



Research article

Factors affecting young customers' smartphone purchase intention during Covid-19 pandemic[☆]Md. Rakibul Hafiz Khan Rakib^{a,*}, Shah Alam Kabir Pramanik^b, Md. Al Amran^a,
Md. Nurnobi Islam^a, Md. Omar Faruk Sarker^c^a Department of Marketing, Begum Rokeya University, Rangpur, 5404, Bangladesh^b Department of Marketing, Islamic University, Kushtia, Bangladesh^c Department of Marketing, University of Rajshahi, Rajshahi, Bangladesh

ARTICLE INFO

Keywords:

Smartphone
Purchase intention
Product features
Brand image
Product price
Social influence
Covid-19
Bangladesh

ABSTRACT

Purchase intention has become a critical issue to the marketers of smartphones as the market has become very competitive, volatile, uncertain and dynamic during Covid-19 than ever before. For sustaining in the competitive market, every marketer is trying to upgrade its product appearance, product quality, service quality, attractive features, and latest version of software as a whole. This study has investigated the effects of product features, brand image, product price, and social influences on young customers' purchase intention of smartphone during this Covid-19 pandemic time. Survey was conducted using structured questionnaire by collecting data from 305 respondents by using convenience sampling technique. Statistical Package for the Social Sciences (SPSS) integrated with AMOS was employed for data analysis. Cronbach's alpha, composite reliability and average variance extracted (AVE) were used to test the reliability and validity of the collected data while hypotheses were tested by using Structural equation modeling (SEM). The findings of the study shows that, there is a significant effect of product features, brand image, and product price on purchase intention of a smartphone but social influences has no significant impact on young customers' purchase intention. The study results will help the smartphone marketers to redesign their pandemic and post pandemic segmenting, targeting, differentiation and positioning strategies. Practical and managerial implications along with the future research directions have been discussed at the end of this paper also.

1. Introduction

Since the technological implications have been rising in every sphere of daily life, the physical shape of technological devices are becoming more comfortable in size and use. The people of different ages and levels are very much involved with technological accessories. The invention and development of smartphone is one of the indications of the speedy change in technological improvements (Adekunle and Ejechi, 2018). Smartphones are now a day's considered as the part and parcel of daily life and most of the people carry it right along with them (Li et al., 2021; Smura et al., 2009). At the end of July 2021, the number of internet subscribers in Bangladesh exceeds 123.74 million (BTRC, 2021), and most of them have smartphones (Islam et al., 2021). During the Covid-19 pandemic, use of smartphones increase manifold (David and Roberts, 2021; Li et al., 2021; Serra et al., 2021) and this trend is expected to increase in future also. A

smartphone can be defined as a mobile phone with more sophisticated computing capability and connectivity than the fundamental feature phones (Falayi and Adedokun, 2014). Google's Android, Apple's iOS, Microsoft's Windows Phone, Nokia's Symbian, RIM's and BlackBerry OS are the widely used mobile operating systems (OS) for smartphone; among them Android is leading the market with 72.11% market share (Lasso and Kazanzides, 2020; Statcounter, 2022; Suki and Suki, 2013). Customer's purchasing of smartphone has been increasing over the recent years (Wijayaa et al., 2021) when the casual mobile phones almost rubbed-out from the market. People of different ages are using smartphone of different brands according to their personal inherent and choice about particular brands. As performing as a minicomputer by adding latest technology and easiest carrying facilities, smartphone is used by the people at everywhere (Genova, 2010; Kaushal and Kumar, 2016). Smartphones are now increasingly perceived as a necessity rather than a luxury in

[☆] This article is a part of the "Business and Economics COVID-19" Special issue.

* Corresponding author.

E-mail addresses: rakibmkt@gmail.com, rakibmkt@brur.ac.bd (Md.R.H.K. Rakib).

people's everyday life (Hew et al., 2015; Walsh and White, 2006), because smartphones radically changes the behavioral patterns, lifestyles and status of users by acting as a multi-tasking devices for calling, texting, gaming, socializing and downloading numerous everyday use applications (Liang et al., 2018; Shin, 2012; Suki, 2013; Zhu et al., 2012). Smartphones are playing an amazingly essential role amid the widespread corona pandemic and this will flourish even after this pandemic is over as almost all the government services, health, education, financial services etc. all will be increasingly going online and smartphone will work as an easier and more affordable gateway to access these services. Smartphones are now increasingly treated as 'a new weapon against coronavirus' (Timberg et al., 2020). Besides, during the Covid-19 pandemic, educational institutions remain closed in many parts of the world and teachers had to take online classes (Iyengar et al., 2020; Sandars et al., 2020). In Bangladesh, due to Covid-19 induced closure, students had to attend their online classes by using laptop and smartphones. Hence, a large number of students being financially insolvent, government allow them interest free soft loan of Tk. 8000 each (Alamgir, 2020) for purchasing smartphone so that they can attend online classes.

Global smartphones sales to end users grew 10.8 percent to reach 328.8 million units in the second quarter of 2021 (Gartner, 2021). In 2020, the global smartphone shipment stands at 1.29 billion units (Statista, 2021). The marketers of the smartphones are always facing the challenges like bringing new features, upgrading the products quality, appearance, services quality, and using of latest version of software as a whole to sustain in the volatile, and dynamic market (Chow et al., 2012; Le and Yang, 2021; Satriawan and Setiawan, 2020). Most of the people are using smartphone for browsing internet, communicating through social media, searching information, playing video games and so on (Ho and Yang, 2017). Research shows that around 35% of the total people penetrate smartphone, of them, 94% search for local information via their phone, 91% researching products through phone and 42% made a purchase through it (Wong, 2014). Product appearances and packages have an essential role in influencing the consumer purchase intention when they are at the point of purchase. It affects on the attitudes concerning brands while purchasing (Ricardo, 2008). The factors affecting consumer intention towards smartphone are complex in nature as there are many other reasons that can affect their purchase decision. In deciding to purchase a smartphone, the people of different ages and levels especially the young consider some factors like-product features, convenience, brand image, price, family, psychological factors, electronic word-of-mouth, and social influence etc (Chen et al., 2016; Suki, 2013; Tanveer et al., 2021).

Although several researchers (i.e. Adetola and Ifeanvichukwu, 2016; Falayi and Adedokun, 2014; Suki, 2013) have attempted to investigate the factors influencing the demand for smartphones among young adults and students, the little effort has been made by the researchers to find the purchase intention or behavior of young customers of smartphones in Bangladesh, especially in the northern region during this tough time of Covid-19. With respect to customers purchase intention, smartphones proliferation in a developing economy like Bangladesh signals a need for empirical studies. To satisfy those needs, this study focuses on the specific observatory factors that affect young customers' purchase intention towards smartphone brands in the northern region of Bangladesh. In this context, the study has analyzed and studied the young customer's and smartphone markets to identify and examine the factors influencing purchase intention towards Smartphone brands. The existing body of the study related literature has raised an opportunity to explore the main differences among factors influencing purchase intention for this specific product category and proved the effectiveness of the study.

2. Objectives of the study

The objectives of the study are as follows-

- To identify the key factors that influence young customers' purchase intention of smartphone.

- To examine the effects of the factors on purchase intention in case of smartphone buying behavior among the young generation during corona pandemic.

3. Literature review and hypotheses development

Throughout this study, the researchers have tried to find the factors that affect young customers' purchase intention towards smartphone. Numerous theories and models like the theory of reasoned action (TRA) (Fishbein and Ajzen, 1975); technology acceptance model (TAM) (Davis, 1989); theory of planned behavior (TPB) (Ajzen, 1991); the unified theory of acceptance and use of technology (UTAUT) (Venkatesh et al., 2003) have been extensively used to explain the purchase intention, acceptance and adoption of information technology phenomenon. A single factor cannot determine the demand for smartphones and a group of complex factors affects its demand (Chow et al., 2012) which varies from person to person (Suki, 2013). Hence, young customers' purchase intention of smartphone is affected by a lot of variables ranging from perceived usefulness, perceived ease of use, subjective norms, product features, brand image, perceived price, social influences, friends and family members, colleagues, and the society as a whole.

3.1. Smartphone

Smartphone is an advanced type of calculating and communicating device (Falayi and Adedokun, 2014). It is a multi-tasking device which not only enables calling and texting but also facilitates gaming, socializing, and downloading of everyday use smart applications (Shin, 2012). It provides wireless voice services to connect and internet services like social networking and emailing for communication. The easiest way to differentiate a smartphone and a traditional cellular phone is the inclusion of a mobile operating system (Shabrin et al., 2017). The smartphone market has grown rapidly since 1990s and it is expected to increase in future (Liang et al., 2018; Liu and Li, 2019; Rebello, 2010). The numbers of Smartphone users have been increasing with the development in technology and telecommunication sector. Apple, Samsung, Huawei, HTC, Sony, Nokia, and LG are some of the popular smartphone brands (Lay-Yee et al., 2013). In the 1st Quarter of 2015, Apple, Microsoft and Samsung were the top-selling smartphone brands. But Samsung is now leading the smartphone market with maximum number of unit sales up to the second quarter of 2021 (Gartner, 2021). Two-thirds of the global smartphone market share was hold by the top eight smartphone brands and the shipment of smartphones forecasted to be 1.57 billion in 2022 (O'Dea, 2021). Smartphones are hand-held mobile device similar to an average computer that is beneficial for the young, particularly for the students than a tablet or laptop (Hingorani et al., 2012). Smartphones are thus becoming an inseparable part of people's daily lives because of their powerful computational capabilities and diverse applications, such as email applications, online bill payments, online banking, online shopping and intelligent multi-modal transportation system (Barot et al., 2014; Gan et al., 2016; Ho and Yang, 2017; Liang et al., 2018). Although use of mobile phone (via personal digital assistants or PDAs, laptops, and wireless mobile phones) in the form of mobile learning in educational fields increased in the past decade (Zhang et al., 2014); but young generation is the largest segment of the smartphone users and during the Covid-19 pandemic time, the use of smartphone among young customers for educational purpose increases manifold and reaches its pick (Mella-Norambuena et al., 2021; Saadeh et al., 2021).

