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EXPLORING DETERMINANTS OF E-BUSINESS ADOPTION IN SMES: A SYSTEMATIC LITERATURE REVIEW

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Abstract

Adoption of e-business is extremely a dominant strategy to survive, stay competitive and grow for businesses. However, empirical studies on e-business adoption in recent years have been scarce. The purpose of this paper is to review the paper systematically to explore determinants of e-business adoption in Small and Medium Enterprises (SMEs) of developing countries. E-business has substantial potential for SMEs in developed and developing countries alike. Nevertheless, to accelerate the shift from traditional business to e-business in developing countries faced many challenges in practical use and the issues have not been adequately addressed (Mkansi.M, 2020). In the scarcity of the extant literature, the direction of future work outlined. Guided by PRISMA technique (Moher et al., 2009), three online databases, Scopus, Web of Science and Springer Link Journal were deployed, resulting in 27 articles were included in the literature review and have been identified and diversified into various factors which related to the frequency of occurrence in many researches which apply technology-organization-environment (TOE) framework (Tornatzky and Fleisher, 1990). Further analysis of the studies under TOE framework revealed four significant themes: (1) Technological Context, (2) Environmental Context, (3) Organizational Context, and (4) Individual Context. The themes are combined into a proposed e-business adoption framework and recommendations are reconciled according to the proposed framework. This paper incorporates the insights of the determinants of e-business adoption in SMEs, it suggested pertinent issues for future research endeavors and serve as a portrait for more SMEs entrepreneurs in developing countries to adopt e-business to sustain, remain competitive and bloom in current covid-19 pandemic and hereafter.

Keywords: E-Business, Small and Medium Enterprise (SMEs), Adoption

1.0 RESEARCH BACKGROUND

SMEs are the cornerstone of developing countries, contributing significantly to job opportunity creation and global economic growth in world economics. The Covid-19 pandemic has caused significant disruption and survival crisis to the business environment and affecting the worldwide socio-economy. Small and Medium Enterprises (SMEs) are confronted with unpredictable challenges and difficulties, operations paralyzed, weaken cash flows and faced financial risk (Oyewale et al., 2020). Many SMEs ceased operations due to various obstacles during the pandemic crisis (Kiki Oktora et al., 2020). This has reinforced pre-existing bottlenecks in the e-business ecosystem. The lockdown and movement prevention policies implemented by governments forced businesses to accelerate the shifting of conventional business activities to online platform (Patma.TS et al., 2020). E-business platform helps SMEs to overcome the constraints to secure new market opportunities beyond geographical and physical reach in the covid-19 crisis. However, compared to large organizations, the total number of the adoption of e-business in SMEs remain low globally (Mkansi.M, 2020; Shi.P. et al, 2018; Rahayu.R and Day.J, 2017). Most of the e-business adoption SMEs are from developed countries (Deng.H.et al , 2019; Kurnia.S et al, 2015; Mac Gregor.R.C and Kartiwi.M, 2010) and less in developing countries (Arslan.F et al, 2019; Zaide.A.N.H, 2012).The number of e-business adoption for SMEs entrepreneurs in developing countries are far below the minimum level (Rahayu.R and Day.J, 2017; ITC 2016). Only 2% of African enterprises are adopting e-business (ITC, 2016). Several studies have focused on the adoption of e-commerce and the factors that influence it, (Mirchandani and Motwani, 2001; Grandon and Pearson, 2004; Seyal and Rahman, 2003; Ghobakhloo et al., 2011; Kaynak et al., 2005). However, there are few research on e-business adoption and its extent in SMEs (Alrousan and Jones, 2016; Vilaseca-Requena et al., 2007; Chuang et al., 2007).

