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# The effect of IT infrastructure on organizational performance via the role of core competences: empirical study in Iraqi banks

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## Abstract

The current study is based on three variables included: capabilities of information technology, core competencies and organizational performance to interact with each other and constitute the intellectual and philosophical framework of the study. Information technology capabilities are considered to be among the most important strategic factors to influence the performance of organizations and human resources. This research is launched from a problem expressed by a number of questions. The research aims to study the effect of the dimensions of information technology on organizational performance through competencies which are represented skills, knowledge and experience of human resources. The research consists of a sample of private banks in Iraq, which have identified as those of the sample (55) of middle management managers. This study makes use of statistical computer program (SPSS.V.20) and (AMOS.V.20) for data processing and information. The importance of this research lies in the framing of the ability of core competencies based on the information technology to improve organizational performance. The research is proving the validity of hypotheses that suggest a correlation relationships and effect between variables. The research concludes that the Iraqi banks lack the ability to determine their fortunes in order to improve performance. In contrast, recommendations were made in line with the reality of the findings, as well as providing some of the proposals.

***Keywords**:* Information Technology Infrastructure, Organizational Performance; core competences.

## 1. Introduction

In the light of the fierce competition, the information technology has become a larger role in various types of administrative activities (Subramanian, et al., 2009). Therefore, organizations

began searching for tools enable to survive and compete (Zablah, Bellenger and Wesley, 2004). Clemons et al. (2004) noted unprecedented development in information technology creates opportunities for the success of organizations. Thus, the adoption of information technology has affected, directly and indirectly, the organizational performance. The performance of the organization reflects its ability to achieve its objectives in the long run (Schermerhorn, Osborn and Hunt, 2000). Furthermore, the performance is the final result which is seeking to achieve the organizations through the formulation of the strategy, and the exploitation of resources in an optimal way to get to superior organizational performance (Dewett and Jones, 2001).

The organizational performance reflects the interaction between behavior and achievement of the organization, outputs the value offered by the organization in the form of goods and services (Zack et al., 2009). Indeed, the core competencies represent an administrative capability which affects the lightness of regulatory movement (Tallon, 2010). As well as, dimensions of core competencies include organizational resources, human resources, capabilities, skills and knowledge that are being a motivation to improve organizational performance. Information technology can support the skills and knowledge (O'Brien and Marakas (2008, p.8). Davis and Heineke (2005) pointed out that the core competencies are exceptional capabilities which enable the organization to achieve the position in the market and the long-term.

Hence, the core competencies are forming a central concept in the competitive strategies (Agha, et al., 2012). Sahay and Avgerou (2002) stated that technology capabilities could serve major development functions for the purpose of promoting economic decisions and investment in developing countries. One of the very important elements which affect the organizational performance is the technological support (Li, et al., 2013). The banking industry was a major player in opening up to global markets (Hawkins and Mihaljek, 2001). Thus, Chavan (2013) suggested that the banks need more modern strategies to stay in the market and to provide banking services in various business areas.

## 2. Literature Review:

### 2.1 Organizational Performance

Researchers differed in giving of a specific definition in referring to organizational performance, due to the various performance measurement standards. (Wade and Hulland, 2004). Organizational performance Identified as the organization's ability to achieve its goals in the long term and the lowest possible cost with achieving efficiency. Agha, (2012) selected measuring organizational performance through standard profitability and growth. Wile, Venakartraman and Ramanujam (1987) measured organizational performance through three dimensions which are sales growth, net income growth and growth in return on investment. According to Kaplan and Norton (1992) were able to measure organizational performance by placing Balanced Scorecard, which included both the financial and non-financial criteria to achieve performance. On the other hand, Brynjolfsson (1993) provided a plausible justification for investment in information technology.