3.2. Purchase intention

Actual purchase behavior can be measured with the help of purchase intention and purchase intention is a predisposition of the customers regarding their action of purchasing (Liu and Li, 2019; Trivedi and Raval, 2016). Consumers' willingness to buy a product can be described through the extent of purchase intention. Purchase intention is an advance

planning of the customers for purchasing certain products in future (Warshaw and Davis, 1985). It describes an individual's preference for product purchase and their categorization of the available options (Zeithaml, 1988). Purchase intention represents consumer's willingness to purchase, that is, if purchase intention is high the likelihood of consumer willingness to purchase a product or service is also high (Schiffman and Kanuk, 2000). At first, consumers will go through the recognition of the product to purchase after that they search for information about the product, then evaluate, purchase and feedback about their response (Kotler et al., 2010). Blackwell et al. (2006) stated that, what cross in the mind of customers' signifies their intention to purchase. The characteristics of smartphone such as the brand name, quality, price, innovation awareness, and recreating capability etc. can influence the buying behavior of customers before purchasing (Leo et al., 2005; Rahim et al., 2016; Rakib, 2019). There are many brands, models and designs available in the smartphone market that create difficulties for consumers to choose a smartphone. When customers have intention to buy smartphone, they generally consider several factors like-brand, price, functions, reputation, durability, social influence, relative advantages etc (En and Balakrishnan, 2022; Tran, 2018).

3.3. Product features

Product features refers to the attributes of a product that can satisfy consumers' needs and wants through having, using and applying the product (Chen et al., 2018; Kotler et al., 2010). Product characteristics along with product quality and functions can affect the adoption and usage of product (Gu and Wei, 2020). Different consumers have different emotion on attributes of the product. Sometimes, consumers don't know how to judge the quality of products. In most cases, they feel for difficulty of information processing and inconsistent product attribute reviews (Pan et al., 2017). For improving the performance of the products, many components like software and hardware are developing faster, and both components are considered by the customers before purchase (Osman et al., 2012). Smartphones are also assembled as per consumer preference on numerous components and peripherals. Many small companies are making computers and smartphones those are carrying out the same functions what the consumers actually expect (Sargunam and Bruce, 2015). People with different needs and wants can chose smartphone with different features. Hardware (such as body of the smartphone, size, weight, design) can be physically touched while operating software (such as Android, iOS, Windows, and memory) includes computer programs, procedure and documentation. Customers are more preferable with the design, color, screen size, camera, voice activated dialing, wireless connectivity, gaming facility, speedy internet browsing, and video calling as features of a smartphone brand (Oulasvirta et al., 2011; Persaud and Azhar, 2012). Design was considered as the most important determinant of consumer purchase response (Bloch, 1995; Crilly et al., 2004). Most of the college students search for the size, physical appearance and menu organization of a smartphone brand (Rahim et al., 2016). Technology, OS version and hardware features also have a significant effect on young student's choice while purchasing a smartphone. Innovative features, durability and portable aspects do arrive on top of the list in consumers' choice of smartphone brands (Trivedi and Raval 2016). Thus, the researchers have proposed the following hypothesis:

H1. Product features have significant positive influence on young customers' purchase intention of Smartphone.

3.4. Brand image

Brand image refers to the perceptions and beliefs that the customers hold, which reflects the association placed in the memory of customers (Kotler and Keller, 2006; Li et al., 2021). Brand image explains how the brand is perceived by the consumers (Aaker, 1996). It is the means of making choices by the consumers about specific brand and the available

alternatives after gathering information (Ataman and Ülengin, 2003; Chen et al., 2018; Li et al., 2021). Brand image is formed through the effective communication of brand regarding its name, logo, symbol or attributes; from consumers experience with the brand and their perception about the brand; and from the diverse group of social influences (Riezebos, 2003). In the field of high-tech new products like smartphones and tablets the effects of brand image is very high. Reputed brand with higher image enjoys the major advantages compared to non-reputed brands as it is associated with psychological assurance (Raj and Roy, 2015). How a product is perceived and come into customers' memories is termed as the product image. It is a perception of customers towards the products or related associations as reflected by the experience or imagination of customers (Naing and Chaipooiprutana, 2014). Brand experience applies to all kinds of products and services that consider human being as an emotional as well as a rational decision maker during their purchase, repeat purchase and recommendation behavior (Li, 2018). Brand experience is the consumers' internal behavioral and subjective responses at different levels of interaction, both direct and indirect, with brand-related stimuli. They are getting more attention from marketers as their brand preference is an important step towards understanding consumer purchase behavior (Ebrahim et al., 2016). Brand name, another construct of brand image and identity, has the most significant effect on the increasing demand for smartphone among customers. Brand and brand ambassador are the important drivers in purchase decision of smartphone (Trivedi and Raval, 2016). Studies of Savitri et al. (2022) and Khasawneh and Hasouneh (2010) also found that product's brand image significantly affects customers' brand evaluation and buying intention. The study of Suki (2013) confirmed that brand name have a profound effect on the young students smartphones' demand in Malaysia. Brand name, brand experience, brand communication and promotion, brand perception and related association altogether establish a strong brand image that affects young customers purchase intention of smartphone. Hence, the researchers have propounded the following hypothesis:

H2. Brand image have significant positive influence on young customers' purchase intention of Smartphone.

3.5. Product price

Price is the sum of money consumers is indebted to pay for products and services to fulfill their needs or want (Kotler et al., 2010). It is the sum of money necessary to make payment for buying a product (Swani and Yoo, 2010). Some people think a product's value is better against the amount paid but others may think it as just opposite. Different people have different perspectives and ideas about the value for money (Campbell, 1999). Hence, price deduction may affect the customers' purchase decision. Most of the time, customers have higher intention to purchase a product, if the discount rate is higher. There is also opposite picture like, when the discount rate is lower, customers may have lower intention to purchase a product (Lay-Yee et al., 2013). Although price of the product affect consumers purchase decision (Bloch, 1995; Crilly et al., 2004; Hew et al., 2015) and consumers often try to maximize their value, but they are rarely afraid of spending big amount of money for purchasing their desired smartphone (Suki, 2013). Purchasing of smartphone depends on a particular choice situation that is guided by factors such as price, brand, features or properties etc. Price is the foremost influencing factor to the choice of purchasing a smartphone (Rakib, 2019). While Chow et al. (2012) argued that price has profound influence on the demand for smartphone, other study considered price as a core issue of customer purchase intention (Tran, 2018). Price plays an important role in creating customer value and deciding customer purchase intention (Malviya et al., 2013). Demand for smartphones are increasing rapidly and price is one of the factors affecting this demand and the purchase intention of the young customers, specially the university students (En and Balakrishnan, 2022; Khan and Rohi, 2013). But for purchasing a smartphone, price is not a key concern to the people

when the convenience provided by the smartphone is worthy enough. The customers are also willing to pay a little higher for the smartphone (Malviya et al., 2013). Therefore, the researchers have developed the following hypothesis:

H3. Product price has significant positive influence on young customers' purchase intention of Smartphone.

3.6. Social influences

Changing of thoughts, feelings, attitude, and behavior, intentionally or unintentionally, and being influenced by other person of the society is termed as social influence (Rashotte, 2007). Social influence affects behavioral intention of customers (Lu et al., 2016; Rigopoulou et al., 2017.) as it is associated with the way other people influence one's beliefs, feelings and behavior (Mason et al., 2007) and people often adopt the thoughts, feelings, attitudes and behavior of others (Chow et al., 2012). Surrounding people influence the action of consumers (Kotler et al., 2010). Social influences inaugurate the impacts of three interrelated social forces on an individual to adopt or reject a new system; those are subjective norm, voluntariness, and image (Venkatesh et al., 2000). It happens from the interaction among the various levels of people in the society those who are known to each other like parents, family, peers, friends, relatives and so on (Rahim et al., 2016). While purchasing any product, family members can strongly influence buyer behavior (Tikkanen, 2009). Some customers purchase high priced smartphone to demonstrate their social status. Besides, internet creates both positive and negative influence on the customers purchasing intention through social media communication (Wei and Lo, 2006). Customers can learn and get available information about different brands from various online media provided by other consumers sharing own experiences and opinions (Cong and Zheng, 2017). People can also be influenced through social media such as Facebook, Twitter, Instagram and so on. They can find comments and product reviews from other users those who currently or previously used the smartphone. Media, parents and peers usually influence consumers purchase intention of Smartphones (Nelson and McLeod, 2005). Young generation especially students are very much depended to the suggestions from others when purchasing smartphone (Rahim et al., 2016). Throughout the Covid-19 pandemic time, advices and recommendations from pertinent and important people become more important for purchase decision making of individuals (Zhao and Bacao, 2021). Thus, the researchers have posited the following hypothesis:

H4. Social influence has significant positive influence on young customers' purchase intention of Smartphone.

