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E-GOVERNMENT ADOPTION AMONG BUSINESSES IN JORDAN

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ABSTRACT

This study investigates e-government adoption among businesses in Jordan. Specifically, the objectives of the study are twofold: (a) to determine the status (level) of e-government adoption among businesses in Jordan, (b) to identify the factors that drive e-government adoption among businesses in Jordan. For this purpose, an integrated theoretical framework for assessing e-government adoption, beyond initial adoption was developed. The responses of 113 firms were used to determine the relationships between technological, organizational, and external factors and adoption of e-government. The result found the existence of significant relationship between the technological, organizational, and external factors and the businesses e-government adoption. It is further 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; E-Business; Businesses; SMEs; 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).

Electronic government or e-government as some authors call it has become a pervasive global phenomenon in both industrialised and developing nations (Pacific Council on International Policy, 2002). E-government refers to the public sector uptake of technology applications to enhance services delivery to citizens, businesses, and other agencies, 24 hours a day, seven days a week (Seiferr and Bonham, 2004).

The general perception is that e-government uptake helps to reduce costs by making operations more efficient, serving citizens better and, reducing complex and over-stretched bureaucratic system (Basu, 2004). Therefore, the adoption of e-government has become a major for the policy planning by many countries which led to allocate significant amount of resources towards the implementation of e-government initiatives.

A broad definition of e-government is the use of ICT, particularly internet application by government to increase the availability of necessary information and services to citizen, business organisations and other institutions (Layne and Lee, 2001). Therefore, it is argued that enhancing economic development is one function of e-government. By using e-government technology, government can facilitates the delivery of and ease access to timely information and services to businesses and therefore, can be one type of customized assistance used by government to promote the economy. Ideally anyone who can access the internet can access the information and services. Presumably e-government could be used to enhance developing countries economic development.

Joseph (2009) has highlighted the importance of the interaction between government and businesses via the web environment that he refers to it as G2B. Past literature highlighted several advantages of business organizations adoption of e-government. For example, reducing the amount of time and money that businesses must spend to comply with rules and regulations (Awan, 2007). According to DeBenedictis et al. (2002), this can be done in five ways namely providing information in one easy-to-access location; simplifying and streamlining reporting requirements; reducing the number of forms; making transactions easier (paying fees, obtaining permits); and helping businesses understand what regulations apply to them and how to comply with them. Together, these capabilities can have a significant impact on a business's bottom line. Another significant advantage of such e-government is attracting foreign direct investment (FDI). E-government service uptake by the business organization helps in creating an attractive atmosphere for FDI. As reported by Kostopoulos (2006), some Arab countries including Jordan wanted to use e-government services to attract foreign direct investment (FDI) through transparency, accountability, and efficient public service towards the basic needs of individuals and businesses.

In addition, the Jordanian government realized the need to implement e-government in order to take advantage of the opportunities offered by international trade. Jordan would need more efficient, market-oriented customs regime to comply with World Trade Organization (WTO) requirements, capable of handling increased traffic at the borders while at the same time preventing the entry of pirated software (Tadros and Assem, 2006). As such, the Jordanian government has invested heavily in e-government initiatives for the last 10 years. However, it seems there is a lack of empirical evidence regarding the current stage of e-government adoption and what influence business organizations in Jordan to adopt e-government from the demand side perspective.

This study could provide information to the Jordanian government for future policy planning purposes and to enhance the adoption of e-government in Jordan. The knowledge resulted from Jordan's experience in implementation of e-government could also be used by other nations which aimed to embarked on similar initiatives.

Similarly, this study is important to e-government consultants and IT vendors for designing, developing and supplying hardware and software that could enhance the effectiveness and efficiency of e-government service deliveries that will indirectly drive the uptake of e-government systems among citizens.

The knowledge from this study could also extent the boundaries of e-government literature that can be shared by academics and researchers who are pursing research in this subject area.

