
**Dynamic contextual factors, individual agency and adoption of e-commerce
in SMEs**

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Abstract: This article provides an explanation of how dynamic contextual factors and individual agency influence the adoption of electronic commerce (e-commerce) in small and medium-sized enterprises (SMEs) in Pakistan. Eight multiple qualitative case studies were undertaken, involving 24 face-to-face semi-structured interviews and were thematically analysed using NVivo. This study found that the Technology-Organization-Environment (TOE) factors and additional extended micro-level (individual agency) factors strongly influenced the adoption of e-commerce practices by the managers of Pakistani SMEs. Managers need to address factors such as digital readiness, recruiting of skilled ICT expertise, reluctance of customers to switch their preference from traditional business selling methods to e-commerce, obtaining government and local institutional support, and recognizing the characteristics and individual agency of their owner-managers. On top of these factors, there is a strong need to improve the Information and communication technology (ICT) infrastructure in order for manager to prepare for and to embrace the e-commerce practices in their respective companies. This article extends Tornatzky and Fleischer's TOE framework by adding the micro-level context of individual agency. Additionally, this article proposes practical implications for policymakers, governments, and local business support agencies.

Keywords: *SMEs, E-commerce adoption, TOE framework, Individual agency factors, Emerging economies, Pakistan.*

Introduction

To compete in increasingly competitive global market, firms strive to improve by moving away from traditional sales methods and creating better ways to meet the demands of local and international customers (Kraus *et al.*, 2020) by using social media (Qalati *et al.*, 2020) and electronic channels such as e-commerce (Fan, 2019; Arsalan Nazir and Saleem Khan, 2022). Numerous studies (Daoud and Ibrahim, 2019; Innocenti and Zampi, 2019) have shown that, as a first step to improve and to outperform the competitors, SMEs' independent owner-managers (as individual agents) and middle managers should be aware of the potential benefits of e-commerce technology. Better awareness may lead to benefits such as 1) using e-commerce as an essential marketing tool (Qalati *et al.*, 2020), 2) increasing foreign trade (especially exports) by granting SMEs access to global markets, 3) reducing administrative burdens and restrictions, and 4) enabling a rapid response to changes in consumer demand (Wagner Mainardes, de Almeida and de-Oliveira, 2019; Kraus *et al.*, 2020). Most SMEs in emerging economies, however, remain unaware of these benefits either due to various internal and

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external dynamic Technology-Organization-Environment (TOE) contextual factors (Molla and Licker, 2005; Kartiwi, H. and Suhaimi, 2018) or because of presence of less developed manufacturing bases with only rudimentary infrastructure in the industry in their respective countries (Nazir and Khan, 2022). As a consequence of this unawareness, SMEs in emerging economies lag behind their peers in developed countries (Molla and Licker, 2005) in embracing e-commerce practices and reaping their benefits.

The adoption of e-commerce is well studied, in general, in the contexts of emerging economies (Kurnia *et al.*, 2015; Daoud and Ibrahim, 2019) and developed economies (de Oliveira *et al.*, 2015). However, literature (except for (Gilaninia *et al.*, 2011; Ajao, Oyebisi and Aderemi, 2018) related to e-commerce adoption w.r.t. SMEs in emerging context is quite scarce (Molla and Licker, 2005). The studies that were performed in the context of developed economies and their subsequent conclusion/strategies are thus less applicable in the context of emerging economies in the South Asia (Molla and Licker, 2005). The foremost reasons for this unapplicability are that emerging economies in the South Asia are unique 'heterogeneous economies' as these differ significantly in terms of their cultural contexts, business environment and government rules and regulations (Lawrence and Tar, 2010) and thus require more culturally aligned relevant strategies (Lim and Trakulmaykee, 2018).

Earlier studies problematize the application of theories that do not fit the respective phenomena and context (Baker and Welter, 2018; Welter, Baker and Wirsching, 2019) of emerging economies (Bruton, Ahlstrom and Obloj, 2008; Scott *et al.*, 2020); however, little attention was paid to understand why these theories do not fit in the emerging context. Most of SMEs in Pakistan as well as across the globe are managed and controlled by single owner-manager. Since the individual characteristics of innovative owner-managers (Ghobakhloo and Tang, 2013) play an important role in the steering of strategic direction and smooth running of day-to-day operations in SMEs; therefore, the current study proposes that the micro-level 'individual agency' context needs to be analysed to better understand the e-commerce adoption among SMEs.

Previous studies of SMEs' adoption of e-commerce were situated in Ghana (Awiagah, Kang and Lim, 2016), Malaysia (Kartiwi, H. and Suhaimi, 2018), Brazil (Wagner Mainardes, de Almeida and de-Oliveira, 2019), South Africa (Molla and Licker, 2005), and Indonesia (Rahayu and Day, 2015). Though, there have been few studies e.g. (Seyal *et al.*, 2004; Abbas, Abdullah and Saad, 2018) that were carried out in South Asian context; but all of these studies neglected the dynamic TOE contextual factors and individual agency while explaining the e-commerce adoption. Similarly, few studies were carried out from the perspective of challenges to growth (Hyder and Lussier, 2016; Dar, Ahmed and Raziq, 2017; Zafar and Mustafa, 2017) and tended to be at a more macro level i.e., focusing on institutions and related contextual factors such as social relations and regulatory regimes. To bridge this gap in literature, the current study considers micro level contexts and micro interactions between small firms as contextual factors in e-commerce adoption in an emerging economy context.

Pakistan is a semi-industrialised emerging economy located in South Asia. With a population comprising of 220+ millions inhabitant, Pakistan is the 5th most populous country in the world and has a Gross National Income (GNI) of USD 1,629 per capita (Nazir and Khan, 2022). SMEs constitute ~99% of total economic establishments in Pakistan and together these contribute 40% to Pakistan's GDP (Nazir and Khan, 2022). To facilitate SMEs, the Government of Pakistan (GoP) established Small and Medium Enterprises Development Authority (SMEDA) and tasked it with the responsibility to formulate industrial policies in order 1) to promote and facilitate the financing of SMEs nationally and 2) to contribute to the training and education of entrepreneurs (Hyder and Lussier, 2016). Despite of SMEDA's continuous efforts, Pakistani SMEs in various sectors continue to struggle (Dar, Ahmed and Raziq, 2017). Even though internet penetration in Pakistan is around 35%, yet majority of

SMEs have not adopted e-commerce as a mode of doing business (Arsalan Nazir and Saleem Khan, 2022). To explore the problems of e-commerce adoption and individual agency faced by SMEs in various sectors in Pakistan motivated the authors to carry out this research.

