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E-commerce adoption factors affecting the SMEs: A case study investigation of a developing economy-Pakistan.

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Abstract:

Small and Medium-Sized Enterprises (SMEs) are the backbone of many economies to contribute to the Gross Domestic Product (GDP). New technological innovations have helped many SMEs to increase their Electronic Commerce (e-commerce) capabilities after the development of latest Information and Communication Technology (ICT) tools, mainly in developed economies. However, this development is very rare in developing economies. This study draws from the similar studies in the small and medium business of developed economies, how they struggled and adopted e-commerce as a business tool to conduct the business online. Also, many previous studies only focused on developed economies, and the e-commerce adoption studies in developing economies are insufficient. Therefore, the primary objective of this study is to increase the body of knowledge regarding the development and adoption of electronic commerce in SMEs of a developing economy after determining relevant e-commerce adoption factors. The study primarily focuses on four SMEs and, more importantly in the context of Pakistan as a developing economy, within three financial cities of Pakistan; Islamabad, Lahore and Rawalpindi. In Pakistan, there are approximately 4.1 million economic institutions (such as banks, commercial organisations including retailers, manufacturers, wholesalers and buyers who generate, distribute and purchase goods and services) out of which approximately 99 percent are SMEs (SMEDA, 2014). With the help of theoretical adoption framework, this study also (extends) the TOE (Technological, Organisational and Environmental) model to find out different adoption factors which are organised into four TOE model categories that includes; technological factors, organisational factors, environmental factors and individual extended factors. Based on the qualitative case study analysis of four SMEs, it was found that lack of entrepreneurship, lack of e-commerce skills, absence of innovation awareness among the society, lower literacy rate and owner-managers characteristics are the major factors that influence the adoption of electronic commerce within the SMEs of Pakistan as a developing economy.

Keywords: SMEs, e-commerce adoption, ICT, developing economy.

Introduction:

SMEs are an essential element of the economy of various countries (Mutula and Van Brakel, 2007). Due to their economic contribution regarding job creation, regional development and innovation (Jones and Beynon-Davies, 2011; Bharati and Chaudhury, 2006) they have a significant impact on the growth and financial stability of their economies. Improvement of SMEs is the top agenda of several economies across the globe. The rapid advancement of ICT (Information and Communication Technology) and the WWW (World Wide Web), has resulted in many changes in the world, in developing and developed economies alike (Kurnia et al., 2015; Jones and Beynon-Davies, 2011; Montazemi, 2006; Looi, 2005). There is an inspiration for small-scale and large-scale firms to develop their commercial activities beyond the physical limits of organisations in backward geographic areas with the help of the personal computers, broadcasting, digital television broadcasting and the internet (Chaston, 2004).

According to Abdullah (2015), electronic commerce refers to “the purchase and sale of information, products and services via computer networks”. Kalakota (1997) argued that e-commerce transformed the way in which the organisations traditionally use business transactions between firms. According to researchers (Kshetri, 2001; Annan, 2001; Teri and Lituchy; 2000), e-commerce has excellent potential to contribute to economic growth in developing and developed economies. Electronic commerce not only is one of the most critical tools for large enterprises but is also essential for small and medium enterprises. According to Molla and Licker (2005), e-commerce not only helps SMEs to reduce transaction costs but also helps to get rid of the transitional method and gives the convenience of choosing from a range of products and services available within the shop. Therefore, it is mandatory for the SMEs to adopt e-commerce as a business tool to survive in the competitive online business market with the support of local government institutes.

There is ample scientific evidence showing the role of government in many economies, which gives considerable attention to the development and adoption of e-commerce in SMEs. Researchers such as Awiagah and Lim (2015), Al-Somali et al., (2015), Martinsons (2008), Chan and Al-Hawamdeh (2002) and Dunt and Harpe (2002) found that the level of adoption of e-commerce and its use in developed economies has been significantly enhanced by the participatory role of governments in enabling ICT infrastructure for the adoption of e-commerce. In Singapore, for example, the government has improved ICT infrastructure by ratifying legislation that promotes e-commerce (Al-Hawamdeh, 2002). In the United Kingdom, the Institute for the Information Society of Wales (ISW) was established to help SMEs adopt e-commerce as a useful business tool (OECD, 2002).

Bjorn et al., (2003) found that government intervention influences and regulates, SMEs that such interventions should focus on mobilisation, which he explained have a sense of internal organisation. Seyal et al., (2007) indicated that government support is closely linked to the adoption of e-commerce in the society. Awiagah and Lim (2016) argued that mainly the governments in developing economies should provide financial resources to small and medium organisations to enhance the e-commerce market in the economy. While studying SMEs of developing economies, Lawrence and Usman (2010) stated that the government should support organisations to promote the use of ICT, education and the establishment of an appropriate regulatory framework for the adoption of the e-commerce.

In many countries, and in particular OECD (Organisation for Economic Co-operation and Development) countries, governments are facing the challenges of low growth, weak trade and investment, and rising, or persistently high inequality (OECD, 2016a). They are also confronted with growing discontent among citizens in the current situation, which is also reflected in a reaction against globalisation and technological change. In this context, it is necessary to create the conditions to improve the benefits of open markets and technological progress and to disseminate them more widely in the economy and society (OECD, 2017).