3.7. Overview of the proposed research model

Based on the above mentioned reviews of literature, the researchers is now in a position to propose a theoretical framework for this study. By combining the frameworks of students demand for smartphone (Suki, 2013) and generation Z consumers' smartphone purchase intention (Mohammed, 2018), the researchers propose the framework of young customers smartphone brands purchase intention during Covid-19 pandemic (Figure 1). The conceptual framework dictates the effects of various independent variables on the depended variable. The proposed model in figure-1 tries to show the causal relationship between the research variables in order to examine the impact of product features, brand image, product price and social influence on the purchase intention of smartphone among the young generation consumers of northern region in Bangladesh during Covid-19 pandemic.

4. Methodology of the study

In performing this study, both qualitative and quantitative approaches have been used by the researchers. Both primary and secondary sources of data have been used for conducting this study. The researchers have collected data from various renowned local and international journals, different newspapers, and web-sites and by e-mail survey through self-administered questionnaire when direct face to face conversation with young respondents of the northern region of Bangladesh was made by the research associates (data collector).

4.1. Questionnaire development, sampling technique and data collection

Initially a pilot survey was conducted for developing an effective questionnaire by considering 50 samples with an initial questionnaire of 28 items developed from various past studies. The researchers selected samples from Rangpur region for pilot survey and consider those young who have already used or currently using any types of smartphone. After initial analysis and recommendation from knowledgeable persons related with this study such as university teachers, dealers and outlet owner of smartphone shop, customers and an extensive review of secondary sources such as relevant literature from different books, journals, newspapers, websites regarding this study, the questionnaire was finalized for use with 18 items. For collecting data from primary sources, the researchers sent email questionnaire to students of different universities and colleges, and made a tour to different smartphone shops by maintaining proper Covid-19 safety protocols to collect responses from a total

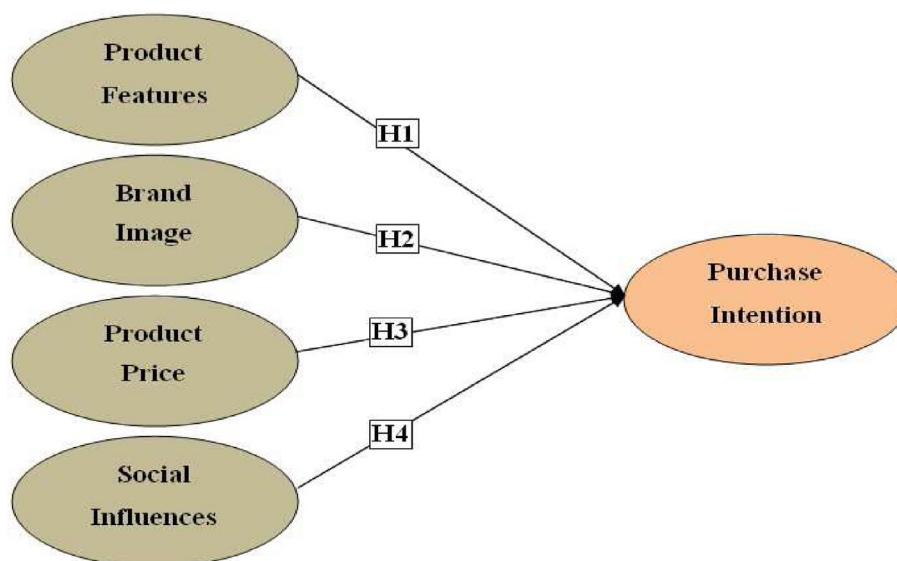


Figure 1. Hypothesized model of young customers smartphone brands purchase intention. Source: Researchers' own construction (2021).

of 350 young respondents (age between 15 to 30 years) of different parts of Rangpur region by using a self-administered questionnaire. Data were collected using the survey method between January 2021 and March 2021. The researchers preferred this time because during that time educational institutions like colleges and universities, shopping malls and smartphone shops in Bangladesh were reopened on a small scale after an extensive shutdown due to Covid-19. 305 useable and completed questionnaires were selected for the final study after eliminating the incomplete, problematic, erroneous and unusable questionnaires. Convenience sampling method has been employed for this study as this sampling technique is easy to conduct and inexpensive as well as frequently used for this type of research (Eze et al., 2011; Hafez, 2018; Raj and Roy, 2015). The sample size of 305 is regarded as good and sufficient to perform this study by using structural equation modeling (SEM) (Comrey and Lee, 1992, Hair et al., 2010).

4.2. Measurement and scaling technique

A total of 18 items were grabbed from different sociology, psychology, technology and marketing related literatures in order to develop the main five constructs for the final study. Product features was measured by five items; items were adapted from Trivedi and Raval (2018); Chow et al. (2012); and Kaushal and Kumar (2016). Brand image was measured by four items; two were adapted from Trivedi and Raval (2018) and one from Chow et al. (2012) and Kaushal and Kumar (2016) each. Product price was measured by three items; one of them was adapted from Trivedi and Raval (2018) and two were from Chow et al. (2012). Social influence was measured by three items; all are adopted from Shabrin et al. (2017). Finally, purchase intention was measured by three items; where two items were modified from Maduku (2013) and one item from Warshaw and Davis (1985). A 5-point Likert-scale was used to measure the statements of first part with 5 referring to strongly agree and 1 referring to strongly disagree; and nominal scale was used to measure the demographic data of the second part of the questionnaire.

4.3. Data analysis procedure

The researchers applied exploratory factor analysis (EFA) for analyzing the data by using the principle components analysis (PCA). During the EFA, sampling adequacy and normality of the data have been checked out with the help of KMO (Kaiser- Meyer- Olkin) and Bartlett's tests were performed. Further to test the reliability and validity of the constructs confirmatory factor analysis (CFA) was done. By employing the path analysis through SEM (structural equation modeling) with the help of SPSS and AMOS software (Version-21) the proposed theoretical framework along with the five constructs was tested to find the goodness of fit indices of the proposed model and hypotheses also.

5. Data analysis and findings

5.1. Respondents' demographic profile

The demographic profile of the respondents presented in Table 1 shows that 71.5% of the respondents are male. Most of the smartphone users (63.0%) fall between the age group of 18–25 years, of the total, 67.5% of them are students. The majority of the respondents (50.2%) hold a post graduation degree, while 59.3% of the respondents earned less than Tk. 10000. The below table (Table 1) shows the full demographic profile of the respondents.

5.2. Exploratory factor analysis (EFA) with descriptive statistics

In order to identify the influential factors and attributes of customers purchase intention exploratory factor analysis (EFA) was performed. With the help of principle component analysis (PCA) with varimax rotation, EFA for this study was performed which ensures maximum

number of items with high loadings on a construct/component (Darzi, 2016; Kaiser, 1958; Malhotra, 2003). In case of extraction of constructs/factors Eigen value criteria were employed (e.g. Eigen value more than 1 or equal to 1) and minimum absolute value for coefficient was .20. To test the reliability of the study, item reliability within each factor was measured through Cornbach's Alpha (α) and the value was in between .725 to .919 which is matched with standard threshold value of .70 (Nunnally, 1978). In addition to test the sampling adequacy KMO and Bartlett's test were performed. Threshold value of KMO should be >0.50 (Nunnally, 1978), in this study the KMO value is found 0.751 which indicates the sample size is sufficient to consider the data is normally distributed and justified for factor analysis (Kaiser, 1974). To measure the level of significance, the chi-square test was applied and its value was 2973.799 that were significant at 1% significant level. The rotated component matrix, related descriptive statistics along with the sources of the items under this study are shown in the below Table 2.

5.3. Confirmatory factor analysis

To measure the reliability and validity of the constructs CFA was performed. In addition, the study has investigated the model fit indices, Chi-square value, goodness of fit (GFI) and other indices to check the study's appropriateness for the next stage that means whether the study can build measurement model (Byrne, 2001; Kelloway, 1998; Kline, 2005; Schermelleh-Engel et al., 2003). Figure 2 depicts the CFA Diagram.

5.4. Convergent and discriminant validity

In the assessment of a measurement model, the convergent validity and discriminant validity are crucial (Hair et al., 2016). According to Fornell and Larcker (1981), the measurement model will be considered as reliable if the constructs ensure the convergent and discriminant validity. Information for the validity measures are shown in the below Table 3.

For convergent validity, both the reliability (Alpha value) and composite reliability (CR) of the constructs should be greater than .70. The AVE (Average Variance Extracted) for each construct should be greater than 0.50, this study has found AVEs of all the constructs are greater than 0.50 which ensures the convergent validity of the measures (Hair et al., 2006). In this study Alpha value and CR value of all the constructs are

Table 1. Demographic profile of the samples.

