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## Intellectual capital and its effect on financial performance of banks: Evidence from Saudi Arabia

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### Abstract

This study examines intellectual capital (IC) performance of listed banks in Saudi Arabia using value-added intellectual coefficient (VAIC) methodology, and investigates the impact of IC on financial performance. It identifies the IC components that may be the drivers of the traditional indicators of bank success. The results of a survey of a sample of all listed banks during 2008 to 2010, show that IC performance of Saudi banks is low and it is positively associated with bank financial performance indicators. However, when VAIC is split into its components, the relationships between these components and bank financial performance indicators vary.

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*Keywords:* IC performance; financial performance indicators; Saudi listed banks

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### 1. Introduction

It is widely recognized that with the advent of knowledge based economy, the traditional bases sources of competitive advantage that depend on tangible assets in creating firm value and sustaining competitive advantage begun to erode (Pablos, 2002). In the new economic era, intellectual capital (IC) resources such as human capital and customer relations have become the most important business success factor and the key factor in sustaining competitive advantage and creating value of firms (Maditinos, Chatzoudes, Tsairidis, & Theriou 2011; Shih,

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Chang, & Lin, 2010; Andriessen, 2004). Accordingly, the potential for creating competitive advantage and long-term value lies more importantly in the efficient management of IC than in tangible assets. This is so true in knowledge-based industries such as the financial industry such as banks, as the main resources in these industries are non-tangible and intellectual in nature (Shih et al., 2010). According to Ahuja and Ahuja (2012), an efficient utilization of IC is more crucial for accomplishing success in banking than other industries, asserting that delivering of high quality services by a bank depends on its investment in items related to IC such as its human resources, brand building, systems and processes. Goh (2005) further states “though physical capital is essential for banks to operate, it is the intellectual capital that determines the quality of services provided to customers.” (p.386). Therefore, it becomes necessary for banks to manage their IC as efficiently as possible.

This study adopts the value added intellectual coefficient (VAIC) developed by Pulic (1998) to measure IC performance of commercial banks in Saudi Arabia. This study further investigates whether intellectual capital (IC) and its components influence banks' financial performance measures, namely return on assets (ROA) and return on equity (ROE). The banking sector is the most active sector in Saudi's economy and it plays an active role in the economic development of the country. The Saudi banking sector is viewed as one of the major beneficiaries of the government's continuous efforts to diversify its economy to the non-oil sectors. The combined assets of Saudi banks stand at Saudi Riyal 1.60 trillion at the end of 2010 constituting the second largest asset base in the Arab region after UAE banks. The banking sector in Saudi Arabia is characterized as profitable, stable and is closely regulated by the Saudi Arabian monetary agency (the central bank). However, the Saudi banking sector experienced major changes which dramatically altered banks' competitive environment in GCC region. In 2004, Saudi Arabia Monetary Authority restricted barriers to foreign banks entry by granting new branches and licenses to several foreign and regional banks such as Deutsche Bank, Gulf international Bank, HSBC, National Bank of Kuwait, BNP Paribas, National Bank of Bahrain, JP Morgan Chase, and Emirates International Bank as part of the Saudi government's commitment to meet its international and regional obligations as a member of World trade organization and GCC council (Gaddam, Al Khathlan, & Malik, 2009). As a result, building and maintaining sustainable competitive advantage is crucial for Saudi banks to outperform their rivals. Hence, given the fact that banks' main resources are intellectual and intangible in nature and they play the most crucial role in the process of creating value, it is of interest to explore the value creation efficiency in banking and analyze how well IC resources are managed.

This study contributes significantly in that it provides Saudi's banks with a simple method in understanding and evaluating performance, as well as enhancing the management of IC. The IC literature will also help in deciding the potential role of IC efficiency in the financial performance of banks in Saudi Arabia, an emerging country which lacks such research. This paper is organized as follows. The second section presents the literature related to the study and hypotheses development. Next, in the third section, we discuss the research methodology and data employed in the study. The fourth section presents the results of the study. Finally, we conclude the paper in the fifth section.

