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Factors affecting customers' satisfaction in e-commerce marketplace during COVID-19 pandemic: developing market context

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Abstract: COVID-19 pandemic is forcing consumers from developing countries along with their peers from developed markets to opt for online shopping and undertake many more activities feasible through the help of information and communication technology (ICT). This is a relatively new phenomenon for some developing countries' markets. Therefore, we aim to examine the factors that affect customers' satisfaction on using the e-commerce system in culturally diverse developing countries. A survey questionnaire was designed and randomly distributed to 260 respondents in order to find out how customer satisfaction depend largely on factors such as service quality, information quality, and system quality as well as perceived usefulness and self-efficacy. The study found that IQ, SYSQ, PU, and SE have significant positive relationship with customers' satisfaction on e-commerce. However, SEVQ did not have any significant relationship with customer' satisfaction towards e-commerce. This study addresses important evidence on how e-commerce can respond to COVID-19 transition and receive numerous benefits from online marketplace. The findings can help managers in e-commerce sector to contextualise while formulating their business policies and develop marketing strategies in developing market context in order to improve the willingness of customers to engage in online purchasing.

Keywords: e-commerce; developing economy market; customers' satisfaction.

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1 Introduction

Constraints of time and distance are vanishing now-a-days and the world has become an integrated community of sellers and buyers thanks to the formidable development of ICT that enable consumers from global marketplaces to interact with sellers through the digital information system. Physical marketplace is being transformed to an information-based marketplace, which allows lowering the cost of transaction, removing distance barriers and saving time and energy (Skordoulis et al., 2018). E-commerce is transforming the way people do participate in the marketplace and creating an open real-time market where participant can join anytime from anywhere. The growth of e-commerce offers a huge global marketplace for buyers and sellers. It poses important challenges, yet it also given great opportunities for business growth and development. Celik (2009) have indicated that e-commerce is product of the latest technology developments in ICTs and online payment systems making the transactions online ever easier. Development of digital cash transfer systems have further accelerated the virtual transactions. With the increased spread of reliable and cheaper internet service in the developing countries, e-commerce is becoming an important channel for B2B and B2C transactions.

As people are more and more devoted to online activities such as social networking, gaming and web surfing, e-commerce is becoming a normalised activity in many regions (Jiang et al., 2013). The COVID-19 has further increased the dependence on online business activities. The conditions of the COVID-19 crisis including government-imposed lockdown, isolation, and implementation of social distances has driven people to significantly limit physical interactions, which led to new purchasing behaviour in day-to-day shopping (Dirgantari et al., 2020). Since people have been

isolated at home, they gradually depended on digital platforms for many activities including purchasing daily necessities. Although many people have already adopted the digital platforms even before the pandemic, this new phenomenon has forced a huge number of new customer base to adopt and use digital platforms. Along with the individuals, this also led business organisations to perform most of their activities through digital technologies as the situation led to interrupting the local and global supply chain for countries (Gu et al., 2021).

As the residence of a developing country, Bangladeshi people have been affected parallelly by this pandemic and became dependent on digital platforms especially e-commerce platform for purchasing their daily essential goods (Neger and Uddin, 2020). However, the e-commerce sector in Bangladesh is still progressing and the infrastructure has not developed yet to compare with developed countries. Despite the delay in digitalisation infrastructure in developing countries, some of them, including Bangladesh has lately invested in improving its digital infrastructure and enabling its citizen to have access to the information superhighway and conduct many activities using this system. This late adoption of the digital platform may deliver customers a mixed experience and different degree of satisfaction while purchasing online because of system and IQ, security, usefulness to use, the layout of the online marketplace, and so on.

The customers' satisfaction is a very important factor, which affects the customer intention to buy items online (Azam et al., 2012). Therefore, the customers' satisfaction is an essential condition for the success of companies. According to Kurnia et al. (2015) there are significant influence of environmental pressure on the adoption of various e-commerce technologies and customer satisfaction and might vary between developed versus developing economy context. Skordoulis et al. (2018) indicate that e-customer satisfaction determinants are the purchasing process, the safety provided by the website, the brand name of the e-commerce firm, the possibility of interaction and communication with the website and other consumers and, the products delivery process. Satisfaction is a complex psychological state of mind depends on many contextual, material and socio-economic-cultural factors and might be different in different special and temporal zones.

