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Article

Unveiling the determinants of online shopping: Insights from a developing nation

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Abstract: This study examined the factors influencing online purchases among consumers in Bangladesh, employing a modified version of the Technology Acceptance Model (TAM). Data from 353 individuals in Bangladesh revealed that perceived ease of use, social influence, security, convenience, trust, emotional experience, and functional experience significantly positively affect the intention to purchase online. Additionally, results show that the intention to purchase online significantly positively affects actual online purchases. Findings further highlighted that intention to make online purchases mediated the influence of perceived ease of use, social influence, security, convenience, trust, emotional experience, and functional experience over online purchases. The study provides significant practical recommendations to help businesses and consumers support online purchasing with diverse advantages.

Keywords: cashless transactions; behavioural intention; technology acceptance model; partial least squares; Bangladesh
JEL Classification: M21

1. Introduction

The popularization of smartphones coupled with easy Internet access paved the way for online shopping in people's everyday lives. For 4 billion people with internet access, online shopping is a quick fix for their busy life in today's world (Nguyen et al., 2019; Rahman et al., 2018). This number of Internet users is ever-proliferating, translating to mobile technology and the Internet substantially impacting businesses and their consumers (Nguyen et al., 2019). Consequently, online shopping, powered with more accessibility, convenience, and cheaper methods to find various products in less time, is dramatically developing businesses (Nguyen et al., 2019; Polas et al., 2022; Rahman et al., 2018). With the escalation of online shopping in recent years, both experts and researchers internationally have been developing a holistic understanding of online purchases (Polas et al., 2022). Through the Covid-19 pandemic lockdowns, online purchasing helped millions of individuals to receive their goods (Polas et al., 2022). Bangladesh, an emerging economy in Southeast Asia, has witnessed a significant hike in online businesses recently (Polas et al., 2022). Similar to Asian citizens from similar age groups, young Bangladeshis, are exploring new ways of shopping that led to the growth and popularity of online purchases in Bangladesh

(Rahman et al., 2018). Consumers' behaviour towards online purchasing has significant implications for the future of online businesses, particularly in the retail industry. Researchers have been found to focus extensively on online practices in the context of customer behaviour (Polas et al., 2022). According to Fülöp et al. (2023), it is interesting to analyze the factors that influence online shopping. Because of its emerging significance globally, capturing the variables that influence individuals' intention to purchase online is vital.

In the above regard, Polas et al. (2022) argued that further research is required to comprehensively understand the consumer's online purchasing behaviour. The notion of inadequate research is echoed by Gök et al. (2023), who stress that although the active internet population in the world is large, the rate of online transactions is still relatively low. Moreover, Akram et al. (2021) stressed that although the literature surrounding online commerce is extensive, online transactions have received inadequate academic attention. Furthermore, Al-Hattami (2021) stressed that despite the huge growth potential for online shopping, many do not know about the determinants of user intention to use online shopping. Specifically, factors reflecting concerns associated with online purchases is an essential angle of consumer behaviour that need immediate research attention (Celik, 2011; Nagar and Gandotra, 2016). According to Gök et al. (2023), directing consumers' shopping intentions toward online channels and increasing online purchases are recent challenges that require companies to understand the factors influencing consumers' online shopping intentions better. In a separate study, Wei et al. (2024), added that majority of studies on online shopping behaviors focused on developed nations, while fewer researchers attempted similar explorations in developing countries. Additionally, Al-Hattami et al. (2023) argued that irrespective of the tremendous growth in online purchasing platforms globally, such platforms are not very popular in less developed countries, which calls for further investigation

Perhaps, this is why online shopping across developing economies, such as Bangladesh, contextually still has an inadequate understanding of online consumer behaviour (Polas et al., 2022). According to Rahman et al. (2018), internet shopping has been initiated in Bangladesh. However, consumer adoption is still low for purchases online. The aforementioned reflects a gap in the body of knowledge, particularly from a developing country's perspective, that motivates this study and justifies its relevance. The main question of this research was to determine how the variable of interest (i.e., Perceived Ease of Use; Perceived Usefulness; Perceived Entertainment; Intelligence; Social Influence; Security; Convenience; Trust; Emotional Experience; Functional Experience; and Intention to Online Purchase) influences Online Purchase within the premise of expanded TAM model in the field of online purchases.

Theoretically, this paper contributed by enriching the literature on the intention and behavior towards online shopping, particularly from a developing nation's perspective. Specifically, the paper extended the technology acceptance model (TAM) model by integrating relevant variables and further extending the lens of TAM by examining intention and behavior toward online shopping within its scope. As for practical implications, findings from the present study forward deeper insights regarding the motivators of online shopping. Recommendations to help businesses and

consumers support online purchasing that has diverse advantages have also been outlined.

2. Literature review and hypothesis development

2.1. Context of study

This paper investigated the factors influencing consumer intention and actual behaviour towards purchasing online in developing countries, using Bangladesh as a data source through an expanded technology acceptance model. Globally, electronic commerce accounts for USD 2.29 trillion, expected to grow swiftly (Rahman et al., 2018). The Asia Pacific region, in particular, recorded massive growth, reporting USD 1 trillion in online sales. In Bangladesh's endeavour toward being a digital society, smartphone internet users have witnessed an enormous proliferation in recent years (Polas et al., 2022). As Internet penetration extends across urban and rural areas in the South-Asian nation, online shopping in Bangladesh is observed to evolve rapidly and potentially grow exponentially in due time (Rahman et al., 2018). Based on Associated Asian Market Wealth, linked consumers or individuals using e-commerce will continue to grow annually in Asia, including Bangladesh (Polas et al., 2022). However, where there is potential, there is a problem. According to Rahman et al. (2018), Bangladeshi residents are traditionally conservative in their approach towards online purchasing. Hence, this paper justified using Bangladesh as a suitable laboratory to understand consumers' intentions and behaviour towards online purchases from the developing nations' perspective. This study is thus valuable and novel by focusing on the emerging market economy of Bangladesh, which has significant potential for development in the area of electronic commerce and online shopping.

2.2. Theoretical foundation

The technology acceptance model (TAM) has been extensively used in existing studies examining online purchasing behaviour. However, most related studies focused on developed countries, whereby existing findings might not be directly implied to developing economies' perspective (Nguyen et al., 2019). According to TAM, perceived ease of use and perceived usefulness combinedly develop the attitude that creates the intention to adopt innovative technology, which predicts actual behaviour (Davis, 1989). In the present context, if the online shopping platform represents information technology, TAM should be a viable framework to predict customers' intentions and behaviour towards online purchases. To enhance the predictive power of the original framework, researchers integrated additional relevant variables to TAM over time. In an earlier study, Venkatesh and Davis (2000) developed TAM 2 by removing attitude and adding the subjective norm to the original model. To accommodate e-commerce, Venkatesh and Bala (2008) proposed TAM 3 by including trust and perceived risk in the original model. Results from Nguyen et al. (2019) further show that trust, ease of use, and usefulness are essential in developing attitudes towards online purchasing.

