

THE DRIVERS OF E-BUSINESS IMPLEMENTATION AND THE EFFECT ON ORGANIZATIONAL PERFORMANCE

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ABSTRACT

The aim of this study is to propose and empirically test a suggested research model that shows the effect of four organizational factors on (learning capabilities, knowledge management capabilities, adhocracy culture, and top management support) e-business implementation, in addition to the effect of implementing e-business on organizational performance. Several statistical techniques such as confirmatory factor analysis and structural equation modeling have been used to examine the validity of the hypothesized conceptual model and to validate the recommended hypotheses. The statistical analysis for the collected data from 301 IS manager in different companies located in Saudi Arabia support the positive effect for the four organizational factors on e-business implementation, Moreover, organizational performance is positively affected by e-business implementation.

Keywords: E-Business; Learning capabilities; management support; Adhocracy culture; Knowledge management capabilities.

INTRODUCTION

In the previous twenty years the importance of using e-business is growing rapidly and the number of research papers in e-business and IT is increasing (Ghobakhloo & Tang, 2011). In addition to the worldwide attack of Covid-19 shows the importance of transferring for the traditional way of doing business to e-business. For each organization there is a strategy for innovation and updating technology, using e-business as a complete solution to integrate all internet-based systems with the main organization activities is so crucial for the successful implantation of the organization technological innovation strategy's (Kim & Ramkaran, 2004). Using e-business enables the organization of internet as online search tool for information and share it with all the organization supply chain members as a way of creating long term relationship with the supplier and provide an excellent customer service (Zhu & Kraemer, 2002; Martin et al, 2011).

Therefore, e-business helps the successful transformation of the organization, suppliers, and customers to integrated network, capable of enhancing the value adding processes' and effectively manages and controls the relationships with all its supply chain members' (Lucia-Palacios et al., 2014). As the research trend in the area of implementing e-business is growing fast in the developed countries, there is a lack of studies in the less developed countries especially in the Middle East region (Al-Somali et al., 2011). In addition, the previous studies in the area of e-business implementation did not deal in depth with the effect of organizational factors such as top management support and environmental variables on adapting e-business.

Also, there is a lack of studies, examining the effect of using e-business on enhancing the organizational performance.

The organizational factors are varied and one of such factors is the capabilities of the organization which form the culture of learning for the organization and help in shaping the organizational knowledge. Thus, enhancing the organizational learning curve and efficient management for organizational knowledge capabilities contribute to the successful implementation for the new IT (Lin & Lee, 2005). Despite the previous empirical studies tested the relationship between various organizational factors, different environmental variables, innovative technology and implementing e-business, few of these studies targeted the relationship between the use of e-business and managing the organizational knowledge capabilities. Also, previous empirical studies which, incorporated the organizational knowledge capabilities as one of the study variables showed only the positive relationship between knowledge management capabilities on the organizational innovation in technology; and few empirical studies tested how the effective managing for the knowledge capabilities help in the successful implementation of e-business (Chong et al., 2014).

Accordingly, there is a gap in literature regarding the positive effect for organizational capabilities such as knowledge and learning, on e-business implementation and improving the performance of the organization especially in a fast-developing country like Saudi Arabia (Senarathna et al., 2014). Based on extensive review of the literature, a few studies have been identified, which examined the effect of the support from top management on the adoption of e-business. However, recently, a study in Saudi Arabia found a positive effect for top management support on the successful implementation of e-business (Al-Somali et al., 2011).

Based on the previous discussion, the objectives of the current study are as follows:

- Identify the effect of learning capabilities, knowledge management capabilities, organizational culture, and the support of top management on the implementing of e-business.
- Identify the effect of implementing e-business on the organizational performance.

THEORY AND HYPOTHESIS DEVELOPMENT

In this part, a review for relevant literature has been done to establish the relationships between different organizational factors such as learning capabilities and e-business implementation and organizational performance.

Organizational Factors and E-business Implementation

According to Abu-Musa (2004), e-business implementation is using the internet capabilities to manage the internal and external business processes. Implementing e-business solution is not just a change of the ways of doing the business; it became a part of the strategic approach of the company. To understand the effect of implementing e-business, there is a need first to understand the organizational elements that motivate the implementation of e-business. Javalgi et al. (2004) and Migdadi et al. (2016) support the same idea, arguing that it is important to understand the organizational factors underlying the expansion of e-business. In addition, Ghobakhloo et al. (2011) pointed out that organizational readiness is a crucial element in the process of implementing e-business. The organizational readiness can be defined as availability

of required technological, human, and financial resources, in addition to the supportive culture values and top management devotion to implement e-business. Organizational factors integrated in this research are learning capabilities, knowledge management capabilities, adhocracy culture, and top management support.