This study is to measure the factors affecting customers' satisfaction of e-commerce in developing country context. There is relatively little research in culturally conservative developing countries such as Bangladesh where people have different customs, practices of shopping, and consumptions. Consumers in developing countries are relatively less familiar with e-commerce platforms and might have different preferences in using them for commercial purpose. Moreover, there are insignificant studies on the relationship between SEVQ and customers' satisfaction, IQ and customers' satisfaction, SYSQ and customers' satisfaction, PU and customers' satisfaction as well as SE and customers' satisfaction in developing country context.

Culturally conservative societies prefer human interaction and prefer the traditional marketplace for commercial transactions. Though e-commerce developed a foothold in the developed countries, e-commerce traders in developing countries are still struggling to woo enough customers to this fast and real-time commercial transaction channel. The sector of e-commerce faces problems on how to increase the customers' satisfaction by improving their services and activities as well as performance. The e-commerce companies need to obtain new clients as well as retain existing clients. Although the internet users are sharply increased lately due to the rapid spreading of internet, but some users are still unwilling to use the advances of information and communication systems

and prefer the traditional way on doing business and purchasing items. There are still some of the customers willing to waste more time and pay transportation cost on purchasing items and doing business in a traditional way, rather than using the information and communication technologies. Therefore, there is need to identify and examine the factors that affect customers' acceptance and satisfaction on e-commerce.

The main objective of this research is to investigate the factors influencing the customers' satisfaction towards e-commerce. The specific objectives of this research included to examine and study the effective factors that influencing customers' satisfaction towards e-commerce in developing countries, and to identify whether the SEVQ, IQ, SYSQ, PU, and SE have effect on customers' satisfaction towards e-commerce.

The structure of the paper is as follows. Section 2 reviews the literature on e-commerce and customers' satisfaction. Section 3 discusses the theoretical framework and develops the hypotheses. Section 4 and 5 discuss research design and results of the analysis, respectively. Section 6 focuses on the discussion of major findings along with implications, limitations, and future research directions. Finally, Section 7 concludes.

2 Literature review: electronic commerce and customers' perception

The COVID-19 pandemic has changed the existing way of life including the purchasing behaviour that have been settings in the previous years. Many businesses and individuals are forced to move to the online marketplace as soon as government initiated lockdowns and social distance measures took place due to the wide spread nature of the pandemic (Dirgantari et al., 2020). Although people were somewhat habituated to purchase on online, this COVID-19 pandemic has appeared the main channel of buying daily necessities (Han et al., 2022). Studies demonstrated that high-frequency online transactions have been observed during the pandemic in several countries like the US (Andersen et al., 2020), The UK (Chronopoulos et al., 2020), and China (Chen et al., 2021). Similarly in Bangladesh, the e-commerce transaction value rose by 70% to 80% between July 2019 and July 2020, where significant increases were observed for food service, household goods and electronic appliances, and clothing and fashions (Hasan, 2020).

The reason behind this higher sales volume is convenience that the online marketplaces offer to their customers over internet. E-commerce platforms made it easier than ever to serve the customers in an advantageous way. Chiu et al. (2019) investigated the preference of online and offline shopping and found that online shopping is easier and more simplified than offline shopping. They also identified some other factors such as available product information, lower search costs, and price sensitivity that motivated customer to spend much time on online marketplace. Rahmayanti and Wandebori (2018) focused on the customers' attitude towards online shopping and revealed that SEVQ influences customer purchase behaviour and satisfaction, where as other studies mentioned SYSQ, IQ, PU, and SE (Phuong and Trang, 2018; Ghasemaghahi and Hassanein, 2015; Kaushik and Srinivasa, 2017). Qin et al. (2008) identified six dimensions for analysis of the degree of customer satisfaction towards e-commerce, which includes quality of service, customer service, management of process, ease of use, the quality of information, and design of the website. In this study, we employs DeLone and McLean's information systems (D&M IS) success model variables (SEVQ, IQ, and

systems quality) and two other additional variables (PU and SE) to measure how these factors affect customers' acceptance and satisfaction on online marketplace.

2.1 Service quality

The SEVQ represents support quality which the customers receive from the IT support personnel and IS department like helpdesk, hotline, and training (Tarhini et al., 2019; Urbach and Müller, 2012; Fauska et al., 2013). The online SEVQ can be defined as an extent, to which an internet or a website facilitates effective and efficient purchasing, shopping, selling and delivery (Khan et al., 2019; Lu et al., 2007). In website facilities, it includes all phases of customers' interactions. On the other hand, Santos (2003) argues that the online SEVQ is an aggregate or overall customer judgment and assessment of online service delivery in the marketplace. Online service delivery is much easier for consumers to compare the differences of service provided than through traditional channels (Saha et al., 2020).