REVIEW OF RELATED LITERATURE

Empirical suggestions of some e-government studies often differ with findings in the literature. Accordingly, lack of generalizability is frequently cited as one of the limitations in some empirical studies (Horst et al. 2007; Fu et al. 2006). For example, Deursen et al. (2006) makes an interesting observation despite similarities in Dutch and Scandinavian culture, welfare state, and political system; the usage of e-government vastly differs in these countries. The adoption early of ICT and higher levels of awareness about the use of technology helped search for e-government success in developed nations (Sheridan and Riley 2006). In comparing, businesses in developing countries are far behind in

adoption of ICT (Nikam et al. 2004). In Jordan, for example, e-government research is in its early stages (Elsheikh et al., 2007) and the level of change ICT would bring to the Jordan will be huge, can hardly afford to be left behind in harnessing the benefits of implementing e-government (Mofleh and Wanous, 2008).

The literature review suggested various types of stage models. Some have three phases, four phases, five phases, or more. However, there are similarities and overlap between these phases. Whatever the stages model is, essential stages should be included. These are publishing, transaction and integration stages. Based on that, during the e-government's lifecycle, what are the stages that it should move through still without a common agreement? One of the most used, is Gartner Group's (2004) model that classified e-government services offered online into four evolutionary phases: (1) publishing (web presence) is the earliest stage where static information about the agency mission, services, phone numbers and agency address are provided for further communication; (2) interacting is goes one step further by enhancing the site's features with search capabilities and intentions-based programmes; (3) transacting is focus to build self service application for public to access online. Typical services such as tax filling and payment, driver's license renewal are available; and finally (4) transforming is considered to be the long-term goal of almost all government services.

A study conducted by Al-Qirim (2007) to examine the factors that influencing adoption and diffusion of e-commerce in developing countries to streamline its business processes and information flow to businesses in Jordan and to other international businesses interested in the Jordanian market. As result, positive relationships between innovation adoption and (relative advantage, compatibility, image, top management support, size and resources, quality of IS, and competition) and negative relationships between innovation adoption and (complexity, trialability, observability, cost, user involvement, product champion, suppliers buyers, and technology vendors). Al-Qirim (2007) highlighted different drivers and impediments to the adoption decision of e-commerce in one nongovernmental organisation (Jordan House of Commerce) in Jordan. However, this study was limited to an exploratory focus of issues surrounding e-commerce adoption and success in one nongovernmental organisation in a developing country. Looking at organisational factors such as perceived benefit, security, IT infrastructure, government pressure, business nature, organisation culture, top management support, financial recourse and examining their impact on the adoption decision process were not a focus in this study and, hence, they were left as potential future research areas. As such, future research can focus on extending this study to other organisation such as Amman Stock Exchange (ASE).

Study conducted by OECD (2003) examined several countries' experiences with implementing e-government including Denmark, Canada, Australia, Mexico, Germany, and the US. This study compared and evaluated the differences of implementing e-government among these selected OECD countries. In addition, they focused on the obstacles and challenges that should be overcome in order for e-governments to develop. The findings showed that the most important challenges facing governments today and in the future include lack of funds, overall costs, lack of accountability, shortage of skills, and difficulties of monitoring and evaluating e-government programs. While the OECD (2003) focused on the OECD countries, in the same year, Heeks (2003) conducted a study in order to examine the failure and success rates of e-government in developing or transitional countries. Results show that 85% e-government initiatives face a total or partial failure and only 15% were successful. Heeks (2003) provides potential reasons for such failure by highlighting the problem that often arises with developing countries which is that there is frequently a mismatch between the current and future systems, due to the large gap in the economic, cultural, physical, and various other contexts between the software designers and the place it is being implemented. The model has led Heeks (2003) to identify archetypes of situations where design reality gaps are common. These are summarized below:

- Hard-Soft Gaps: the difference between the actual technology (hard) and the social context (people, culture, politics etc.) in which it operates (soft).

- Private-Public Gaps: the difference between the private and public sectors means that a system that works in one sector often does not work in the other one.