E-business is not just building a presence for the company on the internet, but it includes performing e-business transactions, reshaping the business processes, and maximizing the adding value for the business (Turban et al., 2012). There is a need to understand the benefits of implementing new technology before adopting it, to improve the performance (Zhu et al., 2006). Accordingly, organizations that are open for learning are most likely to implement e-business and gain its benefits (Theodosiou & Katsikea, 2012; Maditinos et al., 2014). Therefore, employees and organization as a whole have to learn how to implement the new technology effectively while they are adapting the e-business (Purvis et al., 2001). The learning capabilities can be classified into three types as follow:

According to Garavan et al. (1997), training is an organized and official effort to enhance the skills, behavior and knowledge of the employees and the training availability can be described as to what extent the training and education is available for the employees. Using a new technology requires training on how it will be used and implemented, thus effective implementation for e-business needs investing in employees' training in addition to the IT infrastructure (Bradford & Florin, 2003). Accordingly, companies that allocate sufficient resources for training most probably will gain benefits from implementing e-business (Zhu & Kraemer, 2005; Migdadi et al., 2016).

Technical Expertise

It refers to the overall organization's technical experience for developing internet-based capabilities, which is the key determines for the e-business success (Zhu and Kraemer, 2002). The technical expertise and IT infrastructure are main requirements for integrating e-business in the company value chain (Oliveira & Martins, 2010). According to Ifinedo (2012), enhancing the technical knowledge of the organization leads to effective implementation of the e-business and improving the company performance. The company with superior levels of technical expertise is most likely to dominate the technological issues of e-business and contribute positively to company performance compared to the company with inferior level of technical expertise (Zhu, 2004).

Ghobakhloo and Tang (2011), define Knowledge level as the awareness of the company employees with technology, the awareness helps the employees are in dealing with e-business adoption . Moreover, the awareness helps in enhancing the employee's capabilities in dealing with their customers and running business over the internet (Zhu & Kraemer, 2002). Based on the previous analysis for the relationship between learning capabilities and e-business adaptation, the first hypothesis for the study is the follow:

H1: Learning capabilities are positively affecting the e-business implementation.

In the knowledge era e-business developed rapidly in sense of providing variety of choices for the customer, through the e-business the customer can now match up different offerings worldwide. Accordingly, the company needs to develop unique knowledge to stimulate the customer decision (Chong et al, 2014). Knowledge management capabilities concentrate on

setup of knowledge repositories and develop a convenient environment for knowledge sharing for increase the customer awareness and dissemination of e-business (Lin, 2013; Attia, 2018).

According to Yeh et al. (2012), knowledge acquisition and knowledge sharing have positive effect on e-business, in addition the company that encourage the acquisition and sharing of knowledge are most likely to use intensively e-business compared to the company that do not (Theodosiou & Katsikea, 2012; Demitrios et al., 2014). Moreover, Chong et al. (2014) indicated that knowledge acquisition and knowledge application play a major role in making decision about e-business adaptation. Accordingly, effective acquisition, application, and sharing of knowledge, are crucial for the success of e-business implementation.

According to Lin (2008), knowledge acquisition is one of the business critical processes which devoted to use the current knowledge and identify the new ones, in order to secure unique knowledge for the company. Moreover, the companies that own valuable knowledge and update it frequently are most likely to implement e-business successfully and gain its benefits compared to the company that do not. Therefore, the effective and successful implementation of e-business needs extensive effort in identifying and collecting the new knowledge (Etemad, 2004). Chong et al. (2013) identified a positive relationship between knowledge acquisition and implementing new supply chain technologies. Accordingly, acquisition of knowledge is positively related to the successful implementation of e-business.

Knowledge Application

It's the next step to knowledge acquisition which includes the implementing of what has been learnt to the business processes to gain value (Cohen & Levinthal, 1990). Chong et al. (2014) in their study discovered that the company which is willing to enhance their knowledge application is the most likely company to implement e-business. E-business is about developing an electronic platform over the internet to stimulate the collaboration between the company from a side and the employees, customers, and suppliers from other side by sharing knowledge (Plessis & Boon, 2004). Accordingly, sharing knowledge could happen between different entities inside the company or between the company and different entities outside (Plessis & Boon, 2004). Moreover, previous studies about the effect of IT on organizational performance showed that, knowledge sharing is one of the critical organizational factors for successful knowledge management and e-business implementation (Damodaran & Olpher, 2000).

