Challenges of E-Commerce Adoption Experienced by Pakistani SMEs: A Qualitative Analysis

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Abstract. This study explores the various contextual challenges that SMEs face in adopting e-commerce in Pakistan. To satisfy the study aim, a qualitative method of research was selected, comprising semi-structured face-to-face and unstructured telephone interviews. Applying the Technology-Organization-Environment (TOE) framework, this study found several key challenges SMEs encountered during e-commerce adoption. Five major types of challenges that emerged during data analysis were technological, organizational, and environmental challenges, and challenges related to national (local) institutional support and to the entrepreneurial characteristics of owner-managers. This study shows the adoption of e-commerce in Pakistani SMEs is dynamic and, when enthusiastic owner-managers and other employees become interested in technology and are willing to engage in e-commerce projects, the chances of e-commerce adoption are greater. The findings of this study provide policymakers with a real-market overview (or contextual knowledge) to formulate e-commerce policies that will help new entrepreneurs in SMEs and improve their capacity for innovation.

JEL Codes: M13, M15, L26, O32, O53.

Keywords: SMEs, entrepreneurial characteristics, e-commerce adoption challenges, innovation, TOE framework, qualitative analysis, Pakistan.

1. Introduction

The term e-commerce is widely used in business and personal activities but, until 2019, was a relatively innovative concept in most emerging economies, especially in South Asia, according to a new World Bank report (Kathuria *et al.*, 2020).

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Poorangi *et al.* (2013) pointed out that existing studies on the subject were mainly positioned in developed Western, North American, and European economies such as the United Kingdom (UK), Canada and the United States (US). Most small business research institutes and entrepreneurship development centers are located in these regions enabling various business sectors to improve productivity through technology (Brima and Sesay, 2019). However, for developing economies, the use of e-commerce services is currently limited to basic functionalities like email communication – internal and external – with stakeholders and customers (Idris, Edwards and McDonald, 2017).

It is well documented (Khouja and Liu, 2020) that the adoption of e-commerce can lead to multiple benefits for SMEs but there are some obstacles. In developed economies, rapid advancements in Internet communication technologies and e-commerce have helped SMEs to implement technology in their strategies and, as a result, improve their day-to-day business operations (Fan, 2019; Rana *et al.*, 2019). Scholars (Brima and Sesay, 2019; Didonet, Fearne and Simmons, 2020) found that e-commerce could improve a firm's efficiency and productivity, but doubts about its usefulness in the development of emerging economies have persisted. Moreover,

Another key element in e-commerce adoption in SMEs is formed by the characteristics of individual entrepreneurs, or owner-managers (Najar and Dhaouadi, 2020). SMEs attempting to discover and exploit innovative ideas need individual entrepreneurs to make decisions and provide resources (Feng *et al.,* 2021), which proves to be a challenge (AlBar and Hoque, 2019). Also to consider are a 'firm's traits'

Recently Pakistani authorities have struggled to support and expand the SME sector through digital developments (Dar, Ahmed and Raziq, 2017). Through its business support agency, the Small and Medium Enterprises Development Authority (SMEDA), with the collaboration of the Government of Pakistan (GoP), is helping in the training and education of entrepreneurs in the four provinces of the country (Hyder and Lussier, 2016). Despite SMEDA's development efforts, SMEs still struggle because Pakistan's overall technological innovation progress is lagging behind other economies in the region and has not been able to keep pace with digital developments

In many ways, this study is an extension of previous empirical studies. First, there is a need to focus on the characteristics of entrepreneurs (owner-managers). According to Jones *et al.* (2019), much of what we know about entrepreneurs, their backgrounds, their motivations for starting a business and related business growth through innovation is largely based on research studies of Western entrepreneurs. There is little information about Pakistani entrepreneurs (Nazir and Roomi, 2020). Second, as more and more Pakistanis start new businesses, it is increasingly relevant to understand the challenges associated with individual characteristics as they adopt e-commerce for their business growth (Hyder and Lussier, 2016). Finally, with regard to the objective of this study, the Technology-

Organization-Environment (TOE) framework (Tornatzky, Fleischer and Chakrabarti, 1990), which has not so far been applied in the context of Pakistan, is applied here, as a theoretical basis for the research, to discover internal and external challenges.

This study, in fact, extends the TOE framework. Previous studies of developed economies (Al-Qirim, 2007; Martinsons, 2008; Scupola, 2009) have used the framework extensively to identify several TOE factors their businesses face when adopting e-commerce; it is now time to extend the framework to include challenges related to an individual category of entrepreneurs – owner-managers (Ghobakhloo and Tang, 2013). Indeed, owner-manager characteristics are seen as an important trait impacting e-commerce adoption, as users' skills and knowledge towards technology can result in seeking, trying or accepting new innovation (Nazir and Khan, 2022). With this expanded framework, the research generates new knowledge and perspectives and serves as a point of reference for future researchers. The purpose of the paper is to enable entrepreneurs in emerging economies, such as Pakistan, to create and capture value from e-commerce.

2. Literature Review

Existing literature documents various cases of slow adoption of e-commerce by SMEs. An empirical study in Kuwait, (Al-Alawi and Al-Ali, 2015) shows that elements in the TOE contexts (perceived benefit, management support and government support) all play an essential role in the adoption of e-commerce. When these and other critical elements in the development of SMEs are lacking, adoption of e-commerce in developing economies is virtually non-existent (AlBar and Hoque, 2019; Qalati *et al.*, 2021). As research in the context of the developed economies cannot be applied in developing countries, due to differences in cultural backgrounds, business environments and government rules and regulations (Lawrence and Tar, 2010; Najar and Dhaouadi, 2020), this study aims to determine the challenges SMEs face in adopting e-commerce in the context of a developing country, such as Pakistan.

Various studies (Lawrence and Tar, 2010; Alzahrani, 2019; Nazir and Roomi, 2020) have argued that developing economies are extremely heterogeneous in terms of political systems, economy, ideology, demography, culture, race, etc. Because of this, culturally appropriate strategies and specific adoption of trade are required (Hegarty *et al.*, 2020). For example, developing Asian economies are distinguished from other developing economies and the least developing countries in different regions in terms of their geographic, social and cultural context (AlBar and Hoque, 2019). This study highlights the hidden challenges associated with these specific contexts when SMEs in Pakistan adopt e-commerce.