Lin et al. (2019) and DeLone and McLean (2003) indicate that it is essential to offer comprehensive information technology services to satisfy customers' need. They show how could the updated D&M IS model is able to adapt in order to evaluate a new online commerce providers' success. There was strong evidence regarding the relationship between SEVQ and consumer satisfaction among related research. In the study about e-commerce (DeLone and McLean, 2004), application service system (Kim and Lee, 2007) and e-learning systems (Lin, 2007), the connected measurements have been set up which show SEVQ has a positive relationship with consumer satisfaction. As the model developed by DeLone and McLean (2004) has been tested in developed country context, we will test the same model in developing country context.

2.2 Information quality

Other than SEVQ, DeLone and McLean (2003) and Tarhini et al. (2019) indicated that high levels of IQ contribute to high level of customer satisfaction. Wu and Wang (2006) also examine that higher quality information system leads to better customer satisfaction in the knowledge management system. The empirical results in other field studies were shown positive relationship. For example, the e-learning systems (Lin, 2007) and the application service systems (Kin and Lee, 2007). Moreover, IQ is always the main dimension of end-user satisfaction instruments (Doll et al., 1994; Baroudi and Orlikowski, 1988). Thus, IQ is frequently not differentiated as a sole construct but it is evaluated as a component of customer satisfaction. Therefore, evaluating this dimension is quite difficult for IS researchers. In addition, Nguyen et al. (2020) examined a generic scale of the quality of information. However, others have also evolved their own scales by using the previous literature which is related to the kind of information systems under research (Gable et al., 2003; Wixom and Watson, 2001).

In term of e-commerce systems, the IQ is critical features of determining the success of online retailers (Phuong and Trang, 2018; Bell and Tang, 1998; Zhang et al., 2000). IQ is a measure of information outputs (DeLone and McLean, 1992). Molla and Licker (2001) identified the users of e-commerce system may seek marketing services, customer services, transactional and information which account must be taken of the features differentiate e-commerce system from the conventional information system. The concept of IS success is important in the context of online commerce as provision of data and

information is the general goal of any website (Huizingh, 2000). IQ has been identified as the factor of information system success (DeLone and McLean, 1992; Tandon et al. (2017), for website's success in e-commerce context (Liu et al., 2000), and in-home page performance of website (Zhang et al., 2000).

2.3 System quality

The third factor which affecting customers' acceptance and satisfaction towards e-commerce is the system quality. SYSQ can be defined as the quality of the information processing system (Cui et al., 2019; DeLone and McLean, 1992; Negasha et al., 2003). It is the quality of the interaction between the system and users. In online shopping context, SYSQ can be characterised by the interaction between website and consumers such as doing e-commerce transaction, downloading and information searching (Javenpaa and Todd, 1997). In some cases, the information processing system also refers to the company's online presence. Keevil (1998) indicated that some researchers defined SYSQ as consumers' easiness to find the information on system easily.

Based on the survey of Molla and Licker (2001), the failure of online system will cause a consumer to "mouse-click away" leading to non-use. Hence, the online SYSQ also consists of traditional SYSQ attributes including accuracy, reliability, response time, ease of use and flexibility (DeLone and McLean, 1992) and the more encompassing concept of the site performance (Molla and Licker, 2001). DeLone and McLean (2003) proposed SYSQ able measured technically. Based on the knowledge management system for uses, Wu and Wang (2006) explained that the higher the SYSQ, the higher level the user satisfaction, also as in application service systems (Kim and Lee, 2007) and e-learning system (Lin, 2007).

2.4 Perceived usefulness

Other than the 3 variables developed by D&M IS success model, PU is another variable in this research. Perceive usefulness means the levels to which a person believes in using a particular system will improve their job performance (Davis, 1989). PU can also be defined as the essential prerequisite of an amount of market technology acceptance that hinges on the expectation of customers about the method of the use of information technology can pave the method for improved as well as simplified lives (Jabeur et al., 2013). Besides that, Gutman (1982) described perceived benefit means advantageous result which stems from attributes as well as these advantages may be physiological, material in nature or psychological. There are three things were used to tap the construct of PU which adapted from the previous technology acceptance model (TAM) research. Davis (1989) also found that PU was an important determinant of the intentions of user to use computers. Besides that, Morris and Dillon (1997) indicated that the users' first perceptions of technology usefulness had significant effect on intentions to use it.