This research makes a contribution in literature by developing an extended *contextualized* model which focuses on the dynamic TOE factors by incorporating the micro-level context of individual agency and owner-manager characteristics. Considering that Pakistan is one of the largest emerging countries in the world, this study's qualitative approach not only helps establish a theoretical framework to generate new knowledge, but also makes recommendations that are of particular interest to the government, local business support agencies and entrepreneurs in an emerging context.

Literature Review

Perspectives on the adoption of e-commerce

Extant theories and models on the adoption of e-commerce include 1) the technology acceptance model (TAM) (Davis, Bagozzi and Warshaw, 1989); 2) the unified theory of acceptance and use of technology (UTAUT) (Venkatesh *et al.*, 2003); and 3) the technological, organizational, and environmental (TOE) framework (Tornatzky, Fleischer and Chakrabarti, 1990). The first two models focus more on the individual characteristics of people adopting innovation, whereas, the latter model focusses on different contextual dimensions. Research suggests that all three contextual dimensions i.e., technological, organizational and environmental influence the decision of SMEs to adopt e-commerce. For instance, recently (Qalati *et al.*, 2020) studied a sample of 423 SMEs located across Pakistan and evidenced a significant effects of TOE factors in the context of social media adoption. A significant body of literature e.g., (Rana *et al.*, 2019; Chau, Deng and Tay, 2020) have ignored these three dimensions and focused on the individual dimension of the intention to adopt or reject e-commerce. This made their research limited in its applicability. However, if we adopt TOE as a preferred model, it gives many benefits. Firstly, it combines many micro level and macro level factors that are present in other two models into a TOE model. For example, size of the firm is covered in TAM but not in UTAUT (Nazir and Roomi, 2021). Similarly, external factors such as government support is addressed in UTAUT but is not covered in TAM (Rahayu and Day, 2015). As both micro and macro level factor affect the adoption therefore each of these two models (i.e., TAM and UTAUT) alone are not sufficient to address the research problem. Secondly, TOE provides a provision to explore the hidden factors that explain the interaction between individuals inside an SME and external factors (Oliveira and Maria F Martins, 2010). Therefore, TOE model has been selected in the current study on account of being more complete than its counterparts. This study thus 'combines' the TOE framework and the individual (internal-agency micro-level) contextual perspective of other authors (Oliveira and Maria Fraga Martins, 2010; Rahayu and Day, 2015) to explain the factors affecting the e-commerce adoption in SMEs in Pakistan. Each contextual dimension is now examined, in turn, in the following sections.

Technological dimension

Prior studies unveil critical technological factors as pre-requisite to e-commerce adoption and these include perceived credibility (Venkatesh *et al.*, 2003), technological readiness (Martins, Oliveira and Thomas, 2015) and, to a lesser extent, relative advantage (Awiagah, Kang and Lim, 2016). First critical factor is 'perceived credibility' which is the perception in the mind of customers about the website of an SME. Privacy and security (Chau, Deng and Tay, 2020) are two important elements of Perceived credibility and both affect mature SME customers' e-commerce adoption. Privacy i.e., control over one's personal data, and security i.e, attempting to access data by unauthorized third parties are two critical issues for SMEs as well as their customers that prevent embracing e-commerce (Nazir and Zhu, 2018). Second factor of technological dimensions is 'technological readiness' which measures the presence of

necessary technological infrastructure inside and outside a firm. As evidenced by the research of (Martins, Oliveira and Thomas, 2015) in Portugal, SMEs' technological readiness depended on the ICT technology infrastructure that supports their adoption of e-commerce. Therefore, they need to obtain the latest computer infrastructure equipment to integrate e-commerce in their existing business model (Oliveira and Maria Fraga Martins, 2010). The third technological factor is 'Relative advantage' and it refers to the degree of acceptance of the possible benefits that e-commerce technology can offer to SMEs (Awiagah, Kang and Lim, 2016). A better managerial understanding of the relative advantage of adopting e-commerce increases the likelihood that the business will allocate certain technological resources to adopting e-commerce technology (Eze *et al.*, 2018).

Organizational dimension

Organizational factors, e.g. size and structure (Martins, Oliveira and Thomas, 2015), and financial commitment (Nizaeva and Coskun, 2019) significantly influence the adoption of e-commerce. Size and structure are related to a firm's internal ability to provide the financial and structural resources to run their departments through technology (Rahayu and Day, 2015). Indeed, the adoption of e-commerce in SMEs in emerging economy, such as Jordan, is virtually non-existent since they lack finance and adequate IT departments due to size and structure (Alqatan *et al.*, 2017). The more internal resources a firm has, the more likely it is to adopt e-commerce technologies (Mutula and van Brakel, 2006).

Environmental dimension

One of the reasons for an SME to adopt e-commerce is external pressure from customers, suppliers (Awa, Ojiabo and Emecheta, 2015) or their competitors (Duan, Deng and Luo, 2019). If a firm wishes to remain competitive (Zhu and Kraemer, 2005), it cannot ignore this factor. However, support from local governments, and regulation and policy about e-commerce have greater influence on SMEs' adoption of e-commerce (Al-Alawi and Al-Ali, 2015; Duan, Deng and Luo, 2019). Therefore, to create an enabling environment for e-commerce, the government can help firms solve the problems of technology adoption by raising awareness through digital policy, and providing the right technology infrastructure according to local business requirements (Awiagah, Kang and Lim, 2016).