2.1. Theoretical Underpinning

Different theories, models and frameworks have been used by many scholars and practitioners to conduct research on topics related to technology adoption. Some theoretical models focus only on external environmental factors; others examine technological and organizational factors (Martins, Oliveira and Thomas, 2015). A framework extensively quoted among researchers is the TOE framework developed by Tornatzky, Fleischer and Chakrabarti (1990). It provides a holistic and guiding theoretical basis for investigating the adoption of e-commerce at the organizational and external level by addressing a wide range of perspectives.

The TOE framework identifies three key aspects in the context of SMEs that influence the process through which a business adopts and implements technological innovation: the Technological context, the Organizational context and the Environmental context (Arsalan and Saleem, 2022). The structure of the TOE is useful, in developing economies, to study the adoption and assimilation of ICT innovations (Martins, Oliveira and Thomas, 2015). The framework provides a solid theoretical basis, consistent empirical support, and potential for application to the innovation domains of information systems (AlBar and Hoque, 2019; Bala and Feng, 2019). It should be noted that specific challenges identified in its three contexts might vary from one study to another.

Many researchers used the TOE framework to determine the e-commerce adoption challenges of SMEs in their countries (Awa, Ojiabo and Emecheta, 2015; Alraja, Hussein and Ahmed, 2021). Individual challenges related to the entrepreneurial characteristics of owner-managers, managers, and other employees at different levels, however, have not been well explored. In the context of Pakistan, these additional factors must be considered (Ghobakhloo and Tang, 2013; Ghobakhloo and Ching, 2019) when using the TOE framework.

Our paper proposes an extended theoretical TOE framework **(see Figure 1)**, augmented by a fourth dimension: the entrepreneurial characteristics of SME owner-managers. Owner-managers of SMEs strongly influence management systems (Qalati *et al.*, 2021), and their opinions, skills, training, and more general characteristics influence all strategic innovation decisions (de Oliveira *et al.*, 2015).

Figure 1: The proposed extended TOE research framework for SME e-commerce adoption
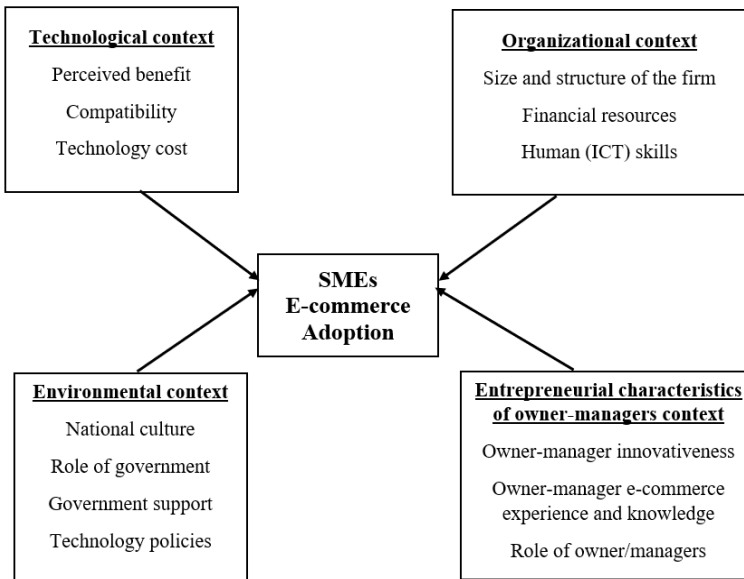
2.1.1. Predicting Challenges Related to the Technological Context

According to Rogers (Rogers, 1995), perceived benefit, compatibility, and cost influence the adoption of e-commerce technology. Greater managerial understanding of the relative advantages of e-commerce adoption raises the probability of the company allocating technological resources to do so (Poorangi *et al.*, 2013). Compatibility between an organization's policies and technology innovation makes innovation easier by placing it in a familiar context

2.1.2. Predicting Challenges Related to the Organizational Context

Previous researchers (Awiagah, Kang and Lim, 2016; Nazir and Roomi, 2020) identified internal factors influenced by the general characteristics and the current position of SMEs. Human resources (Scupola, 2009), the size and structure of the firm (Martins, Oliveira and Thomas, 2015), financial problems (Mabenge, Ngorora-Madzimure and Makanyeza, 2022), and e-readiness culture (Okundaye, Fan and Dwyer, 2019) were typical factors that can both encourage and discourage SMEs from adopting e-commerce services. The larger the business, the greater its ability to provide certain resources, and the more likely the adoption of e-commerce technology (Rahayu and Day, 2015).

2.1.3. Predicting Challenges Related to the Environmental Context

Environmental factors, such as the government(s) role (Ghobakhloo and Ching, 2019), government support and technology policies (Bala and Feng, 2019), and national culture (Okundaye, Fan and Dwyer, 2019) also influence the adoption of e-commerce in SMEs. Many SMEs have limited financial and IT skills resources. Therefore, support from the government (through policies or rules to protect parties involved in business transactions), and Internet regulation (involving security of transactions, and incentives to use e-commerce; Awiagah, Kang and Lim, 2016) are believed to drive SMEs to adopt technology (Rahayu and Day, 2015).

Other factors that influence e-commerce adoption are: entrepreneurial characteristics of SME owner-managers; individual contextual challenges influenced by the role of owner-managers; ICT knowledge of managers/ executives and employees; and awareness of e-commerce (Garg and Choeu, 2015).

This study extends the TOE model for the following reasons:

- Most SMEs in Pakistan are sole proprietorships.

- The final decision to adopt technology rests with the owners.

- Owner-managers can overcome other TOE contextual challenges that arise within the SMEs and the local business environment.

- Financial approval to purchase and install equipment to support e-commerce services can only be granted by owners.

Because owner-managers have these powers, it is therefore necessary to understand the role of the entrepreneur in the adoption of e-commerce as a business tool (Garzella *et al.*, 2021; Nazir and Roomi, 2020).

2.1.4. Predicting Challenges Related to the Owner-managers' Entrepreneurial Characteristics

Challenges identified in the literature were related to: innovation know-how; e-commerce knowledge and experience; and active participation in the adoption of critical systems in SMEs' e-commerce (Garg and Choeu, 2015). In terms of the success of e-commerce projects, a study by Najar and Dhaouadi (2020) showed that top management's innovative experience played a vital role and

This study, therefore, indicates there are extended contextual determinants and an additional category – the individual entrepreneurial characteristics of

owner-managers – that influence the adoption by SMEs of e-commerce innovation.