Additionally, in the context of e-commerce PU meets the wants and needs of customers (Shwu-Ing, 2003). Delafrooz et al. (2009) stated that extrinsic benefits are features of extensive array of goods selection, easy access to information, competitive pricing and low search cost. They also mentioned that prior literature revealed that the more stable linear relationship between attitude on e-commerce and perceived benefits of e-commerce.

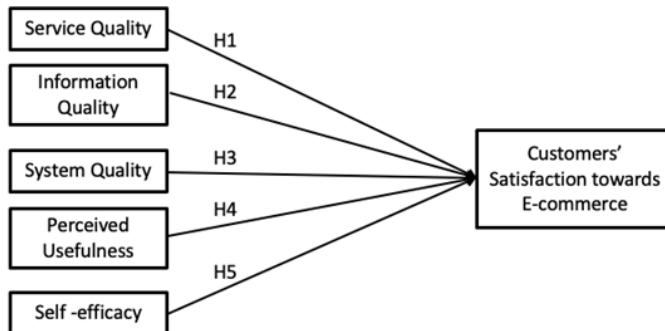
2.5 Self-efficacy

SE can be defined as the beliefs about one's capabilities or skill to accomplish a particular task or job by one's own resources and actions although in the face of barriers or obstacles. (Wu et al., 2016; Sniehotta et al., 2005). It was derived from the social cognitive theory (SCT), which proposed by Bandura (1977). Based on the concept of Bandura, SE means to belief in one's capabilities or skills to cognitive resources, mobilise the motivation, and courses of action needed in order to meet attainments given. Also, SE can be defined as beliefs in one's ability and capabilities to execute and organise the course of action needed to produce attainments given (Bandura, 1997).

2.6 Online customers' satisfaction

As mentioned above, customer satisfaction is always used as dependent variables in various researches as well as in this research. E-commerce depends on their customers, and hence, customers are very important to a company. Therefore, the customers' satisfaction is an essential condition for the success of companies. Satisfaction is a concept which many researchers are interested in marketing and it proceed to be a subject of numerous researches in ICT and web marketing (Audrain-Pontevia et al., 2013). Based on the theoretical analysis, we are presenting our theoretical framework at Figure 1.

Figure 1 Factor affecting e-commerce



3 Theoretical framework and hypothesis development

In this research, customers' satisfaction towards e-commerce is the dependent variable, while the SEVQ, IQ and SYSQ are the independent variables in this study which applied from the updated DeLone and McLean of information system success model (2003). In addition, the research has added two independent variables which are PU and SE of customers in this study for survey. Figure 1 shows the relationship between independent variables and dependent variable.

SEVQ can increase customers' satisfaction. The SEVQ represents support quality which the customers receive from the IT support personnel and IS department like helpdesk, hotline, and training (Urbach and Müller, 2012). DeLone and McLean (2003) and San-Lim et al. (2016) indicated it is essential for customers' needs that service

providers offers comprehensive and quality service by effectively using information system. They clarify how could the updated D&M IS model able to adapt in order to the evaluation of a new online commerce world success. In the study about e-commerce (DeLone and McLean, 2004), application service system (Kim and Lee, 2007) and e-learning systems (Lin, 2007), the connected measurements have been set up which show SEVQ has a positive relationship with consumer satisfaction. The concept of DeLone and McLean (2004) has been used by many researchers, and it also applied in this study. Thus, it is hypothesised as follows:

H1 There is a significant positive relationship between SEVQ and customers' satisfaction towards e-commerce.

IQ refers to the timeliness, accuracy, relevance, reliability and scope of the information provided on website. DeLone and McLean (1992, 2003) and Choshin and Ghaffari (2017) indicated that the higher the levels of IQ, the higher the customer satisfaction. Wu and Wang (2006) also examine that higher information system cause higher customer satisfaction in the knowledge management system. Moreover, IQ has been identified as the factor of information system success (DeLone and McLean, 1992), in the success of website in the context of e-commerce (Liu et al., 2000) and in home page performance of website (Zhang et al., 2000). Thus, the hypothesis stated that there is positive relationship between IQ and customers' satisfaction. Thus, it is hypothesised as follows:

H2 There is a significant positive relationship between IQ and customers' satisfaction towards e-commerce.

