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## The Relationship between Information Technology Capability and Organizational Performance in Nigerian Banks

Kabiru J. Ringim\*, Mohd R. Razalli and Norlena Hasnan

College of Business, Universiti Utara, Malaysia

### Abstract

The increasing competitive pressure as a result of technological development, globalization, changing customer demand has led to survival challenges of many banks in the developing countries and demanded for improvement in quality of customer service and speed to enhance profitability performance and cost reduction. Specifically the main aim of this study is to determine the effects of Information Technology (IT) capability on the organizational performance of Nigerian banks. Data was collected using hand delivery of questionnaire survey approach. The study used stratified random sampling and simple random probability procedure in selecting the organizations as the sample. Out of 560 questionnaires distributed, 417 respondents were found to be useable for further analysis representing 74% valid response rate. Multiple regression analysis was used to analyze the data using SPSS software. The findings showed that IT capability is significantly related to organization performance of banks based on resource based view (RBV) of organization performance. The outcome of this study provides important information on the effect of IT capability on organizations' performance, to the managers and academics in Nigeria.

**Keywords:** *Information Technology Capability; Organizational Performance; Nigeria; Banks; RBV*

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### 1. Introduction

This paper discusses the impact of IT capability on organizational performance of banking operations in Nigeria. Banking industry was chosen because of several reasons. Firstly, banking and financial industry is a competitive economic sector in Nigerian business environment. The sector plays the role of a driver in Nigerian economy that contributed over 6.4% against a target of 10% of total gross domestic products (CBN., 2008). A bank requires information technology and strategic management approach to improve its organizational performance (Idowu *et al.*, 2002). The possession and the management of information is a key activity in banking. The influence of process reengineering and innovations through IT is likely to be bigger in banking than in other industries (David-West, 2005). Banks importantly require IT to coordinate enormous

volumes of information (David-West, 2005). Information technology (IT) is perceived as a necessity to pursue the rationalization and cost management due to intensified competition in the financial sector (DeBandt and Davis, 2000). Information technology has helped Nigerian banks to streamline the back office operations by improving both efficiency and cost reduction. Advances in technology also influence the way banks services are delivered with the aim of making it more convenient for customers. For example, many bank's branches were connected online real time (24/7). This clearly reduces the danger of carrying cash. The banks were able to deal effectively with global competition that offered low priced products/services with high quality service level. Competitiveness is no longer assured for the powerful organizations of the past;

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\* Corresponding author: kabirujinjiri@yahoo.com

changing industry and market conditions had cause organizations to adapt to changes or die. The pace of changes has accelerated more product and service innovations, product life cycle has shortened and technological advancements have become more rapid; government regulation/political pressures compelled banks to respond accordingly. Such responses may be minor adjustments or could entail an overhaul or revamping of an entire business process. The financial service industry is one of the early adopters of IT. The effect of IT capability on firm performance has not been explicitly explained, that remains inconclusive in the sector in general, unlike in the manufacturing sector (Brynjolfsson, 1993). Therefore, the objective of this paper is to investigate the relationship between IT capability of a bank and its impacts on the performance based on resource based view. The theory explained the relationship between organization's resources and sustaining competitive advantage for superior performance relative to competitors (Barney, 1991; Fahy, 2000).

## 2. Literature Review

The concept of IT capability was introduced by Ross *et al.* (1996) and defined IT capability as the firm's ability to assemble, integrate and deploy IT based resources. Heijden (2000) pointed out that the measurement of IT capability covers relationships in IT department with the rest for the business. It also broadens the explanation of accepted views of organizational IT capabilities on an organization's information technology function. Bharadwaj (2000) defined IT capability as the ability of a firm to mobilize and deploy IT based resources in combination with other resources and capabilities. Those IT-based resources are IT enabled resources, which consist of technical and managerial IT skills; intangible IT-enabled resources; such as knowledge, assets, customer orientation and synergy- the sharing of resources and capabilities across organizational division. Therefore capabilities reflect the ability of these firms to combine resources to promote superior performance (Amit and Shoemaker, 1993). Capability can be in form of competence that organization demonstrates in its capability to make use of IT tools and processes that are required to maintain market and customer information

(Tippins and Sohi, 2003). Hence, IT competence was conceptualized to include three dimensions: IT operations, IT object and IT knowledge (Tippins and Sohi, 2003). A high level of IT experience enables organizations to be innovative in service delivery and cost containment strategy that would enhance performance as well as meet customer requirement (Bhatt and Grover, 2005; Clark *et al.*, 1997).