Variables	Variable Categories	Frequency	Percentage
Gender	Male	218	71.5
	Female	87	28.5
Age	Less than 18 years	1	.3
	18–25 years	192	63.0
	26–30 years	112	36.7
Profession Type	Student	206	67.5
	Private Job	52	17.0
	Govt. Job	3	1.0
	Business	41	13.4
	Others	3	1.0
Education	Below Secondary	0	0
	Secondary	4	1.3
	Higher Secondary	28	9.2
	Graduation	153	50.2
	Post Graduation	120	39.3
Monthly Income	Less than Tk. 10000	181	59.3
	10001–20000	36	11.8
	20001–30000	21	6.9
	More than Tk. 30000	67	22.0

Source: Field survey (2021)

Table 2. Rotated component matrix with descriptive statistics.

Attributes	Mean Score	Std. Deviation	Factor Loadings	Factor Mean	Reliability (Cronbach' α)	Eigen Value	Total Variance Explained	Literature/Source Review
Social Influence (SI)								
I usually consult my friends when buying a Smartphone brand.	3.65	1.119	.919	3.56	.835	2.17	12.90%	Shabrin et al. (2017)
I love to have the same Smartphone as my family members.	3.70	1.078	.899					
My friends always persuade me to buy the same phone as theirs.	3.34	1.367	.771					
Product Features (PF)								
I choose a Smartphone that has a superior camera.	4.73	.458	.922	4.69	.919	4.59	21.25%	Chow et al. (2012); Kaushal and Kumar (2016); Trivedi and Raval (2018)
I consider the speedier internet accessibility of the Smartphone.	4.69	.466	.898					
I choose a Smartphone that has a mature app store.	4.76	.423	.886					
I consider the operating system of the Smartphone.	4.69	.466	.803					
I consider the design of Smartphone when I purchase it.	4.58	.506	.773					
Brand Image (BI)								
I consider the brand image when buying a Smartphone.	4.22	.940	.841	4.17	.818	2.96	14.73%	Chow et al. (2012); Kaushal and Kumar (2016); Trivedi and Raval (2018)
I purchase my favorite brand of Smartphone only.	4.26	.850	.834					
I purchase a brand from my past using experience.	3.95	1.034	.765					
I consider the country of origin of the brand.	4.23	.889	.708					
Purchase Intention (PI)								
I will use Smartphone regularly in the future.	3.81	.870	.821	3.81	.768	1.62	11.65%	Maduku (2013); Warshaw and Davis (1985)
Purchase intention then make me to final purchase of the brand.	3.50	.843	.818					
I intend to start/continue using Smartphone in the future.	4.12	.789	.769					
Product Price (PP)								
I am willing to buy branded Smartphone even the price is higher.	3.44	.826	.875	3.44	.725	1.51	10.93%	Chow et al. (2012); Trivedi and Raval (2018)
I prefer buying Smartphone during price deduction period only.	3.77	.833	.799					
I compare prices of other brands before I choose one.	4.03	.853	.722					

Extraction Method: Principal Component Analysis.

Rotation Method: Varimax with Kaiser Normalization.^a

^a Rotation converged in 5 iterations.

greater than .70 and MaxR (H) value also greater than .80 which have ensured the convergent validity of all the constructs (Fornell and Larcker, 1981; Hair et al., 2006).

For discriminant validity the AVEs should be greater than MSVs and the squared root of the AVEs should be greater than inter-construct correlation. The bold diagonal in Table 3 represents the square root of the AVEs. In this study, all of the constructs have mitigated the discriminant validity conditions (Fornell and Larcker, 1981; Gaskin and Lim, 2016; Hu and Bentler, 1999).

6. Structural equation modeling (SEM) and hypotheses testing

SEM has been conducted to evaluate the hypotheses formulated at the initial stage of the study as well as to test the goodness of fit of the hypothesized model. In the measurement model the study has found the following values: Chi square and Degree of freedom were 329.872 and 126. The Cmin/df value should be smaller than 3 to consider the model

having good fit, for the current study the Cmin/df value is 2.618. To ensure the goodness of fit indices of the structural model the study has used the modification technique suggested by AMOS. Model modification has been conducted among the residual errors those belong to same construct. Justification for the correlations of residual errors within a factor are found reasonable (Gerbing and Anderson, 1984; Hermida, 2015). The final structured model is shown in Figure 3 and the goodness of fit indices for both of the models (measurement model and structured model) are shown in Table 4.

Table 4 demonstrates that all the fit indices meet up the cut-off point which is a good figure of acceptability of structural model according to the cut-off value given by Byrne (2001); Hu and Bentler (1999). In Table 4 it is found that in both of the models, the GFI value is close to .90. According to the threshold values, GFI Greater than .90 indicates a good fit whereas a greater than .80 also indicates an acceptable fit (Forza and Filippini, 1998). Although the ideal range for AGFI is greater than .90, in a few circumstances it might be accepted at a value of .80–.90 (Hu and Bentler, 1999).

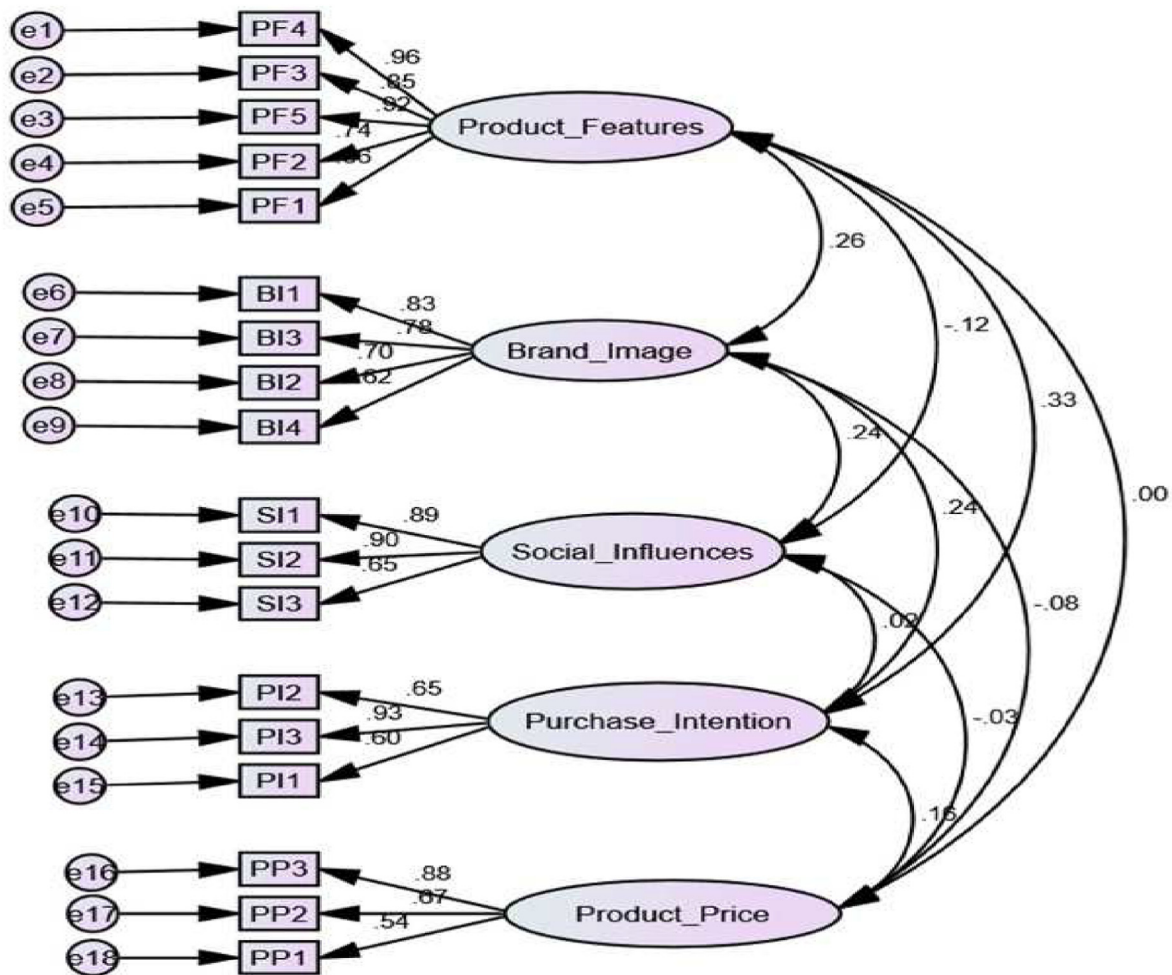


Figure 2. Confirmatory factor analysis (CFA) diagram. In the CFA analysis minimum Chi-square value was achieved 410.248 and degrees of freedom was 125 where probability level was 0.000. The CMIN/DF (Minimum Chi-Square/Degrees of Freedom) was 3.282. The Goodness of Fit Indices were as follows Root Mean Squared Residual (RMR) = 0.040, Goodness of Fit Index (GFI) = .873, Average Goodness of Fit Index (AGFI) = .826, Parsimonious Normed Fit Index (PGFI) = .638, Root Mean Square Error of Approximation (RMSEA) = .087. All the values are consistent with the threshold value (Byrne, 2001).