Despite all the efforts that government made and supported the economies, the adoption of electronic commerce is still far behind in the small and medium-sized enterprises. Therefore, the question arises, what are the factors that hinder the adoption of e-commerce in SMEs? The Governments of many developed economies supported organisations regarding e-commerce adoption so what are the problems in the developing economies while adopting the e-commerce as a business tool? It is essential to find out the answer as many researchers confirmed that SMEs play an essential role in the development of the economy. According to various statistics and reports of industrialised economies, SMEs are considered as the main contributor in the employment sector of many private organisations. An empirical study of (Subhan, Mehmood and Sattar, 2013) provided the information that SMEs contribute more than 55% of GDP and more than 65% of total employment in high-income economies but 75% in lower-income economies in terms of employment, SMEs and informal enterprises account for more than 60% of GDP, while in the middle-income economies, the contribution of SMEs in the employment sector is 95% and 70% of GDP. To understand the role of e-commerce in the SMEs of developing economies it is appropriate to develop a framework which enables to find out the hidden adoption factors of a country.

The adoption of e-commerce in SMEs is still a vital part of the extent research on Information Systems (IS) and Social Sciences (SS) (Parker and Castleman, 2009; MacGregor, 2004). Several studies on the acceptance of electronic commerce in SMEs in developing economies have been discussed by a limited number of researchers (Abdul Rahim, 2015; Chibelushi and Costello, 2009; Scupola, 2009; Brand and Huizingh, 2008; Karakaya and Shea, 2008; Wilson et al., 2008; Grandon and Pearson, 2004). Likewise, the developing economies can be characterised by these studies (Shemi and Procter, 2013; Tan, Tyler and Manica, 2007; Looi, 2005; Molla and Licker, 2005; Magembe and Shemi, 2002). However, there are fewer studies conducted in developing economies that have provided essential factors related to SMEs' adoption of e-commerce. Different factors that have been examined are dissimilar, fluctuating between different businesses, and include studies of the various countries, and the usage of ICT techniques (Ngai and Wat, 2002). An essential element of concern for extent research is the absence of evidence on how the adoption of e-commerce in SMEs is started and explored, as most prior research has been exploratory, e.g. limited surveys but without depth and lacking information (Riemenschneider et al., 2003).

The above-detailed situation is the main reason for codifying this study to investigate the e-commerce adoption factors that influence SMEs in a developing economy. For this reason, Pakistan was chosen as a developing economy in which research was conducted. Pakistan has not been selected for any specificity, but rather as a developing economy in South Asia with social, commercial and industrial characteristics that can be responsible for a rich dimension and uniqueness in the acceptance of e-commerce. The reason for Pakistan as a choice for this study is also the contribution of SMEs to the economy of Pakistan and its gross domestic product (State Bank of Pakistan, 2015) while other research recognises that SMEs are also crucial for global economies (OECD, 2015). Moreover, during the 2015 SME Finance Quarterly Review, the State Bank of Pakistan (SBP) recognised the vital role that

small and medium-sized enterprises played in the development of the economy in December (2014-2015). The report shows a growth of 6% in different sectors of SMEs, due to the SME-friendly measures taken by the Central Bank of Pakistan (SBP, 2015). However, as is common in most developing economies, the adoption rate of e-commerce by Pakistan's SMEs is still lagging behind with other regional and developed economies and needs to be studied (Seyal et al., 2004).

Literature Review:

Theoretical e-commerce adoption framework

The existing literature on electronic commerce offers several model theories to study the determinants of the adoption of electronic commerce by SMEs. With the help of previous surveys of the existing literature, it is observed that some models dominate the research on the adoption of e-commerce SMEs. Downs and Mohr (1976) have argued that “no single theory” or model can explain all aspects of the acceptance of innovation. As a result, most research on e-commerce adoption is based on one or all the adoption models. The most commonly used adoption models are; Theory of Acceptance Model-TAM (Davis, 1989), Theory of Planned Behaviour-TPB (Ajzen,1991), Diffusion of Innovation Theory-DIT (Rogers, 2003 and 1995), Technological-Organisational-Environmental (TOE) model (Tornatzky and Fleischer, 1990) and Resource Based Theory-RBT (Barney, 1991).

The *Technology Acceptance Model (TAM)* is widely regarded as the most influential and widespread theoretical domain in information systems (Lee et al., 2003) and has received rich empirical support (Chang et al., 2010). TAM was developed by Davis (1986) to explain the adoption by users of technology in organisations. TAM is based on the theory of reasoned action (Fishbein and Ajzen, 1975), which discussed how behaviour has an impact on individual behaviour. TAM involved the two main predictors: Perceived Usefulness (PU) and Perceived Ease of Use (PEOU). The dependent variable; the Intention to use and Actual system usage. However, despite the influential role of TAM in information science research, including the adoption of e-commerce, TAM has several inadequacies as explained by many researchers (Idris, Edwards and McDonald, 2017; Nistor et al., 2014 and 2012; Nezakati et al. 2012; Johar and Awalludin, 2011). According to Nistor et al., (2014), TAM focuses on PU as the most significant indicator of acceptance without considering the actual use of technology. Moreover, Parker and Castleman (2009) cited that TAM is not suited to understand the adoption of e-commerce in SMEs as it does not consider the contextual factors of SMEs.