Many corporate organizations are adopting new technologies aiming to sustain and grow as well as competitive advantage (Weill and Woerner, 2017). Incorporate the technology in business strategy occupy prominent position (Panetta, 2018) and has attracted attention from both the literature and business organizations in e-business adoption. It served as a watershed moment in the growth of business procedures, proving to be advantageous to SMEs in developing countries (Kiki Oktora, et al 2020). The outbreak of Covid-19 pandemic has accelerated the adoption of e-business at least five years. Lockdown pushed more people purchase online. This study explored

determinants of e-business adoption of SMEs in developing countries using the Technology-Organization-Environment (TOE) as the theoretical framework with a comprehensive and through view of systematic literature and addresses research question: what are the determinants of e-business adoption in small and medium enterprises (SMEs) of developing countries? This paper provides theoretical background on the existing knowledge of e-business adoption and TOE Model. Thereafter discuss the methods to analyze the literature and subsequently present the result of systematic review. Finally draw conclusions and provide suggestions for future research directions.

■ 2.0 PURPOSE OF THE STUDY

The purpose of this paper is to review the extant literature comprehensively, objectively, accurately and systematically on the determinants of e-business adoption of SMEs in developing countries.

■ 3.0 LITERATURE REVIEW

E-business refers to business activities conducted online. All business activities can transact electronically, such as food order online, car booking online, booking of air tickets, payment of bills, money transfer, promotion, public relations, goods delivery as well as all kinds of online business operations which are in accordance with the use of e-business technology (Arisandi, 2018). The adoption of technology as a strategic tool by companies is not a recent practice (Bharadwaj et al, 2013; Laurindo, 2008; Venkatraman, 2017), but incorporated the artificial technologies into business strategy has significantly more complicated in view of Artificial Technology applications able to perform tasks that require cognitive which formerly performed by humans (Bean, 2019; Brynjolfsson and Mitchell, 2017; Duan et al., 2019; Lichtenthaler, 2020a; Norman, 2017; Wilson and Daugherty, 2018). In this context, creating business value from technology investments to do business online is far more complicated than forecasted. This was mainly due the paradox that the same individual may have negative or positive attitudes towards technology, depending on different circumstances (Lichtenthaler, 2019).The adoption of e-business has diminution of operating and administrative cost in addition to boost the quality of products and services, new clients and vendors penetration, innovate and speed up the product distribution channels and flexibility (Stockdale and Standing, 2004; Ramanathan et al., 2012; Daniel and Wilson, 2002). This availed in giant corporate as well as in SMEs. A positive growth rate recorded in SME‟s revenue and turnover in adoption of e-business adoption (Abebe, 2014). Adoption is the decision made by a firm to run B2B business online or to use e-commerce to trade with their vendor and business partners (Chatterjee et al., 2002). Most of the scholars considered full-capacity of innovation in the core business as adoption (Scupola, 2009). Small and Medium enterprises (SMEs) defined differently by countries. SME is defined on the basis of the sales turnover per annum and total full-time employees of a firm in Malaysia (National SME Development Council, 2013). The TOE model has been utilized as a foundation to study the determinants of e-business adoption in developing countries.

■ 4.0 METHODOLOGY

Literature identification

A systematic review is characterized by a rigorous, explicit and transparent methodology (Greenhalgh et al., 2004, p.582). The identification, screening, eligibility and inclusion of articles are guided by PRISMA technique (Preferred Reporting Items for Systematic Reviews and Meta Analyses). First, three databases – Scopus, Web of Science and Springer Link Journal. The year of publication from 2011 to 2020 and quality journal papers are selected. The Boolean search terms used are “adopt*” AND (“e-Business” OR “e-commerce” OR “Electronic Business” OR “Digital Business” OR “Online Business” AND “Small and Medium Enterprises AND “SME”

Data Search

From data source, 596 articles obtained. The detailed screening process identified 72 articles. The articles are imported into the reference manager software Mendeley (full-text.pdf file). The abstracts of these articles are read, and full text will be read if deem necessary in cases of where the classification was in question. This is to decide inclusion or exclusion criteria. 27 articles are included for the study, refer Figure 1.

Inclusion and Exclusion Criteria

Duplicate articles are not included in the analysis. All articles not in full text are also excluded, and the inclusion limited to articles published in English, from year Jan 2011 to Dec 2020. The inclusion and exclusion criteria are defined in the table 1.

