ORIGINAL RESEARCH ARTICLE

JBFS Volume 16 Number 2
(December) 2024
DOI: https://doi.org/

Raad Mozib Lalon*
Professor, Department of Banking and Insurance, University of Dhaka, Dhaka
Email: raadmozib@du.ac.bd
Corresponding Author

Jannatul Naiem
Lecturer, Department of Finance and Banking, Southpoint School and College, Panchlaish, Chattogram
Email:

Keywords
Internet Banking, UTAUT model, Technology Acceptance, Demographic influence

JEL Classifications: C3, C35

Received: 20 December, 2024

Accepted: 02 June, 2025

Published online:

Published in Print:

ISSN (Online) 3006-5720

ISSN (Print) 1990-5157

Factors Affecting the Internet Banking Adoption among Professionals in Bangladesh

Abstract

This paper employs the Unified Theory of Acceptance and Use of Technology (UTAUT) model to identify the determinants influencing the adoption of Internet Banking among professionals in Bangladesh. Through an online survey involving 440 respondents from diverse demographic backgrounds, this research investigates the impact of performance expectancy, effort expectancy, social influence, facilitating conditions, attitudes, and concerns about security and privacy on Internet Banking usage. Utilizing Linear Probability, Logistic, and Probit regression analyses, the study also examines how demographic factors such as age and gender moderate these relationships. Results indicate significant positive effects of performance expectancy and attitudes on the acceptance of Internet Banking. However, gender and age display varying moderating influences, with facilitating conditions showing unexpected mixed results and social influence exerting minimal impact. These findings offer essential insights for financial institutions and policymakers aiming to develop targeted strategies that boost Internet Banking adoption and enhance service delivery, particularly in developing contexts like Bangladesh. The study contributes valuable empirical evidence to the broader discourse on technology acceptance in emerging economies like Bangladesh.

Cite as:

1. Introduction

The banking sector has been drastically changed by the digital revolution, moving conventional banking products to online platforms and improving worldwide financial transaction behavior. The key to this change is that internet banking provides many benefits like ease, time savings, and better access to financial services. Though these advantages are popular among the users of Internet Banking, the acceptance of Internet Banking differs greatly depending on the demographic, cultural, and technological context of each area. Both banks and legislators, trying to improve service delivery and boost financial inclusion, depend on an awareness of the forces underlying Internet Banking acceptance. The explanation of user behavior in adopting new technologies has been aided by theoretical models such as the Technology Acceptance Model (TAM) and the Unified Theory of Acceptance and Use of Technology (UTAUT). Particularly, the UTAUT model provides a complete framework including performance expectation, effort expectation, social

impact, and facilitating conditions—key elements affecting technology acceptance (Venkatesh et al., 2003). Although these models have been proven in many developed and technologically advanced settings, their relevance in developing nations remains understudied, especially in South Asia.

Bangladesh's rising economy with fast-expanding digital infrastructure offers an interesting setting for researching Internet Banking acceptance. Although mobile and internet penetration has advanced significantly, Internet Banking usage in Bangladesh lags behind many of its neighbors. User opinions of utility, simplicity of use, trust, social influence, and the availability of enabling resources can help to explain this discrepancy in adoption. Furthermore, influencing adoption could be demographic traits like age and gender, which might have moderating effects.

Research from past years in various underdeveloped nations has produced varied results. Research by Khan et al. (2017) in Malaysia, for example, found that Internet Banking adoption was mostly driven by convenience, trust, and perceived usefulness; social impacts and demographic considerations had little bearing. Comparably, research conducted in South Africa and India underlined the value of perceived usefulness and simplicity of use as well as the fact that security issues and user attitudes can impede adoption (Viet and Huynh, 2021; Sabbir et al., 2020; Khan et al., 2017; Governer & Wu, 2013; Kesharwani et al., 2011). Few studies have methodically investigated these aspects in Bangladesh using thorough models like UTAUT.

This paper aims to close this discrepancy by using the UTAUT model to examine Bangladeshi job holders' Internet banking uptake. With age and gender taken as moderating factors, it specifically looks at how performance expectation, effort expectation, social influence, facilitating conditions, and attitude influence user behavior. The selection of job holders as the target group guarantees that the study catches a demographic segment that is probably conversant with digital technology but may still have adoption challenges depending on age or views toward change.

Three main goals define this research: (i) to pinpoint the main determinants influencing the acceptance of Internet Banking in Bangladesh; (ii) to comprehend the moderating effects of demographic factors on these determinants; and (iii) to offer actionable insights for banks and legislators to create focused strategies for increasing Internet Banking acceptance. This study intends to add to the corpus of current knowledge on technology adoption in developing countries and provide useful suggestions for improving user involvement with Internet Banking systems.

