

Drivers of E-business Adoption in SMEs in Saudi Arabia

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Abstract

The aim of this research is to investigate drivers of e-business adoption by SMEs in Saudi Arabia. Two key phases were undertaken. First, citing the most common factors of e-business adoption in the literature. Second, testing the effects of these factors on e-business adoption using a convenience sample from SMEs in Saudi Arabia. The search cited 30 common technological, organizational, and environmental factors and used these factors as indicators of three exogenous variables to test three key hypotheses on the effects of technological, organizational, and environmental factors on e-business adoption. The results, which were reached through using SmartPLS 3.0 software, pointed out that e-business adoption is significantly and positively influenced by technological, organizational, and environmental factors. Particularly, the research indicates that the top ten influential indicators of e-business adoption are: enterprise's strategic orientation, qualified human resources, financial resources, enterprise size, enterprise age, leadership style, top management commitment and support, perceived benefits of e-business adoption, digitization clear plans, and security issues. Hence, the contribution of this research can be seen theoretically through reducing a literature gap about these factors and empirically through proposing a stretched set of crucial factors influencing e-business adoption.

Keywords: *E-business adoption, SMEs, technological drivers, organizational drivers, environmental drivers.*

1. Introduction

Small and medium enterprises (SMEs) are a central part of countries' economies. So, academics and practitioners are attracted to find out what influence business operations and organizational outcomes of these enterprises. One significant aspect in this regard is to gain advantages from technological advancements such as carryout business through adopting electronic solutions such as electronic business (e-business) solutions.

It has been reported that e-business adoption is combined with many benefits such as business performance and logistics processes in terms of time reduction and quality enhancement (Beheshti & Salehi-Sangari, 2007; Matopoulos et al., 2009; Al-Ayed; Al-Tit & Alashjaee, 2023). However, e-business adoption is influenced by many factors related to technological, organizational, and environmental factors (Alraja and Malkawi, 2015; Awa, & Ojiabo, 2016; Alos-Simo et al., 2017; Abdullah et al., 2018; Šimić et al., 2019; El Rassi, 2020; Bakeer & Albaour, 2021; Gómez et al., 2022; Alotaibi & Aloud, 2023). In fact, prior works pointed out mixed results and each research revealed a number of those factors. For example, some studies deemed security issues as a major technological factor (Altayyar & Beaumont-Kerridge, 2016) while other studies indicated that government support is a crucial factor in e-business adoption (Jeon et al., 2006; Satar & Alarifi, 2022),

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some studies regarded business size as a key organizational driver of e-business adoption (Abdullah et al., 2018) even though other studies viewed such a factor has no influence on e-business adoption (Jeon et al., 2006), and some studies considered competitors' engagement in e-business solutions and government support as basic environmental reasons of e-business adoption (Dubelaar et al., 2005; Nguyen, 2013; Alraja and Malkawi, 2015) whereas other studies showed that customer readiness and government support, were not (Prabowo & Yuniarty, 2021; Satar & Alarifi, 2022). Hence, the aim of this research is to explore drivers of e-business adoption by SMEs in Saudi Arabia. competitor

A key contribution of the current research is to expand the list of e-business adoption drivers through citing the most common factors influencing e-business adoption in the literature and to investigate the effects of these factors on e-business adoption using a sample from SMEs in Saudi Arabia. This contribution was emerged based on a research problem concerning a lack of knowledge about drivers of e-business adoption by SMEs in Saudi Arabia. The importance of tackling this problem can be seen theoretically and empirically through a suggested model comprises drivers of e-business adoption by which this research fulfills a theoretical gap in the literature and instructs stakeholders and policy makers of e-business adoption in SMEs about drivers of e-business adoption.