Table 1: Inclusion and Exclusion Criteria

Criterion	Eligibility	Exclusion
Type of Literature	Journal Articles, Research Articles	Duplicate, not in full text
Language	English	Non-English
Timeline	Jan 2011 to Dec 2020	<2011

Data Mining and Analysis

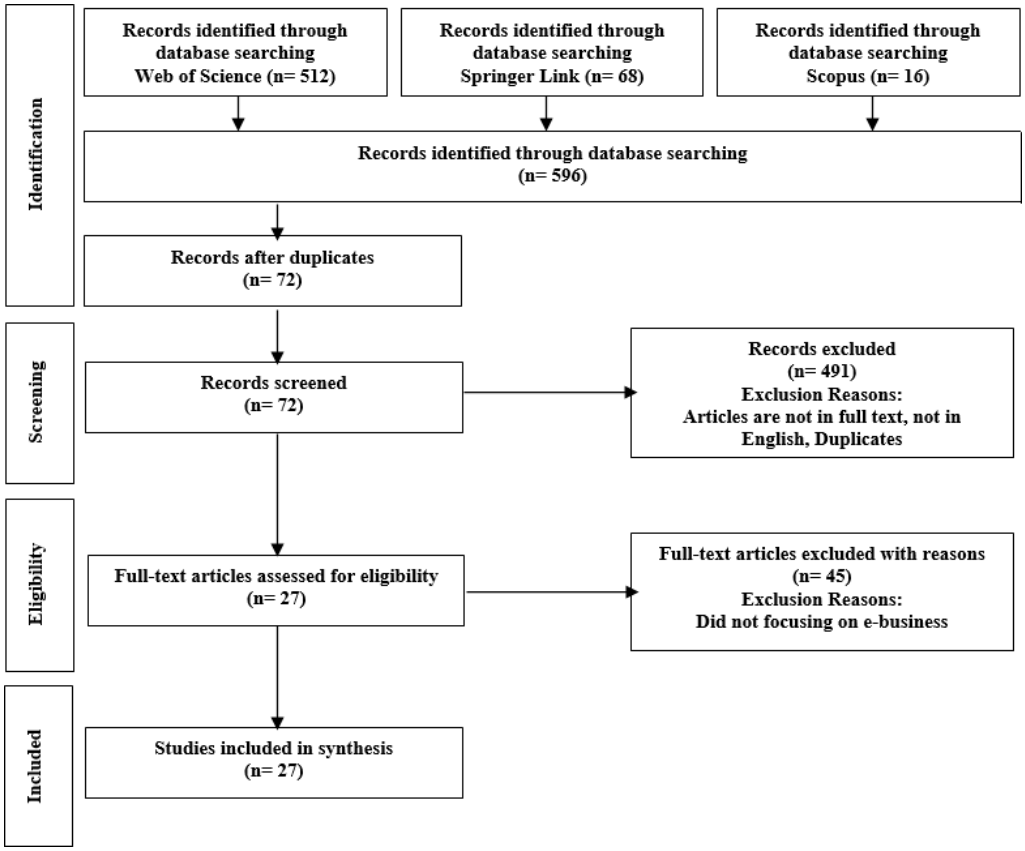

Figure1: Literature search process for identification of studies

■5.0 RESEARCH FINDINGS AND DISCUSSION

Classification of articles by publication years

Time frame from Jan 2011 to Dec 2020, and the distribution of articles depicted in Table 2.

Table 2 Number of articles published year wise

Year	Author	Publications
2011	Ghobakhloo et al. (2011), Alam et al. (2011a, 2011b), Grandón et al. (2011), Liu (2011), Wymer and Regan (2011), Ifinedo (2011), Awa et al.(2011)	8
2012	Li and Xie (2012), Raymond et al. (2012), Hameed et al. (2012), Ooi et al. (2012), Chan et al. (2012), Rowe et al. (2012), Kannabiran and Dharmalingam (2012), Govindaraja and Chandra (2012), Bharati and Chaudhury (2012)	9

Table 2 Number of articles published year wise (continued)