- Country Context Gaps: the gap that exists when trying to use the e-government systems for both developed and developing countries.

As such, there is scope for further research in both the areas of failure and success of e-government in developing countries, and undoubtedly as more real world cases come forth, so will new interpretations.

THEORETICAL FOUNDATION

The foundation of many previous information system and innovation adoption studies were based on the theoretical frameworks derived from Fishbein and Ajzen's (1975) theory of reasoned action (TRA); Theory of Planned Behaviours (TPB) Ajzen's (1985); Davis' (1989) technology acceptance model (TAM); Rogers' (1983,1995) diffusion of innovation (DOI) theory; and Tornatzky and Fleischer's (1990) TOE model. While some of these theories are able to explain the organisation level of innovation adoption, other focused on the individual acceptance of new technology (see Table 1).

Table 1. Applicable theories

Theories (Author)	Factors	Usage	Selected Articles Using the Theory
Diffusion of innovation (Rogers, 1995)	Relative Advantage Compatibility Complexity Trialability Observability	Acceptance of any new innovation Such as e-initiative, computer, internet	Korteland and Bekkers, 2007; Carter and Belanger, 2005; Fu et al., 2006; Schaupp and Carter, 2005
Technology-Organisation-Environment (Tornatsky and Fleischer, 1990)	Technology Organisation Environment	Adoption of a technology or innovation such as e-government , mobile, PDA, e-commerce, internet banking	Al-Qirim et al., 2007; Mohamad and Ismail, 2009; Ramdani et al., 2009; Wang and Ahmed, 2009
Technology Acceptance Model (Davis, 1989)	Perceived Usefulness (PU) Perceived Easy Of Use (PEOU)	Acceptance of innovation of technology such as mobile, e-initiative, PDA, e-vommerce, internet banking	Trkman and Turk, 2009; Colesca, 2008; Carter and Belanger, 2005; Dimitrova and Chen, 2006; Gilbert et al., 2004; Horst et al., 2007; Lau et al., 2008; Carter, 2008. Walczuch et al., 2007; Wang et al., 2006
Theory of Planned Behaviours (TPB) Ajzen's (1985)	Attitude toward Using (A) Subjective Norm (SN) Perceived Behavioral Control (BC)	Improved the predictability of intention in various health-related fields such as condom use, leisure, exercise, diet	Horst et al., 2007; Warkentin et al., 2002.
Theory of Reasoned Action (TRA) Fishbein and Ajzen's (1975)	Attitude Toward Behavior (A) Subjective Norm (SN)	Most use in medical innovation such as dieting, condom, limiting sun exposure	Trkman and Turk, 2009; Napoli and Ewing, 2000;

An individual acceptance and adoption of innovation differ from organisation innovation adoption in terms of the factors that influence such adoption (Moon and Norris, 2005; Titah and Barki, 2006). An organisational innovation is defined as a new process, system, or service that is either internally developed or purchased from an external source (Damanpour and Evan, 1984). As the definition suggests, organisation replace exciting process with new one (innovation) in the hope of improving

the effectiveness as well as the efficiency of the organisation performance (Gallivan, 2001). One major reason for such innovation is the environmental where the firms operate. The pressures that drive firms to adopt innovation caused by competition actions and the firm struggle of have competitive advantage (Teo et al., 2003). Therefore, using Rogers's theory of DOI with combination with TOE framework would provide a useful theoretical framework to explain the organisation adoption of any e-initiative in general and e-government among business organisation in particular (Mohamad and Ismail, 2009; Ramdani et al., 2009; Lippert and Govindarajulu, 2006). Such approach could provide strong empirical support to e-government adoption research and account for the technological, organisational, and external influencing e-government adoption among business organisations (Al-Qirim, 2007).

