

RESEARCH PAPER

Investigating the adoption of E-Business Technology by Small and Medium Enterprises

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Abstract. The main purpose of this study is to identify factors affecting E-business technology adoption and organizational performance. Firms in Libya are facing competitive pressure that creates urgency of working efficiently in the competitive market. This makes an urgent need of e-business adoption strengthening their capacity and capability. Quantitative method was utilized for the data collection and statistical analysis. Data is collected using non-probability random sampling technique and the respondents were the managers having experience of using E-business. Data were analyzed using structural equation modelling technique to confirm the hypothesis developed. The quantitative findings revealed that beta coefficient of trial-ability and observability was having high influence on adoption of E-business technology by 0.466 and 0.371. With the significant standardized regression weights of all the constructs and items, the overall square multiple correlation was found to be 0.55 (55%) which is considered as very strong and significant finding of the study. This paper contributes to the adoption debate extending the Diffusion Innovation Theory framework by the inclusion of trial-ability and observability towards E-business and organizational performance as an antecedent factor. E-business has potential to increase revenues, operational efficiency and relationship development. The present study adds to the limited empirical work performed in this area investigating the antecedents and outcomes of e-business adoption, within the context of a highly competitive and rapidly evolving industry.

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INTRODUCTION

Adoption of new technology and the investment required to do so give rise to risky perception of key stakeholders in small and medium enterprises (SMEs). Thus it is important to adopt the technology through technical perspectives and its association towards the benefit of SMEs (Grant, Edgar, Sukumar & Meyer, 2014). The race for survival among

enterprises is the main issue owners or managers are concerned with. Consequently, greater focus is being targeted at the management of e-business since it is one of the most influential aspects in the overall performance and competitive advantage of organization which lead to their growth or decline. In Libya many enterprises consider e-business as an extra cost, arguing that if they sell their products why should they consider an activity that will increase costs? One of the reasons for researching e-

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business for small businesses are that they have been neglected in the past, and if more attention were given to the sector this would embrace the industry as well as the economy through the Internet at a national and international level. SMEs appear to face important and unique challenges in adopting new technologies, thus impeding the garnering of benefit. This is such, due to the fact that the majority of tools, techniques, and methodologies focused in the domain of information systems and technology that were meant for large firms (Maguire & Magrys, 2001).

Furthermore Janita & Chong, (2013) mentioned that information and communication technology is considered a key source for a firm's business performance and in turn, when adopted, E-business brings forth a high impact on business practices. The usage of internet in businesses significantly improves the dealing of companies with their customers and suppliers (Chopra & Van Mieghem, 2000). Thus, keeping in view of previous research (Frankish, Roberts, Coad, Spears & Storey, 2013; Grant *et al.*, 2014; Janita & Chong, 2013; Weill & Vitale, 2001) this study investigates the technological factors like compatibility, complexity and relative advantage and their effect on the adoption of E-business by the small and medium enterprises of Libya. Many researchers and academicians confirmed that the usage of Information and Communication Technology (ICT) transforms a business (Jeon, Han & Lee, 2006; Lip-Sam & Hock-Eam, 2011; Panigrahi, Zainuddin & Azizan, 2014; Sebor, Lee & Sukasame, 2009). For SMEs, performing well consistently is a very important driving force for a business. The performance level has to be felt throughout the organization under diverse environments (Etheridge, Hsu & Wilson, 2001).

Due to its broad applicability, E-business implies and requires a change of practice in dealing with customers and suppliers and the way in which products and services are delivered to buyers. Changes are also required in the necessary skill of the staff to support the E-business adoption and complete business practices using internal processes such as productivity, knowledge management and human resources (Patel, Turban, Anderson, Charleston, Miller & Appel, 2010). E-business increases productivity of the firm. Technological development on the other hand opens up new opportunities for the organization. These new opportunities include electronic business referred to as 'E-business' that has created a driving force for the need of the creation of innovative business strategy, which requires effective functioning and

rapid response to opportunities and challenges in a dynamic environment. E-business is described as an integration of communication technologies with business processes and management practices via the internet (Simpson & Doherty, 2004). E-business usage is very limited in Libya. This study thus focuses on the main challenges faced by SMEs in the adoption of E-business in Libya. An in-depth investigation concerning the impact of the various technological harmonization contexts that affect the adoption of E-business has also been performed.

