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E-Commerce Adoption: Enablers within Small and Medium–Sized Enterprises in Punjab

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Abstract: *The purpose of this research is to examine the influence of e-commerce on Small and Medium–Medium-sized enterprises in Punjab a province of Pakistan. There is resistance to the adoption of e-commerce in certain parts of underdeveloped countries, even though the most successful companies have adopted e-commerce and gained increasing success. This study describes the drivers for e-commerce adoption and investigates the benefits obtained by the companies when they adopt e-commerce. The targeted population for the study was the Small and Medium Sized Companies registered in the Lahore District of Punjab province of Pakistan. The Study selected 400 SMEs in the Lahore District. A structured adapted questionnaire was used to collect the data. The quantitative approach was adopted. Seven dimensions namely e-commerce adoption, top management support, perceived benefits, adoption cost, payment mode/type government support and technology awareness and knowledge were measured by using the Likert scale measurement items, acknowledging the previous studies. The results revealed that top management support, perceived benefits, adoption cost, payment mode/type and technology awareness and knowledge had a significant positive influence on e-commerce adoption within SMEs while government support had a negative influence on e-commerce adoption.*

Key Words: E-commerce, Drivers, Benefits, Small and Medium Sized Enterprises

Introduction

Most recent research studies specify that electronic commerce (e-commerce) is providing numerous advantages to SMEs. The abundant availability of information and communication technology (ICT) infrastructure has enabled e-commerce to flourish (Shaltoni et al., 2018). Numerous researchers have asserted that due to availability of the ICT systems, e-commerce can deliver a lot of benefits to organizations at various levels, such as enhancing the level of earnings and profitability, reduction in operating costs, delivery of service within the shortest time and in a better way in the national as well as international markets (Fan, 2019). It is found in past studies that various internal as well as external drivers have a very decisive role in e-commerce adoption in SMEs. Some factors act in a positive way while others act in a negative way. This composition of both negative and positive relationships of different factors made the adoption of e-commerce a complex structure for SMEs in developing economies (Kuruwitaarachchi et al., 2020).

E-Commerce is an internet-based business tool and is expressed by Turban et al., (2010), "it is a process of doing commercial transactions including services and information through internet and integrated appliances". In the same way, Abdullahi, Jakada, and Kabir (2015) pointed out that e-commerce is the selling and buying of services, products and information by way of computer networks. In the recent past, Shemi and Procter (2018) argued that e-commerce is changing the business dynamics of SMEs which was adopted for performing business dealings through online mode. Alyoubi (2015) and Kurnia

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et al., (2015), asserted that e-commerce holds substantial capability to enhance domestic and global financial development. A study performed by Elbeltagi et al., (2016) wherein found that e-commerce can perform a pivotal function in providing effective control as well as providing economic support to most of the businesses.

E-commerce is a web-based platform that is very beneficial for large companies and has acted now as a vital business tool for SMEs. In developing countries, e-commerce not only aids SMEs in lowering their operational and transaction expenses but has travelled above the old-fashioned selling techniques like telling and selling through physical meetings with customers. E-commerce has given the opportunity to choose the required product or select the suitable service from abundant resources made available on one platform by different business units that are operating in a limited sales capacity (Abed, 2020). Resultantly, it has now become necessary for SMEs should adopt the platform of e-commerce so that these businesses can sustain their existence while making growth in the cutthroat competition, for which active backing and legal support from government institutes is also needed (Nazir & Zhu, 2018).

Governments of the developing countries do recognize and regulate Small and Medium Size Enterprises. This business sector is contributing positively to the financial well-being and strength of the country by providing new employment opportunities to the unemployed workforce (Hashim et al., 2018; Ratten, 2014). The SME's contribution factor in providing employment to a vast number of people in a society is believed to be above 65 percent while more than 85 % of business entities are Small and Medium Enterprises (Raza et al., 2018) and SMEs have great importance in developing economies (Rao et al., 2021). The pivotal role of SMEs has not been given due importance in the past because it was thought that some big business entities are contributing to the monetary well-being of the economy. But now SMEs are also helpful for generating foreign investments and enhancing the existing foreign reserves in the country. Researchers belonging to East Asian Nations believe as per reports of research studies that the potential of SMEs' growth in the economies of these countries has been noticed mainly due to the growth in their SMEs (Khattak et al., 2011).

The present study focused on the SME division of Pakistan. Location of this country is South Asia having more than 230 million inhabitants. Agriculture is the main source of income for most of the people and in addition to this, like other underdeveloped nations, there are different segments of businesses which contribute to the national economy. Realizing the significance of SMEs by Ministry of Trade and Commerce Pakistan formed a department which supports the SME sector in the country and it is named as "*Small and Medium Enterprises Development Authority*" (SMEDA). The objective of SMEDA is to develop rules and procedures to support and sponsor SMEs. In addition to that, it aids in setting up the system of education and assistance to the industrialists (Hyder & Lussier, 2016). Per capita income of Pakistan during 2017-18 was $1,641 (Ministry of Finance Pakistan, 2018). The main supporting segments of Pakistan's economy are Agriculture, Manufacturing and Services. SMEs in general referred to as small and medium-sized enterprises but so far there is no consensus on a specific accepted meaning of SMEs and as a result of this obstacle, it has become challenging to define SMEs.

A report by the United Nations of one of the Conference on Trade and Development (UNCTAD) has described that, with the passage of time, usage of internet-based technologies is getting stronger and their user-friendly interface and inventions of different gadgets, like cell phones, laptops, PC tablets etc. are making it an essential platform to establish all kinds of links including sales and marketing, especially in emerging economies (UNCTAD, 2021). Considering in detail the business environment of Punjab in Pakistan, out of the many factors discussed above, for this study we have selected the following six (6) factors that are expected to

significantly affect the adoption of e-commerce in the SMEs sector of Punjab. These include TMS (Top Management Support), Perceived Benefits (PB), Adoption Cost (AC), Payment Mode/Type (Pm/T), Government Support (GS) and Technology Awareness and Knowledge (TAK).

