2009; Ramirez, Lorduy & Rojas, 2007). (Swartz & Firer, 2005), therefore conceptual, cognitive and theoretical differences in the concept of intellectual capital lead to lack of a perfectly acceptable measure of intellectual capital performance. Involvement of researchers from different specialisations such as accounting, economics, finance, strategy, human resources and psychology has led to multidimensional measurement of intellectual capital using different theories to justify measurement of intellectual capital (Nazari & Herremans, 2007). Many researchers (Latif, Malik & Aslam, 2012; Goh, 2003; Andriessen, 2004; Pulic, 2004; Ho & Williams, 2003; Edvinsson & Malone, 1997; Stewart, 1997, among others) state that performance-measuring systems do not provide a lot of assistance in measuring intellectual capital performance as they tend heavily towards financial and material resources. They also assure that using traditional measures may prompt investors to make inappropriate economic decisions. According to Kamath (2007), ignorance of intellectual capital can be disastrous for companies in the long run due to the growing importance of intellectual capital as a major source of fixed value and competitive advantage.

Failure of traditional methods to incorporate intellectual capital measures motivates researchers to conduct studies to produce methods in intellectual capital accounting. This has led to developing many methods for measuring intellectual capital. According to Tan, Plowman & Hancock (2007), methods of measuring intellectual capital can be generally categorised under two approaches: (1) approaches that do not use a critical measurement of intellectual capital such as balanced scorecard, intellectual capital and intangible asset control approaches; and (2) approaches that use monetary measurement of intellectual capital such as approach of economic value added, calculated intangible value, market value approach and intellectual coefficient of value added. This study will discuss the method of intellectual coefficient of added value.

## **Literature and Developing Hypotheses**

### ***Number of Board of Directors Members***

The size of board of directors is one of the most important characteristics of board of directors that can affect performance of companies. Results of previous experimental studies have shown that the size of board of directors is one of the most important variables that determine effectiveness of board of directors and its impact on performance of the company (Liang et al., 2013; Pathan & Faff, 2013). The greater the size of board of directors, the greater expertise of the board of directors that will enhance the board's ability to process information better and their ability to oversee and distribute work to be done.

Theoretically, there are two conflicting theories about the impact of board of director size on corporate performance. Theorists of Agency's Theory support that there is a negative relationship because increasing number of board of directors leads to the problem of poor communication, coordination and decision-making and more likely to dominate the board (Liang et al., 2013; Pathan & Faff, 2013; Dalton et al., 1999; Eisenberg, Sundgren & Wells, 1998; Jensen 1993; Lipton & Lorsch, 1992). In contrast, the lack of board of directors leads to good cooperation, engaging in more open discussions, and making decisions more quickly. In addition, a small board of directors reduces control on the board (Denis, 2001).

Theorists of theory of Resource Dependency Theory argue that larger size of board of directors leads to an increase in the existing expertise of the board of directors that will enhance the board's ability to process information better. An increasing number of directors reduce shortcomings of individual management and business skills through collective decision making, which in turn improves quality of company's strategic decisions and actions (Abeysekera, 2010; Ruigrok et al., 2006). Additionally, the size of board of directors increases the company's ability to secure vital resources from their environment such as intellectual capital (Abeysekera, 2010).

With regard to intellectual capital performance, there are few studies investigating relationships between size of board of directors and intellectual capital performance. Results also are inconclusive. For example, Al-Musallia & Ku Ismail (2011) conducted a study to investigate relationships between characteristics of board of directors (educational level, nationality, multiple memberships, size of board and number of independent members) and intellectual capital performance of banks in financial markets of State of Bahrain. The study used a sample of 18 banks during the period from 2005 to 2007. Results showed that intellectual capital performance in Gulf banks is low. Contrary to research hypothesis, there is no relationship between size of board of directors and intellectual capital performance. However, Ho & Williams (2003) conducted a study to find out relationships between size of board of directors and companies' performance for a sample of 286 publicly traded companies. They were distributed as follows: from South Africa (84 companies), Sweden (94 companies) and UK (108 companies); their findings indicated that there is a negative correlation between size of board of directors and performance of intellectual capital of companies.

Given results of previous studies and lack of studies between size of board of directors and intellectual capital performance, there is an urgent need for further studies between size of board of directors and intellectual capital performance in different environments; differ from other studies such as Gulf countries in light of overlapping economic conditions among Gulf countries. In addition, there is a need to focus on one sector, which is the banking sector. As highlighted earlier, the banking sector in Gulf countries tends to include a large number on the board of directors compared to other sectors. Thus, based on Theory of Agency and on above arguments we propose that:

**H1:** There is a negative correlation between size of board of directors and intellectual capital performance in Gulf banks listed on Gulf stock exchanges.