LITERATURE REVIEW

The adoption of E-business has been identified as a distinct, critical, and growing topic in E-business research. Researchers are faced with thousands of E-business adoption articles to refer to when seeking and reviewing those that are most relevant to their own projects. Individually, this is very time-consuming, collectively, it can mean that the "wheel is reinvented" many times. Accordingly, it is valuable to characterize the landscape of E-business adoption research and review what has so far been accomplished. Several review studies on the E-business field have appeared since 2000. However, most of them either broadly cover all E-business articles (Ngai & Wat, 2002; Wareham, Zheng & Straub, 2005) or narrowly include a specialized part of E-business adoption research (Mohamad & Ismail, 2009; Zhou, Dai & Zhang, 2007). While helpful, there remains a need for a concentrated and comprehensive review of E-business adoption research. Due to a low startup cost for businesses, the issues of taking risks to open new ventures have been reduced in today's business environment.

Due to the introduction of E-business i.e. purchasing products online, costs have been reduced and accessibility has been increased. E-business makes the transaction easier, faster and cheaper, decreasing the issues related to communication between customers and suppliers. The main advantage of E-business is that it is cost saving for both buyers and suppliers. Online suppliers are able to reduce their overhead cost as there is no necessity to hold inventory and rely on a huge number of employees and expensive shop fronts. The introduction of E-business has helped manufacturers reduce their prices and give discount to their customers. Due to the availability of information of sellers online, customers can also scout and compare the product prices and quality quickly and make purchase decisions. There is no need to travel and carry out business due to the usage of E-business facilities. Furthermore, below are some of the previous studies

analyzed to garner the factors affecting the usage of new technology and previous studies on E-business adoption and business performance in the context of small firms. There are a number of factors that may be affecting intent-

ion to adopt technology. Each employee may have a different affective impact from different things at the workplace regarding E-business tools.

TABLE 1. Barriers and findings of previous studies

Author and Year	Barrier	Findings
(Marasini, Ions & Ahmad, 2008)	Low investments in SMEs make them unable to use this application. Apart from low investment, other issues like lack of awareness, set up costs and security, introduction of technology in SMEs are still undeveloped	Investigated the adoption of e-business in SMEs to facilitate, collaborate, trade, learn and deliver services and manage company business. Through a case study approach it was found that due to complex and inflexible system the adoption of e-business is still undeveloped.
(Lin & Kuo, 2007)	Employees influence adoption of EBT based on their e-business knowledge. Trading partners influence the adoption of e-business depending on their transaction volumes and personal relationships.	This study analyzes the critics of theories in relation to adoption of e-business in SMEs and found that no theory was able to confirm the value of e-business adoption in SMEs. It was also reported that organizational learning and skills can play a significant role between adoption of technology and organizational performance. Developing organizational learning has been considered as a key factor for the successful adoption of EBT.
(Bordonaba-Juste, Lucia-Palacios & Polo-Redondo, 2012)	Limited resources and the level of skills and knowledge of the owner affect the e-business adoption	Investigated the influence of firm size and organizational factors like IT knowledge, IT external support, and level of employee's knowledge on e-business usage. The study found positive and significant influence of organizational factors on e-business use. It was also found that SMEs use IT sourcing as a key factor to e-business use. It was also mentioned that internal factors affect adoption of EBT higher than the external factors. Developing organizational learning and knowledge management strategies have been considered as key factors for the successful adoption of EBT
(Chong, Ooi, Lin & Tang, 2009)	Although, the adoption of E-business has several advantages, SMEs are still not implementing it. Roger's DIT suggested that the adoption of EBT is based on five factors: relative advantage, compatibility, complexity, trial-ability and observability.	Investigated the influence of inter-organizational relationships on the adoption of e-business in SMEs of Malaysia and found that factors such as communication, collaboration and information sharing significantly affect adoption of e-business. Benefits of e-business include speed of response, cost savings, improvement in communications, information and knowledge sharing, reduction in inventory, improvement in productivity and efficiency, best transfer of practices.
(Matopoulos, Vlachopoulou & Manthou, 2009)	Adoption of e-business is considered as an internal issue of the company. Some of the issues that were identified were	It was found that compatibility and the level of collaboration were the major factors affecting e-business adoption. E-business adoption helps to