Similarly, numerous scholars have regarded social influence in earlier studies, and it is widely accepted as an essential driving factor to embrace technology (Polas et al., 2022). Moreover, Rahman et al. (2018) argued that online shopping is trendy

because it offers better convenience, value proposition, information, choices, and costs. Additionally, Nguyen et al. (2019) urged future studies to extend the TAM perspective by including factors relating to enjoyment. In related research to comprehend the attributes of "The Internet of Things", Pinochet et al. (2018) developed a theoretical model and tested hypotheses focusing on interactivity, connectivity, intelligence, sense of presence, security, and convenience along with functional and emotional experience for the individual adoption behaviour. Based on the above, this study found TAM as a suitable theoretical avenue for this paper. Nevertheless, to extend the TAM in the present context, this study integrated additional key constructs (i.e., perceived enjoyment, intelligence, social influence, security, convenience, trust, emotional experience, and functional experience) into the original model that can comprehensively capture online shopping intention behaviour in developing nations' perspective. Thus this study extends the applicability of TAM to the context of online commerce, with a particular focus on placing these constructs in the existing nomological structure of TAM.

2.3. Perceived ease of use (PE)

PE denotes the extent to which an individual perceives that adopting an innovative technology requires minimum effort (Al-Smadi, 2012; Mwiya et al., 2017). According to Hossain et al. (2023), PE is rooted in the TAM and reflects individuals' subjective assessments of how adopting a particular technology, such as an e-commerce platform, enhances their efficiency and effectiveness in achieving specific goals. Logically, if an innovative system is user-friendly, it will require less effort from the user, which could create a positive intention toward adopting the new technology. The TAM perspective denotes that easy-to-use technologies are more attractive to users (Venkatesh and Davis, 2000). In a recent study, Yang et al. (2021) found that PE significantly positively affects the intention and actual use of electronic wallets. Earlier, Rahman et al. (2018) mentioned that shoppers prefer to purchase online for products' variety and ease of use. According to Polas et al. (2022), the ease of online purchases shoppers enjoy drives the accelerated growth of online business models. Empirically, Nguyen et al. (2019) show that PE significantly predicts attitudes toward online purchasing. Furthermore, Herowati (2024) found that behavioral intention of online buyers is explained by PE. Hence, based on the above, we draw the following hypothesis:

H1: PE affects online purchase intention positively and significantly among Bangladeshi consumers.

2.4. Perceived usefulness (PU)

PU reflects the degree of individuals' perception of enhancing their job performance by adopting a particular system (Al-Smadi, 2012). According to Hossain et al. (2023) PU, the other fundamental construct of TAM, encompasses users' evaluations of the simplicity and accessibility of using technology. PU in the present context could be worded as individuals' perceptions regarding the outcome of purchasing online (Mwiya et al., 2017). Rationally, the user should develop a positive intention towards adopting any new technology if the results are beneficial. Research shows that increased usefulness significantly influences individuals' intention to adopt

the latest technology (Lee, 2009; Kesharwani and Bisht, 2012; Rahi et al., 2017; Venkatesh and Davis, 2000). In a recent study, Yang et al. (2021) revealed that PU significantly and positively affects electronic wallets' intention and actual use. According to Rahman et al. (2018), users' reason for adopting e-commerce for its usefulness translates that PU significantly predicts online purchase intention. Empirically, Nguyen et al. (2019) found that PU determines attitude toward online purchasing. Furthermore, Herowati (2024) found that behavioral intention of online buyers is explained by the variables PU. Hence, based on the above, we draw the following hypothesis:

H2: PU affects online purchase intention positively and significantly among Bangladeshi consumers.

2.5. Entertainment (EN)

EN reflects to the degree to which the behaviour of adopting innovative technologies is expected to be enjoyable and acts as a significant intrinsic motivator to drive users' adoption of new technology (Gao and Bai, 2014). Logically, if new technologies can bring pleasure and fun, users will be more likely to adopt them. In a recent study, Hossain et al. (2023) mentioned that people's enjoyment plays a significant role in their decisions. According to Polas et al. (2022), the enjoyment experienced by shoppers drives the accelerated growth of online business models. Empirically, Gao and Bai (2014) showed solid support for EN in predicting the intention to accept the Internet of Things. EN is further known to indicate online re-purchase intention (Rahman et al., 2018). Hence, based on the above, we draw the following hypothesis:

H3: EN affects online purchase intention positively and significantly among Bangladeshi consumers.

2.6. Intelligence (IN)

IN refers to the feature related to the extent of automated functions (e.g., sensors, data processing memories, and communication skills) embedded in the platform of online purchase (Pinochet et al., 2018). It could be deduced from Chang et al. (2014) that the construct of "intelligence" resembles the degree of automation experience by the customer during the online purchase. This study assumes that greater intelligence of the online platform will reduce the concern of users in executing tasks/services/activities related to online purchases. Hence, based on the above, we draw the following hypothesis:

H4: IN effect online purchase intention positively and significantly among Bangladeshi consumers.

2.7. Social influence (SI)

SI could be translated as the perceptions of significant others that influence an individual's beliefs resulting in an indirect stimulus of inspiration (Polas et al., 2022). If the user believes their use of innovative technology is considered necessary by others, then individuals are more likely to have a positive inclination towards adopting the new technology (Farahat, 2012; Thakur, 2013). According to Gao and Bai (2014), the social context of the use should be considered in assessing the adoption of

innovative technologies. Earlier research commented that occasionally peer influence and other people's commands get more priority than the individuals' feelings and beliefs (Davis, 1989; Dutot, 2015). In a separate study, Karahoca et al. (2017) noted that social prestige is essential in quantifying the relative advantage of new technology. Empirically, Nath et al. (2013) identified that SI impacts the adoption and use of innovative technologies. More recently, Yang et al. (2021) showed that SI significantly positively affects the intention and actual use of electronic wallets. Hence, based on the above, we draw the following hypothesis:

H5: SI affects online purchase intention positively and significantly among Bangladeshi consumers.

2.8. Security (SE)

SE could be defined as a combination of perceived security and privacy, jointly known as perceived creditability (Dutot, 2015). Consumers remain concerned about privacy and security when purchasing online (Rahman et al., 2018). According to Polas et al. (2022), security assurance is influential in reducing customer concerns regarding personal and transactional data abuse. In a separate study, Nguyen et al. (2019) mentioned that consumers' beliefs about the retailers' platform's security, reliability, and integrity are essential for online purchasing. Privacy and Data security are serious concerns related to online purchasing that can harm users' well-being if a third party intercepts their private data (Pinochet et al., 2018). Empirically, Poon (2008) found security significantly affects users' adoption of electronic banking. Thus, this paper assumes that the extent of security offered by the online vendor creates a sense of convenience for the consumer, influencing their decision to purchase online (Chang et al., 2014). Hence, based on the above, we draw the following hypothesis:

H6: SE affects online purchase intention positively and significantly among Bangladeshi consumers.