### 2.2 Core Competences

The researchers, Hamel & Brahalad (1994), presented views about the development of organizations through adopting the core competencies which are different from a conventional perspective of organizations through a book published in 1994 entitled "The compete on the future". Today, there is a large scale understanding that core competence is one of the significant sources of institutions and are the foundation for sustainable competitive advantage, and then access to organizational performance (Agha, 2012). Gregory et al. (2009) claim that core competencies are a set of experiences and skills of human and organizational sources to create new opportunities for the organization. The core competencies have an important role in the creation and composition of synergies in the strategic business units of the organization (Besle and Sezerel, 2011).

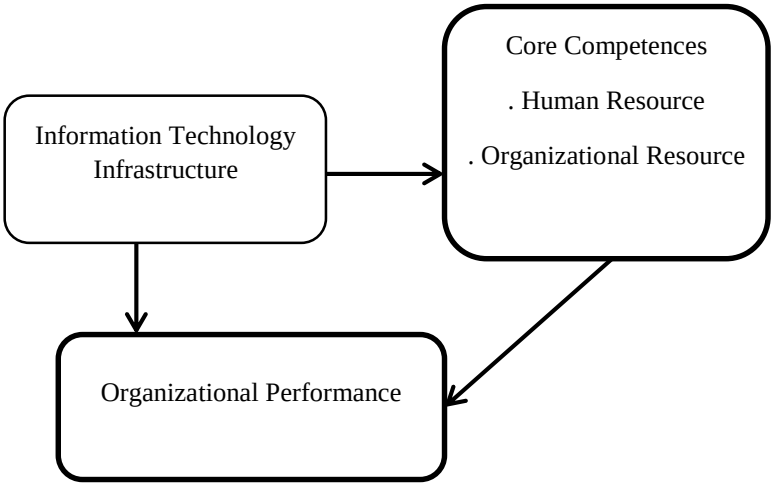
### 2.3 Information Technology Infrastructure

Allamah et al. (2011); Laudon and Laudon (2012); and O'Brien and Marakas (2008) they pointed out that the information technology means the development and management techniques used by the organization represented with instruments, software, networks, databases, communications and human skills programmers and end-user. While, Scott and Walczak (2009) confirmed that the tools of information technology infrastructure based on the computer, are including the collection, storage, processing and storage of data and information. On the other hand, Love et al. (2005) noted that the infrastructure density of information technology could lead to improving the performance and make the organization more superior over its competitors from organizations that do not invest in information technology. The importance of information technology infrastructure can be considered as a key dimension to the kinds of capabilities of information technology in business organizations (Byrd and Turner, 2001). As information technology infrastructure capabilities will be available to support new applications and initiatives in the organization (Mithas, et. Al., 2007).

Hence, Infrastructure and the impact of information technology and human skills on performance is one of contemporary topics that are important for all researchers and academics.

## 3. Framework Model Proposed

The framework form of this search was proposed basing on the ideas of each of Kaplan and Norton (1992) to measure the dimensions of organizational performance. While, the infrastructure of information technology measure is based on the opinions adopted by O'Brien (2008) and Turban, et al. (2008). Core competencies were chosen as a mediator of the relationship between the IT Infrastructure and organizational performance. As shown in the model below:




Fig(1) Framework Model

## 4. Methodology

The study population consists of some managers of the Iraqi private banks. The Likert scale Quintet used in the distribution of self-questionnaire on the 55 respondents represented a pilot sample for this study. The reliability of measurement tools is used to search through the alpha coefficient to internal consistency test. Whereby, internal consistency is the most common method for measuring reliability (Beckman, Mandrekar, Engstler, & Ficalora, 2009). Literature revealed that the minimum reliability, ranging from $\alpha = 0.60$ to $\alpha = 0.80$ (Creswell, 2009). The structural equation modeling (SEM) has been used for the questionnaire data analysis.

## *3.* Data Analysis

Results indicated that 44% of the respondents were in the age group of 41 to 50 years, were the education 52% of the sample B.A. Degrees, that 76% of the respondents were in the Job title group head of department and 40% accumulated at least 21 to 30 years of personal work experience in a bank.

