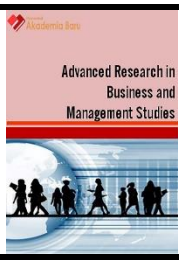
Penerbit Akademia Baru

Journal of Advanced Research in Business and Management Studies

Journal homepage: www.akademiabaru.com/arbms.html
ISSN: 2462-1935



Antecedents and Impacts of Electronic Procurement Usage among Jordanian Large Firms

Open Access

Luay Daoud[1,*], Marhaiza Ibrahim[1]

[1] Tunku Puteri Intan Safinaz School of Accountancy, College of Business, Universiti Utara Malaysia, 06010 Sintok, Kedah, Malaysia

ARTICLE INFO

Article history:
Received 16 January 2019
Received in revised form 26 February 2019
Accepted 13 March 2019
Available online 24 March 2019

ABSTRACT

E-procurement usage enables the organization to reduce business cost, access wider market and streamlining purchasing processes. Despite these benefits, the Ministry of Information and Communications technology in Jordan reported showed only 27.6% of the firms in Jordan use the e-procurement system, therefore the e-procurement usage among Jordanian firms still in early stage. This study employed a self-administered questionnaire survey for data collection purpose. The research model was validated based on the responses from 221 large firms in Jordan. Making an overall 40% response rate, and were analyzed using Partial Least Squares Structural Equation Modelling (PLS-SEM). The outcomes of this study show all technological, organizational and environmental factors used in this study were found to have influenced e-procurement usage among businesses. Furthermore, a significant positive association existed between e-procurement usage and firm performance. To conclude, this study has provided important insights to the government which could assist in designing and initiating suitable policies and programs to enhance the level of diffusion.

Keywords:
Electronic procurement, DOI theory, TOE framework, RBV theory, firm performance

1. Introduction

The performance of Jordanian firms still underperforming and still needed more techniques to enhance their performance and increase their competitiveness around the world [1]. The firms experience extraordinary performance in commercial operations when they apply information technology (IT) as a business model and use electronic supply chain management operations [2]. To improve the firms' performances, they must consistently enhance their interior procedures and operations. The purchasing process which involves the incursion of enormous administrative expenses between buyers and suppliers is one of the cost-intensive operational chains. To overcome such predicament and minimize the business cost, many firms have adopted e-procurement to simplify the complication of the procurement process [3]. E-procurement system seeks to achieve greater efficiency in the firm performance, by enhancing the performance of purchasing process [4].

* *Corresponding author.*
E-mail address: Luaydaoud1@gmail.com (Luay Daoud)

E-procurement enables the organization to reduce business costs, reduce purchasing time, accessing wider markets and streamlining purchasing processes [5]. E-procurement has provided an opportunity for top managers to boost the profitability and competitiveness of the businesses by smooth purchase order processes, expanding supplier bases, simplifying purchase payment and reducing cost [6]. Given the potential benefits of the e-procurement system, numerous companies worldwide have already adopted e-procurement in an attempt to leverage this to survive in the present competitive environment.

E-procurement define as an organizational application of IT in setting up agreements, facilitate the Business to Business (B2B) procuring transactions for goods and services, and requesting price quotation [7-10]. E-procurement is a Business to Business (B2B) purchasing practice (Teo, Lin, and Lai (2009b). According to De Boer, Harink, and Heijboer [12], e-procurement is consisting of many functions, which includes e-sourcing, e-tendering, e-information, e-auction, e-MRO, Web-based enterprise resource planning (ERP) and e-collaboration.

In the past decade, the value of e-procurement worldwide has increased rapidly. According to the United Nations Conference on Trade and Development (UNCTAD), the estimated volume of e-procurement worldwide in 2013 was more than $15 trillion. More than 33% of the total volume was generated by the United States, the People's Republic of China, Japan, and the United Kingdom [13]. Based on these figures, the growth of e-procurement is accelerating in the developed countries rather than the developing countries.

Jordan is a developing country, the e-procurement usage in Jordan has grown significantly over the last few years [4]. As a developing country, Jordan shows readiness for e-procurement compared to other developing countries; however, there are still limitations to e-procurement usage in Jordan [14]. Although with the growth of e-procurement in Jordan, there are many challenges enforced to use e-procurement [14]. Despite the benefits of e-procurement usage, Ministry of Information and Communications Technology [15] in Jordan found only 27.6% of the businesses use e-procurement system. In addition, research in the Middle East region is limited, especially for Jordan. This present paper fills the research gap by examining the determinants that influence e-procurement usage in Jordan.

This paper investigates the subject of whether the e-procurement usage influence on the firm performance among large firms in Jordan, by using the Resource Based View (RBV) theory, which intensive usage IT such as e-procurement system lead to a greater level of value and impact on firm performance [16]. In addition, this paper investigates the influence of Technology-Organization-Environment (TOE) factors on the e-procurement usage, through Diffusion of Innovations (DOI) theory and TOE framework.

This study offers several contributions to researchers and practitioners. For researchers, this study has incorporated DOI theory, TOE framework and RBV theory to examine key elements that facilitate or inhibit the firms to e-procurement usage and impact of e-procurement usage on firm performance, and to improve our comprehension of the current e-procurement usage among Jordanian firms. As for the practitioners, this study focuses on TOE factors that promote greater use e-procurement and to offer a number of suggestions to senior management to facilitate greater diffusion of e-procurement technologies.

