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Achieving Competitive Advantage through Enterprise Resource Planning System (ERP) Empirical Evidence from Jordan

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Abstract

Business world has witnessed huge challenges today, resembled in; speed technological changes and the companies work for achieving the competitive advantage. This study aims to investigate the effects of Enterprise Resource Planning ERP systems on gaining competitive advantage in Jordanian companies from manager's viewpoint .21 questionnaires were analyzed to achieve the research objective. The results of the study show that there is a significant association between the adoption of ERP systems and the different sources of competitive advantages. In addition the study results revealed that is a difference in the opinions of respondents toward achieving the sustainable competitive advantage as it is imitable by other competitors in the market.

Keywords: Enterprise Resource Planning (Erp) Systems, Competitive Advantage, Jordan, Management Information Systems.

Introduction

The intensity of global competition has led to significant changes in the way companies conduct their businesses. Also, world has seen tremendous changes and developments in technology, particularly in Information Technology IT, which increase the pressure on organizations to response to customers' demands and to achieve customer satisfaction. Organizations are struggling to reduce costs, increase business profits and improve their market share in order to gain and sustain competitive advantage. (Al-Rfou, 2003). This competitiveness encourages organizations to use new technologies, tools and sophisticated systems to respond effectively and efficiently to

the new environment. Organizations are forced to keep up to date and make huge investments in developing and implementing better technologies and systems through effective ERP. Against this background, the purpose of this research is to investigate the effect of adoption of the ERP systems on gaining competitive advantage in Jordanian companies from the viewpoint of managers. The next section develops the theoretical model, including presentation the study's hypotheses. Section 3 outlines the research method applied. The empirical results appear in Section 4. Sections 5 discuss and conclude the study.

Theoretical development and hypothesis formulation

An ERP system is a technology infrastructure which can assist enterprise in integrating internal department with external supplier and customers. According to Heizer & Render (2006), ERP is an information system for identifying and planning the enterprise-wide resources needed to take, make, ship, and account for customer order. Laudon & Laudon (2004) argued that, ERP is an enterprise-wide information system that integrates all business functions and processes in which information can freely flow between different departments within the organization. Generally, ERP systems contain several modules that support business functions such as manufacturing, inventory management, personal management and storage management.

Chuang & Shaw (2005) noted that ERP system whereby enterprises can integrate all their business processes through breaking barriers between different functional departments inside the organization in order to be more responsive and flexible and at the same time avoiding repeating the same task. ERP system has been considered as a part of the IT infrastructure which can smooth the flow of information among all business processes in an organization. Thus, in order for organization to be global, first it needs to build ERP systems as a backbone for their own company (Huang, M. (2004).

The main objective of an ERP is to provide a computer system linking all departments to one database in order to support operation activities, material acquisition,

manufacturing, product delivery, planning, and management sales. According to Barkmeyer & Algeo, (2000), ERP software is based on an underlying integrated database that stores master and transactional data in an a consistent manner which provides decision makers with very accurate information about the current situation of the organization in order to improve performance. ERP also provides the manufacturer with the mechanisms to monitor the current and potential situation of the enterprise and assist managers to keep abreast of the happenings in the organization. Essentially, ERP system improves the flow of information among organizational units, reduces administrative and maintenance costs, enhances timeline related information, and finally provides centralization of administrative activities.

However, ERP system has been defined by many researchers as enterprise-wide integration of data, information and business process. In fact, ERP can help enterprise in automating and integrating corporate cross-functions and also in organizing and standardizing data and business processes. In addition, ERP system facilitates information sharing by which, within Supply Chain Management SCM, enable closer cooperation between supply chain partners and thus reduce the cost of transaction.

