DOES INFORMATION TECHNOLOGY CAPABILITY IMPROVE BANK PERFORMANCE? EVIDENCE FROM TURKEY

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Abstract

The aim of this paper is to examine whether the Information technology (IT) capability of a bank can create economic value and competitive advantage. In contrast to previous research, which generally concentrated on the effects of IT investment on competitive advantage, this paper examines IT capability directly. Based on a sample of 15 banking firms, this paper investigates the effects of IT capability and human capital support on three firm-performance measures. The results demonstrate that human capital support contributes directly to performance of banking firms.

Keywords: *Information technologies, human capital, banking and finance*

JEL Code: G21, O15, O33.

INTRODUCTION

In today`s rapidly changing business environment, information technologies (IT) has become an essential component of firm capability and a source of sustainable competitive advantage (Lin, 2007). IT is restructuring the basics of business and customer service, operations, product and marketing strategies, and distribution are almost entirely dependent on IT (Chen et al., 2006)

Although it is widely accepted that IT resources contribute to performance and future growth potential of the firm, the empirical results of the relationship between IT capability and firm performance is still ambiguous in general and in financial sector in particular. Indeed many financial institutions have changed their service delivery systems in response to IT development (Lin, 2007). Many

banks choose to deliver services via IT-based channels and reduce the reliance on branch offices **(**Orlow et al., 1996**).** Considering the fact that there is an increasing use of IT among financial institutions; evaluating the impacts of IT on bank performance has long been an important research topic (Beccali, 2009). However the part research has shown little or no correlation between IT investment and financial performance, which is generally referred as the IT productivity paradox (Ou, 2009).

Accordingly this paper attempts to seek an answer whether the IT capability of a bank can create economic value in Turkish finance sector. In contradiction of past research, which generally assumes that IT investment leads to IT capability that ultimately leads to competitive advantage, this study examines IT capability directly. Moreover a firm's IT strategy should involve a human dimension that contributes to organizational learning as a key determinant of IT success. In an effort to better model the IT impact on firm performance the current paper develops a research model involving the influential factors of human capital. To reach this end this paper is arranged in xxx parts. The concepts of IT capability and human dimension of IT capability are described in the next section. Then the effects of It capability and human capital support on bank performance is discussed. This is followed by the methodology applied to explore the hypotheses and the data analyze by SPSS 15.0 for Windows software statistical package program. Finally, the conclusions are set out together with some recommendations for executives and future research.

LITERATURE REVIEW

IT capability

Information technology (IT) has become an essential element of firm capability and a source of sustainable competitive advantage in general (Lin, 2007). Considering the intrinsic nature of banking activities that include processing, managing, and strategically using information (Beccalli, 2009); this becomes much more significant for banking and finance industry (De Bandt and Davis, 2000). In accordance with the current IT developments and to remain competitive, many financial institutions have transformed their service delivery systems. Many banks prefer to deliver services using IT-based channels and reduce the reliance on branch offices (Orlow, Radecki & Wenninger, 1996).

Eventhough the relationship between IT capability and a firm's performance has long been an important research subject, conclusive evidence about whether IT contributes to a firm's productivity and ultimately performance is not available

yet (Lin, 2007). Prior research has shown little or no correlation in support of the relationship between IT investment and financial performance, which is often referred as the IT productivity paradox (Harris, 1994). This paradox also exists in the banking industry (Ou et al., 2009). For instance Chen et al.(2007) searched the relationship between IT investments and bank performance and found little relationship between IT investment and bank profitability or efficiency; the study of Beccalli (2007) concerning the effects of investment in information technology on bank performance, again resulted with unclear conclusions. Also the previos research concentrated on IT spending have failed to show a clear link from IT investment to profitability (etc. Shin, 2001; Tam, 1998; Rai *et al.*,1997;).

Indeed the contemporary IT evaluation approach emphasizes return on investment and return on management and mainly based on quantitative assessment of IT costs, benefits, and risk during the systems development life cycle with very few post-implementation evaluation studies (Chen et al., 2006). To correctly address the IT impact on firm performance, the current paper investigated the links between IT and bank performance from the capability based view and uses IT capability as an input (Lin, 2007).