2.9. Convenience (CO)

Regarding place and time, CO could lead to customer satisfaction (Gao and Bai, 2014), which could develop the behavioural intention to adopt new systems (Rahi et al., 2017). Empirically, Poon (2008) found that convenience of usage significantly affects users' adoption of electronic banking. Regarding the availability of diverse products as well as services and time-saving, CO could thus be important for consumers to develop their intention to shop online. Rahman et al. (2018) argued that online shopping is trendy because it offers better convenience, value proposition, information, choices, and costs. According to Nguyen et al. (2019), CO represents a primary factor for online shopping in emerging economies. Earlier, Karahoca et al. (2017) argued that CO is an essential component of the quantity relative advantage of new technology. In a more recent study, Polas et al. (2022) noted that CO and the ease of online purchases shoppers enjoy drive the accelerated growth of online business models. Hence, based on the above, we draw the following hypothesis:

H7: CO affects online purchase intention positively and significantly among Bangladeshi consumers.

2.10. Trust (TR)

TR can be represented as "a set of specific beliefs dealing primarily with the integrity, benevolence, and ability of another party", and it refers to "an expectation that others one chooses to trust will not behave opportunistically by taking advantage of the situation". According to Hossain et al. (2023), people's trust plays a significant role in their decisions. In general, TR is vital for e-commerce (Nguyen et al., 2019). In a recent study, Yang et al. (2021) found that perceived trust significantly and positively affects electronic wallets' intention and actual use. In the e-commerce and tech environment, TR represents the cornerstone of successfully implementing new technology (Dutot, 2015). According to Rahman et al. (2018), TR and perceived benefits majorly determine consumer attitudes toward online purchases. The construct of TR is particularly crucial as it impacts multiple aspects of online transactions (Pinochet et al., 2018). Results from Nguyen et al. (2019) show that trust directly influences intention towards online purchasing. Hence, based on the above, we draw the following hypothesis:

H8: TR affects online purchase intention positively and significantly among Bangladeshi consumers.

2.11. Emotional experience (EE)

Emotions play an influential role in an individual's beliefs and attitudes, which in turn affects thought processes, actions, and decision-making. Therefore, the importance of emotions cannot be neglected while considering the factors influencing individual intention to accept or reject a new technology (Gratch and Marsella, 2004). Unlike in the brick-and-mortar environment, customers' experience influences online shopping behaviour (Rahman et al., 2018). According to Polas et al. (2022), online purchasing conditions require greater emotional activation coupled with the immediate emotional fulfillment that such a purchase brings. It is perceived that consumers mainly engage with a system or process that invokes EE, wherein such experiences facilitate forming an association with the consumers beyond the purchase or financial transactions, developing feelings of closeness and esteem and revealing cultural values and features related to the customers (Pinochet et al., 2018). Hence, based on the above, we draw the following hypothesis:

H9: EE affects online purchase intention positively and significantly among Bangladeshi consumers.

2.12. Functional experience (FE)

In the online environment, customers rely on their experience as the basis for quality judgment of items in purchasing (Rahman et al., 2018). According to Pinochet et al. (2018), consumers always engage with a system that involves functional experiences, which stems from the satisfaction attached to noticing the usefulness of the technology. Such pleasure, in general, is contingent on perceived quality and is predicted by the consumers' expectations regarding the offered product or service, along with the perception of the same service or product after use or consumption (Pinochet et al., 2018). Hence, based on the above, we draw the following hypothesis:

H10: FE affects online purchase intention positively and significantly among

Bangladeshi consumers.

2.13. Intention towards online purchase (IP)

Behavioural intention translates to "how hard people are willing to try" and "how much of an effort they are planning to exert" to perform a specific behaviour (Nguyen et al., 2019). Intentions could be perceived as the extent to which a potential user has developed conscious plans to execute or not execute a specific behaviour in the future (Mwiya et al., 2017). According to Yaseen and El Qirem (2018), behavioural intentions could be worded as a mirror image of individuals' potential to perform a specific behaviour. TAM posits that intention best predicts actual use (Davis, 1989). In a related context, Polas et al. (2022) mentioned that online purchase habits require adjusting to online purchase intentions, as such intentions are significant predictors of successful purchases online. Empirically, Yang et al. (2021) found that intentions to use electronic wallets significantly and positively determine their adoption. Hence, based on the above, we draw the following hypothesis:

H11: IP affects on online purchase behaviour positively and significantly among Bangladeshi consumers.

2.14. Mediating role of intention

Generally, intention precedes action. Theoretically, the TAM portrays intention as a mediator between PU, PE, and technology adoption (Davis, 1989). Empirically, Mwiya et al. (2017) revealed that PE, PU, and trustworthiness form an attitude positively linked to electronic banking, which eventually determines the adoption of such services. This suggests a mediating role of intention between attitude and adoption of digital banking services. Moreover, Yang et al. (2021) confirmed the mediating role of intention on the correlations between diverse factors and the actual use of electronic wallets. In general, this study aspired to determine the variables influencing consumer intention and actual behaviour toward purchasing online in developing countries through an expanded technology acceptance model. More specifically, the paper examines the effect of PE, PU, EN, IN, SI, SE, CO, TR, EE, and FE on IP, consequently, the impact of IP on online purchase behaviour among Bangladeshi consumers. Additionally, the mediating effect of IP was further examined. Hence, the following hypotheses are forwarded:

HM: IP significantly mediates the effect of PE, PU, EN, IN, SI, SE, CO, TR, EE, and FE on online purchase behaviour among Bangladeshi consumers.

3. Methods

3.1. Research design

This study used a cross-sectional design to collect quantitative data to assess the influence of PE, PU, EN, IN, SI, SE, CO, TR, EE and FE on online purchase intention and behaviour in Bangladeshi consumers. The information was gathered using structured interviews between October and November 2019. Random individuals were interviewed using a questionnaire in public spaces using non-probability-based convenient sampling. To ensure the relevance of respondents, responses were only recorded from individuals who have at least a single experience of online purchase.

For the variables of interest, the study used a 5-point Likert scale (1 = 'strongly disagree', 5 = 'strongly agree').

3.2. Research instrument

This paper used a set of items validated by different existing studies in the English language. As for the sample size, this paper adhered to Reinartz et al. (2009) and collected subjective responses from 353 individuals in Bangladesh. The indicators used to measure PE, PU, EN, SI, and TR were adopted from Gao and Bai (2014). Measures for IN, SE, CO, EE, and FE were adopted from Pinochet et al. (2018). Finally, IP and Purchase Online items were adopted by Dutot (2015). The exploratory nature of this study influenced the use of Structural equation modeling (SEM). More specifically, the variance-based SEM, partial least squares (EM-PLS), was used (Ringle & Hansmann, 2004) to analyse the data, following Hulland's (1999) procedure. Results have been reported following the recommendations of Hair et al. (2019).