(Oliveira & Martins, 2010)	negligence of complexity, cost, availability of financial resources, availability of human resources, nature of relationships Innovation becomes complex for many organizations and limits them to adopt the technology.	reduce time and improve quality followed by direct cost reductions. In order to promote e-business adoption it is crucial to clarify the factors and drivers. The finding suggested that perceived benefits, technology readiness, competitive pressure and trading partner collaboration are the factors that influence e-business adoption
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Their attitude and behavior play a vital role in their performance when using these tools. Identifying these variables in the proposed model can help improve the E-business applications within the SME sector context in developing countries where there is a remarkable shortage of such studies on information systems, particularly E-business. Hence, in an attempt to fill the research gap, the present study was initiated to identify the influence of factors like compatibility, complexity and relative advantage to adopt E-business among SME sectors in Libya where very few studies have been conducted in this context using DIT. For this study, a theoretical framework is proposed to examine the effects of compatibility, complexity and relative advantage to adopt E-business in order to get a full picture about these technological variables together and how it affects performance of SMEs in Libya. Moore & Benbasat (1991) developed their instrument to measure users' perception of adopting an information technology innovation and to act as a tool for studying the initial adoption and eventual diffusion of any new innovation within organizations. The instrument was based on (Rogers, 2003) five attributes of an innovation: relative advantage, compatibility, complexity (renamed ease of use), observability, and trial-ability. These variables are critically discussed below:

Compatibility

Compatibility is defined as "the degree to which using an innovation is perceived as consistent with the existing socio-cultural values and beliefs, past and present experience and needs for potential adopters". Compatibility has been widely accepted and used as the needs of a potential adopter, and taps into the aspects of relative advantage since an innovation cannot be viewed as advantageous if the technology does not meet user's needs. Additionally, according Almobarraz, (2007) the degree of the consistency of an innovation must coincide with the existing values, past experience, and needs for

potential adopters. If an idea is inconsistent with the values of society, it will not be adopted in the same rapidity as when it is compatible. Compatibility has been identified as an essential factor for innovation adoption (Chau & Hu, 2001). The significant effect of compatibility on user technology acceptance has been reported by many prior studies, including (Tornatzky & Katherine, 1982; Cooper & Zmud, 1990; Igarria & Iivari, 1995; Rogers, 1995; Taylor & Todd, 1995). (Moore & Benbasat, 1991) reported a strong relationship between compatibility and relative advantage, which is largely congruent with perceived usefulness in the context of TAM (Chau & Hu, 2001). Previous studies based on the impact of compatibility of technology towards the firm's technology adoption were very crucial in order to confirm the variables and precede this study. Thus based on the above discussions and review of various related literature, hypothesis 1 is proposed:

H1: Compatibility has positive influence on E-business adoption in SMEs of Libya.

Complexity

Haque, Torafder, Yasmin & Nikhashemi (2012) defined complexity as the degree to which an innovation is perceived to be difficult to use and understand. Complexity is defined as the innovation of degree of difficulty in understanding and using new ideas, and the ease of adopting the said new skills (Almobarraz, 2007). According to (Rogers, 2003) complexity is "the degree to which the technology is perceived to be difficult to understand and use". Complexity is "the degree at which an organization's members positively relate to a high level of knowledge and expertise". Increase in product complexity leads to increase in loyalty as many consumers perceive that the trust developed stems from the help of product complexity.