2. Theoretical Foundation

This present paper seeks to investigate the usage of e-procurement and its performance in terms of an organizational viewpoint. The majority of influencing determinants come from two distinct perspectives. Firstly, perspective covers the intra-organizational determinants while the second

perspective studies the institutional perspective that influences the decision of application [17]. Intra-organizational studies investigate the determinants that influence the assessment of organizational capability and innovation desirability by assessing the characteristics of innovation [17]. Meanwhile, the institutional perspective considers the organizational behavior is influenced by the social context in which the organizations operate [17]. The first research approach focuses on the variables influencing innovation usage decisions while the second approach examines the antecedents and the impact of innovation usage.

With regard to the first approach, reviewing the earlier literature suggests that the DOI theory and TOE framework provide a useful starting point to look at e-procurement usage. The second approach grounded on the rationale of RBV that firms create value and impact by combining various resources that are economically difficult to imitate or valuable across firms [18]. DOI theory proposed by Rogers [19] evaluated innovation by using five characteristics known as innovation attributes, namely, relative advantage, compatibility, complexity, observability, and trialability. Nonetheless, studies show that three determinants – relative advantage, compatibility, and complexity are consistently associated with technology usage [18,10]. Hence, these determinants were used in this paper.

Organizational characteristics also explain the role in determining the efficiency of innovation [17]. It facilitates assessment of an organization's ability to successfully use any type of innovation [20]. According to previous studies, one of the most important organizational factors that help firms to usage innovation is organizational readiness [17,21,22]. Information System (IS) committee another organizational factor may help organization to usage e-procurement through reviewing and monitoring management's strategies for developing or implementing new technologies and reviewing the post-implementation results of all key technology projects [23]. In terms of environmental factors that are associated with IS usage, the literature has identified many factors that affect the usage decision. Two major external pressures encountered by businesses are competitive pressure and government supports [24]. According to Al-qirim [25], the Jordanian government did not support any technical or financial support to motivate IT. Hence, this study focuses the role of government on issue the rules and regulations which can promote the usage of e-procurement among businesses.

The TOE framework considers three contextual determinants- technological, organizational, and environmental that could impact the management's decision on innovation adoption in terms of e-procurement. Hassan, Tretiakov, Whiddett, and Adon [26] stated that the TOE serves as the fundamental framework that enthused most previous research in the explanation of precursors of e-procurement usage. The present study combined the DOI theory, TOE model with the RBV theory in the research framework. RBV theory work to explain the relationship between e-procurement usage and its perceived impacts. Innovation impact depends on the extent to which innovation is used to support key activities of the firm's value chain [16]. The greater the use, the more likely the firm is to develop unique impact from its innovation [27]. RBV provides a theoretical basis for linking e-procurement use and impact [16].

3. Conceptual Framework and Hypotheses

The present study's conceptual framework incorporates DOI theory, TOE framework, and RBV theory. This paper investigates factors influencing the use of e-procurement among large Jordanian firms as well as the impact of e-procurement usage on the firm performance. The three main factors that influence on e-procurement usage are examined from the contexts of technology, organization,

and environment. The hypotheses of the study play a major role in completing the research model. Figure 1 exhibits a research framework.

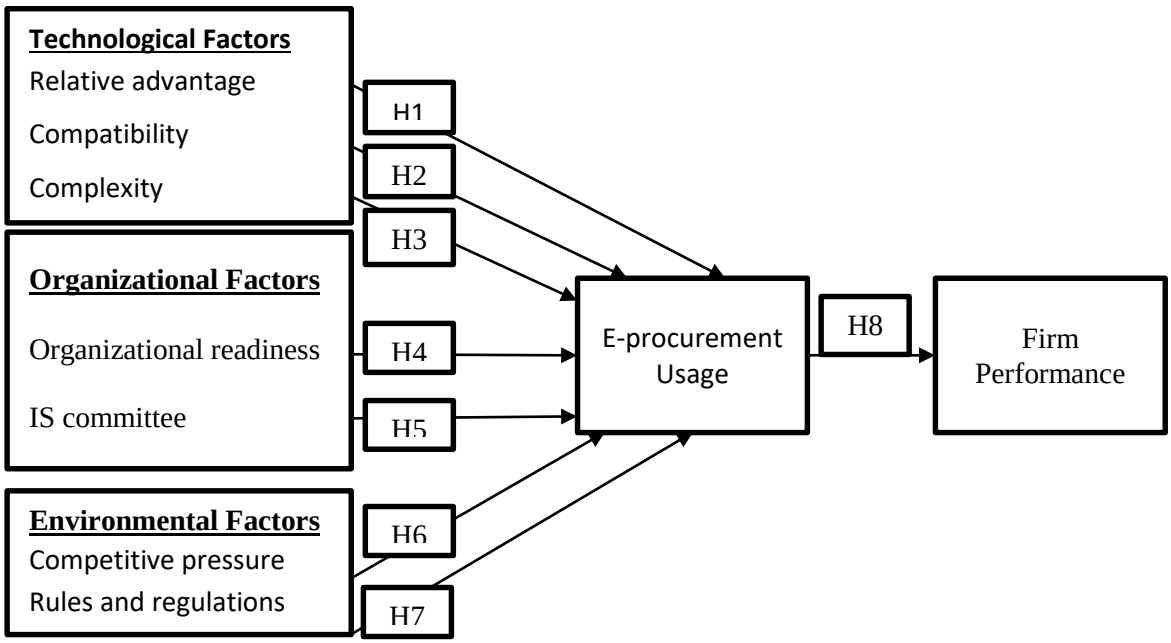


Fig. 1. Research framework

3.1 Technological Factors

In terms of technical factors that are associated with e-procurement usage, the literature has identified many technical factors that affect the usage of e-procurement.

