



Barriers to Adopting Electronic Commerce for Small and Medium-sized Enterprises in Emerging Economies

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Abstract

With the availability of the Internet as an Information and Communication Technology (ICT) tool, electronic commerce (e-commerce) has received much attention in many Western and developed countries. However, it has been given little attention in emerging economies, and therefore e-commerce adoption has been particularly difficult for Small and Medium-sized Enterprises (SMEs). The purpose of this review paper is to explore several types of barriers that influence the adoption of e-commerce by SMEs in emerging economies. An exhaustive review of the literature was conducted on the subject. It further evaluates and extends Tornatzky and Fleischer's (1990) Technology-Organization-Environment (TOE) framework by adding a micro-level context - that of the 'entrepreneurial (individual) characteristics of owner-managers' to examine various contextual challenges SMEs face in adopting e-commerce in emerging economies. The paper examines a number of new dynamic and contextual barriers identified in the study, grouping them into four themes: technological, organizational, environmental and extended 'entrepreneurial (individual) characteristics of owner-managers'. The paper sets up a new conceptual framework and has established a holistic view of contextual barrier themes for the coming years. In addition, this theoretical model provides us with the new barriers related to 'entrepreneurial (individual) characteristics of owners/managers' and 'local business institutions in supporting e-commerce' that influences the adoption of e-commerce by SMEs in emerging economies. Based on this extended framework, future areas of research can be determined, and owner-managers of SMEs, new entrepreneurs and government authorities in emerging economies will be able to identify emerging concepts in e-commerce.

Keywords: SMEs, Entrepreneurship, E-commerce, Technology, Emerging Economies



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I. Introduction

The Internet is now regarded as one of the most crucial networking tools and techniques. It contributes to the dissemination of knowledge globally and it is necessary for the sharing of experiences and knowledge, the dissemination of culture and the creation of communication bridges between emerging and developed economies. The Internet is a vital tool for many SMEs and large companies, especially in developed economies.

The web has played an essential role in the successful dissemination of new technologies and the implementation of the modern method of internet commerce. With the improvement and growth of Internet technology over several decades, e-commerce, conducted via the Internet, has become an essential channel for many businesses (Turban *et al.*, 2018). As observed in many economies around the world, e-commerce is an indispensable business tool in the field of ICT. Technology companies and businesses in the modern world appreciate the transition to e-commerce and have become essential pillars in the growth of many economies. As a result of this progress, companies seek to maximize the growth of e-commerce at their level and to take full advantage of technology that will help increase e-commerce efficiency and improve business processes, performance and productivity. The general belief is that, in this century, e-commerce via the Internet will create more opportunities for organizations and individuals to conduct online transactions worldwide. However, Kshetri (2007) and Mainardes *et al.* (2019) says that most SMEs, in the context of emerging economies, are still not aware of the benefits of e-commerce.

According to the latest report (2018) of the United Nations Conference on Trade and Development (UNCTAD) - established in 1964 as a permanent intergovernmental body - emerging economies should adopt e-commerce as a new technology without reservations because this new technology will improve their business, economic, social and human development. In turn, this will lead to higher business productivity, reduce business operating costs, and improve the level of integration with international markets. The report further shows that these emerging economies generally had low rates of basic Internet usage, but the growth rate was high. In an earlier report (2005), UNCTAD stated that between 2000 and 2005, emerging economies experienced an increase in the Internet user population of

around 400 million, which corresponds to a growth rate of 300%. International participation of online users had increased from 25% to 40%. Internet bandwidth followed a similar trend, the increase in bandwidth in emerging economies doubled, compared to developed economies. Although these statistics can be extrapolated to a corresponding rise in e-commerce adoption in emerging economies, many local issues still present barriers for these emerging economies in their pursuit of economic and business prosperity through e-commerce (Molla and Heeks, 2007).

Furthermore, the uneven adoption and diffusion of various ICT resources, goods and services between emerging and developed economies - and between urban and rural SMEs - similarly show how e-commerce is valued and how it functions in organizations (Kurnia *et al.*, 2015). Many researchers have further concluded that, the accessibility of e-commerce resources in developed economies has contributed significantly to e-commerce adoption and its integration as an innovation in the business processes of those organizations (Al-Qirim, 2007; MacGregor and Kartiwi, 2010). They also found, however, that emerging economies experience a challenge in obtaining e-commerce resources and using them successfully, and the overall cost of acquiring e-commerce projects is very high. This has been found to be the case for many SMEs in emerging economies (Kartiwi *et al.*, 2018). The failure of many e-commerce projects in emerging economies has been attributed to problems of "poor understanding of the context", and has led to the closure of e-commerce businesses (Duncombe and Heeks, 2002). These concerns are relevant to the adoption of e-commerce and, therefore, need particular investigation.

The purpose of this paper is to examine the various barriers that hinder SMEs' adoption of e-commerce in emerging economies. It seems that developed economies have used internet resources and provided technical services to their local businesses because of the essential role they play in their economies. However, emerging economies are still in their infancy and have tried to launch campaigns for SMEs and individuals to expand the opportunities offered by e-commerce via the Internet at different economic levels.