2. Literature review and hypotheses development

2.1 Electronic business (e-business) definition

E-business has been described as using Internet-driven technologies to carry out business operations (Oliveira & Martins, 2010). Referring to IBM definition of e-business shows that such a term has been defined as converting an organization's key business operations to be carried out using Internet technologies (Chaffey, 2011 cited in Abdullah et al., 2018, P.10). Also, e-business refers to fulfilling business processes or activities through information and communication technologies (El Rassi, 2020). There are several e-business tools such as e-mail usage, internet usage in market research, internet usage in product/service promotion, e-payment, (Šimić et al., 2019).

2.2 Drivers of e-business operations

One of the most important frameworks used to explain e-business adoption in many studies is Technology-Organization-Environment (TOE) framework (Tornatsky & Fleischer, 1990). TOE consists of three contexts: the technological context, the organizational context, and the environmental context (Gómez et al., 2022). As key variables in the current research, the following sections illustrate these three drivers and their related indicators.

Technological drivers e-business adoption

The technological context refers to using the current available technologies as well as any new technologies required by the firm to undertake its business operations (Oliveira & Martins, 2010). For Alraja and Malkawi (2015), an organization's technology readiness signifies the extent to which an organization can use information systems. Scholars, as shown in Table 1, identify several technological factors influencing e-business adoption. The table contains the most 10 common drivers of e-business adoption, which are information technology infrastructure (Oliveira & Martins, 2010; Prabowo & Yuniarty, 2021), employee information technology skills (Bakeer & Albaour, 2021; Prabowo & Yuniarty, 2021), internet access (Prabowo & Yuniarty, 2021), employee training to use information technology applications (Oliveira & Martins, 2010; Bakeer & Albaour, 2021), top management knowledge in e-business adoption (Prabowo & Yuniarty, 2021), technology cost and relative advantage (Panatik et al., 2022), perceived security and risk of using e-business tools (Panatik et al., 2022), technology collaboration with business

partners (Oliveira & Martins, 2010; Prabowo & Yuniarty, 2021), compatibility of organization's information systems with suppliers and customers (Prabowo & Yuniarty, 2021; Panatik et al., 2022).

Table 1. Technological drivers of e-business adoption in the literature

Technological drivers of e-business adoption	References
1. Information technology infrastructure and capabilities.	Oliveira & Martins (2010); Alraja and Malkawi (2015); McElheran (2015); Chatzoglou and Chatzoudes (2016); El Rassi (2020); Prabowo & Yuniarty (2021); Bakeer & Albaour (2021); Panatik et al. (2022).
2. Employee Internet and IT skills.	
3. Security applications and perceived risks.	
4. Employee training in information technology.	
5. Technology collaboration with partners.	
6. Technology cost.	
7. Technology is a relative advantage.	
8. Top management knowledge in e-business adoption.	
9. Internet access for employees, customers, and suppliers.	
10. Information systems compatibility with customers and suppliers.	

Organizational drivers of e-business adoption

The organizational drivers of e-business adoption describe the organizational characteristics by which an organization is encouraged to adopt e-business solutions. Examples of these factors comprise organization size and organization scope (Oliveira & Martins, 2010; Satar & Alarifi, 2022), organization age (Abdullah et al., 2018), perceived benefits of adopting e-business (Alraja and Malkawi, 2015), organization's strategic orientation (Awa, & Ojiabo, 2016), clear plans for digitization process management (Prabowo & Yuniarty, 2021; Bakeer & Albaour, 2021), qualified human resources (Abdullah et al., 2018; El Rassi, 2020), availability of financial resources (El Rassi, 2020; Satar & Alarifi, 2022), process management (Thaha et al., 2022; Al-Ayed & Al-Tit, 2023), leadership style such as transformational leadership (Alos-Simo et al., 2017), and top management commitment and support (El Rassi, 2020; Bakeer & Albaour, 2021; Panatik et al., 2022; Abbad et al., 2022; Thaha et al., 2022; Al-Ayed & Al-Tit, 2023), and perceived financial cost (Satar & Alarifi, 2022). Table 2 cites the most common 10 organizational factors affecting e-business adoption as furnished in the literature.