There is a strong need to find such factors or drivers which can affect the adoption of e-commerce by SMEs. Limited studies are available to identify such drivers which affect the e-commerce adoption by SMEs sector in the Punjab province of Pakistan. No such study is conducted in Punjab. This study will examine the effect of such drivers on the adoption of e-commerce by SMEs in a combined manner. Therefore, this study will contribute to highlighting the various drivers towards the adoption of e-commerce in Punjab.

Review of the Literature

The government of Pakistan in the year 1998, established an independent body and named it SMEDA (Small and Medium Enterprise Development Authority) to assist SMEs in every dimension like setting up, and financing their projects etc etc. SMEDA is also entrusted with the task of formulating regulations and rules regarding SME's development, progress and growth. It has been observed in Pakistan that about 80% of all business enterprises are established under the shadow of SMEs. Presently, according to one of the reports, around thirty-two million SMEs are listed (SMEDA, 2018). Moreover, SMEs in Pakistan are directly or indirectly contributing nearly about forty percent to the GDP of the country (Economic Survey of Pakistan, 2018). This chapter examines the literature considering the adoption of e-commerce by SMEs in Panjab, Pakistan. Literature available in previous studies is examined. For this study, we have selected six (6) drivers that influence e-commerce adoption by SMEs. These drivers are Top Management Support, Perceived Benefits, Adoption Cost, Payment Mode/Type, Government Support and Technology Awareness and Knowledge. The relationship of these factors with e-commerce adoption is also explained.

Numerous business and financial systems which were operating in many countries have seen a substantial drift in the twenty-first century. For example, economic reports of Asia Pacific have narrated that, SMEs are contributing more than 50% to providing and creating employment opportunities (APEC, 2018). In addition to that, APEC countries' GDP is being contributed about 20 to 50 percent by the SMEs growth. Moreover, in ASEAN countries, SMEs contribute about 63.3 percent to the overall employment of the countries and 42.2 percent is being contributed to the overall gross value of the country (ASEAN, 2020). Furthermore, 95% and 70% are being contributed by SMEs to the employment and GDP respectively of the countries which are low-income countries. Therefore, it can be claimed that like any other form of business, SMEs have now become very essential for every economic structure of the globe (Zafar & Mustafa, 2017).

For the purpose of our study, out of many variables identified by researchers affecting the e-commerce adoption in SMEs, this research selected the following variables namely Top Management Support (TMS), Perceived Benefits (PB), Adoption Cost (AC), Payment Mode/Type (PM/t), Government Support (GS) and Technology Awareness and Knowledge (TAK). Now we discuss in detail each variable and its effect on the SMEs' e-commerce adoption.

Empirical Studies

Top Management Support (TMS)

Top management performs an authoritative part in e-commerce adoption, since it speeds up the carryout of the implementation process, by accepting the switching from conventional to the new advanced technological system which also requires to change in the infrastructure. Positive assumptions of the top management in disseminating the change most of the time design the overall direction of the business (Baker, 2017). It is the duty of the top management to give

emphasis on the increased output which could be possible by means of using e-commerce. It also needed to have a skilled executive team which is capable of creating on the ground the vision of the firms, top management provision has appeared as a serious structural aspect that touches on technologies' adoption (Nizamani 2019). Usually, information flows from top to bottom, in most of the Pakistani organizations (Sheikh et al., 2018). Singh et al., (2019) recommended that top management support has a substantial role in implementing technology usage like the adoption of e-commerce specifically in SMEs.

Top Management patronage is connected with the firm's owners accelerating the importance of the adoption of e-commerce and assurance to it (Jitpaiboon, Vondermbse & Asree, 2010). The positive relationship between firm performance and top management support is found in past empirical studies (Popovi et al., 2018; Sing et al., 2019). Similarly, top management support influenced the usage of technological innovation in the form of the adoption of e-commerce in SMEs (Hussein et al., 2019). The operational and strategic level decisions can bring open innovation in the firms which are only possible by the top management. Moreover, organizational innovativeness depends on the awareness regarding open innovation to its employees which is only reflected by the top management support (Barham et al., 2020). Researchers have identified that in order to reduce the resistance to adopting the new technology, the top management role is indispensable in most organizations. Certainly, if top management performs its function in a positive and constructive way to adopt new technology, the organization members accept the change like e-commerce (Tajudeen, Jaafar & Ainin, 2018). Earlier researchers have taken into account the individual mental perception about the possible prospects of adoption of e-commerce (Liang et al., 2007). However, top management support is an indispensable strategic resource and factor that serves to increase firms' suitable growth (Sing et al., 2019).

It is an established and verified phenomenon in SMEs that whenever owners and managers have a positive attitude toward the latest technologies, it becomes easier to adopt such technologies and decisions are steadily made (Hamad, Elbeltagi & El-Gohary 2018). According to Hussain et al., (2020), the adoption of e-commerce in Pakistan is still at the initial level, TMS has a very decisive and critical role towards implementing e-commerce which may result in increased performance of SMEs in Pakistan. Implementation of e-commerce is contingent more on the attitude of the firm's administration (Hussain et al., 2020). The research studies have verified that a firm's chief executive plays an effective role in the implementation and expansion of e-commerce. Moreover, according to Hussain et al., (2020), the support and encouragement from top management can play a role in minimising the confrontation towards IT adoption from the staff. Hence, top management support as drivers of the adoption of e-commerce in SMEs cannot be ignored (Sing et al., 2019).

Perceived Benefits (PB)

The consumer in any business environment has some inbuilt perceptions which affects the buying patterns of consumers in both positive and negative manners. Perceived benefits refer to the advantages in the business systems which result from using e-commerce applications in existing business setups (Rahayu, 2015; Agwu & Murray, 2015). In one study by Govinnage and Sachitra, (2019), perceived benefits are the perception of some benefits, likely to be obtained for adopting e-commerce. When considering online shopping, this type of advantage is not limited to the service or product itself but includes fast accessibility, ease of choices, and saving of cost and time (Kim et al., 2009). Without any doubt, a positive perception about the magnitude of Perceived Benefit normally converted to a tougher shopping intention. If a client is pleased that he or she will get more benefits given by the service provider of e-commerce, the customer is probably turned into a regular consumer. On the contrary, it is also

true that customer purchase intention decreases as their level of perceived benefits goes down and even customers can stop buying from such service providers. Conclusively, irrespective of developing and developed countries, purchase intention is positively affected by the perceived benefit of product and service.