### ***Diversity in Educational Level***

Educational level of board of directors is an indicator of their knowledge, knowledge orientation and skill base (Hambrick & Mason, 1984). Upper Echelon Theory suggests that diversity of educational level among the board of directors reflects their varying degree of knowledge and skills, affecting the board's ability to generate more or less creative solutions to solve complex problems and can provide a wider range of inputs that help improve strategy formulation and evaluate it (Ruigrok, Peck, Tacheva, Greve & Hu, 2006; Auh & Menguce, 2005). On the other hand, it alleges that similarity of educational level of board members may lead to similarities in information processing and decision-making because of homogeneous training and experience, which in turn may limit the board's ability to provide creativity and innovation (Auh & Menguce, 2005). Benefits of diversity in educational level

can contribute by providing better advice and assistance on strategic issues and lead to quality decisions (Wincent et al., 2010; Auh & Menguc, 2005).

It has been said that the board with a greater diversity of educational level, is likely to have greater capacity to process information, flexibility and better ability to adopt new ideas and accept innovations (Wincent et al., 2010; Talk et al., 2010). These characteristics can help members develop relevant strategies and policies on how to best utilise and use intellectual capital resources (Williams, 2001) and formulate corporate strategic direction such as customer orientation, enterprise orientation and technology orientation, (Safieddine et al., 2009; Auh & Menguc, 2005; Keenan & Aggestam, 2001), which in turn affect resources behind intellectual capital. Thus, a diversity of educational level of board of directors' members can be beneficial to Gulf banks seeking to improve performance of their intellectual capital.

Empirical research has shown that diversity of education level is positively correlated with innovation that affects companies' stock of intangible assets and facilitates developing intellectual capital (Marques et al., 2006). For example, using a sample of 319 companies from 10 industrial industries from 17 countries in Europe and North America, Talk et al., (2010) presented evidence that diversity in educational level has a strong impact on strategic choice of companies to focus on innovation. They concluded that diversity in education facilitates innovation strategy that increases company's ability to produce new products and services and improves company's performance.

Upper Echelon Theory suggests that diversity of educational level among board members should lead to a high level of strong performance (Auh & Menguc, 2005). However, previous studies on relationships between diversity of educational level and company performance are inconclusive, revealing that this effect can be either positive or negative correlation. Some studies even show that there is no relationship between diversity of educational level and company's performance.

However, most of previous studies have focused on studying relationships between diversity of educational level and fixed performance in terms of physical and financial capital. There is a lack of previous studies regarding studying relationships between educational level diversity and intellectual capital performance. This study aims to bridge this gap in previous studies. Based on the above theory and discussion, this study predicts that diversity in educational level among board members can help improve the performance of bank's intellectual capital. Thus, this study proposes the following hypothesis:

**H2:** There is a positive relationship between diversity in educational level of board of directors and intellectual capital performance of Gulf banks.



### ***Nationality Diversity***

According to Veen & Marsman (2008), increasing nationality diversity is an important requirement for the quality of strategic decision-making and leads to better company performance. Accordingly, diversity of nationality among board members is expected to affect performance of bank's intellectual capital in ways similar to educational level, mainly relationships of banks with employees and customers who are the most important components of intellectual capital (Kamath, 2007).

According to Erhardt et al., (2003) the board should reflect diversity of company's customer base and business complex. Van der Walt & Ingley (2003) and Heijltjes et al., (2003), argue that board members should be drawn from the entire business complex and match this diversity in the workforce, without leaving other nationalities outside recruitment processes. Williams (2001), argues that increased cultural diversity resulting from appointment of foreign directors on the board of directors can enhance the board's influence on company's performance with regard to intellectual capital, mostly human intellectual capital. While his study focused on ethnic diversity, points are similar to nationality diversity.

In the same context Miller & Triane (2009), found that cultural diversity of the board is positively linked to established innovation strategies that provide new strategic opportunities for the company to establish new services or new product lines. They argue that diversity of cultural backgrounds of board of directors' members should produce a broader set of ideas and information that helps identify new innovative opportunities in the identification phase. This allows for a more accurate assessment of options at selection stage and thus strongly influences innovation, which in turn affects the intangible asset inventory and facilitates developing intellectual capital (Marques et al., 2006). Based on above discussion, it is clear that nationality diversity among board of directors' members can help improve the performance of intellectual capital of banks.

Similar to diversity in educational level, previous studies on nationality diversity have yielded different results. Several empirical studies such as: Miller, Triane (2009); Erhardt et al., (2003); and Oxelheim & Randøy (2003), support a positive impact of nationality diversity on company performance. However, Randey et al., (2006), in their study using a sample of 500 major companies from Denmark, Norway and Sweden, did not find any effect of nationality diversity on the company's performance in these countries. A study by Rose (2007), in Denmark found similar results to Randey et al., (2006). However the above studies focus only on relationships between nationality diversity and company's physical and financial performance. There is a lack of empirical evidence on relationships between nationality diversity in board and intellectual capital performance. This study aims to fill this

gap in previous literature. Therefore, based on Upper Echelon Theory and discussion above, the following hypothesis is proposed:

**H3:** There is a positive relationship between diversity of nationality in board of directors and intellectual capital performance of Gulf banks.