To gain a comprehensive view on what factors may shape the adoption of e-government, the TOE framework by Tornatzky and Fleischer (1982), will also be adopted. The TOE framework identifies three aspects of an organizational factor that influence the process by which it adopts and implements a technology innovation. These dimensions are technology factors, organization factors, and environment factors. A review of the success factors of e-government literature would suggest that the technology-organization-environment (TOE) framework (Tornatzky and Fleischer, 1990) is an appropriate starting point to our research.

The technological factors describe the characteristics of the innovation in question as well as the organization's internal technological landscape (Tornatzky and Fleischer, 1990). For the purpose of our research, relative advantage, compatibility, security, and IT infrastructure were examined.

The organisational factor represents the different mechanisms, structures and characteristics that influence the propensity of adoption and assimilation of an innovation (Tornatzky and Fleischer, 1990). The organizational attributes included are the top management support, resources, and organisation culture which are important to IT implementation in organization.

The External factors examined the organisation's external landscape (Tornatzky and Fleischer, 1990). For the purpose of our research, competition pressure and government support was examined.

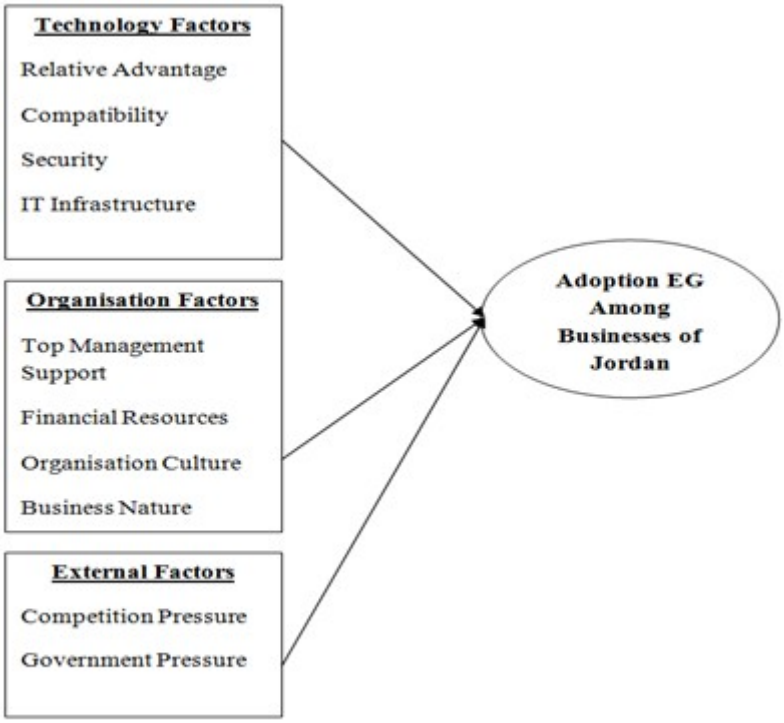

Figure 1. Trend of research on e-government among businesses

OPERATIONALIZATION OF VARIABLES

The proposed framework of this research consists of two parts. The first part is the e-government's antecedent's factors which are the technological, organisational, and external factors. The second part is the e-government adoption among business in Jordan which is operationalized in general as the firm's uptake and use of the various available functions and services provided by the Jordanian e-government which range from getting information to conducting transactions with government online. Table 2 below shows the operational definitions of the variables used in this study.

