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Keywords: *operational excellence, e-procurement, adoption, SME'S, Jordan.*

GJMBR-A Classification: *JEL Code: H57*



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Toward Realizing Operational Excellence through e-Procurement Adoption: A Resource based view

Ziad Moh'd Ali Smadi [α] & Hayel T. Ababneh [σ]

Abstract- This study examines a conceptual framework that investigates the determining factors affecting the e-procurement adoption by SMEs in Jordan. It extends to discover how e-procurement adoption contributes to the enhancement of operational excellence. The proposed conceptual framework was examined by distributing a structured questionnaire to a group of Jordan SMEs. Confirmatory factor analysis and structural equation modeling technique were used to test the research hypotheses. The study results reveal that the IT infrastructure, top management support, and IT staff readiness have strong influences on e-procurement adoption. It was also found that e-procurement adoption is a powerful business tool to reach operational excellence. This implies that organizations with similar contextual settings can potentially utilize this study's findings and promote further implementation of e-procurement systems. This study gives deeper attention to the internal resources that decision makers should emphasize to adopt e-procurement successfully and consequently obtain its potential desired outcomes. The current study scrutinizes the intra-organizational competitive capabilities that enhance successful adoption of e-procurement and provides strong evidence on the possibility to harvest operational benefits through applying e-procurement in the SME's.

Keywords: operational excellence, e-procurement, adoption, SME'S, Jordan.

I. Introduction

E-procurement is an organizational use of IT to automate the external contracts to purchase processes from outside vendors (Gunasekaran, 2009). Among the wide array of tactical, operational, and strategic values (Hashim et al., 2013), e-procurement could support organizational performance by acquiring its main benefits such as cost reduction and streamlining inter-organizational processes (Teo et al., 2009). However many organizations fail to realize the desired performance of using e-procurement systems due to the failure of considering the individual-level acceptance of e-procurement before making their decision of adoption (Brandon-Jones and Kauppi 2018).

Many manufacturing companies exert premium efforts in acquiring needed resources in the future, and many of them cannot realize the relation between transforming into the use of technology and achieving a satisfactory level of performance. This may help in filling this theoretical gap by tracking the success factors of e-procurement and examining its impact on realizing business excellence. The objectives of this research are to bring light into the prerequisites of adopting e-procurement and to portrait its relation with achieving operational performance. With that goal in mind, we are also responding to the call of Mikalef et al., (2013) and Batenburg (2007) who encourage future quantitative studies focusing on the value of e-procurement on organizational performance.

The study seeks answers to the following research questions:

1. How e-procurement adoption is being motivated in Jordan SMEs?
2. How do Jordan SMEs currently use and plan to use e-procurement?
3. How does the doption of e-procurement across Jordan SMEs affect operational excellence?

This study was carried out for many reasons; First, the existing literature on e-procurement has paid main attention to a large scale and sophisticated technology-based organizations (Tatsis et al., 2006). Second, e-procurement in small and medium enterprises has not received much attention from researchers or vendors (Gunasekaran et al., 2009), and some have conflicting results. Thus, searching for further evidence are still required to support the current literature. We believe that success factors and barriers are changing over time and across different economic-cultural context, Thus it is necessary to explore these variable to determine the level of using e-procurement in a developing country; Jordan. Third, there has been little investigation of e-procurement outside of US and European settings (Walker and Harland, 2008), thus conducting such research in a different context is a valuable contribution because we believe that what may be good practice in an organization within developed countries may not be so obviously applicable for organizations in developing countries. Fourth, research in IT adoption have paradoxical results. Thus we believe that this research will contribute to the existing literature by identifying key intra-organizational resources that leverage potential operational performance from IT

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investments. Fifth, because most studies focus on factors influencing e-procurement adoption (Rahim, 2008; Batenburg, 2007; Chan and Lee, 2003), there is a great need to investigate the link between e-procurement adoption and its consequent results to understand the business value of e-procurement adoption (Mikalef, 2013).

This study is structured as follows. First, the RBV is introduced which is considered the lens for understanding the inner organizational resources that shape the extent of e-procurement adoption. Next, the literature review is presented that considers the determinants of e-procurement adoption and its relation with realizing operational excellence. Subsequently, the method of collecting and analyzing data is articulated. Finally, findings and conclusions that are relevant to SMEs with a moderate economic and technological abilities are drawn.

II. Literature Review and Research Hypotheses Development

a) *The Resource-Based View*

Based on the resource-based view (Penrose and Penrose, 2009), business organizations rely on their internal tangible and intangible resources to formulate their strategy for the purpose of improving business performance and consequently building competitive advantage (Peteraf, 1993; Barney, 1991; Wernerfelt, 1984). RBV considers that achieving excellence and to obtaining external opportunities necessitates exploiting the available internal capabilities. However, superiority over rivals could not be obtained with imitable or substitutable corporate resources (Barney, 1991).