IT investment is assumed to lead to better IT capabilities which in turn lead to competitive advantage (Ou et al., 2009). A firm's IT capability, involves 'its abilities to mobilize and deploy IT-based resources in combination or co-present with other resources and capabilities''. Firms with higher IT capability take the advantage of superior financial performance by bolstering their revenues, increasing productivity, and decreasing costs (Lin, 2007). Sambamurthy et al. (2003: 237) states that IT capabilities influence the firm's ability to launch ''many and varied competitive actions and that, ultimately these competitive actions are a significant antecedent of firm performance''. Therefore;

H1. IT capability is positively related with bank performance

Human Capital

From a resource-based perspective it is certain that sustained competitive advantage can accrue from "a pool of human capital" which is larger than those groups, such as senior managers and other elites, who are traditionally identified as determining organizational success or failure. This is achieved by the human capital adding value, being unique and imperfectly imitable (Bontis & Fitzenz, 2002). Edvinsson (1997) addresses that it is mainly the human capital that determines the success of any strategy including IT based approaches. Thus a firm's IT strategy should be supported with human dimension that facilitates

organizational learning as a main determinant of IT success. So, it is important to consider the influential factors of human resources or human capital when evaluating the contribution of IT to a firm's performance (Lin, 2007). Therefore;

H2: Human capital supporting the IT capability is positively related with bank performance

Dependent Variables

In order to investigate the relationship between IT capability, human capital support and bank performance this study uses return on capital (ROA), return on equity (ROE) and capital adequacy ratio (CAR).

1. Return on Capital (ROA): ROA is used because it measures how effectively a bank has utilized its existing physical capital to earn income. This has been comprehensively used in past research on bank firms (Lin, 2007, Beccani, 2009) and non-bank firms (Shin, 2001; Tam, 1998; Rai et al., 1997;)

2. Return on Equity (ROE): is used because it evaluates a firm's ability to generate profits from equity without regard to how those capital are financed. This ratio has also been widely used in past research on bank firms (Lin, 2007, Beccani, 2009) and non-bank firms (Shin, 2001; Tam, 1998; Rai et al., 1997)

3. Capital Adequacy Ratio (CAR): measures how effectively a bank has utilized its existing equities. Moreover it is a legal obligation to estimate CAR

METHODS

Data and Measures

The aim of this study is to evaluate the effects of IT capability and human capital support on bank performance. In order to empirically investigate the hypothesis, bank employees were surveyed and bank performance ratios (ROA, ROE and CAR) are estimated using data from their financial reports. 15 banks are identified as the target group because of the availableness of their knowledge. Tools such as e-mail, letter and face to face interviews are used for gathering data. As total of 51 questionnaires among 150 from 15 banks has returned. The ratio of participation is approximately 34%. Independent variables were measured with existing scales five point Likert-type scale; while real data is used for dependent variables (ROA, ROE and CAR). The relationships between the variables are tested using correlation, reliability, regression and factor analyses through SPSS 13.0.

IT capability: IT capability was measured using four items adopted from Benito`s (2007) study.

Human Capital Support: Human capital support was measured using three items from Benito`s (2007) study.

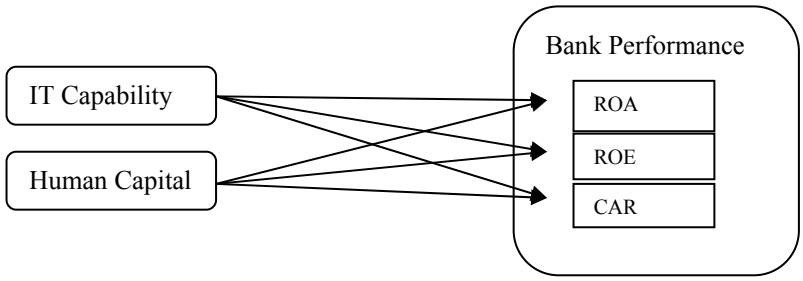

Figure 1. The theoretical model

ANALYSIS

Since the scales were used with a new sample, 7 items were submitted to exploratory analysis. A principal component analyses and scree plot indicated that three factors should be retained (eigenvalues above1.0). The best fit of data was obtained with a principal factor analysis with varimax rotation.

Table 1. Factor Analyses for Independent Variables

	Faktör 1	**Faktör 2**
IT Capability		
In our bank, we constantly renew information technologies, suystems, software and related tools	,761	
In our bank, we constantly improve information technologies, systems, software and related tools	,779	
In our bank we constantly improve our computers in order to take the advantage of information technologies	,634	
In our bank we focus on information and communication technologies for improving customer relationships		
Human Capital Support		
In our bank, employers are submitted to training programs about new software and systems.		,611
In our bank, employers are submitted to training programs about new equipments and tools.		,807
In our bank, we prefer to hire qualified people who can effectively use new technologies and systems.		,862

The results of the factor analyses show that our independent variables are gathered in two factors Factor 1 consists of xxx IT capability items with an internal consistency reliability coefficient (Alpha) of 0,910. Factor 2 includes xxx human capital support items with an internal consistency reliability coefficient of 0,861 .

