



Unfolding factors behind internet-banking adoption in Bangladesh: An extended application of UTAUT2 model with perceived security and trust

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ABSTRACT

Over the last decade, Internet banking is making its own acceptance worldwide including both economically stable as well as in developing countries. Though an ample amount of research on Internet banking (IB) adoption is accessible in developed countries and in some developing countries, it is scant in Bangladesh. Therefore, the aim this study is to analyze the predictors that influences customers in IB adoption in Bangladesh. Incorporating two external variables, namely perceived technology security (PTS) and trust with the UTAUT2, a survey questionnaire was developed and distributed among Bangladeshi customers using online platforms. Using convenience sampling method as a nonprobability sampling technique, a total 280 responses were gathered in an online survey and analyzed following PLS-SEM strategy. This study revealed that PTS, performance expectancy, trust, effort expectancy (EE), social influence (SI), facilitating conditions (FC), price value (PV), and hedonic motivation (HM) have significant influences on IB adoption in the Bangladesh context while habit (HT) has found insignificant. Further, while we investigated the gender differences between the relationships of exogenous and endogenous constructs using PLS-MGA (multi-group-analysis), we found that trust, HT, PV, EE, and FC are significant for female whereas PTS, SI, and PE are significant for male respondents. Gender also moderates the relationships between HT and IB adoption, and, trust and IB adoption. This study contributes in the literature of IB adoption as well as offers some valuable implications for Banks in developing country to increase the IB adoption.

Keywords: Internet banking (IB) adoption, UTAUT2, perceived technology security, trust, Bangladesh

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INTRODUCTION

In the realm of the current digitalization of service industry, use of wide range of information technology has been observed worldwide (Rahaman et al., 2021). Especially, in the banking sector, a remarkable breakthrough has come over the traditional service channel. This breakthrough is termed as “E-banking” or “Internet Banking” that allows the customers to take the banking services at their easy through online by using their own computer or laptop (Gholami, et al., 2008). By unlocking lots of opportunities, Internet Banking helps the banks to integrate faster and reliable banking services at their door step (Jahan et al., 2020). Badreldin et al. (2016) defines Internet Banking as the banking approach where customers can manage their bank accounts or do bank related works through the internet from their home, office or from any other places at their desired time to do so. More specifically, under Internet banking, banks use the internet as a remote delivery channel (Karen et al. 2000). Although, in the beginning of the internet banking, banks were only involved in sharing information of the products or services in their websites, but with the advancement of technological safety, they are now offering transactional services (Martin et al., 2014) like fund transfers, balance check-up, investments, bill payment,

regular cheque requisition services through online to their customers (Merhi et al., 2019). Alsajjan and Dennis (2010) opine that, the intangible and informative nature of the banking products enhances the efficient uses of this technology by the banks. Banks using internet banking can lessen their operational and labor costs in comparison to that of the traditional human encounters (Alalwan, 2018). Moreover, by dissolving the time and place limitation, it can facilitate the banks to reach more customers with more services (Rawashdeh, 2015). Hence, to reduce the costs along with improving customer services more and more banks are now offering internet banking options (Martin et al., 2014). Indeed, among the other e-commerce activities, Internet banking has become one of the most cost-effective one (Lee, 2009). Importantly, the paramount role of IB in enhancing development, growth, innovation and competitiveness, has made it as a global phenomenon (Hasan, 2010). As such, its adoption is increasing in the developing countries along with the developed one (Yuen, 2010). Although, IB had been commenced in the developed country many years ago: in UK in 1983 (Islam & Mahfuz, 2014), in the US in 1994, in Australia in 1999 (Yuen, 2010), however, in the developing countries,

due to the underdeveloped information technology, computer illiteracy, digital division between rich and poor, lack of technological security and user-friendly law and regulations, IB has not been spread as much as expected (Nitsure, 2003).

According to Iqbal & Qureshi (2012), these developing nations are now also concerned about the urgency of participating in the continuing flow of internet banking. In turn, the traditional cash driven economy of the developing countries is going to be replaced by a modern and sophisticated online system (Chevan, 2013). Bangladesh, as one of the rising developing countries of South Asia, is not an exception. At present, there are around 61 public and private banks working in Bangladesh and most of these banks are now offering at least some basic online services to their customers (Islam, 2014). Indeed, Internet Banking has a great future in Bangladesh. Particularly, as the customers are becoming technology oriented (Sagib & Zapan, 2014; Barua, Aimin, & Akter, 2016), as well as the number of internet users is increasing geometrically here, so the potential of IB is also (Islam & Mahfuz, 2014). Looking at the current situation in Bangladesh, we see that the "Internet banking transactions have surged in recent months as people increasingly embraced the digital mode while opting not to visit branches" (Zamir, 2021). It is reported in the same article that the recent lockdown declared by the Government to control the spread of COVID-19 has sharply enhanced the customers' reliance on the internet banking transactions. In December 2020, the total number of such transactions was 23.44 lakh which was 41.88 percent higher than the previous year.