2. Literature Review

Das et al. (2024) highlight factors such as perceived usefulness, perceived ease of use, trust, security concerns, social influence, and demographic variables like age, education, and income are key determinants that influence digital banking adoption. It underscores the importance of both technological and socio-cultural elements in shaping users' attitudes towards digital banking.

The study of Abdelrhman et al. (2024) employs the Technology Acceptance

Model (TAM) to explore the adoption of internet-based banking services, with a particular focus on e-banking. It examines factors such as user-friendliness, trust management, cultural considerations, and mobile technology, providing insights into how these elements influence user behavior and acceptance of e-banking services.

Rahaman et al. (2021) examined the factors influencing the adoption of Internet banking among university students in Bangladesh. Using a survey of 300 students, the study found significant differences based on gender and academic discipline. Male students and those studying Business Administration showed higher intention to adopt Internet banking and greater perceived ease of use. Social influence was also a key factor for business students. The study highlights the importance of tailoring Internet banking strategies for different customer segments.

Akhter et al. (2022) examined important factors influencing the intention to adopt Internet banking services among commercial bank users in Bangladesh. Using a survey questionnaire and a convenience sampling method, they collected data from 180 respondents. The paper found that Perceived Security Risk (PSR), Perceived Usefulness (PU), Perceived Ease of Use (PEU), Social Influence (SI), and Consumer Innovativeness (CI) significantly impact the intention to adopt Internet banking. The findings suggest that bank management should focus on these factors to enhance users' willingness to adopt Internet banking services.

Viet and Huynh (2021) investigate how various factors influence the adoption of Internet banking. The study integrates customer innovativeness (CI) traits, perceived risk, and demographic characteristics into the Technology Acceptance Model (TAM) to understand this adoption process. This research shows that CI traits, perceived usefulness, perceived risk, attitude, and Internet experience significantly impact Internet banking. Furthermore, perceived risk negatively affects consumers' intentions to use new technology, emphasizing the need for banks to build trust through advertising, workshops, and clear communication about security.

Sabbir et al. (2020) examined several key factors influencing Internet Banking adoption, including perceived usefulness, perceived security, perceived ease of use, and green concern by using Internet banking apps. Their study, using factor analysis, Pearson correlation, and multiple regression analysis, found that Internet banking apps and perceived usefulness significantly impact usage, while perceived ease of use and green concern also positively influence adoption. However, perceived security was found to have a negative impact. These insights are important for banks in Bangladesh to tailor their strategies and enhance the adoption of Internet banking by addressing these factors.

Safeena et al. (2018) highlight the significant impact of the Internet on banking in India, nothing rapid growth and development of Internet Banking Technology (IBT). This shift offers both challenges and opportunities for banks and their customers, who appreciate the convenience of online transactions. However, few studies focus on IBT adoption in India, and there is limited evidence of an integrated model for this adoption. This study emphasizes the need

for comprehensive research to develop a framework for understanding the factors influencing IBT adoption in the Indian context.

As digital technology advances, understanding what drives online banking adaptation has become crucial. Khan et al., (2017) investigated this in Malaysia with 200 respondents (chosen from an equal proportion of both males and females) and developed a questionnaire for data collection by using seven factors of consumer influencing and found that among seven factors convenience, trust, perceived usefulness significantly influences consumers' decisions to use online banking. Conversely, social influence, gender, and age group have little impact. This might be because older adults, who are less swayed by social pressure and make up a large part of the study sample, are generally comfortable with technology due to Malaysia's high internet and smartphone penetration. These findings are essential for banks and policymakers to improve and promote online banking services, though more research is needed to explore other potential factors.

The growth of digital devices has highlighted the benefits of online banking, particularly in developing Asian economies. Khan et al. (2017) conducted research on Pakistan using an extended UTAUT2 model, factoring in cultural variables. They found that performance expectancy, facilitating conditions, habit, perceived security, and price value significantly influence behavioural intentions. Cultural aspects like collectivism and uncertainty avoidance also play crucial roles. The study highlights the need for banks to ensure robust security measures and educate customers about safety to boost online banking adoption. These insights are essential for improving customer satisfaction and promoting online banking.

Roy et al., (2017) examined how Internet banking is adopted by Indian customers by combining the Technology Acceptance Model and Perceived Risk Theory. They categorized perceived risk into external and internal risks and found that both types of risk negatively impact customer acceptance of Internet banking. Using structural equation modelling and artificial neural network analysis on 270 responses, they discovered that perceived ease of use and external risk are crucial factors in determining Internet banking acceptance.

Govender and Wu (2013) researched the factors influencing Internet banking adoption in South Africa and found that perceived usefulness, reflecting relative advantage, played a crucial role. Users found that Internet banking is less complex and more cost-effective than non-users. However, social influences from friends, parents, and colleagues did not significantly impact adoption. These insights highlighted the need for targeted strategies to enhance the adoption of Internet banking in South Africa, focusing on its advantages and ease of use.