II. Emerging Economies - A Diverse Context

Emerging economies, also known as emerging or developing market economies, are often said to be at the forefront of scientific and technological development, particularly in the fields of information technology (IT), social and economic industrialization, and advances in military technology. In this paper, 'emerging economies' refers to the emerging and postcolonial economies of the African, Asian, South American, and Pacific regions, generally called 'third world economies' or 'less developed economies' (LDEs). Recently, third world economies can be defined as those with high poverty rates, economic instability, and lack of basic human resources compared with the rest of the world. On the other hand, LDEs are a list of developing countries which, according to the United Nations, have the lowest socio-economic development and human development (HDI) scores of all countries in the world. LDEs have

weaknesses in areas such as nutrition and education (higher illiteracy rates), and have economic vulnerabilities and widespread poverty. These emerging economies are countries that are on their way to becoming developed, and are generally headed for mixed or free markets. Emerging markets are countries that do not constitute 'capitalist democracies', such as those in Europe and North America. Emerging economies include countries in the Asia-Pacific, Africa and Latin America regions that share common (often negative) structural and historical characteristics such as colonial experience, weak defence, and declining economic growth. These are countries where the army intervenes in response to specific situations or catalysts for particular political crises; there are national insurgency movements, civil wars and, in extreme circumstances, 'state collapse'. There are, however, a few exclusions: certain so-called developing or emerging economies, including China, India, and Brazil, which are catching up and developing their known stereotypes (Lawrence and Tar, 2010).

Previous studies have argued that, unlike most Western and developed societies, which are largely 'homogeneous' - for example in Europe, where most people share the same type of cultural values, language, ethnicity and religious system - the emerging world is phenomenally 'heterogeneous' in terms of political systems, economy, ideology, demography, culture, and race. Each country has a unique situation that requires culturally appropriate strategies and specific adoption of the trade (Lawrence and Tar, 2010; Nazir and Zhu, 2018, 2019). For example, the emerging economies of Asia differ from other economies and LDEs in the region in terms of their geographic, social and cultural context. In terms of political systems, emerging economies have adopted a wide range of systems - for example: autocracy (Russia, Saudi Arabia and Jordan); democracy (India, Japan, South Korea and Taiwan); and socialism (China, Cuba, Vietnam and North Korea). In demographic terms, there is also a strong disparity - for example, between China, with a population of 1.43 billion, and Pakistan, with a population of only 220 million. Despite these dramatic differences, however, the emerging world shares some common complex challenges: to improve education; to promote competition; and to establish regulations to develop a high value-added service for the SME business sector. This paper, therefore, contributes to the knowledge of e-commerce and of emerging economies, by highlighting the barriers associated with SMEs' adoption of e-commerce in businesses, in emerging economies, since it is believed that the emerging world has economic deficiency, technological deficit, and both chaos and potential (Lawrence and Tar, 2010).

III. Literature Review

It has already been established that e-commerce can potentially offer many unprecedented opportunities through new technological advances, with its positive impact on trade, investment, business transactions and market penetration (Singh and Kota, 2017). The findings of many studies, of both emerging and developed countries who sought these benefits, have been disappointing overall. Various studies of e-commerce issues have indicated, however, that the problems faced by many SMEs in emerging economies

might be entirely different from those faced in developed economies. SMEs that embrace ICT and e-commerce in emerging economies have unique challenges, and challenges that are more pronounced than in developed economies (Kartiwi *et al.*, 2018). Emerging economies face many barriers that seriously hamper the growth of their e-commerce sector (Ghobakhloo and Tang, 2013). Molla and Heeks (2007) noted that most SMEs did not appear to have benefited from e-commerce, whether by expanding their market access, improving their reach, improving their relationships with their customers and suppliers, reducing their costs, or improving their efficiency.

Researchers have identified the barriers to the adoption of e-commerce by SMEs, especially those in developing countries. Barriers can be broadly categorized as being internal or external (Khouja and Liu, 2020). Internal barriers exist within an organization and can also be resolved in the organization's environment as they are under its control. They typically include: organizational culture; lack of resources; attitudes towards e-commerce; and the level of employee training. External barriers, which are beyond the immediate control of the organization, include: a lack of telecommunications infrastructure; poor Internet connectivity; the lack of fixed telephone lines for dial-up access; and weak Internet service provider (ISP) infrastructure. Such barriers were identified in Sri-Lanka by Kapurubandara and Lawson (2008), and in Nigeria by White *et al.* (2014), as significant challenges to SMEs' e-commerce adoption.

A recent study by Nazir and Zhu (2018, 2019) and Rahayu and Day (2017) further revealed that high dependence on email services, lack of government support, lack of ICT specialists and lack of financial resources were all obstacles to the low adoption of e-commerce services by SMEs in Pakistan and Indonesia - both emerging economies. Salehi (2013) also argued that economic and cultural poverty, and low awareness of information technology hinder the adoption of e-commerce in Iran's emerging economy. In line with the findings of other studies, Santhosh (2019) studied SMEs in emerging economies and found several obstacles and difficulties in adopting technology, internationalisation and financial performance. Financial systems of emerging economies were seen as significant hurdles for SMEs and need to be restructured to allow for online payment mechanisms and credit facilities. In this respect, emerging economies lag behind, with the exception of South Korea, where the government actively supports commerce, and benefits from it.

In studies undertaken twelve years apart, Awiagah *et al.* (2016) and Zhu and Kraemer (2009) identified regulatory conditions that also play a crucial role in stimulating SMEs and have a more significant impact on the adoption of e-commerce in emerging economies than in developed economies. These studies show inadequate infrastructure to be a significant barrier to e-business adoption by SMEs in emerging economies, and this situation is drawing the attention of many parties - including researchers - given the critical role that SMEs play in improving economies through job creation and poverty reduction. The development of e-commerce technologies for SMEs in any country would have a positive influence on the commercial and economic progress of the country (Makiwa and Steyn, 2019; Rahayu and Day, 2015, 2017).