3.1.1 Relative advantage

Rogers [28] defined relative advantage as the degree of which an innovation is acknowledged as more advanced than its successor. Relative advantage and adoption/application behaviors are found to be positively related [29, 30]. It is argued that if a firm perceives that e-procurement brings little benefit, then implementation of such system would be pointless. Thus, this study hypothesizes the following:

H1: Relative advantage has a positive influence on e-procurement usage.

3.1.2 Compatibility

Moore and Benbasat [31] defined compatibility as the "the degree to which an innovation is perceived as being consistent with the existing values, needs, and past experiences of potential adopters" (p. 195). E-procurement usage demands new skills and methods to use it correctly [32]. The perceived compatibility of e-procurement usage could increase the usage. Thus, this study hypothesizes the following:

H2: Compatibility has a positive influence on e-procurement usage.

3.1.3 Complexity

Rogers [28] defined complexity as "the degree to which an innovation is perceived as difficult to understand and to use" (p. 257). Al-Hudhaif and Alkubeyyer [33] argued that when the complexity of innovation increases, the rate of IT usage decreases. Thus, this study hypothesizes the following:

H3: Complexity has a negative influence on e-procurement usage.

3.2 Organizational Factors

The organizational factor represents different mechanisms, structures, and characteristics that influence the propensity of adoption and assimilation of an innovation [34].

3.2.1 Organizational readiness

Organizational readiness refers to the capability of an organization in adopting new technology. The key barriers to e-procurement systems adoption are the inability to obtain skills and talents in new technologies, and inadequate training and education [35]. Thus, it is argued that the organization has a higher tendency in applying e-procurement if it has greater readiness. Thus, this study hypothesizes the following:

H4: Organizational readiness have a positive influence on e-procurement usage.

3.2.2 IS Committee

IS committee is described as a group of IT specialists in the business who comprehend and are devoted to the vision and mission as well as strategic planning of the business [4]. IS committee act to investigate the effects of the several dimension such as employee knowledge, skills, and culture of alignment IS and should take account of as it is important for the firms in using IT [36]. Therefore, the organizations that take on IS decisions on IS committee opinion are more likely to achieve success in e-procurement usage. Thus, this study hypothesizes the following:

H5: IS committee has a positive influence on e-procurement usage.

3.3 Environmental Factors

Jeyaraj *et al*., [37] defined environmental factors as exterior elements that are out of the firm's top management control. Researchers found the environmental factors influence to adopt and usage innovations by businesses, the environmental factors examine the organization's external landscape [34]. According to Sutanonpaiboon and Pearson [24] two major external pressures encountered by businesses are competition pressure and rules and regulations by government.

3.3.1 Competitive pressure

Zhu and Kraemer [16] reported that the competitive pressure will push organizations to provide quicker responses to customers' needs, shorten lead times and offer a better level of customization. Previous research has found that competitive pressure is statistically significant in affecting

technology adoption and use [38, 39, 11]. Lutfi et al. [39] argued that competitive pressure is also the key determinants of IT application. Thus, this study hypothesizes the following:

H6: Competitive pressure has a positive influence on e-procurement usage.

3.3.2 Rules and regulations

Daoud and Ibrahim [4] defined rules and regulations as the acts and laws enforced by the government to manage e-procurement application in business. Previous research has shown that on the purview of rules and regulations, assistance and incentives can support the application of innovations [40, 16]. Thus, it is suggested that rules and regulations are critical in supporting e-procurement, promoting its application and managing several limitations that inhibit its application in organizations. Thus, this study hypothesizes the following:

H7: Rules and regulations have a positive influence on e-procurement usage.

3.4 E-Procurement Usage and Firm Performance

The ultimate goal of using e-procurement for any firm is to improve the firm's performance. Based to Teo and Lai [41] with the more extensive use of e-procurement systems, the benefits of e-procurement will increase by internal efficiency, managerial effectiveness, cost reduction, and coordination improvement [42]. In the present study, authors use RBV theory to suggest a positive link between e-procurement usage and performance impact. Hence, it is expected that the more usage of e-procurement, will increase the impact on firm performance. Thus, this study hypothesizes the following:

H8: E-procurement usage has a positive influence on firm performance.

4. Research Method

This paper studies the impact of e-procurement usage on firm performance and to investigate the TOE factors that influence e-procurement usage among Jordanian firms. The research population covers the companies listed with Jordanian Companies Control Department (CCD) with huge registered capital. The reason for this is that e-procurement system technologies are sophisticated of which significant technical and financial resources are needed to adopt such technologies [26,43]. A correlation is found between e-procurement system usage and high transaction volumes [44,45]. These parameters tend to occur in companies with sufficient resources, and there is a higher chance that such companies have huge registered capital [38,46,47]. Jordanian CCD's database served as the source of sample list in this paper. This directory consists of about 176,000 companies and it divides the companies in terms of the size of capital used. The sample restricted to large companies with registered capital equal to or more than JD 5,000,000 [38]. Therefore, the final population consisted of 566 companies. In this study, the entire population is included as the sample. In other words, the sample size is equal to the population size. This method was used due to the small population size (566 companies) and generally low response rate in Jordanian context where the response rate is 30% [38].

The data was obtained using a questionnaire survey. seven-point Likert scale was used to measure the research constructs because it's more useful than others as it increases the variance in the measures and provides a much broader range of options [48]. A semantic differential scale

ranging from strongly disagree (1) to strongly agree (7), with the exception of the items regarding e-procurement usage activities which were measured on a seven-point semantic differential scale ranging from not used (1) to used very extensively (7). All main latent constructs that were adopted from previous research. Authors have engaged a forward-backward- translations procedure as to ensure the translation of the survey questionnaire from English to Arabic is accurate, free from bias and eliminate any discrepancies [49]. Authors had pre-tested the instrument with academicians in the area of e-business as well as purchasing managers of large firms in Jordan. Then, for the purpose of pilot testing, the instrument was tested with 34 selected firms.