Wade and Hulland, (2004) argue that studying information systems (IS) from the lenses of the RBV has the potential to address main drivers of business excellence. Thus it is considered to be a valuable framework to think about the relationship between IS and firm performance (Santhanam and Hartono 2003). According to Bharadwaj (2000), firms can create an advanced performance through building IT -related capabilities such as individual and firm-specific resources. Similarly, Ravichandran and Lertwongsatien, (2002) found preliminary evidence supporting the relationship between IT firm capabilities and superior firm performance. These IT firm capabilities would include managerial IT knowledge (Ray et al., 2001; Mata et al., 1995). A more recent study conducted by Gupta, (2018) affirms that firms can use IS as an internal firm resource to establish a transient competitive advantage and a favorable level of performance.

b) *Determinants of e-procurement adoption*

i. *Availability of technological infrastructure*

According to Chatzoglou and Chatzoudes (2016), IT infrastructure is considered as one of the most important e-business adoption drivers. The results of Hassan, Tretiakov, and Whiddett, (2017) also showed that reliance on e-procurement is driven by some variables which include technology infrastructure. Various studies confirmed that B2B e-commerce is mainly determined by IT availability and its level of maturity (Gorla, Chiravuri, and Chinta, 2017; Chatzoglou, and Chatzoudes, 2016). Many firms especially SMEs use slight technologies because of their limited resources, limited knowledge, and limited IT infrastructure (Harland et al., 2007). The diffusion of e-commerce in developing countries is influenced by IT infrastructure and other issues such as tele-communications, government and, legal, social and cultural factors, (Javalgi and Ramsey, 2001; Murillo, 2001). Walker and, Harland, (2008) affirmed that one of the main issues encountering adoption of e-procurement in developing countries, is lack of technological infrastructure and online access. In conjunction with Diffusion of Innovation theory (DOI), numerous IT studies have employed its insights to emphasize factors that affect the adoption of technological innovation (Rogers, 1995). A key contextual aspect of DOI is the technological context that focuses on the availability of IT infrastructure, IT sophistication, and IT capability. Firms have to address these issues before the intention to adopt e-business technology. This view is reinforced by Premkumar and Ramamurthy (1995) who indicate that the adoption of e-business is enhanced through acquiring the necessary IT infrastructure including hardware, software, application and, network. By obtaining these technological resources, organizations will be more likely to adopt technological initiatives (Chang, 2010). Therefore, our hypothesis is as follows:

H1: There is a positive effect of IT infrastructure on the extent of e-procurement adoption.

ii. *Management support*

In a review of the motivators and inhibitors of IT adoption, management support was considered as one of the main determining factors. Ngai et al. (2010) confirm that management support is crucial to the successful implementation of SCM technology. In a study of Chan and Chong (2013) aimed to identify determinants of a mobile supply chain management system, it was found that constant support from the top management will the achieve greater success of its implementation. Thus, involving owners and managers would ensure sufficient commitment toward the decision of adopting new technology (Scupola, 2009; Huang et al. 2008; Carnaghan and Klassen 2007; Jeyaraj et al., 2006; Premkumar, 2003). In this regard, managers would support e-procurement adoption if they are aware of its positive impact on organizational performance (Chatzoglou and Chatzoudes, 2016). Hence, the following hypothesis is developed.

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H2: There is a positive effect of management support on the extent of e-procurement adoption.

iii. *Users' readiness*

The findings of Chatzoglou and Chatzoudes (2016) affirm that users' skills of using the internet is one of the main influencing factors on e-business adoption is mainly influenced by firm size, firm scope, IT infrastructure and internet skills being the most important e-business adoption drivers. Similarly, Giunipero, Ramirez, and Swilley, (2012) found that internet skills is associated with the use of electronic purchasing tools. Technology Acceptance Model (TAM) and its modified versions (Davis 1985; Davis et al., 1989; Venkatesh et al., 2003) are considered as the most dominant models because of their high capability in explaining technology adoption. The two determinants of TAM; the perceived ease of use (PEOU) and perceived usefulness (PU) have explained 40% of the variance in the intention to adopt technology (Autry et al., 2010). Perceived ease of use refers to "the degree to which the prospective user expects the target system to be free of effort" (Davis, 1989). Users perceive that the use of a particular type of technology will be easy when they have a good level of skills in using that technology. Users readiness to is more likely to be high when they are significantly skilled in using technology (Au, Ho, and Law, 2014; Giunipero, Ramirez, and Swilley, 2012; Mirchandani and Motwani, 2001). Since organizations possess internet-skilled users who accept using new technology, the decision to adopt e-procurement would be easier and more guaranteed. Therefore, this study hypothesizes:

H3: There is a positive effect of users' readiness on the extent of e-procurement adoption.

iv. *Users' willingness*

Based on the theory of reasoned action (Fishbein and Ajzen, 1975), human behavior is determined by pre-existing attitudes. People choose to behave in a particular way according to their expectations and potential outcome of such behavior. Since organizational performance is mainly determined by the behaviors of individual employees, understanding their attitudes become very important (Cho and Chang 2008). Regarding TAM, users' attitudes toward technology acceptance and use is identified by the perceived usefulness. Once individual employees perceive the technology's usefulness, they will become more willing to use it, and hence should affect its adoption (Davis, Bagozzi, and Warshaw, 1989). As users' readiness refers to their capabilities and skills, users' willingness can be identified by their acumen and perceptions of e-procurement usefulness. For successful adoption, Giunipero, Ramirez, and Swilley, (2012) argue that users have to be aware of the benefits of e-procurement. If they perceive its usefulness in improving performance at the individual and organizational levels, they will be more inclined to accept using it. Accordingly, we hypothesize the following:

H4: There is a positive effect of users' willingness on the extent of e-procurement adoption.

v. *IT staff support*

Based on the study of Ross, Beath, and Goodhue (1995), some firms do generate competitive value not only from acquiring IT systems but also by developing competent IT human resources (Chahal and Bakshi 2015; Powell and Dent-Micallef, 1997). Competent IT staff can learn new technical skills and possess the required information technology knowledge to solve IT business problems and to address business opportunities through IT. Organizations with highly skilled IT staff are keen to adopt IT innovations because IT specialists can develop IT applications and customize them according to the organizational specific needs (Lin and Lee, 2005). Ebrahim and Irani (2005) suppose that technology itself would not guarantee success but, it is necessary to ensure having sufficient resources such as capable IT staff and effective IT training and support. According to Kannabiran and Dharmalingam, (2012), advanced IT adoption is limited by in-house IT human resources. This result is supported by a study conducted by Upadhyaya, Mohanan, and Prasad, (2013) which found that one of the main barriers to adopt IT in is lack of in-house IT manpower. Because of limited skills and knowledge of technological innovations, many firms are reluctant to adopt IT until they have internal IT related expertise (Thong, 1999). Thus, to ensure the successful adoption of e-procurement systems, it is necessary to ensure the availability of knowledgeable and skilled IS staff. Thus, we develop the following hypothesis:

H5: There is a positive effect of IT staff support on the extent of e-procurement adoption.

c) Operational excellence

A study conducted by Subramaniam and Shaw, (2002), had listed significant values created by web-based procurement. It includes a reduction in transaction costs, search cost, and product price. The results of Hung et al., (2014) confirmed that electronic purchasing improve intra-organizational efficiency as well as external partnerships, and consequently has a positive impact on buyers' organizational performance. Organizational performance could be enhanced by the ability of e-procurement in improving collaboration with outside partners, providing updated information, and streamlining processes (Tatsis et al., 2006). Inter-organizational systems also increase the bargaining power over suppliers (Porter and Millar, 2001), allow better inventory forecasting and planning for future needs (Turban et al., 2017). The emergence of online procurement systems transforms the way to conduct

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purchasing processes; from make-for-stock operations into make-to-order operations (Gosain, Malhotra, and El Sawy, 2004). Online B2B transactions require minimal data inputs, and little errors would occur. Thus online procurement operations lessen cycle time and provide more accurate information. By minimizing errors, an e-procurement system can lead to a better match between buyers' needs and the delivered product, thus achieving better quality of products. One of the main advantages of e-procurement system is its ability to locate alternative sources within a reasonable time (Subramaniam and Shaw, 2002). Consequently, the following hypothesis was developed:

H6: There is a positive effect of the extent of e-procurement adoption on realizing operational excellence.

III. Research Model

As shown in Figure (1), this study focuses on investigating how intra-organizational factors and would determine the level of adopting e-procurement, and how this may affect operational excellence.