Table 2. Organizational drivers of e-business adoption in the literature

Organizational drivers of e-business adoption	References
1. Organization size.	Oliveira & Martins (2010); Alraja and Malkawi (2015); Chatzoglou and Chatzoudes (2016); Alos-Simo et al. (2017); Abdullah et al. (2018); El Rassi (2020); Prabowo & Yuniarty (2021); Bakeer & Albaour (2021); Panatik et al. (2022).
2. Organization scope.	
3. Organization age.	
4. Perceived benefits of e-business adoption.	
5. Clear plans for digitization process management.	
6. Organization's strategic orientation.	
7. Qualified human resources.	
8. Financial resources.	
9. Leadership style.	

10. Top management commitment and support.	
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Environmental drivers e-business adoption

The environmental context designates the environment in which an organization takes on its business actions (Oliveira & Martins, 2010). Such an environment includes, as reported in the literature, factors influencing e-business adoption. Commonly, environmental factors are related to external pressure from competitors and government (Rawash, 2021). Particularly, examples of environmental factors of adopting e-business include competition intensity (Alraja and Malkawi, 2015; Satar & Alarifi, 2022; Thaha et al., 2022), customer expectations from his or her organization (Oliveira & Martins, 2010), customer readiness to use e-business tools (Prabowo & Yuniarty, 2021), supplier expectations (Oliveira & Martins, 2010), business partners' readiness to use e-business tools (Prabowo & Yuniarty, 2021), ICT consultant services (Nguyen, 2013), government regulations and support (Awa, & Ojiabo, 2016; Rawash & Al-Tall, 2020; Satar & Alarifi, 2022), market scope (Nguyen, 2013), entrepreneur's innovativeness (Satar & Alarifi, 2022), vendor support (Nguyen, 2013; Thaha et al., 2022), knowledge management processes such as knowledge acquisition (Azyabi, 2018), supporting industries (Omar et al., 2015), and owner support (Abbad et al., 2022). Table 3 reports the most common 10 environmental factors affecting e-business adoption as informed in the literature.

Table 3. Environmental drivers of e-business adoption in the literature

Environmental drivers of e-business adoption	References
1. Competitors' engagement in using e-business tools.	Oliveira and Martins (2010); Nguyen (2013); Alraja and Malkawi (2015); Chatzoglou and Chatzoudes (2016), Šimić et al. (2019); El Rassi (2020); Prabowo & Yuniarty (2021); Panatik et al. (2022); Satar & Alarifi (2022).
2. Customers' expectations.	
3. Customer readiness to accept online purchases.	
4. Suppliers' expectations.	
5. Business partners' readiness to use e-business tools.	
6. ICT consultant services.	
7. Government regulations and support	
8. Market scope.	
9. Entrepreneur's innovativeness.	
10. Vendor support.	

2.3 Research hypotheses

The hypotheses of the current research were developed based on TOE framework, which means it comprise three key hypotheses. First, a hypothesis on the effect of technology factors on e-business adoption. Second, a hypothesis on the effect of organization characteristics on e-business adoption. Finally, a hypothesis on the effect of environment on e-business adoption. These hypotheses were developed as shown in the following sections.

First hypothesis: Technology and e-business adoption

Technological drivers of e-business adoption had been regarded as positive predictors of e-business adoption as organizations with appropriate level of information technology resources are more expected to adopt e-business (Alraja and Malkawi, 2015). Generally, scholars reported significant effects of some technological drivers on e-business adoption (Thaha et al., 2022). Particularly, the authors indicate that e-business adoption is a function of numerous drivers such as information technology infrastructure (Oliveira and