### *Number of Meetings*

A corporate governance code stipulates that companies are encouraged to hold regular meetings of the board of directors to review their tasks and responsibilities. Board of directors shall also disclose the number of board meetings held in the year, financial statements and details of attendance of each member of board in relation to meetings held. Frequent board meetings are considered important means for improving effectiveness of the board (Adams & Ferreira, 2009; Francis et al., 2015).

Board meetings and attending meetings are said to be important channels through which members get important information to help them perform their oversight role. A study conducted by Francis et al., (2015), indicated that companies with low attendance at board meetings are much worse than boards with frequent attendance during financial crisis. In addition Ntim & Oseit (2011) conducted a study in South Africa that also suggested similar results between frequent board meetings and company performance where boards that meet frequently tend to generate higher financial performance.

On the other hand, there are researchers who consider that board meetings are not necessarily beneficial because of limited time of non-executives in the company (Vafeas, 1999). Recurring meetings also include administrative time, increased administrative support expenses, administrative requirements and board meeting fees.

Based on above arguments, there have been inconclusive findings regarding frequency of board of directors' meetings with company's performance and this study seeks to address this. In addition, there is a strong emphasis on studies based on developed countries such as Europe and North America that have a different institutional context and corporate governance practices where effectiveness of board meetings on intellectual capital performance can be expected to be different from Gulf States. In addition, there are no studies on relationships between the number of meetings and intellectual capital performance. Therefore, the following hypothesis is proposed:

**H4:** There is a positive relationship between frequency of board meetings and intellectual capital performance.

## **Methodology**

### ***Sample Selection***

The study population consists of all banks listed on Gulf Stock Exchanges during the period 2014-2018, where the study reached 86 banks from 91 banks for a period of five years. This study focuses on banks listed on Gulf Stock Exchanges, as data of banks listed on the market are considered more reliable. Additionally, listed banks include public accountability for their performance (Saleh et al., 2009). Researchers selected the study sample according to the following conditions:

1. The bank should be listed on the Gulf Stock Exchanges.
2. Its annual report from 2014 to 2018 should be available on its own website or on the Stock Exchanges website.
3. The annual report is easy to access and includes required information.

Financial statements of this study were compiled from annual reports of banks from 2014 to 2018, which were available on Gulf Stock Exchanges websites.

### ***Measuring Dependent Variable: Intellectual Capital Performance***

This study used Value Added Intellectual Coefficient (VAIC), a coefficient model developed by Pulic (1998), a tool used by many researchers to measure intellectual capital performance particularly in the banking sector, for example (Ahuja & Ahuja, 2012; Latif et al., 2012; Wang, 2011; Abdul Salam et al., 2011; Ku Ismail & Abdul Kareem, 2011; Johshi et al., 2010). Justification for using this model is that it allows us to measure the contribution of both physical (physical and financial) and intellectual resources (human and structural) to create value added by the company. Algebra is sum of value of efficiency of creation of working capital (physical and financial) and two main components of intellectual capital (i.e. human and structural capital), as follows:

$$VAIC = CEE + HCE + SCE$$

Whereas:

1. Capital Employed Efficiency (CEE) is an indicator of efficiency of value added through employed capital.
2. Human Capital Efficiency (HCE) is an indicator of efficiency of value added through human capital.
3. Structural Capital Efficiency (SCE) is an indicator of efficiency of value added through structural capital.

Employed capital efficiency, human capital efficiency and structural capital efficiency are calculated through several different steps as follows. The first step is to calculate the bank's ability to create value added (VA). Value added is calculated as follows:

$$\text{Value Added} = \text{Outputs} - \text{Inputs}$$

Outputs refer to gross income or total revenue, which is income generated by the bank during the financial year through provision of its services. Inputs refer to operating expenses excluding personal costs. Inputs refer to all costs incurred by bank for operating and maintaining business. Employee compensations and other costs incurred by bank are considered training and development expenses (personal costs) of total expenses and the reason for this is that they will be treated as investments rather than expenses (Pulic, 2004). According to concepts of knowledge-based economy, employees are considered the main component in creating value. Consequently, expenditures on employees deserve to be described as an investment rather than cost. The second step is to calculate human capital efficiency (HCE) by dividing total value added by human capital.

$$HCE = VA \div HC$$

$$\text{Human Capital Efficiency} = \text{Value Added} \div \text{Human Capital}$$

Human capital efficiency refers to amount of value added generated by monetary unit invested by employees. According to Pulic (2004), employee costs are an indicator of human capital. As mentioned earlier, these expenses are no longer part of inputs. This means that employee-related expenses are not treated as a cost but as an investment. Consequently, relationships between value added and human capital refers to the ability of human capital to create value in bank. The third step is calculation of structural capital efficiency (SCE), which shows contribution of structural capital to create value by dividing structural capital by total added value.

$$SCE = SC \div VA$$

$$\text{Structural Capital Efficiency} = \text{Structural Capital} \div \text{Value Added}$$