The existing literature has revealed that the perceived benefits play a positive motivating role in increased usage of technology innovation (Sultan et al., 2018), which ultimately enriches the effectiveness and competitiveness of the firm (Ocloo et al., 2018). Perceived benefits have been defined by various scholars in their own ways. They have also noticed that perceived usefulness and relative advantage are sometimes used interchangeably when pursuing the adoption of e-commerce (Karahanna et al., 2013). Many other types of research explored that the idea of perceived benefits is influencing a firm's choice regarding e-commerce adoption (Scupola, 2009). The contributing drivers or factors of the adoption of e-commerce in SMEs are examined by a number of factors and found that perceived benefits are a fundamental determinant regarding the preference towards e-commerce adoption and have a substantial role in the performance of SMES (Alam et al., 2020).

Some additional benefits which can be availed by SMEs by adopting e-commerce include as identified by Bhatti & Rehman (2019): variety and ease of selection, increase in sales revenues and growth in profits, effectiveness of commercial transactions, increase in employee productivity, obtaining customizing services to customer needs (Govinnage & Sachitra, 2019). Findings from the studies revealed that perceived benefits have a positive relationship with e-commerce adoption.

Adoption Cost (AC)

According to studies by Mohtaramzadeh et al., (2018) and Hussain (2021), an additional substantial element in a firm perspective is the sacrifice of e-commerce adoption. The more the technology costs the SMEs incur, the less the technology these SMEs use. Numerous researchers also emphasize that deficiency of funds is a main obstacle to the use of e-commerce in SMEs (Palm, 2018). This is the reason due to which the cost of adopting e-commerce is the main determinant and indispensable variable in developing countries for top management to take this factor in their decision-making (Mohtaramzadeh et al., 2018).

It has been well acknowledged through existing literature that there are both negative and positive streams associated with technology innovation adoption (Koh et al., 2006). Furthermore, the relative innovation price is very instrumental for SMEs in comparison with the bigger organizations because of the scarcity of funds like materials and labour (Gunawardana, 2020). On the other hand, an adverse connection is noticed between firm efficiency and transaction cost (Gunday et al., 2011). On the other, it has not been established whether adoption cost has any direct influence on firm performance. For that reason, some additional factors are needed to examine the relationship among operational efficiency, innovation and productivity at the firm level. Various costs of innovation have major effects on firm performance (Prajogo, 2016). Therefore, the association between business performance and adoption cost needs to be examined in more detail and existing literature also lacks the required data to arrive at conclusive evidence.

Adoption cost is a combination of different costs incurred as a result of e-commerce usage and is taken as a strong driver in SMEs (Sila, 2013). Similarly, it has been argued in the past literature that it will be easier to implement in the firm if the cost of adopting technology is low (Wymer & Regan, 2015). Chen & Zhu (2004), in one of their studies, narrated a significant relationship between IT investment and e-commerce adoption. The existing studies recommended that various factors have effects on adoption costs like that of external connections which is important in Business-to-Business global market penetration (Yoon, Shin & Lee, 2016). Many researchers in contrary to it suggested an inverse association between various ITC-related costs

and e-commerce adoption (Gunday et al., 2011).

Payment Mode / Type (Pm/T)

The history of e-commerce has a straight link to Cyberspace history. In 1991, when the Internet was free for the public an era of online shopping was made possible (Miva, 2020; Alam et al., 2020). E-commerce is described as a business prototype by way of purchasing goods and services over the Internet (Ardianash, 2020). Payment against these goods and services uses an internet platform and is termed a mobile payment system. This is a system that permits consumers to pay for buying via smartphones (Satar, 2019). The online business is the extension of e-commerce which allows consumers to buy goods and services via wireless devices including laptops, smartphones and tablets in commercial online transactions (Narwal, 2019). Considering today's busy life schedules, the popularity of using e-commerce is increasing day by day as it allows customers to make spending from anywhere and deliver goods without any annoyance. The acceptance of online shopping or e-commerce is due to the perspective of online business. Selling and buying goods online has been made possible. Provision of financial information and services via the Internet and converting or sending money instantly is being practised by businesses (Bezoski, 2016).

Advanced countries have opted for a lot of electronic payment instruments like debit cards, credit cards, e-cheques, mobile payments, smart cards and e-wallets, but countries like Pakistan which is a developing country are using cash on delivery payment mode (Hira, 2017). There is a cash economy in Pakistan and people feel it is very safe and appropriate to practice shopping by physical currency (Khan et al., 2017). Cultural differences have an important effect in choosing the payment mode. It has been found that a momentous segment of consumers have no availability of e-payment opportunities and they never preferred using e-payment methods. COD (Cash on Delivery) is becoming a common mode of payment within the country. It permits the consumers to buy a new product without any advance payment. It allows the customers to order a product without having to pay for the same in advance. COD is a widely accepted mode of payment in UAE, Myanmar, Bangladesh etc. (Jana, 2017; Halaweh, 2018). A positive trend has been noticed in Pakistan for opting for the COD payment method and this trend is increasing in number when evaluated with other South Asian countries. Researchers have also noticed that a more thorough investigation needs to be undertaken to investigate the key elements affecting COD (Imtiaz, Ali & Kim, 2020).

Since there is no involvement of any banking channel in the COD payment system, therefore, COD transactions are considered safe. According to studies by Jana (2017), COD is considered a satisfaction means for most of consumers. In addition, COD is also another choice for those customers and youth who don't have access or facility of debit or credit cards or other facilities for e-payments (Investopedia, 2018). Customers make payments at the time of delivery of goods or services. Therefore, customers make payments for their online shopping after they receive their products at their doorstep and make payments on the spot (Chiejina & Olamide, 2014).