## **2. Literature review & hypotheses development**

The Organization for Economic Co-operation and Development (OECD) (2000) defines IC as the "economic value of two categories of intangible assets of a firm: (1) organizational (structural) capital; and (2) human capital." This definition is consistent with the VAIC methodology applied in this study to measure IC performance. The definition of IC provided by OECD (2000) implies a classifying of IC into two components; human capital (HC) and structural capital (SC). This classification of IC is similar with classifications provided by scholars such as Edvinsson and Malone (1997). Other scholars classify the IC into three components: human capital, structural capital, and relational capital (Ting and Lean, 2009). Human capital is defined as the knowledge, qualifications, experiences, and skills of employees that they take with them when they leave the firm (Zeghal & Maaloul, 2010). Structural capital refers to the knowledge that remains with a firm after the employees leave it at night. It includes production processes, organizations' management processes, organizational routines, procedures, systems, cultures and databases, information technology, customer relations and loyalty, supplier relation, firm brand and reputation, R&D etc. (Zeghal & Maaloul, 2010; Goh, 2005).

Presently, there is no universally accepted measurement of IC (Zeghal and Maaloul, 2010; Chan, 2009). Sveiby (2010) reviews the current IC measurement methods and identifies 34 methods. Among these methods, the VAIC methodology is widely used method and suggested by many researchers as the most appropriate method to measure IC performance. Using VAIC methodology, there are several studies have been conducted to examine the relationship between IC performance and corporate performance as measured using accounting and market-based measures in developed and emerging economies, in banking and non-banking sectors producing mixed results (see e.g. Komnencic & Pokrajcic (2012) in Serbia, Mehralian, Rajabzadeh, Sadeh, & Rasekh, (2012) in Iran, Chu, Chan, and Wu (2011) in Hong Kong, Ku Ismail and Abdul Kareem (2011) in Bahrain, Maditinos et al. (2011) in Greece, Wang (2011) in Taiwan, Zeghal and Maaloul (2010) in UK, Chan (2009) in Hong Kong, Ting and Lean (2009) in Malaysia, Kujansivu and Lonnqvist (2007) in Finland and Firer and Williams (2003) in South Africa.

According to the resource-based perspective, a firm is a bundle of resources (tangible and intangible resources) and these resources are a source of sustainable competitive advantage if they are valuable, rare, inimitable, and non-substitutable (Barney, 1991). The resource-based theory views the intellectual capital (both human and structural) as well as physical and financial capitals as strategic resources. This is because firms gain competitive advantage and superior performance through the acquisition, holding and efficient use of these strategic resources (Zeghal & Maaloul, 2010). More recently, the IC-based theory developed by Reed et al. (2006) has been advanced as one specific aspect of resource-based theory. Reed, Lubatkin, and Srinivasan (2006) argue that IC is the only source of competitive advantage and value added to the firm because it is difficult to imitate and substitute whereas physical capital is generic resource, easily imitable and substitutable, and can be easily purchased and sold on the open market. Hence, it is only the IC that deserves to be considered as strategic resource to allow a firm to create value added. This point of view is consistent with other authors such as Youndt, Subramaniam, and Snell (2004).

Based on the IC-based theory developed by Reed et al. (2006) which consider the IC as the sole strategic asset of firms that play the crucial role in creating and maintaining firms' competitive advantage, we expect IC as well as its components to be positively associated with banks' organizational financial performance. We propose the following hypotheses:

*H1. Banks with higher IC performance are associated with higher organizational performance.*

*H1a. Banks with higher human capital efficiency are associated with higher organizational performance.*

*H1b. Banks with higher structural capital efficiency are associated with higher organizational performance.*

*H1c. Banks with higher capital employed efficiency are associated with higher organizational performance.*

### 3. Research methods

#### 3.1 Sample

The sample of our study consists of all commercial banks listed in Saudi stock exchange (Tadawel) which are 11 commercial banks. Data were collected from the annual reports of commercial banks for the period 2008-2010. The total number of observations is 33.

#### 3.2 Measurement of variables

##### 3.2.1 IC performance

Consistent with previous studies (see Al-Musali and Ku Ismail, 2012; Abdulsalam et al., 2011; Joshi, Cahill, and Sidhu, 2010), this study employed the value added intellectual coefficient (VAIC) method of Pulic (1998) to measure IC performance. Mathematically, the VAIC is computed as follows:

$$\text{VAIC} = \text{CEE} + \text{HCE} + \text{SCE} \quad (1)$$

Where CEE refers to Value Added efficiency of capital employed (CE). CE represents the book value of total tangible assets. CEE is defined by dividing the value added (VA) by CE. HCE refers to efficiency of human capital in creating value. It is computed by dividing VA by HC. HC refers to personnel costs. SCE refers to Value Added efficiency of structural capital, measured by dividing SC by VA. SC is defined as the difference between VA and HC. Total VA is computed using the following formula:

$$VA = OP + EC + D + A \quad (2)$$

Where, OP = Operating Profits; EC = Total Employee Expenses; and D = Depreciation and A = Amortization.