According to the methodology, structural capital is the result of previous performance of human capital (regulation, licenses, patents, reputation, standards and customers' relationship). Structural capital can be seen as a contribution to the value creation process for a given period (Komnenic & Pokrajcic, 2012). Pulic (2004), states that structural capital is obtained when human capital is deducted from added value. As this equation suggests, this form of capital is not an independent indicator. In fact, it depends on value added created, which suits to human capital. This means that an increase in share of human capital in value added created is smaller than share of structural capital. The fourth step is to calculate capital employed efficiency (CEE) by dividing total value added by employed capital (CE).

$$CEE = VA \div CE$$

*Capital Employed Efficiency = Value Added ÷ Employed Capital*

Employed capital refers to financial and physical capital of a bank (i.e., book value of a company's net tangible assets. According to Pulic (2004), intellectual capital is a dependent variable on physical and financial capital i.e., intellectual capital alone cannot generate any value. Consequently, employed capital cannot be ignored in building indicator of intellectual capital performance (El-Bannany, 2008).

As mentioned above, intellectual capital performance is the sum of three components of indicators of added value efficiency (value added coefficient of intellectual capital). According to Saleh et al., (2009), value added coefficient of intellectual capital provides a unified and consistent basis for measuring intellectual capital performance.

### **Measuring Independent and Control Variables**

#### ***Size of Board of Directors***

Size of board of directors is measured as the total number of board of directors' members.. This measurement is similar to that used in previous studies, for example Liang et al., (2013) and Al-Musalli & Ku Ismail (2012).

#### ***Diversity in Educational Level***

Diversity in educational level of members was measured using a Blau index, which was widely used by previous researchers in context of senior management and researches of board of directors (Talk et al., 2010; Auh & Menguc, 2005 & 2006; Ruigrok et al., 2006; Bantel & Jackson, 1989). The Blau index is described as an ideal measure for capturing diversity and differences within a group of people because it meets four criteria for measuring diversity, it varies from zero point and it does not represent diversity to theoretical maximum of 1. Large numbers indicate greater diversity and assume no negative values (Miller & Triana, 2009; Harrison & Klein, 2007). Furthermore, for categorical variables such as diversity in educational level, the Blau index is considered as the most appropriate measure of diversity for these variables (Bantel & Jackson, 1989). Educational level diversity is measured using Blau index by calculating the following mathematical equation:

$$\text{Diversity of educational level} = B = [1 - \sum(P_i)^2]$$

P= Percentage of board of directors' members in each educational category.

i = Number of different educational categories represented in board.

In line with previous studies, maximum educational level of each board member has been defined in four categories: without a bachelor's degree, a bachelor's degree, a master's degree, and a doctoral degree (Kim & Lim, 2010; Talk et al., 2010).

### ***Foreign Diversity***

Nationality diversity in boards was also measured using the Blau index.

$$\text{Nationality diversity } B = [1 - \sum(P_i)^2]$$

Whereas:

p = Percentage of board members in each category of nationality.

i = Number of different categories of nationality represented in boards.

This study identifies two categories for obtaining nationality diversity - local and foreign. This measurement is similar to that used by Darmadi (2011) and Ruigrok et al., (2006).

### ***Number of Board of Directors' Meetings***

Board of directors' meetings were measured by the number of board meetings held during the financial year. The same scale has been used by previous studies, for example (Al-Musalli & Ku Ismail, 2012; Wincent et al., 2010).

### ***Measuring Control Variable (Bank Size)***

Intellectual capital performance of large banks is better intellectually because they are more innovative and can better afford large investments required by innovation, research and development activities (Bantel & Jackson, 1989). As a result, intellectual capital performance can be enhanced as innovation increases intangible assets' stock and facilitates developing intellectual capital (Marques et al., 2006). Use of total assets to measure bank size is the best way to measure regulatory size of the banking sector (Bantel & Jackson, 1989). A positive relationship is expected between bank size and intellectual capital performance.

### ***Multiple Regression Analysis***

To achieve the objectives of this study and test research hypotheses, the following regression model was used to determine the effect of each of variable in the study on intellectual capital performance:

$$ICP = \alpha + \beta_1 BOSIZE + \beta_2 EDLD + \beta_3 NATD + \beta_4 FRMEE + \beta_5 BASIZE + e.$$

Whereas:

ICP: Intellectual Capital Performance: (a) Constant value in regression equation.

BOSIZE: Size of board of directors: ( $\beta_1$ - $\beta_4$ ) Regression coefficients of independent variable.

EDLD: Diversity in educational level: ( $\beta_5$ ) Regression coefficients of control variable.

NATD: Nationality Diversity: (e) Random error.

FRMEET: Number of meetings.

BASIZE: Bank size.