(Ajzen, 1991) proposed a *Theory of Planned Behaviour (TPB)* to understand human behaviour from the physiological context and extended the theory of reasoned action by integrating another construct, Perceived Behavioural Control (PBC), to explain situations in which an individual lacks control over targeted behaviour (Ajzen, 1991, cited in Wang and Ritchie, 2013). The concept of TPB referring to behavioural dispositions, such as social attitude, subject norms and perceived behavioural control, played an essential role in these attempts to predict and explain human behaviour (Ajzen, 1988, Sherman and Fazio, 1983). Grandon et al., (2011) have confirmed in the research that many researchers have published articles in MIS journals (e.g., Pee et al., 2008; Khalifa and Shen 2008; Nor and Pearson, 2008; Pavlou and Fygenon, 2006; Fu et al., 2006) used TPB, and by default TRA, to explain the behavioural intent to adopt information technology, but only a small part of these studies focuses on SME samples, such as Nasco et al., (2008), Riemenschneider et al., (2003) and Riemenschneider and McKinney (2001 and 2002) use the TPB to predict the decisions of small business executives to adopt information technology to gain a competitive advantage.

However, the study of (Yousafzai, Foxall and Pallister, 2010) on the behaviour of the Internet banking; the theory of planned behaviour argues that there is a proximity between intention and behaviour. Therefore, the predictive power of the TPB model is still weak if it applies in a situation where intention and behaviour are highly correlated. (Rahayu and Day, 2015) also criticised TPB for ignoring, or not considering, several factors that can increase predictive power, such as personal norms and emotional assessment of behaviour.

Diffusion of Innovation (DIT) is the process explained by (Rogers, 1995, p.6) in which specific channels communicate an innovation. It is a communication, in that the messages are concerned about new ideas. Rogers and Shoemaker (1971) constructed five characteristics of innovation summary of previous research, including relative advantage, compatibility, complexity, experimentality and observability. After further work, Rogers (1983) developed these five characteristics of innovation, showing that in many studies, 49-87% of the variance in the adoption rate is explained by these five characteristics of innovation. The characteristics of innovations, as perceived by individuals, help to explain their different adoption rates. Rogers (1995, p. 15) defined the characteristics of the innovations that influenced the decision of the individual with five determinants: Relative advantage, Compatibility, Complexity, Trialability, and Observability.

Resource-Based Theory (RBT) (see: Peteraf, 1993, Barney, 1991 or Grant, 1991) attempts to explore the link between firm-level resources (assets and capabilities) and sustainable competitive advantage. Also, Barney (1991) suggested that organisations obtain sustainable competitive advantages by implementing strategies that expel their internal strengths, responding to environmental opportunities, while neutralising external threats and avoiding internal weaknesses. Ray and Ray (2006) also mentioned that these resources could be reached internally or that the organisation might choose to exploit external resources.

Tornatzky and Fleischer (1990) developed a *TOE framework* for the organisation to adopt innovation and implement it in the organisation's business structure. Also, the TOE framework uncovered various technological, organisational and environmental contextual factors that influence the decision of firms to embrace innovation. The *technological context* refers to the external and internal technological factors that affect the organisation while embracing innovation. The *environmental context* is the arena in which the organisation deals with competitors, business partners and the government to run the business. The *organisational context* refers to organisational factors related to size, communication channels, slack and scope of the organisation.

With the detailed explanation of the previous adoption theories, the TOE framework is chosen as the theoretical basis for the development of this study. This choice is based on several considerations as discussed by (Rahayu and Day, 2015) when studying the factors of the adoption of electronic commerce in Indonesian SMEs. Both researchers agree that previous studies have widely recognised the structure of the TOE as a well-established framework for studying the adoption of electronic commerce (Ramdani, Chevers and Williams, 2013; Sila and Dobni, 2012; Morteza, Daniel and Jose, 2011; Chong et al., 2009; Zhu and Kraemer, 2005). The TOE framework considers different contexts, not only focusing on technological contexts but also on the vision of organisational and environmental contexts. It is also recognised that a model that covers many dimensions can provide a better explanatory power than a model that includes only one aspect (Molla and Licker, 2005).

Hameed, Counselor and Swift (2012) also confirmed that the TOE framework is recognised as a model that uses an interactive perspective that assumes that changes in an organisation are understood not only by individuals in an organisation but also by the characteristics of the

organisation in which they operate The interactive perspective allows the researcher to analyse all the factors and their interaction in a dynamic context (Molla and Licker, 2005) and is supposed to explain the adoption of e-commerce innovation (Rahayu and Day, 2015).

Despite many positive views on the TOE, however, there are still critics of this theory as explained by (Altayyar and Beaumont, 2016; Rahaya and Day, 2015; Ghobakhloo and Tang, 2013) in the study of Indonesian, Saudi Arabian and Iranian SMEs. One of them, revealed by Ghobakhloo and Tang (2013), is that this model ignores the factors associated with individual attributes regarding employees and owner-managers of SMEs. Also, Ghobakhloo and Tang (2013) stated that the TOE provides a comprehensive theoretical basis for studying the determinants of e-commerce adoption in organisations, but that it does not focus on individual factors, like employees and owner-managers.