The task of IT capabilities for improving organizational performance was well established in the literature. Various IT studies suggest IT capabilities provide the basis of gaining competitive advantage and enhancing organizational performance (Bhatt and Grover, 2005; Santhanam and Hartono, 2003). An extensive body of IT capabilities literature agreed that IT capabilities are resource to facilitate an effective collection and utilization of information (e.g., Bharadwaj, 2000). Floyd and Wooldridge (1990) suggest that IT capabilities enhance service reliability, reduce transaction errors and increase consistency in performance. Further additions to the observations are that IT capabilities can contribute to enhancing service quality through better customized or individualized services, and in creating knowledge links for identifying and sharing organizational expertise (Quinn *et al.*, 1994).

Tippins and Sohi (2003) commented that IT capabilities, which are also known as IT competencies, improve performance through elimination of inefficiency, reduction of long term cost, improve service reliability and reduced transaction errors. In this study, the term IT capability is adapted from the study conducted by Tippins and Sohi (2003). The study used IT knowledge, IT infrastructure and IT operations among the dimensions of measuring IT capability. IT knowledge concerns with the extent to which a firm possesses a body of technical knowledge about objects such as computer based systems (Tippins and Sohi, 2003). IT knowledge encompasses professional qualification, expertise and skills such as programming, systems analysis and design, and competencies in emerging technologies. IT operations include IT functions, coordination and interaction with user community. Hence, IT operation was conceptualized as the extent to which organization utilizes IT to manage

market and customer information. The computer based hardware, software and support staff were referred to as IT objects.

### 3. Research Methodology

The questionnaire in this study was adapted, with some modification, from a previous study on IT competency and firm performance (Tippins and Sohi, 2003). IT capability as the organization competency was measured from two dimensions, IT knowledge and IT operations, and twelve items. The respondent were requested to assess their organization's based on IT capability in terms of IT knowledge and IT operations as well as organization performance based on financial and non financial measures. The measurement for the organizational performance was adapted from the findings of Hammer and Champy (1993), Bontis *et al.* (2000), and Terziovski *et al.* (2003). The unit of analysis for the questionnaire is organization. All responses pertaining to both dependent and independent variables are measured on six-point Likert scale. The data collected were analyzed by using SPSS. To validate the instrument, principal component analysis (PCA) was conducted. Finally, regression analysis was carried out to determine the relationship between the identified IT capability variables and organizational performance.

#### 3.1 Sample Collection

The objective of the study is to examine the effect of IT capability at organizational level on organization performance of banks; executives, manager's or heads of departments at senior management level were the appropriate subjects that completed the questionnaires. The target sample frame consisted of Commercial banks, Microfinance banks and Primary mortgage financial institution registered by Central bank of Nigeria. A total of 560 questionnaires were hand delivered with one questionnaire to each organization out of which 460 questionnaires were returned and 417 responses were found to be

useable for further analysis making a valid response rate of 74%. This response rate is considered adequate according to Sekaran (2006) that 30% response rate for survey is acceptable. Also, 61% response rate considered sufficiently large for statistical reliability and generalizability (Tabachnick and Fidell, 2007).

#### 3.2 Validity

In this study, before data collection, the face and content validity of the instruments was established by conducting extensive literature review, and then experts from academics and practitioners thoroughly reviewed the questionnaire. Construct validity for IT capability and organizational performance was conducted using principal component analysis and criterion related validity for the identified IT capability variables was established before regression analysis was conducted.

#### 3.3 Reliability

The reliability test for each dimension emerged after factor analysis was conducted. Table 1.0 in appendix shows the results of the test. Flynn *et al.* (1994) argued that a Cronbach's alpha of 0.6 and above was considered an effective reliability for judging a scale. The generally agreed lower limit for Cronbach's alpha may decrease to 0.60 in exploratory research (Hair *et al.*, 2010). Cronbach's alpha coefficient is widely used as a measure of reliability. Therefore, the scales were satisfactory for subsequent analysis. Note that there were some items that had been deleted. The reason for deletion was that the instrument of the study would have achieved a higher reliability. From table 1.0 in appendix, the Cronbach's alpha ranges from 0.60 0.99 for the variables in the questionnaire used for the study implies that the instrument is reliable. Hence, instrument reliability is satisfactory as far as internal consistency is concerned. That is, the instrument can give consistent results on the effect of CSFs of business process reengineering on organizational performance of small and medium banks in Nigeria.

**Table 1**  
Summary of reliability analysis of major variables

Variables	No. of items	Cronbach's Alpha
<i>Dependent Variables</i>		
Organizational Performance	10	0.865
Operations cost reduction	5	0.993
Customer Service Management	3	0.705
Operational Process efficiency	2	0.60
<i>Independent Variables</i>		
IT Capability	10	0.830

## 4. Findings

### 4.1 Correlation Analysis

The purpose of this study is to determine the relationship between IT capability and organizational performance of banks. Overall, the result of the correlation analysis shows that all the variables of IT capability have significant relationship with organization's performance. Most of the relationships between IT capability and organizational performance were significant at  $p < 0.01$ . The strongest positive correlation was the relationships between IT capability and customer service management performance ( $r = 0.436$ ,  $p < 0.01$ ) with high level of IT capability associated with high level of organization customer service management performance. The next strongest positive correlation was between IT capability and business operations efficiency ( $r = 0.346$ ,  $p < 0.01$ ), followed by IT capability and operations cost reduction as well as overall performance ( $r = 0.233$ ,  $p < 0.01$ ).