### 5.1 Description and analysis of IT infrastructure as an independent variable

This section is aimed at identifying the current status of IT infrastructure. It must be noted that the respondents' comments were studied using ten items in terms of 5 Likert scale ranging from strongly disagree to strongly agree. Table (2) shows that the highest overall mean related to "Our Information Systems are subject to modification and adjustment." with (M=3. 74, SD= 1.25). The second most important item was "Our application systems are transparent to users." with (M=3. 73, SD= 1. 21) however, the last and least item of IT infrastructure belongs to "The IT infrastructure of our bank is a sufficient degree of flexibility." with (M=3. 25, SD=1.22).

Table2, Frequency distribution of respondents answer for related items to IT infrastructure sub dimension (%) infra

| Item | Strongly Disagree | Disagree | Neither Agree or Disagree | Agree | Strongly Agree | Menn | SD |
|---|---|---|---|---|---|---|---|
| The IT infrastructure of our bank is a sufficient degree of flexibility. | 8.3 | 18.5 | 35 | 16.3 | 21.9 | 3.25 | 1.22 |
| Our application systems are transparent to users. | 2.6 | 15.4 | 28.3 | 13.8 | 40 | 3.73 | 1.21 |
| The speed of our communication infrastructure contributes to meet current needs. | 4.7 | 15.6 | 34.1 | 23 | 22.6 | 3.43 | 1.14 |
| Our databases are capable of collecting, analyzing, storing and retrieving data and information easily and as needed. | 4.7 | 16.1 | 36.6 | 19.5 | 23 | 3.40 | 1.14 |
| Our Information Systems are subject to modification and adjustment. | 3.7 | 15.9 | 23.8 | 15.9 | 40.6 | 3.74 | 1.25 |
| Bank data are a flexible and sharable with business units. | 3.1 | 16.3 | 31.7 | 17.7 | 31.1 | 3.57 | 1.18 |
| Infrastructure of IT can create new strategic assets. | 3.1 | 15 | 31.3 | 22 | 28.5 | 3.58 | 1.14 |
| The ability of our network infrastructure meets our customer needs. | 5.5 | 22.4 | 28.1 | 17.3 | 26.6 | 3.37 | 1.24 |
| A good budget is allocated by our bank for the components of our IT infrastructure (i.e., Hardware,Software,Network and Database). | 4.5 | 15.6 | 34.3 | 23 | 22.6 | 3.44 | 1.13 |
| Our bank seeks to examine and adjust the infrastructure of IT in proportion with the areas of marketing. | 4.1 | 19.3 | 27.6 | 19.1 | 29.9 | 3.51 | 1.22 |

### 3.2 Description and analysis of core competence as a mediator variable

Core competence 14 questions were selected with 5 point Likert scale ranging from strongly disagrees to strongly agree. This variable divide to three sub dimensions, namely organizational resources, Human Resources and Abilities. Based on Table (3) the overall mean of organizational resources with M=3.51 was higher than the overall mean of indicators related to the Abilities M=3.52 and Human Resources M=3.41. The overall mean of core competencies with M=3. 481.

Table 2: Frequency distribution of respondents answer for related items of Core Competences