Government Support (GS)

It is an established fact that government agencies play an important role in organizational innovativeness (Wang et al., 2020). The researchers have developed two indicators to measure the role of government support. The first indicator is the degree to which the government shows its availability in providing facilities for using technology like the Internet and other related items. The second indicator is connected with government reinforcement and support in motivating SMEs for e-commerce adoption. Notably, Zhu and Kraemer (2005) found that those firms which have to follow strong government regulations are less likely to adopt e-commerce. Contrary to that Salwani et al., (2009) have observed that e-commerce adoption is only possible with the support of government regulations and these regulations can affect the adoption of e-commerce positively or negatively. Similarly, Scupola (2009) asserted that government support for internet access and the width of the internet can influence the usage

of e-commerce in the country. This study expected that government support will act as an influencing factor for SMEs to adopt e-commerce.

Past literature found that government policies have a critical role in SME innovation and implementation (Lee, Narjoko & Oum, 2019). It means government preventive and corrective measures are instrumental to resolving various issues including research and development departments' establishment in international markets and bringing advancements in products and services through the latest technology. Open innovation in the 21st century is the most important concern of businesses. In the developed world, the governments of countries like Singapore and Australia have supported the promotion of open innovation platforms for online shopping or usage of e-commerce (Yun & Liu, 2019). There is a scarcity of literature in relation to innovation, government support and firm performance in developing countries like Pakistan (Hussain, Li, & Sahibzada 2023). Hence, past literature found that the penetration of e-banking, e-learning, e-marketing and e-government is only possible if the government supports it and vice versa Sanchez et al., 2018; Shahzad et al., 2020). Therefore, it is concluded from the above debate of the literature that SMEs performance is influenced positively or negatively through different factors, particularly government support. It is required to find the effect of government support's impact on the firm performance through e-commerce adoption, and this present study is likely to fill this requirement.

Pakistan Ministry of Commerce & Textiles adopted a comprehensive e-commerce policy in 2019. It has provided a motivating and consumer-protecting space for the flourishment of e-commerce with a special emphasis on SMEs with reduced taxation, the latest infrastructure facility and logistics. All these findings of previous research suggest that GS to businesses through transparent laws help promote e-commerce around the globe (Billal, Shin & Sim, 2019). In most of the developing economies government support helps SMEs to strive in the market competition through legislation and implementation of various policies. The resource support and regulatory support by the government play the role of a facilitator for start-ups and SMEs to opt latest technologies for day-to-day activities (Trang et al., 2016). Hence it is observed from the above discussion that the government support acts positively towards the adoption of e-commerce.

Technology Awareness and Knowledge (TAK)

Awareness about Information Technology and related infrastructure is actually an integration of the organization employee's knowledge about related IT infrastructure and technical skills. The technical skills of employees and IT infrastructure are significant and without these factors, it is hard to revamp any firm value chain that is dependent on advanced technological innovations (Oliveira & Martins, 2010). The present research tries to find out the impact of IT human resources and IT infrastructure on the adoption and usage of e-commerce in the context of Pakistan to fill the paucity of literature. It is also important to discuss that IT infrastructure is required to use certain technologies so that these can be implemented in place through software and hardware. SMEs generally have limited financial resources to access the latest technologies. However, the extra cost of using e-commerce is low compared to the cost of traditional business procedures or processes (Shahzad et al., 2020). Furthermore, the cost of operations can be reduced by those firms that have the latest IT infrastructure. IT infrastructure and firm performance have an insignificant relationship because of perceived negativity about online financial payment methods and financial transactions.

Organizational ability in a technological context is identified, as how quickly it is shifted to innovation and new technologies (Turban & Volonino, 2011). The features of e-commerce adoption are defined by technological factors such as the relative advantage of technology and technology readiness (Rahayu & Day, 2015). IT skills and knowledge imply the individual's perception regarding her or his ability to adopt an IT system (Terzis & Economides, 2011). The

ability to use IT determines the e-commerce usage which is only possible by computer literacy. On the contrary, lack of skills, knowledge and awareness of IT are the major hindering factors of e-commerce adoption (Kapurubandara & Lawson, 2006). Hence, it is thought that if employees in any country have sufficient IT skills and knowledge, it would add significantly and positively to their determination of e-commerce usage (Arromdee& Suntrayuth, 2020).

Technology awareness creates the effect of ease of doing business. Through the use of technology, businesses connect to their customers and other stakeholder with a single click on their computer. Technology has opened the gateway to the whole world without boundaries (Billal, Shin & Sim, 2019). It is evident that e-commerce depends on the availability and efficiency of the technology in that particular demographic area. Several researchers have investigated various technological factors associated with e-commerce adoption, and the most frequently cited framework is the technology–organization–environment framework introduced by Kumar et al., (2016). According to Awa et al. (2015), and Rahayu and Day (2015), technological factors relate to internal and external factors, such as technical compatibility, and observability.

The implementation of e-commerce depends on capabilities for using IT and related equipment and any limitations in IT-related skills and awareness act negatively (Arromdee & Suntrayuth, 2020). If the staff and management have sufficient IT knowledge and technological awareness this factor will positively contribute to e-commerce adoption.

Hypothesis Development

H1: There is a positive impact of TMS (Top Management Support) on the adoption of e-commerce in SMEs.

H2: There is a positive influence of Perceived Benefits on the adoption of e-commerce in SMEs.

H3: There is a negative impact of Adoption Cost on the adoption of e-commerce in SMEs.

H4: There is a positive influence of Payment Mode/Type on the adoption of e-commerce in SMEs.