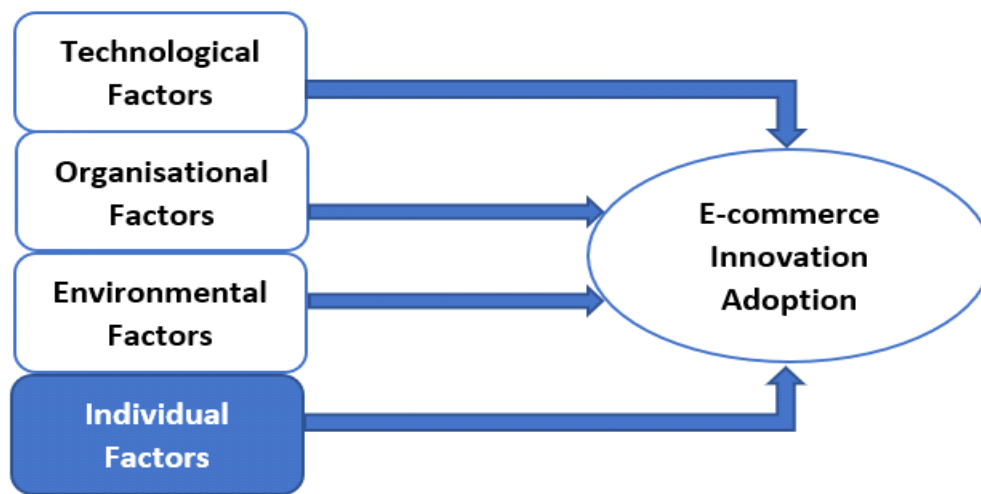


Figure 1: Extended model of TOE

Therefore, this study draws from the view of Ghobakhloo and Tang (2013), in addition to considering the technological, organisational and environmental contexts, the relevant factors related to the individual frames that affect the adoption of e-commerce by SMEs in the context of Pakistan, and the model of the TOE is then extended (as shown in Figure 1) to include an additional framework context, namely the *individual factors*.

Factors affecting the adoption of e-commerce in SMEs

Based on the above-detailed discussion about the theoretical framework, different factors that affect the adoption of innovation are categorised into three TOE frameworks and one extended category: *Technological factors, Organisational factors, Environmental factors and Individual factors*.

Technological factors: refer to the adoption of innovation using different ICT equipment and other related network technologies within the environment of organisations (Teo et al., 2004). Therefore, it refers to the technologies available within organisations and how technological contextual factors affect the adoption of technologies in organisations (Chau and Tam, 1997).

In most of the developing economies, the speed of internet connections is not reliable and efficient for users and many organisations due to inadequate information, telecommunications networks and variable networking systems not able to adopt innovative technologies. As a result, most economies are still not ready to adopt e-commerce, due to the lack of network infrastructure, particularly among many individual users and entrepreneurs

(new businesses, including SMEs) (Kozma and Vota, 2014). Another technological factor affecting the adoption of e-commerce within organisations in most developing economies as compared to developed economies is the power shortage. Without power, it is not possible for organisations to use ICT equipment to run the e-commerce process.

Organisational factors: represent the internal factors of an organisation that influence the adoption of innovation (Tornatzky and Fleischer, 1990).

The OECD (2017) report confirms that the situation of the costs of adopting and implementing ICT resources and upgrading e-commerce network systems in many organisations is not very satisfactory in many developing economies. It is also clear that the high cost of ICT infrastructure in many developing economies does not allow small and medium-sized enterprises to adopt new technologies and influence the growth of e-commerce (Ghobakhloo and Tang, 2013). Mutula and Van Brakel (2007) argued that the issue of finance has also been cited to prevent the adoption of e-commerce in SMEs regarding the number of financial resources that a company can use to create, by purchasing ICT for the implementation of trade, payment of consulting fees, training of staff, maintenance of the website and other infrastructure costs.

Hachimi et al., (2017) confirmed that the size and structure of the organisation were the most frequently considered factors in previous e-commerce adoption studies. Some of the most cited organisational factors in the literature (Scupola, 2009) are the organisational size (Iacovou et al., 1995) and organisational structure (Jeyaraj et al., 2006). The availability of adequate and credible payment channels such as credit and debit cards, PayPal, online payment systems and phone payments using cards, help many organisations sell products online without using any efforts. However, no online payment environment or institute contributes to the construction of transactional integrity and, consequently, the development of the e-commerce and the payment system in most developing economies (Oxley and Yeung, 2001).

Environmental factors: is the area in which the organisation establishes its activities (Tornatzky and Fleischer, 1990) or, in other words, concerns the organisation's environment (Scupola, 2009), explaining how environmental factors influence the adoption of e-commerce (Teo et al., 2004).

Government plays an essential role in the country to create the innovation environment for the local businesses and make effective policies which are useful for the SMEs. But in many developing economies, government are not playing an essential role to develop the e-commerce in the society. The elimination of strict control and deregulation of telecommunication systems is necessary for many developing economies to implement ICT infrastructure on trade policies that are easy and beneficial for SMEs (Lawrence and Usman, 2010). With the help of active trade policies, many organisations will benefit from the ICT environment for widespread Internet use in various development sectors of many developing economies (Alrawabdeh, 2014). In studying the Martin (2001) report of the World Bank, the author has argued that the widespread use of non-tariff barriers in developing economies create particularly severe problems for managing trade policies and the quality of trade governance in general.

An organisation may be under competitive pressure when it sees more enterprises in the industry adopting e-commerce as a business tool, and therefore needs to be adapted to remain competitive in the marketplace (Kaun and Chau, 2001).

Individual factors: In developing economies, most owners-managers control all the activities of the business. Therefore, in this study, individual factors are also considered in determining e-commerce adoption factors in the context of developing economies.

Wojtkowski & Hardesty (2001) suggested that for the successful adoption of e-commerce technologies, the owner-manager must have a reasonable, practical knowledge of the new technology. According to the idea of “factors of knowledge” explained by Attewell, 1992; The expertise and knowledge development of different users can facilitate and accelerate the adoption of the latest innovations such as e-commerce. (Shemi, 2012; Karakaya and Shea, 2008) cited that an active owner-manager usually transforms SME goals and corporate structure to develop the organisation further. When the owner-manager of the SME is inactive and does not appreciate the importance of ICT innovation, there is stifling growth in the business.