Based on the previous analysis for the relationship between knowledge management capabilities and e-business adaptation, the second hypothesis for the study is the follow:

H2: Knowledge management capabilities are positively affecting the e-business implementation.

Despite of wildly studies in the area of organizational culture but few studies tested the relationship between organizational culture and e-business implementation (Lirios et al., 2017). One of the few studies which, tested the relationship between organizational culture and e-business implementation done by Annamalai and Ramayah (2013), and their results support the moderator effect of the organizational culture on the success of implementing the ERP system.

According to Deshpande et al. (1993) and Migdadi et al. (2016), the adhocracy culture is the most suitable type of culture for e-business implementation and success. The adhocracy culture is risk taking culture which support the entrepreneurial, creative, and robust work environment. Accordingly, the adhocracy culture supports the first stage of e-business

implementation (Senarathna et al., 2014). Moreover, the organizational culture that facilitate risk taking speeds up new IT implementation (Moon & Norris, 2005). Finally, a study by Senarathna et al. (2014) discovered that the chances to implement e-business are higher with the organization followings adhocracy culture.

Based on the previous analysis for the relationship between adhocracy culture and e-business adaptation, the third hypothesis for the study is the follow:

H3: Adhocracy culture is positively affecting the e-business implementation.

Top management support refers to the activities of motivating, engaging, and encouraging implemented by management for successful e-business implementation. Top management support is one of main organizational factors that, identify how well the company is prepared for e-business implementation and identifying the role of e-business in the company (Eder & Igbaria, 2001). Top management support required to assign the needed resources for e-business implementation, to modify the organizational structure to facilitate the use of e-business and to build up values that support the use of e-business (Hossain et al., 2011; Theodosiou & Katsikea, 2012). Based on the previous analysis for the relationship between top management support and e-business adaptation, the fourth hypothesis for the study is the follow:

H4: Top management support is positively affecting the e-business implementation.

E-business Implementation and Organizational Performance

The competition in today's business world shifted from single competition-company to company- to a competition between supply chains, IT is a crucial element in building the supply chain and makes it a flexible supply chain to deal with the changes in the business environment (Kohli et al., 2003; Attia, 2015). According to Cisco Systems, investments in IT will help the company in reducing costs, improving productivity, profitability and increase customer satisfaction. However, it is surprising to find that a little research seems to have been done on measuring the effect of E- business implementation on performance (Barnes & Hinton, 2012).

Implementing e-business affect the performance of the company in three areas: customer satisfaction, financial performance, and business process performance (Amoroso, 2001). In addition, the effect of implementing e-business on performance can be measured under three level of analysis. First, organizational level which can be measured by profitability. Second, the process level which can be measured by efficiency and the last level is individual level which can be measured by customer satisfaction (Garrity & Sanders, 1998). Furthermore, implementing e-business affect the performance of all departments in the company and many of the company processes (Lucia-Palacios et al., 2014).

Based on the previous analysis for the relationship between top e-business implementation and organizational performance, the fifth hypothesis for the study is the follow:

H5: E-business implementation is positively affecting the organizational performance.

RESEARCH MODEL

The research model is shown in Figure 1. In this model, the hypothesized research model suggests the impact of organizational factors on e-business implementation. Also, the effect of e-

business implementation on organizational performance. To test the validity of the hypothesized research model, the structural equations modelling (SEM) technique has been chosen.