Table 2. Research variables and operational definitions

Variables	Operationalization	Number of Items	Items Source
E-government Adoption	The firm's uptake and use of the various available functions and services provided by the Jordanian e-government which range from getting information to conducting transactions with government online.	4 items	Zhao et al., 2008
Technological Factors	The existing and new technologies relevant to the firm that play significant role in the firm's adoption decision as it determine the ability of the firm to benefits from e-government initiative.	16	-
Organizational Factors	Descriptive measures related to organization structure, financial support, and top management support.	18	-
External Factors	Competition and government pressures that act as environmental external factors which drive firms to adopt new technology.	10	-
Relative Advantage	The degree to which an innovation is perceived as being better than the idea it supersedes.	4	Moore, 1991
Compatibility	The degree to which an innovation is perceived as consistent with the existing values, past experiences, and needs of potential adopters.	4	Premkumar, 2003
IT Infrastructure	Hardware and software that enable users to do secure internet related business.	5	Ramamurthy, 1999
Security	Perception and fear of safeguarding mechanisms for the movement and storage of information through electronic databases and transmission media.	3	Jones and Beatty, 1998; Fulford and Doherty, 2003
Organisational Culture	Second order construct that consisted of four traits. These are adaptability, mission, involvement and consistency.	8	Denison et at., 1995
Top Management Support	The extent of commitment and resource support from Organisation's top management for e-government adoption.	4	Sutanonpaiboon and Pearson, 2006
Resource	Allocation and spending of the amount of money required to support activities and obtain the necessary human and other resources such as hardware and software licenses.	6	Sutanonpaiboon and Pearson, 2006
Competitive	Pressure derived from the advantages that		Sutanonpaiboon

Pressure	competitors enjoy when they adoption new technology, in which a firm has to consider whether or not to follow its competitors, or threat of losing competitive advantage, forcing firms to adopt e-government.	5	and Pearson, 2006
Government Pressure	The government support and promotion of e-government adoption among business.	5	Sutanonpaiboon and Pearson, 2006

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.

A principal component analysis with varimax rotation was executed to examine the factor structure of e-government adoption antecedent measures. Four technological factors with the eigenvalue above 1.0 arose and they were generally consistent with the constructs proposed, representing the themes of relative advantage, compatibility, security, and IT infrastructure. These four factors altogether explained a total of 75% of the variance. Items were retained in a factor if they had a loading at or above .5 on that factor, and the differences between this loading and two other cross-loadings (Hair, 2006). Based on the final factor structure and the component variables, four different factors with the variables in each factor were identified. In addition, all the rotated variables were returned as there was no cross loading of variables of more than 0.5 observed. In order to provide meanings to each factor, these factors were labeled based on the meanings of the variables in each factor. Factor 1 consists of five items related to IT infrastructure; therefore, this factor was labeled as 'IT infrastructure'. Factor 2 had four items related to relative advantage, so this factor was labeled as 'Relative advantage'. The third factor consists of four items all related to compatibility, as such this factor was labels as 'Compatibility'. Finally, three items were grouped in the last factors which all related to security. Thus, this factor was labeled as 'Security'.

Three organisational factors with the eigenvalue above 1.0 arose and they were generally consistent with the constructs proposed, representing the themes of top management support, resources, and organisation culture. These three factors altogether explained a total of 76% of the variance. Based on the final factor structure and the component variables, five different factors with the variables in each factor were identified. In addition, all the rotated variables were returned as there was no cross loading of variables of more than o.5 observed. In order to provide meanings to each factor, these factors were labeled based on the meanings of the variables in each factor. The first factor consists of four items all related to the adaptability and mission of the organization; therefore, this factor was labeled as 'Organization adaptability and mission'. Factor two had four items all were related to the involvement and consistency of the organization, so this factor was labeled as 'Organization involvement and consistency'. The third factor consists of four items all related to the support of the top management, as such this factor was labels as 'Top management support'. The fourth factor had items related to human resource in the organization, and therefore this factor was labeled as 'Human resource'. Finally, three items were grouped in the last factors which all related to financial resources. Thus, this factor was labeled as 'Financial resources'.

Two external factors with the eigenvalue above 1.0 arose and they were generally consistent with the constructs proposed, representing the themes of competition pressure and government support. These two factors altogether explained a total of 60% of the variance. Based on the final factor structure and the component variables, tow different factors with the variables in each factor were identified. In addition, all the rotated variables were returned as there was no cross loading of variables of more than 0.5 observed. In order to provide meanings to each factor, these factors were labeled based on the meanings of the variables in each factor. Factor 1 consists of five items related to government

support; therefore, this factor was labeled as 'Government support'. Factor 2 had five items related to competitive, so this factor was labeled as 'Competitive'.