Martins, 2010), employee internet skills (El Rassi, 2020), security applications and potential perceived risks (Oliveira and Martins, 2010), employee training in information technology (Oliveira and Martins, 2010), organization collaboration with its business partners (Oliveira & Martins, 2010; Prabowo & Yuniarty, 2021), technology cost and relative advantage (Panatik et al., 2022), top management knowledge in e-business adoption (Prabowo & Yuniarty, 2021), employee and customer internet access (Prabowo & Yuniarty, 2021), and organization's information systems compatibility with customers and suppliers (Oliveira and Martins, 2010). On the other hand, some studies indicate that factors such as customer readiness to accept online purchases (Prabowo & Yuniarty, 2021), competition pressure (Rawash, 2021), relative advantages of using e-business tools (Abbad et al., 2022; Satar & Alarifi, 2022), and information systems compatibility (Rawash, 2021) have no significant effects on e-business adoption. With the purpose of exploring the effect of technological drivers on e-business adoption based on the current research data from SMEs, the following hypothesis was suggested:

H1: Technological drivers have a significant effect on e-business adoption.

Second hypothesis: Organization and e-business adoption

The second hypothesis of the research was developed to explore the effect of organizational drivers of e-business adoption. It was found that organizational drivers have significant effects on e-business adoption (Oliveira & Martins, 2010; Alraja and Malkawi, 2015; El Rassi, 2020). In details, scholars underlined significant roles of organization size and scope (Oliveira & Martins, 2010), organization age (Abdullah et al., 2018), perceived benefits of e-business adoption (Alraja and Malkawi, 2015), clear plans for digitization process management (Prabowo & Yuniarty, 2021; Bakeer & Albaour, 2021), organization's strategic orientation (Awa, & Ojiabo, 2016), organizational resources (Abdullah et al., 2018; El Rassi, 2020), leadership style, (Alos-Simo et al., 2017), as well as top management commitment and support (El Rassi, 2020; Rawash, 2021). In fact, mixed results were reported in the literature. For example, some studies reported that organizational characteristics such as firm scope (Satar & Alarifi, 2022) have no significant effects on e-business adoption. To investigate the effect of organizational drivers on e-business adoption using data gathered from SMEs, the following hypothesis was postulated:

H2: Organizational drivers have a significant effect on e-business adoption.

Third hypothesis: Environment and e-business adoption

The third hypothesis of the research was established to test the effects of environmental drivers on e-business adoption. Reviewing the literature on such effects revealed significant effects of these drivers on e-business adoption. Prior works in this regard specify that e-business adoption is positively affected by many drivers such as competitors' engagement in e-business operations (Oliveira & Martins, 2010; Alraja and Malkawi, 2015; Satar & Alarifi, 2022), customer expectations (Oliveira & Martins, 2010), customer readiness to use e-business tools (Prabowo & Yuniarty, 2021), supplier expectations (Oliveira & Martins, 2010), government regulations and support (Awa, & Ojiabo, 2016; Abdullah et al., 2018), market scope (Nguyen, 2013), entrepreneur's innovativeness. (Satar & Alarifi, 2022), and vendor support (Thaha et al., 2022). Generally, these factors have been regarded as positive predictors of e-business adoption. However, some prior works showed that some environmental factors such as government support (Satar & Alarifi, 2022) exert insignificant effects on e-business adoption. Therefore, the current study is concerned with investigating the effects of these factors as a set of environmental drives on e-business adoption on the basis of data collected from SMEs. Hence, the following hypothesis was proposed:

H3: Environmental drivers have a significant effect on e-business adoption.

3. Research methodology

3.1 Research sample and data collection

Small and medium enterprises in Saudi Arabia comprise the population of this study. Sampling technique relevance can be assessed based on using 10 individuals per factor indicator (Alotaibi & Aloud, 2023). In e-business adoption studies, a preferred method to collect research data is to carry out a survey (Habiboğlu et al., 2020). A was used to collect research data via online questionnaire administered to research sample using Google form. For this research, a total of 350 responses were collected from a convenience sample, 125 responses were omitted as outliers, which means a total number of valid responses equals 225 responses.