Table 3. Model validity measures.

Constructs	Alpha Value	CR	AVE	MSV	MaxR(H)	Product Features	Brand Image	Social Influences	Purchas Intention	Product Price
Product Features	.919	0.916	0.691	0.102	0.967	0.831				
Brand Image	.818	0.824	0.542	0.067	0.842	0.259***	0.736			
Social Influences	.835	0.858	0.672	0.059	0.897	-0.119†	0.243***	0.820		
Purchase Intention	.768	0.777	0.547	0.102	0.877	0.320***	0.238***	0.027	0.740	
Product Price	.725	0.746	0.505	0.024	0.824	-0.001	-0.079	-0.026	0.156*	0.711

Note: CR = Composite Reliability; AVE = Average Variance Extracted; MSV = Maximum Shared Variance; MaxR (H) = Maximum Reliability; Significance of Correlations: †p < 0.100, *p < 0.050, **p < 0.010, ***p < 0.001.

6.1. Hypotheses testing

After getting the standard goodness of fit indices of the measurement model, SEM was performed to test various hypothesized causal relationships between the four antecedents (product features, brand image, product price and social influences) of purchase intention and the outcome variable purchase intention. The results of the hypotheses are summarized in the Table 5.

The study has found that there is a significant effect of product features, brand image, and perceived price on purchase intention of a Smartphone brand but social influences has no significant impact on young consumers purchase intention.

7. Discussions on findings

In this digital era, technology shapes almost every sphere of our lives. Smart gadgets are continuously outperforming the analog devices. Smartphones becomes an inseparable part of the lifestyle of the young (Smura et al., 2009); and even during this tough time of Covid-19 pandemic it becomes imperative. The study of Trivedi and Raval (2016) found that latest technology, OS version, speedy internet, applications, hardware features, design etc. have a significant effect on young student's choice while purchasing a smartphone (Bloch, 1995; Crilly et al., 2004). This study also confirmed that, product features (.000) has significance value less than (<) (0.05) which indicates that

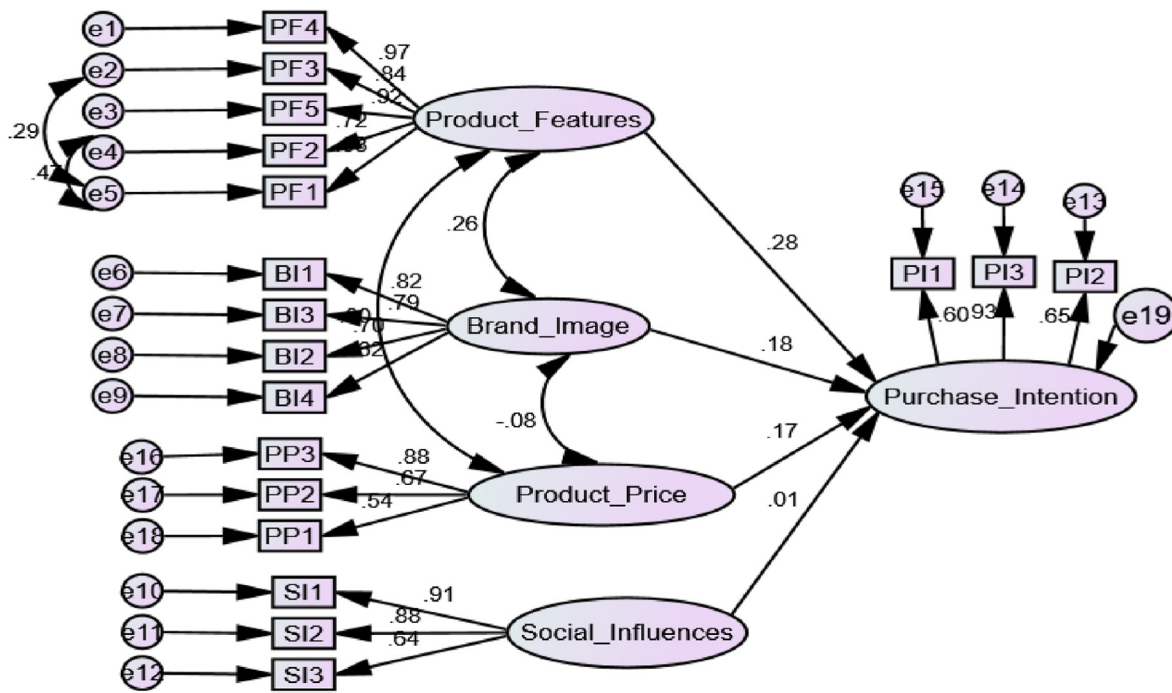


Figure 3. Smartphone buying intention model.

Table 4. Key goodness-of-fit indices.

Type of fit	Key index	Acceptable level	In the measurement model	In the structured model
Absolute Fit	Chi-Square (χ^2)	$2df \leq \chi^2 \leq 3df$	410.248	329.872
	Root Mean Square Error of Approximation (RMSEA)	$0.05 \leq RMSEA \leq 0.08$	.087	0.073
	Goodness of Fit Index (GFI)	$0.90 \leq GFI \leq 0.95$	.873	.900
	Average Goodness of Fit Index (AGFI)	$0.90 \leq AGFI \leq 0.95$	.826	.864
	Root Mean Squared Residual (RMR)	$0.05 \leq RMR \leq 0.10$	0.040	0.064
Comparative Fit	Normed Fit Index (NFI)	$0.90 \leq NFI \leq 0.95$	.865	.892
	Relative Fit Index (RFI)	$0.90 \leq RFI \leq 0.95$	.835	.868
	Incremental Fit Index (IFI)	$0.90 \leq IFI \leq 0.95$	.902	.930
	Comparative Fit Index (CFI)	$0.90 \leq CFI \leq 0.95$	.901	.929
Parsimonious Fit	Parsimonious Normed Fit Index (PNFI)	$PNFI > 0.5$	.707	.734
	Parsimonious Goodness-of-Fit Index (PGFI)	$PGFI > 0.5$	.638	.663
	Parsimonious Fit Index (PCFI)	$PCFI > 0.5$	.736	.765

Source: Adapted from Byrne (2001); Hu and Bentler (1999); Kelloway (1998); Kline (2005) and Schermelleh-Engel et al. (2003).

the product features have profound effect on young customers' smartphone purchase intention in Bangladesh. Hence, hypothesis H1 is accepted. Brand image explains how the brand is perceived by the consumers (Aaker, 1996) and reflected through the experience or imagination of customers with the brand (Naing and Chaipooirutana, 2014). Prior studies also found that smartphones' brand image significantly affects customers' brand evaluation and purchase intention (Khasawneh and Hasouneh, 2010; Savitri et al., 2022). Findings of this study also support the same as the factor brand image (.009) has significance value less than (<) (0.05). Therefore, hypothesis H2 is supported. As stated earlier, price is the sums of money consumers are indebted to pay for products and services to fulfill their needs or want (Kotler et al., 2010). Several previous studies i.e. En and Balakrishnan (2022), Khan and Rohi (2013), Trivedi and Raval (2016) & Lay-Yee et al. (2013) also confirmed that smartphones' price is the foremost influencing factor to the intention of purchasing a smartphone by young customers. This study shows that, the hypothesis H3 is supported because the factor perceived price (.010) has significance value less than (<) (0.05) which indicates that the perceived price significantly affect young customers purchase intention of smartphone brands. As human is

a social being, they influence and being influenced by others in the society. Although the study of Rahim et al. (2016) concluded that young generation especially students are very much depended on the suggestions from others when purchasing smartphone (Nelson and McLeod, 2005; Wei and Lo, 2006), but in the current study no significant effect of social influence was found on purchase intention of smartphone. This study shows that, the hypothesis H4 is rejected because the factor social influence has p value (.830) greater than the cut-off value (0.05). The respondents of this study are mainly male students from universities. This tends to be one of the reasons that social influences have no significant effect on their purchase intention of smartphone. Because prior studies (i.e. Lay-Yee et al., 2013; Suki, 2013) that found social influence as important determinants of young generations smartphone purchase intention were mainly female dominant. So in case of the hypothesis (H4), the researchers of this study think that young consumers are very intelligent and knowledgeable, hence the young generation may not rely on the suggestion of others. And even during this pandemic time, the young generation search information from online, critically assess the product quality, brand image and price, and then make purchase decision that's why societal influence does not impact them significantly.

Table 5. Results of the hypotheses testing.

Hypotheses	Dependent Variable	Independent Variable	Estimate	Std. Estimate	SE	C.R. Critical Ratio	P	Comments
H1	Purchase Intention	Product Features	.348	.275	.083	4.182	***	Accepted
H2	Purchase Intention	Brand Image	.132	.181	.050	2.672	.008	Accepted
H3	Purchase Intention	Product Price	.132	.171	.052	2.562	.010	Accepted
H4	Purchase Intention	Social Influences	.007	.013	.033	.215	.830	Rejected

Note: H= Hypothesis; SE = Standard Error; CR = Critical Ratio; P = probability; *** = 0.000.

