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Strategic Role of Information Technology for Human Resource, IT Connectivity, Intellectual Capital on Bank Performance in UAE

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Abstract: Researchers and practitioners consider Information Technology (IT) as a competitive tool. However, existing knowledge on mechanisms of IT that impact bank performance remains unclear. Based on the dynamic capabilities theory, this study proposes a model to study how IT (i.e., IT connectivity and IT for human resource) impact bank performance. Moreover, this model is expected to build new insight on how IT could shape the banking sector and economies of the United Arab Emirates (UAE) too.

Key words: Information technology for human resource, IT connectivity, bank performance, UAE, dynamic

INTRODUCTION

The literature disputes that banks cannot achieve competitive if IT strategy and their business are not aligned. However, until now the main undertaking of the executives still achieves strategic alignment (Esmaili *et al*., 2010). Previous studies have presented that flexibility in IT is an important characteristic to maintain the strategic alignment in the current business environment though the studies on dimensions of IT flexibility related to strategic alignment are limited (Esmaili *et al*., 2010). IT connectivity and information technology human resource capability are important characteristics that make IT flexibility. Therefore, leveraging Information Technology (IT) to develop competitive advantage is considered as a main attention for banks (Yan and Sengupta, 2011).

This research addresses the effect of IT connectivity and Information Technology in Human Resource (ITHR) on bank performance and their potential in helping banks to build their competitive advantages. The following sections illustrate the research framework, theoretical background; hypotheses, conclusions and future research.

Research framework: Figure 1 describes the research framework. The researcher offers the relationships between two important strategic capabilities with bank performance. More specifically, the researcher seeks to prove the positive relationship of bank performance with ITHR and IT connectivity.

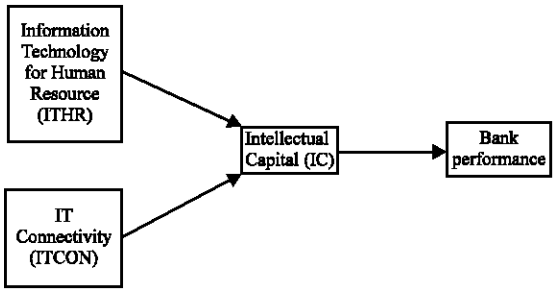

Fig. 1: Research model

Literature review

UAE at glance: United Arab Emirates (UAE) involves of seven Emirates or Sheikhdoms and those are Abu Dhabi, Dubai, Ajman, Al-Fujayrah, Ras Al-Khaymah, Sharjah and Umm Al-Qaywayn. UAE has been considered as an important economic power in the world (Toledo, 2013). According to World Energy Council, UAE holds the seventh-largest reserves of oil and the eleventh largest producer of natural gas in the world (Sayani and Miniaoui, 2013; Shahwan and Hassan, 2013). To further strengthen the economy, the country has established Abu Dhabi Economic Vision 2030 (Shahwan and Hassan, 2013). The vision includes banking sector as one of its economic development pillars.

Banking sector in UAE: The history of UAE banking is dated back to 1946 when the British opened a bank in Dubai. From then to date, the sector is heavily supporting oil sector. Apart from that, it also strongly supports consumer loans, real estate and construction sectors.

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Regional wise, UAE has the largest banking sector in the GCC, accounting for 33% of overall GCC banking assets, with total assets worth of US$489 billion as of November 2012.

The shareholding structure of UAE banks is dominated by two groups Government and rich and well known families. Specifically, the government owns 52% equity (Hassan *et al*., 2010).

Balanced Score Card (BSC) as bank performance measurement tool: Kaplan and Norton (1996) developed Balanced Score Card (BSC) that focuses on four different perspectives: financial, customer, internal and learning perspective.

Financial perspective: It is the first perspectives in firm performance measurement. Specifically, it focuses on improving monetary aspects such as cash flow, profitability and budget. This perspective enables firm to understand the financial situation and perception of shareholders better.

Customer perspective: It is the second perspective on firm performance which focuses on how firm response or serve their customers.

Internal business process perspective: It is the third perspective in firm performance which focuses on improving the processes of producing or delivering product/services.

Learning and growth perspective: It is the fourth perspective on firm performance which focuses on employees learning and growth in all aspects via knowledge as to produce or deliver better quality of product/services.

Information Technology for Human Resource (ITHR): The IT uses have changed or enriched the role of human resource. By merging IT and human resource capability has known as IT for Human Resource (ITHR) which enhances bank's performance (Mishra and Akman, 2010).