The literature on technology acceptance models (TAM) has extensively explored how various factors influence online behaviour, particularly in Internet banking. The Unified Theory of Acceptance and Use of Technology (UTAUT) integrates key TAM constructs like performance expectancy, effort expectancy, and social influence to understand technology acceptance (Qeisi and Abdallah, 2013). While UTAUT has been validated in industrialized contexts (Venkatesh et al. 2012), its applicability

in non-industrialized settings like Jordan remains underexplored. This study extends UTAUT by incorporating website quality perceptions, highlighting their indirect impact on user behavior through performance and effort expectancy. The findings validate UTAUT measures and underscore the significance of website quality in enhancing user experience and technology adoption in banking.

Research on Internet banking adoption in Iran by Baraghani (2007) extended the Technology Acceptance Model (TAM) with the Theory of Planned Behavior and Trust. The study found that attitude, perceived behavioural control, perceived usefulness, perceived ease of use, and trust significantly influence customers' intentions to adopt Internet banking services and encourage customer adoption.

Tsai et al. (2013) explored the adoption factors of Internet banking services in Taiwan based on the Unified Theory of Acceptance and Use of Technology (UTAUT). Their study, involving 371 respondents from domestic banks, identified Performance Expectancy, Effort Expectancy, Social Influence, and Perceived Risk as significant antecedents influencing adoption intention and usage behaviour. The research highlighted that variables such as gender, age, and experience moderated these relationships. These findings provide valuable practical insights for organizational managers looking to enhance Internet banking services.

Yousafzai (2012) reviewed the literature on Internet Banking (IB) adoption through nine different theories. The review shows that adopting IB is complex, involving personal, social, psychological, utilitarian, and behavioural factors. It suggests that focusing on customer belief formation is crucial for influencing IB behaviour. The study highlights that IB research lacks consensus on the key belief driving adoption and needs more research on effective interventions to help managers promote IB adoption.

Kesharwani et al. (2011) expanded the Technology Acceptance Model (TAM) to study Internet banking adoption in India, focusing on security and privacy concerns. They found that perceived risk negatively impacts the intention to adopt Internet banking, while trust reduces perceived risk. A well-designed website helps make Internet banking easier to use and reduces perceived risk. The study suggests that banks should focus on minimizing perceived risk and building trust through effective website design to retain and attract customers. This approach also benefits web-based retailers using online payments.

Yousafzai and Soriano (2011) developed the Customer-Specific Internet Banking Acceptance Model (CSIBAM) to understand Internet banking behaviour by combining technology readiness, the Technology Acceptance Model (TAM), and demographics like age and gender that influence beliefs about Internet banking. Younger, optimistic, and innovative males find usefulness more important, while older females who are less comfortable with technology prioritize ease of use. This insight helps banks tailor their services to meet customer needs and improve their experience.

Despite the growing importance of Internet banking, studies on consumer adoption and customer satisfaction in the African context remain limited. Musiime and Ramadhan (2011) investigated factors

influencing the adoption of Internet banking in Uganda, highlighting a significant positive relationship between Internet banking and customer satisfaction. Their study used a questionnaire designed on a 5-point Likert scale to collect data, revealing that targeted efforts toward individual clients and innovative awareness strategies are essential for increasing adoption. The findings suggest that banks should continually innovate and tailor their services to meet diverse customers' needs, ensuring sustained engagement and satisfaction.

Mirza et al. (2009) conducted a study on Iranian customers' adoption of internet banking at Mellat Bank. They found that while most customers are comfortable with Internet banking, security concerns and lack of technological knowledge are significant barriers.

Customer acceptance of Internet banking is crucial and depends on ease of use, as highlighted by Hosein (2009). His research survey found that customers in China face difficulty in using Internet banking, which deteriorates the revenue of banking. Surveys suggest that despite benefits like increased revenue and improved customer service, banks must adapt their services to enhance adoption rates. Surveys show that usability issues significantly deter customers from adopting Internet banking.

Venkatesh et al. (2003) reviewed IT acceptance literature and compared eight models: the Theory of Reasoned Action, the Technology Acceptance Model, the Motivational Model, the Theory of Planned Behaviour, a combined TAM and TPB model, the Model of PC Utilization, Innovation Diffusion Theory, and Social Cognitive Theory. They developed and validated the Unified Theory of Acceptance and Use of Technology (UTAUT), which integrates elements from all eight models. UTAUT, with four core determinants and up to four moderators, explained 69-70% of the variance in user intentions to use IT, outperforming the individual models. This model helps managers assess the success of new technology adoption and design targeted interventions.