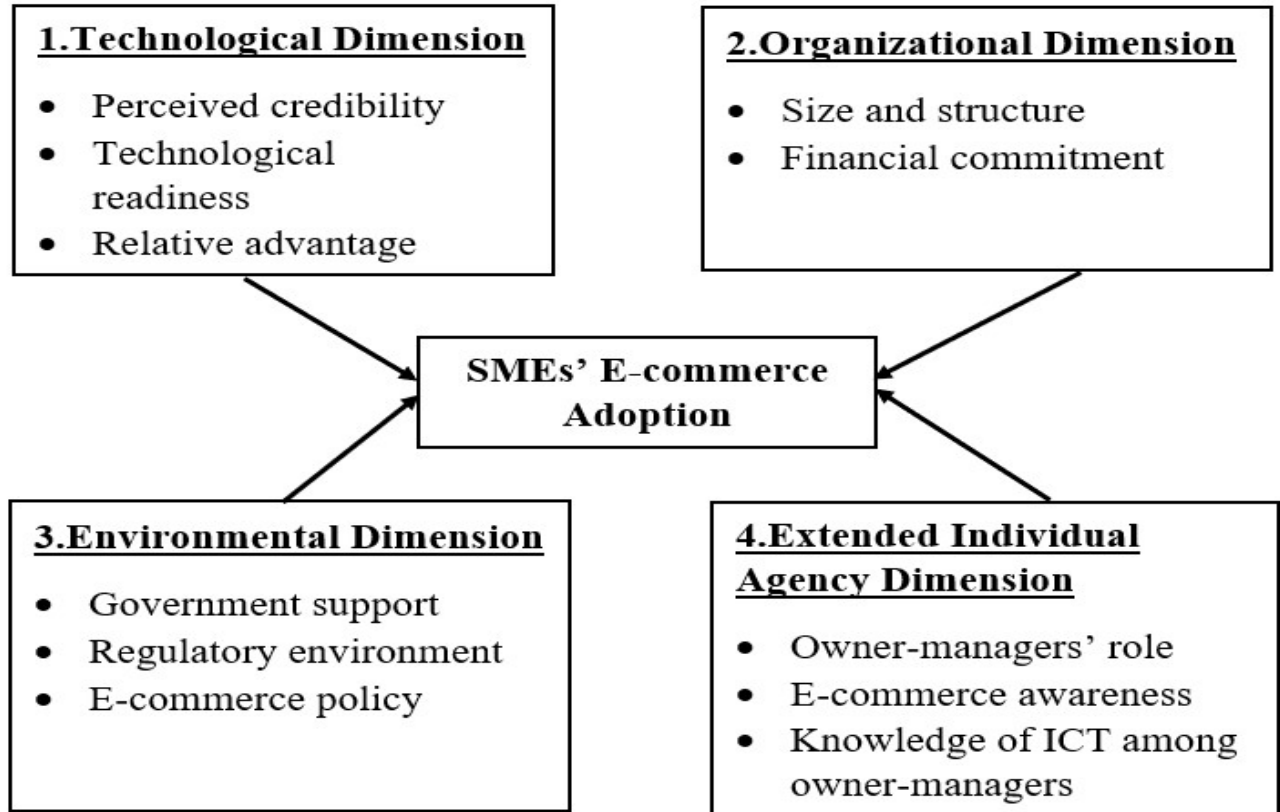
Although above-mentioned environmental factors are specific to e-commerce and there may be additional factors which may vary according to contexts; however, empirical evidence (Oliveira and Maria Fraga Martins, 2010; Rahayu and Day, 2015) consistently support the relevance of and largely recognized TOE as a well-established framework (Rahayu and Day, 2015; Prause, 2019). Just like institutional theory for environmental context, TOE has its opponents and supporters. It's critics (Ghobakhloo and Tang, 2013) claim that the framework ignores factors associated with micro-level individual attributes, i.e. SMEs' owner-managers, managers and employees. Understanding e-commerce adoption by SMEs in emerging economies requires frameworks that are flexible enough to capture change (Afriyie, Du and Musah, 2019). The proponents of TOE e.g., (Pudjianto and Zo, 2009; Miao and Tran, 2018) confirm that the TOE framework is flexible and can be further extended to include themes and factors that help find and explore drivers and barriers related to the adoption of technology. For this main reason, TOE has been adopted in this research while integrating the 'extended (individual agency) dimension' that influences the adoption of e-commerce by SMEs in the context of Pakistan.

Extended (individual agency) dimension

The three aforementioned contextual factors of the TOE can be augmented by the micro-level (individual agency) dimension as a key determinant of SMEs' e-commerce adoption. That is particularly apparent in Pakistan whose market contrasts markedly with other emerging and developed economies in South Asia (Nazir and Zhu, 2018), with Pakistani SMEs generally being sole proprietor businesses. Indeed, strategic decision-making in most SMEs is highly

dependent on owner-managers (Ghobakhloo and Tang, 2013; de Oliveira *et al.*, 2015; Rahayu and Day, 2015) and is influenced by cultural differences. Therefore, this study addresses a critical gap in the extant literature by extending the TOE framework to include individual agency (see following **Error! Reference source not found.**) and thus addressing the need to understand the individual role of owner-managers in adopting e-commerce (Raza *et al.*, 2018).

Figure 1: Adopted conceptual framework for this study (Source: Authors)



The individual agency dimension encompasses the individual role of owner-managers and their awareness of e-commerce. The adoption of e-commerce by SMEs depends primarily on these factors (Abbas, Abdullah and Saad, 2018) as they tend to be characterized by centralized decision-making structures (Jude and Adamou, 2018). The study also focuses on managers/executives' and employees' knowledge of ICT (computer skills) and its application. Of course, high training cost of acquisition of these skills may result in limited e-commerce application skills (Alfahl, Houghton and Sanzogni, 2017). As most tasks performed by staff members in managerial positions are controlled by owner-managers (Espinoza-Benavides and Díaz, 2019; Zanella *et al.*, 2019), therefore, their individual roles and the support of management for their training should also be considered in this research.

Research Methodology

The study employs a qualitative case study methodology which is interpretive in nature thus enabling a detailed examination of the participants' perspective (Yin, 2018). Nature of the study demanded that input from multiple case studies in order to strengthen the research position (Saunders, Lewis and Thornhill, 2019) and consequently making research findings more convincing and robust (Herriott and Firestone, 1983). For this research, interviews from eight case study SMEs in various industry sectors (Table 1) were analysed to improve external validity, present convincing evidence and enable cross-case comparisons.