For data collection purpose, the questionnaires were distributed by hand, distributing the questionnaires by hand enables the researcher to gather all completed responses in a short period of time, and allows the researcher to respond immediately to any inquiries that the respondents might have [50]. The questionnaires were distributed to 548 firms (18 firm's unreachable). After eight weeks, 238 responses were obtained with 5 responses were excluded due to incomplete information. Additionally, twelve of the cases was considered as outliers and therefore be deleted. This reduced the usable number of responses to 221 (40% response rate). Nevertheless, as indicated by Hair, Hult, Ringle, and Sarstedt [51], the total responses received fulfills the minimum samples required to test the model using Partial Least Square-Structural Equation Modeling (PLS-SEM).

5. Data Analysis

PLS was used to test the proposed model. As an SEM technique, PLS can simultaneously test the measurement model and the structural model [52]. Likewise, PLS has the potential to work with very complex models with a hierarchical structure model and a high number of indicators, constructs, and relationships [53-54]. Moreover, PLS avoids small sample size problems and has less strict assumptions of normality distribution and error terms [55]. Therefore, it can be useful in some conditions when other approaches are not. It is this premise that this technique was used for the purposes of this study.

The first step in PLS analysis process is to conduct reliability and validity tests of the measurement model. The reported data indicate reliability and validity of all constructs as all scores exceeded the thresholds value specified for Cronbach's Alpha (CR), composite reliability (CR) and average variance extracted (AVE) of 0.70, 0.70 and 0.50 respectively [50,56]. As shown in Table 1 below, the Cronbach's alpha of all constructs was greater than 0.70, which indicates that the measurements are reliable. Furthermore, the composite reliability of all constructs was greater than 0.70. More importantly, the AVE was greater than 0.50, and this indicates that the convergent validity was achieved for all constructs. As presented in Table 2, all the squared roots of AVE on the diagonal line are reportedly higher than the correlation coefficients between constructs, signifying discriminant validity at the construct level. Therefore, it is safe to proceed with the structural model execution.

Authors have assessed the structural model by applying similar PLS algorithm. The significance of path coefficients was calculated via bootstrapping technique generating 5000 resamples. Table 3 presents standardized path coefficients (β-values), the critical ratios (t-values), and the p-values (in case of supported hypotheses) of each proposed hypothesis. Overall, all hypotheses were supported.

Table 1
Constructs reliability and validity

Constructs	CA	CR	AVE
Compatibility (COM)	0.926	0.944	0.773
Competitive Pressure (CPR)	0.936	0.959	0.886
Complexity (COX)	0.969	0.976	0.891
Firm Performance (FP)	0.964	0.967	0.650
IS Committee (ISC)	0.941	0.962	0.894
Organization Readiness (OR)	0.955	0.967	0.881
Relative advantage (RA)	0.948	0.958	0.793
Rules and Regulations (RR)	0.926	0.947	0.819
Usage e-procurement (UEP)	0.974	0.976	0.612

Table 2
Discriminant assessment and correlation matrix.

	COM	CPR	COX	FP	ISC	OR	RA	RR	UEP
Compatibility	**0.879**								
Competitive Pressure	0.714	**0.941**							
Complexity	-0.345	-0.271	**0.944**						
Firm Performance	0.731	0.657	-0.302	**0.806**					
IS Committee	0.570	0.634	-0.346	0.551	**0.946**				
Organization Readiness	0.709	0.617	-0.289	0.700	0.567	**0.938**			
Relative advantage	0.499	0.468	-0.323	0.544	0.518	0.524	**0.890**		
Rules and Regulations	0.701	0.632	-0.383	0.688	0.630	0.750	0.584	**0.905**	
Usage e-procurement	0.771	0.700	-0.438	0.785	0.685	0.727	0.647	0.771	**0.782**

In terms of technological factors, relative advantage reported significant and positively related to e-procurement usage and supported H1 (β= 0.181, t= 4.351, p<0.01), compatibility reported significant and positively related to e-procurement usage (β= 0.266, t= 4.936, p<0.01), is supported H2. Finally, complexity reported significant and negatively related to e-procurement usage and is supported H3 (β= - 0.036, t= 2.771, p<0.01). In terms of organizational factors, organizational readiness reported significant and positively related to e-procurement usage (β= 0.125, t= 2.183, p<0.05), is supported H4, IS committee reported significant and positively related to e-procurement usage (β= 0.148, t= 2.931, p<0.01), is supported H5. In terms of environmental factors, competitive pressure reported significant and positively related to e-procurement usage (β= 0.113, t= 2.008, p<0.01) and supported H6, rules and regulations also reported significant and positively related to e-procurement usage (β= 0.181, t= 2.888, p<0.01) and supported H7.

Finally, the results reported the e-procurement usage has a significant and positively related to firm performance (β= 0.785, t= 25.877, p<0.01), Thus, H8 was supported. The explanatory power of this study model is also shown in Fig. 2. The results indicate that e-procurement usage explains 61.7% of the variances in the firm performance. Meanwhile, 77.7% of the variance in e-procurement usage is being explained by the specified independent latent variables.