3. Research Methodology

Qualitative research in the interpretive paradigm tradition (Creswell and Creswell, 2017) was most feasible for this study because of its potential to generate new explanations and contextualized insights into the concept of entrepreneurial behavior and associated technologies of e-commerce in Pakistan. This study used an inductive approach to explore specific cases, then extract themes from the data. Its research philosophy was based on the development of knowledge using questioning, observation and dialogue, through which participants and owner-managers of SMEs in Pakistan shared real-life experiences. It analyzed practical knowledge that was integrated into the world of human interaction and its meaning (Saunders, Lewis and Thornhill, 2019).

3.1. Participants' Characteristics

Yin (2018) supported the use of purposive, or judgemental, sampling, which identifies and selects information-rich cases with effective use of limited resources in a qualitative study. The primary criterion is to select those who can provide the best information to achieve the study's aims. This study used purposive sampling based on two criteria: 1) the number of employees (1-250) in the SME; 2) participants have basic experience working in e-commerce, implementing and using ICT infrastructural units. The Small and Medium Enterprises Development Authority (SMEDA) and the Regional Chamber of Commerce provided a list of SMEs. Firms were initially selected randomly according to the criteria; the final firms were validated via telephone calls and selected after willingness to participate was gauged (

Table 1: Profile of SMEs & Respondents

SME Name	Start Date	Size, Sector & City	Total Staff	Interviewee Position	Education Level
S1	2008	Small, manufacturing: Rawalpindi	22	Owner-manager, Finance Officer, Field Marketing Manager	High school certificate, BA and B.com
M1	1998	Medium, manufacturing: Islamabad	51	Owner-manager, ICT Manager, Marketing Director	MBA, BBA and ICT university certificate
T1	2008	Small, travelling and tourism: Islamabad	12	Owner-manager, Finance and Admin Officer, Marketing Assistant	High school diploma, BA and B.com
I1	2007	Medium, ICT: Islamabad	56	Owner-manager, Finance Manager, Sales and Support Manager	BCS, M.com and BCS
H1	2008	Small, hospitality: Lahore	21	Owner-manager, Accounts Officer, Admin Officer	High school diploma, B.com and BA

Yin (2018) also recommends a 'simple and straightforward case study' because of the complexity of managing and analyzing large volumes of data. This study adopted five SMEs from the manufacturing, hospitality, and ICT sectors in Pakistan (as shown in Table 1). According to Nazir and Zhu (2018), there are around 2 million micro, small and medium enterprises in Pakistan. These include 400,000 manufacturing units, 600,000 service sector units, and 1 million commercial sector units. Of the total SMEs, 41% are urban and 59% are rural and mostly located in the cities of Rawalpindi, Lahore, and Islamabad in two provinces (Punjab and Federal) of Pakistan. The rationale for choosing SMEs from these three sectors was their major contribution to GDP and the ease of access for flexible data collection and interviewing. The main objective was to take an explanatory approach and provide in-depth contextualized information and new knowledge grounded in a specific Pakistani context.

3.2. Interview Design

According to Saunders, Lewis and Thornhill (2019), research interviews are intentional conversations, requiring the interviewer to establish a good relationship and ask interviewees open questions, which allow more flexibility. Interviews may be semi-structured, with no formal list of questions, or unstructured, with no pre-defined response categories. Interviews are conducted face-to-face, over the phone, or web-based (Rashid *et al.*, 2019).

Three participants from each SME, including owner-managers and other staff, were selected based on their experience working in the ICT and e-commerce sectors and involved in several projects. Semi-structured interviews allow participants to explain the opportunities, challenges, and obstacles and to clarify the influence of these contextual challenges on their SMEs. Interview questions were developed from the literature framework on SMEs and the entrepreneurial characteristics of owner-managers.

The first part of the questionnaire is dedicated to the demography of SMEs (size and structure, characteristics and type) and measures the different variables identifying the perceived benefits and the level of adoption. The second section relates to the questions that are based on theoretical concepts, including adoption factors, and community barriers within the organizations. The third section includes the role of local business institutes, government support and strategies for the adoption of e-commerce, and the establishment of the latest technology infrastructure units in supporting e-commerce within SMEs. The final section relates to the role and characteristics of owner-managers and other employees in terms of e-commerce and technology knowledge and innovation awareness as described in the conceptual framework categories.

Semi-structured face-to-face and unstructured telephone interviews were administered, leading to 26 completed interviews and handwritten notes. All participants agreed to have follow-up structured telephone interviews (see Table 2 for more details) to provide clarification and any further information missed during the face-to-face interviews. The main purpose of the follow-up phone interviews was to get the latest information on whether e-commerce activities had been launched, whether businesses were starting to sell online, or still relying on traditional systems to manage their operations. All interviewees were sent a written summary to validate the findings.