8. Management implications and contributions

The use of Smartphones in Bangladesh is increasing day by day and during this Covid-19 pandemic time, young generation is considered as the most promising market for smartphones. Hence their purchase intention must be understood carefully. Findings from this study can help marketers to understand the purchasing intention of young consumers' towards smartphone brands. The result dictates that if the product gives more attributes and up to date features, customer's purchase intention towards this brand will rise. The researchers would like to recommend that marketers should focus on including more features and up grading the existing features to ensure better online connectivity to increase the purchase intentions of customers. A positive significant effect of brand image has been found on purchase intention. The result shows that customers are more aware about a particular brands' image, the recognition of the brand, past using experience of brands, and consider the country of origin of the brand before purchasing it. The researcher would like to recommend that marketers should focus on creating positive brand image and recognition as well as good after sales service by improving the quality and effective promotion of the brand to increase the purchase intentions of customers. Product price also has significant influence on purchase intention of smartphone of the northern regional customers in Bangladesh. The result shows that customers are much aware about a particular brands' price and sometimes search for comparative price before purchasing it. During this pandemic, many young students lost their part time jobs which make them even more price sensitive. Smartphone marketers are therefore expected to set product price by considering this situation. At last, no significant impact of social influence has found on the young customers when they are intending to purchase a smartphone. But sometimes, friends and family have high influence on the purchase decision of the customers. Customers try to consult with their friends or peers before going to purchase a smartphone. Marketers should keep in mind that young generations are very much tech friendly and intuitive in case of judging a smartphone quality; so information should be available in websites and catalog of the products. The findings will assist marketers in generating necessary and effective target market coverage strategies to attract the attention of Bangladeshi young consumers towards purchasing particular smartphone brands during this global crisis of Covid-19 pandemic.

9. Conclusions and future research directions

The prevailing factors which stimulate the young consumers' intention to buy smartphone in northern region of Bangladesh are explored throughout the study. Four key underpinnings of smartphone purchase intention namely product features, brand image, product price and social influence were identified and investigated their effects on purchase intention during this study. But this research also faces some problems like respondent's unwillingness to response without any reason, many of the respondents are not aware about the present smartphone market, price and latest technology. This study was focused on convenience sampling where other probability sampling could have been tested. Mediating effects of brand image and trustworthiness of the smartphone brands, culture, convenience, and user dependency could be investigated in future. Further research work in this area should be carried out by using larger sample size and with moderating variables like age, gender,

occupation, income level in order to facilitate more specific result. The study was conducted in the northern region of Bangladesh only, more number of cities and regions could be covered up in order to generalize the results of the study in future.

Declarations

Author contribution statement

Md. Rakibul Hafiz Khan Rakib: Conceived and designed the experiments; Performed the experiments; Analyzed and interpreted the data; Contributed reagents, materials, analysis tools or data; Wrote the paper.

Shah Alam Kabir Pramanik: Performed the experiments; Analyzed and interpreted the data; Contributed reagents, materials, analysis tools or data; Wrote the paper.

Md. Al Amran, Md. Nurnobi Islam, Dr. Md. Omar Faruk Sarker: Conceived and designed the experiments; Contributed reagents, materials, analysis tools or data; Wrote the paper.

Funding statement

The author(s) received no specific funding for this work.

Data availability statement

Data will be made available on request.

Competing interest statement

The authors declare no conflict of interest.

Additional information

No additional information is available for this paper.

References

- Aaker, D., 1996. *Building Strong Brands*. Free Press, New York, USA.
- Adekunle, S.A., Ejechi, J.O., 2018. Modelling repurchase intention among smartphones users in Nigeria. *J. Model. Manag.* 13 (4), 794–814.
- Adetola, A.A., Ifeanyichukwu, C., 2016. Factors influencing smartphone purchase behavior among young adults in Nigeria. *Int. J. Recent Scientif. Res.* 7 (9), 13248–13254.
- Ajzen, I., 1991. The theory of planned behavior. *Organ. Behav. Hum. Decis. Process.* 50 (2), 179–211.
- Alamgir, M., 2020. Buying Smartphone: UGC Loan for 41,500 public univ students', *The Daily Star*. Available at: <https://www.thedailystar.net/frontpage/news/buying-smart-phone-ugc-loan-41500-public-univ-students-1988901> (accessed 16 December 2020).
- Ataman, B., Ülengin, B., 2003. A note on the effect of brand image on sales. *J. Prod. Brand Manag.* 12 (4), 237–250.
- Bangladesh Telecommunication Regulatory Commission (BTRC), 2021. Internet Subscribers in Bangladesh July, 2021. Available at: <http://www.btrc.gov.bd/content/internet-subscribers-bangladesh-june-2021-0> (accessed 10 September, 2021).
- Barot, D., Amdawadkar, K., Singh, A., Panchal, S., 2014. An empirical assessment of smart phone usage amongst students and professors. *Int. J. Bus. Gen. Manag.* 3 (3), 19–28.
- Blackwell, R.D., Miniard, P.W., Engel, J.F., 2006. *Consumer Behaviour*, tenth ed. Thomson South-Western, Mason, Ohio.
- Bloch, P.H., 1995. Seeking the ideal form: product design and consumer response. *J. Market.* 59 (3), 16–29.

