Table of Contents

[Chapter 1 2](#_Toc154256957)

[Introduction 2](#_Toc154256959)

[1.1 Define the problem 2](#_Toc154256958)

[1.2 Purpose of the Study 2](#_Toc154256959)

[1.3 Significance of the study 3](#_Toc154256959)

[1.4 De-Limitations of Study 4](#_Toc154256960)

[1.5 Research Questions 4](#_Toc154256961)

[Chapter 2 5](#_Toc154256962)

[Literature Review 5](#_Toc154256963)

[2.1 SME’s in Pakistan 5](#_Toc154256964)

[2.2 Theoretical e-commerce adoption framework 5](#_Toc154256966)

[2.3 Factors affecting the adoption of e-commerce in SMEs 8](#_Toc154256959)

[Chapter 3 12](#_Toc154256967)

[3.1 Orientation of the topic 12](#_Toc154256959)

[3.2 Type of research 12](#_Toc154256959)

[3.3 Data Analysis 12](#_Toc154256959)

[Chapter 4 14](#_Toc154256968)

[4.1 E-commerce adoption factors in case 2LHRICT: 14](#_Toc154256959)

[4.2 E-commerce Boom and Digital Transformation: Asnapshot of Pakistan’s Growing Online Market 15](#_Toc154256959)

[2.3 Factors affecting the adoption of e-commerce in SMEs 7](#_Toc154256959)

[Chapter 5 18](#_Toc154256970)

[Conclusion 18](#_Toc154256971)

[Recommendations 19](#_Toc154256972)

[References 21](#_Toc154256959)

# Chapter 1

**Introduction**

## 1.1 Define the problem

Pakistan is going through financial issues, energy crises and country peace. Every day we hear the news of series of repeated crimes like robbery, snatching, vehicle lifting, target killing, in different cities of Pakistan. Why this crime and illegal activities in rising day by day? People are killing if they trying to protect himself from these dacoits and killers. The most common report by Pakistan Bureau of Statistics shows the teenage or younger are involved in crimes, obviously a literate or earning person cannot go to this illegal way. Is the better solution is that, if they are skilled and literate so that they will be able to earn in a legal way?

https://docs.google.com/forms/d/e/1FAIpQLSfCJZuHLU5UFnJEq6fi4vYctfz3B6akqt-gefZD-vrsOwIH0g/viewform?usp=pp\_url

## 1.2 Purpose of the Study

The purpose of this study is to comprehensively examine the impacts of crime and explore strategies for overcoming it. When we take a bird's eye view of the situation back in 2005 or earlier, the crime rate in Pakistan was not alarming. However, with the passage of time, it has been steadily increasing. Our examination delves into various factors contributing to this rise in crime, aiming to identify the root causes. According to latest report issued by PBS (Pakistan Bureau of Statistics) the age group between 18 to 34 are mostly involved in illegal acts. If we provide education to criminals in prison so that they will be able to earn to live and able to join the race of business and technology competition that is a legal way of earning.

A comprehensive solution is proposed to control and eradicate crime at its source. We will explore why individuals engage in criminal activities or violate laws, despite being aware of the associated punishments and legal consequences. Additionally, we will discuss the necessary reforms required to better protect the country. The role of education and finance in crime control is crucial, and we will analyze their impact on mitigating criminal activities. The purpose is that we have to discussed the matter that we people commit crime? What are the reasons? This topic will be cover by research and people views regarding this issue.

The overarching goal of this study is to address the escalating crime rates in Pakistan by identifying and implementing major reforms in existing laws. By comprehensively examining the root causes of criminal behavior, we aim to formulate effective strategies for crime prevention. An essential aspect of our proposed solution involves prioritizing education, ensuring that every individual, especially children, is literate and aware of legal consequences. This study seeks to underscore the critical role education plays in shaping societal values and deterring criminal activities. Through a holistic approach, we aspire to create a safer environment by instigating legal reforms and fostering widespread literacy, ultimately working towards the eradication of crime from its roots.

1.3 Significance of Study

1. Addressing Escalating Crime Rates:

The study is crucial in tackling the rising crime rates in Pakistan. By examining the root causes of criminal behavior and proposing comprehensive solutions, it aims to contribute to the reduction and prevention of various criminal activities.

1. Legal Reforms for Crime Prevention:

The research is significant in advocating major legal reforms to address the challenges posed by crime. It provides insights into the deficiencies in existing laws and suggests changes needed to create a more effective and responsive legal framework.