Table 2: Semi-structured face-to-face & structured telephone interviews

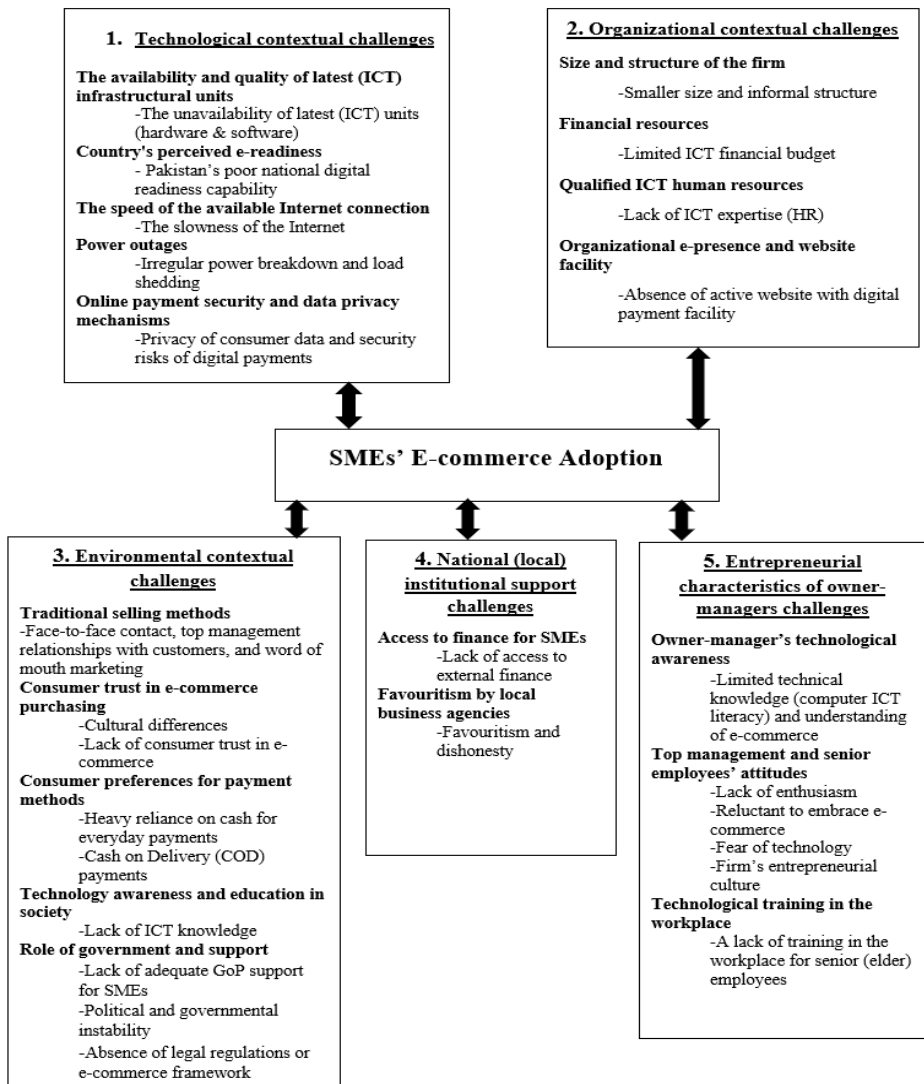| Face-to-face & Telephone: SMEs	Total face-to-face interviews	Total telephone interviews	Participants
S1	3	2	Owner-manager, Finance Officer and Field Marketing Manager
M1	3	2	Owner-manager, ICT manager and Marketing Director
T1	3	1	Owner-manager, Finance and Admin Officer, and Marketing Assistant
I1	3	3	Owner-manager, Finance Manager, and Sales and Support Manager
H1	3	3	Owner-manager, Accounts Officer, Admin Officer
Total = 26 Interviews	15	11	15 Participants

3.3. Data Analysis

After the interviews were completed, the qualitative data was analyzed using a manual coding list to make more sense of the texts and written notes (Walsham, 2006) and to compare and reflect on the issues raised (Hashimov, 2015). This study applied thematic analysis for each separate case, followed by a cross-case comparison. During the interviews, the interviewer wrote manual field notes, document summaries, diary notes, and scripts to highlight participants' responses.

A qualitative inductive approach to coding was adopted to "avoid stiffness and premature closure that are risks of a deductive approach" (Hashimov, 2015). These were then reviewed several times to identify potential themes, key issues, and experiences in individual cases. The validity and reliability of this research study were ensured by testing the interview guide/proforma during the pilot study phase, using multiple case studies to develop solid evidence and providing an open and comfortable interviewing environment (the participants' offices) (Nazir and Khan, 2022). Furthermore, the researchers used several approaches, such as frequent debriefing sessions between researchers, review of the research project via academic experts, and analysis of previous empirical research, to assess how consistent the study results were with the literature (Zivdar et al., 2017).

4. Findings and Discussion

The results have been organized into themes and sub-themes in accordance with the TOE framework – i.e., challenges in adopting e-commerce due to technology, organization and environment. Two other distinct themes emerged from the in-depth interviews and included national institutional support for e-commerce adoption and entrepreneurial characteristics of owner-managers. Each of the themes and sub-themes defined in this section are supported by quotes from the interview transcripts and discussed further. Figure 2 below shows this study's new extended model for SME e-commerce adoption.

Figure 2: New extended TOE model For SMEs' e-commerce adoption challenges in Pakistan

1. Technological contextual challenges

The availability and quality of latest (ICT) infrastructural units
-The unavailability of latest (ICT) units (hardware & software)
Country's perceived e-readiness
- Pakistan's poor national digital readiness capability
The speed of the available Internet connection
-The slowness of the Internet
Power outages
-Irregular power breakdown and load shedding
Online payment security and data privacy mechanisms
-Privacy of consumer data and security risks of digital payments

2. Organizational contextual challenges

Size and structure of the firm
-Smaller size and informal structure
Financial resources
-Limited ICT financial budget
Qualified ICT human resources
-Lack of ICT expertise (HR)
Organizational e-presence and website facility
-Absence of active website with digital payment facility

SMEs' E-commerce Adoption

3. Environmental contextual challenges

Traditional selling methods
-Face-to-face contact, top management relationships with customers, and word of mouth marketing
Consumer trust in e-commerce purchasing
-Cultural differences
-Lack of consumer trust in e-commerce
Consumer preferences for payment methods
-Heavy reliance on cash for everyday payments
-Cash on Delivery (COD) payments
Technology awareness and education in society
-Lack of ICT knowledge
Role of government and support
-Lack of adequate GoP support for SMEs
-Political and governmental instability
-Absence of legal regulations or e-commerce framework

4. National (local) institutional support challenges

Access to finance for SMEs
-Lack of access to external finance
Favouritism by local business agencies
-Favouritism and dishonesty

5. Entrepreneurial characteristics of owner-managers challenges

Owner-manager's technological awareness
-Limited technical knowledge (computer ICT literacy) and understanding of e-commerce
Top management and senior employees' attitudes
-Lack of enthusiasm
-Reluctant to embrace e-commerce
-Fear of technology
-Firm's entrepreneurial culture
Technological training in the workplace
-A lack of training in the workplace for senior (elder) employees

4.1. Technological Contextual Challenges

Overall, five technology challenges have hindered the adoption of e-commerce. Four factors were external to SMEs: the country's perceived e-readiness; Internet connection issues; power outages; and cybersecurity. Only one barrier was an internal factor: the availability and quality of the latest ICT infrastructure units.

4.1.1. The Availability and Quality of the Latest Technology Infrastructure Units

This challenge – involving hardware and software units – has been highlighted as one of the main obstacles to the successful adoption of e-commerce. Participants also explained that although they have the basic infrastructure to undertake their necessary activities, the quality of these units has a significant impact on the successful integration of e-commerce services. Respondents believed that to embrace technological change, their firm's system was not ready.