Table 3
Results of the tested hypotheses

Relationships	Beta	Std. Err	t-value	p-value	Decision
Relative advantage -> E-Procurement Usage	0.181	0.042	4.351	0.000**	Supported
Compatibility -> E-Procurement Usage	0.266	0.054	4.936	0.000**	Supported
Complexity -> E-Procurement Usage	-0.100	0.036	2.771	0.003**	Supported
Organization Readiness -> E-Procurement Usage	0.125	0.057	2.183	0.015*	Supported
IS Committee -> E-Procurement Usage	0.148	0.051	2.931	0.002**	Supported
Competition Pressure -> E-Procurement Usage	0.113	0.056	2.008	0.022*	Supported
Rules and Regulations -> E-Procurement Usage	0.181	0.063	2.888	0.002**	Supported
E-Procurement Usage -> Performance Impact	0.785	0.030	25.877	0.000**	Supported

Notes: Significant level at ** = p < 0.01; * p < 0.05

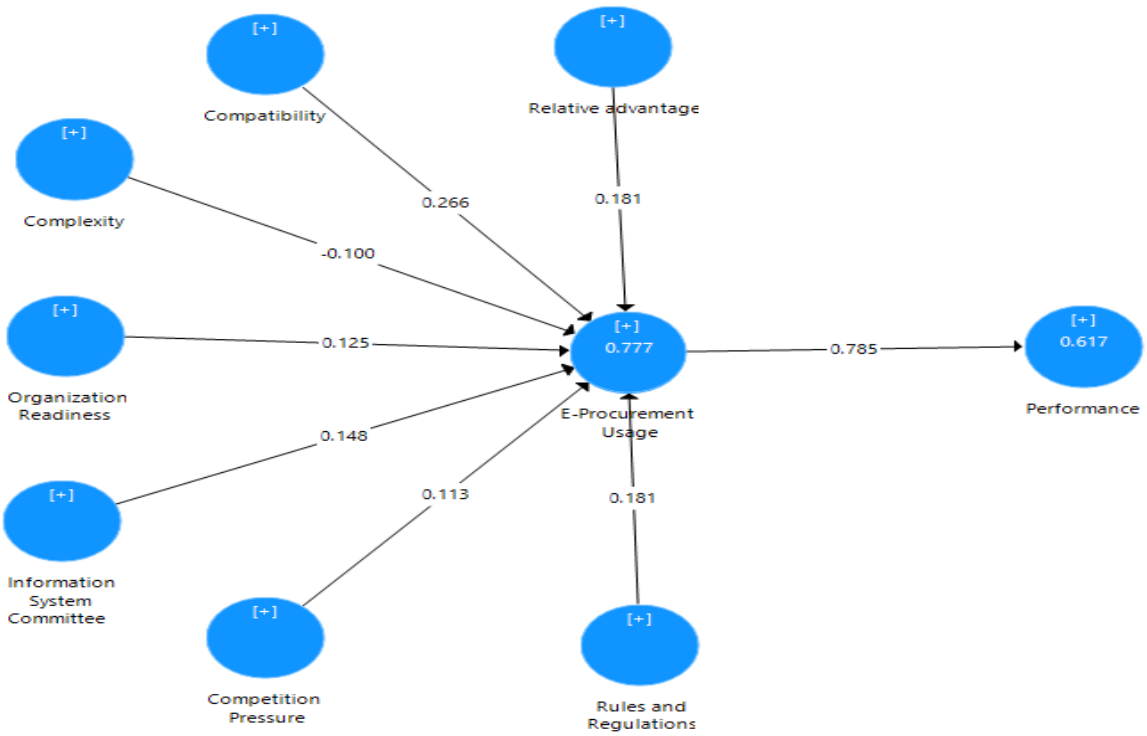


Fig. 2. Coefficient of Determination (R^2)

6. Discussions and Conclusion

One of the purposes of this study is to explore e-procurement usage impact on the firm performance. Therefore, this study offers an integrated model that draws upon TOE framework to explain e-procurement usage and RBV theory to explain the relationship between e-procurement usage and its perceived impacts. The results found all TOE factors in this study have a significant influence on e-procurement usage.

With respect to the technological factors, relative advantage has a positive and significant effect on the e-procurement usage. This result supports Roger [28] argument that a characteristic of an innovation influences on usage decision, and the result are consistent with the prediction of the DOI theory and TOE framework. The finding that relative advantage affects extent of e-procurement use is consistent with findings reported in broader literature on technology adoption and use e.g., [57, 58].

This study also reveals that compatibility has a positive and significant effect on the e-procurement usage. This result is consistent with the prediction of the DOI theory and TOE framework. The finding supports the notion that the businesses perceive e-procurement as a technical innovation where adequate manpower resources and computer competency enable e-procurement usage more quickly and good impact [59,60]. The findings in this study consistent with findings reported in literature on IT adoption and use e.g., [38, 61]. Moreover, complexity has a negative effect on e-procurement usage in this study. The findings in this study consistent with findings reported in previous studies, which indicate that raising the complexity of IT erodes the innovation usage, this is consistent with Rogers [28] and prediction of the DOI theory and TOE framework.

As for organizational factors, the results presented the organizational readiness and IS committee have a positive effect on e-procurement usage. The findings in this study consistent with findings reported in previous studies (e.g., [62,63], and prediction of the TOE framework. Those studies have concluded that organization readiness as manifested by the widespread use of IT would speed up the usage process. Suggesting that without sufficient organizational readiness, businesses will not be able to use e-procurement. The IS committee encourages the general managers to take the decision to use e-procurement system and the IS committee makes sure strategic planning paralleled with e-procurement usage and this strategic planning must be paralleled with top management strategy.

With regard to the environmental factors, the results presented the competitive pressure and rules and regulations have a positive effect on e-procurement usage. The findings in this study consistent with findings reported in previous studies (e.g., [62,58,16], and the prediction of the TOE framework. The competitor forces the firms to adopt and use new innovation, to be able to compete in the local and global market [60]. The competitive environment surrounding the firms creates significant motivation and constructive motivation to use e-procurement in order to grasp the tender and business opportunity [56]. Meanwhile, the development of IT and the usage new innovation requires new rules and regulations by the government to encourage the organizations to use new technologies with business partner and competitors around the world.