Likewise, (Rogers, 2003) asserts that complexity has a negative relationship with the rate of adoption. Higher

complexity allows for a greater intensity of adoption; potential adopters are likely to require elevated levels of support during all the phases of the adoption process. Recent development in technology suggested that users perceive a maximum level of functionality that limits the complexity of the technology which results in a maximum degree of change to maintain the utility of the products. Brown & Lockett (2004) found that complexity of technology is one of the factors that significantly influence the adoption of E-business; (Grandon & Pearson, 2004) found complexity to be an insignificant factor that is a significantly influential factor. Huang & Hsieh (2012) examined the technological innovative attributes like compatibility, complexity and relative advantage and found that complexity is a main component that enables companies to switch from one technology to another. New ideas that are easy to understand will be adopted more rapidly than innovation that requires the adopter to develop new knowledge, skills and understanding (Premkumar & Roberts, 1999). Systems that are perceived as easier to use and less complex have a higher likelihood of being accepted and used by potential users (Flavián, Guinalú & Gurrea, 2006). Therefore if the new technology is more complicated than existing technology, organizations will be reluctant to adopt the new technology. Thus based on the above discussions and review of related literature, hypothesis 2 is proposed:

H2: Complexity has positive influence on E-business adoption in SMEs of Libya

Relative Advantage

Relative advantage is a multi-dimensional belief as is the norm in Information Technology studies and its focus is on the aspect of usefulness (Van Slyke, Johnson, Hightower & Elgarah, 2008). Haque *et al.* (2012) defined relative advantage as the degree to which an innovation is comprehended as being better than the idea it supersedes. Relative advantage is defined as the degree to which an innovation is considered as being better than the idea it replaced. This construct is found to be one of the best predictors of the adoption of an innovation. In order to maintain and manage competition in the workforce, there is a need for an organization to invest their time and resources in learning activities in order to achieve consistency and convenience as well as garnering a high competitive advantage. Studies found that the variable of relative advantage is positively related to the adoption of IS innovations (Grandon & Pearson, 2004). When an IS innovation is perceived to offer relative advantage over the

firm's current practice, it is more likely to be adopted. Technology provides many benefits to adopters in terms of accommodating business growth, improving business processes and reducing business operating and administrative costs (Markus & Cornelis, 2000). In a highly competitive marketplace, these benefits make significant motivations for adopting such technologies. Furthermore, (Carter & Campbell, 2011) examined the impact of relative advantage on e-government and found that relative advantage has a significant impact on the intention to use technology. The Information System literature posits that DIT constructs like relative advantage, compatibility and complexity are among the most relevant constructs to technology adoption research. In addition, (Choudhury & Karahanna, 2008) examined relative advantage as a construct and its influence on the adoption of electronic channels. The study found that consumers consider the relative advantage of channels at two distinct stages of the purchase process: gathering information and executing the transaction. Thirdly, different dimensions of relative advantages are critical in predicting the choice of channel used by the consumers. Thus based on the above discussions and review of related literature, hypothesis 3 is proposed:

H3: Relative Advantage has positive influence on E-business adoption by SMEs in Libya

Trial-Ability

Trial-ability is the degree to which innovation may be experimented on a limited basis. Trial-ability is much more concerned on changes or modification of technology by the adopters. Thus it is after the implementation stage. Mohamad Hsbollah, Kamil & Idris (2009) Investigated the perception of lecturers regarding the adoption of e-learning. Factors like relative advantage, complexity, compatibility, trial-ability and observability were considered in the investigation. It was found that compatibility and trial-ability positively influence the adoption decision. Kuckertz & Breugst (2009) further explored the relationship between organizational readiness and E-business adoption using a survey questionnaire and concluded that when provided with an alternative rationale for variations in levels of E-business adoption across countries, not only do factors related to management, such as perceived usefulness or perceived ease of use, are crucial but policy-related factors do matter as well; cultural effects and technological effects also take place. This is the main reason that trial-ability was not found to be the major factor during the technology

adoption stage. This study includes trial-ability as contributing to the theoretical gap identified from previous studies on the role of trial-ability towards technology adoption. Thus it is hypothesized that:

H4: Trial-ability has positive influence on E-business adoption of SMEs in Libya

Observability

Observability is the degree to which innovation is visualized by others. Peer observation is important as the motivational factor in the adoption of technology. But previous studies like (Soh, Yong Mah, Jek Gan, Chew & Reid, 1997) found that observability is not always been significantly associated with the adoption of technology in SMEs. If the observed effects are perceived to be small or nonexistent, then the likelihood of adoption is reduced. Thus it is hypothesized that:

H5: Observability has positive influence on E-business adoption of SMEs in Libya

Very few studies have included all five technological aspects of DIT in both developed and developing countries. Soh et al., (1997) mentioned that majority of participants have performed the trial of technology and their observation before adoption. Similarly (Shah Alam, Khatibi, Ismail Sayyed Ahmad & Bin Ismail, 2008) performed the study in United States and found positive correlation between trial-ability, observability and rate of technology adoption. Whereas, Mohamad Hsbollah & Idris (2009) investigated in Malaysia and found that trial-ability and observability have positive influence on adoption decision. Furthermore, no study was found to have been performed in the Libyan contexts or even in the African countries or the Middle East, highlighting the importance of DIT factors on adoption decisions. Therefore, it can be confirmed that not many studies have considered all the aspects of technology adoption. It also seems that there is theoretical gap that exists in the technological contexts for the rate of adoption. Thus in order to fill the theoretical gap of technological aspects this study includes all the five innovation variables provided by Roger and attempts to investigate their influence on E-business adoption in Libyan SMEs.

METHODOLOGY

This study used quantitative analysis for empirically testing the research questions through primary data collections in order to achieve research objective. The data are collected using self-structured survey questionnaire from the customers having experience of using e-business

online through structural equation modelling method. The way of collecting the data for this study is the use of statistical survey which is the method used to collect in a systematic way (Fowler Jr, 2008), information about managers to identify how SMEs make their decisions to perform business online, also to know their attitude and backgrounds and other information that serve as the main objectives of the study. According to (Baeza-Yates, Calderón-Benavides & González-Caro, 2006; Panigrahi, Zainuddin & Azizan, 2014) quantitative method is able to demonstrate situation factors, practices, and other phenomena (Sekaran, 2003). As suggested by Yuserrie et al. (2014) customers with IT knowledge are able to provide information accurately through the survey questionnaire.

The data are analyzed using AMOS through SEM after the reliability and validation of the data collected are tested. Measurement Items were measured in accordance with the Likert scale: 1 (strongly disagree) to 5 (strongly agree). Data screening and outlier detection process is done in order to ensure correct input of data. Data screening is very crucial for confirming the variables to be normally distributed without any bias or outliers. According to (Hair, Anderson, Tatham & Black, 1995) data need to be examined properly before applying structural equation modeling technique. Therefore, this study used univariate outlier detection test, and the distribution of scores for each individual constructs is examined. There is a need to examine the variables individually for the univariate outlier detection, and histogram, boxplot are the graphs indicating the appearance of outliers. Confirmatory factor analysis (CFA) through SEM technique was utilized to test the hypotheses. This study investigates to generate findings by examining the data collected based on the observed and unobserved variables. Thus this study is a confirmatory research that utilizes quantitative analysis for the given purpose and problem statement addressed in the previous studies. Hypothesis testing was performed through several analyses for the initial 42 items. Reliability findings suggested that the (Cronbach, 1951) alpha value of the variables were having reliability of above 80%, exceeding the acceptance criteria of 0.70 provided by (Cronbach, 1951).