4. Results

As observed in **Table 1**, data were gathered from 353 individuals in Bangladesh (64.9% males and 35.1% females). Although no specific age group was internationally focused and non-probability-based convenient sampling was used, most respondents reported being between the ages of 21 to 30 years old (73.9%). Regarding educational qualifications, most respondents (66.6%) reported to have a bachelor's degree. As for their employment status, the majority (65.7%) of the respondents were students.

Table 1. Respondents' demographic profile.

Gender	**n**	**%**	**Age**	**n**	**%**
Male	229	64.9	18 years old–20 years old	47	13.3
Female	124	35.1	21 years old–30 years old	261	73.9
Total	353	100	31 years old–40 years old	24	6.80
Occupation			41 years old–50 years old	17	12.0
Unemployed	28	7.9	51 years old–60 years old	3	0.80
Employed	80	22.7	Above 60 years old	1	0.30
Self-employed	13	3.7	Total	353	100
Student	232	65.7	Academic Background		
Total	353	100	Below Secondary School Certificate	9	2.50
Marital Status			Secondary School Certificate	12	3.40
Single	273	79.0	Higher Secondary Certificate	57	16.1
Married	71	20.1	Bachelor's Degree	235	66.6
Others	3	0.80	Masters and above	40	11.3
Total	353	100	Total	353	100

Table 2 shows that Cronbach's alpha values for all variables exceeded 0.7. Hence, this study assumes all items used to be reliable. The composite reliability values of all variables also exceeded 0.8, proving the reliability of the items (Hair et al., 2019). Moreover, the Dillon-Goldstein rho values in **Table 2** further confirm the reliability of the items. AVE values of all variables exceeded 0.50, portraying convergent validity.

The Cross-loading values in **Table 3** confirmed discriminant validity. Moreover, Fornell–Larcker criterion in **Table 4** showed adequate discriminant validity. Lastly, the VIF values for all constructs dismissed any multicollinearity in the data (Chin, 2010).

Table 2. Reliability and validity.

Variables	Items	Cronbach's alpha	Dillon-goldstein's rho	Composite reliability	Average variance extracted	Variance inflation factor
PE	5	0.765	0.775	0.841	0.516	2.455
PU	4	0.736	0.737	0.834	0.557	2.360
EN	3	0.807	0.814	0.886	0.722	2.531
IN	3	0.718	0.735	0.841	0.639	2.923
SI	5	0.808	0.814	0.867	0.567	2.868
SE	4	0.731	0.741	0.834	0.560	2.079
CO	3	0.779	0.790	0.873	0.699	2.195
TR	5	0.812	0.815	0.869	0.571	1.916
EE	5	0.828	0.828	0.879	0.592	2.080
FE	4	0.778	0.802	0.858	0.604	2.642
IP	8	0.886	0.887	0.909	0.556	1.000
PO	5	0.804	0.808	0.864	0.560	-

Note. PE—Perceived Ease of Use; PU—Perceived Usefulness; EN—Perceived Entertainment; IN—Intelligence; SI—Social Influence; SE—Security; CO—Convenience; TR—Trust; EE—Emotional Experience; FE—Functional Experience; IP—Intention to Online Purchase; PO—Online Purchase.

Table 3. Loadings and cross-loadings.

Items	PE	PU	EN	IN	SI	SE	CO	TR	EE	EE	IP	PO
PE1	0.751	0.505	0.509	0.386	0.339	0.420	0.480	0.287	0.262	0.431	0.411	0.354
PE2	0.791	0.606	0.536	0.422	0.399	0.473	0.478	0.357	0.372	0.515	0.519	0.381
PE3	0.665	0.453	0.331	0.366	0.306	0.309	0.334	0.262	0.370	0.393	0.408	0.282
PE4	0.679	0.494	0.321	0.354	0.354	0.305	0.220	0.229	0.334	0.437	0.355	0.362
PE5	0.697	0.473	0.366	0.386	0.370	0.287	0.257	0.276	0.286	0.407	0.429	0.286
PU1	0.525	0.753	0.377	0.296	0.379	0.365	0.383	0.336	0.378	0.463	0.429	0.301
PU2	0.528	0.763	0.486	0.399	0.360	0.328	0.423	0.260	0.336	0.505	0.456	0.327
PU3	0.567	0.744	0.362	0.364	0.442	0.345	0.299	0.337	0.417	0.397	0.407	0.325
PU4	0.500	0.726	0.411	0.407	0.332	0.336	0.461	0.316	0.364	0.409	0.403	0.364
EN1	0.522	0.432	0.852	0.535	0.481	0.457	0.556	0.311	0.332	0.438	0.494	0.449
EN2	0.508	0.488	0.884	0.576	0.572	0.532	0.527	0.384	0.386	0.531	0.546	0.434
EN3	0.458	0.484	0.812	0.558	0.568	0.445	0.404	0.398	0.409	0.444	0.466	0.367
IN1	0.502	0.504	0.585	0.854	0.638	0.513	0.483	0.410	0.487	0.557	0.531	0.450
IN2	0.409	0.364	0.528	0.802	0.567	0.437	0.360	0.378	0.406	0.519	0.462	0.452
IN3	0.356	0.281	0.443	0.737	0.585	0.347	0.256	0.371	0.402	0.413	0.394	0.413
SI1	0.421	0.355	0.534	0.624	0.745	0.412	0.404	0.379	0.454	0.464	0.479	0.434
SI2	0.374	0.364	0.517	0.558	0.742	0.459	0.315	0.394	0.439	0.406	0.460	0.342
SI3	0.377	0.435	0.486	0.597	0.826	0.365	0.339	0.425	0.457	0.474	0.505	0.379

Table 3. (*Continued*).