After examining the existing literature, it is found that many studies have conducted on the use, impact, adoption and diffusion of e-commerce by SMEs. In addition, some researchers have attempted to uncover the factors that influence the adoption of e-commerce in SMEs. However, there has been very little research on combined issues conceding to the adoption of e-commerce in SMEs in “emerging economies” refers to the emerging and postcolonial economies of the African, Asian, South American, and Pacific regions, generally called ‘third world economies’ or ‘less developed economies’ (LDEs).

An examination of the barriers to the adoption of e-commerce in SMEs shows that the obstacles identified affect SMEs differently, depending on the socio-technical context. Although extant theories including the technology acceptance model (TAM) (Davis, 1989) and the unified theory of acceptance and use of technology (UTAUT) (Venkatesh et al., 2003) models have been proposed by researchers in seeking to explain e-commerce acceptance and use, this study adopted and applied the Technology-Organization-Environment (TOE) framework developed by Tornatzky and Fleischer (1990). It comprises three distinct but intersecting, interlinked contextual dimensions: Technological, Organizational, and Environmental barriers. Very few literature studies have applied the Tornatzky and Fleischer’s (1990) (TOE) framework and identified the barriers linked to the adoption of e-commerce in emerging economies in three original dimensions, notably technological (describes internal and external technologies relevant to SMEs), organizational (refers to the scope, size, financial constraints and overall strategy of SME e-commerce adoption) and environmental (indicates the situation in which SMEs run the business in a local environment). However, this means numerous studies have largely ignored individual factors related to the ‘entrepreneurial (individual) characteristics of owner-managers, managers and other employees’ at different levels. Therefore, barriers related to the role of owner-managers and the characteristics of management employees need to be considered in the context of the TOE framework (Ghobakhloo and Tang, 2013) as they have not been studied earlier in the context of emerging economies.

IV. Research Strategy and Framework

To achieve the research objectives of this paper, it relies heavily on a comprehensive review of the literature on e-commerce barriers found in various studies. Our literature review was conducted based on what we believe to be a representative sample of most of the research cited on this topic. A critical analysis was performed to determine the similarities and differences, if any, between the barriers reported in the literature. This paper further evaluates and extends Tornatzky and Fleischer’s (1990) Technology-Organization-Environment (TOE) framework by adding a micro-level context - that of the ‘entrepreneurial (individual) characteristics of owner-managers, managers and other employees at different levels’ to examine various contextual challenges SMEs face in adopting e-commerce in emerging economies refers to the emerging and postcolonial economies of the African, Asian, South

American, and Pacific regions, generally called ‘third world economies’ or ‘less developed economies’ (LDEs). Important socio-economic contextual barriers and new dynamics have also been identified in order to develop a new conceptual framework for the study.

The TOE framework is adopted in this paper and then extended with the addition of fourth dimension; ‘entrepreneurial (individual) characteristics of the owner-managers’ as a theoretical basis for the research. This study extended the TOE model to include the individual context, given that the adoption of e-commerce is highly dependent on the individual decision of owner-managers and other executives of SMEs in emerging economies. This study identified various barriers in four dimensions - technological, organizational, environmental, and individual barriers - all of which hinder SMEs’ successful adoption of e-commerce in emerging economies.

V. Findings and Discussion

The hidden barriers associated with the adoption and development of e-commerce in SMEs in emerging economies are summarized in Figure 1, and then discussed further.

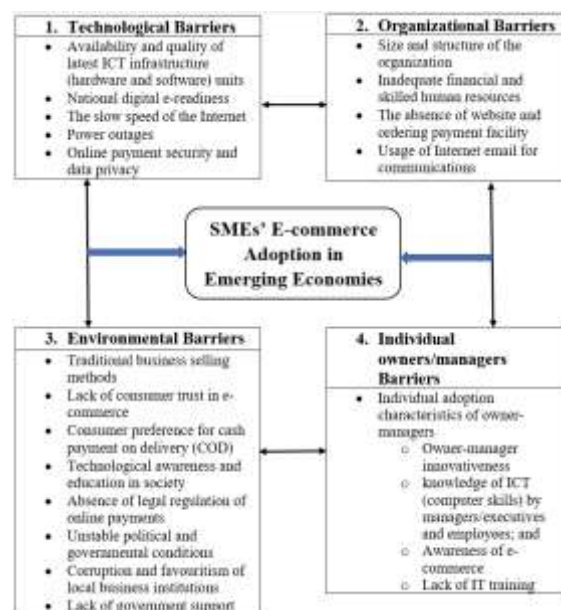


Figure 1. Barriers for SMEs to adopt E-commerce in Emerging Economies - A Framework

Source: Authors' Compilation

‘Technological barriers’ refer to the adoption of e-commerce using different ICT units and other related network technologies in the SME environment (Teo and Pian, 2004). The technological context represents the pool of technologies that SMEs can adopt (Scupola, 2009), whether technologies available on the market, or the current ICT equipment of an organization. This study identified several technological barriers that hinder the adoption of e-commerce in emerging economies: availability and quality of latest ICT infrastructure (hardware and software) units; national e-

readiness; the slow speed of the available Internet connection; power outages; and online payment security and data privacy.

For the successful adoption of e-commerce technologies, we found it crucial that SMEs in emerging economies adopt the latest ICT devices that support e-commerce projects. 'Availability and quality of current ICT infrastructure' refers to technologies (hardware and software) that enable SMEs to develop their e-commerce processes (Chatzoglou and Chatzoudes, 2016). In considering quality, this study found that, due to the smaller size and horizontal structure of the SMEs, ICT units were not fully developed. Compared with developed countries, SMEs in emerging economies did not have the latest ICT devices available to support e-commerce projects; they used outdated ICT equipment that needed to be updated for e-commerce to succeed. Although hardware devices were available in each organization to handle day-to-day activities, they were outdated, controlled by owner-managers, and had no ICT support within the business.