3.2 Research model

The aim of this research is to investigate the effects of technological, organizational, and environmental drivers on e-business adoption. So, three key hypotheses (H1, H2, and H3) were developed to test such effects, i.e., the effects of technological drivers (TD), organizational drivers (OD), and environmental drivers (ED) on e-business adoption (EBA). Figure 1 shows the theoretical model in which these three exogenous variables (e-business drivers) were linked to an endogenous variable (e-business adoption).

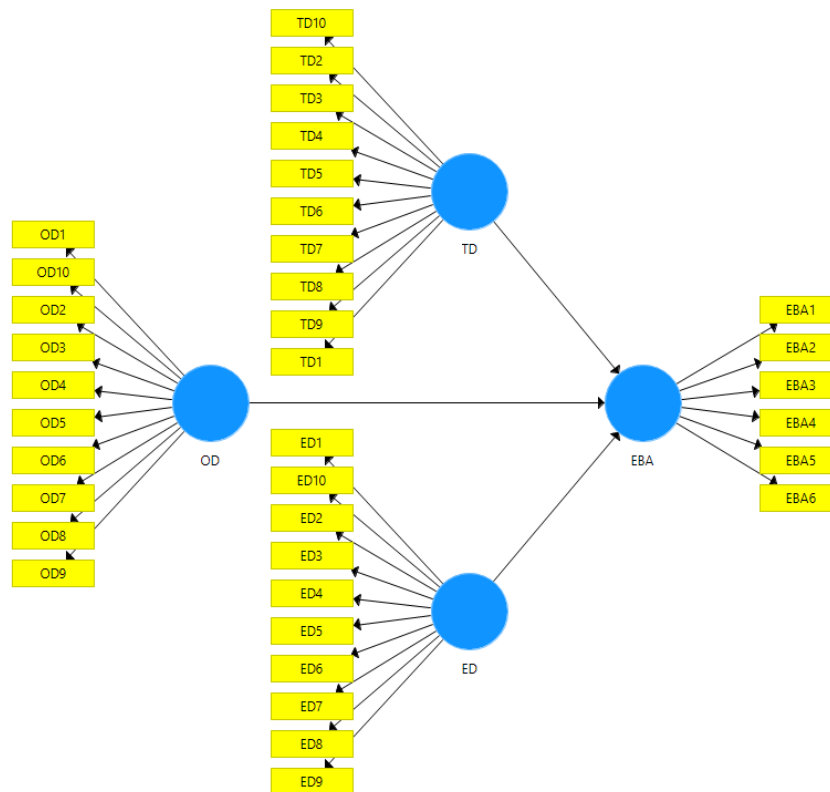


Figure 1. Research theoretical model

3.3 Research measures

An electronic questionnaire was designed to gather research samples. Research independent variables, i.e., technological drivers, organizational drivers, and environmental drivers are measured using 30 items based on prior works as cited in Table 4. The items of the questionnaire are developed based on technological, organizational, and environmental drivers of e-business adoption as shown in Tables 1, 2, and 3 in the literature review section. On the other hand, the dependent variable, e-business adoption, is measured using 6 items based on previous studies (Nguyen, 2013; McElheran, 2015; Awa & Ojiabo, 2016; Alos-Simo et al., 2017; Prabowo & Yuniarty, 2021; Thaha et al.,

2022). All items are anchored using Likert-type scale with five points from 1 (completely disagree) to 5 (completely agree).