Kiplangat, Shisia and Asienga (2015) showed the results of Kenyan SMEs that ICT innovative knowledge levels among employees have a significant influence on the adoption of e-commerce in the firms surveyed. Macharia (2009) also found that the low level of technical skills and computer literacy among owner-managers and employees influences the adoption of SMEs in Kenya.

Research Methodology:

This research followed a case study strategy after choosing an interpretive paradigm to discover the hidden e-commerce adoption factors of SMEs mainly in the context of an emerging economy, Pakistan. The interpretation methodology aims to understand the phenomenon from the perspective of an individual, by studying the interaction between individuals as well as the historical and cultural contexts in which people live (Creswell, 2009, p.8). The case study strategy is best suited to this qualitative research to provide answers to the “how” and “why” research questions. Curran and Blackburn (2001) indicate that case studies in small business research are often less than ten cases. As a result, four multiple cases (SMEs) were selected for this study, to improve external validity, present convincing evidence, and assist research. This research focused on a process in an organisation, the use of electronic information for decision-making in the SME, by the person involved, the owner-manager as the primary decision-maker, but other key participants have also been considered to collect information.

Moreover, a purposive sampling technique was used to solicit the participation of SMEs. The research also identified different participants in SMEs and then selected based on their experiences in the field of e-commerce and ICT that provided the best information. A complete SME list was collected from Small and Medium-sized Enterprises Development Authority (SMEDA) and Federation of Pakistan Chamber of Commerce and Industry (FPCCI) with all staff contact information, and then organisations were contacted by telephone with an invitation to participate directly in the study. In total, four SMEs from tourism, ICT and manufacturing sectors were selected based on their size, location, availability of owner-managers and other participants, and willingness to participate in this study. For this qualitative research, primary data were collected through semi-structured face-to-face interviews using a semi-structured questionnaire. The semi-structured questionnaire was mostly used in the interview method. It was designed to obtain the information necessary to achieve the objectives of the research. A total twelve participants including; four SME owner-managers and eight key participants participated in the face-to-face interviews of four SMEs. Various e-commerce adoption topics were discussed, and different adoption factors were considered during the interview phase. Also, telephone interviews were conducted in

the second phase after the face-to-face meetings to clarify other questions or topics that were missed during face-to-face interviews. The total duration of each face-to-face meeting was 45 minutes to 1 hour. All semi-structured interviews were recorded manually to be transcribed. Also, the literature review, direct observation, and SME archives were used to obtain additional information and data on the SME environment in which they operate e-commerce and ICT activities.

Data collected from interviews and other sources were then analysed and interpreted using the data analysis strategy of (Miles, Huberman and Saldana, 2014 and Copes, 2005). The data were analysed in four steps: (1) conduct interviews, (2) transcribe and capture notes (to improve the researcher's understanding of different models, themes, and categories in the data), (3) write case narratives (stories) for case analysis and (4) determine the results from cross-case analysis and interpreting and unfolding findings in literature. This research also presents the secondary results of data analysis using a selection of existing literature that deals with developing and developed economies policy documents and business reports and themes emerging from in-depth face-to-face interviews.

Case study findings:

This section presents the results and characteristics of four SMEs describes the e-commerce adoption factors that affect the business process of the organisation during the adoption of electronic commerce. In this research, code names of four SMEs were generated and named as 1ISBTour, 2LHRICT, 3ISBTRAVEL and 4RWPMANU.

Case 1-IISBTour

1ISBTour was established in 1999, a medium tourism organisation based in Islamabad. A total of 31 employees work in the different departments of the organisation, including administration, IT, finance, and marketing. The organisation is involved in the tourism sector and facilitating the public (local and remote areas) to book vacation packages (air seats and hotel reservations) for the northern cities of Pakistan. It also provides transportation facilities to customers who have booked vacation packages.

E-commerce adoption factors in Case 1ISBTour

The owner-manager and other participants of 1ISBTour noticed various adoption factors in the face to face interviews. The owner-manager explained that:

“the organisation’s staff members were unwilling to adopt and accept online computer systems due to lack of ICT expertise and interest.”

For this reason, the traditional business method was used in the corporate structure of 1ISBTour which did not allow the organisation to adopt the e-commerce as a tool. Most employees used the computer for their personal use and checked email. Another staff member also justified the statement and said that:

“it was not possible to hire a skilled ICT workforce because of the organisation’s limited financial budget.”

Also, the organisation’s infrastructure was not fully developed, and the speed of Internet is slow. Therefore, it was not possible to implement proper ICT tools to adopt e-commerce activities in the organisation. Another factor was highlighted by the participant that:

“the high cost of ICT maintenance affected the organisation e-commerce adoption policies. Maintaining ICT and e-commerce tools in small business was not possible due to a limited ICT budget and lack of ICT staff.”

Furthermore, IISBTOUR receives *no support from the government* to facilitate the organisation while adopting e-commerce as a business tool. In the background of Pakistan, *the lack of Internet payment* has also been a significant factor in the globalisation that has prevented many SMEs from adopting the e-commerce in the business and selling and promoting the products on the websites. In Pakistan, as explained by the manager that:

“most tourism customers prefer to use the Cash on Delivery (COD) service because of the lack of trust in online businesses during online booking.”

After the analysis of IISBTOUR, it has been found that many factors affected the adoption of e-commerce and are based on the TOE framework:

Technological: (1) Slow speed of the Internet.

Organisational: (1) Poor quality of infrastructure (2) High maintenance cost of infrastructure (3) Limited maintenance and financial budget (4) Lack of innovation staff.