> The quality of the existing technological units [is] poor, the majority of the technology is obsolete. This is because…most employees are not tool friendly, [and] however, I can say that the current units need upgrading to embrace future e-commerce technology development

> Based on the overall technology infrastructure situation and business context of our firm, we are required to use standard generic units to run our day-to-day operations (T1)

4.1.2. Country's Perceived E-readiness

All participants cited the overall state and readiness of the country's infrastructure for e-commerce adoption as one of the barriers to business success in the tech space. This is because Pakistan's technology infrastructure is outdated and not compatible with modern technology requirements for e-commerce adoption.

> The country's telecommunications infrastructure is provided by the Pakistan Telecommunications Authority (PTA). It is the only provider of landlines and other ISPs, so the information and communication technology infrastructure of PTAs is not good enough to support businesses in Pakistan if we [SMEs] are interested in adopting e-commerce

Informants also reported that a lack of good quality hardware and software hindered their adoption of e-commerce. An owner-manager of the SME agreed and cited the availability of inexpensive ICT equipment compatible with e-commerce software as another factor.

> E-commerce depends on the vendor. Typically, the vendor maintains the hardware and software and sells them in standardized packages. Although e-commerce packages are readily available in the country, buying them is still expensive for us [SMEs]… (T1)

> …let me tell you that the technology infrastructure in Pakistan is not good enough. For example, ministries have equipment to perform basic activities, but the quality [of equipment] is poor, which hinders their customer services, so being a small company, how can we [SMEs] buy the latest low-cost devices from vendors. So what I am saying here is we have products in Pakistan but the quality is poor with high prices and does not support e-commerce services **(I1)**

4.1.3. The Speed of the Available Internet Connection

Several participants reported difficulties in accessing the Internet due to insufficient capacity of the broadband network. The e-commerce process requires faster and high-quality Internet performance to run various e-commerce applications. Pakistan Telecommunication Company Ltd (PTCL) under PTA, the leading low-budget Internet Service Provider (ISP), was characterized by lower quality and speed, technical issues and poor customer service, hampering the e-commerce process for SMEs:

> We are having problems with the internet on the computers running the ERP software…this may be due to network issues on the ISP side…

> …E-commerce related devices require high-quality internet speed, [but] in our firm we have PTCL internet, the speed and its capacity for e-commerce is insufficient … **(T1)**

4.1.4. Power Outages

This critical challenge, including power outages and load shedding, was at the forefront of participants' concerns. Load shedding – one of Pakistan's most serious problems – affects many sectors of the economy. To run their operations, business owners have to depend on expensive alternative electrical appliances. Electricity shortage is another obstacle to converting to e-commerce.

> I am [fed up] with the power outage… Finally, I had to buy this run-down diesel generator to run some of the computer equipment at the head office to communicate with other departments and meet our daily business needs … (I1)

> … However, sometimes when the generator stopped working [out of fuel]…all the configuration of information and communication technology also stopped, affecting the e-commerce ordering process and affecting customer service…(M1)

… In our firm, power outage is the major problem for finance and marketing departments. When the e-commerce process stops due to outage, the finance department can't send the payment confirmation emails to customers and so on, the delivery department can't process the order for delivery to customers. As a result affecting communication between all stakeholders. (H1)

4.1.5. Online Payment Security and Data Privacy Mechanism

Participants from medium-sized firms encountered problems in receiving online payments through their websites and frequently received emails from customers complaining about data security; this could hinder the use of e-commerce services by SMEs in the near future:

The notification mechanism for electronic payments depends on the bank's infrastructure, which is overwhelming. Due to system crash, customers met several payment issues and sometimes not working well, and they have to call us to confirm if the order is received as the payment is deducted from their account [but most of the time, we never received online payment but order received], so we have to call the bank officials for payment confirmation and they said that it was not caused by the bank but by the electronic network, which is operated by the PTA … (I1)

Supporting this claim, two owner-managers felt that e-commerce was still neglected because secure electronic payment methods were not available:

… At this point, most 'consumers do not have full credit/debit card access or even bank accounts to securely shop online', which can complicate [data privacy] the process of electronic shopping… (M1 and I1)

The study suggests that technological challenges have made it almost impossible for SMEs to adopt e-commerce (Rahayu and Day, 2017). Many participants felt that even if their firms were equipped with state-of-the-art e-commerce equipment, external technological factors and a lack of telecommunications infrastructure with limited spare capacity would continue to delay the adoption of e-commerce. If these hurdles are not overcome, the transition to e-commerce will be a challenge for the country.

4.2. Organizational Contextual Challenges

The structure of the SME was a major deterrent to adopting e-commerce. Most of the organizations interviewed were working on a small scale, with financial and administrative autonomy in the hands of a single owner.

These challenges are primarily examined from four perspectives.

4.2.1. Size and Structure of the Firm

Participants reported that this influenced the adoption of, and support for, e-commerce technologies:

> We do not have a formal structure. Most of the departments operate in a simple and flat business hierarchy controlled mainly by the owner-manager, which is similar to the other firms in Pakistan… (T1)

4.2.2. Financial Resources

Participants believed their firm had a limited financial budget, because of its smaller size and informal business structure:

> At some point, the owner-manager had been interested in hiring technology experts and had planned to develop an e-commerce environment by updating their systems… However, it was decided not to hire them because of internal cost issues… (M1)

4.2.3. Qualified ICT Human Resources

The success of e-commerce adoption was limited by insufficient ICT expertise and inadequate human resources (HR) needed to install software, operate and maintain technological devices and develop websites:

> When the firm decided to update the TYPO 3 e-commerce software to Magento 2, the procedure for configuring the entire software within the firm took [seven months]… as management did not find [expert] to successfully implement it according to 'business requirements'… (M1)

> … In a travelling business, we had [no] specialized IT people who could help us with the website and its upgrade to promote our business electronically on a daily basis (T1)

4.2.4. Organizational E-presence and Website Facility

Participants highlighted the role of effective e-commerce websites with payment facilities. Previous literature shows that the perceived success of SMEs depends on the availability of a website that not only communicates with potential customers and sells products and services, but also facilitates sales through various payment channels (AlBar and Hoque, 2019). However, during the data collection stages, small businesses did not adopt e-commerce sites and still relied on traditional sales methods.

At the time of the development of the firm, the 'website was not necessary'. The owner-manager was not interested in developing the website due to the availability of social channels such as Facebook to promote and sell the products. (H1)

Other participants further indicated that they did not intend to sell all products through e-commerce. The ordering process still depended on email, fax and mobile Internet communication.