SYSQ can be defined as the survey of the information processing system (DeLone and McLean, 1992; Negasha et al., 2003). Based on the knowledge management system for uses, Wu and Wang (2006) explained that the higher the SYSQ, the higher level the user satisfaction. Palmer (2002) suggested that a website which has a high level of usability should generate an intention and desirable perception to use the site. Thus, a hypothesis of the higher the SYSQ, the greater the customers 'satisfaction has been drawn. Thus, it is hypothesised as follows:

H3 There is a significant positive relationship between SYSQ and customers' satisfaction towards e-commerce.

PU means the levels to which a person believes in using a particular system will improve their job performance (Davis, 1989). Bhattacharjee (2001) found that consumers would not turn off the web and cancel the transaction if they perceived it was useful or them. The perception of usefulness encourages consumer attitude and behaviour toward online purchasing and the intention to purchase and sell items online. Thus, the PU from consumers of a websites has positive impact on the attitude of consumers. It will be a motivation for customers to continue and intention to use the e-commerce store (Bhattacharjee, 2001). Thus, it is hypothesised as follows:

H4 There is a significant positive relationship between PU and customers' satisfaction towards e-commerce.

Kim and Kim (2005) indicated that SE can be redefined as the belief of a person in her or his capability to execute and organise some attitude and behaviours which necessary for the customer to achieve their goal in online purchasing such as successful and satisfactory transaction. Most of the consumers worry about they will not satisfied with

their order and they unable to return the products if any defective products. For instance, if an individual are confident that he or she usually can buy exactly the item they want from web vendor, they will trust the web vendor and intent to purchase form them (Kim and Kim, 2005). Hence, there is a positive relationship between SE and customers' satisfaction. Thus, it is hypothesised as follows:

H5 There is a significant positive relationship between SE and customers' satisfaction towards e-commerce.

4 Research design

There is relatively few studies that examined the e-commerce satisfaction in collective and conservative developing countries like Bangladesh. This research sought to explore and examine the factors affecting customers' satisfaction and acceptance towards e-commerce in Bangladesh. This research applied a survey design which involved distributing the questionnaires in order to collect data on an extensive range of variables at a specific point in time. Also, this research applied a quantitative approach in order to analyse the collected data. By using the quantitative research approach, this study involved numerical representation as well as manipulation of those collected data for explaining and describing the phenomenon of customers' satisfaction on e-commerce in Bangladesh.

4.1 Sample population

The target population for this study focuses on the e-commerce consumers in Bangladesh who have the experiences of purchasing or doing business online before. The reason why this study chooses the people from Bangladesh as respondents was because most of the studies in this area have been done in other countries predominantly on developed markets. Bangladesh is a fast developing market with huge potential and leap frogging to a rapidly expanding digital market. Also, the respondents are the current shopper online and have adopted the information system for purchasing or selling items online. In order to retrieve a reliable and accurate result, there were 260 sets of questionnaires distributed to people with the experiences of online purchasing or doing business online that represents a total of 130 sets for male and 130 sets for female respondents, respectively. The survey questionnaire was consisted of 24 items, and these were measured using multi-item five-point Likert rating scales ranging from 'strongly disagree' to 'strongly agree'. The average time to complete the survey was 15 minutes. The survey was conducted for 3 months on e-commerce customers between June–August 2021.

4.2 Sampling method

There are many methods for distributing questionnaire to the respondents to fill in. However, this research was choosing to use simple random sampling method in order to find out the data as well as achieve the objective of the study. The point of using simple random sampling as the research method was to avert bias and conflicts of culture issues as well as can ensure that every people in Dhaka had the opportunity to be selected to give their opinion. In this survey-based research, respondents have been drawn from

across the different socio-cultural backgrounds to fill the questionnaires to get more reliable results. In addition, this sampling method has a benefit which is saving time and energy to find the respondents. The questionnaires were distributed randomly to the students, faculties, hawkers, staffs and people surrounding or nearby such as in classroom, hostel, library, office, cafeteria, restaurant, markets and etc. Also, the accuracy of the results using sampling method is higher than other methods.

4.3 *Data collection method*

In this research, there were two sources of data outcomes from the research method which is primary data and secondary data. The primary data is the information which able to get through from the areas where researcher intended to carry out the research.

It is the first hand data, which gathered through questionnaire and distributed it to respondents through personal contacts who use e-commerce. Some of the questionnaire, we have e-mailed to prospective respondents. The respondents were chosen randomly.

4.4 *Overview of data gathered*

The sample profile of the questionnaires survey are shown as below. There are a total of 260 questionnaires were distributed to the respondents. However, only 213 questionnaires were collected back, which made up 81.9% of total questionnaires distributed were satisfactorily completed and examined by using the software of Statistical Package for Social Sciences (SPSS).

