ANALYSIS OF E-GOVERNMENT ADOPTION AND ORGANIZATION PERFORMANCE IN THE JORDAN BUSINESSES SECTOR

Mohammad Issa Al-Zoubi
Technology Management
University Utara Malaysia
MALAYSIA
Abu4212@yahoo.com

Dr. Thi Lip Sam
College of Business
University Utara Malaysia
MALAYSIA

Dr. Lim Hock Eam
College of Business
University Utara Malaysia
MALAYSIA

ABSTRACT

This study investigates e-government adoption among businesses in Jordan. Specifically, the objectives of the study are twofold: (a) to determine the status of e-government adoption among businesses in Jordan. (b) To examine the impact of e-government adoption on firms' performance. For purpose, an integrated theoretical framework for assessing e-government adoption, beyond initial adoption was developed. The responses of the 113 firms were used to determine the relationships organization performance and adoption of e-government. The result found the existence of significant relationship between the time and cost and efficiently the businesses e-government adoption. It is found that higher explicitness and accumulation of technology can help the transfer of technological knowledge within the organization and can raise the capability to adopt innovative technologies.

Keywords: E-Government; E-Commerce; Impact; Businesses; Organization Performance; Literature Review; Hierarchical Cluster

INTRODUCTION

The revolution in information communication technologies (ICT) has resulted in changes in many aspects of people's daily lives around the world. This revolution has also changed the way governments around the globe interact with their citizens, businesses, agencies, employees and other stakeholders (Lee, 2010). These changes and development have promoted the adoption of electronic government or e-government (Raus, Liu, and Kipp, 2010; Elsheikh, Cullen, and Hobbs, 2007). The revolution in ICT has raised the attention among researchers and the information system practitioners worldwide. The field of e-government has become an important subject around the globe (Siau and Long, 2006; Chen, Chen, Huang, and Ching, 2006).

E-government represents a pervasive notion that leads to changes in the way business is being conducted (Zhao et al., 2008) and businesses have an important role to play in a nation's economy (Awan, 2007, Almahamid, Mcadams, Kalaldeh, and Al-Sa'eed, 2010). Sizable investments are being made by the Jordanian government and by firms, including businesses, to initiate the adoption of e-government. However, many Jordanian firms which are reported to have e-government capability in general, are not using e-government for a large proportion of their transactions (MoICT, 2008). Furthermore, the knowledge on the stage of e-government penetration, firms' e-government adoption pattern, and the impact of e-government on performance among Jordanian firms have also been lacking due to the limited studies conducted on the issues of e-government adoption in Jordan.

The present study aims to identify the current status of Jordanian e-government adoption by the business sector in Jordan. It also aims to investigate the impact of e-government adoption on the organization's performance.

E-government is an increasing application area in the IT domain. One important benefit of using e-government services is obtain information about new business opportunities online (Ho, 2002). If businesses and governments are aware of the current status of e-government adoption, organization performance and, appropriate strategies can be employed to reduce some of the inherent barriers. Further, an understanding on the type of applications that support the usage of e-government can provide input to promote more business firms to access government services online (Zhao et al., 2008). In this aspect, this study provides online important information into in the field of G2B e-commerce. From a practitioner's perspective, it gives developers information on what features and tools are most useful for a G2B platform.

In general, the purpose of this study is to explore and investigate the organizational performance and the current status of the e-government adoption among businesses in Jordan. Although the commercial potential of G2B e-government is enormous, empirical evidence regarding firm e-government adoption initiatives are lacking and little is known about the factor that influences firm's participation in G2B e-government and its impact on organization performance (Alawneh and Hattab, 2009). These warrant present research to be conducted.

LITERATURE REVIEW

E-government initiative in Jordan is a national programme initiated by His Majesty King Abdullah II in 2000 and launched e-government portal in the last quarter of 2006. The initiative is aimed at improving government performance in terms of service delivery, improve efficiency, accuracy, reduce time and cost required to complete a transaction. In addition, e-government in Jordan aims to help integrate and coordinate various functions provided by different government agencies. The ultimate objective is to achieve an effective, efficient, transparent and better integration among government departments (Tadros, Hammam, and Al-Zoubi, 2008; MoICT, 2005).