1. Empowering Through Education:

The study underscores the pivotal role of education in crime prevention. By emphasizing the importance of literacy, especially among children, it advocates for an empowered and informed society, capable of making choices that discourage criminal activities.

1. Creating a Safer Environment:

Through a holistic approach, the research aims to create a safer environment for the citizens of Pakistan. By proposing and implementing solutions that address the root causes of crime, the study seeks to contribute to the overall well-being and security of the population.

1. Social Impact and Awareness:

The findings of the study have the potential to generate social awareness about the underlying factors contributing to crime. By highlighting the social impact of criminal activities, the research contributes to a broader understanding of the consequences of such behavior on the community.

1. Policy Implications:

The research may influence policies related to crime prevention and law enforcement. By identifying areas that require attention and reform, the study provides valuable insights for policymakers to craft more effective strategies in the fight against crime.

1. Inspiring Future Research:

The "Crime to Code" study may inspire and guide future research in the field. By identifying gaps in current understanding and proposing solutions, it lays the groundwork for further exploration and development of strategies to combat crime.

## 1.4 De-Limitations of Study

This research is constrained by the use of a questionnaire designed for literate individuals. The survey, administered through platforms like Google Forms, is accessible only to those who possess an understanding of the impact of crime and are knowledgeable about methods to reduce crime rates. By targeting literate respondents, the study aims to gather insights from individuals who can provide informed perspectives on the subject, thereby enhancing the quality and relevance of the data collected

## 1.5 Research Questions

1. How can educational interventions and legal reforms contribute to reducing the crime rate and promoting a shift from criminal activities to lawful endeavors in Pakistan?
2. Is the Prison Education Program is the best way of treating the criminals?
3. What role does legal awareness play in deterring individuals from participating in criminal behavior?
4. How effective are existing legal frameworks in addressing and preventing various forms of crime in the country?
5. In what ways can educational institutions be optimized to foster a culture of lawfulness and discourage criminal behavior?
6. How does the level of education and literacy influence individuals' engagement in criminal activities in Pakistan?

# Chapter 2

# Literature Review

## 2.1 Crime Rate in Pakistan

## The analysis of “why people crime” is discussed in the article[1]. The crime rate in Pakistan has been a subject of increasing concern, with numerous studies attempting to understand its dynamics, causes, and implications. This literature review aims to provide an overview of key findings in the field, identifying patterns, gaps, and areas requiring further investigation. Studies by PBC (2010) examined historical crime trends in Pakistan, highlighting shifts in crime rates over the past two decades. These analyses revealed fluctuations influenced by socio-economic factors, political events, and changes in law enforcement strategies.

Emerging research by National Response Centre for Cyber Crime (2020) delved into the role of technology in crime prevention. Findings suggested that advancements in surveillance technology and data analytics could enhance law enforcement capabilities and contribute to a reduction in certain types of crimes.