Tan and Teo (2000) conducted a study and found that people's intentions to use Internet banking are mainly influenced by their attitudes and perceived control over the behaviour, but not by social pressures or norms. Key factors include that perceived complexity was not significant due to limited user experience. Self-efficacy and government support were important, but technology support was not as Singapore has a robust tech infrastructure. Interestingly, perceived complexity did not significantly impact adoption intentions, likely because Internet banking was new and users had limited experience. Banks should focus on individual awareness campaigns, highlighting benefits and addressing security concerns to encourage Internet banking adoption.

Considering the above discussions on review of relevant literatures, several hypothesises have been constructed in following data and methods section.

3. Data and Methods

This study employs a quantitative approach to analyse the factors influencing the adoption of Internet Banking in Bangladesh. The Unified Theory of Acceptance and Use of Technology (UTAUT) model guides the research, which helps understand user acceptance behaviour. A primary data collection method was used to gather responses

through an online survey. The survey includes closed-ended questions with a Likert scale (from disagree to strongly agree), allowing respondents to indicate their level of agreement or disagreement with statements related to Internet Banking.

The target population of this study is jobholders in Bangladesh. To ensure diversity, the sample includes respondents with different levels of Internet Banking experience across this demographic. Responses were collected from 440 individuals (450 questionnaires were distributed among job holders, who are doing jobs in different companies, and 440 survey responses duly collected) through online platforms such as social media, email, etc., where respondents answered a structured questionnaire based on the measurement items from the UTAUT model of Venkatesh et al. Among 440 respondents, 314 are male and 126 are female job holders. All participants were informed about the study's objectives, and participation was voluntary.

The sample size of 440 respondents is obtained using Cochran's formula for an infinite population, which is appropriate when the population size is large or unknown, as in the case of jobholders across Bangladesh. The formula is expressed as:

$$n_0 = \frac{Z^2 \cdot p \cdot (1-p)}{e^2}$$

where n_0 is the required sample size, Z is the z-score corresponding to the desired confidence level (assuming a 95% confidence level, z = 1.96), p is the estimated proportion of the population with the characteristic of interest (0.5 is used for maximum variability), and e is the desired margin error (0.05 for a 5% error tolerance). Substituting the values, the result is 384.16. Thus, the minimum required sample size is approximately 385 respondents. This study collected data from 440 respondents, which not only meets but exceeds the minimum requirement. This large sample size enhances the statistical power of the analysis, reduces the margin of error, and ensures more precise and generalizable results. A response rate of 97.8% (440 out of 450) reflects effective engagement and the appropriateness of the online distribution channels for reaching the target demographic.

The questionnaire has 6 sections (Performance Expectancy, Effort Expectation, Social Influence, Facilitating Condition, Attitude and Security with Privacy), and each section has 5 to 6 questions. So, the average value of these five sections was taken for the variables. The dependent variable of this research is Internet Banking (IB) (actual use of Internet Banking or intention to use), and the independent variables are Gender (G), Age (A), Performance Expectancy (PE), Effort Expectation (EE), Social Influence (SI), Facilitating Condition (FC) Attitude (At) and Security with Privacy (SP). We have taken dichotomous variable or binary value (0 and 1) for both Internet Banking and Gender. In addition, we have also performed the interaction effect of gender and age with these six independent variables and generate 12 new variables such as GPE, GEE, GSI, GFC, GAt, GSP, APE, AEE, ASI, AFC, Aat and ASP. So, the total independent variable for this study is now twenty. The details of these variables are mentioned below in Table 01.

Table 1: A review of the factors influencing the study's empirical findings

Variables	**Notations**	**Expected sign of coefficient**	**Reference**	**Data source**
Internet Banking (dependent variables)	IB		Yiu et al. (2007); Wang et al. (2003); Pikkarainen et al. (2004)	Questionnaire (online survey)
Independent variables (∑X)				
Gender	G	Contextual	Venkatesh et al. (2003); Dwivedi et al. (2019)	Questionnaire (online survey)
Age	A	Negative/ Neutral	Venkatesh et al. (2003); Morris and Venkatesh (2000)	Questionnaire (online survey)
PerformanceExpectancy	PE	Positive	Venkatesh et al. (2003) - UTAUT	UTAUT questionnaire (online survey)
EffortExpectation	EE	Positive	Venkatesh et al. (2003) - UTAUT	UTAUT questionnaire (online survey)
SocialInfluence	SI	Positive	Venkatesh et al. (2003) - UTAUT	UTAUT questionnaire (online survey)
FacilitatingCondition	FC	Positive	Venkatesh et al. (2003) - UTAUT	UTAUT questionnaire (online survey)
Attitude	At	Positive	Park et al. (2007); Taylor & Todd (1995); Ajzen (1991)	UTAUT questionnaire (online survey)
SecurityPrivacy	SP	Positive	Kesharwani et al. (2011); Sabbir et al. (2020);	UTAUT questionnaire (online survey)
Gender_ PerformanceExpectancy	GPE	Positive (male = 1)	Venkatesh et al. (2003); Gefen & Straub (1997)	Derived interaction from survey