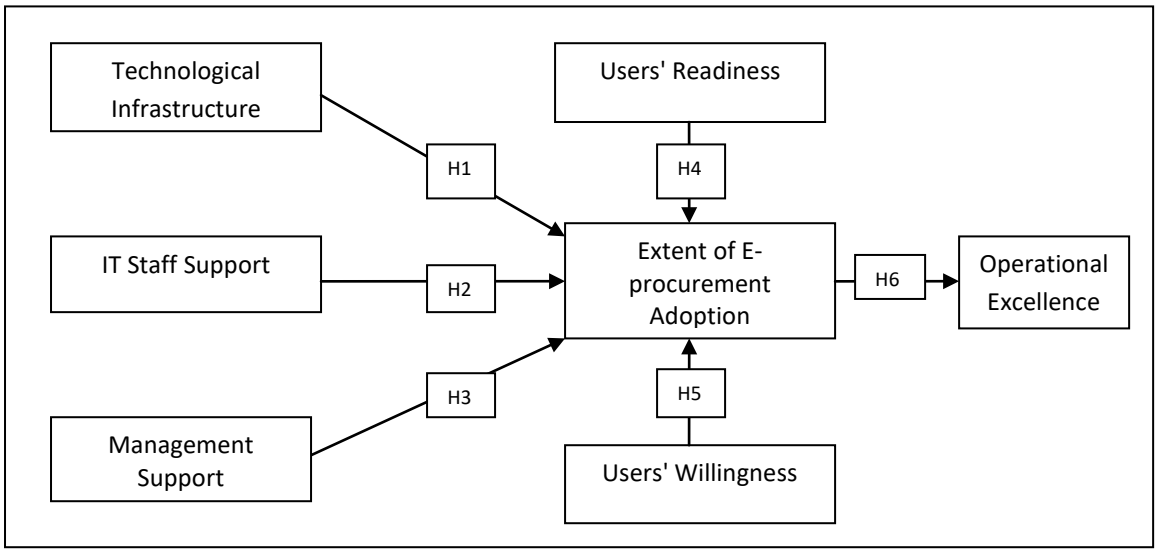


Figure 1: The proposed conceptual framework of the study

IV. Research Methodology

Depending on the nature of this research, an empirical analysis was selected as the research method. For the purpose of collecting data, a structured questionnaire was developed. The questionnaire was pilot-tested by involving manufacturing-responsible managers and quality consultants. It was pre-tested, modified, and finalized in a customizable manner to be suitable for capturing data on the subjects of e-procurement and operational excellence in the industrial environment of SME's in Jordan. There were eight parts to the questionnaire: (1) profiles of the respondents and targeted organizations; (2) availability of technological infrastructure; (3) the extent of IT staff support; (4) the extent of management support; (5) the extent of users' readiness; (6) the extent of users' willingness; (7) the extent of e-procurement adoption; and (8) the realized operational excellence.

a) Data collection

The questionnaire was distributed individually with a brief interview with all respondents to ensure a better understanding of the questionnaire items. The questionnaire was also collected in person to ensure privacy and confidentiality of collected information. Simple random sampling technique was used in distributing questionnaires to different managerial levels (operational managers, quality professionals, and line supervisors) at manufacturing companies of Al-Hassan industrial city. Out of (150) industrial companies at al-Hassan industrial city (Jordan chamber of commerce 2016) only 60 industries were selected randomly for solving the problem of the study, in which eight questionnaires was only distributed at each of these industries companies using a random simple sampling technique. Out of 480 questionnaires distributed to population sample only 410 or (85.4%) of questionnaires were received back, and after omitting (22) invalid responses, therefore only (388) questionnaires were only fit for analysis.

b) Profile of participants

Table (1) shows the profile of the respondents and the targeted organizations in this study. In this study all respondents were in operations and purchasing departments. The results showed that one-third of respondents were female, and more than 59% were young. A majority of the respondents had at least a bachelor certificate. This highlights the fact that our

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respondents were well educated and thus more trusted to fill the questionnaire understandably and appropriately. The largest group of respondents, 60.8%, were those with less than five years working experience in the purchasing and other related fields, followed by participants who had experience of between five and nine years (19.6%). Regarding to the targeted companies, 30% of them were established not less than 15 years ago.

Table 1: Profile of respondents and targeted organizations

		Frequency	Percentage
Gender	Male	264	68
	Female	124	32
Age	Less than 25	84	21.6
	25 - 34	148	38.1
	35 - 44	92	23.7
	45 - 54	40	10.3
	55 and more	24	6.2
Experience	Less than 5	236	60.8
	5 - 9	76	19.6
	10 - 14	48	12.4
	15 and more	28	7.2
Educational level	High school	16	4.1
	Diploma	72	18.6
	Undergraduate	268	69.4
	Postgraduate	32	8.2
Title	Operations manager	196	50.5
	Quality manager	88	22.7
	Purchasing manager	104	26.8
Age of company	Less than 5	40	10.3
	5 - 9	64	16.5
	10 - 14	124	32.0
	15 - 19	96	24.7
	20 and more	64	16.5

c) Data Analysis

For analyzing data in the current study, we use Structural Equation Modeling (SEM) technique and Partial Least Square (PLS) technique SEM was used for testing the proposed model and hypotheses because of its ability to analyze multiple relationships simultaneously (Byrne, 2016; Lomax and Schumacker, 2012). PLS is used due to its ability to model both formative and reflective constructs of small sample sizes (Chin, 1998; Gefen et al., 2011). Therefore the researchers used SEM to test the proposed research model, to discover the extent to which the research model is supported by collected data, and to obtain a reliable measurement tool useful for predicting the extent of using e-procurement and the potential operational excellence. For performing a reliable and vigorous analysis using SEM, the typical sample size should not be less than 200 cases (Kline, 2011; Hair et al., 2010). The number of respondents participated in this study was 388 managers in the purchasing departments and other related areas; production and quality departments.

V. Empirical Results

a) Reliability and validity

To evaluate the sufficiency of the measurement model, we relied on the criteria of reliability, convergent validity, and discriminant validity. Reliability was examined using values of Cronbach's Alpha. Table 2 shows that all values were above 0.7, which is the acceptance threshold for judging the reliability of the measurement tool.