In contrast, in developed countries, ICT infrastructure in SMEs is of relatively good quality. Most SMEs have well-structured ICT units, with high-speed Internet connections, scanners, laser printers, fifth generation computers and laptops, and efficient e-commerce and online software. In addition - an important distinction - they have a business-friendly environment with the necessary facilities and inter-office coordination. This study, therefore, proves that it is imperative for every business to have available the latest ICT infrastructure in order to embrace e-commerce fully in all departments. The study highlights that to date, SMEs in emerging economies, as well as their counterparts in most third world countries, do not have sufficient infrastructure, especially when compared with developed economies.

In preparing SMEs for the adoption of e-commerce, the country's overall ICT infrastructure needs to be optimal. We observed that, in emerging economies, ICT systems are not fully developed, and broadband Internet and other related tools networks are not available in most places - especially in rural areas. The cost of the latest computers and other ICT accessories is also huge and it is difficult to justify the investment (Syed and Shaikh, 2012). It is evident in the literature that the high cost of the latest ICT infrastructure devices in many emerging economies restricts the ability of SMEs to adopt new technologies and therefore influences the growth (or lack of) of e-commerce (Ghobakhloo and Ching, 2019). This study indicated that overall national readiness of emerging economies was a determining factor in their e-commerce adoption process. According to UNCTAD (2003), the country's electronic preparedness is essentially a measure of its online business environment - a combination of factors that indicate how open a market is to the opportunities offered by the Internet.

We further found that private ISPs, public institutions and banks - which hold the monopoly on providing facilities and services to national consumers and the commercial sector - do not have adequate infrastructure and facilities. The general weakness of the national infrastructure means that SMEs generally only allow a limited transaction using a particular credit card, which makes it even more challenging to use credit cards for daily purchases. This study highlighted that this is

due to the current weaknesses of the national banking network and its structure. As a result, an emerging country's infrastructure is not powerful enough to help local businesses adopt cutting-edge technologies, including e-commerce and its applications via the Internet. This is also a significant barrier to SMEs' adoption of e-commerce. Therefore, general deficiencies in the infrastructure of emerging economies require improvement and support from the government.

Emerging economies are confronted with a slow-paced Internet - also a barrier for SMEs to the development of e-commerce services. This study highlights the slowness of the Internet as delaying a firm's progression towards e-commerce and as a barrier to e-commerce adoption. This lack of speed was a particular problem for small enterprises, but also for medium-sized enterprises. Due to the slow speed of the Internet, the majority of SMEs use Internet applications solely for communication purposes - sending and receiving e-mails and promoting products and services on social media pages. For e-commerce applications, however, a high-speed Internet connection is required. Nazir and Zhu (2019) reported that with the limited speed of Internet services and network devices, most SMEs in emerging economies preferred to utilise only the email aspect of e-commerce. This study found that, in terms of managing an online business, the speed of the Internet in emerging economies is very slow compared with developed economies.

Power outages (shortage of electricity) seem to present a barrier for all SMEs in emerging economies compared with developed countries. The energy crisis is the most severe problem facing the world today, especially in emerging economies and LDEs. This study identified electricity shortage as a determining barrier in the e-commerce adoption process. Emerging economy states have faced an unprecedented energy crisis for many years. The problem worsens in summer and causes daily electricity shortages - 8-10 hours in urban areas and 12-14 hours in rural areas. Shortages seriously affect industries, commerce and people's daily lives as well as the daily activities of SMEs (Hyder and Lussier, 2016). Without a continuous supply of electricity, SMEs cannot use ICT equipment that supports e-commerce and other related technological tools. It is found that, in the event of power failure, SMEs in emerging economies use generators and backup devices to operate computer systems. When outages occur, however, they can only afford to use diesel generators for a short time, which hinders the continued operation of technological devices and their processes. It is confirmed, therefore, that in emerging economies power outages prevent many SMEs - especially those in remote regions - from adopting e-commerce. The problem of power supply has negatively affected the business environment, and companies are now relocating to neighbouring countries where infrastructure is more readily available.

Emerging economies face severe problems with regard to online payment security and protection of consumer data confidentiality during online shopping experiences. These concerns were found to be further barriers preventing SMEs in emerging economies from fully adopting e-commerce services. Online and mobile payments are those payments made using mobile devices or computers connected to the Internet through existing online personal accounts - usually a bank account, a

credit/debit card or a payment service provider - to perform transactions on the Internet. With technological advances, the use of mobile devices by consumers in emerging economies in online payment transactions has increased (UNCTAD, 2017). However, this study highlights some of the problems associated with online and mobile payment systems presented to online consumers. The study revealed that SMEs customers are at risk of a security issue when buying online and making online payments. Consumers were concerned that unauthorised third parties, including marketing and promotion companies, could access their personal data, without their knowledge or consent. In addition, they felt that they might be at higher risk when shopping online if there were no secure payment mechanism available on the company's website. However, the study also suggests that an excellent web security system and user privacy would help improve online users' confidence and increase the rate of adoption of e-commerce in SMEs in emerging economies, and also in developed countries.

Due to insufficient security of online payments and data privacy, the rate of receiving payments via the e-commerce channel is very low. Customers of SMEs were also reluctant to use e-commerce services online as they felt it constituted a breach of consumer confidentiality. This study shows that Internet security is becoming a major problem in emerging economies. As a result, SMEs' customers in emerging economies viewed the Internet as an insecure way for transactions and prefer to do offline transactions to avoid the risk of Internet fraud. Hence, this study argues that consumers fear they risk their identities being stolen, and that this fear threatens their trust in e-commerce and undermines its growth.