Gender_ EffortExpectation	GEE	Positive (female = 1)	Venkatesh et al. (2003); Ong & Lai (2006)	Derived interaction from survey
Gender_SocialInfluence	GSI	Positive (female = 1)	Venkatesh et al. (2003); Gahtani et al. (2007)	Derived interaction from survey
Gender_ FacilitatingCondition	GFC	Neutral / Positive	Venkatesh et al. (2003)	Derived interaction from survey
Gender_Attitude	GAt	Neutral	Limited literature - less commonly tested	Derived interaction from survey
Gender_SecurityPrivacy	GSP	Positive(male=1)	Sabbir et al. (2020); Tsai et al. (2013)	Derived interaction from survey
Age_ PerformanceExpectancy	APE	Negative	Venkatesh et al. (2003); Morris and Venkatesh (2000)	Derived interaction from survey
Age_EffortExpectation	AEE	Positive	Venkatesh et al. (2003)	Derived interaction from survey
Age_SocialInfluence	ASI	Positive	Venkatesh et al. (2003)	Derived interaction from survey
Age_ FacilitatingCondition	AFC	Positive	Venkatesh et al. (2003)	Derived interaction from survey
Age_Attitude	AAt	Neutral	Limited literature - less commonly tested	Derived interaction from survey
Age_SecurityPrivacy	ASP	Positive	Tsai et al. (2013); Sabbir et al. (2020);	Derived interaction from survey

Source: Author's estimations.

The collected data on these variables were then analysed using regression analysis considering Linear Probability Method (LPM), Logistic or Logit Model, and Probit Model[1] to examine the relationship between the dependent

[1] We have estimated both logit and probit models to validate conclusions across different distributional assumptions and ensure that model results are not driven by the choice of link function. If results are consistent, it boosts confidence in the robustness of the analysis. So, probit regression is often estimated alongside logistic (logit) regression because both models are used to explain or predict binary outcomes (i.e., yes/no, success/failure), but they differ in underlying assumptions and link functions. Comparing both helps assess robustness, sensitivity, and model fit for binary choice modeling.

variable and independent variables. We have also performed diagnostic tests such as heteroskedasticity test, autocorrelation test, multicollinearity test, and model specification biased test based on the output generated from LPM. Descriptive statistics are also calculated to summarize the demographic profile of the sample, and inferential statistics were applied to test the hypotheses.