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Table 2: Scale Statistics

Variable	Mean	SD	Alpha
Technological Infrastructure	3.86	0.93	0.90
Readiness of IT Staff	3.78	0.91	0.93
Management Support	3.94	0.87	0.93
Users' Readiness	4.01	1.02	0.78
Users' Willingness	3.87	0.91	0.83
Extent of Adoption	3.91	0.81	0.93
Operational Excellence	3.79	0.85	0.98

To assess convergent, the 58 items used to measure the 7 research variables, factor analysis was used. In the first round, 21 items, were found to have strong loadings of more than 0.40 on more than one factor. Thus, these 21 items were dropped, and the analysis was performed again. The results identified a scale of only 37 items to measure the seven factors in the current study. Further analysis of the discriminant validity was conducted by examining indicators of Cronbach's Alpha, Average Variance Extracted (AVE), and factor loading. As presented in Table 3, it is clearly evident that Cronbach's Alpha of all items exceeded the conventional value of 0.7 (Hair et al., 2010; Nunnally and Bernstein 1994). AVE is a measurement tool used for testing convergent validity. It examines the amount of variance that the indicators share with their respective construct (Hair et al., 2011). The results of convergent validity presented in Table (3) show that the AVE values of all constructs are more than the cutoff value of 0.50. To examine the extent to which a given construct of the research model is different from others, discriminate validity was assessed (Fornell, and Larcker, 1981). The discriminate validity is assured when the square root of the AVE of an individual construct is greater than the correlation of that construct with other constructs in the model (Fornell, and Larcker, 1981). The diagonal values shown in Table 4 are the square root of the AVE. These values are greater than the inter-construct correlations, which indicates an acceptable discriminant validity. Consequently, there is clear evidence that the measurement model is valid, reliable, and suitable for further analysis. To examine convergent validity, the confirmatory factor analysis was used to extract factor loadings. Table 3 shows that all items had loadings above 0.50 on their particular constructs. This means that the measurement has adequate convergent validity (Hair et al., 2010).

Table 3: Convergent and Discriminant Validity, and Reliability

Variables	Items	Factor Loading	AVE	VIF	R^2
Technological infrastructure	IT-Infr1	0.827	0.696	1.858	
	IT-Infr2	0.863			
	IT-Infr3	0.853			
	IT-Infr4	0.790			
Readiness of IT Staff	IT-Read1	0.942	0.807	1.161	
	IT-Read2	0.833			
	IT-Read3	0.916			
Management Support	M-Supp1	0.938	0.808	1.881	
	M-Supp2	0.814			
	M-Supp3	0.938			
Users' Readiness	U-Read1	0.871	0.645	1.153	
	U-Read2	0.728			
Users' Willingness	U-Will1	0.813	0.711	1.040	
	U-Will2	0.872			

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Extent of Adoption	Adop1	0.725	0.665	1.195	0.16
	Adop2	0.780			
	Adop3	0.725			
	Adop4	0.775			
	Adop5	0.892			
	Adop6	0.892			
	Adop7	0.892			
Operational Excellence	Excel1	0.931	0.741		0.43
	Excel2	0.889			
	Excel3	0.931			
	Excel4	0.852			
	Excel5	0.865			
	Excel6	0.713			
	Excel7	0.780			
	Excel8	0.888			
	Excel9	0.878			
	Excel10	0.931			
	Excel11	0.733			
	Excel12	0.818			
	Excel13	0.788			
	Excel14	0.866			
	Excel15	0.980			
	Excel16	0.878			

The study assessed whether the assumed first-order constructs load sufficiently and significantly into their prospective second-order construct. Accordingly, loadings between first-order and second-order constructs were examined using the PLS algorithm. The results show that the five determinant variables of e-procurement (first-order constructs) have sufficient and significant loading values. The overall results indicate that the measurement model meets the conventional standards of reliability and validity.

Table 4: Correlation Matrix

Variables	1	2	3	4	5	6	7
1. Extent of Adoption	0.815						
2. Management Support	0.320	0.899					
3. Operational Excellence	0.661	0.070	0.861				
4. Readiness of IT Staff	0.218	0.156	0.244	0.898			
5. Technological infrastructure	0.315	0.647	0.198	0.092	0.834		
6. Users' Readiness	0.098	0.144	-0.098	0.272	-0.067	0.803	
7. Users' Willingness	0.071	-0.037	0.015	-0.142	0.022	0.005	0.843

b) Testing Hypotheses

To test research hypotheses, we estimate the path coefficients and significance level for each latent variable in the structured model using the PLS algorithm and the PLS bootstrapping procedures. As illustrated in Figure 2, the validity of the model is evaluated by R^2 values and structural paths (Chwelos et al., 2001). The value of the R^2 shows that almost 16.3% of the variance of the extent of e-procurement adoption was accounted for the proposed five preceding variables. This value indicates a satisfactory level of explanation. With regard to the path structure, the research empirically tested the proposed relationships using the bootstrapping procedure to test the statistical significance of the path coefficients.