Year	Author	Publications
2013	Jamaluddin (2013), Sila (2013), Ramdani et al. (2013), Ghobakhloo and Tang (2013)	4
2014	Hajli et al. (2014), Ahmad et al. (2015), Abebe (2014), Aboelmaged (2014), Senarathna et al. (2014)	5
2015	Awa et al. (2015a, 2015b), Kurnia et al. (2015b), Al-Somali et al. (2015), Palacios-Marqués et al. (2015), Rahayu and Day (2015), Kurnia et al. (2015a), Al-Alawi and Al-Ali (2015), Wei et al. (2015), Arifin (2015), Al-Bakri and Katsioloudes (2015), Sila (2015), Yeh et al. (2015)	13
2016	Sin et al. (2016), Alrousan and Jones (2016), Walker et al. (2016), Soto-Acosta et al. (2016), Chatzoglou and Chatzoudes (2016), Awiagah et al. (2016)	6
2017	Kabanda and Brown (2017), Choshin and Ghaffari (2017), Rahayu and Day (2017), Hassan et al. (2017), Gorla et al. (2017), Ntwoku et al. (2017), De Mattos and Laurindo (2017), Alsaad et al. (2017), Giotopoulos et al. (2017)	9
2018	Hamad et al. (2018), Orser and Riding (2018), Mohtaramzadeh et al. (2018), Alsaad et al. (2018), Eze et al. (2018), Puklavec et al. (2018), Cataldo et al. (2018)	7
2019	Arslan, et al. (2019), Cardoso, et al. (2019), Deng et al. (2019), Otoo, et al. (2019), Haneem, et al.(2019), Mkansi, et al. (2019)	6
2020	Clement,J. (2020a), Clement,J.(2020b), Casseta, et al. (2020), Kiki Oktora. Et al (2020), Mkansi, et al. (2020)	5
Total Articles		72

Classification of articles by the factors affecting e-business adoption

Table 3 exhibits the allotment of papers sorted by factors. This study aims to investigate the frequency and relative weight of every e-business adoption variable in a connected manner. The various factors are classified under the TOE model's broad framework. The outcome is constructed into a table.

Table 3 Classification of articles on the basis of different factors

		Technological Factors				Environmental Factors			Organizational Factors			Individual Factors			
		Technology Cost	Relative Advantage	Compatibility	Perceived Risk	Government Support	Vendor' s Support	External Pressure	Strategic Orientation	Technology Readiness	Organizational Characteristics	Owner Characteristics	Owner Innovativeness	Owner Experience	Management Support
1	Ghobakhloo et al. (2011)	/	/	/			/	/			/		/	/	
2	Alam et. Al. (2011a)	/	/	/	/					/		/			
3	Liu (2011)	/			/				/	/	/				
4	Bharati and Chaudhury (2012)					/	/	/		/	/	/	/		
5	Ooi et al. (2012)					/				/			/		

Table 3 Classification of articles on the basis of different factors (continued)

		Technological Factors				Environmental Factors			Organizational Factors			Individual Factors			
		Technology Cost	Relative Advantage	Compatibility	Perceived Risk	Government Support	Vendor' s Support	External Pressure	Strategic Orientation	Technology Readiness	Organizational Characteristics	Owner Characteristics	Owner Innovativeness	Owner Experience	Management Support
6	Ghobakhloo and Tang (2013)	/	/	/	/								/	/	
7	Sila (2013)	/			/		/	/	/		/				
8	Abebe (2014)											/			
9	Awa et al. (2015b)		/		/		/	/	/	/	/	/		/	
10	Ahmad et al. (2015)		/	/			/	/				/	/	/	
11	Kurnia et al. (2015b)	/	/	/	/	/		/		/					/
12	Rahayu and Day (2015)	/	/	/			/	/		/	/		/	/	
13	Al-Bakri and Katsioloudes (2015)							/	/		/		/		
14	Al-Somali et al. (2015b)	/	/	/	/	/	/	/	/	/			/		/
15	Awa et al. (2015a)									/		/		/	
16	Al-Alawi and Al-Ali (2015)		/			/				/					/
17	Wei et al. (2015)		/			/		/		/	/	/			
18	Sin et al. (2016)		/					/							
19	Walker et al. (2016)		/	/				/	/	/					/
20	Alrousan and Jones (2016)		/	/		/		/		/	/	/	/		/
21	Choshin and Ghaffari (2017)	/	/		/					/	/			/	
22	Hassan et al. (2017)		/	/				/		/					/
23	Mohtaramzadeh et al. (2018)	/	/			/		/		/					/
24	Orser and Riding (2018)							/				/			
25	Hamad et al. (2018)	/	/	/		/		/							/
26	Marieme Chouki et al. (2019)	/				/	/	/	/	/	/				/
27	Kiki Oktora (2020)								/	/	/				