Typically, the successful implementation of the Internet Banking depends on the approval of the system by the customers and thereby justifies its investment in this sector (Alalwan, 2018; Curran and Meuter, 2007). Even after huge money and effort being implemented in some developing countries, like in Fiji (Sharma, 2020) or in Jordan (Alalwan, 2018), the IB adoption is not satisfactory. Particularly in developing countries IB adoption rates are not as high as predicted, and also in using such services customers are less interested (Alalwan et al., 2016; Hanafizadeh et al., 2014; Hossain and Dwivedi, 2014; Lin, 2011, 2013; Purwanegara, Apriningsih, & Andika, 2014; Püschel et al., 2010; Zhou, 2011, 2012; Weerakkody et al., 2013). In Bangladesh, use of the online channel is also slow. In reality, "for many firms, often the challenge is not managing the technology but rather getting consumers to try the technology" (Muter et al., 2005, p-78). In the report of Bangladesh Bank regarding Electronic Banking in the period of 2013-2018, the number of banks involved in IB and the volume of IB transactions, both have been found smaller comparing to Debit cards, Credit cards or ATM services in Bangladesh. For instance, according to Financial Stability Report (2013-2018) of Bangladesh Bank, in 2018, Number of Banks involved in Electronic Banking in Bangladesh in internet banking, credit card issue, debit card issue is 41, 39, 53 respectively (FSR, 2018). Therefore, to speed up the current upraising trend of the IB adoption and to ensure returns from the investments in this regard, banks need to have a clear understanding about the factors supporting or obstructing the adoption or acceptance choice of Internet Banking by the actual and potential customers here. After making a comprehensive literature review, it is seen that most of the previous research on Internet Banking has done in the perspective of the customers in developed nations (Tahini, El-Masri, Ali, & Serrano, 2016; Chaouali, Yahia, & Souiden, 2016;

Malaquias & Hwang, 2016). Again, in some recent papers (Alalwan et al., 2018; Badreldin, F., et al., 2016; Khalil & Michael, J., 2008), researchers focus the issue with respect to the customers of the specific developing country context. In contrary, researches in Bangladesh mainly took place on the prospects and problems of Internet Banking (Sarker et al., 2020, Rahman et al., 2017; Huda & Chowdhury, 2017; Sadekin & Shaikh, 2016; Mohiuddin, 2014; Rahman et al., 2012). Therefore, the study relating to the antecedent factors at the back of the complete adoption intention of Internet Banking in Bangladesh is quite urgent. Considering the above scenario, the current paper is an attempt to discover the factors behind the choice options of the customers to adopt Internet banking in Bangladesh. In order to do so, the widely accepted UTAUT2 model has been used to sort-out the priorities of the Bangladeshi customers in adopting Internet banking services. Although, the model has been applied in a satisfactory number of researches to investigate the customers' preferences in this respect on different developed and developing countries, there is no remarkable work in context of Bangladesh yet. Furthermore, as, we are investigating two sensitive issues, namely money and internet (Wang, Wang, Lin, & Tang, 2003), PTS and trust two additional constructs are integrated in this model in view of the risks involved in taking banking services over the Internet here. Besides, to understand the gender specific influences on the nature of the customers' IB adoption behavior, the role of gender on all hypothetical relationships of the current model will be tested. In order to do so, the paper has been organized into main six sections. Following the introduction, in the second section, literature review and research framework have been discussed. The third section covers hypothesis development for the empirical investigation. Research methodology including construct measurement, data collection and characteristics of the respondents has been described in the fourth section. Subsequently, data analysis and results are sequentially reported in the fifth section. Finally, before the conclusions, discussions of the empirical results and implications of them in theory and practice have been mentioned in the sixth part of this paper.

LITERATURE REVIEW AND RESEARCH FRAMEWORK

Many studies over the last decade have centered on factors affecting the adoption of IT (Heijden, 2003; Taylor and Todd, 1995). Aligning with these, surveys on digital financial platforms and reports on consumer adoption of online banking have received further coverage (Nguyen, Nguyen, Mai, & Tran, 2020). However, the literatures on Internet Banking have included the investigation of a wide range of factors and the validation of numerous theories (Tam and Oliveira, 2016; Martins et al., 2014; Orel and Kara, 2014; Zhu et al., 2013; Hung et al., 2012). All of these researches come with some insightful and analytical findings. Lee (2009), in the light of the Taiwanese business climate, states that as intervening variables, perceived usefulness, attitude, subjective norm, and perceived behavioral control all have a major influence on the intention to use internet banking. On the other hand, lack of facilitating conditions was identified as the main barrier of IB adoption. Again Martin et al. (2014) reported the important role of perceived expectancy (PE), effort expectancy (EE), and social influence (SI) on IB adoption. In another study, Kwateng, Atiemo, & Appiah, (2019) investigated the growth of online banking in Ghana, and their survey result showed that price value, habit, and trust have a substantial impact on behavioral intention, which in turn has a positive impact on real

technology use. Nguyen et al. (2020) investigated IB adoption among Vietnamese and found that PE, EE, hedonic motivation (HM), habit (HT), and trust all had substantial effects on customers' choice to espouse internet banking. In context of Pakistan, Rahi, Ghani, & Ngah (2018) concluded performance expectancy, effort expectancy and social influence as the major ancestors of the customers' willingness to accept internet banking. In contrary, the contribution of enabling situations, HT (habit) and price value (PV) was not proven on customer adoption intention in that study. Furthermore, Alhassany & Faisal (2018) conceptualized and confirmed the direct and indirect impacts (through perceived usefulness) of perceived ease of use and subjective norms on IB adoption decisions of the customers of North Cyprus. Even if, a substantial number of research models or theories have been developed through validating these factors in explaining customers' IB adoption, scholars have not still stopped their efforts to formulate a more effective theory in this respect. Such as, the Technology Acceptance Model (TAM) was a widely recognized model and collection of ideas that studied IB adoption (Davis, 1989). But, because of its shortcomings in illustrating customers' technology acceptance and use (López-Nicolás et al., 2008), the UTAUT (Unified Theory of Acceptance and Use of Technology) model was developed by Venkatesh, Morris, Davis, and Davis (2003) to assess independent variables (like; PE, EE, SI, FC) when analyzing internal and external motivation. In this continuous journey, Venkatesh, Thong, and Xu (2012) further created UTAUT2 by incorporating HM, PV, and HT to capture a more accurate picture of technology acceptance and usage (Negahban and Chung, 2014). At present, the impact of PTS and trust on IB adoption decisions is reported in some papers in a scattered way. In Slovakia, Vejacked and Tofa (2017) found that PTS and trust play a significant role in increasing customer intention to use internet banking.