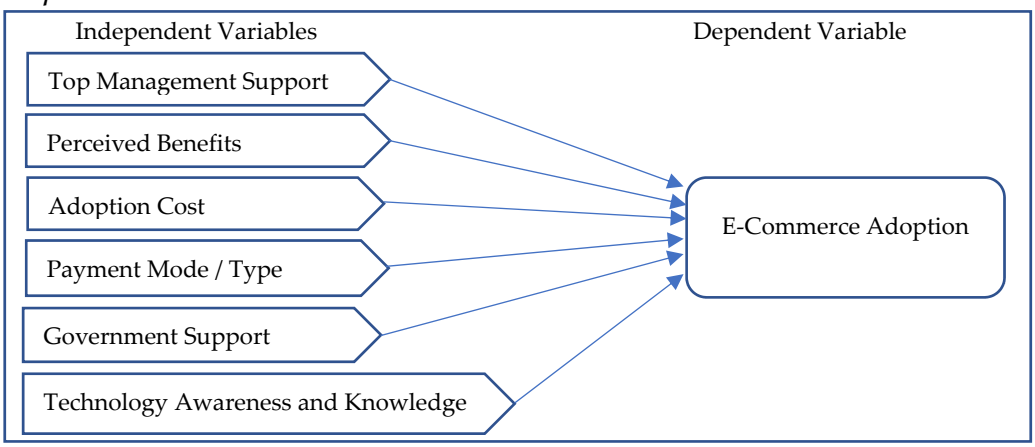
H5: There is a positive effect of Government Support on the adoption of e-commerce in SMEs.

H6: There is a positive impact of Technology Awareness on the adoption of e-commerce in SMEs.

Conceptual Framework

Figure 1

Conceptual Framework



Methodology

This portion of the study describes how the research is carried out. This research used a quantitative research approach (Rahman, 2020). Predominantly quantitative method, adopt the survey method so as to obtain deep and comprehensive information. Furthermore, the object which is being studied is called the unit of analysis (Sekaran, 2004). This research aim is to examine the impact of Top Management Support, Perceived Benefits, Adoption Cost, Payment Mode/Type, Government Support and Technology Awareness and Knowledge on e-commerce adoption by SMEs. In the present study, Top Management Support, Perceived Benefits, Adoption Cost, Payment Mode/Type, Government Support and Technology Awareness and Knowledge are independent variables while e-commerce adoption is selected as the dependent variable.

This study focused on Small and Medium Sized Enterprises (SMEs) having their operations in Punjab, Pakistan. Punjab is the hub of business activities in Pakistan. The target population of this research is manufacturing SMEs operating in Punjab. There are about 3.2 million SMEs in Punjab. The sample consists of SMEs operating in Lahore. Managerial-level employees of SMEs are selected as respondents. The reason for selecting SMEs in Lahore is because Lahore is the capital city of Punjab and it is enriched with a large number of well-established SMEs. The sample size of this research was 400. This size was suitable as SEM was used for analysis in this study. SEM applicants normally used sample sizes from 250 to 500 (Lei & Lomax, 2005). Questionnaires were floated in SMEs located in Lahore for data collection. This research applied simple random and convenience sampling techniques for our study. This procedure is used due to constraints of time and cost. This is the simplest technique as suggested by Sekaran (2010). Moreover, this technique keeps the researcher away from biases. The sampling units of our study were Managerial level employees.

In this study, the questionnaire which was adapted from past studies comprises two parts. Part A pursued demographic information relevant to research respondents utilizing a nominal scale. Part B of the instrument is made up of questions about the factors contributing to the adoption of e-commerce in SMEs. For measuring Top Management Support (TMS) 3-item scale is used which is taken from the study of Hussain et al. (2020) having a Cronbach Alpha value of 0.967. For PB 7-item scale is adopted having a Cronbach Alpha value of 0.768 taken from the study of Ahmed et al. (2017). For AC 4-item scale is adapted from the study of Choshin & Ghaffari (2017) having a Cronbach Alpha value of 0.880. While PM/T 6-item scale is adapted having Cronbach Alpha value 0.850 from the study by Anjum & Chai (2020). For GS, the 5–item scale is adapted to having a Cronbach Alpha value of 0.778 from the study by Govinnage & Sachitra (2019). Lastly for TAK 4-item scale having a Cronbach Alpha value of 0.788 is adapted from the study by Arromdee & Suntrayuth (2020). 400 questionnaires were sent to the top and middle-level managers of selected SMEs for data collection purposes. This is the simplest technique as suggested by Sekaran (2010). Moreover, it is inserted that this technique keeps the researcher away from biases. The Validity and Reliability of the proposed model and data is checked by Smart PLS. Regression and correlation techniques were run to test the hypothesis and to generate the results. The adapted questionnaire is attached in Appendix A.

Econometric Model

$$EC(i) = \alpha 1 + \beta 1TMS(i) + \beta 2PB(i) + \beta 3AC(i) + \beta 4PMT(i) + \beta 5GS(i) + \beta 6TAK(i) + \mu(i)$$

Where EC(i) denotes the E-Commerce adoption of ith firm. $\alpha 1$ is the intercept and $\beta 1$ represents the slope of the Co-efficient. While TMS(i) is the Top Management Support of ith firm and independent variable. PB(i) is the perceived Perceived Benefits of ith firm. AC(i) is

the Adoption Cost of ith firm. PMT(i) is the Payment Mode/Type of ith firm. GS(i) is the Government Support of ith firm.TAK(i) is the Technology awareness and knowledge of ith firm and μ(i) is the error term of ith firm.

Results & Discussions

To analyze the relationship of e-commerce adoption with the selected drivers which are: Top Management Support, Perceived Benefits, Adoption Cost, Payment Mode/Type, and Government Support and Technology Awareness /knowledge by SME's in Punjab, a sample of 400 SME's which were located in Lahore was selected and 350 respondents filled the questionnaires making it 87.5 % response rate making the sample a sufficient for this study.

In the first stage, the instrument's validity and reliability are tested and then the hypotheses are tested. While assessing the measurement model of this study, all items' outer loading is run to assess the internal item reliability. This step has been recommended in previous studies (Hair & Lukas, 2014). All items which were below the minimum benchmark of average variance extracted (AVE) which is below 4 were deleted (Hair, 2010). Regarding this study results showed that all items' factor loading is above 5 however, no item was deleted.