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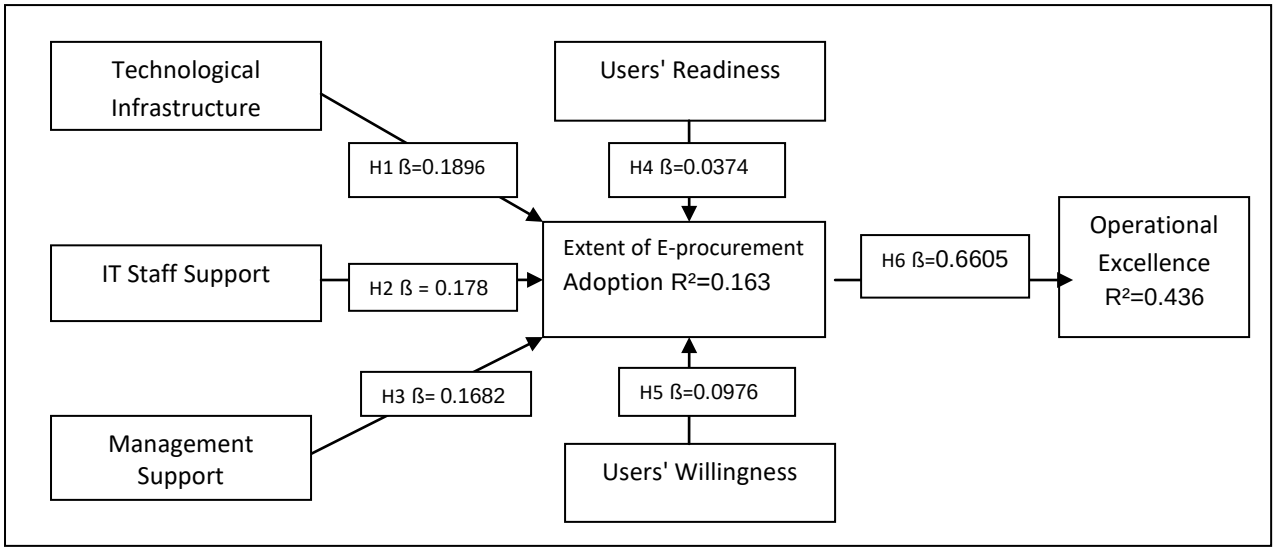


Figure 2: Structural equation modeling (SEM) results

Since our hypotheses were to predict an effect and relationship between independent and dependent variables, therefore we have used path analysis to examine this effect through knowing the-t- value and its coefficient (ß) and we have examined our hypotheses at one tail test. The path coefficient and t-value of all relationships are shown in Table 5.

Table 5: Path Analysis Parameter Estimates

Hypothesis	Hypothesized Paths	Coefficients	t-Value (one tail)	P value (one tail)	Inference
H1	Technological infrastructure -> Extent of Adoption	0.190	2.511	0.006	Supported
H2	Readiness of IT Staff -> Extent of Adoption	0.178	2.599	0.005	Supported
H3	Management Support -> Extent of Adoption	0.168	1.818	0.035	Supported
H4	Users' Readiness -> Extent of Adoption	0.037	0.406	0.340	Rejected
H5	Users' Willingness -> Extent of Adoption	0.098	1.146	0.126	Rejected
H6	Extent of Adoption -> Operational Excellence	0.661	12.028	0.000	Supported

As shown in the table above, the relationship between technological infrastructure and the extent of e-procurement adoption is positive and significant (path coefficient = 0.18, $p < 0.05$), providing support for H1. Similarly, the relationship between the readiness of IT staff and the extent of e-procurement adoption is positive and significant (path coefficient = 0.17, $p < 0.05$), providing support for H2. Also, the relationship between management support and the extent of e-procurement adoption is positive and significant (path coefficient = 0.16, $p < 0.05$), providing support for H3. Contrary to expectation, the effect of users' readiness on the extent of IT adoption were insignificant at 0.05 (path coefficient = 0.0374; $p > 0.05$). This result was similar to the study conducted by Alsaad et al, (2018) in which the role of organizational readiness was not significantly influenced the intent to adopt B2B e-commerce (path coefficient $= -0.039$; $p > 0.05$). Thus, we reject H4. Similarly, the effect of users' willingness on e-procurement adoption were insignificant at $p < 0.05$, providing no evidence to accept H5 (path coefficient $= -0.0976$; $p > 0.05$). However, the effect of the extent of e-procurement adoption on realizing operational excellence was positive and significant (path coefficient = 0.66, $p < 0.05$), providing support for H6.

VI. Discussion and Conclusion

Although resource-based view has been widely employed in a variety of management fields, it is rarely getting attention by IS researchers. Thus, there is insufficient effort to explain how inner resources of the firm is a robust theory that has received wide acceptance in other management fields. While it has been used on a number of some occasions in IS research, there has been no comprehensive effort to describe or defend its use in an IS context. The principal reason behind this paper has been to provide evidence of the way firm IT resources would motivate firms to adopt technology and to give better sight for those who wish to understand how certain technology (i e, e-procurement) would lead to accomplish competitive performance. Our paper shows the significance of the resource-based view to understanding the determinants of e-procurement. This study complements previous research that has used this theoretical framework (Wade and Hulland, 2004; Ross et al., 1998) to explain factors

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affecting the extent of adopting e-procurement, and consequently the ultimate outcome of improving operational excellence.

Research on the value of e-procurement shows that adopting it does not guarantee the realization of the potential value. The realized value depends on internal and external factors. This study focuses on internal factors which are controllable by the firm. They can be enhanced and well managed internally to achieve better results. These include availability of technological infrastructure, users readiness and willingness, top management and skilled IT staff. Once managers become conscious about the potentiality of e-procurement system, it is necessary to identify the determinants of its adoption. Realizing the value of the e-procurement is restricted to certain internal factors, which are controllable by the organization. These are called Organizational IT resources. The contribution of e-procurement system depends on such resources as acknowledgeable and attentive people whether they are IT support staff or decision makers.