According to Patel and Patel (2018), PTS, along with perceived usefulness, perceived ease of use, and SI have a major influence on IB adoption. Lee, M.-C. (2009) discovered a related finding in his study too. Similarly, trust has been identified as a significant factor that increases consumer intention to use internet banking (Lin, Wang, & Hung, 2020). In fact, the value of trust in IB adoption has been found in a group of studies (Ahmad & Soleymani, 2013; Grabner-Kräuter & Faullant, 2010; Nor & Pearson, 2007; Suh & Han, 2002; Sohail & Shanmugham, 2003). So, in view of the paramount significance of these PTS and trust in the Bangladesh context, a developing country, the current paper attempts to make a detailed analysis through testing them as additional constructs of this UTAUT2 model, as shown in Figure 1.

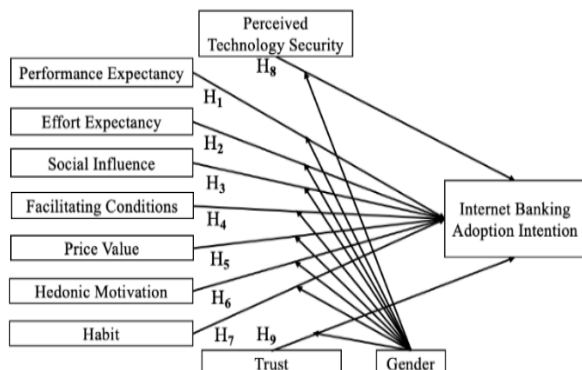


Figure 1. Research Model

HYPOTHESIS DEVELOPMENT

Performance Expectancy (PE)

PE is theorized whereas the services along with advantages are achieved by using pioneering means in respect of accessibility, modification, availability, proficiency, operating period, and exertion sparing (Venkatesh, Morris, Davis, & Davis, 2003). PE can be specified as the extent to which receiving an innovation will bring in efficiency to clients in completing certain endeavors (Venkatesh, Thong, & Xu, 2012). It is expounded that PE signifies user's awareness towards improvement by using of internet banking like ease of payment, fast response, and service effectiveness (Zhou, Lu, & Wang, 2010). Regarding internet banking Ali Abdallah Alalwan, Dwivedi, & Williams (2014) suggested that PE is counted as term of service that is confronted through utilization of internet banking. Therefore, we can hypothesize that:

H1: PE positively influences IB adoption.

Effort Expectancy (EE)

EE is the extent of comfort related to customers' usage of technical knowledge (Venkatesh et al., 2012). Corresponding to Miltgen, Popovič, & Oliveira (2013), EE extends a comprehensive forecast of intention to embrace an innovation. Prior studies stated that the latest innovations' practical simplicity is not a hurdle for advanced operators, as they generally come up with ample technical understanding besides applied competence (Wang, Jung, Kang, Chung, & Technology, 2014). Zhou et al., (2010) showed that once consumer believes that internet banking is simple to operate and no need to entail much attempt, they would have high opportunities to accept internet banking. Therefore, EE has impact on IB adoption. Thus, the relationship of effort expectancy is proposed as:

H2: EE positively affects the adoption of internet banking.

Social Influence (SI)

SI has been described as "the extent to which people comprehends that essential to other thinks, he/she ought to utilize the modern approach" (Venkatesh et al., 2003). Various practical aspects as user's companions, family, and bosses on performance have been revealed through SI (Venkatesh et al., 2003). As individual belongs to society, so they are bound to influence by others in their surroundings, as acquaintances, elders, kin, and loved ones, to utilize internet banking (López-Nicolás, Molina-Castillo, & Bouwman, 2008). The clients can take part in a decisive role in breeding consciousness and motivating the intentions regarding IT/IS usage (Alalwan, Dwivedi, Rana, Lal, & Williams, 2015; Alalwan, Dwivedi, Rana, & Williams, 2016; Alam, Hu, & Barua, 2018; Barua & Barua, 2021). A pragmatic research on IB services adoption performed by Chaouali, Yahia, and Souden (2016) decided that SI and trust implicitly affects customers' IB adoption. Hence, the following hypothesis can be formulated:

H3: SI will have a positive effect on customers' IB adoption.

Facilitating Conditions (FC)

FC describes the customers' opinions of the properties as well as funding accessible to implement a behavior (Venkatesh et al., 2012). FC is termed as the consequence of structural and practical framework to assist the internet banking usage, such as user's understanding, competence, and supplies (Venkatesh et al., 2003). Apparent behavioral management and congeniality are the decisive ways of FC (Venkatesh et al., 2003). Relevance with the UTAUT2 model, it is recommended that FC completely impact intention to utilize

the technical innovation, heading toward the following hypothesis:

H4: FC have a positive impact on IB adoption.

Price Value (PV)

The aspect of PV is used to characterize consumers' intellectual exchange between the apparent benefits and financial cost, as consumers usually have to bear the cost of adopting a technology (Venkatesh et al., 2012). The apparent advantages of utilizing a technology are more when the PV is more, and the apparent financial charge is fewer (Oliveira, Thomas, Baptista, & Campos, 2016). The financial charges relate to the value being recognized in disparity to the paid price (Petrick, 2002), while the non-fiscal costs are the value being recognized in return for the reduced costs like effort and time (Boksberger & Melsen, 2011). Ultimately, PV has great influence in adopting internet banking. So, we can hypothesize that:

H5: PV has a positive effect on IB adoption.