### *Descriptive Statistics of Study Sample*

It is noted from Table 1 with regard to independent variables that results generally indicate keenness of Gulf banks in applying high-quality governance mechanisms, where proportion of diversity in educational level within the board of directors is high and proportion of nationality diversity is acceptable as well board of director' members meet periodically. The average size of board of directors in Gulf banks is 11 members with a minimum of 8 and a maximum of 13 members. These results are consistent with figures reported by Arouri et al., (2011) and Chahine (2007). Diversity in educational level ranges from 0.54 to 0.81, with an average of 0.65 and a standard deviation of 0.09. This indicates that diversity in educational level tends to be high. With respect to nationality diversity, measure of diversity varies between 0.00 and 0.80, with an average of 0.40 and a standard deviation of 0.35. This indicates that nationality diversity exists in Gulf banks due to presence of foreign banks. As for number of board of directors' meetings, statistics indicate that the average number of board of directors' meetings is 5 in Gulf banks. Although the average number of board of directors' meetings provides evidence that Gulf banks follow governance recommendations for banks.

**Table 1:** Descriptive Statistics of Study Variables

<b>Variables</b>	<b>Min</b>	<b>Max</b>	<b>Mean</b>	<b>St. D</b>
Intellectual capital performance	1.91	4.33	3.06	0.66
Size of board of directors	8	13	11	1.23
Diversity in educational level	0.54	0.81	0.72	0.09
Nationality diversity	0.00	0.80	0.40	0.35
Number of meetings	5	12	7.17	1.50
Bank size	7.39	35.19	21.76	1.13

### ***Correlation Test***

A Pearson correlation test was conducted to explore relationships among variables and to indicate whether correlation of variables can cause estimation problems. The correlation matrix was generated using Pearson's method to measure the correlation between the independent variables with each other. Pearson correlation coefficients among study variables are shown in Table 2. The results show that correlation coefficients are less than 0.6 (see Table 2). This indicates that there is no probability of a problem (collinearity) among variables in the statistical model.

In order to examine strength of the model, a Variance Inflation Factor (VIF) was conducted for each of independent variable; this test is considered a measure of correlation impact among variables, where (VIF) values were below 10, which means that study models are free of linear interference problem.

**Table 2:** Pearson correlation matrix of study variables

<b>Variables</b>	Size of board of directors	Diversity in educational Level	Nationality diversity	Number of meetings	Bank's size
Size of board of directors	1				
Diversity in educational Level	0.214	1			
Nationality diversity	0.107	0.352	1		
Number of meetings	0.302	0.189	0.101	1	
Bank size	0.389	0.019	0.359	0.402	1
VIF	1.49	1.089	1.413	1.109	1.045

### ***Heteroscedasticity Problem Test***

One of the significant assumptions of the regression models and implementation of the Ordinary Least Square (OLS) is the actual presence of homoscedasticity (Awad, 2000). If the heteroscedasticity is present in the model, then some statistical methods (e.g. White test) will be used to overcome this problem. The White test is routinely conducted by using the E-Views program after being elicited from the program themselves. Table 3 shows the p-value (Prob.) of the research model. The p-value for the White test was less than (0.05) which proves the presence of homoscedasticity in the model.

### ***Regression Test***

For the purpose of testing study models, models were designed so that the multiple linear regression method is used so that regression models are tested at sample level as a whole. To find the appropriate method for this study, cross-section fixed, cross-section random or what is known to overcome problem of heterogeneity were considered. Cross-section random and Hausman test were adopted. In addition, robust standard errors test was used to control the problem of heteroscedasticity for research models. It was found that White statistic was less than (0.05) for the research models. This means that we reject nihilistic hypothesis that research models suffer from problem of instability of random error variation.

Table 3 shows results of analysis of regression models between characteristics of board of directors and intellectual capital performance. Results show significance of  $p < 0.05$ . In addition, the results show ability of regression models to explain a large proportion of changes in dependent variable (value, R<sup>2</sup>), where regression model can explain 73%.

**Table 3:** Multiple regression results

<b>Variables</b>	<b>Expected hypothesis</b>	<b>Coefficients</b>	<b>t</b>	<b>Sig</b>
$\alpha$		-0.228	-2.787	0.027
Size of board of directors	+	-0.011	-3.492	0.001
Diversity in educational Level	+	0.087	2.548	0.015
Nationality diversity	+	0.011	1.009	0.320
Number of meetings	+	0.094	8.522	0.000
Bank's size	+	0.087	2.548	0.015
Adjusted R Square		0.73		
F		13.54		
Sig		0.00		
White		0.00		
Cross-section random				

Contrary to the prediction of the Resource Dependency Theory and prior findings of Abidin et al., (2009) and Ho & Williams (2003), the results of this work finds a highly significant negative association between size of the board of directors and intellectual capital performance at 1% of significance level  $p = 0.001$ . Thus, the first hypothesis was accepted. This result suggests that when the size of board of directors in Gulf banks is small, intellectual capital performance is no better (bad). This finding is incompatible with recent findings of Abidinet al., (2009) in Malaysia, which indicates that large size of board of directors is significantly and positively correlated with intellectual capital performance. This finding is also inconsistent with findings of Williams (2003), as they concluded that size of board did not affect intellectual capital performance in South Africa, Sweden and United

Kingdom, according to Dwivedi & Jain (2005). Another explanation for the negative findings found in this work may be because GCC banks, on average, do not select their board members in the right way. The OECD-Hawkamah survey reveals that most of the selected directors in boards of GCC banks lack the necessary skills and adequate understanding of the banking environment (OECD, 2009). This may lead to a lack of coordination and communication that causes decision-making problems.