Our paper highlights that organizations are more likely to use e-procurement when a sufficient level of IT infrastructure is available. Our results show that IT infrastructure was the most important IT asset for influencing the decision to adopt e-procurement. It is a normal result as it is impossible to use any type of business systems without guaranteeing readiness and availability of technological infrastructure. This indicates that it is important to possess the required hardware, and a capable network to cope with increasing number purchasing processes conducted over the internet. This conclusion is congruent with various studies such as Chang, (2010); Gorla, Chiravuri, and Chinta, (2017); and Chatzoglou, and Chatzoudes, (2016), who affirm that IT availability and maturity level is one of the main issues encountering e-procurement adoption, especially in the developing countries (Walker, and Harland, 2008). Additionally we conclude that organizations will adopt e-procurement whenever there is a reliable staff ready to handle emerging IT issues. IT staff should be highly skilled and willing enough to follow up users needs and to sort out potential difficulties. The importance of competent IT staff also resides in their role of developing IT applications and aligning technology to the organizational needs (Lin and Lee, 2005). This finding comes in line with findings of Kannabiran and Dharmalingam, (2012) and Chahal and Bakshi (2015), who showed the significance of competent human resources in realizing competitive value through acquiring IT initiatives. Another important organizational asset required for successful adoption of e-procurement is the top management support. It is much necessary to guarantee managers belief in the value of using e-procurement to their firms. This study was in agreement with the study of Ngai et al. (2010) and Scupola, (2009), who argue that managers' awareness of IT benefits and their commitment is crucial to the successful adoption of IT.

Unexpectedly, no significant evidence was observed concerning the impact of users' readiness on adopting e-procurement. This may indicate that some managers may decide to outsource IS and adopt its actual implementation without considering users IT skills. Thus, some managers do not pay attention to users' abilities, but alternatively, they consider the availability of physical IT assets and the capabilities of IT department. As a result, it is largely recommended to change employee perception toward using new technology and to improve their behaviors by offering a training program, lecture, technical know-how workshops. Surprisingly, this finding contradicts many studies (for example; Au, Ho, and Law, 2014; Giunipero, Ramirez, and Swilley, 2012; and Venkatesh et al., 2003) affirm the role of users' readiness (perceived ease of use) in acceptance and use of technology. Another surprising finding of this study is the insignificant relationship between users' willingness and e-procurement adoption. This finding contradicts the findings of different studies (for example; Giunipero, Ramirez, and Swilley, 2012; and Cho and Chang 2008) who confirm that perceived usefulness (users' willingness) is a critical factor in determining successful adoption and usage of IT initiatives.

It is clearly, found that e-procurement adoption is directly related to realizing a variety of benefits at the operational level of the purchasing departments. To a large degree, potential adopters of e-procurement perceive its value in achieving better performance of purchasing activities. This is in agreement with Rahim, (2008); Batenburg, (2007); and Chan and Lee, (2003) who investigate the need to link between e-procurement adoption and its consequent results to understand the business value of e-procurement adoption. This behavior could be reasonable in a particular organizational culture which allows managers to take decisions on their own without considering perceptions of potential users. In some organizational settings where the masculinity prevails, managers behave aggressively with others. They decide to adopt a certain technology and wait other to perform in certain way (Hofstede, et al., 1998).

The result also confirmed that our model is reliable enough to predict the intention to adopt e-procurement, and its consequent relationship with realizing operational excellence. Additionally, the model validity was tested by the indicators of convergent and discriminant validity. Both tests show that the model is valid enough to be used for investigating the determinant factors affecting e-procurement, as well as the level of operational excellence could be achieved by adopting e-procurement. Furthermore, the validity of our model was evaluated by the R^2 value which showed that almost 16.3% of the variance in the intention to adopt e-

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procurement was accounted for the proposed framework, which indicates a satisfactory level of explanation.