| Items | SD | D | N | A | SA | Mean | SD |
|---|---|---|---|---|---|---|---|
| Organizational Resource | | | | | | | |
| To best meet the needs of the customer. | 0.80 | 13.4 | 39.20 | 34.40 | 12.2 | 3.44 | 0.90 |
| High efficiency in the performance of employees. | 0.80 | 5.50 | 41.10 | 40.0 | 12.6 | 3.58 | 0.81 |
| Follow the trends of research and developments have competitors. | 1.40 | 8.90 | 41.70 | 34.60 | 13.4 | 3.50 | 0.88 |
| Structure of the organization in response to changes in the environment. | 0.80 | 11.00 | 36.40 | 36.20 | 15.6 | 3.55 | 0.91 |
| The use of work teams in organizational structure. | 0.80 | 7.70 | 44.30 | 34.40 | 12.8 | 3.51 | 0.84 |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Human Resource | | | | | | | |
| Benefits from the creative ideas have the employees. | 0.04 | 10.40 | 42.90 | 37.00 | 9.6 | 3.46 | 0.81 |
| Spreading of the common culture of knowledge, experience and skills of the members of the bank. | 1.20 | 14.20 | 45.50 | 26.60 | 12.6 | 3.35 | 0.91 |
| Application of various techniques to provide a good service. | 0.01 | 9.80 | 42.10 | 35.20 | 12.8 | 3.51 | 0.84 |
| Maintain competent human resources. | 0.60 | 13.80 | 42.90 | 30.70 | 12.0 | 3.40 | 0.89 |
| Teamwork to accomplish tasks effectively and efficiently higher than work individually | 0.40 | 12.20 | 50.20 | 27.80 | 9.40 | 3.34 | 0.83 |
| Apilities | | | | | | | |
| Deal with the challenges that effect of the superior performance. | 4.30 | 11.40 | 31.50 | 28.90 | 23.8 | 3.57 | 1.10 |
| Possess unique capabilities that ensure the achievement of superior performance | 2.40 | 15.70 | 34.80 | 26.00 | 21.1 | 3.48 | 1.06 |
| Use a variety of communication channels | 2.80 | 15.20 | 28.00 | 27.40 | 26.8 | 3.60 | 1.12 |
| Exploit the opportunities and working to generate options active thinking for the development of the work. | 3.90 | 19.30 | 27.40 | 26.40 | 23.0 | 3.45 | 1.15 |
| Overall | | | | | | 3.481 | |

### **3.3** Description and analysis of organizational performance as a dependent variable

Totally fifteen questions were related to the Organizational Performance. This variable divide to four sub dimensions, namely Financial Performance, Customer Satisfaction, Internal Processes Efficiency and Growth & Learning. Based on Table (4-9and 4-12) the overall mean of Internal Processes Efficiency with M=3.32 was higher than other sub dimensions. Three items measured the Financial Performance related sub dimension Respondents selected the items ranging from strongly disagree to strongly agree. Among three questions designed to collect information regarding to sub dimensions the highest mean belongs to "Our bank achieves an increase in total assets." with (M=3.27, S.D=0.96). The lowest mean, among these Items was observed for "Our bank achieves yield on investment higher than that of our competitors." (M=3.12, SD=1.01).

A total of three questions focused to collect information regarding to Customer Satisfaction, respondents should select the items ranging from strongly disagree to strongly agree. In this sub dimension, the highest and most important mean belongs to "Bank management seeks to meet the demands of customers and stay in the market." with (M=3.26, S.D=1.18) and the lowest mean score belonged to "Bank management has skills and abilities that help acquire new clients." (M=2.75, S.D=1.15). In the Internal Processes Efficiency sub dimension the highest and most important mean belongs to "Bank management is keen to enhance staff experience and domain knowledge" (M=3.52, S.D=1.30) followed by "Bank management is keen to create a better work environment to ensure excellence in the performance of tasks." (M=3.49, S.D=1.23). The lowest mean was observed for "Bank management always keen to create new business strategies and to enable existing ones." with (M=3.30, S.D=1.23) (Table 4- 11). A total of five items focused to collect information regarding to Growth & Learning, respondents should select the items ranging from strongly disagree to strongly agree. In this sub dimension, the highest and most important mean belongs to "Expansion expenses R & D activity to support teradical changes in services." with (M=3.64, S.D=1.27) and the lowest mean score belonged to "Bank management is keen to raise the rate of employees that constitutes their presence in the bank as a benefit." (M=3.53, S.D=1.27).