In line with expectations, this study found an important positive correlation between level of education and intellectual capital performance,  $p = 0.015$ . Thus, the second hypothesis was accepted. It supports the idea that diversity in educational level of board members reflects their varying degrees of knowledge and skills, affecting the board's ability to generate more or less creative solutions to solve complex problems and can provide a wider range of inputs that help improve strategy formulation and evaluation (Ruigroket et al., 2006; Auh & Menguce, 2005). On the other hand, the possible reason for the insignificant effect of educational level diversity refers to the work carried out on GCC bank boards which do not require any specific educational level. As the board members have a university degree or equivalent skills, the board members should have sufficient human capital to understand IC-related information that is provided by the board of managing directors. Human capital may be obtained from a career as a director in other firms or from substantial experience in business life.

Contrary to expectations of Resource Dependency Theory, this study did not find clear evidence between nationality diversity in the board and intellectual capital performance in Gulf banks,  $p = 0.320$ . Therefore, the third hypothesis was rejected. Thus, this study concluded that inclusion of foreign members on a board of directors of Gulf banks does not affect intellectual capital performance. Negative results between nationality diversity in board of directors and intellectual capital performance can be attributed to the fact that Gulf banks have a high problem of information variance (Chahine, 2007), which in turn creates difficulties for foreign members to access and obtain strategic information such as that related to intellectual capital. Although problems of variance affect both foreign and domestic members, there are differences in level of information variance among them (Zaheer, 1995). Also, a possible explanation is that the GCC region is regarded as risk prone countries, especially political risks (Laabas & Abdoumoula, 2005). Therefore, banks and other financial institutions from developed countries may prefer to keep short-term relationships with domestic banks focusing on profitability opportunities in GCC domestic markets instead of focusing on the transfer of knowledge, technology and new management styles and skills to investee-domestic banks. Also, it has been argued that in situations involving low total percentage shares of foreign strategic investors, foreign investors have low motivation to introduce advanced technologies, new products and suitable corporate governance



mechanisms (Al-Musali & Ismail, 2012), which make their impact on IC performance insignificant.

Results of this study showed that the number of board meetings has a strong positive correlation with intellectual capital performance, where the value of  $p = 0.000$ . Thus, the fourth hypothesis is accepted, concluding that the number of board meetings has a clear impact on intellectual capital performance. This supports some of researchers' views of who consider board meetings to be extremely useful as through meetings, there are more discussions and exchanges of ideas (Vafeas, 1999), as well as discussing strategic issues and following up company's business continuously. Furthermore, the findings of this work support the recommendation issued recently by the GCC Board of Directors Institute (2011) that GCC boards need to allocate more time to discuss strategic issues.

## REFERENCES

- Abdul Salam, F., Al-Qaheri, H., and Al-Khayyat, R. (2011). The intellectual capital performance of Kuwaiti banks: an application of VAIC model. Available online at <http://www.SciRP.org/journal/ib>.
- Abeyssekera, I. (2010). The influence of board size on intellectual capital disclosure by Kenyan listed firms. *Journal of Intellectual Capital*, 11(4), 504-518.
- Abidin, Z., Kamal, N., and Jusoff, K. (2009). Board structure and corporate performance in Malaysia. *International Journal of Economics and Finance*, 1(1), 150-164.
- Ahuja, B., and Ahuja, N. (2012). Intellectual capital approach to performance evaluation: A case study of the banking sector in India. *International Research Journal of Finance and Economics*, 93(1), 110-122.
- Ahuja, B., and Ahuja, N. (2012). Intellectual capital approach to performance evaluation: A case study of the banking sector in India. *International Research Journal of Finance and Economics*, 93(1), 110-122.
- Al- Musali, M. and Ismail, K. (2012). Corporate governance, bank specific characteristics, and intellectual capital performance of Banks in Arab Gulf Cooperation Council Countries. *Asian Academy of Management Journal of Accounting and Finance*, 8(1), 115-135.
- Andriessen, D. (2004). *Making sense of intellectual capital: Designing a method for the valuation of intangibles*. (1st ed). Published by Elsevier, Inc.
- Auh, S., and Menguc, B. (2005). Top management team diversity and innovation: The moderating role of inter-functional coordination. *Journal of Industrial Marketing Management*, 34(3), 249-261.
- Awad, T. (2000). Introduction to econometrics. Amman: *Publications of Jordan University*.
- Bantel, K., and Jackson, S. (1989). Top management and innovations in banking: does the composition of the top team make a difference? *Strategic Management Journal*, 10(1), 107-124.
- Buallay, A. (2017). The relationship between intellectual capital and firm performance. *Corporate Governance and Organizational Behavior Review*. 1(1), 32-41.
- Chan, K. (2009). Impact of intellectual capital on organizational performance: An empirical study of companies in the Hang Seng Index. *The Learning Organization*, 16(1), 4-21.