…A website generally requires 'appropriate administration, additional budget and constant monitoring of the site and individual IT staff to manage the website and keep it online'. To further support us on the website and communicate with our corporate customers, our goal is to 'communicate by email', which is an easy communication channel. (M1)

In terms of organizational challenges, we found that if the owner thinks adopting e-commerce is beneficial, then the business can work to adopt it and vice versa. Therefore, we conclude that in Pakistan, due to small business size, SMEs operate on a tight budget and are generally unable to bear the cost of adopting e-commerce, either in terms of equipment, availability of staff and financial resources, or web platforms.

4.3. Environmental Contextual Challenges

Government policies, consumer behavior, modes of doing business, and business norms within the society are external factors but cannot be ignored when assessing the successful adoption of e-commerce (Ghobakhloo and Ching, 2019; Qalati *et al.*, 2021).
The five environmental challenges are:

4.3.1. Traditional Selling Methods

Participants highlighted this challenge and indicated that traditional sales methods, including personal selling, word of mouth, telephone or mobile communication and owner-managers' personal contact with customers, suppliers and partners, were the main obstacles to the transition from traditional commerce to e-commerce operations.

In this type of family business, 'personal selling' is very common. We use people (salesforce) to sell the product 'face-to-face' with the client… to inform and encourage the customer to buy the package or, at least, convince them [over the telephone] to visit the firm… then [deciding] to buy the products (M1)

4.3.2. Consumer Trust in E-commerce Purchasing

Although many customers in large cities have considerable purchasing power, they do not trust the Internet enough to make online purchases. This is one of the biggest hurdles for e-commerce purchasing in Pakistan, and a barrier to SMEs relying solely on it.

> It is very complicated to make sales until 'the manufacturing product can be felt and touched properly'. Therefore, 'Physical Observation' is mandatory to purchase manufacturing products… (M1)

Owner-managers of other SMEs also confirmed this:

> There is no electronic payment option on the [sites] because consumers do not trust e-commerce and are hesitant to transact online until they see the product … (I1 & M1)

4.3.3. Consumer Preferences for Payment Methods

Participating SMEs indicated that they mainly rely on traditional cash payments, which have been described as a preferred and secure means of payment in Pakistan (Hyder and Lussier, 2016):

> The penetration rate of credit/debit card digital payments in the country is relatively low and… [shoppers] prefer to pay in cash rather than transferring money to a bank account or [paying with] cards… I can say with [confidence] that the 'traditional cash payment method' is still considered a secure and faster payment option available in Pakistan … (M1)

> … The local bank takes 1-2 business days to clear credit/debit card payments and bank account payments usually take 3-7 business days. Sometimes it takes longer if payment is made on Friday or in certain situations if a bank account has not been confirmed or validated … (S1)

4.3.4. Technology Awareness and Education in Society

Participants felt customers need sufficient knowledge to use digital payments for e-commerce transactions, and most are not well trained in using the technology and/or are unfamiliar with using debit/credit cards or placing orders through e-commerce channels:

> New technology should be user-friendly and users should update them with the latest computer advancements. We've had issues…when users aren't updated with new technologies. (H1)

> Although sales, support and logistics staff can manage online systems, there is also a 'lack of consumer skills to use the Internet' because it takes more time to guide them [when they called the support team] on how to navigate the Website and to transact online'. (I1)

4.3.5. The role of Government and Support for E-commerce Adoption

Interviewees believed the government has an essential role in the development of various SME support policies, but many firms still lag. Participants cited problems related to government support for e-commerce adoption: the absence of legal regulations on e-commerce framework, unstable political and governmental situations, and – most crucially – corruption. Previous studies suggested that government should work with SMEs to actively promote e-commerce, take the initiative and propose legislation for an e-commerce framework (Awiagah, Kang and Lim, 2016; Kala Kamdjoug, Djuitchou Chengo and Gueyie, 2020). However, participants revealed that the government has not given due attention to updating policies governing e-commerce and the ICT industry.

> One of the driving forces for e-commerce is government policies aimed at improving business conditions…[I] don't think the government is doing much to promote e-commerce (environment) in the country…the government hasn't consistent policy available to us [small businesses] … (M1)

Owner-managers further added that electronic payments and receipts should be protected and that a standard/certified integrated payment gateway mechanism should be made available to SMEs in collaboration with local banks and online businesses.

> … I think there is still no active digital payments regulator in the country that encourages [companies] to use e-commerce payment technology practices to stay globally competitive. (I1)

If e-commerce is to be successfully implemented, it must be compatible with the current technology infrastructure (Poorangi *et al.*, 2013). In Pakistan, due to a shortage of cheap, quality local manufacturers, expensive ICT materials and equipment have been imported. Prices fluctuate daily, depending on political and economic conditions. There is a lack of government support for SMEs.

> … [Due to] the political and economic instability of the country, when the government changes, the (legal) framework of each ministry, especially that of commerce, also changes, which affects the local business community to import the products. (S1)

Corruption, particularly in government departments and associated agencies, affects the real growth of SMEs' e-commerce capabilities in Pakistan. New

technology vendors struggle to create innovative start-ups that would make it easier for SMEs to undertake activities that support e-commerce.

> Illegal practices in the business environment of Pakistan, in any form, hinder the technological development of SMEs. This concerns not only SMEs but it's also one reason for reducing opportunities for growth, production, and employment in SMEs. (T1)

> …With corruption… 'the cost of information and communication technology infrastructure' linked to the expansion of SMEs is increasing and makes up a major obstacle to the development of e-commerce. (M1)

The government plays a crucial role in promoting new technologies in the country (Ghobakhloo and Ching, 2019; Qalati *et al.*, 2021), but this study found that corruption in ministries and poor governance technology decisions means SMEs lag in implementing technology infrastructure that supports e-commerce. The unstable political and governmental situation in Pakistan negatively affects SMEs' decisions concerning the implementation of the latest ICT units that support e-commerce. The positive development of e-commerce adoption and the entrepreneurship growth of SMEs requires an effective role of government and related regulatory policies.

4.4. National (Local) Institutional Support

This new theme emerged as a determining factor in the decision of Pakistani SMEs to adopt e-commerce. Qualitative evidence strongly suggests that the higher the support from local institutions, the more likely local businesses, including SMEs, are to adopt the latest innovative technologies.