The e-government initiatives in Jordan intend to move the nation's transformation into a knowledge society founded on a competitive, dynamic economy. As a part of its effort to transform its society, economy and government, Jordan is pursuing a national strategy for e-government aims to offer high quality services for citizens, improve performance and government efficiency, improve the competitiveness of Jordan , in the public sector transparency and accountability, reduce costs and improvement to ensure easy interaction with the government, to promote the development of the ICT sector in Jordan, the development of skills in the public sector to increase e-government activities, and the information security (MoICT, 2005).

In this study, they have discussed an interesting, but not entirely adopted and applied topic, value creation in e-business. According to Alawneh and Hattab (2009), empirical studies on e-business or e-government ventures and applications adoption among business organizations are rare in Jordan. The authors go beyond that and stated that:

"As far as we know this study is one of the first in Jordan that has attempted to evaluate the value of adopting e-business in banking services industry" (i.e., e-banking).

As such, research on e-government adoption among business has been limited in general. In particular, there is lack of academic research focusing on performance and current status of e-government adoption among businesses in Jordan.

Similarly, a study conducted by Zhao et al. (2008), aimed at investigating the user-interface characteristics and effectiveness of the e-government-to-business (G2B) sites of the 50 US states. They measure the functional capacity of each G2B service of four evolutional current status of web

site sophistication and functionality: informational activities allowing users to get information only; interactive use that enables users to get or search for information, as well as download forms, and send email; transactional activities allowing users to do business online such as filing tax documents, renewing licenses, and bidding contracts; and intelligent activities enabling users to create accounts and to personalize the site contents and services. The result shows that majority of the state G2B sites included the user-interface characteristics that provided online users with positive experiences when visiting the sites. However, the study identified some weaknesses (e.g. lack of online transaction capacity and lack of other important e-services) that caused negative experience to online users. However, the study ignored the impact of e-government adoption on the firm's performance. As a result, future research needs to focus on G2B adoption which helps strengthen their organization's competitiveness and growth from the manager's perspectives. In addition, the antecedent factors of G2B adoption were not investigated. As such, the present study differs from Zhao et al. (2008) which investigated the antecedent factors of e-government adoption among business organizations in Jordan as well as the influence of such adoption on the organizations performance.

To conclude, all previously discussed empirical studies highlighted the need for more studies to be conducted especially in the developing countries in order to investigate the influencing factors on the citizen and business adoption of e-government. In addition, the literature review indicates that there is lack of empirical evidence on the factors that influence business firms to adopt e-government as well as the influence of such adoption on the firm performance in Jordan. Furthermore, as there are mixed findings provided by different studies, several authors call for more investigations through empirical testing to confirm both negative and positive proposed relationships with the adoption decision in general. In some cases, the same authors provide inconsistent findings when they conducted the same study using the same framework but with different respondents. For example, Carter and Belnger (2005, 2004), in 2004, reported relative advantage to be significant in influencing student adoption of e-government, while in 2005, the same authors reported it to be insignificant in influencing citizens in general.

In terms of effectiveness, it has long been recognized that the possibility of being aware of the government new information would increase the organization performance, or at the best avoid loses. Access to updated information provided by the government and using this available information is the most important factor that contributes to the increase of business organization's effectiveness and performance. To name some of this information; economic indicators, future government investment project, agreements developed with other countries, credit or encouragement lines of various (Montagna, 2005).

Several authors highlighted the need for more research to investigate the impacts of IT adoption on the firm's performance (Barua et al., 1995; Crowston and Treacy, 1986; Davenport, 1992; Harrison, 1992; Lefebvre and Lefebvre, 2003). The reason for such an argument is that empirical findings on this relationship have been vague and non-conclusive over the past decade (Boyer and Olson, 2002; Gebauer and Shaw, 2002; Grandon and Pearson, 2003; Gunasekaran et al., 2002).