Table 1: Characteristics of participating SMEs (Source: Authors)

SME Name	Start Date	Size and Sector	City* (K, L, I)	Total Staff	Interviewee Position	Education Level
1- KHIMANU SML	2009	Small; manufacturing	K	22	Owner-manager, Finance Officer, Field Marketing Manager	High school certificate, BA and B.com
2- ISBTICKS ML	2005	Small; ticketing and tourism	I	12	Owner-manager, Co-owner, Accounts Officer	BA, MBA and M.com
3- ISBMANU MED	1997	Medium-sized; manufacturing	I	51	Owner-manager, ICT Manager, Marketing Director	MBA, BBA and ICT university certificate
4- ISBTRVLS ML	2007	Small; travelling and tourism	I	12	Owner-manager, Finance and Admin Officer, Marketing Assistant	High school diploma, BA and B.com
5- ISBICTME D	2006	Medium-sized; ICT	I	56	Owner-manager, Finance Manager, Sales and Support Manager	BCS, M.com and BCS
6- KHITRVL MED	2002	Medium-sized; ticketing and tourism	K	90	Owner-manager, ICT Manager, Finance Manager	Bachelor's in business, MBA-IT and M.com
7- LHRHTLS ML	2007	Small; hospitality	L	21	Owner-manager, Accounts Officer, Admin Officer	High school diploma, B.com and B. A
8- LHRMANU MED	2003	Medium-sized; manufacturing	L	80	Owner-manager, Marketing Manager, Finance Manager	MBA, MSc and ACCA

*Note: K= Karachi; L= Lahore; I= Islamabad

Selection criteria

Twenty-four participants were selected from eight manufacturing, hospitality, tourism and information technology sector SMEs in the main financial centres of Pakistan (the cities of Karachi, Lahore and Islamabad), with their strong commercial presence of, and easy access to, SMEs. The SMEs were purposively sampled from a list of 150 provided by SMEDA (as shown in Table 1) and which had actively engaged in e-commerce activities by implementing ICT resources, or were transitioning to e-commerce. Finally, SMEs that had physical offices and whose owner-managers actively participated in business and decision-making activities were sought. After careful scrutiny and a physical visit to the SMEs to confirm their authenticity, 16 SMEs were identified as meeting the study criteria and were contacted by telephone with an introductory request to participate. Informal face-to-face meetings were organized with enthusiastic owner-managers to discuss the research agenda. Eight SMEs refused to participate because their owner-managers had busy schedules and were reluctant to provide internal information about their firms. The final eight SMEs – four in Islamabad, two from Karachi, and two from Lahore (as shown in Table 1) – participants varied from 2-4 each thus making a total tally of 24 participants.

The interviewer arranged to visit officially the eight selected SMEs and to conduct personal interviews with owner-managers, other managers and employees (see Table 1) who were familiar with e-commerce and ICT related applications. “Finance officers” and “accounts officers” were interviewed because they controlled financial services, allocated technology funds or bought equipment, had atleast basic knowledge of ICT tools (software and hardware)

that support the adoption of e-commerce, and could provide adequate information on the financial capacity of their SMEs. Getting views of multiple people carrying out different functions in same company is always advantageous. For example, interviewing people with different perspectives can be valuable and valid (Yin, 2018) such that views of senior managers cannot be prioritized or legitimized above those of subordinates (Eisenhardt and Graebner, 2007).

Data collection tool

Informed consent was obtained from each participant before the open-ended interviews, each of which lasted between 45-90 minutes. Written notes and details of the interviews were recorded manually in a diary (and, in some SMEs, audio recorded) for later transcription. It was also agreed that telephone interviews could be conducted to obtain more information if necessary.

Research protocol

While collecting qualitative data, a good researcher needs to ensure the inclusion of all key discussion points in the conversation. To make the respondents open up and share their experiences about underlying factors candidly, open-ended questions were asked. These open-ended questions were built on research questions derived from previous research on e-commerce. To ensure content validity, the elements of each concept, based on the extant literature and the conceptual framework, were modified (Luarn and Lin, 2005). Given the imperative to test any research instrument before using it for the collection of final data (Kumar, 2018), a pre-test was carried out with six randomly selected participants from three SMEs in each city and sector. The interview length was dependent on the context and the respondent's ability and willingness to provide information. During interview, the interviewer examined pre-test respondents' understanding of each question to identify potential problems or differences in interpretation. They were encouraged to identify various barriers and individual agency issues regarding e-commerce adoption in their SMEs and to evaluate the validity of the questionnaire externally. The four sections of the questionnaire based on the extended framework were:

1. The *technological (structural) profile*: location, sector, ICT characteristics and type
2. The *organizational (firm) profile*: size, structure and resources
3. The *environmental (external) context*: the role of local business support agencies, government support and strategies for the adoption of e-commerce
4. The *micro-level (individual agency) context*: e-commerce adoption factors, community barriers and the role of owner-managers and other employees in terms of ICT knowledge and innovation awareness

The pilot study provided excellent feedback, identified points that were useful in the final data collection process, and validated the research instrument in the context of Pakistan. After the final interviews, interviewee's response statements against each questions asked were transcribed, labelled and categorized into codes to determine the latent contextual factors corresponding to the constructs. The themes were again compared to all datasets in the form of codes and transcripts to ensure that the developed themes are complete and that all codes have been covered in the analysis process. The differences were resolved by asking clarification questions from respondents in followup interviews through telephone. In addition, links were established between the contextual factors by matching the variables with the literature.

Data analysis

The present research used thematic analysis approach, because it is flexible, can be deployed across a wide range of research questions (those related to influencing factors), different sample sizes (small or large) and theoretical framework (Rashid *et al.*, 2019). There are several other reasons as well such as provides easy classification, generate themes and identifies the

recurring data across the cases/respondents (Saunders, Lewis and Thornhill, 2019). Thematic analysis was run through NVivo a qualitative software, which helps researchers to unearth rich insight and generate articulated, and defensible results backed by strong evidence (Rashid *et al.*, 2019). Besides, it also allows qualitative scholars to organize, manage, analyse and find out insights in the qualitative data such as open-ended survey responses, e-commerce and web-based content, interviews, and journal article, where deep level of analysis either at large or small scale are required (Nazir and Roomi, 2021).

The data analysis was underpinned by inductive reasoning by: (1) reading the transcripts from each SME; (2) generating initial codes based on the TOE framework, with codes (nodes) selected and the configuration and reconfiguration of the code providing appropriate responses to research questions (Bazeley and Jackson, 2013); and (3) identifying preliminary topics (themes) using thematic analysis. Themes were characterized by their importance (Braun and Clarke, 2006) and thus the codes were reviewed, and some grouped into specific themes. For example, high Internet cost, poor Internet connection, infrastructure, hardware and software, were made as sub-themes (factors) under the theme of ‘technological contextual factors’. Firm-level analysis was constructed to identify further themes and sub-themes grouped, according to the TOE model, and subsequently coded; and thus addressed the relevant research questions. Finally, the original list of three themes was then modified to fit the emerging sub-themes and trends, and extended to include micro-level (individual agency) contextual factors (see Table 2).