Table 2

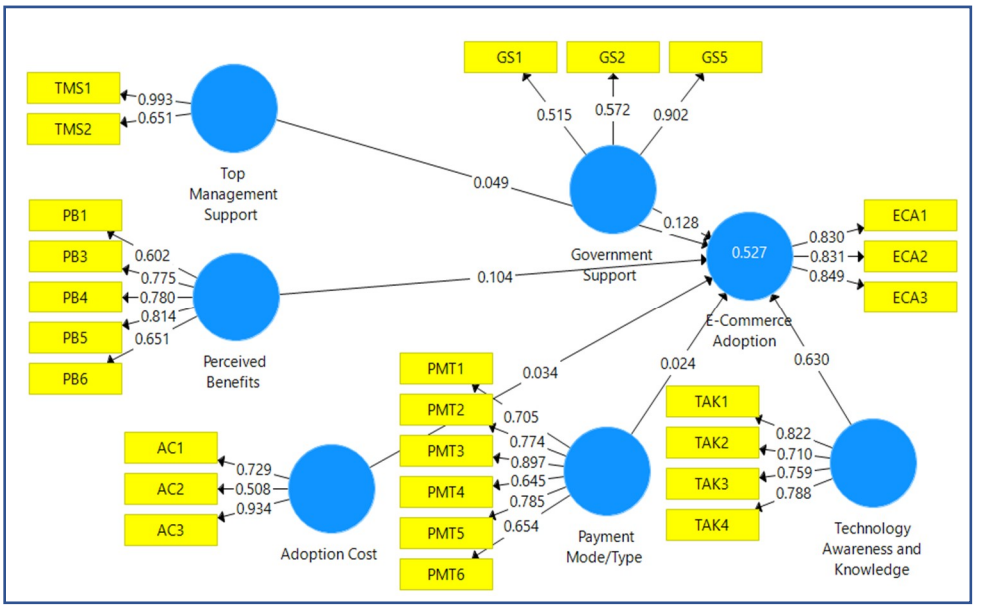
Data Statistics.

	S. No	Missing	Mean	Median	Min	Max	Standard Deviation	Excess Kurtosis	Skewness
TMS1	1	0	1.733	1	1	5	1.096	1.982	1.633
TMS2	2	0	2.491	2	1	5	1.432	-0.97	0.653
TMS3	3	0	2.298	2	1	5	1.045	0.699	0.927
PB1	4	0	2.348	2	1	5	1.339	-0.273	0.941
PB2	5	0	2.553	2	1	5	1.337	-0.822	0.484
PB3	6	0	2.137	2	1	5	1.123	-0.697	0.631
PB4	7	0	2.329	2	1	5	1.355	-0.411	0.941
PB5	8	0	2.031	2	1	5	1.187	0.487	1.199
PB6	9	0	2.248	2	1	5	1.261	0.033	0.965
PB7	10	0	2.404	2	1	5	1.302	-0.693	0.7
AC1	11	0	2.087	2	1	5	1.166	0.532	1.135
AC2	12	0	2.13	2	1	5	1.247	-0.386	0.895
AC3	13	0	2.05	2	1	5	1.056	0.843	1.177
AC4	14	0	2.211	2	1	5	1.258	-0.323	0.898
PMT1	15	0	2.155	2	1	5	0.982	-0.208	0.637
PMT2	16	0	2.385	2	1	5	1.41	-0.702	0.794
PMT3	17	0	1.957	2	1	5	0.955	0.465	0.953
PMT4	18	0	2	2	1	5	1.028	0.679	1.109
PMT5	19	0	2.453	2	1	5	1.387	-0.742	0.724
PMT6	20	0	2.311	2	1	5	1.176	0.1	0.88
GS1	21	0	1.925	2	1	5	1.013	1.156	1.274
GS2	22	0	2.019	2	1	5	1.139	0.316	1.032
GS3	23	0	2.168	2	1	5	1.143	0.661	1.075
GS4	24	0	2.286	2	1	5	1.297	-0.18	0.954
GS5	25	0	2.012	2	1	5	0.939	0.631	0.974
TAK1	26	0	2.099	2	1	5	1.227	0.304	1.132

	S. No	Missing	Mean	Median	Min	Max	Standard Deviation	Excess Kurtosis	Skewness
TAK2	27	0	1.857	2	1	5	0.918	0.673	1.066
TAK3	28	0	1.832	2	1	5	0.893	1.224	1.129
TAK4	29	0	2.13	2	1	5	1.191	0.572	1.149
ECA1	30	0	2.087	2	1	5	1.111	0.852	1.17
ECA2	31	0	1.863	2	1	5	0.956	2.88	1.615
ECA3	32	0	1.876	2	1	5	1.002	1.55	1.338

Note: *Top Management Support; PB = Perceived Benefits; AC = Adoption Cost; PMT = Payment Mode/Type; GS = Government Support; TAK = Technology Awareness and Knowledge; ECA = E-Commerce Adoption.*

Figure 2



Note: *Top Management Support; PB = Perceived Benefits; AC = Adoption Cost; PMT = Payment Mode/Type; GS = Government Support; TAK = Technology Awareness and Knowledge; ECA = E-Commerce Adoption.*

Measurement Model Assessment

Peterson and Kim (2013) have explained that the most commonly used estimators to measure Cronbach's alpha, are internal consistency reliability and Composite Reliability (CR). The internal consistency reliability is obtained when the value of Cronbach's alpha is above 0.7 as shown in table 2. The convergent validity is also obtained because all the values of Cronbach's alpha and CR were more than 0.7. In addition, the value of AVE was greater than 0.5 which proved that convergent validity is obtained as shown in table 3.

Table 3

Factor Loadings, Composite Reliability and Average Variance Extracted (AVE).