Several previous studies show positive relationship between IT adoption and firms performance (Steyaert, 2004; Bharadwaj, 2000; Bharadwaj, Sambamurthy, and Zmud, 2003; Hussin, King, and Cragg, 2002; Lang, 2002; Small Business Association, 2000). Other studies (Tippins and Sohi, 2003) show negative results between IT capability and organizational performance. Thompson et al. (2005) support these findings by observing a negative direct link between IT and firms' profitability. While Badri and Alshare (2008)'s findings show significant effects of time savings on firms' profitability. Results demonstrate that both revenue expansion (intelligence generation and new businesses) and cost reduction (time savings) have strong positive effects on firm performance and profitability. Furthermore, a study by Navarro et al. (2007) revealed that business performance does not affect e-government use. This agrees with Thompson et al. (2005) who suggest that enhancing the economic performance of the private sector may not be a priority for the government.

Research using subjective measures to examine the relationship between IT implementation and organizational performance has shown a more consistent pattern in result (Byrd and Marshall, 1997). Using Khandwalla's (1977)'s subjective measures on organizational performance, Cragg et al. (2002) found that when a firm's business strategy is aligned with IT, it is perceived to have better long term profitability, higher sales growth, stronger financial resources, and possess higher image and client loyalty compared to moderate and low-aligned firms (Cragg et al., 2002). Using similar measures, Ismail and King (2005) found SME's with accounting information system requirements aligned with accounting information system capacity, have achieved better organizational performance. In another study, Ismail (2007) found firms that employed sophisticated IT can generate sufficient management accounting information and thereby improve performance.

Alawneh and Hattab (2009) investigated the impact of e-business adoption on banking performance from the perspective of sales-services-marketing, internal operations and coordination and communication. The result shows that among the benefits are: enhanced internet communication, attracting new customers, competitive positioning, enhanced services, and improved supply. Ramamurthy et al. (1999) posited that the impact of EDI on firm performance is the consequence of TOE factors. Their empirical results indicated that the impact of EDI on operational and market-oriented performance was significantly affected by these factors. Iacovou et al. (1995) using the technology-organization-environment (TOE) framework, found that the impact of EDI on performance was directly affected by its level of integration with other IS and processes.

Porter (2001) laments that although technology such as internet helps firms to transact business with one another more easily; it also makes it more difficult for firms to capture such benefits as profits. A number of studies have also raised doubts on the benefits accrued as a result of IS or e-government adoption (Cagg and King, 1992; Montagna, 2005). For instance, the Cagg and King (1992) study based on business engineering firms indicates that there is no significant difference in terms of performance between firms with different levels of IS sophistication. Zhu and Kraemer (2002) measured performance using three dimensions: profitability, cost reduction, and inventory efficiency among manufacturing firms. Overall weak results were obtained from their study to support any significant relationship between e-government capability of firm and firm performance.

Based on that, this aspect of e-government adoption among businesses and its impacts on the firm's performance requires further investigation especially in the context of the Jordanian initiatives.

RESEARCH FRAMEWORK AND METHODOLOGY

A good number of e-government status models have been proposed throughout the literature which and were basically developed by either individuals or institutions. The literature review on the division status model of the application of e-government has divided them into various phases, whatever the division is; there are similarities and overlapping between the phases. However, the Ministry of Information and Communication Technology in Jordan has adopted the four stage model. These four stages are: presentation of information, mutual contacts, financial transactions and the integration of services.

In the e-government status models, content analysis has been found in the literature as a common method in evaluating government web contents, strategies, and deliveries (e.g., Zhao et al., 2006; Wilkinson and Cappel, 2005; Campbell and Beck, 2004; Zhao and Zhao, 2004; Boggs and Walters, 2006). The functional capacity of each G2B service was ranked on the basis of four evolutional phases of web site sophistication and functionality: (1) presentation of information allowing users to get information only; (2) mutual contacts which basically refers to users ability to get information, download forms, and send email; (3) financial transactions such as filing tax documents and renewing licenses (4) the integration of services that enable users to personalize the site content as well as create user's accounts (e.g., see Koh and Prybutok, 2003; Koh, Ryan, and Prybutok, 2005; McCarty and Aronson 2000, 2001). In this stage, all information systems are integrated and services can be obtained at one virtual centre (Baum and DiMaio, 2000). These four stages of e-government development were

further validated by Ebrahim et al. (2003) in a comparison study on all e-government adoption-staged models.