The relative importance of a factor in a different context

There are 27 articles that focus on the elements that influence the adoption of e-business in SMEs. TOE framework applied to categorize the variables into four themes, (1) technological context, (2) environmental context, (3) organizational context, (4) Individual context.

Technological context

The technological elements found from the study are depicted in Table 4. The frequencies of occurrence of 27 articles in different studies have been counted. The search result concluded that observability and trialability of variables have the least frequency of occurrence, that is 0.19. These variables are least quoted in the literature, whereas other elements have notable contributions in the study.

Table 4 Technological Factors

No	Factors	No of Articles	Frequency
1	Relative Advantage	17	0.63
2	Cost	12	0.44
3	Compatibility	11	0.41
4	Perceived Risk	8	0.30
5	Complexity	6	0.22
6	Observability	5	0.19
7	Trailability	5	0.19

Environmental context

Environmental elements selected from the study are depicted in Table 5. The numerous environmental elements have been examined, and it has been determined that only the network intensity has a frequency of 0.11, which is lower than the minimal cutoff frequency of 0.24, but other factors play a substantial role in the adoption articles.

Table 5 Environment Factors

No	Factors	No of Articles	Frequency
1	External Pressure	18	0.67
2	Government Support	10	0.37
3	Vendor Support	8	0.30
4	Network Intensity	3	0.11

Organizational context

Various organizational elements from the study are depicted in Table 6. Strategic orientation, technology readiness, and organizational characteristics (age, size, and business ownership) have high relative frequencies, however information intensity has the lowest frequency, 0.19, which is less than the cut-off base value.

Table 6 Organizational Factors

No	Factors	No of Articles	Frequency
1	Technology Readiness	18	0.67
2	Organizational Characteristics	12	0.44
3	Strategic Orientation	8	0.30
4	Information Intensity	5	0.19

Individual context

Individual factors discovered from the articles are depicted in Table 7. As demonstrated by the relative frequencies of occurrence, all of the variables analyzed have high relative importance in the literature.

Table 7 Individual Factors

No	Factors	No of Articles	Frequency
1	Owner innovativeness	9	0.33
2	Owner Characteristics	9	0.33
3	Top Management Support	9	0.33
4	Owner Experience	7	0.25

The analysis and findings are presented in a tabular format, separated into various headings to fill research gaps in the literature on the adoption of e-business, which is the objective of this study. All of the study's determinants have been reorganized in an alphabetical order and identical variables have been removed, as multiple studies may have used the same variable but referred to it in different ways. The extracted variables are then grouped and tabulated in relation to the findings of all scholars of the articles that have been discovered. Based on the article's own groupings, or factoring relationships, the grouped variables are divided into individual aspects. Subsequently, variables are ranked according to their comparative weigh or recurrence phenomenon in the paper. As illustrated in Figure 2, the highest repeatedly mentioned variables in the article are condensed into fourteen (14) broad factors employed in the scholar paper employ TOE model. The grouped variables then organized in four themes (1) technological context, (2) environment context, (3) organizational context and (4) individual context.