- Dalton, D., Daily, C., Johnson, J. and Ellstrand, A. (1999). Number of directors and financial Performance: A meta-analysis. *Academy of Management Journal*, 42(6), 674- 686.
- Darmadi, S. (2011). Board diversity and firm performance: The Indonesian evidence. *Corporate Ownership and Control*, 9(1), 524-539.
- Denis, D. (2001). Twenty-five years of corporate governance research. and counting. *Review of Financial Economics*, 10(3), 191–212.
- Edvinsson, L., and Malone, M. (1997). *Intellectual Capital: Realizing Your company's true value by finding its hidden brainpower*. Harper Business, New York, NY.
- Edvinsson, L. And Sullivan, P. (1996). Developing a model for managing intellectual capital: *European Management Journal*. 14(4), 356-364.
- Eisenberg, T., Sundgren, S., and Wells, M. (1998). Large board size and decreasing firm value in small firms. *Journal of Financial Economics*, 48(1), 35–54.
- El-Bannany, M. (2008). A study of determinants of intellectual capital performance in banks: the UK case. *Journal of Intellectual Capital*, 9(3), 487-498.
- Erhardt, N., Werbel, J., and Shrader, C. (2003). Board of director diversity and firm financial performance. *Corporate Governance Journal*, 11(2), 102-111.
- Goh, S. (2003). Improving Organizational Learning Capability: Lessons from two case studies. *The Learning Organization*, 10(4), 216-227.
- Hambrick, D., and Mason, P. (1984). The organization as a reflection of its top managers. *Academy of Management Review*, 9(2), 193-206.
- Hamdan, A., Buallay, A. and Alareeni, B. (2017). The moderating role of corporate governance on the relationship between intellectual capital efficiency and firm's performance: evidence from Saudi Arabia. *International Journal of Learning and Intellectual Capital*, 14 (4), 295-318.
- Hamel, G. and Prahalad, C., (1994) *Competing for the future*, Harvard Business School Press, Boston, MA.
- Heijltjes, M., Olie, R., and Glunk, U. (2003). Internationalization of top management teams in Europe. *European Management Journal*, 21(1), 89–97.



- Ho, C., and Williams, S. (2003). International comparative analysis of the association between board structure and the efficiency of value added by a firm from its physical capital and intellectual capital resources. *The International Journal of Accounting*, 38(4), 465-491.
- Jensen, M. (1993). The modern industrial revolution, exit, and the failure of internal control systems. *The Journal of Finance*, 48(3), 831-880.
- Joshi, M., Cahill, D., and Sidhu, J. (2010). Intellectual capital performance in the banking sector: An assessment of Australian owned banks. *Journal of Human Resource Costing and Accounting*, 14(2), 151-170.
- Kamath, G. (2007). The intellectual capital performance of Indian banking sector. *Journal of Intellectual Capital*, 8(1), 96-123.
- Keenan, J., and Aggestam, M. (2001). Corporate governance and intellectual capital: some conceptualizations. *Corporate Governance Journal*, 9(4), 259-275
- Kim, H., and Lim, C. (2010). Diversity, outside directors and firm valuation: Korean evidence. *Journal of Business Research*, 63(3), 284-291
- Komnencic, B., and Pokrajcic, D. (2012). Intellectual capital and corporate performance of MNCs in Serbia. *Journal of Intellectual Capital*, 13(1), 106-119
- Ku Ismail, K., and Abdul Kareem, M. (2011). Intellectual capital and the financial performance of banks in Bahrain. *Journal of Business Management and Accounting*, 1(1), 63-77.
- Laabas, B., and Abdmoula, W. (2005). Determinants of Arab intraregional foreign direct investments. *Working paper No. 0905*, The Arab Planning Institute, Kuwait.
- Latif, M., Malik, M., and Aslam, S. (2012). Intellectual capital efficiency and corporate performance in developing countries: A comparison between Islamic and conventional banks of Pakistan. *Interdisciplinary Journal of Contemporary Research in Business*, 4(1), 405-420.
- Liang, Q., Xu, P., and Jiraporn, P. (2013). Board characteristics and Chinese bank performance. *Journal of Banking and Finance*, 37(8), 2953-2968.
- Lipton, M., and Lorsch, J. (1992). A Modest proposal for improved corporate governance. *Business Lawyer*, 1(1), 59-77.
- Marques, D., Simon, F., and Caranana, C. (2006). The effect of innovation on intellectual capital: an empirical evaluation in the biotechnology and telecommunication industries. *International Journal of Innovation Management*, 10(1), 89-112.