Hedonic Motivation (HM)

HM is described as "the fun or delight developed from applying a technical knowledge" (Brown & Venkatesh, 2005). In the user perspective, HM has turned out to be an essential influencing aspect of innovation acceptance and usage (Venkatesh et al., 2012). Agreeing to Zhang, Zhu, & Liu (2012), the recognition of internet technology varies on the fun offered by technical innovation. Generally, when confronting challenging operating conditions, social anxieties, and other mental strains, users are further eager to repay interest to technologies delivering joy and delight. Therefore, we expect that:

H6: HM will make positive affect on IB adoption.

Habit (HT)

HT has been identified as "the extent to which people have a tendency to behave impulsively as a result of understanding" (Limayem, Hirt, & Cheung, 2007). HT is among the forecasters that is influencing peoples' behavior of adopting internet banking. HT is distinct from familiarity in two aspects. First, HT building does not inevitably require knowledge, and second, knowledge does not entail equal intensity of habit. Instead, the degree of utilizing the focus on expertise has changed habit (Venkatesh et al., 2012). Ajzen & review (2002) asserted that previous performance influences the current actions. HT has been discovered to have a immediate impact on adopting internet banking. Therefore, we posit the hypotheses:

H7: HT will make positive affect on IB adoption.

Perceived Technology Security (PTS)

PTS relates to the customers' awareness that the internet banking structure is secure for deals (Peković, Zdravković, & Pavlović, 2019). Vatanasombut, Igbaria, Stylianou, and Rodgers, (2008) clarified that PTS is denoted in following sense: in respect of users' knowledge about the network for spreading data as well as the clients' faith on the bank's internet usage. PTS can be upgraded by utilizing the user view of reliable and guaranteed operations while collaborating with the location (Vatanasombut et al., 2008). A pertinent research on technical innovation in Mauritius discovered that safety has a crucial role in the clarification of innovation acceptance (Juwaheer, Pudaruth, & Ramdin, 2012). Therefore, we make the following hypothesis:

H8: PTS has positive impact on adopting internet banking.

Trust

Trust was conceptualized as "personal readiness to be contingent founded on the principles of competence, generosity, and honesty" (Gefen, Karahanna, & Straub 2003). Trust has significant importance in Internet environments: full trust is needed for the successful operation of such computing environment (Coutu, 1998). Concerning Internet banking, a vigorous situation in consort with the desertion of corporal social collaboration, consumers have been initiated to mostly vary on trust to reduce their worries as well to support their choice to follow the embattled structure (Akhlaq & Ahmed, 2013; Eriksson, Kerem, & Nilsson, 2005; Gefen et al., 2003). Likewise, in internet centered operations the threat intensity is greater, and they are mainly triggered by insecurity in using technological structures in trade for knowledge, or it may be more vindicated by the individuals who are engaged in virtual operations (Gefen, 2002). Therefore, we make the following hypothesis:

H9: Trust will have positive impact on customers' intention to adopt Internet banking.

Gender Differences on the Relationships Between Dependent and Independent Variables

In many preceding studies, the moderating impact of gender has been broadly investigated as a core demographic variable in ICT adoption context (Parameswaran et al., 2015). Researchers noted that use of moderating parameters such as age, gender, understanding in the figure would help to have a deep insight on the directional relationships (Venkatesh et al., 2012; Barua, Aimin, & Hongyi, 2018). Moreover, gender is an important construct of an individual supposed to have a significant effect on the exploitation of strategy, applications, entrepreneurial activities as well as performances of the firm in Bangladeshi context (Hoque and Awang, 2019). There exists a variation in accepting technological innovation between male and female. The impact of gender is different on seven core UTAUT2 intention and usage determinants. For instance, the gender effect on EE, SI, FC and PV are stronger for female while the effect on PE, HM and HT is greater for male (Fuksa, 2013; Venkatesh et al., 2012). Gender is found to moderate the relationship between PE and IB adoption intention among users in such a way that the effect is greater on females. Gender regulates the relationship between EE and IB adoption intention among users in such a way that the effect is greater on females. This outcome tallies with the findings of (Venkatesh et al., 2012). However, more women than men are found to rely on others' opinions, views, values and preferences (Venkatesh et al., 2000), in comparison to men, women have a greater understanding level of others' feelings and therefore are more easily wedged by social stress and affiliated needs than men are. However, females seemed to be more relationship-oriented than males, as demonstrated by the females' online connections with service providers and other end-users (Richard et al., 2010). In this way, gender moderates the relationship between SI and IB adoption intention, in which the effect is stronger for females. The finding is identical with the findings of (Venkatesh et al., 2012). Females are more likely to be affected by their friends or family, but with reduced effects on IB adoption. This is probably because their friends or family may encourage them to spend more time with their family rather than on internet. Therefore, the tendency to have Internet access will be less. Female has greater effect of FC in IB adoption. The finding is supported by the findings of (Ameen & Willis, 2019). As females may not be aware of the benefits of having Internet

access, they may not explore more functions that can be conducted by using internet banking. Besides, females allocate greater importance to price value compared to males. The strategy to create price value is a continuous effort that needs to be made by Internet banking service providers. Gender is discovered to temper the correlation between HT and behavioral intention in such a way that females have more impact compared to males. The relationship between HM and IB adoption is observed to be tempered by gender where greater effects are found on females. PTS has greater impact on females rather than males. Females always prefer more secured and safe transaction. The moderating effect of gender on trust can be described as females has greater impact of trust as they are more careful about financial transaction. We, therefore, propose following hypotheses on gender differences.