Table 2: Thematic Matrix (Source: Authors)

Themes	Sub-themes	Codes	Description
1. Technological Contextual Factors	<i>Availability of the latest ICT infrastructure units</i>	Hardware Software ICT Infrastructure	Identifies what technological factors influence the adoption or non-adoption of e-commerce in SMEs
	<i>Quality of available broadband Internet connection</i>	Internet speed High Internet cost Poor Internet connectivity	
	<i>National digital readiness</i>	Physical and technical infrastructure Digital ICT facilities Costly and outdated facilities	
2. Organizational Contextual Factors	<i>Firm size and structure</i>	Owner decision Firm size Firm structure Manual services	Identifies what organizational factors influence the adoption or non-adoption of e-commerce in SMEs
	<i>Financial resources and skilled expertise</i>	Financial capacity Budget IT Skills and expertise Low-cost professionals Costs	
3. Environmental Contextual Factors	<i>Traditional business selling methods</i>	Client preferences Personal visits Traditional ways	Identifies what environmental factors influence the adoption or non-adoption of e-commerce in SMEs
	<i>Consumer (online) e-commerce trust</i>	Consumer trust Culture Cash payment Price negotiation	
	<i>Government and local business institutional support</i>	Interest Support Legal framework Affiliations Finance	
4. Extended (Individual Agency) Contextual Factors	<i>Individual characteristics of owner-managers</i>	Individual innovativeness Internal control Firm decisions Internal success	Identifies what individual agency factors influence the adoption or non-adoption of e-commerce in SMEs
		Technology reluctant Senior employees Online tools Individual preference	
		Individual staff training Profit Internal motivation Individual interest	

Quality of available broadband Internet connection. A slow *Internet speed* is a barrier to SMEs in Pakistan to the adoption of e-commerce, and the provision of online services (e-transactions) for potential customers. Poor quality of internet connection and low bandwidth force SMEs to use Internet applications only for general communication purposes. Many respondents (91%) also criticized the *high costs* associated with *poor Internet connectivity* from the service provider (PTCL). Some typical scenarios experienced by SMEs:

'Pakistan Telecommunication Limited (PTCL)'s monopoly on communication and Internet services resulted in high costs, and poor Internet connections hampered firm's e-commerce adoption and services' [SME3]

'... Internet provided by PTCL is not as good as expected. Sometimes it's fast and other times it's slow and sometimes disconnected... You are never sure!' [SME4]

National digital readiness. 74% of interview data suggest that *physical and technical infrastructure* in Pakistan are not fully developed. Facilities including high-speed broadband Internet and other network-related tools are either not available in most places or are *costly and outdated*, especially in rural areas. As a result, owner-managers stated that the country's *digital ICT facilities* is inadequate to help local businesses adopt cutting-edge technologies:

'Infrastructure across the country, even here, is another [problem] ... most SMEs, especially in rural areas and small towns, are still in trouble! faced with the lack of physical and technical infrastructure and ICT facilities supporting e-commerce' [SME2]

'...It is because of the expensive and obsolete ICT equipment in the country ... not affordable for us and readily available ...' [SME5]

'...How can we implement it [e-commerce] effectively? No, it is not possible in such technical difficulties' [SME7]

Organizational contextual factors – Firm level

These factors are identified as determinants of e-commerce adoption by SMEs in Pakistan.

Firm size and structure. 83% of SME representatives noted that the *size* and *structure* of the firm were considered essential factors and demonstrated the firm's ability to provide the human and financial resources necessary to adopt the new technology standards. Usually, SMEs do not have adequate management structures and resources or ICT departments to facilitate e-commerce projects further and thus they heavily depend on the *owner's decision*.

'We do not have a formal structure to communicate with our departments and external customers using the latest devices. We don't even have a place to think about it [e-commerce] ...' [SME4]

'...to start, e-commerce with which owner? Who manages most of the firm's activities manually and traditionally controls the services ... seriously influences decisions regarding e-commerce adoption ...' [SME7]

Financial resources and skilled expertise. Participants noted that the adoption and development of e-commerce by SMEs have often failed due to the problems related to the *financial capacity* of owner-managers and *ICT skills and expertise* of employees. SMEs face complications in developing commercial websites and recruiting qualified ICT staff for e-

commerce activities. The ICT skilled people are high in demand and usually paid highly. For this reason, companies with sound financial position are able to attract such people with ease. In contrast, SMEs usually have financial constraints and limited budget. Consequently, they are not in a position to hire expensive services offered by ICT skilled staff. SME representatives stated:

'... We don't have the budget for IT advancement' [SME3]; '... we just can't afford...' [SME8]

'...can't pay for the most expensive ICT umbrella devices, especially for the e-commerce adoption, which involves the use of the latest computers, including hardware and software networks, to communicate, store and manage demand information in a limited time' [SME5]

'...we can tell you that small Pakistani hospitality firms including [us] are facing a severe shortage of qualified, low-cost professionals ready to meet our ICT needs on a daily basis' [SME7]

'As a result, [We] have given up on the idea of embracing e-commerce rather than committing to additional costs, not to mention the effort ...' [SME6]

Environmental contextual factors – External level

Three factors are noted as environmental contexts by SME representatives that influence the adoption of e-commerce:

Traditional business selling methods. SME participants indicated that this factor is critical in Pakistan, and involves a combination of relationship-based selling, *personal visits* and contacts between owners and clients, *client preferences* driven, and word of mouth used as a marketing tool:

'In our business, many customers preferred to communicate face to face, looking for discounts for group packages and more interested in [negotiating] the booking of family and group hotels with [the owner].' [SME6]

'...This can only be done by personally visiting the firm and discussing packages with staff members.... How can they [customers] do this online? ...' [SME7]

SMEs cited traditional methods of selling (word-of-mouth, fax and telephone including mobile telephones) as a barrier to the adoption of e-commerce technology.