RESULTS

A non-probability purposive sampling technique is utilized for the data collection process where SMEs with internet users will be considered as ideal participants for the study. Only one individual from one SME will be randomly

selected as a respondent. Micro companies having less than 5 employees are not considered as participant due to their lower chance of technology adoption and not focusing on global competitive market. Managers and owners of the SMEs having more than 5 employees are the targeted respondents, as they are the decision makers or make up the decision making force in their firms on the adoption of technology.

Respondents were asked to complete a 42-item survey consisting of five point Likert scale index including demographic questions and descriptive question on their views towards e-commerce usage that were asked using a closed interval questions. The demographic section had questions about the respondent's profile. The demographic variables include age, gender, qualification, position, company engaged with and decision-making power in the company. As shown in the table, respondents in the age range of 40 to 49 years were the major contributor for this research, accounting for 51% of the total respondents, followed by respondents aged 50 or above by 38.9%.

Simple statistical analysis of frequency and percentage was used to calculate the demographic information of the respondents. There was no female respondent in this study and 100% contribution was from the male respondents. When it comes to the qualification of the respondents, 197 of them hold a bachelor's degree, 130 with master's degree, while 67 having doctorate degree followed by 4 respondents holding other qualifications.

Furthermore, regarding the position of the respondents, a majority of them were managers, totaling up to 243 individuals, followed by 111 owners and 44 respondents as directors or CEO. The position and qualification of the respondents confirmed that they have appropriate knowledge to answer the survey questions. Most of the companies the respondents are engaged in are from the manufacturing sector with a frequency of 232, followed by 116 individuals engaged with trading or merchandizing sector and the remaining 50 respondents were engaged with service sector.

TABLE 2. Demographic profile of the respondents

Demographic profile	Frequency	Percent
Age		
20 to 29 years	19	4.8
30 to 39 years	21	5.3
40 to 49 years	203	51.0
50 or more	155	38.9
Gender		
Male	398	100.0
Qualification		
Doctorate	67	16.8
Masters	130	32.7
Bachelor	197	49.5
Others	4	1.0
Position in the company		
Owner	111	27.9
Director or CEO	44	11.1
Manager	243	61.1
Company engaged		
Manufacturing	232	58.3
Trading	116	29.1

Service	50	12.6
Owner of the company		
Yes	123	30.9
No	275	69.1
Decision making in the company		
Yes	167	42.0
No	231	58.0

E-business is not targeted for only one sector and this is the reason that mixed respondents from service, trading and manufacturing sector are collected. From the total 398 participants, 275 were not the owner of SME whereas 123 respondents claimed to be the owner of the company. Similarly, it was found that 231 respondents do not have decision-making power in the company whereas 167 respondents have the right to make decisions in the SMEs. Table.3 below illustrates the characteristics of technology of the respondents. These questions were asked in order to identify the importance of technology in the respondent's

business profile. The first question, which was on the access to the internet, found that 235 respondents have direct access to the internet whereas 163 do not. Furthermore, the question on usage of internet for their business was responded by 183 individuals having internet usage for less than 6 months, 67 respondents are using internet for the last 1 to 3 years, 70 respondents claimed that they have been using internet for the last 4 to 6 years, followed by 78 respondents using the internet for 7 years or more.

TABLE 3. Technology characteristics of the respondents

Technology Characteristics Of The Respondents		
Technology characteristics	Frequency	Percentage
Internet access		
Yes	235	59.0
No	163	41.0
Internet usage		
less than 6 months	183	46.0
1 to 3 years	67	16.8
4 to 6 years	70	17.6
7 years or more	78	19.6
Email		
Yes	179	45.0
No	219	55.0
Business engaged		
1 to 3 years	38	9.5
4 to 6 years	193	48.5
7 years or more	167	42.0
Internet business		
Sometimes	137	34.4
Often	129	32.4
Constantly	132	33.2

The usage of internet by the respondents showed a positive response for applicability of e-business in their business world. Most of the respondents have good experience with

the business they are engaged in. 193 respondents claimed that they have been engaged in their business for the last 4 to 6 years while 167 respondents confirmed to be engaged

in the business 7 years ago or more and only 38 respondents were engaged in the business for the last 1 to 3 years. The last question in the technology characteristics was based on the use of internet for their business transactions or communication.