### 3.2.2 Dependent variables

Financial performance is measured by return on equity (ROE) and return on assets (ROA). ROE represents returns on common stocks of shareholders and it is recognized as an important financial indicator for owners. Return on equity (ROE) is calculated as the annual net profit of individual bank before tax divided by average shareholders' equity. ROA reflects the efficiency of utilizing available assets in creating profits and it is calculated as the annual net profit of individual bank before tax divided by average total assets.

### 3.2.3 Control variables

To be consistent with prior studies (e.g. Chan, 2009; Shiu, 2006) and to minimize its interaction with the dependent variables, we include bank size (measured as the total assets) in the regression model as a control variable. We also include a dummy variable to control for the global financial crisis (CRIS), whose value is 1 for the years of 2008 and 2009, and zero otherwise. Models 1 and 2 examine the association between VAIC and the two financial performance measures (ROE and ROA), while Models 3 and 4 replace the aggregate IC measure with the three components of VAIC (see Table 2). We test all the linear regression assumptions to ensure the quality of the data and variable\*.

Table 1. Regression equations

Model	Regression equation
1	$ROE = \beta_i + \beta_1 VAIC + \beta_2 SIZE + \beta_3 CRISIS + e$
2	$ROA = \beta_i + \beta_1 VAIC + \beta_2 SIZE + \beta_3 CRISIS + e$
3	$ROE = \beta_i + \beta_1 HCE + \beta_2 SCE + \beta_3 CEE + \beta_4 SIZE + \beta_5 CRISIS + e$
4	$ROA = \beta_i + \beta_1 HCE + \beta_2 SCE + \beta_3 CEE + \beta_4 SIZE + \beta_5 CRISIS + e$

## 4. Findings

Table 2 shows the IC performance of our sample, from 2008 to 2010. The overall mean IC performance of the Saudi banks is 3.646 which is lower than those found by Al-Musali and Ku Ismail (2011) for the Emirates banks (4.4), Abdul Salam et al. (2011) among Kuwaiti banks (4.45), El-Bannany (2008) for the British banks (10.80), Goh (2005) for banks in Malaysia (7.11) and Joshi et al. (2010) for Australian banks (3.80). Table 2 shows the trend of IC performance during the three years. Banks in Saudi Arabia experienced a decline in the value creation efficiency in 2009 reflecting probably the adverse impacts of global financial crisis on banking sectors in this Gulf country. However, IC performance of banks rose in 2010, reflecting probably the success of Saudi government's policies to mitigate the negative impacts of the world financial crisis on the Saudi banking industry.

A comparison of VAIC components suggests that during 2008-2010, the banks in Saudi Arabia are generally more efficient in generating value from its HC rather than CE and SC.

\* These assumptions include linearity, normality, multicollinearity, and homogeneity.

Table 2. IC performance of banks listed in Saudi Arabia during the period 2008-2010

Years	Item	Coefficient
2008	HCE	3.417
	SCE	0.644
	CEE	0.027
	VAIC	4.089
2009	HCE	2.917
	SCE	0.384
	CEE	0.025
	VAIC	3.326
2010	HCE	2.958
	SCE	0.540
	CEE	0.024
	VAIC	3.522
2008-2010	HCE	3.097
	SCE	0.523
	CEE	0.025
	VAIC	3.646

Table 3 summarizes the linear regression results for Models 1 to 4. The results reveal that all the four regression models have high statistical significance and high explanatory power. However, when compared with the results of using VAIC as an aggregate measurement (Models 1 and 2), the explanatory power of the models using the three VAIC components (Models 3 and 4) showed a substantial increase, suggesting that stakeholders and managers may have different emphases on the three components of VAIC (Chen et al., 2005).