Thus, ITHR must be acquired and managed strategically if banks want to use it as another tool in building competitive advantage (Choi *et al*., 2012). Specifically, ITHR comprises of IT management skills and IT technical skills.

Banks have the ability to combine these two factors to gain a better chance and as well as better quality of services. However, there are inconsistent results in relationship between ITHR and bank Performance. For example, Zeng and Zheng (2008) found the relationship between ITHR and bank performance was insignificant. As well as Haiping and Yongming found ITHR a negatively impact on bank performance. However, Xiaojing found a positive impact between the two factors. Similar results were reported by Jiao *et al*. (2008).

According to what is mentioned above, this resarch concentrates on ITHR from three characteristics: the capability of human capital to gain specific skills (management, communication, negotiation, analytical and etc.); the capability to make the data and information available to users and the capability to provide overall connectivity extensively and effectively. This study highlights on impacts of ITHR on bank performance. Consequently, the relationship between ITHR and bank performance is hypothesized as follows:

- H_1: IT for Human Resource (ITHR) has effect on bank performance

IT connectivity: Connectivity is referred to communication technology that linkage between IT components such as computers, systems of computers, electronics and the people who use them. Fundamentally, connectivity has used in one of two methods: as the ability to linkage or maintain a connection between two or more points and as the condition of being connected (Dijck, 2013).

However, the concept of connectivity is not new but it is ignored in previous studies. It is used the first time in 1893, nonetheless it has stayed marginalized until the technological revolution in the field of telecommunications, especially in analogue telephony.

As mentioned earlier, connectivity is one of the most important dimensions of IT flexibility which has considered in this study. IT connectivity is the capability of any IT component to join or be linked with other components, inside or outside the bank. More precisely, the connectivity of IT components allows the banks to link and exchange data and information efciently and effectively with channel partners which increasing the bank's knowledge reach via an integrated technological inte rface (Malhotra *et al*., 2005). Moreover, the connectivity of IT components enables the bank to transfer, regather and re-integrate the data, information and knowledge through functional units (Rai *et al*., 2006). Besides, it enables the bank to have a smooth flow information concerning services and orders to increase channel visibility. Consequently, the relationship between IT connectivity and bank performance is hypothesized as follows:

- H_2: IT Connectivity has effect on bank performance

Intellectual capital: Generally, speaking,most organizations don't recognize the value and nature of intellectual capital, although intellectual capital can be used to create a competitive advantage. In global competition market, the intellectual capital is considered as the critical power to enhance the economic growth. Moreover, intellectual capital creates value through increasing the employee's knowledge, skills, capabilities and that leads to improving the performance and systems of banks. When employees with high levels of skills and knowledge can create new ideas and techniques that can affect on processes and equipment in the banks and they can improve the relationship between managers, customers and employees. However, some studies found the intellctual capital can effect on firm profit such as Youndt *et al.* (2004), Bontis (1998, 2002) and Bontis *et al.* (2000), Walsh *et al.* (2008), Triguero *et al.* (2013). Nonetheless, other studies found intellectual capital not have effect on performance for example, Huselid *et al.* (1997) and Bharadwaj *et al.* (1999). However, most organizations especially bank still do not recognize the importance of intangible resource especially intellectual capital to improve the performance and achieve a competitive advantage. For several banks in the current economy, intellectual, not physical capital is the most important asset for them. According to Grimaldi and Hanandi (2013), employing these intangible resources such as intellectual capital in a bank's strategies enhance their performance through response to opportunities in the market. Therefore, according to the above, we propose this hypothesis:

- H_3: intellectual capital has effect on bank performance

Intellectual capital is considered as one of important resources needed to use IT effectively so the employees who know how to operate and use systems and technologies and create the new technologies, as well as, extend the current systems and technology to new uses. Therefore, some skill-based technologies closely related to skill-levels avaliable in the bank (Dedrick *et al.*, 2013; Bresnahan *et al.*, 2002). Good use of IT has facilitated to collect, handle, store and transfer the data and information inside and outside the bank and that provides new techniques to support the knowledge and learning. These new techniques enhance connectivity in the economic system. Thus, educated employees have the capabilities and skills to use IT and the ability to be more flexible to easily adapt and to accept the new systems and technologies (Robison and Crenshaw, 2002).