Table 3. Correlations, Mean value and standard deviation

	Variables	1	2	3	4	5
1	IT Capability	(0,91)				
2	Human capital	,692**	(0,86)			
3	ROA	,198	,368**	--		
4	ROE	,128	,286*	,889**	--	
5	CAR	-,025**	,038	-,109	-,313*	--
	Mean	2,6176	3,0980	--	--	--
	Standard Dev.	1,04804	,90749	--	--	--

** Correlation is significant at the 0.01 level (2-tailed).

* Correlation is significant at the 0.05 level (2-tailed).

Means, standart deviations and inter-correlations are summarized in Table 2. Cronbach`s Alpha values are shown using parenthesis on the cross of the table. On a bivariate level our independent variables was positively between each other and human capital support was positively related with dependent variables ROA and ROE.

Hypothesis Tests

Table 4. Regression results for IT Capability, Human Capital and ROA

Independent Variables	**β**	**Sig**
IT Capability	-,109	,560
Human Capital	,443*	,021
Dependent Variable: ROA, R^2= 0.141 , F= 3.949		

**: p< 0, 01, *: p< 0,05

In the first regression analyze we investigated the influences of IT capability and human capital on ROA. The regression model is significant as a whole (F= 3.949: p< 0, 05); it explains %14 of the change of ROA. This study provides empirical evidence that human capital support is related to ROA (β: ,443; p<0,05). However we have found no significant relationship between IT capability and ROA. So our hypothesis H2a is supported while H1a is not.

Table 5. Regression results for IT Capability, Human Capital and ROE

Independent Variables	**β**	**Sig**
IT Capability	-,134	,560
Human Capital	,378*	,043
Dependent Variable: ROE, R^2= 0.136 , F= 3.284		

**: p< 0, 01, *: p< 0,05

In the second regression analyze we investigated the influences of IT capability and human capital on ROE. The regression model is significant as a whole (F= 3.284: p< 0, 05); it explains %14 of the change of ROE. This study provides empirical evidence that human capital support is related to ROE (β: ,378; p<0,05). However we have found no significant relationship between IT capability and ROE. So our hypothesis H2b is supported while H1b is not.

Table 6. Regression results for IT Capability, Human Capital and CAR

Independent Variables	**β**	**Sig**
IT Capability	-,134	,560
Human Capital	,378*	,043
Dependent Variable: CAR, R^2= 0.136 , F= 3.284		

**: p< 0, 01, *: p< 0,05

In the third regression analyze we investigated the influences of IT capability and human capital on CAR. The regression model is not significant (F=0,59). we have found no significant relationship between IT capability, human capital support and CAR. So our hypothesis H1c and H2c are not supported.

CONCLUSION

No doubt IT has become a key element of firm capability and a source of sustainable competitive advantage The increasing use of IT has resulted with a need for evaluating the productivity impacts of IT in general and in bankinking and finance sector in particular. This study tries to find out wheter IT capability improves business profitability of banking firms. The results of this paper have implications, both theoretical and practical perspectives, for the field of strategic IT management.

The findings of the study demonstrates that IT capability and human capital support scales which are developed in Western countries, are appropriate for an emerging economy and eastern country; Turkey.

The findings show that human capital support for IT is positively and directly related to ROA and ROE. This means that employing high qualified people who can effectively use new technologies and systems, submitting the existing employees to training programs to enhance their skills to use new software, systems and equipments and tools results with an increasing profitability for banking firms. On the other hand, we couldn`t find any direct statistical association between human capital support and CAR. This may be because of the characteristic of CAR. Indeed CAR is a legal obligation for banking firms from the authority of Banking Regulation and Supervision Agency (BRSA) rather than a performance indicator.

Surprisingly the results provide no empirical evidence in support of the relationship between IT capability and performance measures. However this doesn`t mean that IT capability has no relationship with bank performance, rather it influence the bank performance via human capital support due to the significant correlation among them. In a sense IT capability may trigger human capital support.

The findings of this study cannot be taken as definite evidence because several limitations to the study results deserve commentary. First, this study is conducted on fifteen banking firms. Results may differ for a bigger sample. Second, these results reported here emerge from a developing country, Turkey. Despite these limitations, this study provides important implications from theoretical and practical perspectives. This study indicates that human capital support is an important element of profitability for banking firms.

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