## 2.2 Theoretical e-commerce adoption framework

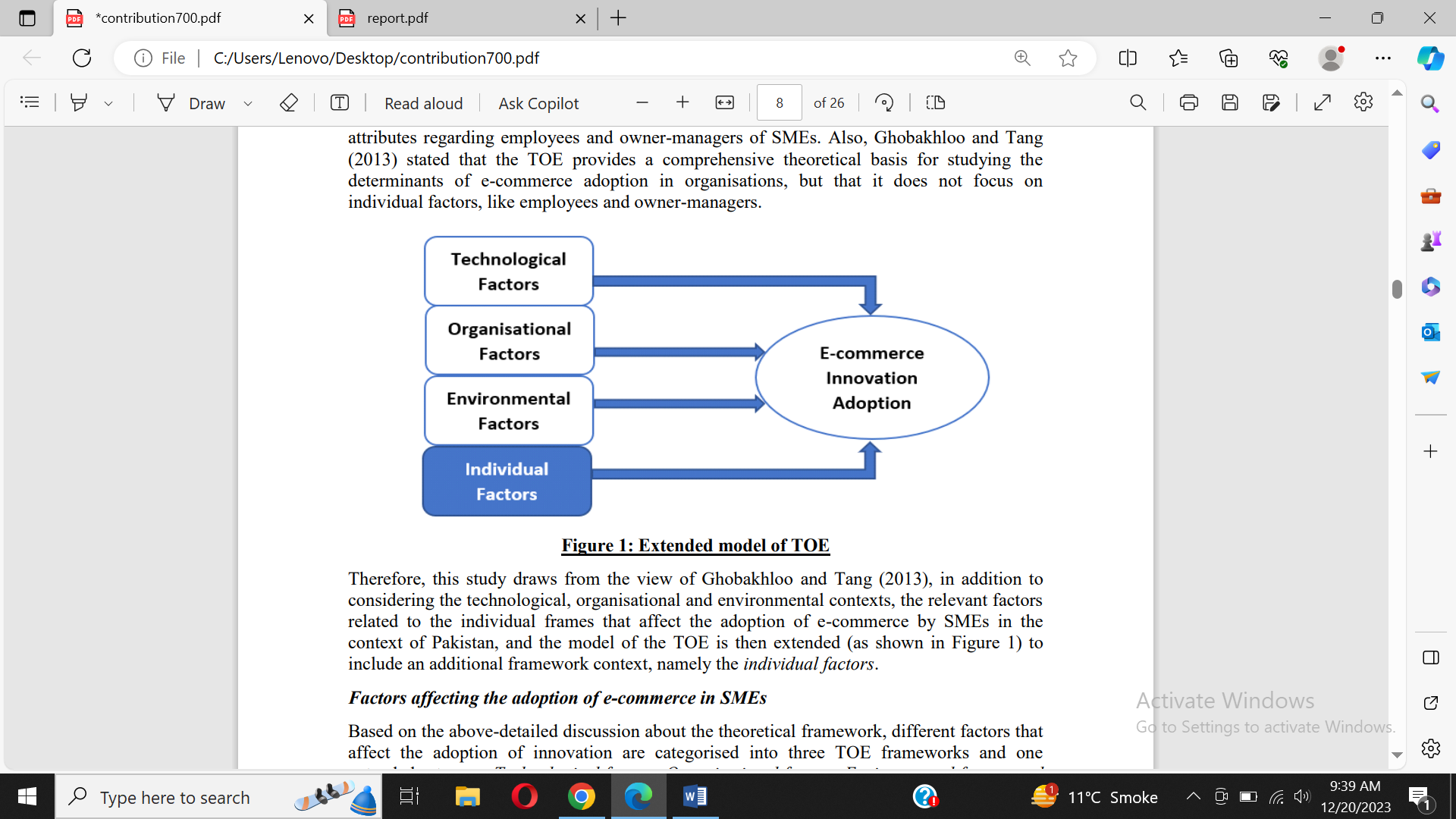
The existing literature on electronic commerce offers several model theories to study the determinants of the adoption of electronic commerce by SMEs. With the help of previous surveys of the existing literature, it is observed that some models dominate the research on the adoption of e-commerce SMEs. 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 Flesicher, 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, 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 Fygenson, 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. 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). 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.



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.

2.3 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.

The review of theoretical frameworks for e-commerce adoption in SMEs emphasizes the dominance of models. While TAM is widely recognized, it has been criticized for its focus on perceived usefulness without considering actual technology use. TPB incorporates behavioral dispositions, and TOE offers a comprehensive framework considering technological, organizational, and environmental contexts. Despite positive views on TOE, critics argue that it neglects individual factors. The proposed research builds upon the TOE framework, extending it to include individual factors, addressing a gap identified by critics. Factors influencing e-commerce adoption in SMEs are categorized into technological, organizational, environmental, and individual dimensions. The research intends to contribute valuable insights to enhance the performance and competitiveness of SMEs in the evolving digital landscape.

# Chapter 3

**Methodology**

3.1 Orientation of the topic:

The purpose of this chapter is to outline the approach and procedures employed to investigate the adoption of digital transformation in Small and Medium-sized Enterprises (SMEs) in various sectors in Pakistan. The primary method for this study is data analysis, with a focus on evaluating the impact of digitalization on operational efficiency, competitiveness, and the overall business landscape of SMEs.

3.2 Type of research:

Researcher has used qualitative method and devised the results of data analysis (descriptive analysis) using a selection of existing literature that deals with developing economic policy documents and business reports related to local markets in Pakistan.

3.3 Data Analysis:

Researcher adapted the descriptive analysis approach to describe the case study and data from different reports. The analysis of the case study “2LHRICT” discovers the hidden e-commerce adoption factors of SMEs mainly in the context of an emerging market, Lahore. 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). This research method is best suited to this qualitative research to provide answers to the “how” and “why” research questions. It 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 (Arsalan and Xiaoxian, 2018).

In conducting the qualitative analysis for this research, the researcher played a pivotal role in synthesizing information from a diverse range of sources, primarily relying on an in-depth examination of the current published work on Pakistan's digital transformation and e-commerce boom. The researcher carefully scrutinized reports such as "Journey to Digital" produced by Google and Kantara consultants, which provided valuable insights into the extent of internet connectivity and usage patterns across urban and rural areas of Pakistan. This initial exploration laid the foundation for understanding the landscape of digital transformation in the country.