Therefore, the banking sector is being considered as a "knowledge based, fast-changing and technologically intensive economy". According to the above, we expect IT connectivity and IT for human resource have ability to effect on intellectual capital. Banks need to devote the efforts IT connectivity and IT for human resource simultaneously to create effects on performance. Thus:

- H_4: IT for human resource has effect on intellectual capital
- H_5: IT connectivity has effect on intellectual capital

However, limited studies used intellectual capital as mediating variable between certain independent variables and dependent variable such as Saeed. Therefore, this article seek to enrich the IS literature through examining the mediation effect of Intellectual capital on the IT for human resource, IT connectivity and bank performance in UAE. Thus, hypotheses developed for this study is as follows:

- H_{5a}: Intellectual Capital (IC) mediates effect on the relationship between IT for Human Resource (ITHR) and the bank performance
- H_{5b}: Intellectual Capital (IC) mediates effect on the relationship between IT Connectivity (ITCON) and the bank performance

MATERIALS AND METHODS

This study aims to investigate the effect of variables on each other's.To achieve this objective, this study used a quantitative methodology approach. According to that, the questionnaire survey used to collect the data from respondents. Total 12 local banks are the sample of this study that listed in central bank, which have 628 branches at the country level. However, the banking sector effectively supports the economics of UAE. The cross-sectional research is the research design of this study which is appropriate approach for collecting the data at certain time. The data of this study was distributed and collected from respondents in eight months in 2015. The source of data was IT managers, CKO and IT executives. The researchers chose them because they know better than others how to connect the IT hardware, software and systems and how to manage the human resource by IT.

The questionnaires have been adapted in this study. The researchers have distributed 1324 questionnaires and three hundred eighteens were given back completely. The questionnaire was designed for a multi-dimensional measures. It has been measured and all the answers on a 7-point Likert scale with 1 being strongly disagree and 7

being strongly agree. Smart- Partial Least Square (PLS) is statistical software that used to assess, analyze and test hypothesis.

RESULTS AND DISCUSSION

Partial Least Square (PLS) is used to test the validity and reliability of constructs. The model of the current study involves from these variables: IT for human resource, IT connectivity, intellectual capital and bank performance (Fig. 2).

The outer model (Measurement): The present section investigates the reliability and validity of constructs before beginning to test the goodness of measurement model. To examine the reliability and validity of this study, we used the content validity, discriminant validity and convergent validity. The next sections are described them.

The content validity: The content validity has linked with the other constructs of model. According to Hair, the content validity examines through factor loading of constructs. The items will be take out if are loaded great with other constructs than their individual ones. To do that, the items will be deleted if are loaded great with other constructs than their respective ones. Table 1 and 2 offered all the constructs are significantly loaded upper in their variables.

The convergent validity: The convergent validity refers the extent to which group of items converges to measure the variable. The convergent validity is testing through the reliability, the loading and Average Variance Extracted (AVE). To study the items are statistically significant and highly loaded, AVE should be at least 0.5, the composite reliability should be at least 0.7. Table 3 shows all these criteria have been tested and confirmed. Therefore, the results of measurement model (outer model) have the appropriate convergent validity.

The discriminant validity: The discriminant validity refers to the degree of items that can distinguish a constructs from anther constructs model. According to Compeau, the items of constructs have variance between them more than other constructs in the mode. Table 4 showed the diagonal line of values including the square root of AVE and there are construct's correlations below. To test the discriminant validity, it should be compared to the diagonal line with the values of other off the diagonal. Based on Fornell and Larcker, we observe in Table 4, the diagonal line's value is higher than other values in columns and rows and that confirmed the discriminant validity of model (Fig. 3).

Table 1: Factor loading significance

Constructs	Items	Coefficient	SE	t-values
	BP2<-BP	0.675	0.056	12.136
	BP3<-BP	0.714	0.050	14.408
Bank	BP4<-BP	0.756	0.035	21.904
Performance	BP7<-BP	0.773	0.031	24.772
	BP8<-BP	0.733	0.038	19.391
	BP9<-BP	0.752	0.039	19.421
	IC1<-IC	0.528	0.063	8.409
	IC10<-IC	0.771	0.032	24.230
Intellect	IC11<-IC	0.725	0.045	16.094
Capital	IC7<-IC	0.676	0.045	14.990
	IC8<-IC	0.773	0.034	22.758
	IC9<-IC	0.778	0.033	23.738
	ITHR5<-ITHR	0.611	0.100	6.126
	ITHR6<-ITHR	0.682	0.080	8.548
IT for	ITHR7<-ITHR	0.777	0.055	14.085
Human				
Resource	ITHR8<-ITHR	0.766	0.052	14.709
	ITHR9<-ITHR	0.771	0.046	16.741
	ITcon1<-ITCON	0.748	0.038	19.919
	IT2<-ITCON	0.729	0.045	16.231
IT	IT3<-ITCON	0.752	0.039	19.061
connectivity	IT4<-ITCON	0.758	0.042	17.954
	IT5<-ITCON	0.670	0.050	13.398