Previous empirical studies on innovation deployment and diffusion provide key reference for the research variables and items (Thompson and Rhoda, 2005; Ailawadi et al., 2001; Zhao et al., 2008; Boggs and Walters, 2006; Campbell and Beck, 2004; Wilkinson and Cappel, 2005; Zhao and Zhao, 2004; Zhao et al., 2006; Koh and Prybutok, 2003; Koh et al., 2005; McCarty and Aronson 2000, 2001). This study attempts to determine the current status level of e-government adoption among businesses. The level of adoption constitutes the types of applications that were identified as available sophistication and functions from the Jordanian e-government website (Elshehe et al., 2007). These available functions comprise of: how to get information, download forms, and send email, file tax documents, renew licenses, and bid contracts.

In this paper, respondents was asked to rate their level of agreement on five point Likert scales with four items. These items are: searching for general business information, locating governmental agencies, forms and applications using governmental web sites, conducting the actual transactions with government online, and filling out forms and submitting information online through governmental web sites.

Today's growing investment in e-government has increased the need to measure the outcomes of e-government adoption and implementation (Verdegem and Verleye, 2009). Although impacts due to IT adoption on firm's performance are an important variable for many studies, it is difficult to define and operationalize firm performance because of the ambiguity as to what firm performance is (Dess and Robinson, 1984).

Organizational performance was the dependent variable in this study. Researchers have offered a variety of measures of organizational performance. Subjective measures were used rather than objective measures as subjective measures have been shown to capture a broad concept like business performance (Khandwalla, 1977). The study adopted the instrument developed by Khandwalla (1977), based on the manager's assessment of the firm's performance relative to its competitors. Thus four items were used to measure long term profitability, availability of financial resources, sales growth, and image and client loyalty. Each was measured using a five point scale. Khandwalla found that these measures correlated fairly strongly with objective performance measures and they have since been validated in the small business context by Miller (1987) and Raymond et al. (1995). Both Khandwalla (1977) and Dess and Robin (1984) support the argument that subjective measures of performance correlate strongly with objective measures. Dess and Robin (1984) recommend using subjective measures, especially when accurate and reliable objective data are not available.

The impact of e-government for this study were examined in two perspectives, namely firm's overall performance using Khandwalla's (1977) subjective measures, along with other impact measures on business benefits of e-government (Zhuang and Lederer, 2003). The aims were to provide richer information about the impacts of e-government on businesses. Khandwalla's (1977) instrument was chosen because it has been widely adopted in previous studies and found to be effective in measuring firm performance (e.g. Bergeron et al., 2001; Cragg et al., 2002; Ismail and King, 2005; Ismail, 2007). Zhuang and Lederer's (2003) instrument was also adopted because it was specially developed to examine the benefits of e-procurement. The development of Zhuang and Lederer's (2003) instrument followed well-established principles for designing and validating a research instrument recommended by Churchill (1979).
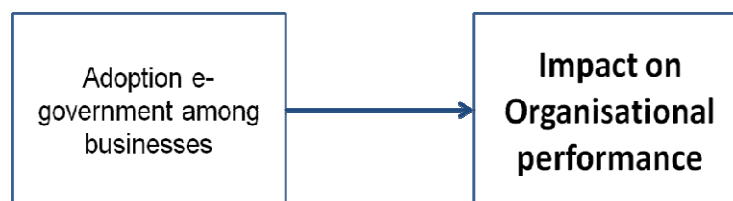

Figure 1. Organisational Performance of Adopting E-Government Among Businesses

DATA COLLECTION AND DATA ANALYSIS

The survey was conducted on 260 firms. A total of 113 responses were received representing 43.4% response rate. Statistical Package for Social Science (SPSS) was used to determine the causal relationship among the variables as proposed in the framework.

Reliability of Scales

The factor analysis established demonstrated the construct validity of the four factors. Having decided which variables are worth including in the final factors, each scale reliability score is then calculated and rechecked for this sample, using the test for reliability. Therefore, the next step is to test the internal consistency of each factor, using Cronbach's alpha.

Hair et al. (2003) quoted from Robinson et al. (1973, 1991) that generally the lower limit for Cronbach's alpha is 0.7, and it may be decreased to 0.6 in exploratory researches. Nunnally (1978) further suggested that an average reliability score of 0.70 would suffice for basic research.