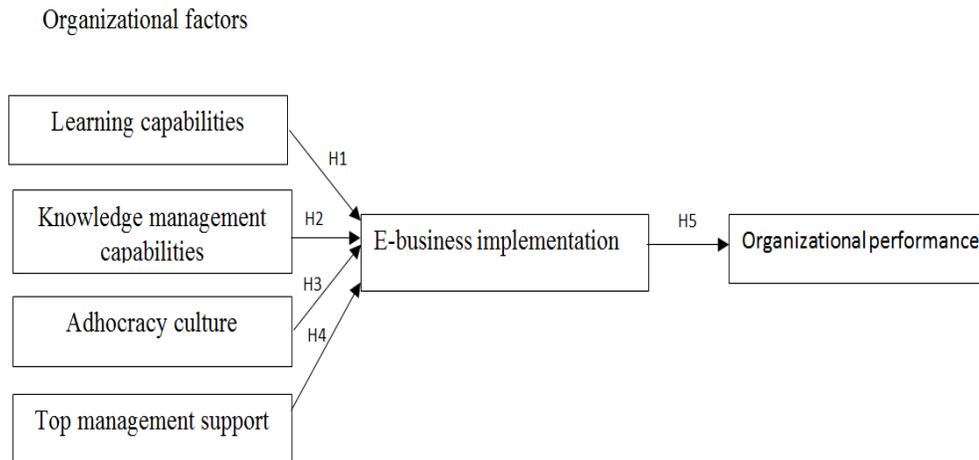


FIGURE 1

RESEARCH MODEL

METHODOLOGY

Research population consisted of IS managers in Saudi companies, the IS managers are the most suitable target to answer all the related questions to e-business implementation. The questionnaires were mailed to 500 managers in a medium and large size companies working in different industries and followed by two phases of phone calls to encourage the managers to fill in the questionnaire. The valid responses were 301, which reflect response rate equal to 60.2%. Table 1 summarizes the responses ratio according to the cities.

TABLE 1		
SUMMARY OF THE RESPONSE RATE ACCORDING TO THE CITIES		
City	Response Number	Response Rate
Jeddah	149	49.50%
Riyadh	105	34.88%
Dammam	19	6.31%
Al-Kharj	16	5.32%
Al-Ahsa	12	3.99%
Total	301	100%

A survey has been developed to measure the different variables for the study, the survey items' for measuring Learning Capabilities and Knowledge Management Capabilities has been developed based on Lee et al. (2007) measures and the survey items' for measuring Adhocracy culture has been developed based on Ifinedo (2007) measures. The survey items' for measuring Top Management Support, and Organizational Performance has been developed based on Wu et al. (2003) measures and finally the survey items' for measuring e-business Implementation has been developed based on Srinivasan et al. (2002) measures.

Data Analysis

To analysis the collected data a two-step structural equation modeling approach was used. First testing the variables measurement. Then, testing the hypotheses.

Measurement Model

The current study recommended a hypothetical research model. The model consists of 49 items which divided between six latent variables, four of the six variables are exogenous variables and the remaining two are endogenous variables. The confirmatory factor analysis (CFA) has been used as a first step of the statistical analysis to examine the reliability and validity of the collected data and to test the fit between the data and measurement model. To test the construct validity of measurement, the factor loading, reliability, and average variance extracted were calculated to estimate the relative amount of convergent validity among item measures. According to Fornell (1982) to determine the validity of research model, the Cronbach's alpha value should be above 0.7, also the composite reliabilities value should be above 0.7 and Table 2 exhibits that, both values are above 0.7. In addition, Hair et al. (2006) recommended that average variance extracted for the model variables should be at least 0.5 to shows the discriminant validity of the model, the results shown in Table 3 exhibits that, the value of the highest average variance extracted is 0.809 and the lowest value is 0.648. All the previous results exhibit adequate discriminant validity for the survey items.

According to Hair et al. (2006) if the average variance extracted from a variable is greater than the correlation between the variable and other variables in the model, that indicates adequate discriminant validity. Table 2 shows that, the average variance extracted is greater than the correlation of that variable with all other variables in the model. Moreover, Table 3 did not show any abnormal correlations between the variables which show no evidence for common method bias. to examine the fit between collected data from the study sample and the measurement model, the confirmatory analysis has been used. Table 2 shows the outputs of confirmatory analysis for the study's variables and the results were: RMSEA=0.093; Chi-square= 2.273; SRMR=0.074; NFI=0.918; NNFI=0.906; IFI=0.937; CFI=0.935, which reflect a good fit between the data and the suggested measurement model.

Variable	Factor loading (0.7)	Cronbach's alpha	Composite reliability (0.7)	Average variance extracted (.0.5)
Learning capabilities				
LC1	0.84	0.812	0.856	0.648
LC2	0.83			
LC3	0.78			
LC4	0.9			
LC5	0.88			
LC6	0.95			