Table 2: Factor loading results

Constructs	BP	IC	ITCON	ITHR
Bank performance				
BP2	0.675			
BP3	0.714			
BP4	0.756			
BP7	0.773			
BP8	0.733			
BP9	0.752			
Intellectual capital				
IC1		0.528		
IC10		0.771		
IC11		0.725		
IC7		0.676		
IC8		0.773		
IC9		0.778		
IT connectivity				
ITCON1			0.748	
ITCON2			0.729	
ITCON3			0.752	
ITCON4			0.758	
ITCON5			0.670	
ITHR5				0.611
ITHR6				0.682
IT for human resource				
ITHR7				0.777
ITHR8				0.766
ITHR9				0.771

Table 3: The convergent validity

Constructs	AVE	Composite reliability	Cronbach's alpha
Bank Performance (BP)	0.540	0.875	0.830
Intellectual Capital (IC)	0.510	0.860	0.806
IT connectivity (ITCON)	0.536	0.852	0.784
IT for Human Resource (ITHR)	0.525	0.846	0.781

Table 4: Correlation and discriminant validity

Constructs	BP	IC	ITCON	ITHR
Bank Performance (BP)	0.735			
Intellectual Capital (IC)	0.500	0.714		
IT Connectivity (ITCON)	0.305	0.307	0.732	
IT for Human Resource (ITHR)	0.175	0.264	0.360	0.725

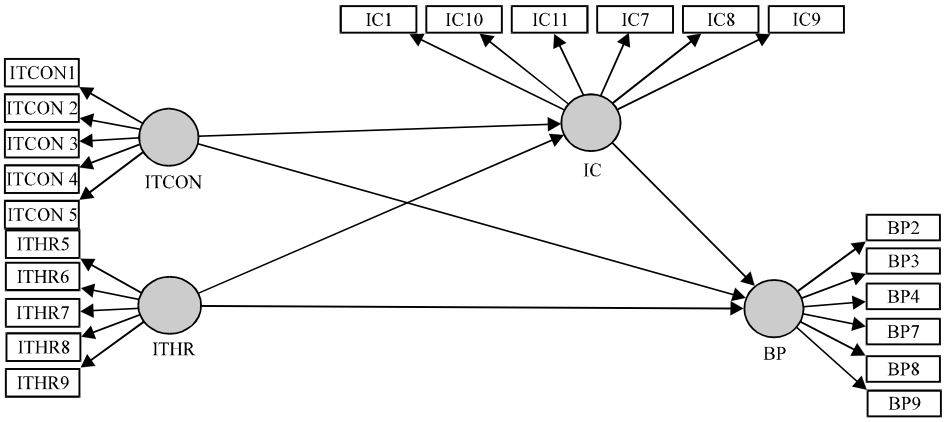

Fig. 2: The research framework

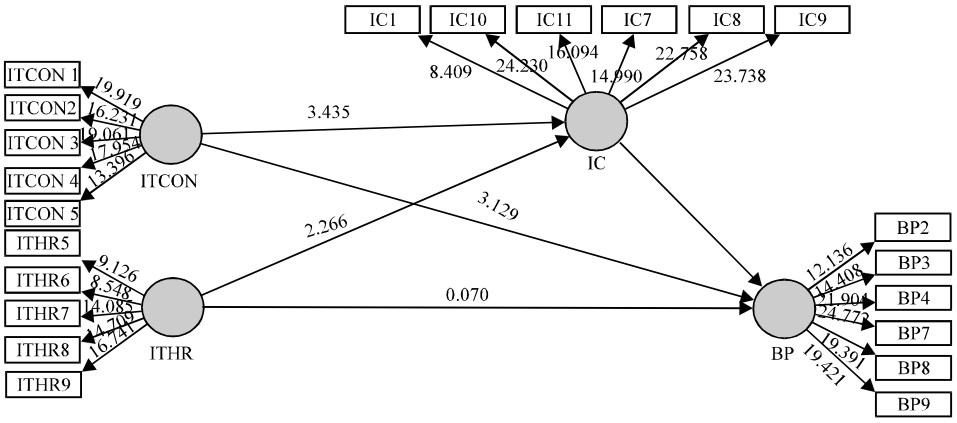

Fig. 3: Hypothesis testing results

Testing the direct hypotheses: This study is to examine the inner model through hypotheses test via running Algorithm and Bootstrapping in PLS-SEM Software. Figure 3 and Table 5 presented the results. Figure 3 and Table 5 show that the 4 hypotheses have positive and significant results at the 0.001, 0.05. 0.01 levels of significance (β = 0.168, t = 3.129, p<0.001), (β = 0.450, t = 5.913, p<0.001), (β = 0.243, t = 3.435, p<0.001), (β = 0.176, t = 2.266, p<0.05), respectively. Therefore, these results supported the hypotheses of the study H_1, H_3, H_4, H_5. The hypotheses H_2 is (β = -0.004, t = 0.070, p>0.01), hence, H_2 is not support.