'Organizational barriers' refer to an organization's internal issues, which influence the adoption and implementation of e-commerce. This study identified several organizational barriers that hinder the adoption of e-commerce in emerging economies. They include: the size and structure of the firm; inadequate financial resources and skilled human resources (HR); and the absence of a website and ordering and payment facility.

This study found that the size and structure of the SME represented an essential barrier and demonstrated the organization's ability to provide the necessary resources - human and financial - to adopt the e-commerce technology standards. In emerging economies, medium-sized SMEs have greater ability to provide specific resources to their business than smaller SMEs. As a result, medium-sized SMEs are more likely to adopt e-commerce. Small SMEs had flatter structures where decision-making power was in the hands of owner-managers. As noted previously, this has an impact on the implementation of the ICT technologies that support e-commerce projects. Small SMEs do not have adequate management structures, resources or ICT departments to facilitate e-commerce projects - all of which have a positive influence on the adoption of e-commerce. This study revealed that size and structure are decisive barriers in a company's decisions and involvement with regard to adoption of e-commerce in emerging economies (Dholakia and Kshetri, 2004; Iacovou *et al.*, 1995; Jeyaraj *et al.*, 2006; Lertwongsatien

and Wongpinunwatana, 2003; Martins *et al.*, 2015; Scupola, 2009).

The barriers that most affect SMEs are the limitation of their financial budgets and lack of qualified staff. In SMEs, the adoption and development of e-commerce have often failed due to problems related to the financial capacity of owner-managers and the ICT skills of employees (Sun *et al.*, 2018). This study mentioned that in emerging economies, small SMEs expressed limitations in relation to their financial capacity to set up new ICT infrastructure bases or upgrade existing ICT infrastructure units. This also extended to their ability (or lack of) to develop and manage an e-commerce website, compared with medium-sized SMEs. In most SMEs it was found that, due to their limited ICT budgets, they did not want to update the network communication channel by installing the latest network devices. In terms of website development, SMEs did not have an experienced web developers able to develop and manage the website daily. Due to the cost, SMEs were not able to use web services from external ICT providers. Therefore, for smaller SMEs in particular, it is complicated to develop a commercial website for e-commerce transactions, and to recruit qualified ICT staff for webpage development, maintenance of ICT units and execution of e-commerce activities on a daily basis. The number of ICT staff in emerging economies is limited, and those that are employed usually work for large organizations; SMEs cannot afford to hire their expensive services or pay a high salary (Syed and Shaikh, 2012). Therefore, it is argued that SMEs in emerging economies have been severely affected by the maintenance costs of ICT devices, and that an individual SME's human and financial resource constraints have a significant impact on its adoption of e-commerce.

To facilitate e-commerce projects and online transactions (and thus receive orders online), a company needs an active website with an online payment system that allows e-commerce payment by different methods. Where these are in place, it is easy for potential customers to access the company's online products and services. As this study highlights, the lack of a website offering an adequate payment mechanism is a barrier that prevents many SMEs in emerging economies from offering e-commerce services and receiving transactions through the e-commerce channel. Also, many SMEs have only simple websites, such as static sites or interactive websites, for the marketing of products and services, and some of them use only email for communication. We suggested that a lack of financial resources was probably the main reason for not having an adequate website with payment functions that support e-commerce services in emerging economies. As a result, this study revealed that, for most SMEs, a website is only a marketing tool, and that the complete e-commerce transaction system is, to a greater extent, not available to them.

The 'environmental factor' refers to the area in which an organization establishes its activities (Tornatzky and Fleischer, 1990) or, in other words, it concerns the external environment (Scupola, 2009) and the explanation of how barriers influence the adoption of e-commerce (Teo and Pian, 2004). This study identified several environmental barriers that hinder the adoption of e-commerce in emerging economies. They include:

traditional business selling methods; lack of consumer trust in e-commerce; consumer preference for cash payments on delivery; technological awareness and education in society; absence of legal regulation of online payments; unstable political and governmental conditions; corruption and favouritism of national business institutions; and lack of government support in the adoption of e-commerce by SMEs.

Another critical factor for SMEs in the development of e-commerce is the traditional method of selling: combining relationship-based selling, personal contact between owners and clients, and the use of word of mouth as a marketing tool. This barrier is common to all SMEs, and this study found that traditional methods of selling negatively affected companies' adoption of e-commerce technology in emerging economies. SMEs rely primarily on sales-based relationships and personal owner-managers' contacts to conduct business transactions. It is the preferred sales method in the business environment of emerging economies and is adopted by many organizations in those states. The use of personal sales techniques, in physical visits and communication with customers in the field, is widespread method of selling products and services, and most transactions are achieved as a result of personal contacts. Sales are relationship-based and owners' methods of managing personal contacts impede the adoption of e-commerce at different stages. Although some SMEs have e-commerce Magento software and ERP tools, because of the traditional culture of emerging economies, company management is also required to use traditional sales methods. These include the use of telephone or mobile devices, fax and email for communication.

Another barrier for all SMEs is the lack of consumer confidence in completing online purchases. In emerging economies, especially in South Asia, buying is an outdoor pleasure, and urban consumers prefer to combine outdoor shopping with family meals at restaurants. This study showed that, unlike in Western consumer culture, where there is little time to go to commercial markets to visit physical stores and buy, South Asian consumers enjoy this type of shopping by making it a family event and, therefore, prefer to visit stores instead of relying on online purchases (Nasimi et al., 2018). The study also suggests one of the most common reasons for not buying online and using e-commerce services, however, is the lack of consumer confidence in e-commerce and its services.