Table 4. Research measures

Variables	Code	Items
Technological drivers (TD)	TD1	Information technology infrastructure and capabilities.
	TD2	Employee Internet and IT skills.
	TD3	Security applications and perceived risks.
	TD4	Employee training in information technology.
	TD5	Technology collaboration with business partners.
	TD6	Technology cost.
	TD7	Technology relative advantage
	TD8	Top management knowledge in e-business adoption.
	TD9	Internet access for employees, customers and suppliers.
	TD10	Information systems compatibility with customers and suppliers.
Organizational drivers (OD)	OD1	Organization size.
	OD2	Organization scope.
	OD3	Organization age.
	OD4	Perceived benefits of e-business adoption.
	OD5	Clear plans for digitization process management.
	OD6	Organization's strategic orientation.
	OD7	Qualified human resources.
	OD8	Financial resources.
	OD9	Leadership style.
	OD10	Top management commitment and support.
Environmental drivers (ED)	ED1	Competitors engagement in using e-business tools.
	ED2	Customers' expectations.
	ED3	Customer readiness to accept online purchases.
	ED4	Suppliers' expectations.
	ED5	Business partners' readiness to use e-business tools.
	ED6	ICT consultant services.
	ED7	Government regulations and support.
	ED8	Market scope.
	ED9	Entrepreneur's innovativeness.
	ED10	Vendor support.
E-business adoption (EBA)	EBA1	E-buying (placing orders online).
	EBA2	E-selling (receiving orders online).

	EBA3	E-marketing (advertising and promotion).
	EBA4	Internet-based information exchange.
	EBA5	Inventory management.
	EBA6	Secured online payment.

3.4 Reliability and validity

Reliability was tested using two indicators: composite reliability (CR) and Cronbach's alpha coefficient (α). As a rule of thumb, the values of these two indicators should be greater than 0.70 (Al-Ayed & Al-Tit, 2021; Al-Tit, 2020). The results of reliability test as shown in Table 5 indicate that reliability is assured due to composite reliability values and alpha coefficients of technological drivers (CR = 0.929, α = 0.915), organizational drivers (CR = 0.950, α = 0.942), environmental drivers (CR = 0.949, α = 0.940), and e-business adoption (CR = 0.926, α = 0.904). On the other side, convergent validity was tested via factor loadings and the average variance extracted (AVE). The value of both indicators should be more than 0.50. The results show that four factors were extracted with factor loadings (FL) and AVE values higher than 0.50; technological drivers (FL = 0.687-0.811, AVE = 0.567), organizational drivers (FL = 0.735-0.871, AVE = 0.658), environmental drivers (FL = 0.749-0.857, AVE = 0.650), and e-business adoption (FL = 0.761-0.891, AVE = 0.678).

Table 5. Reliability and validity indicators

Vars.	Items	Factor 1	Factor 2	Factor 3	Factor 4	AVE	CR	α
TD	TD1	0.718				0.567	0.929	0.915
	TD2	0.687						
	TD3	0.785						
	TD4	0.757						
	TD5	0.819						
	TD6	0.720						
	TD7	0.811						
	TD8	0.677						
	TD9	0.807						
	TD10	0.732						
OD	OD1		0.735			0.658	0.950	0.942
	OD2		0.827					
	OD3		0.852					
	OD4		0.871					
	OD5		0.804					
	OD6		0.823					
	OD7		0.800					
	OD8		0.790					
	OD9		0.831					
	OD10		0.770					
ED	ED1			0.749		0.650	0.949	0.940

	ED2			0.809				
	ED3			0.818				
	ED4			0.826				
	ED5			0.778				
	ED6			0.857				
	ED7			0.823				
	ED8			0.833				
	ED9			0.794				
	ED10			0.766				
EBA	EBA1				0.891	0.678	0.926	0.904
	EBA2				0.799			
	EBA3				0.761			
	EBA4				0.778			
	EBA5				0.862			
	EBA6				0.841			

4. Hypotheses testing

4.1 Model fit.

Two indicators were used to test model fit: Stone-Geiser's (Q^2) and the determination coefficient (R^2). The first one is used to test the predictive power of the model with a threshold value greater than zero (Hair et al., 2011; Al-Ayed & Al-Tit, 2021; Al-Tit, 2020) and the second one is used to determine the explaining power of the exogenous variables according to three categories: low ($R^2 = 0.19$), medium ($R^2 = 0.33$), and high ($R^2 = 0.67$). The results of PLS algorithm and Blindfolding in SmartPLS 3.0 software showed acceptable predictive power of the model ($Q^2 = 0.232$) with a medium explaining power ($R^2 = 0.352$). Hence, the model can be used to test research hypotheses.