Testing for reliability could be achieved by calculating the Cronbach alpha. All the constructs were found to have adequate alpha value (>0.7) (Table 3).

Table 3. Comparing original dimensions to final dimension after factor analysis

Original dimension	Dimension derived after factor analysis	N. Items	Alpha (a)
Technology Factors			
Relative Advantage	Relative Advantage	4	.897
Compatibility	Compatibility	4	.888
IT Infrastructure	IT Infrastructure	5	.864
Security	Security	3	.887
Organisational Factors			
Resources	Human Resources	3	.774
	Financial Resources	3	.892
Top Management Support	Top Management Support	4	.832
Organizational Culture	Organization Adaptability and Mission	4	.896
	Organization Involvement and Consistency	4	.884
External Factors			
Competition	Competition	5	.798
Government Support	Government Support	5	.847

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).

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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 4. Agglomeration schedule under hierarchical clustering

stage	Cluster Combined		Coefficients	Stage Cluster First 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 5 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 5. Number of cases in each cluster

Average Linkage (Within Group)

		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.

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	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

Binary Logistic Regression

The binary logistic regression analysis was performed to identify factors which were associated with adoption groups namely basic and advance adopters. Backward eliminations, a method of stepwise regression were used as it would retain only the predictor variables that were statistically significant in the model (Menard, 2002).

The preliminary results of the chi-squared tests and pseudo R square values that measure the effectiveness of the regression model (testing the overall fit of the model) showed that the chi-squared differences was significant at 0.00 level (Table 6 below). In other words, the improvement in the results after the predictor variables were included provides evidence that the predictors were indeed associated with adoption.

Table 6. Model fitting information

	-2 Log Likelihood	Chi-Square	Df	Sig.
Intercept Only	145.630			
Final	87.531	58.099	11	.000

In addition, Table 7 below shows that Nagelkerke R square value of 0.402 for the overall model. The results indicate the model could explain approximately 40% of the variance in the dependents variables. Nagelkerke R square is chosen because it is a modification over the Cox and Snell R square and has a range of 0 – 1.

Table 7. Pseudo R-Square

Pseudo R-Square	
Cox and Snell	.402
Nagelkerke	.555

The Wald statistic is used to evaluate the statistical significance of each predictor variable in explaining the dependent variable, and Wald statistic indicates whether the β-coefficient for a predictor is significantly different from zero. If so, then the predictor variable is assumed to make a significant contribution to the prediction of the outcome of the dependent variable.

Table 8. Binary logistic regression model

Current Status [a]		B	Std. Error	Wald	df	Sig.	Exp(B)	95% Confidence Interval for Exp(B)	
								Lower Bound	Upper Bound
Advance	Intercept	7.649	3.585	4.552	1	.033			
	Relative Advantage	1.286	.581	4.901	1	**.027**	.276	.089	.863
	Compatibility	.253	.449	.317	1	.573	1.287	.534	3.102
	IT Infrastructure	1.398	.598	5.466	1	**.019**	4.045	1.253	13.054
	Security	.197	.490	.161	1	.688	1.217	.466	3.181
	Competition	1.246	.598	4.343	1	**.037**	.288	.089	.929
	Government Support	1.282	.509	6.340	1	**.012**	3.602	1.328	9.768
	Adaptability & Mission	.995	.436	5.205	1	**.023**	2.704	1.150	6.354
	Involvement &Consistency	2.006	.468	18.378	1	**.000**	7.434	2.971	18.600
	Top Management Support	.598	.569	1.107	1	.293	1.819	.597	5.542
	Financial Resources	.919	.463	3.945	1	**.047**	.399	.161	.988
	Human Resources	.530	.510	1.081	1	.299	1.700	.625	4.622

a. The reference category is: Basic.

Table 8 above shows the summary of the results from the binary logistics regressions. Seven predictor variables, namely relative advantage, IT infrastructure, competition, government support, adaptability and mission, involvement and consistency, and financial resources, were found to be significantly associated with e-government adoption.