- H10a: Gender moderates the relationship between PE and IB adoption
- H10b: Gender moderates the relationship between EE and IB adoption
- H10c: Gender moderates the relationship between SI and IB adoption
- H10d: Gender moderates the relationship between FC and IB adoption
- H10e: Gender moderates the relationship between PV and IB adoption
- H10f: Gender moderates the relationship between HM and IB adoption
- H10g: Gender moderates the relationship between HT and IB adoption
- H10h: Gender moderates the relationship between PTS and IB adoption
- H10i: Gender moderates the relationship between trust and IB adoption

RESEARCH METHODS

Construct Measurement

A survey was carried out in Bangladesh to test the model of IB adoption. A survey instrument was developed incorporating items for each construct and demographic questions for the respondents. The measures for each variable were adapted from the current literature. We had changed some words of the measures considering the context. However, measurements for all UTAUT2 constructs were adapted from Venkatesh et al. (2012) except SI. The scale for SI was taken from Venkatesh et al. (2012) and Venkatesh et al. (2003). For the construct PTS, the scale of Rahi, Ghani, and Ngah (2018) was followed. The items for trust were taken from Gefen, Karahanna, & Straub, (2003). Five items of IB adoption were adapted from Curran & Meuter (2005), Curran & Meuter (2007), and Martins, Oliveira, & Popovič, (2014). Each indicator of the construct was measured using a 5-point likert scale ranging from 1-strongly disagree to 5-strongly agree.

Sampling Technique, Sample Size, and Data Collection

The present study is aimed to explore the customer adoption intention of internet banking services in an emerging economy like Bangladesh by two additional paradigms with the original UTAUT2. However, as a nonprobability sampling technique, this study followed convenience sampling technique for data collection. The nonprobability sampling technique is suitable mainly when randomization is impossible like when the population is very large (Etikan, Musa, & Alkassim, 2016). Consequently, the people studied for this research is dynamic

Internet banking customers who aged 18 years and over, who has one bank account at operation. The sample size was determined by using the sample-to-variable ratio suggested by Hair, Black, Babin, & Anderson (2018), where they noted that a minimum observation-to-variable ratio of 5:1. They also note that the ratio 15:1 or 20:1 is more suitable. The number of variable in this study model is ten that required 200 sample size, but for better prediction and accuracy of the model we tried to collect more data. Accordingly, the basic information is gathered, applying constructed survey questionnaire, from 280 respondents. We accumulated the data through an online survey. Online survey is suitable for the existing research as it is the most effective technique to gather basic data in this pandemic situation of COVID-19 (Barua et al., 2020). Links of the questionnaire were circulated by social media and e-mail (e.g., Messenger, Whats app, LinkedIn, etc.). Customers who were engrossed in the survey could get on the link, and they were instructed to the virtual questionnaire. We termed the research objectives and specifics in the first page of the questionnaire; users began the survey upon their approval of involvement. However, from 280 responses 9 were discarded since their inability to meet the criteria for inclusion in the final data set. Therefore, final data set retains 271 responses. The gender distribution of internet banking customers is well-adjusted, comprising of 47.97 percent male and 52.09 percent female.

DATA ANALYSIS METHOD AND RESULTS

Characteristics of the Respondents

From Table 1, we can explain that 47.97 percent were male, and 52.09 percent were female. A great fraction of respondents were young adults between the age of 26 to 35 years. Our records were broad in respect of skill as well as understanding of respondents.

Table 1. Respondents' characteristics

Items		Frequenc y	%	Items	Frequenc y	%
Gender	Female	141	52.09	Education		
	Male	130	47.97	SSC	03	1.10
Age	18-25	49	18.08	HSC	10	3.69
	26-35	136	50.18	Honors	35	12.92
	36-45	65	23.99	Masters	217	80.07
	46-55	21	7.75	Others	6	2.21
Professional Experience				Experience in Using IB		
	Student	36	13.28	Less than 1 year	49	18.08
	Service	170	62.73	1- 2 years	156	57.56
	Business	59	21.77	3 - 5 years	56	20.66
	Freelance	6	2.21	More than 5 years	10	3.69

Data Analysis Methods

The final data set is out of outlier and influential problems. As we mentioned earlier, the actual data set was of 280 respondents from whom we have deleted 9 responses considering the above problems. Normality of the data was measured employing Pearson's Skewness and Kurtosis parameters. Table 2 shows that the data is normally distributed with the highest range -1.29, where the normal range of parameters is between -2.58 and +2.58 (Azzalini, Browne, Genton, & McNicholas, 2014). Therefore, the data is out of both outlier problem and normality issues.

Table 2. Skewness and kurtosis of all variables

Statistics	PE	EE	SI	FC	PV	HT	HM	Trust	PTS	IB Adoption
Skewness	-.763	-.679	-.441	-.834	-.388	-.625	-.549	-.300	-.679	-.604
Kurtosis	-.824	-1.06	-1.29	-.657	-1.32	-1.08	-1.18	1.54	-.774	-1.16

This study used PLS-SEM as variance-based technique instead of co-variance-based SEM. There are some critical reasons for using PLS-SEM. First, Afthanorhan, Awang, and Aimran (2020) noted that PLS-SEM is suitable controlling multiple variables concurrently. The research model of this study holds multiple variables. Second, PLS-SEM is superior for prediction and theory development (Henseler, Ringle, and Sinkovics, 2009). Third, constructs with fewer items can be used in PLS-SEM (Hair, Ringle, & Sarstedt, 2011). Fourth, SEM required to established the criterion before conducting the measurement and structural model whereas PLS-SEM established to solve this problem (Afthanorhan, 2013). However, following the recommendation of Anderson and Gerbing (1982), this study adopted a two-staged approach of data analysis for PLS-SEM. Measurement model was validated in the first stage of the analysis while second stage was engaged to structural model evaluation. In the measurement model two types of validity were checked, namely -convergent validity and discriminant validity. However, this study employed SmartPLS 3.2.7 software for

analysis of the data. The SmartPLS 3.2.7 is a component-dependent technique that can be utilized for measuring reliability, validity, and associations among constructs. A great advantage of SmartPLS is bootstrap that can be used to resampling the data to get desire results (Afthanorhan, 2014).