Along with the research objectives, the result of data analysis shows that the e-procurement usage has a positive and significant effect on the firm performance and this result is in line with the prediction of RBV theory which intensive usage of IT lead to a greater level of impact and value. Hence, the result implies that companies that use e-procurement would derive greater performance than those companies with less usage e-procurement. This finding is consistent with the findings reported by previous studies e.g. [64,41].

7. Research Implications

This research offers several theoretical and practical implications. The present study combined the DOI theory, TOE model with the RBV theory in the research framework. RBV theory work to explain the relationship between e-procurement usage and its perceived impacts. Meanwhile, integrating DOI theory and TOE framework could help to explain the e-procurement usage phenomena and to determine the factors that effect on the e-procurement usage. Following the work by Hassan *et al*. [58] on the extent of use of e-procurement among SMEs in New Zealand, this study measured the e-procurement usage through e-procurement functions. There are only a limited number of studies on the e-procurement especially in developing countries [62,65,66] such as Jordan [67,14].

With respect to the practical implication of the study, the developed and validated model facilitates firms to identify salient factors that promote the more extensive implementation of e-

procurement. could ensure the country with greater efficiency and productivity in the economy, improve the competitiveness of Jordan around the world, and improve the development of the ICT sector in Jordan.

8. Limitations and Future Research

Regardless of its contributions, readers should consider limitations of the study in generalizing the results. This study represented several sectors in Jordan, the sample has relied on a list CCD database. The population is only large firms that have capital equal or exceed 5 million JOD and thus may not represent all of the companies working in Jordan. Future researchers can investigate the impact of e-procurement usage on SMEs performance, and the factors that effect on e-procurement usage in SMEs. Furthermore, the present study is cross-sectional in nature. This means that changes over time that occur in the process of implementing e-procurement usage are not captured. In order to understand the dynamics of change that take place when e-procurement usage implemented, longitudinal studies may be adopted by future researchers intending to investigate the extent of IT benefits actually experienced by users in the organization.

References

[1] Amman Stock Exchange Report, (2016). https://www.ase.com.jo/ar
[2] Almajali, Dmaithan, Khalid Mansour, Ra'ed Masa'deh, and Mahmoud Maqableh. "The Impact of Electronic Supply Chain Management Usage on Firm's Performance." *International Journal of Communications, Network and System Sciences* 9, no. 06 (2016): 280.
[3] Zunk, Bernd Markus, Martin Marchner, Iris Uitz, Carina Lerch, and Holger Schiele. "The role of E-procurement in the Austrian construction industry: Adoption rate, benefits and barriers." *International journal of industrial engineering and management* 5, no. 1 (2014): 13-21.
[4] Daoud, Luay, and Marhaiza Ibrahim. " A Conceptual Model of Factors Affecting E-procurement Usage and Impact among Jordanian Listed Firms: The Moderating Role of Environmental Uncertainty." *Journal of Advanced Research in Business and Management Studies* 9, no. 1 (2017): 36-44.
[5] Gunasekaran, Angappa, Ronald E. McGaughey, Eric WT Ngai, and Bharatendra K. Rai. "E-Procurement adoption in the Southcoast SMEs." *International Journal of Production Economics* 122, no. 1 (2009): 161-175.
[6] Min, Hokey, and William P. Galle. "E-purchasing: profiles of adopters and nonadopters." *Industrial Marketing Management*32, no. 3 (2003): 227-233.
[7] Abu-ELSamen, Amjad, Goutam Chakraborty, and David Warren. "A process-based analysis of e-procurement adoption." *Journal of Internet Commerce* 9, no. 3-4 (2010): 243-259.
[8] Garrido, M. José, Ana Gutiérrez, and Rebeca San José. "Organizational and economic consequences of business e-procurement intensity." *Technovation* 28, no. 9 (2008): 615-629.
[9] Gunasekaran, Angappa, and Eric WT Ngai. "Adoption of e-procurement in Hong Kong: an empirical research." *International Journal of Production Economics* 113, no. 1 (2008): 159-175.
[10] Wu, Fang, George Zsidisin, and Anthony Ross. "Antecedents and outcomes of e-procurement adoption: an integrative model." *IEEE Transactions on Engineering Management* 54, no. 3 (2007): 576-587.
[11] Teo, Thompson SH, Sijie Lin, and Kee-hung Lai. "Adopters and non-adopters of e-procurement in Singapore: An empirical study." *Omega* 37, no. 5 (2009): 972-987.
[12] De Boer, Luitzen, Jeroen Harink, and Govert Heijboer. "A conceptual model for assessing the impact of electronic procurement." *European Journal of purchasing & supply management* 8, no. 1 (2002): 25-33.
[13] UNCTAD. (2015). Information economic report. Retrieved from http://unctad.org/en/PublicationsLibrary/ier2015_en.pdf
[14] Yaseen, Husam, Kate Dingley, and Carl Adams. "Capturing the growth of e-commerce in Jordan using a novel research approach." *International Journal Of Management And Commerce Innovations* 3, no. 2 (2016): 811-827.
[15] MOICT. (2016). *National E-commerce Strategy* Ministry of Information and Communications Technology. Retrieved from **http://www.moict.gov.jo/Portals/0/Final1.pdf**
[16] Zhu, Kevin, and Kenneth L. Kraemer. "Post-adoption variations in usage and value of e-business by organizations: cross-country evidence from the retail industry." *Information systems research* 16, no. 1 (2005): 61-84.