Only 132 respondents claimed that they use internet for their business regularly while 129 respondents use internet often and the remaining 137 respondents use internet sometimes in order to reach their customers or communicate with them.

Structural Equation Modeling Analysis (SEM)

Before approaching towards the two-stage process of SEM i.e. measurement model and structural model, common

method bias of the data was checked. For the adoption research, common method variance is the most important issue as it may have multicollinearity issue. Common method variance is very crucial for the researchers as it reflects bias relationship between the variables. Detection of bias especially for multidimensional constructs is very important in order to proceed to structural validation analysis. CMV identifies if there is any measurement error between the relationships of constructs or not. During the review, a model for controlling method variance in AMOS is conceptually developed. Method variance is the issue in the research because they are one of the major measurement errors. Measurement error threatens the

TABLE 4. Measurement model for reliability and validity test

Items	Items	Standardized loading	Cronbach's Alpha	CR	AVE
Relative advantage	RA1	0.788	0.928	0.948	0.625
	RA2	0.798			
	RA3	0.854			
	RA4	0.807			
	RA5	0.795			
	RA6	0.740			
	RA7	0.748			
	RA8	0.693			
	RA9	0.679			
Compatibility	CP1	0.682	0.863	0.865	0.562
	CP2	0.772			
	CP3	0.818			
	CP4	0.776			
	CP5	0.692			
Complexity	CX1	0.806	0.936	0.926	0.715
	CX2	0.824			
	CX3	0.857			
	CX4	0.887			
	CX5	0.853			
	CX6	0.828			
Trial-ability	TR1	0.786	0.926	0.927	0.762
	TR2	0.874			
	TR3	0.944			
	TR4	0.881			
Observability	OB1	0.821	0.918	0.920	0.742

	OB2	0.901			
	OB3	0.890			
	OB4	0.831			
E-business adoption			0.885	0.885	0.563
	EB1	0.749			
	EB2	0.788			
	EB3	0.767			
	EB4	0.706			
	EB5	0.729			
	EB6	0.761			
Organizational performance			0.899	0.901	0.565
	OP1	0.803			
	OP2	0.709			
	OP3	0.774			
	OP4	0.744			
	OP5	0.702			
	OP6	0.763			
	OP7	0.761			

validity of the model and about the relationship between the constructs having both random and systematic components (Hair *et al.*, 1995). According to the common method bias results the data are free from multicollinearity issue as the covariance analysis was found to be unfit and the model was worse. This shows that there are no multi collinearity issues or response biases. Thus the research can progress to further analysis. In the measurement model (CFA), all the constructs were considered together in order to confirm reliability and validity issues. The result of measurement model highlights beta coefficient of the components and noticed that all the items were above 0.60 that exhibits positive factor loadings and indeed possess high model fit. In this study, compatibility, complexity, relative advantage, trial-ability and observability served as an exogenous construct

which aimed to capture main characteristics and elements of e-business technology adoption and organizational performance. All the items show high beta coefficient of above 0.60 and confirm to be having high factor loading. Furthermore, the correlations between the variables are not higher than 0.85 which means there are no multicollinearity issues between them. The factor loadings for these measures were all above 0.60 indicating that standardized estimates for these measures were deemed to be statistically significant at $P < 0.001$. Next sub section provides uni dimensional scales for each variable. Thus overall the 2nd order measurement model between exogenous constructs and endogenous construct is confirmed and fit. Figure 1 below shows the re-specified final model that is used for the hypotheses testing.