Table 3: Frequency distribution of respondents answer for related items to Organizational Performance

| Items | SD | D | N | A | SA | Mean | SD.v |
|---|---|---|---|---|---|---|---|
| **Financial** | | | | | | | |
| Our bank achieves an increase in total assets. | 3.1 | 15.7 | 42.5 | 28 | 10.6 | 3.27 | 0.96 |
| Our bank achieves yield on investment higher than that of our competitors. | 6.3 | 18.9 | 38.8 | 28.3 | 7.7 | 3.12 | 1.01 |
| Our financial performance has overridden that of our competitors. | 6.3 | 20.5 | 36.0 | 26 | 11.2 | 3.15 | 1.07 |
| **Customer Satisfaction** | | | | | | | |
| Bank management has skills and abilities that help acquire new clients. | 13.8 | 30.3 | 32.1 | 14.4 | 9.4 | 2.75 | 1.15 |
| Bank management seeks to meet the demands of customers and stay in the market. | 7.7 | 18.9 | 30.7 | 25.2 | 17.5 | 3.26 | 1.18 |
| The bank aims to attain clients' satisfaction via high quality services. | 13.2 | 24.2 | 28.9 | 20.7 | 13.0 | 2.96 | 1.22 |
| **Internal Processes** | | | | | | | |
| Bank management always keen to create new business strategies and to enable existing ones. | 10 | 15.7 | 27.8 | 27.2 | 19.3 | 3.30 | 1.23 |
| Bank management is keen to enhance staff experience and domain knowledge. | 6.1 | 21.3 | 19.5 | 20.5 | 32.7 | 3.52 | 1.30 |
| Bank management is keen to create a better work environment to ensure excellence in the performance of tasks. | 6.7 | 14.4 | 31.1 | 19.1 | 28.7 | 3.49 | 1.23 |
| Low Turnover work | 10.4 | 16.9 | 23.0 | 22.6 | 27.0 | 3.39 | 1.32 |
| **Growth and learning** | | | | | | | |
| Our bank achieves an increase in the growth through entering new markets. | 9.6 | 12.8 | 16.7 | 32.3 | 28.5 | 3.57 | 1.29 |
| Bank management is keen to raise the rate of employees that constitutes their presence in the bank as a benefit. | 9.6 | 12.0 | 20.5 | 31.1 | 26.8 | 3.53 | 1.27 |
| Bank management is keen to attract owners of certificates of academic and professional who have creativity | 7.7 | 13.2 | 18.1 | 33.7 | 27.4 | 3.60 | 1.23 |
| Expansion expenses are & D activity to support the radical changes in services | 7.5 | 14.4 | 16.9 | 29.5 | 31.7 | 3.64 | 1.27 |
| Innovative new methods to get the job done | 7.3 | 15.9 | 16.1 | 31.5 | 29.1 | 3.59 | 1.26 |
| **Overall mean** | | | | | 3.43 | | |

## *6. Measurement model*

The measurement model is important as it provides a test for the reliability of the observed variables employed to measure the latent variables. Prior to test the measurement model individual models were fitted. Individual item reliability can be assessed by evaluating the individual item loadings with values greater than 0.7, which indicates adequate indicator reliability or correlation with each construct (Henseler et al., 2009; Gotz et al., 2010).

The measurement model is important as it provides a test for the reliability and construct validity (convergent and discriminant) of the observed variables employed to measure the latent variables. A measurement model that offers a poor fit to the data suggests that at least some of the observed indicator variables are unreliable, and precludes the researcher from moving to the analysis of the structural model. These items fit the measurement model with $\chi 2$ (1890) = 2824.299, p=0.00, $\chi 2$ /DF=1.494, GFI=0.849; AGFI=0.833, CFI=0.950; IFI=0.950, RMSEA= 0.031. In addition, the RMSEA was met the cutoff point 0.031, which fell between the recommended range of acceptability. See Figure 2.