Table 1. Comparing Original Dimensions to Final Dimension after Factor Analysis

Original dimension	Dimension derived after factor analysis	N. Items	Alpha (a)
	Performance		
Performance	Performance	4	.892
	Impacts		
Impacts	Time and cost	5	.871
	Efficiency	3	.892
	Effectiveness	3	.872

The four multi-variables factors used in this study underwent several successive reliability testing treatments. The statistical information for the four factors is given in Table 1 above. The results show that Cronbach's alpha scores are 0.892 or higher. Since the lowest score is 0.871, i.e. time and cost, all the constructs are deemed to have adequate reliability.

Descriptive Analysis for Organization Performance

Table 2 showed that respondents are moderate in all organization performance which includes 'performance', 'time and cost', 'efficiency', and 'effectiveness'. More specifically, the results showed the highest overall mean score of 3.62 was related to 'effectiveness' as it was about the possibility of being aware of the government new information would increase the organization performance. The lowest overall mean score was 3.26 which were related to 'efficiency' dimensions as it was about the the primary proposed object for any IT introduction.

Table 2. Descriptive Statistics for Organization Performance

N.	Statement	N	Mean	Std. Deviation
	Performance			
1	In long term profitability	113	3.78	.894
2	In sales growth	113	3.70	.743
3	In financial resources	113	3.53	.791
4	In firm image and client loyalty	113	3.50	.836
	Overall Performance	113	**3.62**	.551
	Time and cost			
1	Reduced operational cost	113	3.65	.810
2	Reduced work-process time	113	3.55	.813
3	Reduce error rates	113	3.57	.743
4	Reduce communication cost	113	3.50	.709
5	Reduce uses of paper	113	3.40	.701
	Overall Time and cost	113	**3.53**	.614

	Efficiency			
1	Fewer administrative burdens	113	3.36	.877
2	Increased customer satisfaction	113	3.17	.755
3	Fewer administrative burdens	113	3.25	.797
	Overall Efficiency	113	**3.26**	.736
	Effectiveness			
1	Improved quality of information supply	113	3.78	.894
2	Improve accuracy	113	3.70	.743
3	Improved service level	113	3.53	.791
	Overall Effectiveness	113	**3.64**	.723
	Valid N (listwise)	113		

Hierarchical Cluster

The most appropriate cluster analysis method is hierarchical clustering as a tool for solving classification problems (Rudzkiene and Martinaityte, 2010). Its object is to sort cases or variables into groups, or clusters, so that the degree of association is strong between members of the same cluster and weak between members of different clusters. Each cluster describes, in terms of the data collected, the class to which its members belong; and this description may be abstracted through use from the particular to the general class or type. Cluster analysis is a tool of discovery. It may reveal associations and structure in data which, though not previously evident, nevertheless are sensible and useful once found. The results of cluster analysis may contribute to the definition of a formal classification scheme, suggest statistical models or indicate rules for assigning new cases to classes for identification and diagnostic purposes or find exemplars to represent classes (Hair, 2006). Based on the Everitt et al. (2001) and as it is argued in the literature that hierarchical clustering is appropriate for smaller samples (typically < 150).

According to Hair et al. (2006), hierarchical clustering techniques have long been the more popular clustering method with average linkage probably being the best available. The average linkage method is chosen in this analysis as a compromise to the algorithms relying on a single observation (single or complete- linkage algorithm) while also generating clusters with small within-cluster variation. Ward's methods was not used because of its tendency to generate clusters of equal size, and determining cluster size variation in the sample is an important consideration in this research question (Hair et al. 2006).

In hierarchical clustering, the clusters are nested rather than being mutually exclusive, as is the usual case, that is, in hierarchical clustering; larger clusters created at later stages may contain smaller clusters created at earlier stages of agglomeration (Sharma 1996). The following results show a sample of the results of the hierarchical clustering, which results in a two clusters.

Table 3. Agglomeration schedule under hierarchical clustering

Stage	Cluster Combined		Coefficients	Stage Appears		Next Stage
	Cluster 1	**Cluster 2**		**Cluster 1**	**Cluster 2**	
1	43	113	.000	0	0	68
2	41	112	.000	0	0	40
3	42	111	.000	0	0	71
4	76	109	.000	0	0	20
5	28	106	.000	0	0	99
6	37	102	.000	0	0	43
7	72	101	.000	0	0	24
8	81	100	.000	0	0	16
9	82	99	.000	0	0	62
10	25	97	.000	0	0	46

Table 4 below shows the number of cases in each cluster and their percentages. The first cluster includes 74 firms (65.5%), whereas cluster 2 consists of 39 firms (34.5%) of the sample.