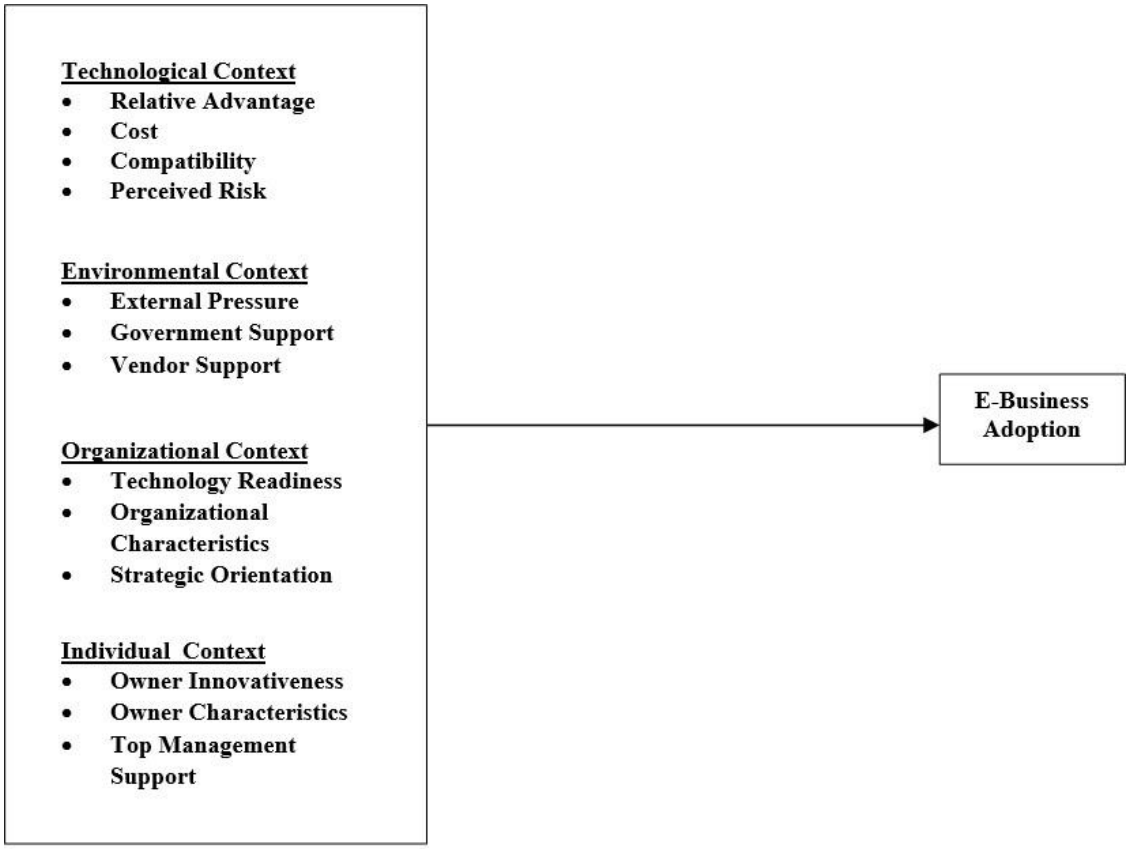

Figure 2 Proposed model: e-business adoption
Source: Adopted and modified from TOE framework (Tornatzky et al., 1990)

■ 6.0 CONCLUSION AND FUTURE STUDIES

The review has managed to articulate e-business adoption from current research. Historical studies conducted in this paper and the most referenced factors in e-business research were recognized from the designed table. Four important themes have been explored: (1) technological context, (2) environment context, (3) organizational context and (4) individual context. The most commonly cited factors of technological factors: relative advantage, technology cost, compatibility and perceived risk. The most extracted factors in environmental context are government support, external pressure and vendor‟s support. The highly commended factors in the organizational context are technology readiness, organizational characteristics and strategic orientation. The highly commonly mentioned factors in individual context are owner innovativeness, owner characteristics, top management support and owner experience, whereas complexity, trialability, network intensity, observability, information intensity, and many more variables are excluded which beyond the scope focused in the study. Hence, the review can serve as a model for testing factors in future research. It also can use as a stepping stone for management in strategic planning in e-business adoption. Future research that uses qualitative or mixed methods to acquire deeper insights from SMEs in order to explore e-business adoption in Malaysia may be more effective and practical.

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