Furthermore, the researcher delved into reputable sources like Haq (2021) to grasp the nuances of the e-commerce surge amid the COVID-19 pandemic. By extracting data on consumer perceptions, preferences, and the role of leading platforms like Daraz and Foodpanda, the researcher gained a comprehensive understanding of the evolving online market dynamics. Additionally, insights from the Pakistan Software Houses Association (P@SHA) report offered a glimpse into the quantitative aspects, revealing the substantial growth in IT export revenue and the correlation between digital technology adoption and business success.

The qualitative analysis process involved a meticulous examination of various dimensions, from the technological advancements shaping the e-commerce landscape to the organizational and individual challenges faced by SMEs in Lahore. Through a synthesis of these findings, the researcher aimed to provide a holistic perspective on the e-commerce adoption challenges and underscore the need for a comprehensive approach that addresses not only technological aspects but also organizational and societal factors. In essence, the researcher's role in navigating and synthesizing diverse information sources formed the bedrock of the qualitative analysis, contributing to the depth and breadth of insights presented in this research.

# Chapter 4

# Findings

4.1 E-commerce adoption factors in Case 2LHRICT:

2LHRICT is an 11-year-old ICT organization located in Lahore, Pakistan, with 23 employees. It specializes in providing ICT products to both the public and government sectors. The company operates through various management departments such as computer development, marketing, promotion, and finance. The owner-manager and interview participants represent different departments, contributing to the uniqueness of the organization's e-commerce and ICT activities.

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” (Arsalan and Xiaoxian, 2018, p. 11).

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” (Arsalan and Xiaoxian, 2018, p. 12).

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” (Arsalan and Xiaoxian, 2018, p. 12).

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” (Arsalan and Xiaoxian, 2018, p. 12).

Significant factors that observed in 2LHRICT were summarized 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.

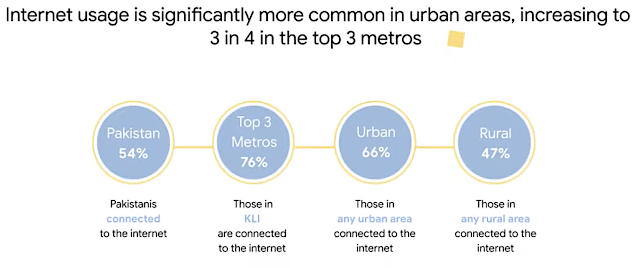
**Individual:** (1) Owner-manager characteristics (2) Limited owner-manager and employee’s innovation skills (3) Absence of administration interest.

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, it suggests 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 organisations is a significant drawback for the adoption of e-commerce in SMEs in Lahore.

4.2 E-commerce Boom and Digital Transformation: A Snapshot of Pakistan's Growing Online Market:

A blog post regarding the digital transformation of Pakistan said that:

Pakistan's digital transformation is in full swing. Over three-quarters of Pakistanis living in the top three metros of Karachi, Lahore and Islacmabad are connected to the Internet, according to a report titled "Journey to Digital" produced by global tech giant Google and Kantara consultants. Researchers found that two-thirds of urban and nearly half of rural Pakistanis regularly use the Internet in the South Asian country of 220 million, the 5th most populous nation in the world. It has a young population with the median age of 22 years. 46% of Pakistanis access the Internet every day.  They use the Internet for education, entertainment, shopping and to search for information. (Haq, 2021)

Pakistan has also experienced an e-commerce boom in the midst of the [COVID pandemic](https://www.riazhaq.com/2020/04/pakistans-internet-traffic-surge-amid.html). 71% of Pakistani shoppers find purchasing products or services online easy, while 66% find it convenient. Another 54% find that online shopping websites or apps give personalized product recommendations, which answer common questions. Two-thirds of consumers believe that online shopping is the way forward. They say they will continue to buy products or services online after the COVID-19 pandemic. (Haq, 2021)

Daraz is a leading e-commerce platform in Pakistan. It has helped thousands of businesses to reach new customers and expand into new markets. In 2022, Daraz generated over $1 billion in sales and employed over 10,000 people. Similarly, Foodpanda is a food delivery platform that has revolutionised the way people eat in Pakistan. It has helped restaurants to reach more customers and increase their sales. In 2022, foodpanda delivered over 100 million meals in the country and employed over 10,000 riders. (Asad, 2023)

According to a report of the Pakistan Software Houses Association (P@SHA), the IT export revenue of Pakistani businesses reached $3.5 billion in 2022, up from $2.5 billion in 2020.