The results of Models 1 and 2 in Table 5 show a significant positive association between VAIC and both financial performance indicators (ROE and ROA) of commercial banks for the years 2008-2010. The aggregated results from regression models 1 and 2 tend to focus on VAIC as a predictor of banks' intellectual efficiency in Saudi Arabia and as such provide support to our expectation which implies that banks with greater IC performance tend to have higher financial performance, *ceteris paribus*.

Table 3. Regression results

Independent variables	Model 1	Model 2	Model 3	Model 4
intercept	-0.06*** (-3.518)	-0.006** (-2.437)	-0.076** (2.653)	-.012*** (-3.677)
VAIC	0.834*** (6.658)	0.898*** (6.045)		
HCE			0.724*** (3.364)	0.447** (2.233)
SCE			0.020 (0.130)	0.127 (0.869)
CEE			0.153 (1.510)	0.455*** (4.827)
Size	0.100 (0.800)	-0.012 (-0.083)	0.070 (0.483)	0.002 (0.015)
Crisis	0.087 (1.236)	0.071 (0.850)	0.078*** (0.981)	0.054 (0.733)
Adjusted R <sup>2</sup>	0.843	0.779	0.818	0.842
F value	58.347	38.669	28.805	34.047
Sig.	0.000	0.000	0.000	0.000

Notes: \*\*\*, \*\*, and \* denote statistical significance at the 1, 5, and 10 percent levels respectively. The figures in the parentheses are the t-statistics.

VAIC is further split into its three components, and put into the regression equation to predict ROE and ROA (Models 3 and 4, shown in Table 3). The results show a significant positive relationship between HCE and both financial performance indicators of banks in Saudi Arabia. In contrast, SCE has shown insignificant associations with financial performance indicators. In terms of CEE, a significant positive relationship is found between CEE and only banks' ROE. In addition, bank's profitability of Saudi banks has been created more by CEE (physical and financial) rather than HCE or SCE. This result is consistent with those reported by Mehralian et al. (2012) in Iran,

Ku Ismail and Abdul Kareem (2011) in Bahrain and Firer and Williams (2003) in South Africa among others suggesting that tangible assets remain the most significant underlying resource of bank financial performance in those countries. Finally, with regard to control variables, empirical findings indicate that global financial crisis has no impact on financial performance indicators of commercial banks. The insignificant effect of global financial crisis on financial performance of Saudi banks may be attributed to the macro intervention policies taken by the Saudi government which help to mitigate the adverse impact of the current global financial crisis and create atmosphere of confidence among Saudi banks and help them continue to implement their normal activities (Khamis & Senhadji, 2010).

## 5. Conclusion

Saudi listed commercial banks have shown a lower level of IC performance compared to their counterparts in developed and emerging economies, exhibiting signs of redundant and nonperforming resources. This also suggests the need for a restructure in order to increase value creation efficiency. The comparison between HCE, SCE, and CEE suggests that the capability of the Saudi commercial banks to create value is mainly depend on HCE. This finding should not be surprised because the banking sector is a service sector, where its customer services rely heavily on human capital. It seems that banks that can better use their HC tend to be most likely to survive. Thus, it is recommended that Saudi banks should identify key people and train them to deliver high HCE as the continuous training program is a vital tool for employees and managers performance. The above results also identify that there is an urgent need in order to develop the value creation efficiency of SC as another important component of IC. As suggested by Mehralian et al. (2012), one of the best policies for emerging and developing countries in order to empower SC, is realizing the value of technological knowledge (know-how) and how they can maintain it. Concurrently, Saudi banks should consider adding of the position of Chief Intellectual Capital Management Officer (CICMO) on their organizational chart in order to help in structuring relevant strategies and policies on how to obtain and best utilize the required resources underlying IC.

Overall, results of the regression analysis (Models 1 and 2) indicate that VAIC can explain financial organizational performance of listed banks in Saudi Arabia demonstrating that an increase in value creation efficiency affects bank's profitability in the country. However, results of the regression analysis of Models 3 and 4 which involve the three VAIC components indicate that during the study period, managers of Saudi banks are not able to realize the full potential of the two bank's IC elements (i.e. human and structural capitals) to maximize the stakeholder's benefit. In conclusion, the findings of this study may give inputs to managers of Saudi banks to structure relevant strategies and policies on how to obtain, best utilize, develop and retain their IC. The findings also could help policy makers in Saudi Arabia to formulate and implement policies for the establishment of a resilient banking sector.

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