Environmental: (1) No Government support, Lack of Internet payment methods, Lack of online trust among society.

Individual: Absence of specialised employees (2) Absence of motivation among employees (3) Lack of e-commerce interest among managers.

With the interaction of organisational and individual factors, this study found that both factors contributed to the adoption of e-commerce in IISBTOUR. These two factors are entirely dependent on the overall characteristics of management and owner-manager while adopting e-commerce in IISBTOUR.

Case 2-2LHRICT

2LHRICT is a small ICT organisation based in the urban city of Lahore, Pakistan. It has been in operation for 11 years with a total of 23 employees. The primary function of 2LHRICT is to provide ICT products to the public and the government sector. 2LHRICT comprises of different management departments including computer development, marketing and promotion and finance. The owner-manager and other participants selected for interviews were from different departments that provided a unique feature of the e-commerce and ICT activities.

E-commerce adoption factors in Case 2LHRICT

2LHRICT is an ICT company, based in the city of Lahore where many ICT companies provide their services to Government departments. As a result, the owner-manager of 2LHRICT also serves in the Government sector. The owner-manager and a second manager participated in the interviewing process, revealed different factors of e-commerce adoption within the organisation. For example, the owner-manager quoted that:

“the preference of customers to visit the store and check out the computer and feel the ICT products as opposed to buying online because they cannot touch the product and because of lack of online trust they cannot understand the specification of the systems.”

The IT executive also observed that:

“when updating the products on the website for customers, low Internet speeds and electricity failures hampered the process, and therefore, with the slow pace of the Internet, it was impossible to adopt the e-commerce and do business online.”

The most critical factor as described by another manager was that:

“due to lack of awareness among clients the adoption rate of online business is inadequate in the country. Moreover, the population of Pakistan is mostly illiterate, and the rate of education is meagre. Therefore, customers do not know about e-commerce, how to use it and how to place the order online.”

Thus, *due to lack of awareness*, it is not possible for organisations to adopt the e-commerce tools in their businesses. It was also stated by the manager that:

“the owner-manager characteristic and the management of the organisation also played their part in the adoption of the e-commerce's activities, but because of the limited skills and financial budget, the administration was not interested in the approval of the e-commerce.”

Significant factors that observed in 2LHRICT were summarised based on TOE framework:

Technological: (1) Slow speed of the Internet (2) Electricity failure.

Organisational: (1) Feel and touch of the products (2) Limited financial budget.

Environmental: (1) Absence of awareness among business clients (2) Lack of awareness among society (3) Lack of education.

Individual: (1) Owner-manager characteristics (2) Limited owner-manager and employee's innovation skills (3) Absence of administration interest.

In 2LHRICT, environmental and individual factors played a significant role in this study, while adopting e-commerce in the organisation. The major problem is with business customers and their awareness affecting the adoption of e-commerce in society. Also, 2LHRICT faces a severe problem of illiteracy rate of society that is very low. The lack of education and owner-manager characteristic of other employees of the organisation is a significant drawback for the adoption of e-commerce in 2LHRICT.

Case 3-3ISBTRAVEL

3ISBTRAVEL is a small travel organisation based in the city of Islamabad, established in 2001 with a total of 18 employees. The primary function of the organisation is to reserve airline tickets (national and international) for government officials and the public and those having an IATA (International Air Transport Association) registration as well. The owner-manager, the finance manager and the IT specialist participated in the interview process. For the most part, the owner-manager wanted to provide better feedback on e-commerce adoption and other technology activities. 3ISBTRAVEL is one of the more reputable and trusted organisations in the city that books international tickets for local clients as well as embassy representatives.

E-commerce adoption factors in Case 3ISBTRAVEL

The owner-manager acknowledged that:

“poor government policies regarding the adoption of the e-commerce were not in favour of small and medium-sized enterprises because of the massive taxes and the enormous costs of implementing infrastructure.”

Owner-manager also stated that:

“most organisations cannot afford to buy ICT tools to adopt e-commerce because of import taxes and government restrictions on SMEs.”

For example, the owner-manager tried to buy the ticket reservation software, but due to the *limited budget of the organisation and poor software policies*, he was unable to obtain e-commerce software to manage the online bookings. Most bookings are from referrals and are made over the phone. 3ISBTRAVEL has implemented some ICT infrastructure such as printers, fax machines and computers, but only to check emails and send tickets to customers using the company's email account. 3ISBTRAVEL has an appropriate website, but just for customer awareness of flight prices and schedules. One of the manager informed that:

“due to the slow speed of the Internet and lack of trust in online payment, many customers are not interested in booking tickets online.”

Furthermore, as said by another manager that:

“most customers do not have online credit cards for payments due to lack of security and online fraud, therefore, consequently, 3ISBTRAVEL continue to traditionally manage their activities with references and the communication channel via e-mail.”

Being a small organisation, mostly employees rely on other staff members to run the ICT tools and deal with the customers over email and other communication channels. The reason for this explained by the manager was that:

“some employees are not interested in using the innovation tools because they are not used to with them, and they do not have an idea how to use the innovation tools and go online. Therefore, owner-manager is not interested in upgrading the systems and using e-commerce in the business.”

Furthermore, regarding employee's interest and awareness about e-commerce, mostly employees, they prefer to work manually and record the customer's information manually or just using the Microsoft Office. The reason explained by the owner-manager was that:

“employees they do not have any awareness about e-commerce due to limited ICT knowledge because of the lower level of education.”