3.1 Hypotheses and model Development

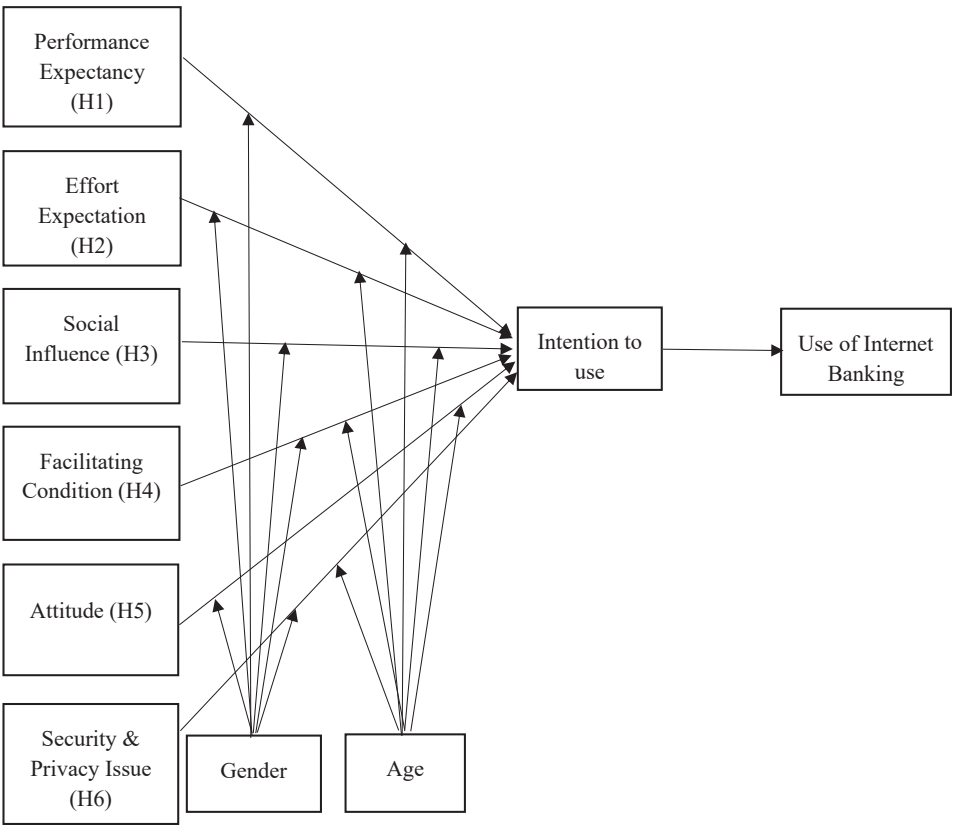

Figure 1: The Conceptual Model

Considering this model revealing the determinants of adoption of internet banking services from diverse demographic credentials along with the interaction effect between demographic credentials and determinants of internet banking adoption, following econometric model has been constructed to estimate the coefficients using Logistic regression model[2]:

[2] We have estimated Logistic regression model in order to examine the direct impact of several independent variables along with their interaction effect on the dependent variable of adoption of internet banking among professionals measured with binary response.

$$\ln\left(\frac{p}{1-p}\right) = \beta_0 + \beta_1(Gender) + \beta_2(Age) + \sum_{i=1}^{n}\beta_i X_i + \sum_{i=1}^{n}\beta_i(\text{Gender} * X_i) + \sum_{i=1}^{n}\beta_i(\text{Age} * X_i) \dots\dots Equation\ (i)$$

Where, p = probability of success; β_0= constant coefficients, β_1, β_1, β_2 and β_i = slope coefficients, X_i = Other independent variables as listed in table 1, (Gender*X_i) = interaction effect between gender and other independent variables and (Age*X_i) = interaction effect between age and other independent variables. This equation (i) can be broken down into following equation number (ii) incorporating the interaction effect:

$$\begin{aligned}\ln\left(\frac{p}{1-p}\right) = {} & \beta_0 + \beta_1(\text{Gender}) + \beta_2(\text{Age}) + \beta_3(\text{PerformanceExpectancy}) + \beta_4(\text{EffortExpectation}) \\ & + \beta_5(\text{SocialInfluence}) + \beta_6(\text{FacilitatingCondition}) + \beta_7(\text{Attitude}) + \beta_8(\text{SecuityPrivacy}) \\ & + \beta_9(\text{Gender} * \text{PerformanceExpectancy}) + \beta_{10}(\text{Age} * \text{PerformanceExpectancy}) \\ & + \beta_{11}(\text{Gender} * \text{EffortExpectation}) + \beta_{12}(\text{Age} * \text{EffortExpectation}) \\ & + \beta_{13}(\text{Gender} * \text{SocialInfluence}) + \beta_{14}(\text{Age} * \text{SocialInfluence}) \\ & + \beta_{15}(\text{Gender} * \text{FacilitatingCondition}) + \beta_{16}(\text{Age} * \text{FacilitatingCondition}) \\ & + \beta_{17}(\text{Gender} * \text{Attitude}) + \beta_{18}(\text{Age} * \text{Attitude}) + \beta_{19}(\text{Gender} * \text{SecurityPrivacy}) \\ & + \beta_{20}(\text{Age} * \text{SecurityPrivacy}) \dots\dots\dots\dots\dots\dots\dots\dots\dots\dots Equataion(\text{ii})\end{aligned}$$

3.2 Estimation Process of Logistic Regression Model:

First, we consider the following regression function for this study:

$$\pi(X) = P(Y = 1 \mid X) = \frac{1}{1+e^{-X\beta}} = \frac{e^{X\beta}}{1+e^{X\beta}} \dots\dots Equation\ (iii)$$

$$where(X\beta = \beta_0 + \beta_1 x_1 + \beta_2 x_2 + \cdots + \beta_k x_k)$$

The likelihood function is given by:

$$L(\beta) = \prod_{i=1}^{n}\left[\pi(x_i)^{y_i}\left(1-\pi(x_i)\right)^{1-y_i}\right] \dots\dots Equation\ (\text{iv})$$

substituting the logistic function in equation (iv), we have:

$$L(\beta) = \prod_{i=1}^{n}\left(\frac{e^{x_i^{\top}\beta}}{1+e^{x_i^{\top}\beta}}\right)^{y_i}\left(\frac{1}{1+e^{x_i^{\top}\beta}}\right)^{1-y_i} \dots\dots Equation\ (v)$$

Now, the Log-likelihood function has become:

$$l(\beta) = \sum_{i=1}^{n}\left[y_i \log\left(\frac{e^{x_i^{\top}\beta}}{1+e^{x_i^{\top}\beta}}\right) + (1-y_i)\log\left(\frac{1}{1+e^{x_i^{\top}\beta}}\right)\right] \dots\dots Equation\ (\text{vi})$$