Two main points were raised:

4.4.1. Access to finance for SMEs

SMEs can improve their overall commercial structure and growth prospects and adopt the latest technologies that support e-commerce by borrowing money (Zafar and Mustafa, 2017). However, Pakistani SMEs remain excluded from easy access to finance. Participants indicated that commercial banks in the country were unwilling to lend to SMEs because they had neither liquid assets nor a good credit history.

> *I approached one of the commercial banks for a commercial loan, but what I observed in the process was that SME financing is seen as a 'risky' option, and many other banks feel that SMEs are poorly structured businesses — since most operate in the informal sector…* (S1)

Access to credit for the full development and progress of e-commerce was hampered by an inadequate regulatory environment and prevailing prudential banking regulations. A local chamber of commerce was created to support small businesses, but owner-managers believed they were unaware of agencies working in the technology sector to improve SMEs. Although firms wanted the support of local and financial institutions, participants did not think it was possible.

> …Due to 'political interference' in financial institutions and 'the absence of a legal and financial framework from the government for SMEs'. (S1, T1)

> …banks are 'reluctant' to provide loans for infrastructure to the new entrepreneur for the development of their SME…(H1)

4.4.2. Favouritism by Local Business Institutions

According to several government reports (including SMEDA, 2019), SMEDA supports SMEs but, at the time of the interviews, many SMEs were not registered as members of local institutions, due to a lack of support and financial aid from the government and business support agencies, which favor big business and foreign companies.

> We [management] have never contacted local business institutions or support agencies and are not affiliated with any industry, as [we] felt that local business institutes were primarily focused on larger firms. (T1)

> …. The majority of public officials who participate in the use of SME selection criteria according to their wishes and have favoured the opportunistic owners of large firms, while meritorious SMEs, directly or indirectly from the affected areas, have been ignored… (H1)

This study shows that obtaining infrastructure loans from commercial banks to upgrade ICT infrastructure is another hurdle for SMEs. Owner-managers confirmed this, claiming local and provincial governments, with the collaboration of financial institutions, including local, national and commercial banks, offer ICT infrastructure loans to firms, but they prefer larger organizations that can afford higher interest rates. Results also show that participants have never contacted local business institutions or support agencies and are not affiliated with any industry, as they felt these bodies were also primarily focused on larger organizations and only looking for benefits for themselves, rather than facilitating the adoption of e-commerce by SMEs.

4.5. Challenges Related to the Entrepreneurial Characteristics of Owner-managers (Extended)

The extended TOE framework includes entrepreneurial characteristics of the owner-managers, as fundamentally related to the adoption of e-commerce by Pakistani SMEs.

This study has identified three challenges.

4.5.1. Owner-managers' Technological Awareness

Participants suggested that owner-managers and managerial staff needed practical knowledge of new technologies and an understanding of e-commerce. However, opportunities to acquire such knowledge and skills were limited. Thus, owner-managers' perceptions of e-commerce were minimal, but they might be encouraged to use it in their business model if their awareness and understanding increased.

> In our firm the owner-manager has no interest in adopting e-commerce technology… because of the low technological awareness and limited benefits of use … (S1)

> … Investing in an electronic business is 'useless' and assumes that e-commerce is [not] reliable for the firm… they [management] don't know how to make it work… so what's the point in adopting it?…(H1)

In other SMEs, the heads of certain departments were interested in the adoption of e-commerce and its full development. However, senior (elder) executives' lack of e-business awareness and computer literacy, their preference for traditional channels of communication and reluctance to use computers means the use of e-commerce applications is minimal:

> Our head office has… nine most senior executives (elder employees) … because of the 'lack of computer skills and insufficient knowledge of technology-related devices', they are [not] able to deal with problems related to technology… (M1)

> …Staff members, including drivers and tour guides, 'do not have an adequate IT qualification or an advanced certificate related to computer science'… their [lack] of IT knowledge affects the successful integration of e-commerce in our firm. (T1)

4.5.2. Top Management and Senior Employees' Enthusiasm

The literature has shown that technological change could alter the firm's activities, environment and work structure, positions, roles, and responsibilities –

or result in the loss of manual jobs if the firm did not wish to train staff members at their posts (Ghobakhloo and Ching, 2019). To facilitate the adoption of e-commerce, executives should provide training, explain innovation and its impact on employees, and ensure that management involves employees in the project (Garg and Choeu, 2015). Respondents believed that fear of technology prevented transformation to technology. Most employees believed digitalization would put jobs at risk and therefore rejected technological change.

> … Some of the purchasing firms are 'still reluctant to embrace e-commerce' and its importance for online work. Many employees of some firms were [not] online because their top management thought that their employees would [abuse the system] by sending personal emails, surfing the Internet to watch movies and listening to songs on YouTube or chatting on Facebook [instead] of to work…
> (I1)

> The employee did not want to leave his/her 'comfort zone'… They thought that after the successful execution of online systems, [they] had to make an 'extra effort' to learn the systems and that it is too late now to learn the new systems…
> (H1)

Participants indicated that the firm's ICT systems must be compatible and aligned with the knowledge and skills of the workers as well as with the current technical requirements of the market to enable the firm to adopt the e-commerce. Plans to move gradually from manual to online systems (primarily in the finance and HR departments) would take time to implement, as senior personnel were reluctant to use online tools.

> I think… the new systems take [some time] to get used to, and after a while, everyone will be comfortable working on more online devices. However, we 'must' configure the system that suits them (senior employees) … (M1)

Participants also believed that if e-commerce was successfully adopted, their [owner-managers'] control over business operations would be limited because they did not fully understand the new online technology.

> The [family] business has seen success through traditional digital methods, but he [owner] will also continue with his conventional approach and not allow anything new to be adopted that would harm his business and his employees …
> (T1)

> … I think… for the top management, they are superstitious that technological changes like e-commerce will harm them if they are fully embraced (H1)

4.5.3. Technological Training in the Workplace

Limited enthusiasm for adopting e-commerce was also due to a lack of training or participation in training activities.