LC7	0.8			
Knowledge management capabilities				
KC1	0.86	0.923	0.938	0.809
KC2	0.91			
KC3	0.82			
KC4	0.93			
KC5	0.9			
KC6	0.92			
KC7	0.83			
KC8	0.86			
KC9	0.8			
KC10	0.81			
KC11	0.86			
KC12	0.82			
KC13	0.9			
Adhocracy culture				
AC1	0.9	0.881	0.915	0.701
AC2	0.87			
AC3	0.92			
AC4	0.79			
AC5	0.89			
Top management support				
MS1	0.83	0.933	0.958	0.77
MS2	0.85			
MS3	0.92			
MS4	0.87			
MS5	0.81			
E-business implementation				
EB1	0.85	0.837	0.897	0.658
EB2	0.82			
EB3	0.83			
EB4	0.86			
Organizational Performance				
OP1	0.8	0.904	0.95	0.785
OP2	0.81			
OP3	0.86			
OP4	0.82			
OP5	0.89			
OP6	0.83			
OP7	0.85			
OP8	0.92			
OP9	0.86			
OP10	0.91			
OP11	0.82			
OP12	0.93			
OP13	0.9			

OP14	0.84			
OP15	0.83			
RMSEA=0.093; Chi-square= 2.273; SRMR=0.074; NFI=0.918; NNFI=0.906; IFI=0.937; CFI=0.935.				

TABLE 3 CORRELATION RESULTS						
Scale	LC	KC	AC	MS	EB	OP
Learning capabilities (LC)	1					
Knowledge management capabilities (KC)	0.318*	1				
Adhocracy culture (AC)	0.267*	0.415*	1			
Top management support (MS)	0.364*	0.612*	0.367*	1		
E-business implementation (EB)	0.514*	0.197*	0.264*	0.330*	1	
Organizational performance (OP)	0.445*	0.573*	0.174*	0.551*	0.639*	1

Correlation is significant at * 0.01 levels (two-tailed)

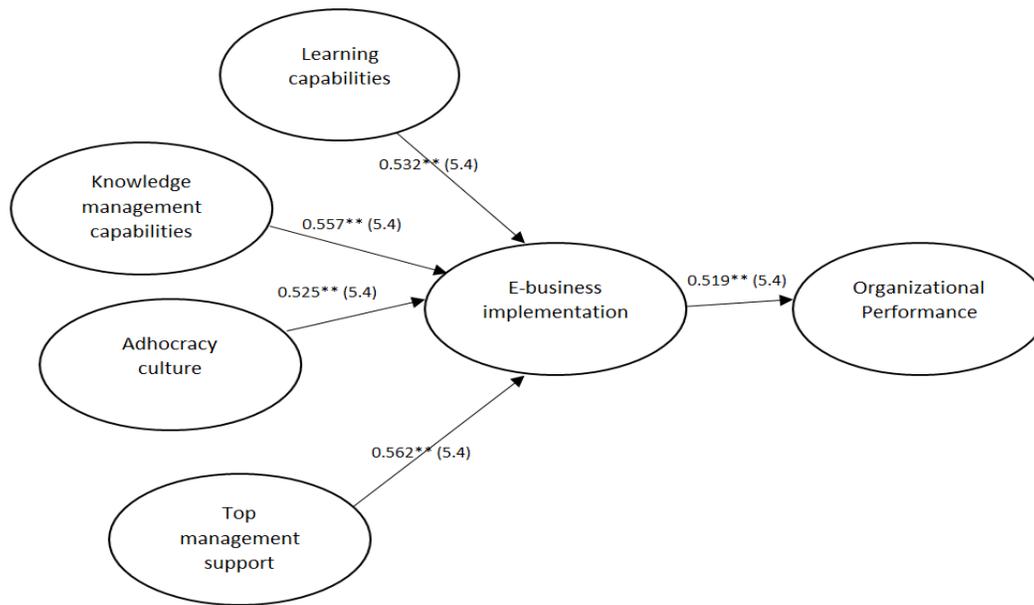


FIGURE 2

STRUCTURAL RELATIONSHIP MODEL

Structural Relationship Model

One of the acceptance standards for a conceptual model is chi-square which should be over 2 to accept the validity of the model. In addition, NNFI value for the model should be above 0.9 and CFI also to accept the model (Garver & Mentzer 1999s). The results of statistical analysis show that, Chi-square is 2.75 for tested model is 2.75, moreover the CFI value is 0.935 and NNFI value is 0.906 for the tested model are 0.935 and 0.906. Based on the previous results the hypothesized theoretical research model is accepted. Figure 2 shows the results of the structural

equation modeling analysis between the study variables and the coefficients values for the standardized paths, based on shown results in Figure 2 all hypotheses were strongly supported. Regarding, hypothesis 1, the result shows that Learning capabilities are positively affecting the e-business implementation ($\beta=0.532$ at $\rho<0.001$). Consistent with hypothesis 2 knowledge management capabilities is positively related to e-business implementation ($\beta=0.557$ at $\rho<0.001$). The result also confirms that adhocracy culture is positively affecting the e-business implementation which provides support for hypothesis 3 ($\beta=0.525$ at $\rho<0.001$). In addition, the data analysis support that, top management support has a positive effect on e-business implementation ($\beta=0.562$ at $\rho<0.001$). Finally, e-business implementation has a positive effect on organizational performance ($\beta=0.519$ at $\rho<0.001$).