Table 4. Number of cases in each cluster

		Frequency	Valid Percent	Cumulative Percent
Valid	1	74	65.5	65.5
	2	39	34.5	100.0
	Total	113	100.0	
Missing		0		
Total		113		

Based on the initial cluster centers which include two clusters and gives the average value of each variable in each cluster, it can be observed that cluster (1) has the highest averages with all variables. In addition, referring to the clustering analysis result - cluster membership - confirmed this observation. For example firms (1, 7, 8, and 9) are in the first cluster which has the highest values, while firms 3, 10, and 11 are in the second cluster which has the lowest averages (see Figure 2 below). Based on this, as well as the mean average of each variable in each cluster, these two clusters could be named. The first cluster is labeled as advanced-adopters while the second cluster is named as basic-adopters.

	Information	Mutual	Financial	Integration	CLU2_2
1	4	3	2	4	1
2	4	4	3	4	1
3	2	3	1	3	2
4	4	5	3	4	1
5	4	4	3	3	1
6	4	4	2	1	1
7	3	3	4	2	1
8	4	4	3	1	1
9	4	4	3	3	1
10	3	3	2	3	2
11	3	3	1	2	2
12	5	5	2	2	1

Figure 2. Initial cluster centers

Exploring Relationship between e-government adoption and its impacts on Businesses

As explained in last section for measures have been derived to examine the impacts on businesses as a result of e-government adoption. Each measure was derived from a set of questions through factor analysis. The high reliability of these measures (Cronbach alpha > 0.70) provided confidence in the results obtained. The four measures of impact identified through factor analyses are: firm's overall performance, time and cost, efficiency, and effectiveness.

To find score for each factor, Singleton et al. (1993) proposed taking the average (mean) of the scores of the individual that constitute each factor. This method has been adopted by other similar studies (e.g. Teo and Pian, 2003, 2004). Figure 3 reproduces a partial diagram of the research framework discussed in methodology.
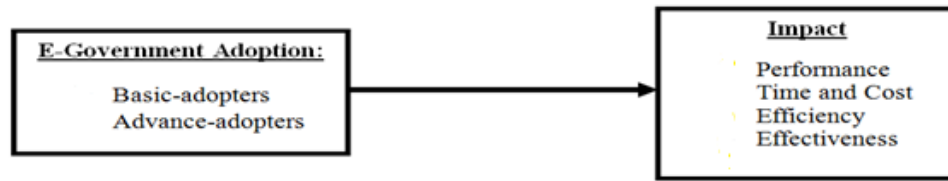
Figure 3. Relationship between E-Government Adoption and Impacts on Businesses

The correlation analysis is used to ascertain whether relationship exists between the extent of e-government adoption and the four impact measures. A non-parametric correlation test, namely Spearman's rho, is used for this purpose because the variables used, i.e. e-government adoption and impact measures, are comprised of an ordinal scale.

The result in Table 5 show that two is a significant correlation between e-government adoption and businesses time and cost (positive correlation of 0.214) and businesses efficiency (positive correlation of 0.198). Further analysis is conducted to provide a better understanding on the differences of impacts gained by the various adoption groups.

Table 5. Correlation Coefficients between E-Government Adoption and Impact Measures

Impact EG Adoption	Time and Cost		Efficiency		Effectiveness		Performance	
	Sig.	r	Sig.	r	Sig.	r	Sig.	R
Advance	.023	.214*	.036	.198*	.754	-.030	.576	.053

DISCUSSION

In this section discusses the result that emerged from the data analysis. Attempts will be made to explore how the result related to the findings from previous studies. The approaches adopted in this section are that the discussion will reiterate the highlights if the results are as expected, and if the results are unexpected, the discussion will be an attempt to reconcile. The results obtained from interpreting the adoption level and matrix will be discussed and followed by discussion on factors associated with e-government adoption.