Items	PE	PU	EN	IN	SI	SE	CO	TR	EE	EE	IP	PO
SI4	0.362	0.370	0.467	0.496	0.764	0.366	0.404	0.478	0.365	0.369	0.455	0.322
SI5	0.318	0.382	0.374	0.530	0.680	0.252	0.315	0.365	0.426	0.388	0.377	0.368
SE1	0.417	0.362	0.483	0.421	0.359	0.802	0.466	0.410	0.275	0.408	0.483	0.358
SE2	0.378	0.316	0.366	0.379	0.356	0.823	0.331	0.455	0.328	0.368	0.454	0.295
SE3	0.367	0.343	0.416	0.408	0.433	0.738	0.389	0.478	0.359	0.409	0.419	0.345
SE4	0.350	0.355	0.420	0.435	0.344	0.611	0.473	0.417	0.295	0.411	0.400	0.374
CO1	0.460	0.446	0.532	0.417	0.343	0.485	0.879	0.361	0.414	0.548	0.502	0.466
CO2	0.432	0.456	0.526	0.428	0.360	0.492	0.892	0.381	0.464	0.549	0.532	0.443
CO3	0.364	0.413	0.401	0.326	0.359	0.405	0.726	0.477	0.478	0.462	0.454	0.373
TR1	0.294	0.278	0.277	0.317	0.376	0.475	0.380	0.784	0.370	0.375	0.372	0.338
TR2	0.352	0.374	0.323	0.337	0.396	0.471	0.384	0.771	0.350	0.387	0.387	0.336
TR3	0.286	0.278	0.384	0.367	0.365	0.503	0.394	0.726	0.368	0.367	0.419	0.318
TR4	0.258	0.282	0.242	0.414	0.474	0.355	0.244	0.710	0.449	0.387	0.414	0.290
TR5	0.315	0.353	0.376	0.381	0.430	0.419	0.413	0.784	0.438	0.380	0.481	0.400
EE1	0.338	0.410	0.411	0.385	0.407	0.347	0.533	0.407	0.732	0.512	0.506	0.506
EE2	0.326	0.354	0.325	0.391	0.398	0.266	0.391	0.398	0.804	0.421	0.431	0.411
EE3	0.357	0.424	0.356	0.426	0.482	0.362	0.487	0.416	0.780	0.513	0.496	0.379
EE4	0.378	0.357	0.307	0.436	0.435	0.343	0.334	0.402	0.772	0.477	0.434	0.325
EE5	0.340	0.362	0.283	0.448	0.458	0.279	0.302	0.396	0.757	0.469	0.452	0.396
FE1	0.532	0.513	0.513	0.495	0.465	0.486	0.607	0.435	0.542	0.809	0.582	0.474
FE2	0.533	0.508	0.419	0.533	0.467	0.427	0.489	0.381	0.520	0.858	0.586	0.508
FE3	0.446	0.445	0.449	0.459	0.370	0.440	0.503	0.412	0.464	0.792	0.512	0.467
FE4	0.363	0.371	0.332	0.470	0.453	0.272	0.297	0.330	0.406	0.630	0.383	0.411
IP1	0.422	0.398	0.437	0.399	0.355	0.444	0.484	0.349	0.372	0.506	0.739	0.614
IP2	0.479	0.458	0.494	0.458	0.454	0.448	0.461	0.405	0.406	0.557	0.767	0.522
IP3	0.471	0.402	0.409	0.389	0.421	0.455	0.427	0.383	0.462	0.482	0.752	0.427
IP4	0.487	0.493	0.436	0.471	0.472	0.483	0.441	0.418	0.534	0.529	0.761	0.474
IP5	0.414	0.427	0.370	0.425	0.467	0.438	0.425	0.411	0.442	0.494	0.741	0.441
IP6	0.441	0.389	0.447	0.437	0.505	0.412	0.378	0.409	0.425	0.413	0.735	0.423
IP7	0.490	0.462	0.482	0.482	0.533	0.459	0.469	0.517	0.532	0.557	0.755	0.544
IP8	0.355	0.354	0.447	0.416	0.420	0.370	0.451	0.399	0.442	0.458	0.713	0.502
PO1	0.478	0.414	0.538	0.456	0.374	0.446	0.529	0.367	0.375	0.540	0.519	0.746
PO2	0.339	0.324	0.328	0.438	0.429	0.323	0.273	0.332	0.437	0.441	0.511	0.740
PO3	0.339	0.365	0.296	0.404	0.408	0.293	0.316	0.337	0.469	0.439	0.499	0.782
PO4	0.290	0.246	0.383	0.426	0.321	0.363	0.423	0.376	0.362	0.413	0.536	0.777
PO5	0.280	0.300	0.275	0.309	0.293	0.273	0.376	0.251	0.329	0.404	0.413	0.695

Note. PE—Perceived Ease of Use; PU—Perceived Usefulness; EN—Perceived Entertainment; IN—Intelligence; SI—Social Influence; SE—Security; CO—Convenience; TR—Trust; EE—Emotional Experience; FE—Functional Experience; IP—Intention to Online Purchase; PO—Online Purchase.

Table 4. Fornell–larcker criterion.

	PE	PU	EN	IN	SI	SE	CO	TR	EE	EE	IP	PO
PE	0.718											
PU	0.709	0.747										
EN	0.584	0.550	0.850									
IN	0.535	0.490	0.654	0.799								
SI	0.494	0.506	0.636	0.746	0.753							
SE	0.507	0.459	0.564	0.548	0.497	0.748						
CO	0.503	0.525	0.585	0.470	0.423	0.553	0.836					
TR	0.399	0.416	0.428	0.483	0.543	0.587	0.482	0.756				
EE	0.453	0.499	0.441	0.542	0.568	0.418	0.540	0.526	0.769			
FE	0.611	0.596	0.556	0.627	0.560	0.533	0.624	0.502	0.625	0.777		
IP	0.598	0.569	0.592	0.584	0.608	0.589	0.595	0.553	0.607	0.673	0.746	
PO	0.464	0.440	0.491	0.548	0.490	0.457	0.513	0.448	0.528	0.599	0.666	0.748

Note. PE—Perceived Ease of Use; PU—Perceived Usefulness; EN—Perceived Entertainment; IN—Intelligence; SI—Social Influence; SE—Security; CO—Convenience; TR—Trust; EE—Emotional Experience; FE—Functional Experience; IP—Intention to Online Purchase; PO—Online Purchase.

The path coefficients (**Table 5**) show that the coefficient value for PE on IP (Hypothesis H1) was 0.136 with a *p*-value of 0.010 (at 5% significance), signaling that PE had a significantly positive effect on IP. Besides this, the f^2 value of 0.020 showed a small impact of PE on IP. The coefficient value for PU on IP (Hypothesis H2) appeared positive (0.029) with a *p*-value of 0.303, reflecting that PU failed to have any statistically significant effect on IP. Similarly, the coefficient for EN on IP had a positive value of 0.076 and a *p*-value of 0.087 (Hypothesis H3), showing an insignificant effect of EN on IP. Interestingly, the coefficient for IN on IP had a negative value (−0.030) and a *p*-value of 0.328 (Hypothesis H4), reflecting that the effect of IN on IP was not statistically significant. Meanwhile, the coefficient for SI on IP was 0.151 with a *p*-value of 0.008 (Hypothesis H5), reflecting that SI had a significantly positive effect on IP. Moreover, the f^2 value of 0.021 indicated a small effect of SI on IP purchase across the study sample.