The data obtained from the survey has 53.1% female respondents and 46.9% male respondents. The 118 respondents out of 213 respondents were aged between 20–29 years (55.4%), 52 (24.4%) were aged between 30–39 years, 30 (14.1%) were aged between 40–49 years, 9 (4.2%) were below 20 years old and only 4 (1.9%) were above 50 years old. A total 89 (41.8%) of the respondents were students, 54 (25.4%) of the respondents were employed in academic institutions, 42 (19.7%) were office staff and 28 (13.1%) of respondents were local community. Among the respondents 67 (31.5%) respondents are using the online store once a month, 25.8% (55 respondents) few times in every month, 27 (12.7%) respondents once a day. About 6.1% (13) respondents use e-commerce a few times in every week and also 13 (6.1%) respondents use several times a day, whereas 38 (17.8%) of the respondents never use it.

Table 1 Results of reliability test

<i>Variables</i>	<i>Number of items</i>	<i>Items dropped</i>	<i>Items recoded</i>	<i>Cronbach's alpha</i>	<i>Remarks</i>
Customers' satisfaction	5	-	5	0.916	DV
Service quality	5	-	5	0.860	IV
Information quality	5	-	5	0.893	IV
System quality	5	-	5	0.911	IV
Perceived usefulness	5	-	5	0.913	IV
Self-efficacy	4	-	4	0.892	IV

After the descriptive analysis of data it is worth to consider the Cronbach alpha in order to ensure the reliability of data collected. Sekaran (1992) elaborated that the reliability

testing ensures the consistency and stability of data collected. Reliability analysis was used to measure the goodness of data. This is to ensure that all items used in each variable are free from error and thus, providing consistent results. According to Sekaran (1992), alpha over 0.80 is considered good, whereas range of 0.70 is considered acceptable.

Table 1 shows the result obtained from factor analysis and we can see that the entire data is good enough. No need to drop any item rather we recorded all the items since the values of Cronbach alpha is more than 0.80 which is accepted.

However, it is not possible to conclude based on the Cronbach's alpha only. So we decided to measure the mean and standard deviation. Table 2 shows that the mean value for all variables is between the ranges 3.5376 to 3.6407.

Table 2 Means, and standard deviations

<i>Variables</i>	<i>Mean</i>	<i>SD</i>
Customers' satisfaction	3.5699	0.82125
Service quality	3.5735	0.72136
Information quality	3.5858	0.76984
System quality	3.5965	0.81765
Perceived usefulness	3.6407	0.78064
Self-efficacy	3.5376	0.80402

Table 3 Factors affecting service quality

<i>Variables</i>	<i>Beta</i>	<i>t-Ratio</i>	<i>Sig. t</i>
Service quality	0.110	1.510	0.134
Information quality	0.240	3.045	0.003
System quality	0.240	3.166	0.002
Perceived usefulness	0.224	2.823	0.006
Self-efficacy	0.198	2.773	0.007

R square = 0.829
Durbin-Watson = 1,805
F = 103,882
Sig. F = 0.000
Condition index = 29,802

4.5 Factors affecting customers' satisfaction towards e-commerce

SEVQ, IQ, SYSQ, PU and SE can be explained 82.9% (R square = 0.829) variation of customers' satisfaction. Durbin Watson fell within the accepted range of 1.805. Therefore, there was no auto-correlation problem with data. Multi-collinearity problem does not exist in this regression model since condition index; VIF and tolerance fell within the accepted range (Condition index = 29,802, VIF = 3,196–3,935, tolerance = 0.254–0.313). F-value was found to be significant at the level of 1% significance level (sig. F = 0.000). Therefore, this can conclude that the regression model used in this study is adequate.

5 Result of regression analysis

Based on the regression analysis done to determine the factors of customers' satisfaction towards e-commerce. SEVQ was found to have no significant effect (sig. $t = 0.134$) on the customers' satisfaction. This finding shows that the satisfaction of using e-commerce system does not depend on the SEVQ. This might be due to the inability of respondents to compare between different quality of services due to the unavailability of the quality e-commerce service experience in an developing country like Bangladesh. Therefore, hypothesis H1 that states that higher SEVQ provided would lead to higher customers' satisfaction towards e-commerce is not supported. This can be also due to the absence of the e-commerce facilities in developing countries and consumers do not have the benchmark with which they can compare the quality of e-commerce service.