[17] Alsaad, Abdallah KH, Rosli Mohamad, and Noor Azizi Ismail. "The moderating role of power exercise in B2B e-commerce adoption decision." *Procedia-Social and Behavioral Sciences*130 (2014): 515-523.
[18] Tornatzky, Louis G., and Katherine J. Klein. "Innovation characteristics and innovation adoption-implementation: A meta-analysis of findings." *IEEE Transactions on engineering management* 1 (1982): 28-45.
[19] Rogers Everett, M. "Diffusion of innovations." *New York* 12 (1995).
[20] Khalifa, Mohamed, and M. Davison. "SME adoption of IT: the case of electronic trading systems." *IEEE Transactions on Engineering Management* 53, no. 2 (2006): 275-284.
[21] Chwelos, Paul, Izak Benbasat, and Albert S. Dexter. "Empirical test of an EDI adoption model." *Information systems research* 12, no. 3 (2001): 304-321.
[22] Fathian, Mohammad, Peyman Akhavan, and Maryam Hoorali. "E-readiness assessment of non-profit ICT SMEs in a developing country: The case of Iran." *Technovation* 28, no. 9 (2008): 578-590.
[23] Bank Queensland Report. (2016). Information Technology Committee Charter.
[24] Sutanonpaiboon, Janejira, and Ann M. Pearson. "E-commerce adoption: perceptions of managers/owners of small-and medium-sized enterprises (SMEs) in Thailand." *Journal of Internet Commerce* 5, no. 3 (2006): 53-82.
[25] Al-qirim, N. "Toward electronic commerce ecosystems in developing countries." In *4th IEEE international conference on digital ecosystems and technologies (IEEE DEST 2010), United Arab Emirates, Dubai*. 2010.
[26] Hassan, Haslinda, Alexei Tretiakov, Dick Whiddett, and Iskandar Adon. "Extent of e-procurement use in SMEs: A descriptive study." *Procedia-Social and Behavioral Sciences*164 (2014): 264-270.
[27] Zhu, Kevin. "The complementarity of information technology infrastructure and e-commerce capability: A resource-based assessment of their business value." *Journal of management information systems* 21, no. 1 (2004): 167-202.
[28] Rogers, Everett M. "The diffusion of innovation 5th edition." (2003).
[29] Abd-Rahman, A., and A. Ismail. "Understanding Accounting Information Systems Continuance Intention among SMEs in Terengganu, Malaysia." In *3rd International Conference of Business and Economic Research*, pp. 1040-1056. 2012.
[30] Zhu, Kevin, Kenneth L. Kraemer, and Sean Xu. "The process of innovation assimilation by firms in different countries: a technology diffusion perspective on e-business." *Management science* 52, no. 10 (2006): 1557-1576.
[31] Moore, Gary C., and Izak Benbasat. "Development of an instrument to measure the perceptions of adopting an information technology innovation." *Information systems research* 2, no. 3 (1991): 192-222.
[32] Ihlsoon Cho, Young-Gul Kim. "Critical factors for assimilation of object-oriented programming languages." *Journal of Management Information Systems* 18, no. 3 (2002): 125-156.
[33] Al-Hudhaif, Sulaiman A., and Abdullah Alkubeyyer. "E-commerce adoption factors in Saudi Arabia." *International Journal of Business and Management* 6, no. 9 (2011): 122.
[34] Tornatzky, Louis G., Mitchell Fleischer, and A. K. Chakrabarti. "The processes of technological innovation. Issues in organization and management series." *Lexington Books. Available at http://www. amazon. com/Processes-Technological-Innovation-Organization/Management/dp/0669203483. Accessed June*10 (1990): 2013.
[35] Chircu, Alina M., and Robert J. Kauffman. "Limits to value in electronic commerce-related IT investments." *Journal of Management Information Systems* 17, no. 2 (2000): 59-80.
[36] Reinig, Bruce A. "Toward an Understanding of Satisfaction with the Process and Outcomes of Teamwork." *Journal of Management Information Systems* 19, no. 4 (2003): 65-83.
[37] Jeyaraj, Anand, Joseph W. Rottman, and Mary C. Lacity. "A review of the predictors, linkages, and biases in IT innovation adoption research." *Journal of information technology* 21, no. 1 (2006): 1-23.
[38] Alsaad, Abdallah, Rosli Mohamad, and Noor Azizi Ismail. "The moderating role of trust in business to business electronic commerce (B2B EC) adoption." *Computers in Human Behavior* 68 (2017): 157-169.
[39] Lutfi, Abd Alwali, Kamil Md Idris, and Rosli Mohamad. "The influence of technological, organizational and environmental factors on accounting information system usage among Jordanian small and medium-sized enterprises." *International Journal of Economics and Financial Issues* 6, no. 7S (2016).
[40] Abdul Hameed, Mumtaz, and Steve Counsell. "Assessing the influence of environmental and CEO characteristics for adoption of information technology in organizations." *Journal of technology management & innovation* 7, no. 1 (2012): 64-84.
[41] Teo, Thompson SH, and Kee-hung Lai. "Usage and performance impact of electronic procurement." *Journal of Business Logistics* 30, no. 2 (2009): 125-139.
[42] Massetti, Brenda, and Robert W. Zmud. "Measuring the extent of EDI usage in complex organizations: strategies and illustrative examples." *MIS quarterly* (1996): 331-345.
[43] Venkatesh, Viswanath, and Hillol Bala. "Adoption and impacts of interorganizational business process standards: Role of partnering synergy." *Information Systems Research* 23, no. 4 (2012): 1131-1157.