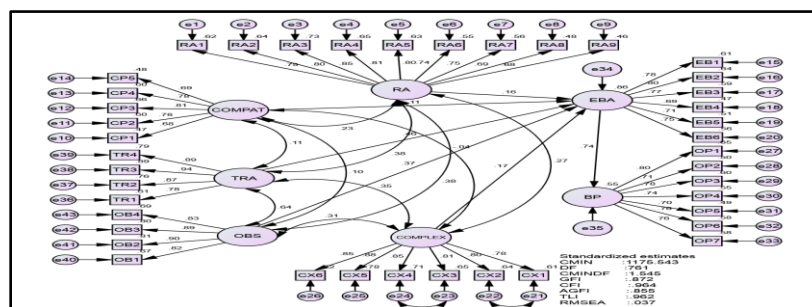


FIGURE 1. Final structural model

For the evaluation of fitness of the model, in SEM through AMOS there is a series of goodness of fit indices

for specifying the model fit. According to Kline (1988), the four major fitness indices like GFI, NFI, RMSEA or CFI are

used for evaluating the model fit. Similarly, Smith (2006) stated that there must be at least three fitness indices significant in order to confirm the model fit. This study adopts the major fitness indices that are commonly used in acceptable; with a ($\chi^2 = 1413.883$, $df = 758$, $\chi^2 / DF = 1.865$, $P=0.000$, $GFI=0.849$, $AGFI = 0.828$, $TLI = 0.939$, $CFI = 0.944$ and $RMSEA=0.047$) as shown in Figure 1. The path coefficients were all significant to the factors of e-business adoption. However, it is noticed that the relationship between exogenous factors and organizational performance was not significant. Furthermore, it is noticed that items CX1 and CX2 have high modification indices value of 129.342 followed by high modification indices between CX3 and CX4 with 105.725. Thus these items were allowed to correlate as suggested by Warner (2009) who mentioned that such items can either be dropped or correlated. For the analysis, no items were dropped as by doing so the fitness indices became worse, indicating that the items are considered to have high value. The goodness-of-fit indices show that this modified model fits the data adequately, even though the chi-square was significant. The chi-square was ($\chi^2 = 1175.543$, $df = 761$, $N = 300$). The GFI was .872, TLI = .962, CFI = .964, RSMEA = .037, $\chi^2 / df = 1.545$. These results show that structural model two is a better fit of the data than the original structural model. From the result of final structural model it is confirmed that trial-ability and observability are the most significant factors for EBT adoption. The higher the trial-ability and observability, the greater the chance of adoption. It is important for the SMEs to test the system or view the work of the system. The more the users can test the system, the more likely they will adopt it. Similarly, when the technology is highly observable, it increases the likelihood of adoption.

research. The absolute values like GFI and RMSEA, incremental values like CFI, TLI and parsimonious values like χ^2/df were used to confirm the model fit. The goodness of fit indices show that the model was good.

CONCLUSION

The study found that even though there is a deep understanding on the importance of e-business for business performance, the SMEs view e-business as not completely relevant for them at this point of time. The research found that technological factors were pre-eminent for Libyan SMEs. For the executives in Libyan SMEs, they are more concerned about the compatibility and relative advantage of the technology and monetary cost was found to have no issue for them. The negligence of technological factors would not be able to solve the adoption issues and would create many challenges for the decision makers providing better access to IT to ease their business operations. The findings of this study confirmed that there is a significant influence of the factors mentioned in the DIT framework for increasing the level of e-business usage. Apart from the misperception, due to deficient information system, some SMEs experienced poor utilization of the technology. SMEs in Libya should consider e-business technology as a strategic decision for their business, and should consider the enormous impact of its usage to their business performance such as cost and time saving, increase number of customers and reach global customers. EBT will help Libyan SMEs to extend beyond local territory and compete in the global market. The better the understanding of technology complexity the higher the e-business usage and business performance. Finally, issues related to organizational culture and government regulations in view of e-business technology advancement should be addressed to foster and innovate e-business.

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