IQ was found to have significant effect with (sig. $t = 0.003$). This means that customers were satisfied if the IQ is high. Access to quality and timely information leads to higher customer satisfaction in knowledge intensive business services (DeLone and McLean, 1992, 2003; Wu and Wang, 2006). Consumers feel at ease to use the online service and become confident to make transaction online. Thus, the hypothesis H2 that stated that higher IQ will lead to higher customers' satisfaction towards online is supported at the significant level of $p < 0.1$.

SYSQ was tested to have significant effect on the customers' satisfaction with (sig. $t = 0.02$). This proved that customers satisfied if the e-commerce system is easy to use and reliable. Many respondents are first time users of internet technology and novice buyers of products online. They are very often worry about the quality of the product purchased online and the secure payment system. A reliable system can reduce those anxiety. The result was similar to the study done by DeLone and McLean (1992) and Wu and Wang (2006), where the higher the SYSQ, the higher level the user satisfaction. Therefore, hypothesis H3 which stated there were a positive relationship between SYSQ and customers' satisfaction is supported at the significant level at $p < 0.1$.

PU was found to have significant effect with (sig. $t = 0.006$). This means that customers satisfied because online commerce assists them achieve their desired goal and performance as well as doing business and purchasing online could be useful in their daily life. It will be a motivation for customers to continue and intention to use the e-commerce store (Bhattacharjee, 2001). Hence, hypothesis H4 which stated that higher customers PU will lead to higher customers' satisfaction is supported.

SE was found that to have significant effect with (sig. $t = 0.007$). This can be proved that customers are satisfied and continue to use the e-commerce system because they able to accomplish the process of buying or selling items online by themselves. This result was similar to the study of Kim and Kim (2005) who found that if an individual is confident that he or she usually can buy exactly the item they want from web vendor, they will trust the web vendor and intent to purchase form them. Also, Hsu and Chiu (2004) who discovered that a person's computer SE can also be represent the positive relationship between internet use intentions. Thus, the hypothesis H5 which stated that higher SE will lead to higher customers' satisfaction is supported at the significant level at $p < 0.1$.

6 Discussion

This study adopted the well-recognised D&M IS success model and applied with two other variables to assess customers' satisfaction in adopting online marketplace during the COVID-19 pandemic. The data analysis found all the relationships were significant except one. The results of the analysis showed no significant positive relationship between SEVQ and customers' satisfaction in using e-commerce system. In another word, the SEVQ did not have apparent impact on the customers' satisfaction on e-commerce, and thus, H1 is not accepted. The research result is different from the findings of Khan et al. (2019), Phuong and Trang (2018) and D&M IS success model (2003) where SEVQ can affect the customers' satisfaction. SEVQ such as services receives from the IT support personnel and IS department like helpdesk, hotline, and training does not help to increase customers' satisfaction. One of the explanations could be the absence of comparable services in the market and consumers from developing countries have limited scope of online B2C services in the local market. It might be also that this is the first time that they are having access to such services that they no need to go to the seller's place to purchase goods and services. Despite certain shortcomings of the SEVQ, consumers are accepting this new found easiness to do business online.

In this research, the relationship between IQ and customers' satisfaction is significant (H2 is accepted). This show that is was consistent with the previous research of D&M on IS success model (1992, 2003) and Wu and Wang (2006) which identified IQ significantly determine the customers' satisfaction. IQ of website such as timeliness, accuracy, reliability and relevant information does help to raise customers' satisfaction on e-commerce. Research results also discovered that there is a significant positive relationship between SYSQ and customers positive attitudes towards the adoption of online marketplace, the qualities of the website leads to higher customers' satisfaction. Thus, H3 is significance. The finding is comparable with previous research made by Aslam et al. (2020) and Phuong and Trang (2018), and DeLone and McLean (1992, 2003) is comparable with the results. SYSQ refers to the interaction between website and consumers such as doing e-commerce transaction, downloading and information searching (Javenpaa and Todd, 1997) are important to customers.

H4 examined the relationship between PU and customers' satisfaction in using e-commerce system. Results revealed that the relationship is significant. This result is supported by the research conducted by Bhattacharjee (2001), his research showed that consumers would not turn off the web and cancels the transaction if they perceived it was useful to them and this perception of usefulness encourages attitude and behaviour toward their intention to use the e-commerce system. Most of the consumers will increase satisfaction in using e-commerce system due to the system will help to enhance their productivity and performance. They can do business or shopping online staying at home or at anywhere they want. Finally, H5 assessed the relationship between SE and customers' satisfaction and this hypothesis is accepted. This result is consistent with the study done by Hsu and Chiu (2004). They discovered that a person's computer SE can be represents the positive relationship between internet use intention. Also this result is parallel with the study Kim and Kim (2005) who found that if an individual are confident that he or she usually can buy exactly the item they want from web vendor, they will trust the web vendor and intent to purchase form them.