[44] Grover, Varun, and Khawaja A. Saeed. "The impact of product, market, and relationship characteristics on interorganizational system integration in manufacturer-supplier dyads." *Journal of Management Information Systems* 23, no. 4 (2007): 185-216.
[45] Liu, Chunhui, Choon-Ling Sia, and Kwok-Kee Wei. "Adopting organizational virtualization in B2B firms: An empirical study in Singapore." *Information & management* 45, no. 7 (2008): 429-437.
[46] Akintoye, Akintola, George McIntosh, and Eamon Fitzgerald. "A survey of supply chain collaboration and management in the UK construction industry." *European journal of purchasing & supply management* 6, no. 3-4 (2000): 159-168.
[47] USAID. (2007). Booklet of standardized small and medium enterprises booklet of definition. Retrieved from http://pdf.usaid.gov/pdf_docs/Pnadm845.pdf
[48] Dillman, Don A., Jolene D. Smyth, and Leah Melani Christian. *Internet, phone, mail, and mixed-mode surveys: the tailored design method*. John Wiley & Sons, 2014.Mark, Saunders, Lewis Philip, and Thornhill Adrian. "Research methods for business students." (2009).
[49] Hair, J. F., Hult, J. G. T. M., Ringle, C. M., and Sarstedt, M. A Primer on Partial Least Squares Structural Equation Modeling (PLS-SEM). SAGE Publications, 2014.
[50] Sekaran, Uma. "Research Methods for Business, a Skill Building Approach, John Willey & Sons." *Inc. New York* (2003).
[51] Gefen, D., D. W. Straub, and E. E. Rigdon. "An update and extension to SEM guidelines for admnistrative and social science research. Manag." *Inf. Syst. Q* 35, no. 2 (2011).
[52] Hair, Joe F., Christian M. Ringle, and Marko Sarstedt. "PLS-SEM: Indeed a silver bullet." *Journal of Marketing theory and Practice* 19, no. 2 (2011): 139-152.
[53] Henseler, Jörg, Christian M. Ringle, and Rudolf R. Sinkovics. "The use of partial least squares path modeling in international marketing." In *New challenges to international marketing*, pp. 277-319. Emerald Group Publishing Limited, 2009.
[54] Wetzels, Martin, Gaby Odekerken-Schröder, and Claudia Van Oppen. "Using PLS path modeling for assessing hierarchical construct models: Guidelines and empirical illustration." *MIS quarterly* (2009): 177-195.
[55] Sarstedt, Marko, Christian M. Ringle, Donna Smith, Russell Reams, and Joseph F. Hair Jr. "Partial least squares structural equation modeling (PLS-SEM): A useful tool for family business researchers." *Journal of Family Business Strategy* 5, no. 1 (2014): 105-115.
[56] Teo, Thompson SH, Chandraskaren Ranganathan, and Jasbir Dhaliwal. "Key dimensions of inhibitors for the deployment of web-based business-to-business electronic commerce." *IEEE Transactions on engineering Management* 53, no. 3 (2006): 395-411.
[57] Abu-ELSamen, Amjad, Goutam Chakraborty, and David Warren. "A process-based analysis of e-procurement adoption." *Journal of Internet Commerce* 9, no. 3-4 (2010): 243-259.
[58] Hassan, Haslinda, Alexei Tretiakov, and Dick Whiddett. "Factors affecting the breadth and depth of e-procurement use in small and medium enterprises." *Journal of Organizational Computing and Electronic Commerce* 27, no. 4 (2017): 304-324.
[59] Panda, Prabir, and G. P. Sahu. "Public Procurement Framework in India: An Overview." In *Digital Governance and E-Government Principles Applied to Public Procurement*, pp. 229-248. IGI Global, 2017.
[60] Wei, Hsiao-Lan, and Eric TG Wang. "The strategic value of supply chain visibility: increasing the ability to reconfigure." *European Journal of Information Systems* 19, no. 2 (2010): 238-249.
[61] Lutfi, Abd Alwali, Kamil Md Idris, and Rosli Mohamad. " AIS Usage Factors and Impact among Jordanian SMEs: The Moderating Effect of Environmental Uncertainty." *Journal of Advanced Research in Business and Management Studies* 6, no. 1 (2017): 24-38.
[62] Alomar, Mohamad Amin, and Christian De Visscher. "E-public procurement: Which factors determine its acceptance by small-to medium-sized enterprises and large companies in Belgium?." *International Review of Administrative Sciences*(2017): 0020852317703466.
[63] Aduwo, Egidairo Bridgette, Eziyi O. Ibem, Obioha Uwakonye, P. F. Tunji-Olayeni, and Kunle Ayo-Vaughan. "Barriers to the uptake of e-Procurement in the Nigerian building industry." *Journal of Theoretical and Applied Information Technology* 89, no. 1 (2016): 133-147.
[64] Calipinar, Hatice, and Mehmet Soysal. "E-procurement: A case study about the health sector in Turkey." *International Journal of Business and Social Science* 3, no. 7 (2012).
[65] Kim, Minkyun, Nallan C. Suresh, and Canan Kocabasoglu-Hillmer. "A contextual analysis of the impact of strategic sourcing and E-procurement on performance." *Journal of Business & Industrial Marketing* 30, no. 1 (2015): 1-16.
[66] Adebayo, Victor Olalekan, and Richard David Evans. "Adoption of e-procurement systems in developing countries: A Nigerian public sector perspective." In *2015 2nd International Conference on Knowledge-Based Engineering and Innovation (KBEI)*, pp. 20-25. IEEE, 2015.

[67] Shareef, Mahmud Akhter, Vinod Kumar, Uma Kumar, and Yogesh K. Dwivedi. "e-Government Adoption Model (GAM): Differing service maturity levels." *Government information quarterly* 28, no. 1 (2011): 17-35.