Businesses that have invested in digital transformation have seen a higher rate of growth in their IT exports than those that have not. Businesses that have implemented digital technologies such as cloud computing, big data, and AI have seen an average increase of 30% in their IT exports in the past year, compared to 20% for businesses that have not implemented these technologies. The global IT services market is expected to grow from $1.3 trillion in 2022 to $2.1 trillion by 2025.

More people are coming online in Pakistan, creating a great opportunity for ecommerce businesses - if they are ready to seize it. As we see more exploration of the internet beyond social, e-retailers can capture natural cross-category purchasing on its rise, but only if they have first established themselves and their product offering in an online marketplace.

In conclusion, the e-commerce adoption challenges faced by SMEs in Lahore are multifaceted, involving technological, organizational, environmental, and individual dimensions. Overcoming these challenges will require a holistic approach that addresses not only the technological infrastructure but also the awareness and education levels of both clients and society at large.

# Chapter 5

# Conclusion

This study investigated the impact of industry 4.0 technologies on the performance of SMEs in Pakistan. The positive significant role in enhancing SMEs performance was verified. Assimilating and exploiting modern technologies is in the limelight of businesses and firms are vulnerable to the impact of innovation. Advanced technologies are transforming and overturning entire business models. The government of Pakistan should facilitate and encourage SMEs to adopt such technologies in their operations extensively, thus not only reducing cost and increasing productivity, but also adding extra value to their products, value that is currently missing in Pakistani SMEs. Furthermore, the appropriate type of human capital equipped with modern day skills is inevitably needed in order to comply with the advanced business settings of industry 4.0.

Furthermore, the findings from Case 2LHRICT shed light on the complex landscape of e-commerce adoption in SMEs, particularly in Lahore, Pakistan. The owner-manager's perspective on customer preferences highlighted a significant barrier—customers' inclination to physically inspect products before purchase due to a lack of online trust and understanding of product specifications. This sentiment reflects the challenges of building trust in the online marketplace and emphasizes the need for educational initiatives to bridge the awareness gap among the predominantly illiterate population in Pakistan.

Additionally, the IT executive's observation regarding internet speed and electricity failures underscores the technological hurdles that impede the smooth adoption of e-commerce. The organizational factor of limited financial budget further complicates the situation, as it hampers the management's interest in approving e-commerce initiatives.

# Recommendations

To unlock the full potential of human capital in Pakistan’s digital transformation, the following steps should be considered to have positive outcomes of digital transformation;

* **Investment in Education:** Prioritize investments in education, focusing on science, technology, engineering, and mathematics (STEM) disciplines. Collaboration between universities and industry can help tailor education to market needs.
* **Adoption of new technologies:** Be prepared to adapt to evolving technologies, cybersecurity threats, and global market changes, ensuring the resilience of digital transformation initiatives
* **Digital Literacy:** Launch nationwide digital literacy programs to ensure that everyone can participate in the digital economy. This includes both urban and rural populations.
* **Innovation Ecosystem:** Continuously nurture the innovation ecosystem by providing support to startups, simplifying regulatory frameworks, and encouraging research and development.
* **Measuring National Progress:** Regularly assess and reports on the progress of digital transformation efforts using key performance indicators and benchmarks even on a state level.
* **Cybersecurity:** Strengthen cybersecurity measures to protect critical digital infrastructure and promote a safe online environment for businesses and individuals.
* **Innovation and Entrepreneurship:** Pakistan’s youth is filled with creative potential. Encouraging innovation and entrepreneurship can lead to the development of homegrown startups that drive economic growth and create jobs. Initiatives like the National Incubation Centers and PlanX are nurturing a new generation of tech entrepreneurs.
* **Digital Inclusion:** Leveraging human capital involves ensuring that all segments of society have access to digital tools and resources. Bridging the digital divide by providing affordable internet access to rural areas can empower individuals and communities to participate in the digital economy.
* **Government Policies and Collaboration:** Collaboration between the government, private sector, and educational institutions is vital. Policies that support research and development, attract foreign investments, and create an enabling environment for startups can further harness the potential of human capital.
* **Data-Driven Decision Making:** Pakistan’s digital transformation is generating vast amounts of data. Developing data analytics and data science skills within the workforce can help the country make informed decisions in various sectors, from healthcare to agriculture.
* **Skilled Workforce:** Investing in education and training programs is essential to build a skilled workforce capable of thriving in the digital age. Pakistan’s youth can be upskilled to meet the demands of emerging industries such as artificial intelligence, data science, and cybersecurity.

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