Even the owner-manager had only received a high school certificate and running a conventional business. Therefore, he stated that:

“if the employees within 3ISBTRAVEL have some IT education, then it will not be an issue for him to adopt the e-commerce in the business and due to the limited financial budget of 3ISBTRAVEL, it is not possible for him to hire any specialised person who can run the e-commerce applications.”

Therefore, based on TOE framework, following factors have been found in 3ISBTRAVEL:

Technological: (1) Slow speed of the Internet.

Organisational: (1) Limited organisational budget (2) Limited customer communication channels (3) Relying on other staff members (4) Higher infrastructure implementing costs (5) Lack of specialised staff.

Environmental: (1) Poor Government software policies (2) Higher tax rates of implementing good infrastructure (3) Import taxes and Government import restrictions (4) Lack of Online payment methods (5) Lack of online trust among the society.

Individual: (1) Lack of employee's interest (2) Poor employees and owner-manager education (3) Limited knowledge among employees (4) Lack of e-commerce awareness among managers.

Environment and individual factors mainly affect 3ISBTRAVEL for the development of electronic commerce in this study. Many government policies and higher tax rates affecting 3ISBTRAVEL. Some employees within the organisation have poor innovation education, which is the main problem for the owner-manager not to adopt e-commerce as a business tool in the organisation.

Case 4-4RWPMANU

4RWPMANU, another medium-sized manufacturing organisation based in the Rawalpindi business area and employing 30 people, manufacture and supply mobile spare parts to local and national mobile phone retailers and large companies. The organisation started operating in 2005 to manufacture mobile batteries only but then moved from small to medium size due to the company's sales growth. Most 4RWPMANU workers lived locally, and managers were fully involved in the decision-making process with the owner-managers. As a result, in the interview phases, three managers participated, including the owner-manager, the IT controller and the general manager to discuss issues related to the adoption of e-commerce in 4RWPMANU.

E-commerce adoption factors in case 4RWPMANU

During the face-to-face interview, the owner-manager was confronted with a different adoption of e-commerce factors. As a mobile parts manufacturing organisation, the primary challenge faced by 4RWPMANU in the adoption of e-commerce has been the *shortage of electricity*. The owner-manager, therefore, stated that:

“the organisation is not able to adopt e-commerce in the business process because of the shortage of electricity. Most of the time, when they assemble the moving parts, the electricity stops, and the parts manufacturing process is stopped, so what good is it to install another piece of equipment in the company ... Therefore, it is not possible to adopt e-commerce as a tool to use it in the process of business and go online.”

The energy crisis in Pakistan is one of the severe problems faced by the country today. Also, he said that if they can adopt the e-commerce system in the organisation, they have no one who directs and controls it effectively. One of the senior managers of the organisation said:

“although the organisation has an IT department, it is just to control the computerised machines and check the limited ICT activities of the company and is not able to improve the capacity and use the e-commerce because of the shortage of qualified IT staff that has some awareness of innovation.”

All managers also agreed that:

“another average organisation in the local market has e-commerce activities, but due to lack of entrepreneurship within the owner-managers of 4RWPMANU, it is not possible to adopt e-commerce in 4RWPMANU.”

Also, the government plays an essential role in implementing ICT and e-business policies in the country. However, many organisations are not interested in adopting such *policies because they are not in favour of SMEs* but of large organisations. According to the owner-manager:

“regarding government infrastructure policies, SMEs cannot afford the latest innovation infrastructure because of high tariff rates and import restrictions.”

As a result, the country's SMEs need to use local *ICT products that are not in good shape* to adopt e-commerce and manage the business online. Also, *employees' knowledge of innovations is insufficient* in the organisation because they *do not have a degree or experience in ICT* to operate the systems online. Another participant said that:

“for the adoption of e-commerce, it is necessary for employees to learn the tools of innovation and to have knowledge on e-commerce, then they can execute the applications successfully, but because of the ignorance among 4RWPMANU employees, they are not able to adopt e-commerce.”

Based on TOE framework, factors affected the adoption of e-commerce in 4RWPMANU were:

Technological: (1) Shortage of Electricity.

Organisational: (1) Lack of skilled staff (2) Limited e-commerce capabilities (3) Poor quality of infrastructure (4) Limited budget.

Environmental: (1) Poor Government policies (2) Import restrictions (3) High Tariff rates.

Individual: (1) Lack of knowledge and experience of innovation among employees (2) Lack of education (3) Managerial innovation ignorance (4) Lack of entrepreneurship.

Individual and organisational factors are considered an essential factor in 4RWPMANU when adopting e-commerce. Due to the lack of entrepreneurial spirit within the owner-manager, the organisation is not fully developed with e-commerce tools. There should be training programs in the organisation that helps to motivate many employees and the owner-manager to adopt e-commerce as a business tool.

Discussion and Conclusion:

This research has investigated various electronic commerce adoption factors affecting SMEs in Pakistan by adopting the T-O-E framework with the added Individual context factor. With the results of interview data and cross-case analysis, it shows that *technological context factors* such as slow speed of Internet and shortage of electricity; *organisational context factors* such as a limited financial budget, poor ICT infrastructure and higher maintenance cost; *environmental context factors* such as lack of awareness among society, local government support, poor government policies, inadequate tariff rates and lack of online payment methods; *individual context factors* such as owner-manager characteristics, lack of entrepreneurship, absence of innovation knowledge, lack of interest and poor managerial education are essential considerations in e-commerce adoption in all four SMEs.