ERP system has a significant impact on organization's legacy systems which improved flexibility in information generation, enhanced the quality of financial reports, increased integration of application, and finally made the maintenance of database easier. Hence, in order for companies to keep competitive in business

environment they need to implement ERP system. Kalling (2003) noted that ERP systems can assist organizations to integrate the computer systems of their different departments such as finance, marketing, human resource and sales to a single database. ERP system provides many benefits to the companies such as integration of financial data and standardization of manufacturing processes and information of human resource.

Also, the researchers investigated the effect ERP on competitive advantage (Davenport, 1998; Markus & Tanis, 2000; Ross, 1998 ;).

Kalling (2003) focused on how ERP systems and strategic management processes can lead to a competitive advantage. Hitt et al. (2000) argued that organizations have to create, transfer and apply knowledge to achieve a competitive advantage. Lengnick-Hall et al. (2004) argued that ERP exploitation should focus on building a new organizational structure, processes, procedures, policies and cultures based on the outcome of the ERP system. All these factors will contribute to achieve competitive advantage. Based on the literature reviewed above, this paper proposes the relationship between the ERP systems and competitive advantage to be positive. Therefore, it can be hypothesized that:

H1: There is a significant relationship between adoption of ERP systems and the different aspects of competitive advantage

H2: There is a significant difference among the respondents toward achieving a permanent competitive advantage.

Methodology

Sample selection and data collection

This study has been built on descriptive analytical approach and aims to analyse the relationship between the ERP systems and competitive advantage in Jordanian companies from the viewpoint of managers. The study population consists of all Jordanian companies which are adopt the ERP system. The data of this study has been collected using questionnaire. 25 questionnaires were distributed with 21 useful questionnaires forming 84% response rate. SPSS version 17 was used; the questionnaire has four sections measure the competitive advantage sources. The first section measures the high responsive to customers source, innovation source, quality source and efficiency source.

Measurement of variables

Multi-item questions were used to measure the impact of ERP on competitive advantage dimensions. The study's main variables are ERP system and the different sources of competitive advantage. These sources include high responsive to customers source, innovation source, quality source and efficiency source.

ERP system

A packaged business software system whereby companies can use and manage their business resources such as materials, operations, human, accounting and finance efficiently and effectively via integrating of information, process and functions needed by the related enterprises and extend to outsiders such as customers and suppliers. Nah & Lau (2001).

Competitive advantage

The ability of an organization to produce goods or services more effectively than competitors do, thereby outperforming them. Thompson, 2001

This means an organization must stay ahead in four areas: high responsive to customers, innovation, quality and efficiency. Kinicki 2006
Responsive to customers

The ability to deliver customer requirements in a timely and satisfactory manner.

Innovation

Finding ways to deliver new or better goods or services.

Quality-the total ability of product or services to meet customer needs.

Efficiency:

Using organizational resources wisely and cost effectively.

Kinicki 2006

Data analysis

This research seeks to investigate the effect ERP systems adoption on the achieving competitive advantage of Jordanian companies.

To achieve this objective, the relationship will be tested using the correlation analysis. Prior to perform the analysis, the researcher performed two tests to ensure the validity of study data. Firstly, the normality test was performed using Skewness and Kurtosis. The values for all variables are within the normal level as the values of Skewness are less than one. In addition, all the values of Kurtosis are less than 10 (Hair et al., 2006) (see Table 1).

Results

The current study aims to investigate *the effect of adoption the ERP systems on gaining*

competitive advantage in Jordanian companies from manager's viewpoint. A correlation test

was performed to test the related hypothesis which represents the relationship between the competitive advantage variable and the result of adoption the system which include customer response, innovation, quality and efficiency.

Table 2 shows the results of analysis. The result indicated a significant positive relationship between *adoption of ERP systems* and the first aspect of competitive advantage (quality). However, the result indicate a strong correlation between the two variables($r = 0.550$, $p=.01$).