In emerging markets there is a culture of fraud and misrepresentation, in which sellers hide the weaknesses of their products. A visit to markets and stores is therefore perceived as necessary, so that consumers can verify the quality and quantity of the desired products - something that is not possible online. This study argues that the generally perceived culture of fraudulent business practices in emerging companies has also affected the level of consumer confidence in e-commerce. This barrier is considered a significant obstacle to receiving e-commerce transactions; in emerging economies customers do not trust online purchases and prefer to pay via offline channels.

This study identified traditional offline payment methods, such as cash on delivery (COD), as a determining barrier to the e-commerce adoption process. It is reported that in emerging economies, the majority of

transactions were made offline, involving a physical exchange of cash. For SMEs who have an online capacity, this involves only the ordering element of the transaction; payment is subsequently made in the form of cash on delivery of the goods (COD). For e-commerce services, appropriate credit/debit cards or digital payment methods are required to conduct transactions. However, in emerging economies it is noted that due to the low rate of use of such payment methods, consumers perpetuate a preference for COD. The results of this study also revealed that most emerging economies - for example, Bangladesh, North Korea, Pakistan, Afghanistan, Ghana, Central African Republic, and Iran - do not have active PayPal services to receive and send money globally.

As noted above, this lack of confidence in electronic payments could partly explain the low participation of consumers and SMEs in e-commerce. Lack of confidence in the use of credit/debit cards or other online payment methods is probably one of the critical issues emerging economies must overcome for the successful and widespread adoption of e-commerce by the public. Physical cash payments continue to dominate the business market in these economies, and this impedes the adoption of e-commerce and the move towards a reliance on electronic transactions.

Previous studies suggested that a lack of awareness of the potential uses and benefits of ICT could also hinder the growth of e-commerce (Kapurubandara and Lawson, 2008; Molla and Licker, 2005). In some emerging economies, the population are only aware of limited Internet applications such as chat, email, and Internet browsing, including Facebook (Rahayu and Day, 2017). As a result, organizations have not considered taking advantage of the potential of e-commerce to improve their business operations. This study cited limited knowledge of e-commerce and computer training among SME clients as a barrier to the adoption of e-commerce. We found that SME clients were uneducated, and did not know about the technology used to place orders online or how to use digital payment methods; neither could they understand the web content and the English language. This is, therefore, a significant obstacle to the use of e-commerce services.

This study revealed that, in emerging economies, most citizens are not very well trained in the use of ICT services and various online tools. This limited technical knowledge is mainly due to country's low technological literacy rate. We felt that governments have tried to improve this, but it takes time to see the effects. Teaching programs have been integrated into various colleges and universities, and training centres have been established - albeit only in large cities. However, it will also take time for the workforce to be ready to take up the challenge of e-commerce. This study, therefore, confirmed that computer training and e-commerce awareness are essential to building a positive and more adaptive culture of e-commerce in society.

The study indicated that a lack of regulation, or an online payment policy to guide e-commerce transactions, was a determining factor in the process of e-commerce adoption. The formulation of e-commerce regulations in emerging economies has been slow, and many public and private sector companies, as well as individual home users, do not have an adequate e-commerce framework to guide their e-commerce transactions. At present, in most of the emerging

economies, there is no legislation, regulation or payment mechanism for e-commerce that requires SMEs to participate in a secure way.

This study further revealed that the lack of a legal and payment framework for e-commerce has hampered the development of e-commerce within SMEs and argued that there are inadequate regulations for online payment in emerging South Asian economies. Despite the growth of e-commerce worldwide, the proportion of post-paid cash payment transactions is still around 80-95% (Asian Development Bank - ABD, 2018).

It is believed that political and governmental conditions are a critical barrier to the successful development and implementation of technologies in any economy. In an emerging country where the political situation is unstable, it is unlikely that public authorities will pay sufficient attention to technological developments such as the development of e-commerce or even the implementation of the latest ICT equipment for the local business market. Political and governmental stability is essential for all activities undertaken by SMEs, including the adoption of e-commerce.

This study showed that the unstable political and governmental situation in many emerging economies affected decisions made by SMEs with regard to the implementation of the latest ICT units that support e-commerce. For example, whenever there is a change of government in emerging or third world economies, SME policies and interest rates also change, due to a lack of political stability in the relevant emerging country. Newly elected governments have also imposed new ICT taxes and regulations, which sometimes create problems for SMEs that want to change a decision to adopt e-commerce as technology. Political and government instability also affects the costs of technology products used in the e-commerce process. Most technology suppliers and dealers process quotations in USD and when a government modifies its tariffs, the cost of state-of-the-art equipment increases, forcing many SMEs in the specific emerging country to use affordable ICT tools that support e-commerce.

It is further noted that the political situation in emerging economies remains unstable and this affects the business environment for future investment, research and development. As a result, with low-profit margins for SMEs, new entrepreneurs are reluctant to invest in modernising traditional business units in favour of e-commerce. To improve the overall e-commerce structure in an emerging country, its government needs to introduce a long-term technology policy for SMEs, as well as to reduce import taxes on the latest ICT equipment. This action is only likely to be taken by a stable and reliable government. Therefore, in an unstable political climate, SMEs in emerging economies are thinking twice before investing or adopting new technologies.

This study confirmed that the corruption and favouritism in governmental and local business institutes is another significant barrier that affects SMEs in emerging economies. It highlights corruption as one of the crucial factors limiting the successful implementation of ICT equipment that would help in the adoption and further development of new technologies, including e-commerce. In most South Asian economies, the problem

is the routine deviation from established standards and norms by public officials and the parties with whom they interact. Corruption is accepted in various ways: bribery and kickbacks in public procurement; the sale of public property by government officials; and the misuse of government funds (Reinikka and Svensson, 2005). This is particularly problematic for SMEs, as they cannot compete with larger companies in terms of technological resources and, as a result, are likely to be last in line when the 'favours' are handed out.