Consumer online (e-commerce) trust. A lack of consumer confidence to complete online purchases is common to all SMEs. Study participants mentioned a *'culture of fraud and misrepresentation in Pakistani markets'*. Consumers find it necessary to visit stores to *negotiate the price* and to verify the quality and quantity of desired products. As this activity is not possible online, it hinders SMEs' intentions to go online. Many customers in the Pakistan usually do not *trust* online purchases and prefer to use *cash payment* or cash on delivery (COD). This attitude of customers is a major obstacle for SMEs endeavouring to conduct e-commerce transactions. It was confirmed by respondents as:

'It is really difficult to do online business here (Pakistan) ... I have read in local newspapers cases of online shopping involving consumers who have purchased multiple products online from local and foreign business

websites. They [did not] receive the same items as they paid for and were deceived by online business.’ [SME8]

‘I can tell you that most Pakistani customers are used to [culturally] visiting the firm’s store, physically checking the product, and then engaging in communication to negotiate the price and pay in [cash] form ...’ [SME5]

Government and local business institutional support. 79% of SMEs respondents consistently stated that the lack of technological *support* from government and absence of a regulatory and *legal framework* for e-commerce (law and jurisdiction on e-commerce) have influenced the e-commerce adoption by SMEs in Pakistan. Indeed, 84% of owner-managers respondents believed that government’s financial and IT affiliations are designed and tilted in favour of large corporations. As a consequence of this belief, SMEs are reluctant or *uninterested* in contacting government, regulatory or other bodies (including industry *affiliations*, Banks, Regional Chambers of Commerce and SME support agencies, such as SMEDA and Securities and Exchange Commission of Pakistan-SECP) and adopting their strict policies.

‘...that time (2016-2019) ... there was no effective governmental ICT [policy] to support us to create a favourable technology environment for the adoption of e-commerce’ [SME3]

‘...We therefore believe that to meet the need for electronic commerce and enable Pakistani SMEs to face technological challenges in the future, the GoP should take the necessary steps to promote and develop electronic systems, by updating ICT digital policy....’ [SME7]

‘Local business institutions...? They don’t even listen to our problems; they think they know us [SMEs] ... but they don’t ... I mean I am not sure we have ever contacted local institutions for technology support, because no direct support has been received from these [national] institutes for SMEs, [but] rather for large firms and multinationals for cheap technology loans (or) for the modernization of ICT systems, which would contribute to the successful adoption of the e-commerce project in the firm...’ [SME4]

Extended (individual agency) contextual factors – Individual level

Individual characteristics of owner-managers. Three micro-level (individual agency) contexts were identified as strongly influential factors.

Individual (agency) innovation capacity refers to the capacity or ability of individual agents (owner-managers) to adopt innovative technologies, including e-commerce, faster than others (Ghobakhloo and Tang, 2013). 92% of top managers of case study SMEs reported that, if e-commerce were adopted as an innovation, their individual *innovativeness*, *control over firm decisions* would become limited. Indeed, they were not aware of the benefits of modern innovative technologies and did not encourage the idea of e-commerce adoption in the firm and, therefore, continued to rely on conventional methods as reported below:

‘In our business, the ‘owner’ is the individual agent and acts on his own ... has gained success through traditional digital methods, but he will also continue their conventional approach and will not let (in) anything new that would harm to his family business and people’ [SME3]

'...he doesn't believe in it [e-commerce] ... he has his own convictions and (is) superstitious that technological changes like e-commerce (will) harm him if fully embraced ...' [SME6]

Individual employees' e-commerce awareness and ICT knowledge. SMEs are more inclined to adopt e-commerce when they have innovative agents (owner-managers) who have relevant technical knowledge (Rahayu and Day, 2017). Employees also need a practical and reasonable knowledge of new technologies and sufficient ICT skills (Kartiwi, H. and Suhaimi, 2018). However, 88% of response data revealed that owner-managers and other staff – particularly *senior employees* (usually elder) – have *individual preferences*, are *technology reluctant*, are not well trained in *online tools*, and have *insufficient knowledge* to utilize the technological ICT devices. This factor influences their commercial e-commerce capacity, as representatives explained:

'We have a dedicated team in some departments that are fully capable of using systems and operating e-commerce software through their knowledge of the information system. However,... most senior employees [elder ones] are still reluctant to use online tools' [SME6]

'... We believe that they [senior managers] do not have enough IT and technical knowledge to use online tools, and prefer manual systems' [SME1]

Individual agents (owner-managers) with dedicated teams who know the functions and benefits of e-commerce might be more willing to adopt such technologies in their SMEs.

Individual agents' (owner-managers') support for IT training. This study indicated that the limited *staff training* in ICT resulted from owner-managers' limited *e-commerce awareness*, *individual interest* and *computer experience*. 76% of participants believed that their individual agents only cared about maximizing the firm's *profits* rather than systems investment or provide employees with the technical *training* sessions necessary to *motivate* them to adopt new online programs, as explained:

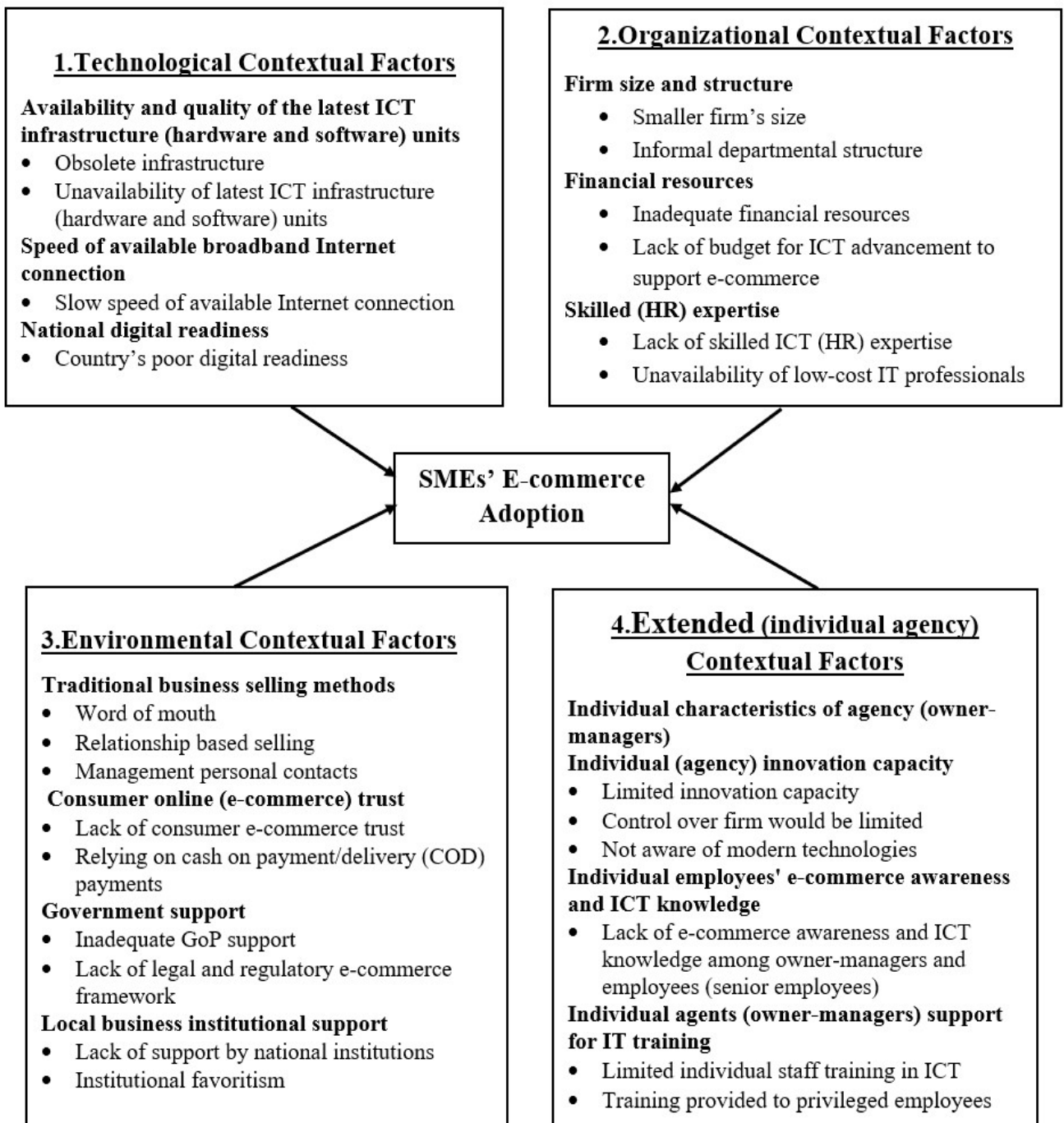
'... IT training can only be given to [privileged] employees if individual agent is interested and aware of the importance and results, [but] in our firm, agent [owner-manager] does not know much about the importance of e-commerce and its related phenomena. I think ... that he is not willing to adopt e-commerce ...' [SME4]

'... do you know how much it costs to study IT in Pakistan? It's really expensive... so only the selected employees have received IT training on ICT projects ...' [SME6]

It can be concluded that the more innovative the owner-managers are, the more likely they will take risks by adopting e-commerce, and take the initiative to provide employees with the technical training necessary to motivate them to adopt new online programs.

Figure 3 summarizes the extended TOE framework, with the factors and barriers that influence SMEs' adoption of e-commerce.

Figure 3: New extended TOE framework for SMEs' e-commerce adoption factors in Pakistan (Source: Authors)



Discussion and Conclusions

The empirical evidence of several contextual factors influenced the adoption of e-commerce in Pakistan. The individual agency factors play an important role, while the dynamic contextual factors of the TOE framework are influential in enabling or constraining individual agents (owner-managers) in their decisions to adopt e-commerce.

The technological context highlighted the presence of three *structural* factors that are hampering the adoption of e-commerce. Firstly, in comparison to what is available to their peers in developed economies SMEs in Pakistan lack latest available ICT (hardware and software) and sufficient infrastructure. Of course, availability or non-availability of optimal ICT infrastructure in a country plays an important role in e-commerce adoption (Awiagah, Kang and Lim, 2016; Chau, Deng and Tay, 2020). However, our findings indicated that SMEs with newer ICT infrastructure units are more likely to adopt e-commerce. Second factor

impeding adoption is that, in Pakistani context, ICT systems including broadband Internet and other related digital networking tools are not widely available especially in rural areas. Thirdly, modern computers and ICT accessories are too expensive to justify the investment for doing business in Pakistan. A slower Internet connection is another barrier to the adoption of e-commerce in SMEs in Pakistan. Problems arising due to slower download speed aggravate when people find technical difficulties but could not find technical support to resolve these difficulties. As a consequence, e-commerce adoption and doing online business processes become slower in emerging economies (Dwivedi, Papazafeiropoulo and Scupola, 2009; Kabango and Asa, 2015). Consequently, this study concluded that the technological context is one of the important factors for the successful adoption of any technological innovation such as e-commerce.

The organizational contextual factors are primarily examined from the *firm's* perspective. In the literature, (Mutula and van Brakel, 2006; Martins, Oliveira and Thomas, 2015) found that for the success of e-commerce, internal resources must be available for the firm. Contrary, our study found that SMEs' management structures, resources and ICT departments are less than adequate to facilitate e-commerce projects and thus strongly influence the adoption of e-commerce. Similarly, inadequacy in financial capacity and ICT skills in employees may affect a firm's ability to maintain ICT systems, and to develop and manage websites for e-commerce transactions. The presence and development of qualified human resources, who can lead e-commerce projects deployment and operations, together with the support of the owner-managers can be crucial to the successful adoption of e-commerce in Pakistani SMEs.

This study highlights that the most important environmental contextual factors that acts as a barrier to e-commerce adoption by SMEs in Pakistan is the perception and behaviour of people about traditional business selling methods. Some of the findings are consistent with the conclusion of (Lawrence and Tar, 2010; Khaskheli and Jun, 2016) about 'general culture behaviour' of SMEs in relation to traditional ways of doing business. However, the current study further contributes to the perceived stereotype of Pakistani firms as 'culturally fraudulent', which reduces consumer confidence in e-commerce, as an obstacle to customers, who therefore prefer traditional offline channels such as 'cash payments on delivery (COD)'. Therefore, this research has come to the conclusion that consumer confidence is of the utmost importance for the evolution of e-commerce applications.