The path coefficient value for SE on IP (Hypothesis H6) was 0.136 with a *p*-value of 0.008, which shows that SE had a significantly positive effect on IP. The f^2 value of 0.024 reflected a small effect of SE on IP. Furthermore, the path coefficient value for CO on IP (Hypothesis H7) was 0.099 with a *p*-value of 0.041, which signifies that CO had a significantly positive effect on IP across the sample of the study. The f^2 value of 0.012 additionally showed that the effect size of CO on IP was zero to small. The path coefficient value for TR on IP (Hypothesis H8) was 0.082 with a *p*-value of 0.045, translating that TR had a significantly positive effect on IP. The f^2 value of 0.009 reflected that the size of TR on IP was zero to small.

Additionally, the path coefficient value for EE on IP (Hypothesis H9) was 0.153 with a *p*-value of 0.001, which shows that EE had a significantly positive effect on IP. The f^2 value of 0.030 reflected a small impact of EE on IP. On the other hand, the path coefficient value for FE on IP (Hypothesis H10) was 0.194 with a *p*-value of 0.002, which portrayed that FE had a significantly positive effect on IP. The *f2* value of 0.038

reflected a small impact of FE on IP. Finally, the path coefficient value of 0.666 for IP on online purchases (Hypothesis H11) with a *p*-value of 0.000 confirmed a significant positive effect of IP on actual online purchases. The f^2 value of 0.797 reflected a substantial impact of IP on online purchases across the dataset of this study. The *r*2 value for IP was 0.625, indicating that independent variables of the study could explain 62.5% of the variation in the construct. As for purchases online, the r^2 value of 0.444 reflects that 44.4% of the variation in online purchases could be determined by the intention towards it among the consumers in Bangladesh. Furthermore, the Q^2 values of 0.319 and 0.232 (above 0) showed that the employed variables had predictive relevance for intention and online purchases.

Table 5. Path analysis.

Hypo.	Association	Coefficient	*t*-Value	Sig.	Decision	r^2	f^2	Q^2
H1	PE → IP	0.136	2.318	0.010	Accepted		0.020	
H2	PU → IP	0.029	0.517	0.303	Rejected		0.001	
H3	EN → IP	0.076	1.364	0.087	Rejected		0.006	
H4	IN → IP	−0.030	0.446	0.328	Rejected	0.625	0.001	0.319
H5	SI → IP	0.151	2.438	0.008	Accepted		0.021	
H6	SE → IP	0.136	2.400	0.008	Accepted		0.024	
H7	CO → IP	0.099	1.742	0.041	Accepted		0.012	
H8	TR → IP	0.082	1.694	0.045	Accepted		0.009	
H9	EE → IP	0.153	3.163	0.001	Accepted		0.030	
H10	FE → IP	0.194	2.845	0.002	Accepted		0.038	
H11	IP → OP	0.666	20.390	0.000	Accepted	0.444	0.797	0.232

Note. PE—Perceived Ease of Use; PU—Perceived Usefulness; EN—Perceived Entertainment; IN—Intelligence; SI—Social Influence; SE—Security; CO—Convenience; TR—Trust; EE—Emotional Experience; FE—Functional Experience; IP—Intention to Online Purchase; PO—Online Purchase.

As observed in **Table 6**, PE had a significant (*p*-value < 0.05) positive and indirect effect on online purchases (at 5% significance), thus revealing the significant mediating effect of IP on the correlation between PE and online purchases (Hypothesis HM1). **Table 6** further revealed that the indirect impact of PU on online purchases was not statistically significant. Hence, Hypothesis HM2 cannot be confirmed. Similarly, EN has no significant indirect effect on online purchases, which does not allow us to approve the mediating impact of IP between EN and online purchase (Hypothesis HM3). Accordingly, IN had no significant indirect effect on online purchases that conveys an insignificant mediating impact of IP on the relationship between IN and online purchases (Hypothesis HM4). SI had a significant indirect effect on online purchases, which suggests that IP mediated the impact of social influence on online purchases across the dataset of this study (Hypothesis HM5).

In addition, **Table 6** revealed that SE had a significant indirect effect on online purchases, suggesting that IP mediated SE's impact on online purchases (Hypothesis HM6). CO showed a significant indirect effect on online purchases, which means that IP mediated the effect of CO on online purchases (Hypothesis HM7). Similarly, TR had a significant indirect impact on online purchases, confirming the mediating role of IP between TR and online purchases (Hypothesis HM8). As expected, EE portrayed

a significant indirect effect on online purchases, demonstrating the mediation of IP between EE and online purchases (Hypothesis HM9). Finally, FE showed a significant indirect impact on online purchases, indicating that IP mediates the effect of FE over online purchases across the sample of the present study (Hypothesis HM10).

Table 6. Mediating effects.

Hypothesis	Path	Beta	CI-Min	CI-Max	Sig.	Decision
HM1	PE → IP → OP	0.090	0.029	0.158	0.011	Mediation
HM2	PU → IP → OP	0.019	−0.036	0.087	0.304	No Mediation
HM3	EN → IP → OP	0.050	−0.014	0.110	0.086	No Mediation
HM4	IN → IP → OP	−0.020	−0.091	0.056	0.327	No Mediation
HM5	SI → IP → OP	0.101	0.032	0.166	0.007	Mediation
HM6	SE → IP → OP	0.091	0.030	0.156	0.010	Mediation
HM7	CO → IP → OP	0.066	0.006	0.139	0.045	Mediation
HM8	TR → IP → OP	0.055	0.002	0.109	0.048	Mediation
HM9	EE → IP → OP	0.102	0.047	0.154	0.001	Mediation
HM10	FE → IP → OP	0.129	0.050	0.199	0.002	Mediation

Note. PE—Perceived Ease of Use; PU—Perceived Usefulness; EN—Perceived Entertainment; IN—Intelligence; SI—Social Influence; SE—Security; CO—Convenience; TR—Trust; EE—Emotional Experience; FE—Functional Experience; IP—Intention to Online Purchase; PO—Online Purchase.

To extend the study results, the IPMA using PE, PU, EN, IN, SI, SE, CO, TR, EE, FE, and IP as variables were run, and Online Purchase as the target construct. As obeserved from **Table 7**, IP was the most critical factor in predicting actual online purchases, as reflected by its high importance and performance values compared to other variables. IP was preceeded by functional experience, emotional experience, and others.

Table 7. Importance-performance map analysis (IPMA).

Variables	Target Construct	Index	Performance
PE		0.099	70.197
PU		0.021	69.537
EN		0.043	67.888
IN		−0.020	63.394
SI		0.107	63.477
SE	Purchase Online	0.087	62.525
CO		0.063	73.075
TR		0.054	60.777
EE		0.100	63.851
FE		0.139	69.252
IP		0.701	67.457

Note. PE—Perceived Ease of Use; PU—Perceived Usefulness; EN—Perceived Entertainment; IN—Intelligence; SI—Social Influence; SE—Security; CO—Convenience; TR—Trust; EE—Emotional Experience; FE—Functional Experience; IP—Intention to Online Purchase; PO—Online Purchase.