### 4.2 Regression Analysis

Multiple regression analysis was conducted to examine the most contributory explanatory variables among the IT capability construct that best predict organization performance variables (cost reduction, customer service management, business operations efficiency and overall performance). The results of the multiple regressions are shown in Table 2, 3, 4 and 5 in the appendix. Four models of standard regression were developed and all the models were statistically significant at 95% level. The result indicates that IT capability attributes jointly explained 21.3% of the variance of customer service management, 13.2% of the variance of business operations

efficiency, 4.7% of the variance of cost reduction and 15.4% of the variance of overall organization performance. The models suggests that, the impact of the IT capability on customer service management performance is the highest then followed by overall performance compared to other organizational performance variables.

The predictor variable, IT capability was be found to be statistically related with customer service management followed by overall performances, business operations efficiency performance and operations cost reduction performance. In this study, the result indicates full support relationship between IT capability attributes and organizational performance. The models were significant and jointly explained the variance of organization performance variables. The evidence from this study suggests that IT capability is important to organizations. Indeed, high levels of IT capability are related to high level of organization performance. IT capability in this study refers to the ability to which an organization is equipped with infrastructure, IT skills knowledge and experience, as well as effective IT operations utilization. A higher level of IT experience enables the smooth implementation of the organization's strategy, develops reliable and cost effective systems for the organization, and anticipates customer needs (Bhatt and Grover, 2005).

Therefore, the significant results on the relationship between IT capability and organizational performance in the Nigerian banking industry sample are consistent with resources based view and confirm previous studies that IT capability enhances organizational performance (e.g. Bhatt and Grover, 2005; Powell and Dent-Micallef, 1997; Santhanam and Hartono,

2003). An extensive body of IT capabilities literature agrees that I.T capabilities are resources to facilitate an effective collection and utilization of information (e.g. Bharadwaj, 2000). Floyd *et al.* (1990) stress that I.T capabilities enhance service reliability, reduce transaction errors and increase consistency in performance. Other researchers

agree that IT capabilities can contribute to improving service quality through better customized or individualized services, and in creating knowledge links for identifying and sharing organizational expertise (Adam, 1993; Quinn *et al.*, 1994).

**Table 2**Results of multiple regression analysis of IT capability and operations cost reduction <sup>a</sup>

Model	R Square	Δ R Square	Std. Error of the Estimate	Durbin-Watson			
1	.054	.052	5.315	1.895			
	Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity	
	B	Std. Error	Beta			Tolerance	VIF
	24.90	0.260		95.67	0.000		
	0.205	0.042	0.233	4.88	0.000	1.000	1.000

<sup>a</sup> Dependent variable: cost reduction**Table 3**Results of multiple regression analysis of IT capability and customer service management <sup>a</sup>

Model	R Square	Δ R Square	Std. Error of the Estimate	Durbin-Watson			
1	.190	0.188	1.936	1.801			
	Un-standardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity	
	B	Std. Error	Beta			Tolerance	VIF
	14.835	0.095		156.46	0.000		
	.151	0.015	0.436	9.878	0.000	1.000	1.000

<sup>a</sup> Dependent variable: customer service management

**Table 4**Results of multiple regression analysis of IT capability and business OPS efficiency <sup>a</sup>

Model	R Square	Δ R Square	Std. Error of the Estimate	Durbin-Watson			
1	0.120	0.118	1.478	2.009			
	Un-standardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity	
	B	Std. Error	Beta			Tolerance	VIF
	9.463	0.072		130.75	0.000		
	0.088	0.012	0.346	7.513	0.000	1.000	1.000

<sup>a</sup> Dependent variable: business OPS efficiency**Table 5**Results of multiple regression analysis of IT capability dimensions and overall performance <sup>a</sup>

Model	R Square	Δ R Square	Std. Error of the Estimate	Durbin-Watson			
1	0.163	0.161	6.24956	1.880			
	Un-standardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity	
	B	Std. Error	Beta			Tolerance	VIF
	49.199	.306		160.759	0.000		
	.444	.049	.404	8.986	0.000	1.000	1.000

<sup>a</sup> Dependent variable: overall organization performance

## 5. Implications of the Study

The results of this study have provided several implications to practitioners and academicians. These implications also serve as a recommendation to managers, and contribute to the body knowledge for academia. The following implications are categorized into managerial and theoretical implications.