Variables	Items	Loadings	Alpha	Composite Reliability	AVE
Adoption Cost	AC1	0.729	0.721	0.779	0.554

	AC2	0.508			
	AC3	0.934			
E-Commerce Adoption	ECA1	0.83	0.786	0.875	0.7
	ECA2	0.831			
	ECA3	0.849			
Government Support	GS1	0.515	0.701	0.707	0.534
	GS2	0.572			
	GS5	0.902			
Perceived Benefits	PB1	0.602	0.809	0.848	0.531
	PB3	0.775			
	PB4	0.78			
	PB5	0.814			
	PB6	0.651			
Payment Mode/Type	PMT1	0.705	0.863	0.883	0.56
	PMT2	0.774			
	PMT3	0.897			
	PMT4	0.645			
	PMT5	0.785			
	PMT6	0.654			
Technology Awareness and Knowledge	TAK1	0.822	0.772	0.854	0.595
	TAK2	0.71			
	TAK3	0.759			
	TAK4	0.788			
Top Management Support	TMS1	0.993	0.713	0.821	0.705
	TMS2	0.651			

Note: *Top Management Support; PB = Perceived Benefits; AC = Adoption Cost; PMT = Payment Mode/Type; GS = Government Support; TAK = Technology Awareness and Knowledge; ECA = E-Commerce Adoption.*

For measuring the discriminant validity, Henseler et al. (2009) proposed that a heterotrait-to-monotrait ratio (HTMT) be used. A maximum value of 0.90 was recommended by Gold, Malhotra and Segars (2001) no value should exceed this value. This study in addition to the above has addressed discriminant validity through AVE square root which is given in Table 4 below (Fornell and Larcker,1981). The results as given in Table 3 show that all values are below 0.90.

Table 4

Discriminant Validity (AVE Square Root).

	Adoption Cost	E-Commerce Adoption	Government Support	Payment Mode/Type	Perceived Benefits	Technology Awareness and Knowledge	Top Management Support
Adoption Cost	0.744						
E-Commerce Adoption	0.095	0.837					
Government Support	0.305	0.463	0.658				
Payment Mode/Type	0.652	0.122	0.305	0.748			
Perceived Benefits	0.483	0.05	0.285	0.54	0.729		
Technology Awareness and Knowledge	0.052	0.713	0.519	0.108	0.062	0.771	
Top Management Support	0.424	0.141	0.403	0.446	0.548	0.115	0.839

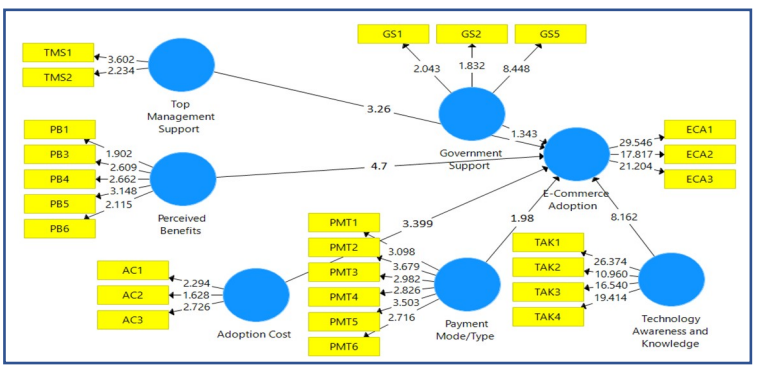
Table 5

Discriminant Validity ($HTMT_{0.85}$).

Adoption Cost	Adoption Cost	E-Commerce Adoption	Government Support	Payment Mode/Type	Perceived Benefits	Technology Awareness and Knowledge	Top Management
E-Commerce Adoption	0.522						
Government Support	0.679	0.491					
Payment Mode/Type	0.506	0.128	0.803				
Perceived Benefits	0.809	0.074	0.771	0.808			
Technology Awareness and Knowledge	0.078	0.612	0.504	0.102	0.088		
Top Management Support	0.671	0.163	0.661	0.517	0.837	0.127	

Figure 3

Structural Model Assessment.



Note: *Top Management Support; PB = Perceived Benefits; AC = Adoption Cost; PMT = Payment Mode/Type; GS = Government Support; TAK = Technology Awareness and Knowledge; ECA = E-Commerce Adoption.*

The structural assessment model was utilized to determine the path co-efficient significance and this was done by carrying out the PLS bootstrapping. Figure 2 demonstrates the structural model assessment. Hair and Lukas (2014) laid down the process for the structural

assessment model which is followed by this research. The findings of this structural model assessment are shown below in Table 6.

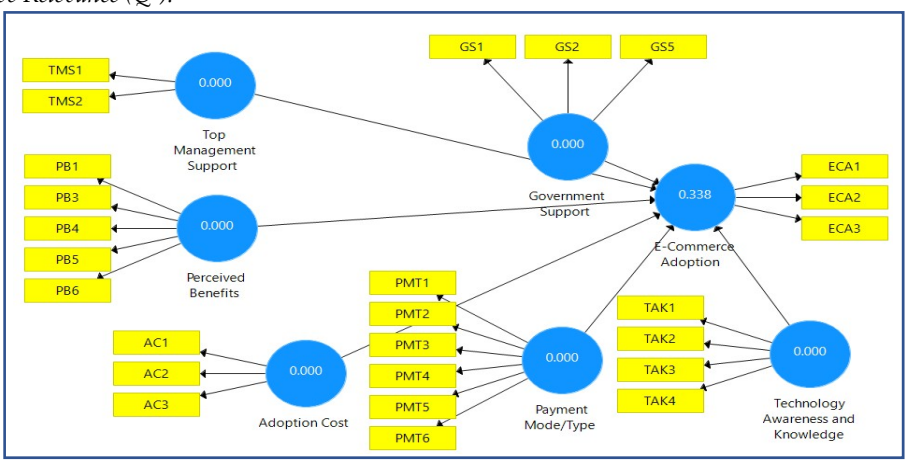
Table 6

Results.

	Original Sample (O)	Sample Mean (M)	Standard Deviation	T Statistics (|O/STDEV|)	P Values
Adoption Cost -> E-Commerce Adoption	0.034	0.025	0.01	3.399	0.001
Government Support -> E-Commerce Adoption	0.128	0.128	0.096	1.343	0.18
Payment Mode/Type -> E-Commerce Adoption	0.024	0.028	0.012	1.98	0.04
Perceived Benefits -> E-Commerce Adoption	0.104	0.08	0.022	4.7	0
Technology Awareness and Knowledge -> E-Commerce Adoption	0.63	0.63	0.077	8.162	0
Top Management Support -> E-Commerce Adoption	0.049	0.03	0.015	3.26	0.001

Figure 4

Predictive Relevance (Q^2).