Figure 1 shows the path cofficents of the study variables.

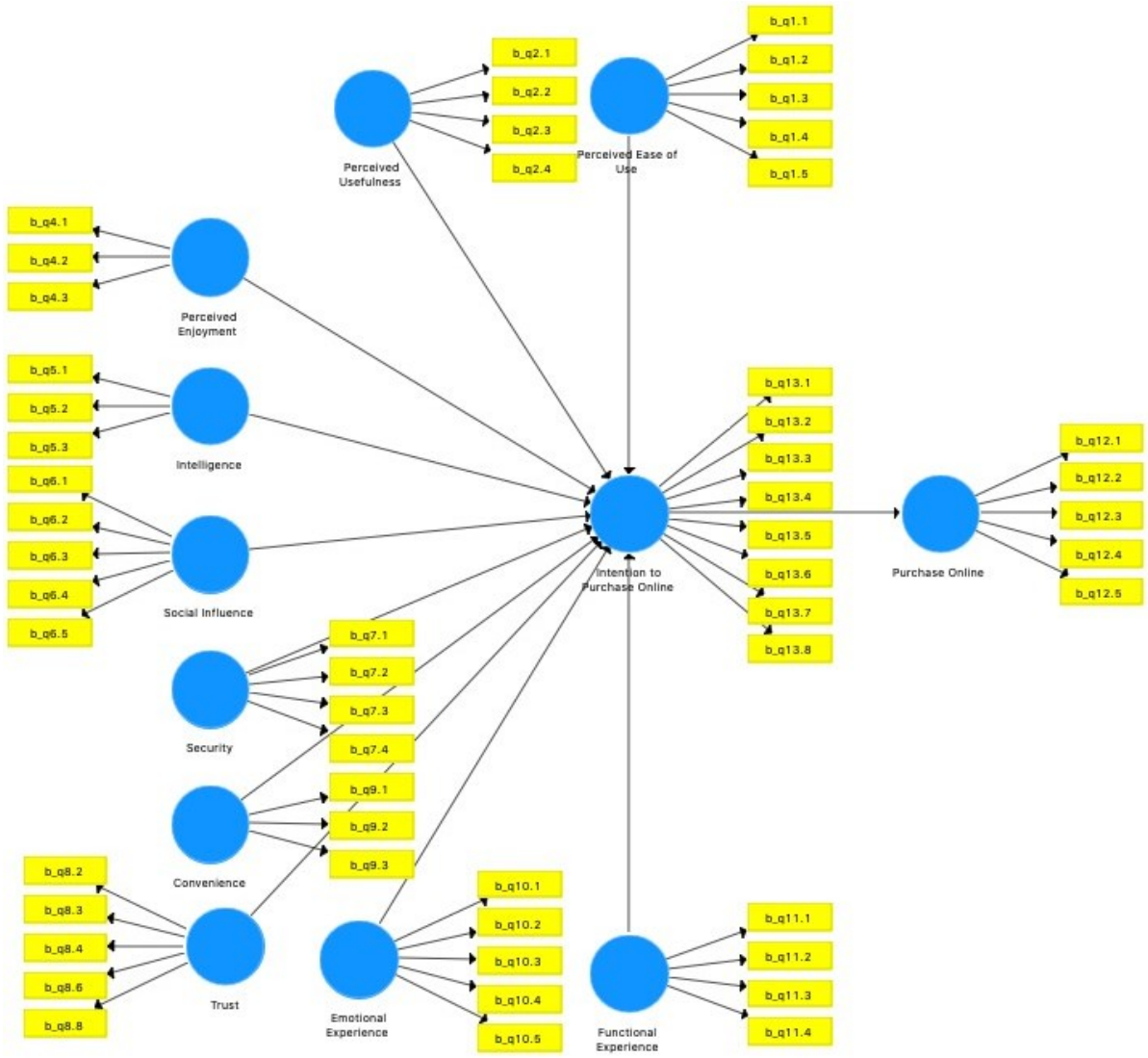

Figure 1. Path coefficients.

Source: Primary data.

5. Discussion

Affordable, intelligent devices, advancement of telecommunications infrastructure, lack of time, increased purchasing power, and extended convenience have driven the accelerated growth of emerging online business models (Polas et al., 2022). Consequently, consumer behaviour has grown globally as a contemporary research area to comprehend this unique nature of online shopping (Rahman et al., 2018). Hence, the purpose of the current study was to determine the variables that influence customer intention and actual behaviour toward purchasing online in developing countries through the lens of an expanded technology acceptance model. Specifically, this study explored the influence of PE, PU, EN, IN, SI, SE, CO, TR, EE, and FE on IP and online purchases employing an expanded version of TAM. Findings revealed that PE had a significantly positive influence on IP, confirming Hypothesis H1. In line with the previous studies (Hossain et al., 2023; Nguyen et al., 2019;

Venkatesh and Davis, 2000; Yang et al., 2021), this finding shows that easiness associated with the system develops positive intention toward purchasing online. This paper could not confirm any significant effect of PU on IP (Hypothesis H2). However, the coefficient value of the path analysis suggested that in the case of a correlation, the impact of perceived usefulness on the intention to purchase online would be positive. This finding narrates that perhaps PU is a less critical factor for IP in the case of Bangladeshi consumers.

Similarly, no significant effect of EN could be established on IP (Hypothesis H3). Nevertheless, the path analysis's coefficient value translated that if EN's impact exists on IP, it should be positive. Contradicting Gao and Bai (2014), this finding shows that the increasingly diverse benefits of online purchasing cause EN to be less significant. Findings, further do not allow this study to confirm any significant effect of IN on IP, as hypothesized in Hypothesis H4, perhaps because of contextual differences between this study and existing literature. Interestingly, the coefficient value suggested a possible negative association between IN and IP. The results also revealed that SI significantly positively affects IP, confirming Hypothesis H5. In line with the existing literature (Gao and Bai, 2014; Nath et al., 2013; Yang et al., 2021), this finding supports that perceptions of significant others shape individuals' intention toward online purchases.