Regarding the *technological context*, this research reveals that slow speed of Internet and shortage of electricity do not allow SMEs to adopt e-commerce in their businesses, as confirmed by (Kozma and Vota, 2014; Lawrence and Usman, 2010; Scupola, 2009, Chong et al., 2009) in the literature. Robust infrastructure and excellent speed of Internet improve the competitiveness of an economy and create a compelling business environment for the development and growth of the economy. Conversely, infrastructure deficiencies create barriers to productive opportunities and increase costs for all businesses, from SMEs to large organisations. If the government introduces plans for generating the electricity and improve the speed of the Internet, the likelihood of SMEs to adopt the e-commerce tools will increase.

Regarding the *organisational context*, poor ICT infrastructure and a limited financial budget were found to be the most critical factors influencing the adoption of e-commerce in four SMEs. This is supported by many other literary studies such as (Wan and Mokhtar, 2016; Picoto et al., 2014; Ghobakhloo et al., 2011; Seyal et al., 2004). With the help of government and other institutes such as SMEDA, SMEs can improve the overall situation of ICT infrastructure. Banks can also help SMEs to provide cost-effective ICT infrastructure by issuing infrastructure loans. There are many previous research studies on the success factors of e-commerce adoption. The limited ICT budget factor, limited e-commerce capabilities, limited customer communication channels, feel and touch of the products and poor infrastructure provide further evidence to the literature.

The results show that in the *environmental context*, government tax regulations significantly affect e-commerce adoption in Pakistan. Good economic governance in areas such as taxation, regulation and business licensing are a fundamental pillar for creating a favourable business environment in the country. This research reveals that if the government reduces tax rates and provides better trade facilities for SMEs, SMEs will be more likely to adopt e-commerce in their businesses. Due to the implementation of strict policies', the e-commerce and ICT in the country, it is not possible for SMEs to adopt the e-commerce. The managers of four SMEs agreed that government could influence the adoption of e-commerce by local SMEs by providing a legal environment for doing business on the Internet (Alawi and Ali, 2015). Also, lack of trust on e-commerce within society, lack of awareness among business clients such as supplier and competitors, and lack of online payment methods were also considered as the critical factors in the context of Pakistan which was supported by many previous researchers (Ochola, 2015; Scupola, 2009; Al-Qirim, 2006).

Regarding the *individual context*, innovation skills, employee awareness of innovation, education for owner-manager innovation and lack of entrepreneurship were critical factors in SMEs affecting e-commerce in this study. Numerous studies in the literature (Rahayu and Day, 2015; Ghobakhloo and Tang, 2013; Nguyen & Waring, 2013) have agreed that owner-manager characteristics were among the leading factors that prevent many SMEs from adopting e-commerce, especially in developing economies. This research provided further evidence to the literature and expanded with the addition of an individual contextual factor of owner-manager characteristics in the context of Pakistan. Also, owner-managers and other employees of SMEs need to be adequately trained if they are interested in adopting and motivating e-commerce applications in their organisations. Many researchers in both developing and developed economies have agreed that one of the critical criteria for successful e-commerce adoption in SMEs is the level of education of owner-managers and employees (Scuopla, 2009, Sarosa and Zowghi, 2003). In many SMEs, many employees are unable to communicate and do better by conducting e-commerce and ICT activities. To get access to the international markets for business and e-commerce, it is mandatory for SME employees to communicate and do their best when carrying out e-commerce adoption activities. Therefore, a business education, certificate or ICT degree should be made available to owner-managers and employees while adopting e-commerce in their SMEs, mainly in developing economies. Furthermore, lack of e-commerce interest, lack of employee's motivation, ignorance of the innovation among owner-managers and lack of administration interest were considered the extended individual factors of this study.

In related to the TOE model, organisational and individual factors have more impact on SMEs than technological and environmental factors in this investigation. Also, each case helps to understand SMEs and the progress of e-commerce. There is an interaction of factors at the three levels of the TOE framework and a broader level (Individual), but the crucial

factors that have benefited SMEs the most while adopting electronic commerce are organisational and individual. This explains the internal environment of the organisation, the ICT infrastructure and the role of owner-managers among all other employees while adopting e-commerce.

The study aims to provide a combined overview of e-commerce adoption of ICT within SMEs in the context of Pakistan in terms of the factors within the business environment. To understand and to introduce the framework, TOE extended model has been used to underline and explain the adoption factors within technological, organisational, environmental and individual context. This study has investigated the challenges faced by SMEs in the adoption of electronic commerce in four cases, in the context of Pakistan, using the interpretive paradigm approach. The research approach favoured the socio-technical context that prevailed in organisations at the time of the study. SMEs had different levels of ICT input and appreciation. However, it was necessary for key managers and/or business owners to be well-informed about ICT and e-commerce and how it could offer commercial value to their organisations.

The results show that there is a need for support to enable SMEs to benefit more from e-commerce technologies. Creating greater awareness of e-commerce, better provision of the necessary technologies, and adequate staff training and updating and upgrading of qualifications are part of the support that would help SMEs to plan their e-commerce optimisation strategically. The results of this study are useful not only for SME managers, but also for government agencies like SMEDA, local business institutes and chambers of commerce, especially in developing economy such as Pakistan, which have strong economic ratios and incentives to care for the development of SMEs. It is believed that the results will also give some insights to ICTs experts regarding their SMEs clients, to improve their services and customer satisfaction.

In terms of study limitations, the study is limited, as it only includes SMEs in three financial cities of Pakistan. Other studies could include other SMEs from different rural areas of Pakistan. In addition, it would be interesting to compare and contrast the findings with those of other developing economies.

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