Simplifying this function, we have

$$l(\beta) = \sum_{i=1}^{n} \left[y_i \cdot x_i^{\top} \beta - \log\left(1 + e^{x_i^{\top} \beta}\right) \right] \ldots\ldots\ldots Equation \text{ (vii)}$$

To estimate β, we will use Maximum Likelihood Estimation (MLE). We take the gradient (derivative) of ℓ(β) with respect to β:

$$\frac{\partial l(\beta)}{\partial \beta} = \sum_{i=1}^{n} \left(y_i - \pi(x_i)\right) x_i \ldots\ldots\ldots Equation \text{ (viii)}$$

This equation (viii) is called the score function.
Now, Set the score function (Equation-viii) equal to zero to estimate the MLE, we have:

$$\sum_{i=1}^{n} \left(y_i - \frac{e^{x_i^{\top} \beta}}{1 + e^{x_i^{\top} \beta}} \right) x_i = 0 \ldots\ldots Equation(ix)$$

This is a nonlinear system in β because π(xi) depends nonlinearly on β. Since the solution has no closed-form, we use iterative numerical optimization[3] typically involving Newton-Raphson[4] Method, Fisher Scoring method[5] and Iteratively Reweighted Least Squares[6] (IRLS) method.

Once this β is estimated considering any of the methods as just described earlier, the fitted logistic model is:

$$\hat{\pi}(x_i) = \frac{1}{1 + e^{-x_i^{\top} \hat{\beta}}} \ldots\ldots Equation\ (x)$$

3.3 Development of Hypothesis

The study proposes the following hypotheses integrating both independent variables and the interaction effects of gender and age with independent variables on the adoption of Internet Banking among professionals:

- H1a: Performance Expectancy has a positive effect on the adoption of Internet Banking.
- H1b: The impact of Performance Expectancy on the adoption of Internet Banking is stronger for younger users compared to older users.
- H1c: The influence of Performance Expectancy on the intention to use Internet Banking is stronger for male users compared to female users.

[3] In the context of models like logistic regression (Logit) or nonlinear models, there's no closed-form solution for the parameters. So, we rely on iterative algorithms to estimate the model coefficients by maximizing the likelihood function (or minimizing a loss function).

[4] Uses both the first derivative (gradient) and second derivative (Hessian matrix). Update rule is

$$\beta^{(t+1)} = \beta^{(t)} - \left[H\left(\beta^{(t)}\right)\right]^{-1} \nabla l\left(\beta^{(t)}\right)$$

$where,$ H(β): Hessian matrix (matrix of second derivatives)$estimated\ H(\beta)$

$$= \frac{\partial^2 l(\beta)}{\partial \beta\, \partial \beta^{\top}}$$

[5] A version of Newton-Raphson where the expected value of the Hessian is used instead of the actual Hessian. Often used in generalized linear models (GLMs), including logistic regression.

[6] Specifically used to estimate GLMs like the logit model. Converts the problem into a weighted least squares problem and updates weights iteratively.

- H2a: Effort Expectation has a positive effect on the adoption of Internet Banking.
- H2b: The effect of Effort Expectation on Internet Banking adoption is stronger for older users, as they may find it more challenging to adopt new technology.
- H2c: Female users perceive higher Effort Expectations as a greater barrier to Internet Banking adoption than male users.
- H3a: Social Influence positively impacts the intention to use Internet Banking.
- H3b: The impact of Social Influence on the adoption of Internet Banking is stronger among female users than male users.
- H3c: The influence of social factors on the intention to use Internet Banking decreases with age, as older users may be less affected by social pressures than younger users.
- H4a: Facilitating conditions positively influence the actual use of Internet Banking.
- H4b: The effect of Facilitating conditions on Internet Banking usage is stronger for older users who may rely more on support and resources than younger users.
- H4c: Facilitating conditions have a stronger impact on female users, who may prioritize available resources and support more than male users when adopting Internet Banking.
- H5a: A positive attitude toward Internet Banking increases the adoption of Internet Banking.
- H5b: Age moderates the relationship between attitude and intention to use Internet Banking, with younger users having a stronger positive attitude towards adoption.
- H5c: Gender moderates the relationship between attitude and intention to use Internet Banking, with male users showing a stronger correlation between positive attitude and adoption.
- H6a: A positive relationship exists between security with privacy and intention to use Internet Banking as high security with privacy increases the adoption of Internet Banking.
- H6b: Gender interacts with the relationship between security with privacy and intention to use Internet Banking as male users are more concerned with security and privacy while using Internet Banking services.
- H6c: Age also interacts with the relationship between security with privacy and intention to use Internet Banking as elder users are more prone to security and privacy while adopting Internet Banking services.