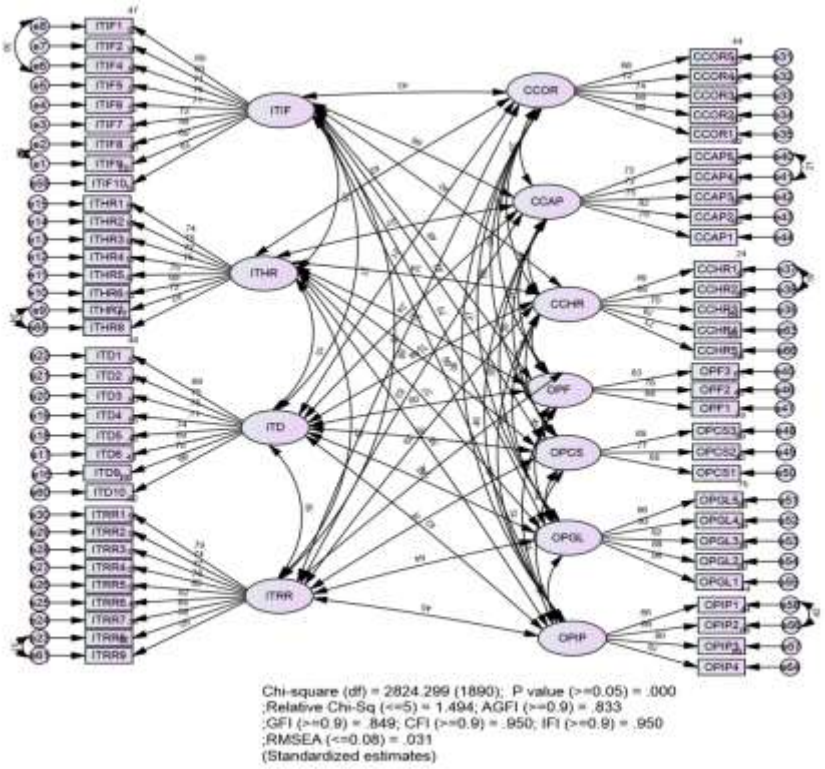



Figure 2: Measurement Model

## 7. Hypothesis Test

**H1: there is a direct relationship between IT infrastructure and organizational performance.**

According to the results of this investigation the direct effect of IT infrastructure on organizational performance was positive and significant ($\beta$=0.498, $p<0.001$), so this hypothesis was accepted.

**H2: there is a direct relationship core competence and organizational performance.**

As shown in table 4-17 there was a significant positive relationship between core competence and organizational performance (B=0.304, p=0.002) therefore this hypothesis was accepted.

**H3: there is a direct relationship between IT infrastructure and core competence.**

As demonstrated in table 4-20 there was a significant positive relationship between IT infrastructure and core competence. The relation was positive significant in the model (B=0.363, $p<0.001$) therefore this hypothesis was accepted.

**H4: Core competence mediated the relationship between IT infrastructure and organizational performance.**

Based on the findings of mediation analysis which was shown in table 4-21, The results indicated that there was a significant mediating effect of Core competence in the relationship between IT infrastructure and organizational performance was significant ( $Z=3.108$, $p < 0.001$ ) and considering the direct effect of IT infrastructure and organizational performance which was significant after mediation ( $B=0.372$ $p<0.01$ ) it can be concluded that there was partially mediation effect and therefor this hypothesis was accepted.

## 7. Conclusions

In this research, the effect of infrastructure of information technology on organizational performance was tested through the role of core competencies as a mediator. The questionnaire was distributed to managers in middle management in a number of Iraqi private banks. Al Najar and Kalaf (2012) stated that private banks in Iraq need to be more research on the role of information technology to improve the performance. Findings showed that infrastructure components of information technology can help individuals acquire the skills and knowledge. Thus, there will be a significant impact on improving the overall performance of the surveyed banks.

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