Convergent Validity

Convergent validity was confirmed by inspecting internal consistency, CR and AVE. As internal consistency, Cronbach's alpha for all constructs was found more than the recommended value of 0.70 (Nunnally, 1978). All indicators' loading was also revealed to exceed threshold limit, ranging from 0.747 to 0.895, shown in the figure 2 measurement model. Hair et al. (2014) suggested that CR value 0.70 and more than that indicates convergent validity of the constructs. The convergent validity was also established through evaluation of AVE as advocated by Fornell and Larcker (1981). AVE values greater than 0.5 in the Table 3 indicates convergent validity.

Table 3. Indicator's loading, Cronbach's alpha, CR, and AVE

Constructs	Items	Loadings	Cronbach's alpha	CR	AVE
Performance Expectancy	PE1	0.859	0.888	0.922	0.748
	PE2	0.880			
	PE3	0.852			
	PE4	0.869			
Effort Expectancy	EE1	0.888	0.905	0.934	0.778
	EE2	0.872			
	EE3	0.895			
	EE4	0.873			
Facilitating Condition	FC1	0.810	0.840	0.893	0.676
	FC2	0.825			
	FC3	0.832			
	FC4	0.820			
Social Influence	SI1	0.835	0.857	0.903	0.699
	SI2	0.838			
	SI3	0.837			
	SI4	0.834			
Price Value	PV1	0.891	0.831	0.898	0.746
	PV2	0.823			
	PV3	0.876			
Hedonic Motivation	HM1	0.747	0.736	0.851	0.656
	HM2	0.881			
	HM3	0.796			
Habit	HT1	0.815	0.885	0.920	0.743
	HT2	0.859			

	HT3	0.887			
	HT4	0.885			
Perceived Security	PTS1	0.879	0.837	0.902	0.754
	PTS2	0.887			
	PTS3	0.839			
Trust	TR1	0.821	0.881	0.913	0.679
	TR2	0.860			
	TR3	0.843			
	TR4	0.863			
	TR5	0.725			
Internet Banking Adoption	IBA1	0.842	0.892	0.921	0.699
	IBA2	0.854			
	IBA3	0.827			
	IBA4	0.823			
	IBA5	0.833			

Discriminant Validity

Discriminant validity of the constructs was assessed by means of Fornell and Larcker (1981) criterion. Table 4 shows that the square root of the AVE was greater than the corresponding correlations that eventually specifies that the measure is discriminant. Further, items cross-loading was inspected and

revealed that no items were loaded on other constructs with higher values than their respective constructive. Additionally, discriminant validity was checked following the suggestion of Henseler, Ringle, and Sarstedt (2015) using the Heterotrait-Monotrait Ratio (HTMT). HTMT values in Table 5 were unearthed less than threshold value 0.85 (Kline, 2011).

Table 4. Fornell-Larcker Criterion for Discriminant validity

	EE	FC	HM	HT	IBA	PE	PTS	PV	SI	TR
EE	0.882									
FC	0.686	0.822								
HM	0.312	0.317	0.810							
HT	0.646	0.649	0.296	0.862						
IBA	0.725	0.716	0.413	0.686	0.836					
PE	0.681	0.637	0.437	0.611	0.761	0.865				
PTS	0.493	0.472	0.326	0.509	0.666	0.593	0.868			
PV	0.337	0.354	0.207	0.321	0.447	0.363	0.386	0.864		
SI	0.456	0.448	0.238	0.472	0.514	0.496	0.336	0.222	0.836	
TR	0.364	0.456	0.051	0.359	0.475	0.362	0.340	0.270	0.190	0.824

PE- Performance Expectancy, EE - Effort Expectancy, SI - Social Influence, FC - Facilitating Conditions, PV - Price Value, HM - Hedonic Motivation, HT - Habit, PTS - Perceived Technology Security, TR - Trust

Table 5. Heterotrait-Monotrait Ratio (HTMT) for Discriminant validity

	EE	FC	HM	HT	IBA	PE	PTS	PV	SI	TR
EE										
FC	0.786									
HM	0.377	0.397								
HT	0.721	0.753	0.363							
IBA	0.804	0.825	0.502	0.769						
PE	0.760	0.737	0.538	0.689	0.853					
PTS	0.566	0.564	0.407	0.591	0.770	0.688				
PV	0.387	0.419	0.255	0.373	0.510	0.420	0.453			

SI	0.518	0.526	0.302	0.539	0.587	0.566	0.397	0.255	
TR	0.405	0.531	0.131	0.406	0.527	0.402	0.384	0.310	0.215

Common Method Bias (CMB)

In the context of PLS-SEM, CMB is a trait that is caused by the measurement process employed in a SEM study (Kock, 2015; Jordan & Troth, 2020).). Since the data for this study for both exogenous and endogenous variables were collected from the same respondents, this might result in CMB. According, we checked the CMB issues following several methods. First, as a procedural remedy, we included an introductory letter informing the respondents that they are free to reply the questionnaire as they believe and withdraw the responses at any time if they feel uncomfortable. Second, we investigated Harman one-factor test and revealed that no single factor explained variance more than 50% (Podsakoff et al., 2003). Therefore, CMB was not an issue in this study.