VII. Contribution to Knowledge and Practice

This study expands understanding of the RBV and its ability to explain how organizational IT capabilities would enhance the organizational performance. It provides empirical evidence to understand how internal IT resources influence the decision to adopt e-procurement. Contradictory results have been found in different studies concerning the determinant factors that may enable or hinder e-procurement adoption. This study supports the extant literature by providing evidence of these enablers. With respect to e-procurement adoption in developing countries, the progress of knowledge is slightly limited, because they do not focus on the unique internal resources. Additionally, to the best of the authors' knowledge, no research effort has been made in Jordan in an attempt to investigate the determinants of e-procurement adoption and its relation to firm performance. In this study, we contribute to the existing literature on e-procurement adoption in developing countries by considering mainly intra-organizational capabilities. The current model has identified the critical organizational aspects recognized from the literature, collectively with other aspects not clearly examined in previous studies. While many previous studies concentrated on the acceptance of using e-procurement from the perspective of users, this study is different as it entails the factors affecting the decision to adopt e-procurement at the managerial level. Furthermore, the inclusion of users readiness, users willingness, and IT staff support factors in this study is a further contribution to the body of knowledge on this topic. A supplementary contribution is the new measurement tool developed. Some questions were adapted to fit the research context while other questions for the novel constructs were merely developed by the researchers. Consequently, the integrated model and the measurement tool used in this research are the contributions of this study. Thus, this research provides valuable knowledge and hence can stimulate others to engage in further research addressing the adoption of new technologies. Practitioners benefit from the insights by the provision of prerequisite factors that purchasers have to consider for better employment of e-procurement systems and acknowledging them with its potential in realizing operational performance. Managers in charge of deciding on the e-procurement adoption need to be more mindful that successful adoption requires considering the internal IT resources. To ensure competitive performance, firms have to acquire inimitable resources which enable them to adopt new technology. Thus, developing more sophisticated IT infrastructure, securing the commitment of top management, and supporting IT staff with the required computer skills are crucial for better adoption.

VIII. Limitations and Recommendations for Future Research

This inquiry was restricted to small and medium manufacturing organizations, which may limit generalisability to larger organizations in different sectors. Thus, we encourage other researchers to target larger firms and different contexts around Jordan. Although our examination was designed to facilitate a deeper insight into internal factors influencing e-procurement adoption likelihood, more factors might provide enhance the existing model in explaining companies' adoption behavior. For example, future studies could investigate the financial support of the organization (Altayyar and Beaumont-Kerridge 2016; Gunasekaran et al., 2009), and the organizational culture (Ababneh and Shrafat, 2014). Another limitation arises from providing a static picture of e-procurement adoption as it is a cross-sectional and lacks a longitudinal approach.

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Appendix: Questionnaire Items

Availability of technological infrastructure

1. We have made significant IT investments
2. We have a good telecommunication networks
3. We have a good expertise in developing e- business applications
4. We have integrated IS applications handling different business areas
5. We are capable to protect our data by applying various security technologies

Note: The factors were measured on a five-point scale, with 1 = "strongly disagree" and 5 = "strongly agree"

Management support level towards e-procurement adoption

1. Top management confidence to use new technology
2. The need for continuing relationship with suppliers
3. Allocated financial resources
4. The existing policies support using new technology
5. Top management belief of its positive impact on future performance

Note: The factors were measured on a fivepoint scale, with 1 = "extremely low" and 5 = "extremely high"

Users' readiness towards e-procurement adoption

Potential users:

1. Have the ability to use the internet well
2. Have the ability to execute good search on the internet
3. Have the technical expertise
4. Have good system knowledge
5. Perceive ease of using the system

Note: The factors were measured on a fivepoint scale, with 1 = "strongly disagree" and 5 = "strongly agree"

Readiness of IT staff

Our internal IT staff members are

1. Available to solve any problems associated with the use of e-procurement system
2. Accessible at any time to provide support on the use of e-procurement system
3. Capable of solving any problems associated with the use of e-procurement system

Note: The factors were measured on a fivepoint scale, with 1 = "strongly disagree" and 5 = "strongly agree"

Users' willingness towards e-procurement adoption

Potential users:

1. Perceive the system usefulness
2. Feel comfort with using the system
3. Expect their jobs will be executed easier through usage
4. Understand the benefits of e-procurement
5. Expect using the system will improve their performance
6. Do not resist using new technology

Note: The factors were measured on a fivepoint scale, with 1 = "strongly disagree" and 5 = "strongly agree"

The extent of e-procurement adoption

We conduct the following information-related activities electronically

1. Searching for suppliers goods and services
2. Checking availability of goods and services
3. Checking prices of goods and services
4. Communicating with suppliers
5. Exchanging procurement-related information internally
6. Providing suppliers with specific information about product and service specifications
7. Sharing inventory planning information with suppliers
8. Negotiating prices and other terms with suppliers

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We conduct the following transactions electronically

1. Purchasing via e-catalogues
2. Creating purchase orders
3. Tracking purchase orders
4. Purchasing via e-auctions
5. Purchasing via e-reverse auctions
6. Allowing suppliers to submit bids online

Note: The factors were measured on a five-point scale, with 1 = "extremely low" and 5 = "extremely high"

The extent of realized operational excellence

We have realized:

1. A reduction in information processing and transactional costs
2. A reduction in purchasing cycle time
3. An advanced level of market share
4. A reduction in operational tasks
5. An improved SCM
6. An enhanced negotiation power over suppliers
7. A better relationship with partners and suppliers
8. A reduction in the cost of monitoring inventory and production schedules
9. A better customer satisfaction
10. A better utilization of staff
11. An improved level of customer service
12. A decrease in number of staff in the purchasing department
13. A better adaptability with market needs
14. A reduction in inventory levels
15. A reduction in the purchase price of goods and services
16. A reduction in the paperwork
17. A better partnership with suppliers
18. An improved communication
19. An improved procurement process
20. A reduction in the operational costs

Note: The factors were measured on a five-point scale, with 1 = "never realized" and 5 = "extremely realized"

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