DISCUSSION

Implementing e-business is a major project that changes used business models, organizational structures, and procedures and the relationships with the clients, suppliers, and different business parties (Chatterjee et al., 2002). Having a clear idea about the motivator variables for implementing e-business and its effect on the organizational performance is crucially important. (Zhu et al., 2006). Accordingly, the current research contributes to literature in the area of e-business implementation by testing the suggested motivators for e-business and its effect on performance.

The results of the statistical analysis for the collected data support the crucial role for learning capabilities as it shows significant positive effect for learning capabilities on e-business implementation. The previous result concurs several previous studies showed the complexity of implementing e-business and the need for the three main learning capabilities to successfully implement e-business and gain benefits from it (Lin & Lee, 2005; Lee et al., 2007). According to by Lee et al. (2007), successful implementation for e-business need effective process of knowledge acquisition and implementing that knowledge in different business processes, in addition to sharing the acquired knowledge with different parties internally and externally. The previous conclusion matches the current study result which indicated a positive effect for knowledge management capabilities on e-business implementation. In addition, Wadesango and Magaya, (2020) found a positive effect for online banking on the increase of the customer deposits and the ROA. The results of their study match the results of the current study.

Developing an organizational culture that aids and enhances e-business implementation is a vital element in supporting the success of implementation process, and the results of the current research support the positive effect for adhocracy culture on e-business implementation. Also, the study results show a positive effect for top management support as one of critical organizational factor on e-business implementation which matches the result of Theodosiou and Katsikea (2012). Finally, the current study result supports the positive effect of e-business implementation on organizational performance which matches the result of Voola et al. (2012) study.

THEORETICAL AND PRACTICAL IMPLICATIONS

The results of current study support the acceptance of suggested research model which indicate the positive effect for learning capabilities, knowledge management capabilities, adhocracy culture, and top management support on e-business implementation. In addition to the positive effect for e-business implementation on the organizational performance. The current

results contribute to the literature of e-business by developing and validating a theoretical model which, explains the effect of different organizational factors on e-business implementation and how the e-business adaptation will enhance the organizational performance. According to the author knowledge, the current study considers as one of few studies which tested the effect of learning capabilities, knowledge management capabilities, adhocracy culture, and top management support on e-business implementation especially in Saudi Arabia.

In addition, the results of current study contribute to the theory of knowledge management which consider knowledge management capabilities and learning capabilities as a crucial organizational factor in the success of e-business implementation. Also, the current study results contribute to the organization culture theory by showing the positive effect for top management support and adhocracy culture on the success of e-business implementation. Finally, the results contribute to the organizational performance theory by clarifying the effect of implementing e-business on organizational performance.

The study findings are important not only for its contribution to academic theories but it also for its contribution for the practitioners. Practitioners can use our results to identify and Implement knowledge management and learning capabilities with acceptable level of confidence based on empirical results that these initiatives will be in the right track with their strategy to implement e-business. In addition, the results of this study draw the attention of the practitioners to the importance of creating the right organizational environment and provide the needed support for successful implementation of e-business.

RESEARCH LIMITATIONS AND RECOMMENDED FUTURE RESEARCH

There are four main limitations for the study, all of which could be considered an opportunity for future research. First, the current study investigated the suggested research model only in companies located in Saudi Arabia; therefore, there is a need to re-examine the hypothesized relationships between the variables in different developed and developing countries. Second, the effect of different environmental variables has not been tested. Second, the effect of different environmental variables on e-business implementation have not been test. Third, only the effect of four organizational variables have been tested on e-business implementation. Accordingly, there is a need to test the effect of different organizational and environmental variables on e-business implementation. Finally, there is a need to test the direct effect of learning capabilities, knowledge management capabilities, adhocracy culture, and top management support on the organizational performance because the results of several studies support the positive effect for different organizational factors on the organizational performance (Hashim et al, 2018; Freihat et al, 2019; Muthuveloo & Teoh, 2020; Koay & Muthuveloo, 2021; Kurniawan & Galushasti, 2021).

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