6.1 Implications

The findings of the study have a number of implications. First, this study adopted the D&M IS success model and applied in developing country online customers satisfaction context. Thus, this study generates new knowledge regarding e-commerce adoption and provides better understanding on how developing country customers think while purchasing online during the COVID-19 pandemic. Second, this study presents interesting implications for e-commerce diffusion as well as for the management of online business activities. The result of the study may enable marketing managers to develop effective strategies to attract more clients towards this flexible and open marketplace. The results can guide managers by informing managers what makes customers more satisfy in online marketplace like quality and the availability of the product information, systems easy-to-use, overall benefits or usefulness of the systems, and so on.

Third, the finding can help top managers to formulate strategies to improve the delivery quality of e-commerce such as doing e-commerce transaction, downloading and information searching, so that their customers become satisfied. E-stores should develop strategic plans which will reverse the negative attitudes, behaviour and beliefs of customers. The perception of usefulness encourages consumer attitude and behaviour toward online purchasing and the intention to purchase and sell items online. Finally, the present study attempts to propose SE to the study of online commerce, as SE has been utilised and introduced in many researches in IS and behaviour science, but little known of SE in e-commerce. Furthermore, it is important for online vendors to incorporate these determinants into the steps of evaluating the degree of customers' satisfaction as part of the organisation performance measurement.

6.2 Limitations of research

Although the present study provides some new insights to researchers, the research findings have some limitations. This is because the results may be biased, as the majority of the respondents were students and aged between 20–29 years old. Also, the questionnaires were randomly distributed online, hence the results may not accurate due to part of the respondents may be simple answer the questions. Also, the samples were limited in Dhaka only. Furthermore, respondents may not be a true representation of Bangladesh context as a whole due to the research was based on only 213 respondents in Dhaka. Lastly, time constraint was another limitation in this study. Due to the shortage of time, some of the respondents did not answer the questionnaires carefully and sincerely. Some of them answered without reading the instruction and questions clearly. Lastly, the finding of SE in e-commerce may be little use for e-commerce or web vendors as they cannot influence to enhance customers' SE. However, with increasingly use of e-commerce facilities and familiarity with social media, consumers are likely to become more aware of their SE and will feel capable of doing e-transactions.

6.3 Suggestions for further research

Due to the limitations of the study, there are few suggestions for further research for the aim of enhancing the study customers' satisfaction in the e-commerce environment. All the limitations of this study which mentioned above should be overcome. For instance,

future research should be able to expand their population to whole Bangladesh so that can overcome the bias of their perception. Future research should develop a better model and choose respondents from various qualification backgrounds. Besides that, future researches are highly recommended to involve Bangladesh's government role in e-commerce implementation support. Future research also suggests including more variables in determining customers' satisfaction on e-commerce. Moreover, it is better to conduct a face to face interview so that can obtain more reason and detail toward e-commerce and thus the information will be more accurate and realistic.

7 Conclusions

Due to the advances of ICT now-a-days, e-commerce has improved the quality of life for many individual. The present research helps to better understand factors that influence customers' satisfaction on e-commerce. IQ, SYSQ, PU and SE play a vital role in determining the customers' satisfaction. Results of the present study can be used for online vendors develop marketing strategies employed by e-stores in order to improve the willingness of customers to engage in online shopping. Consumers should encourage using online purchasing or online commerce by offering them free training and free IT helpdesk to assist them.

The management of online vendors should have a clear understanding of those customers' factors of satisfactions and invest in quality ICT channel for smoother transactions. They must always make sure the information provided are accurate, up-to-date and in detail as well as make sure their system able to run smoothly all the time so that enable customers to do transaction, searching or downloading order form immediately. Moreover, the perception and self-beliefs are also important for customers' satisfaction. Therefore, e-stores should develop strategic plans which will reverse the negative attitudes, behaviour and beliefs of customers. The online vendors have to design a system, which can make it easier for consumers to interact with because it is considered important for customers with the low efficacy.

Last but not the least, the future research should also address all of the limitations such as collecting data from all over the country, develop a better model including more variables, choose respondents from various qualification backgrounds, involve government's role in e-commerce implementation support and conduct a face to face interview as well as comparing with another developing country context.

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