4.2 Research structural model

Figure 2 shows the structural research model in which three hypotheses were tested to explore the effects of technological drivers (TD), organizational drivers (OD), and environmental drivers (ED) on e-business adoption (EBA). Complete results of hypotheses testing in terms of path coefficients between independent variables (IVs) and the dependent variable (DV), t-values, and p-values are depicted in Table 6.

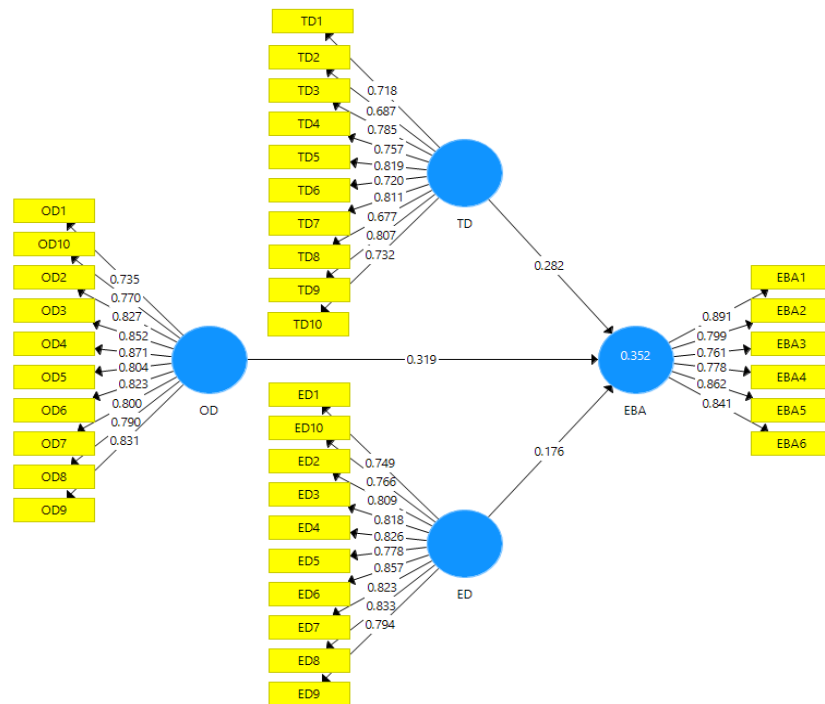


Figure 2. Research structural model

The results of hypotheses testing as shown in Table 6 indicated that the three research hypotheses were accepted. Particularly, it was found that technological drivers exerted a significant effect on e-business adoption ($\beta = 0.282$, t -value = 4.720, p -value = 0.000), organizational drivers had a significant effect on e-business adoption ($\beta = 0.319$, t -value = 5.239, p -value = 0.000), and environmental drivers had a significant effect on e-business adoption ($\beta = 0.176$, t -value = 3.086, p -value = 0.002). The results pointed out that the effects of technological and organizational drivers on e-business adoption were medium while the effect of environmental drivers was low. However, the significant effect of the organizational drivers was the largest one, followed by the effect of the technological drivers, then the effect of the environmental drivers.

Table 6. Results of hypotheses testing

IVs	Path	DV	β	T-value	P-value	Result
Technological drivers (TD)	→	EBA	0.282	4.720	0.000	Accepted
Organizational drivers (OD)	→	EBA	0.319	5.239	0.000	Accepted
Environmental drivers (ED)	→	EBA	0.176	3.086	0.002	Accepted

* Significant at significant level of 0.05.