Characterizing E-Government Adoption

Whilst the works of Thompson et al. (2009), Boggs and Walters (2006), Campbell and Beck (2004), Wilkinson and Cappel (2005), Zhao and Zhao (2004), and Zhao et al. (2006) have provided the approach to describe firm's e-government progression, these studies have focused mainly on whether an application has been adopted or not and whether there is any plan to adopt an application. This study has sought to extend existing adoption studies by focusing on both the range of e-government applications adopted and the extent of usage of each one in order to provide a comprehensive picture of the adoption of e-government by Jordanian businesses.

The finding from this study indicated two distinct groups have emerged, which reflected of the adoption of e-government among the businesses. To enable further analysis on e-government adoption, two groups of adopters are labeled as basic-adopters and advance-adopters.

Basic-adopters represented about 35 percent of the sample. The choices of applications being adopted by these businesses are limited. They have mainly adopted e-government applications which include searching for general business information (laws and regulations, financial, market and technology information), locating governmental agencies, downloading forms, and applications on governmental web sites.

On the other hand, the advance-adopters group represented about 65.5 percent of the total number of businesses in this study. Advance-adopters, in addition to adopting the applications of basic-adopters, also have adopted more sophisticated applications such as filling out forms, submitting information online and conducting transactions with government online.

One possible reason to explain the high percentage of advance adopters in the present study is the effort made by the Jordanian government since year 2000 concentrating in achieving high level of online services believing that e-government success can be achieved by enabling a complicated service online (MoICT, 2007; Mofleh and Wanous, 2008). Though the current status of e-government adoption for the basic adopter-group could be sufficient to meet their needs, however, the basic adopters group which represents 35 percent of the study sample shed the light on the need to improve government efforts in promoting as well as developing high quality online service among business firms in Jordan.

Organization Performance

Among the objectives of the present study is the examination of the links between e-government adoption and firm's performance. Apart from the Khandwalla (1977) subjective measures of firm performance, two measures of e-government benefits, namely time and cost and efficiency were used to examine the association between impacts on firms as consequences of e-government adoption. Although causal links could not be deduced from this study, the result managed to indicate that e-government adoption had an impact on businesses. The impacts accrued were different across various adoption groups.

The findings of this study indicate adoption of e-government have achieved better e-government efficiency and gained time and cost benefits. This is important, because it suggests a positive relationship between increased e-government penetration and increased positive impacts by businesses that have adopted e-government.

CONCLUSION

The study contributes to existing research by providing a means of capturing both adoption and extent of usage of e-government. The non-linearity of the adoption patterns observed in the study raises doubt in the validity of linear stage models to depict e-government adoption of businesses. With regards to factors influencing adoption, the study highlighted the importance of the role, knowledge and experience of the managers. The use of the part to depict current status of e-government adoption made it possible to determine details of the impacts of adoption, and specifically highlighted that positive impacts increased as adoption.

It was found that more advanced-adopters of e-government had gained more significant benefits from their adoption as compared to basic-adopters. In particular, more advanced-adopters achieve better time, cost and efficiency as well as gain strategic benefits such as better work efficiency, operational cost, and work-process time.

The time and cost and efficiency dimensions have an indirect effect on impacts of e-government adoption. The practical implication of this finding is that businesses will find e-government easier and beneficial to adopt and implement with managers as a supporter to drive e-government adoption. The model also suggests that impact of e-government will still be a function of drivers which determine the extent of e-government adoption among businesses.

This research introduced important determinants of innovation adoption and attempted to investigate their impact on e-government adoption in businesses in Jordan. The research results represent an important extension to the organization performance literature. Researchers could benefit from the research results and hence, they could further introduce more influences and investigate their impact on e-government adoption or focus their attention on certain determinants in this research. Researchers could replicate this study from the context of their own countries. Their results could be compared with findings in this research and hence, draw more commonalities and differences with the Jordan context.

The findings of the study provide important information for policy makers and those responsible for devising initiatives to encourage e-government adoption among businesses. Specifically, the study suggests that efforts to increase managers IT awareness and knowledge could play a significant part in increasing levels of e-government adoption among businesses. For Jordanian businesses, the findings provide a useful benchmark against which each business can assess their own level of e-government adoption and usage.

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