In the literature, (Al-Alawi and Al-Ali, 2015; Duan, Deng and Luo, 2019) found that support from local governments, regulation and policy on e-commerce profoundly influenced SMEs' adoption of e-commerce. However, the finding of our study is that GoP and other National business institutes have paid less than required focus on SMEs. That is, in terms of technological improvement, development of e-commerce, and financial access; preference was given to larger and/or multinational companies. As a consequence of this, in the past, inadequate government technology support for e-commerce and unavailability of legal and regulatory e-commerce frameworks (e-commerce law and jurisdiction) has acted as a barrier for SMEs to develop of e-commerce applications within the commercial context. SMEs representative are of the view that the GoP needs to pay more attention in facilitating SMEs.

The study further shows that environmental measures taken by GoP and national business institutions have been insufficient and that there is still a substantial lack of e-commerce framework for SMEs in Pakistan. National business institutes could provide better resources for the development of e-commerce as a new technology, by offering regional knowledge exchange and training workshops, providing financial support, helping to develop local capacity, and organizing technical cooperation agreements among SMEs in the region.

The individual agency of owner-managers, managers and other (senior) employees is critical, and influences the adoption of e-commerce in SMEs on an *individual* level. With regards to

determinants of e-commerce in Pakistan, one can find a single research carried out by (Seyal *et al.*, 2004) who concluded that the manager's role in the adoption of e-commerce had no significant impact. However, this study shows that *the micro-level context of the individual owner-managers – and their characteristics –* can positively (or negatively) influence the adoption of e-commerce by SMEs in Pakistan because these individual agents have strong influence and full control over resources, including financial and day-to-day operations, and are actively involved in technology investment projects, related to ICT (Espinoza-Benavides and Díaz, 2019). Additionally, proprietary owner innovation and e-commerce awareness among owner-managers (and other managers) are integrated into the adoption dynamics of e-commerce applications.

The findings also showed that senior executives (elder employees) were reluctant to improve their basic ICT skills. This, and the low level of ICT-related skills among employees, was attributed to the high cost of training to work on computers and use e-commerce applications, which is provided only to selected managers who are interested. To carry out e-commerce activities and to access international digital markets, ICT training and formal education in computer studies should be made available to new entrepreneurs, senior managers and other SME employees in Pakistan. ICT knowledge was found to be the most critical individual agency factor associated with e-commerce adoption in this study. SMEs that are controlled by individual agents and senior managers who are computer literate and have experience in using ICT devices tend to be more innovative and likely to adopt e-commerce. Therefore, the extended (individual agency) contextual factors, as detailed, are crucial determinants for e-commerce adoption in SMEs in Pakistan.

The dynamic contextual technological, organizational, environmental and extended micro-level (individual agency) factors selected in this study can be generalized to other SMEs in Pakistan and other emerging economies in South Asia (e.g., India, Bangladesh, Sri Lanka and etc.) which share many common characteristics.

In explaining the dynamic factors influencing the adoption of e-commerce in SMEs within the emerging economy of Pakistan, this article has extended Tornatzky and Fleischer's TOE framework (Tornatzky, Fleischer and Chakrabarti, 1990) by adding an extended micro-level (individual agency) contextual category to the extant structural (technological), organizational (but micro-internal level), environmental (external) and individual (internal agency-micro level) contexts. It concludes that the SMEs that have adopted e-commerce, the uptake of e-commerce is influenced by several TOE factors and by internal (individual agency) contexts. Individual agency is more important as in SMEs all important decisions are in the hands of internal owner-managers, who can adopt, develop and use e-commerce in the future as an innovation in Pakistan where there are substantial limitations in the contexts of the TOE framework.

Theoretical implications

The most important theoretical implication that this research has made to the body of knowledge is that it extends the extant literature on the adoption of technology and e-commerce in SMEs by introducing a novel, extended conceptual framework, adapted from the literature on e-commerce adoption, and tested to address the research questions. The extension of the TOE framework allowed this study to explain factors, related to the individual agency of owner-managers and other SME employees, that were previously under-researched. This study confirms that the adoption of e-commerce in SMEs in Pakistan is strongly influenced, not only by the perceived characteristics of information technologies, but also by other determinants, and particularly emphasizes the important role of individual management factors.

Practical implications

The implications for practice encourage owners and managers of SMEs to recognize that the adoption of e-commerce is more of an adaptive challenge than a technical one. The individual agency factors, as explained, indicate the importance of the owner-manager and the management team's decision to adopt e-commerce as the main drivers in the full development of the e-commerce process. The article demonstrates the important relationship between individual agency and the adoption of e-commerce. Without the technological knowledge and commitment of senior management and other employees in SMEs, e-commerce will not be successfully adopted or implemented.

The article also proposes that, in emerging economies, governments (federal or local), policymakers, and other stakeholders (e.g. business support professionals) need to develop appropriate e-commerce laws and policies (macro-level) for SMEs. Government agencies including SMEDA and SECP, should co-ordinate national conferences, seminars and workshops on e-commerce and ICT usage so that SMEs can understand and benefit from e-commerce phenomena that are aligned with international standards. The GoP – as well as other local (national) institutions – should improve the country's e-commerce (readiness) infrastructure. Similarly laws to control/curb fraudulent activities on internet need to be enacted and enforced in order to boost up the trust of SMEs and online customers. This will, consequently, help change the business culture from traditional cash-based to e-commerce based transactions in Pakistan.

Local (national) business institutes and agencies could use the findings of this study to formulate digital strategies to promote e-commerce as a new technological tool among SMEs. Most ICT consultants, vendors, and agencies that promote e-commerce software and tools could develop new e-commerce transaction software to meet the financial needs of various market segments. Most importantly, ICT providers and consultants need to consider the knowledge and experience of individual agents (owner-managers) when promoting their e-commerce products and services on a limited budget.

Limitations and future research directions

In terms of size, this study analyses eight SMEs in three financial cities in Pakistan (Karachi, Lahore and Islamabad) and from *four sectors* (Industrial (*manufacturing*), Consumer Discretionary (*hospitality and tourism*) and *information technology*). Future studies could increase the scope of the research by increasing the size and incorporate SMEs from Pakistan's rural areas, and explore further the role of the government and its motivation for helping SMEs in their unique contexts. The findings could be compared with those of other emerging economies and be generalized to other industries. Future quantitative research could broaden the extended contextual framework in this study, augmenting it with further themes and sub-themes related to 'perceived culture behaviour' to discover additional dynamic contextual and individual agency factors.

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