Structural Model Evaluation

In this second stage of analysis, we tested the proposed relationships between exogenous and endogenous variables. Bootstrapping technique with 5000 resampling size was operationalized to check the hypothetical relationships (Hair et al., 2011). Fig. 3 and Table 6 show the results of

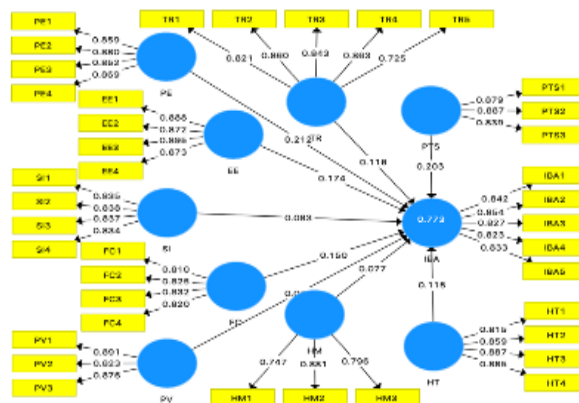


Figure 2. Measurement Model

Bootstrapping. For finding the significance of the hypotheses path coefficients (beta values), T-values, P-values was checked. However, result shows that all the hypotheses (H1, H2, H3, H4, H5, H6, H8, H9) were found significant except hypothesis H7.

Table 6. Test of hypotheses

Hypotheses	Relationships	Beta	T-value	P Values	Comments
H1	PE -> IBA	0.212	3.238	0.001	Supported
H2	EE -> IBA	0.172	2.937	0.003	Supported
H3	SI -> IBA	0.083	2.618	0.009	Supported
H4	FC -> IBA	0.152	2.436	0.015	Supported
H5	HM -> IBA	0.076	2.274	0.023	Supported
H6	PV -> IBA	0.078	2.377	0.018	Supported
H7	HT -> IBA	0.115	1.778	0.075	Not Supported
H8	PTS -> IBA	0.204	3.464	0.001	Supported
H9	TR -> IBA	0.114	3.145	0.002	Supported

Gender Differences and Moderating Effects

Gender differences for different relationships between exogenous and endogenous constructs were checked using multi-group analysis (MGA) in SmartPLS. Gender differences between the relationships of exogenous and endogenous constructs were investigated using PLS-MGA (multi-group-

analysis). Results indicate that trust, HT, PV, EE, and FC are significant for female whereas PTS, SI, and PE are significant for male respondents. Further, we also noticed that gender also moderates the relationships between HT and IB adoption (H10g), and trust and IB adoption (H10i) (Table 7).

Table 7. Gender differences for different paths

Hypotheses	Directions	Path Coefficient (Female)	Path Coefficient (Male)	t-Value (Female)	t-Value (Male)	p-Value (Female)	p-Value (Male)	p-Value new (Female vs Male)
H10a	PE -> IBA	0.098	0.261	1.231	2.725	0.218	0.006	0.193
H10b	EE -> IBA	0.225	0.124	2.386	1.745	0.017	0.081	0.388
H10c	SI -> IBA	0.019	0.145	0.482	2.768	0.630	0.006	0.051
H10d	FC -> IBA	0.181	0.116	2.191	1.463	0.028	0.143	0.570
H10e	PV -> IBA	0.115	0.001	2.865	0.012	0.004	0.990	0.068
H10f	HM -> IBA	0.073	0.065	1.288	1.733	0.198	0.083	0.918
H10g	HT -> IBA	0.280	-0.040	2.928	0.524	0.003	0.601	0.007
H10h	PTS -> IBA	0.113	0.295	1.487	3.672	0.137	0.000	0.101
H10i	TR -> IBA	0.234	0.067	3.144	1.390	0.002	0.165	0.044

DISCUSSIONS AND IMPLICATIONS

Following the recommendation of Chin (2010), R^2 , known as the explained variance of the dependent variable, was inspected to measure the predictive power of the independent variables. Figure 2 shows that the variables incorporated in the model have substantial predictive power of endogenous construct. All the variables explained 77.3% of the variance where it is documented that the R^2 values of endogenous latent variables is considered weak if R^2 is 19 % and higher, moderate if R^2 is 33 % and higher, and substantial if R^2 is 67 % and higher (Chin, 1998). However, in the present study we explored the antecedent factors influencing individual level customers' IB adoption decisions in Bangladesh. An extended UTAUT2 model with PTS and trust has been distinctively and successfully implemented here. Notably, the research statistically proved the strong relevance of PTS in context of IB adoption. In view of the possible risks of online financial transactions, the security capacity of the technologies dealing with the customers' personal and confidential data had got the highest consideration from the customers before choosing internet banking applications as this can secure their transactions. A similar finding was also reported in Cheng, Lam, and Yeung (2006)'s study on IB adoption. The direct and positive influence of perceived expectancy (PE) on customers IB adoption is also vigilant in this study. It is seen that individual's perceived benefits and advantages of IB can positively affect their inclination to involve in IB applications. Thus, individuals with higher level of performance expectancy are found to more likely accept IB options. The range of performance expectancy most importantly include time and effort saving, customization option, easy accessibility, convenience of location (Venkatesh et al., 2012). Regarding trust, the statistical findings proved that trust as a key determinant can predict customer's intension to use internet banking. This implies that customer will be more convinced in adopting internet banking services if using the system can ensure their trust and support them to achieve high level of security and reliability in their banking transactions. Relating to the use of technologies, a group of researchers (D. J. J. o. O. Gefen & Computing, 2003; Nicolaou & McKnight, 2006; Pavlou & Gefen, 2004) had reported the same relation of trusts on the users' intention to use.