> Some [more senior] employees in inventory, marketing, and customer service felt that using the new system [was] complicated … we should provide more training on technology devices and how to work on e-commerce software, so they feel more comfortable using the keyboard … to ensure a smooth transition from typical practices to the e-commerce (I1)

To embrace e-commerce and online systems, everyone must become familiar with their use, and staff members must be motivated by adequate information technology training and owner-manager support. However:

> Information and communication technology training can [only] be provided to employees if top management is interested and aware of the importance and results… (H1)

> … Adequate computer training is necessary to learn advanced systems…[but] it can only be achieved through individual owner-manager support and collective interest (other employees) and includes an 'entrepreneurial culture'. (S1)

5. Conclusions

This study examines the challenges faced by SMEs in adopting e-commerce in the local business environment of Pakistan using the interpretive paradigm approach. Four main challenges have been identified through the interpretive approach: technology, organization, environment, and entrepreneurial characteristics of the owner-manager. The first three challenges were also supported by the conceptual framework; however, the entrepreneurial characteristics of the owner-manager were found to be context-driven. In Pakistan, the adoption of e-commerce is mainly driven by the decision of the individual owner in the SME and complements the other three challenges. This study concludes that while e-commerce adoption is in the hands of owner-managers, other external challenges found in this study also limit SMEs to fully transition their operational management system to the technology. Therefore, there is a need for local SMEs, entrepreneurs, governments, and business leaders to be aware of innovations such as e-commerce and how they can add value to their local businesses by having a deep understanding of associated contextual challenges.

5.1. Contributions

This paper argues that a combination of owner-manager entrepreneurial behavior and innovation is a crucial factor in the long-term sustainability of e-commerce in SMEs. In emerging economies like Pakistan, entrepreneurship needs to be promoted at all levels of the formal system to ensure access to technology, information, skills and knowledge (AlBar and Hoque, 2019). Therefore, this article contributes to a broader understanding by providing insights into the business skills and associated functions of SMEs that need to be developed to adopt aspects of e-commerce (Alraja, Hussein and Ahmed, 2021).

The study's primary contribution is to explain the contextualized challenges for SMEs in e-commerce adoption, based on a context-sensitive analysis of how and why SMEs in Pakistan acted as they did. As an interpretive study, it has provided a methodological contribution at the intersection of entrepreneurship/ small business per se and e-commerce/e-business and innovation systems in Pakistan, since it allows a much broader engagement with the participants during the data collection phases. Moreover, given the need to understand the context and natural environment that affects SMEs in Pakistan, the interpretative approach seems to be the most appropriate for this study. Using this approach, the study has followed different ways of understanding e-commerce and how it should be adopted by each organization to carry out its daily activities.

The experimental contribution of this paper is to study Pakistani SMEs as they embrace innovation in e-commerce at different levels of the organization. This research is a vital extension of other studies of the adoption of e-commerce, which focused primarily on developed economies in other regions. No previous study has provided a clear picture of e-commerce adoption, or a comprehensive view of SMEs in Pakistan, with interpretative analysis.

Many existing studies addressed technological, organizational, and environmental areas, but this study goes further. The approach corroborates the TOE framework (Tornatzky, Fleischer and Chakrabarti, 1990) and provides a deeper understanding of e-commerce by extending it to include new perspectives relevant to the adoption of e-commerce: entrepreneurial management characteristics and national (local) institutional support. Its theoretical contribution is the conduct of additional research that could lead to the adaptation of the theory. The study shows that the adoption of e-commerce in Pakistani SMEs is dynamic and, when enthusiastic owner-managers and other employees become interested in e-commerce and are willing to engage in e-commerce projects, it increases the chances of e-commerce adoption.

Due to the increasingly important role that SMEs play in job creation, poverty reduction, and socio-economic development of any region, government authorities have an important role to play in ensuring that SMEs have the resources to succeed in the successful adoption of e-commerce (Brima and Sesay,

2019). This study concludes that SME entrepreneurs, with the collaboration of government authorities, also have a critical role in future innovation.

This study also contributes by examining how entrepreneurship in support of e-commerce generates socio-economic development. SMEs that adopt technology can foster the advancement of the entrepreneurial society (Jones *et al.*, 2019). The study confirms that the adoption of innovative systems such as e-commerce can provide people with opportunities to improve their shopping behaviors. Advances in e-commerce and technology have had a tremendous impact on SMEs, individuals and local communities, moving traditional business selling methods towards digitalization. Particularly in matters of economic development, the government has a responsibility to provide the infrastructure to support businesses and to ensure that laws and regulations enable SMEs to compete favourably with their larger counterparts. SMEs lack the competitiveness, market control, and resources available to large firms; their success depends on the ability of their owner-managers to be innovative, formulate and implement competitive strategies, and respond to changing market conditions under favourable government laws and regulations. Therefore, the government's entrepreneurial policy is to develop the economy, contribute to job creation and eradicate poverty by facilitating innovative SMEs.

5.2. Implications

In practical terms, the expanded framework developed and applied in this study can help Pakistani SMEs to understand the associated challenges of e-adoption at the individual, firm and national levels. It can help SMEs and firms in other sectors of Pakistan and the South Asian region to identify entrepreneurial challenges and, specifically, the characteristics of owner-managers and other employees that motivate the successful adoption of e-commerce, which would have a positive social impact.

The study also potentially informs government agencies of the urgent need to develop a contextualized policy and legal framework for supporting SMEs to adopt e-commerce, as well as extensive information and networking platforms for improving and expanding SMEs' knowledge base. Government and national institutes, including small-medium enterprise development authorities and other national private agencies in Pakistan, should enhance supportive schemes and organize international conferences, seminars, and workshops on entrepreneurship and innovation in small business management, e-commerce, and ICT usage, so that SMEs can understand and benefit from e-commerce phenomena in line with international standards. Local business institutes and agencies could use the findings to plan e-commerce strategies and promote e-commerce as a new technological tool among SMEs. They could further improve the overall quality

of the technology infrastructure by providing SMEs with technology loans and easier access to finance (Cowling, 2021).

Entrepreneurship has the potential to create new businesses and employment opportunities to drive economic growth. They must, however, have the innovative skills necessary to be successful in business venturing (Meoli *et al.*, 2020) and develop the skills to manage aspects of e-commerce.

5.3. Limitations and Future Research Agenda

By adopting an extended TOE framework involving in-depth interpretive techniques, this study has explored the various challenges SMEs face in adopting e-commerce in three cities in Pakistan (Rawalpindi, Lahore, and Islamabad). Future research could consider studying small, medium and large enterprises in rural areas to uncover more hidden internal and external contextual challenges of e-commerce adoption, using mixed method approaches for a deeper understanding of entrepreneurship and innovations such as e-commerce. The findings could be compared with those of other emerging economies in the South Asia region. Important industries, such as construction, cement, sugar, machinery, food processing, and medical (mainly surgical) instruments were not included in this study. These could be considered when studying rural areas, to boost economic growth and achieve sustainable development goals (SDGs).

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