In respect to the second aspect of competitive advantage (Innovation) the result indicate a strong correlation between the two variables($r = .938^{**}$, $p=.01$). However, the results also indicate a strong correlation between *adoption of ERP systems* and the third aspect of competitive advantage (efficiency). ($r = .533^*$ $p=0.05$). In respect to the last aspect of competitive advantage (responsive to customer) the result indicate a strong correlation between the two variables($r = .805^{**}$, $p=.01$).

Competitive Advantage

The second hypothesis, tests if there is a significant difference among the respondent toward achieving a permanent competitive advantage. The test this hypothesis, the dependent sample test was performed. The result of analysis shows that there is a difference in the opinions of respondents toward achieving the permanent competitive advantage. In particular, there is a difference in the mean (-0.0842). However, the result indicated that there is a difference in the opinion of respondent as $t= -0.311$ and $p\text{-value}= 0.759$. This means the competitive

advantage that achieved by adoption of ERP system was temporary as competitive advantage not sustainable as it is imitable by other competitors in the market.

Conclusions and Discussion

Based on the discussion in this paper, ERP is not just a back office solution, but it should be perceived by companies as a basis for their own infrastructure to gain opportunities from new technological environment and to compete in the local and global marketplace. Therefore, ERP system can provide firms with benefits such as inventory reduction, labor cost reduction, improved customer service, improved visibility, enhance flexibility and better access to information, and elimination of most manual or paperwork. However, in order to increase the success of ERP implementation and achieve better results from ERP systems, firms need to understand these benefits to improve planning for ERP systems.

However, the current study aims to investigate the effects of adoption the ERP systems on gaining competitive advantage in Jordanian companies from manager's viewpoint. Two hypotheses were developed to test the relationship between the competitive advantage variable and the result of adoption the system which include customer response, innovation, quality and efficiency. To achieve the research

objective, two types of analysis were performed. In general, the results indicated that there is a strong association between the adoption of ERP and the different sources of competitive advantage. Thus, it can be concluded that the study is proved the first hypothesis study.

To gain more depth, the researcher developed another hypothesis to test if there is a significant difference among the respondents toward achieving a sustainable competitive advantage. The result of analysis shows that there is a difference in the opinions of respondents toward achieving the sustainable competitive advantage as it is imitable by other competitors.

Despite that this study has some limitations related to the low study sample. It can be argued that this study is open many avenues for the future research agenda. There is a fruitful opportunities for future research to investigate the effect of ERP adoption on other issues such as the financial performance of the adopted companies, supply chain management and the corporate governance of Jordanian and other developing countries using larger sample.

Table-1:Descriptive Statistics

	Mean	Std. Deviation	Skewness	Kurtosis
Innovation	3.6857	.75252	.501	-.159
Quality	3.9365	.50132	.501	-.080
Efficiency	4.0595	.47371	.501	1.502
Response to customers	4.0794	.57643	.501	.967

Table 2:Pearson Correlation

	<i>Innovation</i>	<i>Quality</i>	<i>Efficiency</i>	<i>Response to customers</i>	<i>Permanent</i>
<i>Innovation</i>	1				
<i>Quality</i>	.404	1			
<i>Efficiency</i>	.378	.052	1		
<i>Response to customers</i>	.798**	.182	.211	1	
<i>Permanent</i>	.938**	.550**	.533*	.805**	1

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

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

H2: *There is a significant difference among the respondents toward achieving a permanent*

Table-3: Group Statistics

	APPLIC	N	Mean	Std. Deviation	Std. Error Mean
APPERP	PERMENANT COMPETATIV E ADVANTAGE TEMPORARY	3	3.8681	.35040	.20231
		18	3.9523	.44345	.10452

Table-4: Independent Samples Test

	Levine's Test for Equality of Variances		t-test for Equality of Means						
								95% Confidence Interval of the Difference	
	F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	Lower	Upper
APPE Equal variances assumed	.103	.751	-.311	19	.759	-.08426	.27102	-.65150	.48298
Equal variances not assumed			-.370	3.184	.735	-.08426	.22771	-.78587	.61735

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