In this study we indicated that the government ministries and local financial institutions were held responsible for the spread of corruption in emerging economies, as these local bodies control and allocate the country's public resources. The government plays a crucial role in promoting new technologies in any country, due to the favouritism it shows towards large organizations, and the corruption (bribery) in many ministries - particularly in the trade and commerce sector. As a result, SMEs still lag behind in the implementation of the latest ICT infrastructure that supports the adoption of e-commerce. The results of this study further showed that obtaining infrastructure loans from commercial banks, in order to upgrade ICT infrastructure, is another hurdle for SMEs. This study confirmed this, claiming that local and provincial governments offer ICT infrastructure loans to SMEs, with the collaboration of financial institutions, including local, national and commercial banks, to improve basic ICT systems that support e-commerce. However, government officials and financial institutions prefer larger organizations because they can better afford to pay back their loans.

It is also noted that the country's local business institutions do not play an active role in improving SMEs and developing e-commerce. This study argued that many SMEs had never contacted local business institutions or support agencies and were not affiliated with any industry. They believed that local business institutions were primarily focused on larger organizations, were only looking out for their own welfare, and had no interest in facilitating the development of SMEs. Some private organizations and associations are working in emerging economies to improve SMEs, but their membership is not yet affordable for SMEs.

Previous findings showed that in economies where e-commerce technologies have been successfully adopted, the government had taken initial steps to promote and support e-commerce at various levels (Gibbs and Kraemer, 2004; Lawrence and Tar, 2010; Molla and Licker, 2005). In this study, however, we found that inadequate government technology support for e-commerce and a lack of availability of legal and regulatory e-commerce framework by government affected SMEs in their development of e-commerce applications, in the commercial context of emerging economies.

Although the government plays a vital role in the development of e-commerce technology policies for the wellbeing of businesses in the emerging economies, its offer of support is still far from being accepted by many SMEs. In this study, government support proved to be the most critical factor in the adoption of e-commerce. We discussed various issues, including: the improvement of infrastructure; laws and regulations; financial support;

the tax system; the education program; and the promotion of ICT use. Scupola (2009) found that government intervention has always had a decisive influence on creating economic growth and promoting the diffusion of technological innovations. However, the results of this study revealed that the government had shown little interest in supporting SMEs, as discussed in previous sections; it focused only on strengthening the infrastructure of larger organizations and even imposing more taxes on SMEs. The SME sector is, therefore, not a priority for government or financial institutions, or for other ministries in emerging economies.

As noted in the previous sections, trust is one of the significant problems in emerging economies. This is particularly true for consumers in South Asia, where there is low penetration of e-commerce services in SMEs. Therefore, it is essential that governments take action to make e-commerce an economic tool for improving the economy and the local business market, and that they establish an adequate legal and regulatory framework to strengthen online activities in the country. In this study we suggested that the formulation of such legal and regulatory frameworks for e-commerce in emerging economies has been slow and that SMEs and individual users did not have adequate policies to guide e-commerce transactions. Further, there is no developed legal regulation and e-commerce system that facilitates e-commerce transactions in the SMEs of emerging economies. There were government attempts to pass a law on e-commerce to encourage safe and secure e-commerce commercial payments but, unfortunately, they were unsuccessful. Such a law could have an impact on the use of e-commerce applications by SMEs, as currently there is no legal framework that SMEs can use as a point of reference in their day-to-day business operations. It could also promote e-commerce in the country, and create a regulated legal environment for doing business via the Internet, which, in turn could influence the adoption of e-commerce by local SMEs. Therefore, this study shows that in emerging economies, the role of governments in the implementation of ICT and e-business policies is still questionable, and this has an impact on the successful adoption of e-commerce by SMEs.

In addition to the three contextual barriers faced by SMEs in emerging economies (as described above) we also found new barriers related to 'entrepreneurial (individual) owner-managers'. They were: individual adoption characteristics of owner-managers; owner-manager innovativeness; knowledge of ICT (computer skills) by managers/executives and employees; and awareness of e-commerce. These are also considered key determinants of SMEs' e-commerce adoption in emerging economies, because:

- Most SMEs in emerging economies are sole proprietor businesses. Therefore, there is a need to understand the role of the owner-managers in embracing e-commerce as a business tool (Hyder and Lussier, 2016; Raza *et al.*, 2018).
- Ramdani *et al.* (2011) and Shemi and Procter (2018) have argued that staff members occupying managerial positions perform different tasks, and most SME tasks are controlled by the owner-managers of the organization. Their roles should,

therefore, be considered in order to analyze e-commerce adoption in the context of emerging economies.

We considered individual characteristics of the owner-managers to be another important barrier in relation to the adoption of e-commerce. In this study, it was found that the presence of e-commerce had a correlation with the presence of enthusiastic owner-managers and other senior staff. The individual factor, therefore, highlighted the importance of the owner-manager's role in the development of e-commerce. In addition, individual characteristics of other senior executives were also shown to be crucial in SMEs' e-commerce adoption scenario in emerging economies.

In this study, innovativeness refers to the ability of owner-managers to adopt innovative technologies - including e-commerce - faster than others. Previous findings indicated that owner-managers who participated fully in the decision-making process also controlled day-to-day management activities and administrative tasks (Santhosh, 2019). In this study, owner-managers controlled their organization's finances and HR, and participated fully in administrative and financial activities. The innovative capacity of owner-managers was quite obvious with regard to the introduction of various technologies internally, including e-commerce. Many owner-managers were familiar with e-commerce technologies and were motivated by their interest in technology. They dealt with the troubleshooting of the software and other technical problems related to the electronic system. Despite this, there have been delays to the adoption of any technological change as owner-managers advised staff to rely on the manual system and traditional sales methods. In other emerging economies, although owner-managers controlled the financial activities, the lack of e-commerce knowledge was considered a major barrier to the rapid adoption of e-commerce in the country.