Testing the mediation role of Intellectual Capital (IC): For examining the mediation effect of IC, Bootstrapping in Smart PLS was used to estimate the indirect effect between these variables. Table 5 and according to the criteria of Baron and Kenny, IC has a mediation effect on the relationship between ITCON and bank performance (ITCON->IC->BP). Table 6 shows the hypothesis (H_{5a}) has a partial moderation effect of IC on the relationship between ITCON and bank performance. Therefore, H_{5a} is supported. On the other hand, according to Baron and Kenny, ITHR didn't affect on performance,so, H_{5b} is not support (ITHR->IC->BP). In other word, IC did not mediate on the relationship ITHR and BP.

Predictive relevance of the model: The current article was used R^2, cross-validated redundancy and cross-validated communality to examine predictive relevance of this model. According to Cohen, values of R^2 are weak with 0.02, moderate with 0.13 and substantial with 0.26. The values of Cross-validated communality and cross-validated redundancy should be more than zero to make that modal has predictive quality. Table 7 shows values higher than zero, so there confirmed that the model has prediction quality.

Table 5: Hypotheses testing results

Hypothesis No.	Path coefficient	SE	Hypothesis	t-values	p-values	Decision
H_1	ITCON->BP	0.168	0.054	3.129	0.002	Supported
H_2	ITHR->BP	-0.004	0.061	0.070	0.944	Not supported
H_3	IC->BP	0.450	0.076	5.913	0.000	Supported
H_4	ITCON->IC	0.243	0.071	3.435	0.001	Supported
H_5	ITHR->IC	0.176	0.078	2.266	0.024	Supported
H_{5a}	ITCON->IC->BP	0.076	0.028	2.724	0.007	Supported
H_{5b}	ITHR->IC->BP	-0.002	0.028	-0.065	0.948	Not supported

Table 6: Hypotheses testing results

Hypothesis No.	Path coefficient	SE	Baron and hypothesis	t-values	p-values	Decision
Kennymethod						
H_{5a}	ITCON->IC->BP	0.076	0.028	2.724	0.007	Partial supported mediation
H_{5b}	ITHR->IC->BP	-0.002	0.028	-0.065	0.948	Not supported no mediation

Table 7: Prediction relevance of the model

Constructs	R^2	Redundancy	Communality
Bank Performance (BP)	0.275	0.127	0.540
Intellectual Capital (IC)	0.121	0.046	0.510
IT Connectivity (ITCON)			0.536
IT for Human Resource (ITHR)			0.525

CONCLUSION

This study examines the effect of IT connectivity, IT for human resource and Intellectual Capital on bank performance in UAE and using PLS-SEM as empirical instruments. Moreover, it describes the strategic importance of the IT and intellectual capital as a source to achieve a competitive advantage.

ITHR is related to the ability of bank to create harmony between information technology and human resource management and that lead to make new source or platform to have a competitive advantage. IT connectivity is an important factor for every successful bank. As well as, it can be extra source or platform for bank to launch a new competitive advantage.

The empirical test for the relationship between ITHR and IT connectivity in one model as recommended in this study has created a new avenue for researchers to make strategic recommendations to banking sector players, especially on what and how they should do with ITHR and IT connectivity at least among banks in UAE. Moreover, this study found the intellectual capital play important role to effect on performance.

The current study uses Smart PLS Software to measure the IC as mediator and then IC leads to Bank performance. Researchers of this study believe that this is the one very few studies to consider IC as mediator in any set of relationship. It is proposed that IT measures and intellectual capital of banks yields higher performance. Earlier, the previous studies between these variables have been tested separately. However, this study tried to link between these variables by mediation. The results of this study supported these linked.

RECOMMENDATIONS

Future research might highlight on some of the following directions. First, it is recommended to look into exploratory the relationship quality with reference to emerging economies in Arab countries. Second, also it may be suitable to study and focus more on ITHR and ITCON and discover the strategic paths of other values such as the bank practices. Third, should be highlighted on IC as mediating factor with other factors related to IT and banking capabilities such as information, systems and structures. Lastly, further empirical studies and detailed validations are requested to highlight on the relationships between ITHR and ITCON, especially among other sectors in varied domains.

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