5. Results discussion, implications, and conclusion

The aim of this research is to investigate the effects of technological, organizational, and environmental drivers on e-business adoption using a sample from SMEs in Saudi Arabia. Three key findings were found concerning the effect of these drivers on e-business adoption. First, technological drivers showed a significant effect on e-business adoption. such results was echoed in many previous studies (e.g., Omar et al., 2015; Alraja and Malkawi, 2015; Thaha et al., 2022). Second, organizational drivers exerted a significant

effect on e-business adoption as previously stated in some studies (e.g., Omar et al., 2015; Alraja and Malkawi, 2015; Bakeer & Albaour, 2021; Thaha et al., 2022). Third, in line with prior works (e.g., Omar et al., 2015; Alraja and Malkawi, 2015; Thaha et al., 2022; Prabowo & Yuniarty, 2021; Abbad et al., 2022) environmental drivers had a significant effect on e-business adoption. However, it should be noted that scholars found mixed results based on their research measures and samples. For example, some studies found that owner support, perceived ease to use e-business tools, availability of ICT consultation services, vendor support, integrated information systems between organizations and their customers and business partners, firm size, firm age, trade partner readiness, leadership style, competitive pressure, employee skills and training, organization's technological mastery, and government support had significant effects on e-business adoption (Nguyen, 2013; Awa, & Ojiabo, 2016; Alos-Simo et al., 2017; Abdullah et al., 2018; Habiboglu et al., 2020; Bakeer & Albaour, 2021; Prabowo & Yuniarty, 2021; Satar & Alarifi, 2022; Abbad et al., 2022; Masud et al., 2022), while other studies pointed out that some factors such as competitive pressure, government support, perceived financial cost, customer readiness (Prabowo & Yuniarty, 2021; Satar & Alarifi, 2022; Abbad et al., 2022;) had no significant effects on e-business adoption.

Based on the above-mentioned results and discussion, the current research has theoretical and empirical implications. Theoretically, this research collects 30 sub-drivers of e-business adoption as well-found in the literature, which means that the scope of the research expands the list of technological, organizational, and environmental drivers of e-business adoption. Hence, it provides an expanded model to underline drivers of e-business adoption. Such a model comprises three key drivers with 30 sub-drivers. Empirically, the research verifies that e-business adoption is subject to numerous factors related to technological, organizational, and environmental drivers of e-business adoption. These factors include information technology infrastructure and capabilities, employee IT skills and training, technology cost and relative advantage as well as security issues. Furthermore, the proposed list of the organizational drivers of e-business adoption contains drivers such as organization size, scope, and age, perceived benefits of e-business adoption, digitization plan, organization's strategic orientation, leadership style, top management commitment and support. In terms of the environmental drivers of e-business adoption, it was found that e-business adoption depends on some factors related to competitors, customers, government, business partners, and supporting industries.

Consequently, it was concluded that e-business adoption by SMEs in Saudi Arabia is influenced by numerous technological, organizational, and environmental drivers. However, the process of e-business adoption is more influenced by organizational factors. It can be stated that the top 10 drivers of e-business adoption in SMEs in Saudi Arabia are enterprise's strategic orientation, qualified human resources, financial resources, enterprise size, enterprise age, leadership style, top management commitment and support, perceived benefits of e-business adoption, digitization clear plans, and security issues. That is, e-business adoption in the first place depends on organizational drivers (the first 7 drivers) and technological drivers (the other 3 drivers). In the second place, e-business adoption is influenced by environmental drivers such as vendor support, competitors' engagement in using e-business tools, customers' expectations, suppliers' expectations, as well as government regulations and support.

6. Limitations and future research directions

The results of the current research are limited to data collection design which is a cross-sectional design. So, future studies should consider longitudinal designs to determine e-business adoption changes across time. Moreover, the dependent variable (e-business adoption) was measured based on subjective insights of the sample members not on the

actual experience of the enterprise such as availability of e-buying, e-selling, e-marketing applications, and secured online payment. Therefore, future studies are requested to use actual measures like number of online placed and received orders, e-promotion and advertising activities, e-management of inventory processes, and e-payment systems. On the other hand, the intervening effects of factors such as enterprise size and age were not studied in the current research, which encourages researchers to examine the moderation roles of such variables in the effect of technological, organizational, and environmental drivers on e-business adoption.

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