Note: *Top Management Support; PB = Perceived Benefits; AC = Adoption Cost; PMT = Payment Mode/Type; GS = Government Support; TAK = Technology Awareness and Knowledge; ECA = E-Commerce Adoption.*

Table 7

Predictive Relevance (Q^2).

	SSO	SSE	Q^2 (=1-SSE/SSO)
Adoption Cost	483	483	
E-Commerce Adoption	483	319.7	0.338
Government Support	483	483	
Payment Mode/Type	966	966	
Perceived Benefits	805	805	

	SSO	SSE	Q^2 (=1-SSE/SSO)
Technology Awareness and Knowledge	644	644	
Top Management Support	322	322	

This research model's overall quality is assessed by the predictive relevance which is suggested by Henseler et al. (2009). It is recommended that the value of Q^2 which is predictive relevance should be above zero to achieve the appropriate level of model quality. In addition, predictive relevance is examined through PLS which has a blindfolding procedure (Hair et al., 2014) as exhibited in Table 6 above. The value of predictive relevance of this research is 0.338 which is greater than zero.

Discussions

The above analysis demonstrates that there is a positive and significant relationship between E-Commerce Adoption and Top Management Support. The results as expressed in Table 5 show a value of t = 3.26 and that of β = 0.049. These results support H1. This study proves that Top Management Support affects e-commerce adoption. This result is also supported by previous studies of Hussain et al., (2020) and by Sing et al., (2019).

Likewise, there is a significant and positive relationship between E-Commerce Adoption and Perceived Benefits. According to the results the value of t = 4.7 and β = 0.104. This result supported H2. The findings obtained in this study are in conformity with previous studies conducted by Govinnage & Sachitra (2019).

The cost of adopting new technologies always remains an obstacle for developing countries. Contrary to our hypothesis, this study found a significant and positive relationship between Adoption Cost and E-Commerce Adoption. At present times most of the SMEs are using cloud servers and other equipment on which Government has announced special reduced taxation and other measures to enhance the usage of computer-based equipment. For this study, the value of t = 3.399 and β = 0.034. Resultantly hypothesis H3 is rejected. From the previous studies, Adoption Cost has both negative and positive effects on e-commerce adoption, as explained by Arromdee & Suntrayuth (2020). The present study's findings conclude that adoption cost is no more a negative influencing driver that can affect the usage of e-commerce by SMEs in Punjab, Pakistan.

The relationship between E-Commerce Adoption and Payment Mode/Type found the value of t = 1.98 and β = 0.024 which shows a significant positive relationship between these variables. These results support hypothesis H4. Nowadays, innovative payment modes are gaining popularity and affecting positively e-commerce adoption (Kabir et al., 2020; Putri et al., 2019) which is duly supported in our study.

Governments of developing economies are developing particular policies and giving special financial benefits to larger firms to boost the adoption of e-commerce in their business (Mohtaramzadeh et al., 2018). On the other hand, there is little attention given to SMEs for the adoption of e-commerce by the governments of developing economies. Likewise, the Pakistan government is also formulating policies and providing incentives to big firms for the usage of e-commerce and SMEs are being ignored or given little attention for the above-mentioned purpose of e-commerce usage. The inverse relationship is found between Government Support and e-commerce adoption in this study having a t value of 1.343 and β = 0.128 therefore, hypothesis H5 is rejected. Both positive and negative relationships are found in previous studies conducted by Hamad, Elbeltagi & EI-Gohary (2018). Results obtained in this study did not support our hypothesis and revealed that Government Support has not appeared to be a significant factor for SMEs in adopting E-commerce.

Results concerning the relationship between E-Commerce Adoption and Technology Awareness and Knowledge found the value of t = 8.162 and β = 0.63 which is a strong positive

relationship and supports hypothesis H6. Our study is also supported by previous findings as expressed by Arromdee and Suntrayuth (2020).

Conclusions and Recommendations

The main purpose of this research was to check the relationship between Top Management Support, Perceived Benefits, Adoption Cost, Payment Mode/Type, Government Support and lastly Technology Awareness and Knowledge on e-commerce adoption by SMEs in Punjab, Pakistan. Data was collected from the SMEs operating in Lahore, Punjab, Pakistan. A convenient and simple random sampling technique was used. Questionnaires were floated to 400 respondents, by using a self-administrated method. PLS-SEM (Partial Least Squares Structural Equational Modeling) was used to analyze the data and to test the hypothesis.

The findings of the present study discovered that Top Management Support, Perceived Benefits, Adoption Cost, Payment Mode/Type and Technology Awareness and Knowledge significantly and positively affect the phenomenon of e-commerce adoption by SMEs. Surprisingly, Government Support has a negative impact on e-commerce adoption, this is mainly due to the fact that we are not a developed country where a strong government plays the role of motivator and contributor. These variables may play an encouraging role in the adoption of e-commerce by SMEs and hence act as contributors to the economic well-being of Pakistan.

Recommendations

In this study, we have not taken into account all the factors that have an effect on e-commerce adoption due to the human limitation to review the whole literature available on the subject. Hallikainen and Laukkanen (2018) in one of their studies have established that among many other factors, the value system of that particular country or nation also plays a substantial role in creating belief in e-commerce. Keeping in view this limitation, it is therefore suggested that some additional factors which may cause possible effects on e-commerce adoption might be scrutinized. One of the studies by Kahraman, Tektas, & Coskun, (2019) on Turkish online consumers discovered that demographic characteristics affect their behaviours. Therefore, future research on e-commerce should consider these characteristics.

In addition, it is also important and valuable thought that entrepreneurs should comprehend the possible threats of business failure if they fail to adopt new technologies, new resources should be acquired to make progress and enhance prosperity. Thus, this study will make contributions to the existing literature. Resultantly various economic decision-makers like businessmen, investors, and bureaucrats will have in-depth knowledge about e-commerce adoption factors in SMEs in the province of Punjab and other provinces also. It is further recommended that for any future study, for computing the successful adoption of e-commerce one may compare the SME sector of other developing countries. while at the same time, the economic situation of these nations may also be taken into account.

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