This study revealed that the top management of these companies felt that if e-commerce were adopted as an innovation, their control over business decisions would become limited. This was because they were not aware of the benefits of modern innovative technologies and did not encourage the idea of e-commerce in the organization and, therefore, continued to rely on conventional methods.

Previous findings suggest that the technical knowledge of owner-managers (and other staff) was another barrier in the adoption of e-commerce in SMEs (Kartiwi *et al.*, 2018). To develop e-commerce applications fully, with the implementation of the latest ICT infrastructure, staff in SMEs must have a practical and reasonable knowledge of new technologies. This will only be possible if they have adequate computer skills (ICT skills) to make their organizations aware of the technologies. This study has shown that in emerging economies, owner-managers and other staff - particularly senior executives (who are more likely to be older) of the smaller SMEs - are not well trained in computer applications. Therefore they do not have enough knowledge to use and exploit the technological devices that support e-commerce, which affects their commercial

capacity. In terms of education and awareness, when compared to those in medium-sized SMEs, leaders in small SMEs do not have well-developed ICT skills, and have only limited knowledge of e-commerce technology. This is because these tend to be traditionally operated family businesses, in which employees are generally less educated than perhaps they should be.

We further examined the views and attitudes of employees, and demonstrated a strong link between knowledge and training of senior management and the adoption of e-commerce. It seems that if owner-managers could be better informed about the functions and benefits of e-commerce applications for their businesses, they might be more willing to adopt such technologies (Ghobakhloo and Tang, 2013). We support this claim by stating that the lack of staff training in ICT was the result of the lack of e-commerce awareness and computer experience among owner-managers. Instead of adapting to technological change, in order to improve their organization, they are reluctant to adopt new technologies, or even to use computers, preferring to work by hand. This reluctance to accept new technologies and that fact that traditional methods are effective, result in a significant problem for SMEs in their development of e-commerce.

VI. Conclusion and Recommendations

Although many studies have identified barriers to the adoption of e-commerce, few studies have tested these barriers on SMEs in the three original dimensions (technological, organizational, environmental) of the TOE framework. This study is one of the first to examine the adoption of e-commerce in emerging economies referring to the emerging and postcolonial economies of the African, Asian, South American, and Pacific regions, generally called 'third world economies' or 'less developed economies' (LDEs) SMEs using an extended TOE framework. Therefore, the main contribution of this study is to extend the original TOE framework to examine the barriers that influence the adoption of e-commerce among SMEs. The results showed that the TOE model is really a robust tool for the adoption of e-commerce in SMEs. In addition, this theoretical model provides us with the new barriers related to 'entrepreneurial (individual) characteristics of owners/managers' and 'local business institutions in supporting e-commerce' that influence the adoption of e-commerce by SMEs in emerging economies. Important socio-economic contextual barriers and new dynamics have also been identified in order to develop a new conceptual framework for the study. If these barriers have a significant effect, SMEs in emerging economies will be more willing to adopt e-commerce.

In this study we examined several types of barriers: technological, organizational, environmental, and individual barriers related to owner-managers and management. In summary, it was shown that the availability of the Internet, and websites, is considered a determining driver for SMEs in emerging economies, but there was no e-commerce activity via online payment facilities available on businesses' web pages. Instead, email communication, via Internet applications, defined the e-commerce of the SMEs in this study. The study

then addressed the different new roles and actions of the government and other local business institutions in supporting e-commerce by SMEs and other businesses, in the traditional local context of emerging economies.

This study also demonstrates that, in order to overcome barriers to adopting e-commerce in emerging economies, it is also necessary to understand cultural factors - for example, perceptions of purchasing behaviour, society's awareness of e-commerce, and the penetration rate of digital payments - as well as specific individual characteristics of owner - managers in SMEs. Therefore, in this paper, we present and discuss the major barriers that are impeding SMEs' adoption of e-commerce in emerging economies.

The study also pointed out that the greater the focus on the adoption of e-commerce, the greater the benefits and capabilities acquired by a business. It further suggests that the greater the investment in technological and organizational capacity and resources - including technical, human and financial - the greater the benefits for the business. This paper discussion has shown that the various barriers to e-commerce adoption both motivate and dissuade many SMEs in emerging economies from making e-commerce an innovation.

It is concluded that the future of e-commerce is promising in many emerging economies, despite current barriers with regard to existing and available infrastructure, and other problems related to organizational, environmental and individual conditions. The findings of this study can be used to formulate e-commerce policies and strategies aimed at increasing the uptake of e-commerce among SMEs in emerging economies. In addition to identifying some of the major barriers to the successful adoption and implementation of e-commerce adoption in emerging economies, we have suggested ways to facilitate owners/managers' understanding of how they should approach e-commerce and overcome challenges while adopting new innovations in their businesses. Some barriers can be resolved with the support of government and national (local) institutional support agencies for businesses in emerging economies, as it can be seen that they have the power to remove the barriers that currently impede large-scale adoption of e-commerce. This study suggests that governments in emerging economies should create national technology resource and incubation centers to further educate owner-managers, new entrepreneurs and executives about the potential of new technologies, including e-commerce. This can still be done if local and provisional governments organize technology conferences or workshops with the collaboration of higher education institutions (HEIs) and other stakeholders to improve the knowledge of urban and rural SME owners as well as managers in emerging economies.

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