The path analysis results further supported the proposition that SE significantly positively affects IP, confirming Hypothesis H6. In line with previous studies (Poon, 2008; Pinochet et al., 2018), this finding signifies that consumers' perceived level of SE determines their IP. Consumers' beliefs about the security of the retailers' platforms are essential for online purchasing (Nguyen et al., 2019). Specifically, concerns regarding the privacy of users' personal and financial data directly influence their possibility of purchasing online. CO is further found to have a significant positive influence on IP, confirming Hypothesis H7. In agreement with Poon (2008), this highlights that customers will be more likely to purchase online if they perceive it to be relatively convenient and flexible. Moreover, TR significantly positively affected IP across the dataset, confirming Hypothesis H8. In line with existing studies (Hossain et al., 2023; Nguyen et al., 2019; Yang et al., 2021), this translates that for online purchases, trust is a crucial ingredient for enhancing effective interactions with potential buyers. Results portrayed a significant positive effect of EE on IP, supporting Hypothesis H9. This shows that emotions influence an individual's intention towards a specific behaviour, including the adoption of new technology. Online purchases are facilitated by emotional activation experienced by consumers, who seek closeness and esteem from online shopping platforms beyond financial transactions. Additionally, FE was found to have a significant positive effect on IP, confirming Hypothesis H10. In line with Pinochet et al. (2018), this narrates that consumers are more likely to engage with a system that offers adequate functional experiences. Finally, IP is found to have a significant positive effect on online purchases across the study sample, proving Hypothesis H11. In line with Yang et al. (2021), this advocates that the intention to purchase online adequately captures consumers' actions. Findings indicate that IP significantly mediates the influence of PE, SI, SE, CO, TR, EE and FE on online purchases across the dataset of the study, confirming Hypothesis HM1, HM5, HM6, HM7, HM8, HM9, and HM10. In line with previous studies (Mwiya et al., 2017;

Yang et al., 2021), this finding confirms the mediating role of intention between predictors and technology adoption. However, since no significant indirect effect was found, this paper concludes that IP purchases failed to mediate the effect of PU, EN, and IN on online purchases (Hypotheses HM2, HM3, and HM4). Apart from the above, the results from our extended analysis further allowed this paper to confirm that intention to purchase online was the most crucial factor in predicting actual online purchases among consumers in Bangladesh. Supporting the TAM (Davis, 1989), this paper concurs with Yaseen and El Qirem (2018) and Alshebami (2022) to confer that intentions are the best, most accurate predictor of actual behaviour.

6. Conclusion

The exponential growth of mobile technologies coupled with the Internet has significantly contributed to the advancement of e-commerce and online shopping (Polas et al., 2022). In general, this study aimed to determine the variables that form consumer intention and promote actual behaviour toward purchasing online in developing countries through the lens of an expanded technology acceptance model. Specifically, to identify the drivers of consumers' adoption of online shopping in developing nations, this study explored the influence of PE, PU, EN, IN, SI, SE, CO, TR, EE, and FE on IP and actual online purchases. Findings revealed that PE, SI, SE, CO, TR, EE, and FE significantly and positively affect IP. IP has a significant positive effect on actual online purchases. Moreover, IP mediated the effect of PE, SI, SE, CO, TR, EE, and FE over online purchases. Overall, the results confirm 15 of the 21 hypotheses presented. It could be drawn from the results that PE, SI, SE, CO, TR, EE, and FE are essential drivers of IP and actual online purchases in Bangladesh. It could further be deduced that IP is the most vital determinant of actual behaviour, and it significantly mediates the effect of identified antecedents on actual online purchases in Bangladesh. Interesting to additionally reveal that for online purchases in developing nations, other variables are more critical than PU, EN, and IN. This paper, thus, contributes to the understanding of customers' behaviour online from an emerging economy perspective. Moreover, this study's novelty is due to the study region, which is an emerging or developing country.

7. Theoretical implications

Theoretical, this paper contributes to the development of knowledge by bringing evidence that incites a discussion concerning the future of online shopping and e-businesses. The usefulness of this research was aimed at developing a novel model that could capture the determinants of online purchases comprehensively and reveal useful insights for future researchers, thereby extending current literature on e-commerce in developing nations, while simultaneously extending the theoretical rigor and scope of TAM. This is one of the limited studies focusing on examining the determinants of online purchasing among consumers in Bangladesh employing an extended TAM framework. Our extended TAM model comprises different components, namely perceived ease of use, perceived usefulness, perceived enjoyment, intelligence, social influence, security, convenience, trust, emotional experience, and functional experience, which were used to examine their impact on online purchasing.

The study provides empirical evidence of the significant role played by the TAM model and the need to focus on promoting those key factors that positively influence purchase intention among individuals in Bangladesh. The study also provides a road map for other researchers to continue investigating other variables that may enhance online purchase intention among individuals in Bangladesh using different models. The study also provides insight for other researchers to expand the sample size of the respondents and compare the model's effectiveness with foreign countries. This study is also considered essential as it helps individuals, in general, to switch their purchase patterns to online ones and avoid any face-to-face interaction that may lead to health issues such as Covid 19 and other challenges. Furthermore, this paper provides theoretical insights and practical recommendations to help businesses and consumers to support online purchasing, which has several diverse advantages.

8. Managerial, and practical implications

By focusing on Bangladesh, this paper extends knowledge of technology acceptance and online purchases in developing markets. In addition to the original constructs, this paper integrated EN, IN, SI, SE, CO, TR, EE, and FE to extend TAM to explain better consumer intentions and behaviour related to online purchases in developing nations. Practically, this paper offers insights as to how diverse variables encourage online purchases in developing markets. This could assist critically the online retailers as well as policymakers, to formulate and strategize initiatives to enhance online purchases. Moreover, this study provides useful information to practitioners in the field of online commerce. By explaining users' intentions from a user's perspective, the findings of this research can not only help online commerce specialists develop a more user-friendly e-commerce system but can also provide information on how to best promote their products and services to potential users. Furthermore, the research can assist e-commerce retailers to improve their policies that could enhance the nature of services offered and thus bring greater benefits to the customers. Findings imply that online businesses must develop their platforms to be easy to navigate, simple to use, socially acceptable, reliable, and secure. In particular, online businesses need to enhance the security of their platforms to protect consumer privacy. Policies regarding privacy should be transparently communicated to customers. Online vendors should ensure sufficient security to keep hackers away. To improve adoption and reduce barriers, online stores should further build trust with their consumers, and work on loyalty as a major strategy in business operations. For example, to gain the trust and confidence of customers, online businesses could work to minimize technical disruptions. Finally, companies need to cultivate the tendency to strengthen bonds of emotional and functional experience to enhance online purchases of their services and products .

9. Limitations and future research direction

In terms of limitations, it is noted that the identified factors of online purchase intention and behaviour are non-exhaustive. Therefore, future researchers are encouraged to integrate additional factors to the current model in order to extend its predictive power and provide a more comprehensive understanding of shopping online.

Furthermore, this study used a non-probability-based convenience sampling technique wherein we focused on the general population of Bangladesh. Hence, future researchers are encouraged to use random or stratified random sampling techniques to reveal unique motivators of online purchases among specific groups. Finally, this study employed a cross-sectional design to reach the findings. Though widely used for similar studies, yet, it is recommended for future studies to contrast presented findings using a longitudinal approach to provide a deeper understanding of the subject matter.

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