- Byrne, B.M., 2001. *Multivariate applications book series. Structural equation modeling with AMOS: Basic concepts, applications, and programming*. Lawrence Erlbaum Associates Publishers, Mahwah, NJ, US.
- Campbell, M.C., 1999. Perceptions of price unfairness: antecedents and consequences. *J. Market. Res.* 36 (2), 187–199.
- Chen, C.-M., Liu, H.-M., Ann, B.-Y., 2018. Product attributes and purchase intention for smartphones: a moderated mediation model. *Int. J. Mobile Commun.* 16 (1), 1–23.
- Chen, Y.-S., Chen, T.-J., Lin, C.-C., 2016. The analyses of purchasing decisions and brand loyalty for smartphone consumers. *Open J. Soc. Sci.* 4 (7), 108–116.
- Chow, M.M., Chen, L.H., Yeow, J.A., Wong, P.W., 2012. Conceptual paper: factors affecting the demand of smartphone among young adult. *Int. J. Soc. Sci. Econ. Art* 2 (2), 44–49.
- Comrey, A.L., Lee, H.B., 1992. *A First Course in Factor Analysis*. Psychology Press, New York.
- Cong, Y., Zheng, Y., 2017. A literature review of the influence of electronic word-of-mouth on consumer purchase intention. *Open J. Bus. Manag.* 5 (3), 543–549.
- Crilly, N., Moultrie, J., Clarkson, P.J., 2004. Seeing things: consumer response to the visual domain in product design. *Des. Stud.* 25 (6), 547–577.
- Darzi, S.A.B.M.A., 2016. Customer relationship management: an approach to competitive advantage in the banking sector by exploring the mediational role of loyalty. *Int. J. Bank Market.* 34 (3), 1–34.
- David, M.E., Roberts, J.A., 2021. Smartphone use during the COVID-19 pandemic: social versus physical distancing. *Int. J. Environ. Res. Public Health* 18 (3), 1034.
- Davis, F.D., 1989. Perceived usefulness, perceived ease of use, and user acceptance of information technology. *MIS Q.* 13 (3), 319–340.
- Ebrahim, R., Ghoneim, A., Irani, Z., Fan, Y., 2016. A brand preference and repurchase intention model: the role of consumer experience. *J. Market. Manag.* 32 (13-14), 1230–1259.
- En, L.E., Balakrishnan, 2022. Smartphone purchase intention by Nilai university students living in the city of Nilai Malaysia. *Sriwijaya Int. J. Dynamic Econ. Bus.* 6 (2), 131–146.
- Eze, U.C., Manyeki, J.K., Yaw, L.H., Har, L.C., 2011. Factors Affecting internet Banking Adoption Among Young Adults: Evidence from Malaysia. In: *International Conference on Social Science and Humanity, 5. IPEDR, Singapore*, pp. 337–381.
- Falayi, O.R., Adedokun, A.J., 2014. The demand for smartphones among students in university of Ibadan. *Economics* 1 (1), 30–34.
- Fishbein, M., Ajzen, I., 1975. *Belief, Attitude, Intention and Behavior: an Introduction to Theory and Research*. Addison-Wesley, Reading, MA.
- Fornell, C., Larcker, D.F., 1981. Evaluating structural equation models with un-observed variables and measurement error. *J. Market. Res.* 18 (1), 39–50.
- Forza, C., Filippini, R., 1998. TQM impact on quality conformance and customer satisfaction: a causal model. *Int. J. Prod. Econ.* 55 (1), 1–20.
- Gan, H., Zhao, Y., Wei, J., 2016. Impact of smartphone-delivered real-time multi-modal information. *Int. J. Mobile Commun.* 14 (3), 244–255.
- Gartner, 2021. *Gartner Says Worldwide Smartphone Sales Grew 10.8% in Second Quarter of 2021*. Available at: <https://www.gartner.com/en/newsroom/press-releases/2021-09-01-2q21-smartphone-market-share> (accessed 11 September 2021).
- Gaskin, J., Lim, J., 2016. 'Master validity tool', AMOS Plugin. Gaskination's StatWiki.
- Genova, G.L., 2010. The anywhere office-anywhere liability. *Bus. Commun. Q.* 73, 119–126.
- Gerbing, D.W., Anderson, J.C., 1984. On the meaning of within-factor correlated measurement errors. *J. Consum. Res.* 11, 572–580.
- Gu, Z., Wei, J., 2020. Empirical study on initial trust of wearable devices based on product characteristics. *J. Comput. Inf. Syst.* 1–9.
- Hafez, M., 2018. Measuring the impact of corporate social responsibility practices on brand equity in the banking industry in Bangladesh: the mediating effect of corporate image and brand awareness. *Int. J. Bank Market.* 36 (5), 806–822.
- Hair Jr., J.F., Black, W.C., Babin, B.J., Anderson, R.E., 2010. *Multivariate Data Analysis*. Pearson, Edinburg Gate, Harlow, Essex.
- Hair, J.F., Hult, G.T.M., Ringle, C., Sarstedt, M., 2016. *A Primer on Partial Least Squares Structural Equation Modeling (PLSSEM)*, second ed. SAGE Publications, Thousand Oaks, CA.
- Hair, J., Joseph, F., Black, W.C., Babin, B.J., Anderson, R.E., Tatham, R.L., 2006. *Multivariate Data Analysis*, sixth ed. Prentice-Hall, New Jersey.
- Hermida, R., 2015. The problem of allowing correlated errors in structural equation modeling: concerns and considerations. *Comput. Methods Soc. Sci.* 3 (1), 5–17.
- Hew, J.-J., Lee, V.-H., Ooi, K.-B., Wei, J., 2015. What catalyses mobile apps usage intention: an empirical analysis. *Ind. Manag. Data Syst.* 115 (7), 1269–1291.
- Hingorani, K.K., Woodard, D., Askari-Danesh, N., 2012. Exploring how smartphones supports students' lives. *Issues in Informat. Syst.* 13 (2), 33–40.
- Ho, C.-T.B., Yang, J.-M.D., 2017. Factors affecting users' mobile technology usage intentions: an example of QR code scanning for mobile commerce. *Int. J. Mobile Commun.* 15 (2), 185–209.
- Hu, L., Bentler, P.M., 1999. Cutoff criteria for fit indexes in covariance structure analysis: Conventional criteria versus new alternatives. *Struct. Equ. Model.: A Multidiscip. J.* 6 (1), 1–55.
- Islam, M.S., Sujana, M.S.H., Tasnim, R., Mohona, R.A., Ferdous, M.Z., Kamruzzaman, S., Toma, T.Y., Sakib, M.N., Pinky, K.N., Islam, M.R., Siddique, M.A.B., 2021. Problematic smartphone and social media use among Bangladeshi college and university students amid COVID-19: the role of psychological well-being and pandemic related factors. *Front. Psychiatr.* 12, 647386.
- Iyengar, K., Upadhyaya, G.K., Vaishya, R., Jain, V., 2020. COVID-19 and applications of smartphone technology in the current pandemic. *Diabetes Metabol. Syndr.: Clin. Res. Rev.* 14 (5), 733–737.
- Kaiser, H.F., 1958. The varimax criterion for analytic rotation in factor analysis. *Psychometrika* 23 (3), 187–200.
- Kaiser, H.F., 1974. An index of factor simplicity. *Psychometrika* 39 (1), 31–36.
- Kaushal, D.S.K., Kumar, R., 2016. Factors affecting the purchase intention of smartphone: a study of young consumers in the city of Lucknow. *Pacific Bus. Rev. Int.* 8 (12), 1–16.
- Kelloway, E.K., 1998. *Using LISREL for Structural Equation Modeling: A Researcher's Guide*. Sage Publications, Inc, Thousand Oaks, CA, US.
- Khan, S., Rohi, S., 2013. Investigating the factors affecting youth brand choice for mobile phones purchase-A study of private universities students of Peshawar. *Manag. Market. Challeng. Knowledge Society* 8 (2), 369–384.
- Khasawneh, K., Hasouneh, A.B.I., 2010. The effect of familiar brand names on consumer behaviour: a Jordanian perspective. *Int. Res. J. Fin. Econom.* 43 (1), 34–57.
- Kline, R.B., 2005. *Principles and practice of structural equation modeling*, second. Guilford Press, New York, NY, US.
- Kotler, P., Keller, K.L., 2006. *Marketing Management*, twelfth ed. Pearson Prentice Hall, Upper Saddle River, New Jersey.
- Kotler, P., Armstrong, G., Agnihotri, P.Y., Haque, E.U., 2010. *Principles of Marketing: A South Asian Perspective*, thirteenth ed. Dorling Kindersley (India) Pvt. Ltd, New Delhi.
- Lasso, A., Kazantzides, P., 2020. 'System Integration'. In: *Handbook of Medical Image Computing and Computer Assisted Intervention*, pp. 861–891.
- Lay-Yee, K.L., Kok-Siew, H., Yin-Fah, B.C., 2013. Factors affecting smartphone purchase decision among Malaysian generation Y. *Int. J. Asian Soc. Sci.* 3 (12), 2426–2440.
- Le, M.-D., Yang, S.O., 2021. Factors influencing 5G smartphone purchase intentions in Vietnamese market: a critical realism approach. *J. Marketing Develop. Compet.* 15 (1), 45–80.
- Leo, C., Bennett, R., Hartel, C.E., 2005. Cross-cultural differences in consumer decision making styles. *Cross Cult. Manag.* 12 (3), 32–61.
- Li, B., 2018. The influence of brand experience on people's revisit and purchase intention in the context of China's museum. *Am. J. Ind. Bus. Manag.* 8 (3), 563–578.
- Li, T., Zhang, M., Li, Y., Lagerspetz, E., Tarkoma, S., Hui, P., 2021. The Impact of Covid-19 on Smartphone Usage. *IEEE Internet of Things Journal*, pp. 1–11.
- Li, Y., Teng, W., Liao, T.-T., Lin, T.M.Y., 2021. Exploration of patriotic brand image: its antecedents and impacts on purchase intentions. *Asia Pac. J. Market. Logist.* 33 (6), 1455–1481.
- Liang, T.-P., Lai, C.-Y., Hsu, P.-H., Chiu, C.-M., Hsieh, C.-T., 2018. Factors affecting satisfaction and brand loyalty to smartphone systems: a perceived benefits perspective. *Int. J. Mobile Commun.* 16 (5), 513–534.
- Liu, D., Li, M., 2019. Exploring new factors affecting purchase intention of mobile commerce: trust and social benefit as mediators. *Int. J. Mobile Commun.* 17 (1), 108–125.
- Lu, J., Liu, C., Wei, J., 2016. How important are enjoyment and mobility for mobile applications? *J. Comput. Inf. Syst.* 1–12.
- Maduku, D.K., 2013. Predicting retail banking customers' attitude towards Internet banking services in South Africa. *South. Afr. Bus. Rev.* 17 (3), 76–100.
- Malhotra, N.K., 2003. *Marketing Research- An Applied Orientation*. Pearson Education, Singapore.
- Malviya, S., Saluja, M.S., Thakur, A.S., 2013. A study on the factors influencing consumers purchase decision towards Smartphone in Indore. *Int. J. Adv. Res. Comp. Sci. Manag. Studies* 1 (6), 14–21.
- Mason, W.A., Conrey, F.D., Smith, E.R., 2007. Situating social influence processes: dynamic, multidirectional flows of influence within social networks. *Pers. Soc. Psychol. Rev.* 11 (3), 279–300.
- Mella-Norambuena, J., Cobo-Rendon, R., Lobos, K., Sáez-Delgado, F., Maldonado-Trapp, A., 2021. Smartphone use among undergraduate STEM students during COVID-19: an opportunity for higher education? *Educ. Sci.* 11 (8), 417.
- Mohammed, A.B., 2018. Selling smartphones to generation Z: understanding factors influencing the purchasing intention of smartphone. *Int. J. Appl. Eng. Res.* 13 (6), 3220–3227.
- Naing, K.W., Chaipoopirutana, S., 2014. The Factors Affecting purchase Intention of a Smart Phone in Yangon, Myanmar. In: *International Conference on Trends in Economics, Humanities and Management*, pp. 190–194. Available at: <https://icehm.org/upload/5343ED0814095.pdf>.
- Nelson, M.R., McLeod, L.E., 2005. Adolescents brand consciousness and product placement: awareness, liking and perceived effects on self and others. *Int. J. Consum. Stud.* 29 (6), 515–528.
- Nunnally, J.C., 1978. *Psychometric Theory*, second ed. McGraw-Hill, New York.
- O'Dea, S., 2021. 'Global smartphone unit shipments 2009-2020'. Available at: <https://www.statista.com/statistics/271491/worldwide-shipments-of-smartphones-since-2009/#statisticContainer> (accessed 10 September 2021).
- Osman, M.A., Talib, A.Z., Sanusi, Z.A., Shiang-Yen, T., Alwi, A.S., 2012. A study of the trend of smartphone and its usage behavior in Malaysia. *Int. J. N. Comput. Archit. their Appl.* 2 (1), 275–286.
- Oulasvirta, A., Wahlstrom, M., Ericsson, K.A., 2011. What does it mean to be good at using mobile device? An investigation of three levels of experience and skill. *Int. J. Hum. Comput. Stud.* 69, 155–169.
- Pan, D., Xu, Y., Wu, Y., 2017. The effect of inconsistent product attribute reviews on consumers' purchase intention. *Psychology* 8 (13), 2187–2199.
- Persaud, A., Azhar, I., 2012. Innovative mobile marketing via smartphones: are consumers ready. *Market. Intell. Plann.* 30 (4), 418–443.
- Rahim, A., Safin, S.Z., Kheng, L.K., Abas, N., Ali, S.M., 2016. Factors influencing purchasing intention of smartphone among university students. *Procedia Econ. Finance* 37, 245–253.
- Raj, M.P.M., Roy, S., 2015. Impact of brand image on consumer decision-making: a study on high-technology products. *Global Bus. Rev.* 16 (3), 463–477.
- Rakib, M.R.H.K., 2019. Factors influencing purchase intention of cellular phones among the university students in Bangladesh. *Eur. J. Bus. Manag.* 11 (2), 92–101.
- Rashotte, L., 2007. *Social influence. The Blackwell Encyclop. Sociol.* 1–3. Available at: <http://onlineibrary.wiley.com/doi/abs/10.1002/9781405165518.wbeoss154> (accessed 18 December, 2020).