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.

Factors Associated with E-Government Adoption

One of the objectives of this study is to identify factors that are associated with e-government adoption. This section discusses the results based on the findings from the analysis. The binary logistic regression was used to examine the association of technological, organizational and external factors as independent variables against the two adoption groups.

The findings from this study indicate seven of the eleven factors are significantly associated with various stage of e-government adoption. Among the independent variables relative advantage, IT Infrastructure, organization adaptability and mission, organization involvement and consistency, financial resources, competition, and government support have been found to be significant determinants of businesses adoption of e-government. 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. Jordanian firms can increase their technological innovation capabilities by encouraging or supporting their employees to adopt e-government and by training and educating their employees. Not surprisingly, TOE factors have been found to be significant. The finding from this study confirmed the important roles played by TOE in e-government adoption, and are consistent with findings from previous information system studies conducted by Alawneh (2009), Thompson et al. (2009), Salwani (2008), Lin (2008), and Al-Qirim (2007).

CONCLUSION

The Jordanian government may have to concentrate on achieving high quality low level informative services before moving to more advanced levels. This will give the government the time to focus on simple e-government adoption that are more responsive to their needs and at the same time establish a positive online relationship with businesses, while at the same time working on increasing the number of internet users in Jordan before paving the way to more advanced levels of e-government adoption.

Continuous improvement of these e-services is needed among the stage currently offering such e-services without transactional and intelligent capacities since such e-services play important roles in enhancing the stage economic competitiveness (Brush, 2007; State of Nebraska, 2001).

This study was limited to businesses from the industry, insurance, services, and banking sector. In order to have a complete picture of e-government adoption, future research should also be conducted on other sectors such as hotel, hospital, and communication sectors. Finding from other sector firms would be useful in providing a comparison of the nature of e-government adoption between other sector firms.

In terms of generalizability to other countries' e-government services, results of this study can be expected to apply in general to countries with large government sectors. They will have to be interpreted with caution for countries that are very different in their business environment, business culture, and political system. Additionally, there is inadequate empirical research to support meaningful generalization across different countries in terms of e-government adoption. To facilitate comparisons across different countries, more research is needed, given the scarcity of research in this area.

The current study concentrates only on G2B but the developed framework can be utilized to carry out comparative study among various forms of e-government such as government to government (G2G) or government to employees (G2E) context which will provide knowledge on the topic of e-government adoption.

Future studies can investigate the adoption decision according to businesses. Organizations from different businesses face different operating conditions and may possess different requirements. For example, business conditions in a manufacturing industry are different from that in a pharmaceutical industry. Such findings may be invaluable in delivering more effective and targeted administrative services.

The respondents chosen for the study have been taken from various industries but the model is confined to single-country context. Hence, the research fails to provide comprehensive information for other industries in other counters. Therefore, further research is called for the purpose of providing a comprehensive insight using similar framework to be conducted in other counters such as Syria, Iraq, Yemen, and Gulf countries.

Similarly, the adoption analysis can also be carried out from the perspective of individuals and households as the e-government services provided by the Jordanian government involves various customers comprising of both businesses and individuals. It is, suggested for future research to explore the various factors impacting the decisions of individuals and households whereby the differences between them will provide knowledge on what kinds of e-government services are needed for these categorize as adopters facilities and services for both groups of users.

The research model of the current study has integrated two theoretical research streams which are (TOE and the literature on innovation diffusion). Hence, this research can be a starting point for further research focusing on the adoption decisions of others technologies such as technology competence, image, and technology readiness. In addition, the previous theoretical framework of innovation diffusion has been less effective towards the adoption decision of e-government services. On the other hand, it is believed that this framework could be used to explain the adoption of other technologies (delivered via World Wide Web and others). In terms of the obstacles of adoption, the factors referred to the organizational perspective have been found to be insignificant in this study still a sufficient theory for understanding successful technology adoption. However, it is important to continue to explore other of each model factor in technologies in future studies.

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