### 5.1 Managerial Implications

Several studies have identified IT capability as a strong source that provides a basis of gaining competitive advantage and enhancing organization performance (Adam, 1993; Bharadwaj, 2000;

Floyd and Wooldridge, 1990; Quinn *et al.*, 1994; Santhanam and Hartono, 2003). Also, large number of studies found that complimentary resources must be present to mediate/moderate the relationship between IT and organizational performance (Banker and Kauffman, 1991; Wade and Hulland, 2004). Empirical evidence predicts that information technology needs to interact with other human and business resources to create IT resources which are valuable, rare and applicable to achieve initial, short-term competitive advantage. To achieve a long-term advantage, IT resources must be difficult to imitate, hard to substitute (Wade and Hulland, 2004). Only few studies including Sager (1998) and Venkatraman

and Zaheer (1990) found that strategic IT had no impact on performance. This study contributed to managerial implication for managers especially in banking setting. Managers are encouraged to invest in terms of time, money, commitment and other resources to implement business process reengineering strategies. Evidence from this study suggests that organizations should develop IT support in order to further benefit from various strategic activities.

Previous studies have acknowledged that organizations that are IT oriented are guided by IT usage towards efficient and effective service delivery for competitive advantage and it also indirectly enhances organization performance (Kintana *et al.*, 2003; Said *et al.*, 2009; Shao *et al.*, 2010; Yongmei *et al.*, 2008). The overall results of the present study confirm that IT capability dimensions contribute toward organizational performance. Nigerian banks should strive to become technologically oriented banks to achieve competitive advantage and enhance organizational performance. Organization should consider IT capability as a competence in organization to achieve competitive advantage. The present study identified IT capability as a competence that contributed toward customer service management performance and overall performance.

### 5.2 Theoretical Implications

The findings from this study contribute to the empirical research on the relationship between IT capability and organizational performance of Nigerian banks. It was identified that adopting IT has helped Nigerian banks to streamline the back office operations by improving both efficiency and cost reduction. Advances in technology also influence the way bank services are delivered with the aim of making it more convenient for customers. For example, many banks in Nigeria now have their branches connected on-line real time (24/7). This clearly reduces the danger of carrying cash. Some banks have ATM to make cash available to their customers 24/7. Some Nigerian banks practice e-banking, telephone, and mobile banking. Money transfer services through MoneyGramme and Western Union Money transfer have enabled Nigerian diasporas to send money to their families (CBN, 2008). Information technology capability (IT operations and IT knowledge) moreover, makes Nigerian banks to

participate more effectively in international banking arena. For instance, some technologically up to date banks can access international banking networks in order to efficiently affect fund transfer, open, amend, and negotiate letter of credit, retrieve up to date statuses of customer transactions among the banks that joined the Society for Worldwide Inter-bank Financial Telecommunication (SWIFT). The results of the study also indicate partial support on the relationship between IT capability dimensions and organization performance. The findings suggest that IT capability is an important source of competitive advantage of banks in Nigeria.

### 6. Limitations of the Study

The study is subjected to several shortcomings that limit interpretation on the findings. One of the limitations of this research is the common method variance (CMV) that is a potential problem in behavioral research (Podsakoff and Organ, 2003). Second limitation is the application of cross-sectional design for survey research that captures the perceptions of respondents at a point in time. Thus, the study cannot prove causal relationships on a longitudinal basis. Another limitation of the study is the use of subjective self-reported perceptual measures in assessing the studies. Even though, an attempt was made to identify the best respondents by contacting the key personnel that provided the best information, the accuracy of self-perceptions might be strongly influenced by the respondent's experience in the management of the organizations and frame of reference at the point in time. In addition, the findings cannot be generalized in a larger context across the cultures of other countries and business environments may give different relationship between IT capability and organizational performance.

### 7. Directions for Future Research

To overcome the limitations of the study, this research suggests the need for further investigation. As the survey research in the study was based on cross-sectional design, further work needs to be done to establish the effects of changes over a longer period of time in the aspect of IT capability. Future research should consider

longitudinal study to examine IT capability impact on organizational performance. The use of qualitative information should be conducted in future research because this approach provides in-depth understanding of the setting and the study will be more meaningful if both quantitative and qualitative techniques are carried out as both of them can complement each other. The sample of the study is limited to Nigerian banks. Future research should consider replicating this study in other cultures or countries. In addition, further research is also, needed to be conducted in other sectors or industries besides banking, such as, manufacturing, or construction sector.

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## 8. Conclusion

The overall findings of the study have proven that relationship between IT capability and organization performance have been established. This study provides new empirical contribution to academic knowledge and practitioners. To the academia, more research on multi-disciplines need to be conducted to establish the relationship to the benefit of the industry and society in general. The practitioners, in the search of organizational performance and competitive advantage, should not dependent on a particular management technique but multiple management initiates that are important for survival and success.



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