- Rebello, J., 2010. Global wireless subscriptions reach 5 billion. Available at: <https://technology.ihf.com/388845/global-wireless-subscriptions-reach-5-billion> (accessed 19 December, 2020).
- Ricardo, P.G., 2008. 'Consumer Behavior: Product Characteristics and Quality Perception', Munich Personal RePEc Archive. MPRA Paper No. 11142, Available at: <http://mpra.ub.uni-muenchen.de/11142/>.
- Riezebos, R., 2003. Brand Management: A Theoretical and Practical Approach. Pearson Education Limited, Harlow.
- Rigopoulou, I.D., Chaniotakis, I.E., Kehagias, J.D., 2017. An extended technology acceptance model for predicting smartphone adoption among young consumers in Greece. *Int. J. Mobile Commun.* 15 (4), 372–387.
- Saadeh, H., Al Favez, R.Q., Al Refaei, A., Shewaikani, N., Khawaldah, H., Abu-Shanab, S., Al-Hussaini, M., 2021. Smartphone use among university students during COVID-19 quarantine: an ethical trigger. *Front. Public Health* 9, 600134.
- Sandars, J., Correia, R., Dankbaar, M., de Jong, P., Goh, P.S., Hege, I., Masters, K., Oh, S.Y., Patel, R., Premkumar, K., Webb, A., 2020. Twelve tips for rapidly migrating to online learning during the COVID-19 pandemic. *MedEdPublish* 9 (82).
- Sargunam, S.S., Bruce, M.M.J., 2015. Impact of product and market factors on consumer behavior: a study on personal computers purchase. *Asian J. Appl. Sci.* 8 (1), 92–100.
- Satriawan, K.A., Setiawan, P.Y., 2020. The role of purchase intention in mediating the effect of perceived price and perceived quality on purchase decision. *Int. Res. J. Manag. IT Soc. Sci.* 7 (3), 38–49.
- Savitri, C., Hurriyati, R., Wibowo, L., Hendrayati, H., 2022. The role of social media marketing and brand image on smartphone purchase intention. *Int. J. Data and Network Sci.* 6 (1), 185–192.
- Serra, G., Lo Scalzo, L., Giuffrè, M., Ferrara, P., Corsello, G., 2021. Smartphone use and addiction during the coronavirus disease 2019 (COVID-19) pandemic: cohort study on 184 Italian children and adolescents. *Italian J. Pediat.* 47 (1), 1–10.
- Schermelleh-Engel, K., Moosbrugger, H., Müller, H., 2003. Evaluating the fit of structural equation models: tests of significance and descriptive goodness-of-fit measures. *Methods of Psychol. Res. Online* 8 (2), 23–74.
- Schiffman, L.G., Kanuk, L.L., 2000. Consumer Behavior, seventh ed. Prentice-Hall, Wisconsin.
- Shabrin, N., Sarod, K., Saad, B.A.K., Chan, K.H., Susila, T., 2017. Factors affecting smartphone purchase decisions of generation-Y. *The J. Contemp. Issues in Bus. Govern.* 23 (1), 47–65.
- Shin, D.H., 2012. Cross analysis of usability and aesthetic in smart device: what influences users' preferences. *Cross Cult. Manag.: Int. J.* 19 (4), 563–587.
- Smura, T., Kivi, A., Toyli, J., 2009. A framework for analysing the usage of mobile services. *J. Policy, Regul. Strat. Telecomm., Information and Media* 11 (4), 53–67.
- Statista, 2021. Global Smartphone Shipments from 2009 to 2020 (in million units). Available at: <https://www.statista.com/statistics/271491/worldwide-shipments-of-smartphones-since-2009/> (accessed 12 September, 2021).
- Statcounter, 2022. 'Mobile Operating System Market Share Worldwide - June 2022'. Available at: <https://gs.statcounter.com/os-market-share/mobile/worldwide> (accessed 10 July, 2022).
- Suki, N.M., 2013. Students' demand for smartphones: structural relationships of product features, brand name, product price and social influence. *Campus-Wide Inf. Syst.* 30 (4), 236–248.
- Suki, N.M., Suki, N.M., 2013. Dependency on smartphone: an analysis of structural equation modeling. *Jurnal Teknologi* 62 (1), 49–55.
- Swani, K., Yoo, B.H., 2010. Interactions between price and price deal. *J. Prod. Brand Manag.* 19 (2), 143–152.
- Tanveer, M., Kaur, H., Thomas, G., Mahmood, H., Paruthi, M., Yu, Z., 2021. Mobile phone buying decisions among young adults: an empirical study of influencing factors. *Sustainability* 13 (19), 10705.
- Tikkanen, I., 2009. Maslow's hierarchy and pupils' suggestions for developing school meals. *Nutr. Food Sci.* 39 (5), 534–543.
- Timberg, C., Dwoskin, E., Harwell, D., Romm, T., 2020. Governments around the world are trying a new weapon against coronavirus: Your smartphone. In: *The Washington Post*. Available at: <https://www.washingtonpost.com/technology/2020/04/17/governments-around-world-are-trying-new-weapon-against-coronavirus-your-smartphone/> (accessed 10 July, 2022).
- Tran, T.-T., 2018. Factors affecting the purchase and repurchase intention smart-phones of Vietnamese staff. *Int. J. Adv. Appl. Sci.* 5 (3), 107–119.
- Trivedi, R., Raval, R.D., 2016. Consumer buying intentions towards Smartphones: a conceptual framework. *Int. J. Appl. Res.* 2 (12), 736–742.
- Trivedi, R., Raval, R.D., 2018. Consumer purchase intentions towards smartphone: a factorial study. *Int. J. Adv. Res. Comp. Sci. Manag. Stud.* 6 (4), 40–48.
- Venkatesh, V., Davis, F.D., 2000. A theoretical extension of the technology acceptance model: four longitudinal field studies. *Manag. Sci.* 46 (2), 186–204.
- Venkatesh, V., Morris, M.G., Davis, G.B., Davis, F.D., 2003. User acceptance of information technology: toward a unified view. *MIS Q.* 27 (3), 425–478.
- Walsh, S., White, K., 2006. Ring, ring, why did I make that call? Mobile phone beliefs and behavior among Australian university students. *Youth Stud. Aust.* 25 (3), 49–57.
- Warshaw, P.R., Davis, F.D., 1985. Disentangling behavioral intention and behavioral expectation. *J. Exp. Social Psychol.* 21 (3), 213–228.
- Wei, R., Lo, V.-H., 2006. Staying connected while on the move: Cell phone use and social connectedness. *New Media Soc.* 8 (1), 53–72.
- Wijayaa, O.Y.A., Sulistiyani, S., Pudjowati, J., Kartikawati, T.S., Kurniasih, N., Purwanto, A., 2021. The role of social media marketing, entertainment, customization, trendiness, interaction and word-of-mouth on purchase intention: an empirical study from Indonesian smartphone consumers. *Int. J. Data and Netw. Sci.* 5 (3), 231–238.
- Wong, C.K., 2014. 12 facts you might not know about mobile in Malaysia. Available at: http://www.ecommercemilo.com/2014/09/12-facts-mobile-malaysia.html#_VVsc1rmqqkq (accessed 21 December, 2020).
- Zeithaml, V.A., 1988. Consumer perceptions of price, quality and value: a means-end model and synthesis of evidence. *J. Market.* 52 (3), 2–22.
- Zhang, L., Yang, J., Wei, J., 2014. A cross-nation comparative study of mobile learning. *Int. J. Mobile Commun.* 12 (5), 431–448.
- Zhao, Y., Bacao, F., 2021. How does the pandemic facilitate mobile payment? An investigation on users' perspective under the COVID-19 pandemic. *Int. J. Environ. Res. Publ. Health* 18 (3).
- Zhu, X., Yang, J., Wu, X., Wei, J., 2012. Online promotion and marketing of mobile communication devices: an empirical study. *Int. J. Mobile Commun.* 10 (1), 21–40.