Our study also discovered a substantial influence of effort expectancy on the Bangladeshi customers' IB adoption intention. Individuals normally go through a mental process involving the trade-off between perceived benefits of using technology and the efforts needed to use it (Alalwan et al., 2018; Celik, 2008) and thereby take the decisions to use technology only if the result is positive. Hence, by supporting the results of the previous related researches (Martins, Oliveira, & Popovič, 2014; Riffai, Grant, & Edgar, 2012), empirical finding of the current paper is an addition to the existing internet banking literature. Besides, social influence (SI), facilitating conditions (FC), price value (PV) and hedonic motivation (HM) all have also found positively related with IB adoption intention in Bangladesh. Additionally, in this research, the gender differences on path coefficients described the differences in effects according to male and female. Thus, the higher path loading toward IB adoption intention was established by their related significant t-values. Usually, men rather than women, undertake more attempts to conquer difficulties and challenges from their path of pursuing goals, whereas, women are more intended to consider the

required efforts and the way of achieving their objectives (Henning & Jardim, 1977; Rotter & Portugal, 1969; Venkatesh & Morris, 2000). Thus, the influence of facilitating conditions on individuals' decision to use new technology is greater for female than for male. Again, as a customer, females are more susceptible to the prices and costs of products or services (Slama & Tashchian, 1985). Confirming these prior findings, in this current investigation women were found to be more sensitive to trust, price value, effort expectancy, facilitating conditions and hedonic motivation than men. In contrary, men had shown more preferences for social influence, PTS and PE comparing to women.

Theoretical contribution

This study has a notable contribution in the literature of IB as well as in the context of Bangladesh IB. For instance, this study extended the UTAUT2 framework considering the context of the study and the literature gap. Consequently, first, two external constructs, namely PTS and trust, are incorporated in the framework and revealed their significant contribution in predicting the model. Second, this study also searched the differences of preferences of male and female users of IB and disclosed their significant differences. However, these kinds of contributions are rare in the IB research domain. Thus, we anticipate that the suggested and examined new causal relationships would enlarge both the IB and IT research domain. On the other, the IB research has not been explored in the context of Bangladesh. As we mentioned earlier, only a few studies focused their attention on the problem and prospects of IB in Bangladesh. Till today, we did not find any study to extensively focus on the predictors of IB acceptance in Bangladesh. Therefore, to the best of our knowledge, this study is the first attempt in Bangladesh context to consider the wide range of factors including UTAUT2 along with PTS and trust. Hence, we believe that this research would influence bank marketing researchers in Bangladesh to take it at the advance level.

Managerial Implication

In addition to the theoretical implications, the findings of this study have some practical implications for the managers and policy makers in this area of the internet banking. From the practical perspective, the statistical results of this study unfold the importance of factors leading to customers' intention of IB adoption in Bangladesh and thus, make the banks enable to formulate strategies to influence customers to adopt it. In the current investigation, all the UTAUT2 constructs have found to exert significant influences on customers' IB adoption in Bangladesh, except hedonic motivation. Interestingly, PTS has found to have the highest-level of effect on the customers to adopt the Internet banking services. On the other hand, trust can also influence the internet banking behavior just after the performance expectancy, which is found as the second most important criteria for the customers to adopt Internet Banking here. Therefore, Bangladeshi bank managers should make the customer certain about the technological safety and security of their internet banking platforms. This can be communicated through the promotional messages focusing enhanced internet security and trust on this platform. They should also manage customers' concern relating to the online crimes, fraudulences, invasion of privacy and take the measures to provide error free online transaction facilities. They can also personalize the service link of the bank for the individual customer to achieve their trust. Additionally, money

back guarantees or customers' satisfaction guarantees can be displayed widely as risks reduction strategies. In realizing customers' performance and effort expectancy of using Internet banking, different work-shops can be organized by the banks to provide the know-how of using this platform and to clarify the advantages of using it. As the research findings have also pointed out the relevance of social influence, facilitating conditions and price value, the bank managers must focus on the aspects relating to these factors in their strategies to influence customers' intention to adopt Internet Banking. Suppose, for dealing the price value issue they can emphasize the customers' opportunity to save time, cost and effort in using Internet Banking. They can even make the use of these services free to their customers for strengthening their intentions to become actual users of Internet Banking rather than the potential one. Again, the reported differences of gender influences on the related and newly added constructs of UTAUT2 model will provide the direction to the managers about how they will deliver the messages or make the strategies to deal the customer depending on their gender. Comparing to the male, females are found more sensitive to perceived effort, social influence, facilitating conditions, hedonic motivation and trust, whereas, male are more concern about the performance expectancy and perceived security issue of the Internet Baking. Hence, banks should consider these aspects of gender differences in their endeavor to attract and satisfy customers of their Internet Banking system in general and in particular, the male and female customers to make a valuable long-term relationship with them.

Conclusion and Future Research Directions

This study tried to explore the predictors that influence Bangladeshi customers to adopt IB using and extending UATUT2 model. Considering the context UTAUT2 model is extended incorporating two important variables such as PTS and trust. However, this study revealed that PTS, PE, and trust as top significant predictors. This study also reported some significant differences in the perception of predictors for male and female respondents. For instance, for male, PTS, SI, and PE are more important than female IB customers. On the other, EE, FC, PV, HT, and trust are significant predictors for female participants. However, like many other studies, this study is also not out of some limitations. Caution should be taken to generalize the results of the studysince it used a small sample size comparatively. Further, this study did not consider all moderating variables that were suggested in the original UTAUT2 model. Therefore, future research would consider a large sample size as well as some other moderating variables including those that suggested in the original model.

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