- Miller, T., and Triana, M. (2009). Demographic diversity in the boardroom: Mediators of the board diversity–firm performance relationship. *Journal of Management Studies*, 46(5), 755-786.
- Nazari, J., and Herremans, I. (2007). Extended VAIC model: measuring intellectual capital components. *Journal of intellectual capital*, 8(4), 595-609.
- Organization for Economic Co-operation and Development (OECD). (2009, November). *Policy brief on improving corporate governance of banks in the Middle East and North Africa region*. Paris, France: Author.
- Oxelheim, L., and Randøy, T. (2003). The impact of foreign board membership on firm value. *Journal of Banking and Finance*, 27(12), 2369–2392.
- Pathan, S., and Faff, R. (2013). Does board structure in banks really affect their performance?. *Journal of Banking and Finance*, 37(5), 1573–1589
- Pulic, A. (1998). Measuring the performance of intellectual potential in knowledge economy. Retrieved from <http://www.measuringip.at/Opapers/Pulic/Vaictxt.vaictxt.html>.
- Pulic, A. (2004). Intellectual capital-does it create or destroy value? *Measuring Business Excellence*, 8(1), 62-68
- Ramirez, Y., Lorduy, C. and Rojas, J. (2007). Intellectual capital management in Spanish universities. *Journal of Intellectual Capital*, 8(4), 732-748
- Randoy, T., Oxelheim, L., and Thomsen, S. (2006). A Nordic perspective on corporate board diversity (Nordic Innovation Centre project No. 05030). Retrieved from: <http://www.nordicinnovation.org/Global/Publications/Reports/2006/The%20performance%20effects%20of%20board%20diversity%20in%20Nordic%20Firms.pdf>
- Rodrigues, L., Tejedo-Romero, F. and Craig, R. (2017). Corporate governance and intellectual capital reporting in a period of financial crisis: evidence from Portugal, *International Journal of Disclosure and Governance*, 14(1), 1–29.
- Rose, C. (2007). Does female board representation influence firm performance? The Danish evidence. *Journal Compilation*, 15(2), 404-413.
- Ruigrok, W., Peck, S., Tacheva, S., Greve, P., and Hu, Y. (2006). The determinants and effects of board nomination committees. *Journal of Management Governance*, 10(1), 119–148.



- Safieddine, A., Jamali, D., and Nouredine, S. (2009). Corporate governance and intellectual capital: evidence from an academic institution. *Corporate Governance Journal*, 9(2), 146-157.
- Saidi, N. (2011). Corporate governance in the GCC: What has been done and what remains. *Qatar Business Review*, (November), 11-13.
- Saleh, N., Abdul Rahman, M., and Hassan, M. (2009). Ownership structure and intellectual capital performance in Malaysia. *Asian Academy of Management Journal of Accounting and Finance*, 5(1), 1-29.
- Stewart, T. (1997). *Intellectual capital: The new wealth of organizations*. Doubleday Dell Publishing Group, New York, USA.
- Swartz, N., and Firer, S. (2005). Board structure and intellectual capital performance in South Africa. *Meditari Accountancy Research*, 13 (2), 145-166.
- Talke, K., Salomo, S., and Rost, K. (2010). How top management team diversity affects innovativeness and performance via the strategic choice to focus on innovation fields. *Research Policy*, 39(7), 907–918.
- Tan, H., Plowman, D., and Hancock, P. (2007). Intellectual capital and financial returns of companies. *Journal of Intellectual Capital*, 8(1), 76-95.
- Van der Walt, N., and Ingley, C. (2003). Board dynamics and the influence of professional background, gender and ethnic diversity of directors. *Corporate Governance Journal*, 11(3), 218-234.
- Veen, K., and Marsman, I. (2008). How international are executive boards of European MNCs? Nationality diversity in 15 European countries. *European Management Journal*, 26(3), 188– 198.
- Wang, M. (2011). Measuring intellectual capital and its effect on financial performance: Evidence from the capital market in Taiwan. *Frontiers of Business Research in China*, 5(2), 243-265.
- Wang, M. (2011). Measuring intellectual capital and its effect on financial performance: Evidence from the capital market in Taiwan. *Frontiers of Business Research in China*, 5(2), 243-265.
- Williams, M. (2000). Relationship between board structure and a firm's intellectual capital performance in an emerging economy (Working Paper). Retrieved from [ftp://ns1.ystp.ac.ir/YSTP/1/1/ROOT/DATA/PDF/unclassified/PAPER4.PDF](http://ns1.ystp.ac.ir/YSTP/1/1/ROOT/DATA/PDF/unclassified/PAPER4.PDF).



- Williams, M. (2001). Corporate governance diversity and its impact on intellectual capital performance in an emerging economy (Working Paper). University of Calgary. Faculty of Management, Canada.
- Wincent, J., Anokhin, S., and Ortqvist, D. (2010). Does network board capital matter? A study of innovative performance in strategic SME networks. *Journal of Business Research*, 63(3), 265–275.
- Zeghal, D., and Maaloul, A. (2010). Analyzing value added as an indicator of intellectual capital and its consequences on company performance. *Journal of Intellectual Capital*, 11(1), 39-60.
- Zeghal, D., and Maaloul, A. (2010). Analyzing value added as an indicator of intellectual capital and its consequences on company performance. *Journal of Intellectual Capital*, 11(1), 39-60.