4. Empirical Results

All of the variables (dependent and independent variables) that are part of the research model are summarised in the following table 2:

Table 2: Comprehensive statistics for each variable in the model

Variables	Observation	Mean	Std. Deviation	Minimum	Maximum
InternetBanking	440	0.9090	0.2878	0	1
Gender	440	0.7136	0.4525	0	1
Age	440	32.6954	6.3699	25	57
PerformanceExpectancy	440	4.0558	0.7724	1.3333	5
EffortExpectation	440	3.6163	0.3355	2.3661	5
SocialInfluence	440	3.0091	0.6684	1.3333	4.6
FacilitatingCondition	440	3.8672	0.5189	1.5622	5
Attitude	440	4.4820	0.5162	2.4	5
SecurityPrivacy	440	3.2649	0.4875	1.72	4.8
GPE	440	2.9118	1.9582	0	5
GEE	440	2.5675	1.6537	0	5
GSI	440	2.2857	1.5352	0	4.6
GFC	440	2.7250	1.7897	0	5
GAt	440	3.2060	2.0858	0	5
GSP	440	3.1920	1.6394	0	3.1
APE	440	131.6886	31.24935	53.32	212.3
AEE	440	117.3906	20.08674	79.1666	205.2
ASI	440	99.42009	34.03485	40	248.4
AFC	440	125.9299	27.74521	58.3333	249.2880
AAt	440	145.5057	27.08156	80	267.9604
ASP	440	138.9304	29.7715	74.1117	243.7401

Source: Author contribution based on generated output by Stata 14.0.

The table 2 represents a summary statistic for the study investigating factors influencing Internet Banking adoption, based on a sample of 440 respondents (job holders of Bangladesh). Internet Banking usage is notably high, with a mean of 0.91, indicating that 91% of participants either currently use or intend to use Internet Banking, suggesting widespread adoption among the sampled population. This binary variable (minimum of 0 and maximum of 1) signifies whether or not individuals use Internet Banking. The gender distribution shows a predominance of males (mean 0.71), and the average age of respondents is approximately 33 years, with a range from 25 to 57, suggesting a relatively young to middle-aged group. Participants generally perceive Internet Banking as highly beneficial, reflected in a strong Performance Expectancy mean of 4.06, and find it relatively easy to use, with an Effort Expectation mean of 3.62. Social Influence, which captures the impact of peer and societal expectations, has a moderate influence

on adoption decisions, with a mean of 3.01. Facilitating Conditions, such as the availability of resources and support, are perceived positively, as shown by a mean of 3.87. Finally, Attitudes toward Internet Banking are highly favorable, with a mean of 4.48, indicating widespread acceptance and positive perceptions of the service among the respondents. The interaction variables introduced the moderating effects of Gender and Age on the six core constructs. Gender-based interaction variables such as GPE (mean = 2.91), GEE (mean = 2.57), and GFC (mean = 2.73) show moderate average values, reflecting variability in how gender may influence the perception of performance, effort, or resources in relation to IB use. Age-based interactions exhibit much higher mean values due to the multiplication with a continuous variable (age). For example, APE (mean = 131.69), and AA (mean = 145.51) indicate substantial variation, suggesting that moderating effects pf age on performance expectancy and attitude are more pronounced. The wide range in the minimum and maximum values, particularly in variables like ASI (40 to 248.4) and AFC (58.33 to 249.29), also reflects the diversity in user perceptions across different age groups. Overall, the data suggests strong engagement with Internet Banking and highlight both individual and interaction-level variation, setting the stage for further inferential analysis such as Linear Probability Model (LPM), Logit model, and Probit model.

The following table 3 presents the estimated coefficient and standard error of key variables on Internet Banking adoption, which varies across the Linear Probability Model (LPM), Logistic Model, Probit Model, and Logistic odds ratios with a sample size of 440 respondents. The dependent variable in all models is Internet Banking (IB) usage, operationalized either as actual usage or intention to use, and measured as a binary variable. The analysis evaluates the effects of twenty independent variables, which include main variables- Gender (G), Age (A), Performance Expectancy (PE), Effort Expectation (EE), Social Influence (SI), Facilitating Condition (FC), Attitude (At) and Security with Privacy (SP) as well as twelve interaction terms (GPE, GEE, GSI, GFC, GAt, GSP, APE, AEE, ASI, AFC, AAt and ASP) formed by multiplying Gender and Age with each of the main six explanatory variables (e.g., Gender × Performance Expectancy = GPE).

The findings reveal several noteworthy relationships. In the LPM model, Age shows a strong negative association with IB use, with a coefficient of -0.1409 ($p < 0.001$). This indicates that the likelihood of using Internet Banking decreases with increasing age. This negative association remains consistent in the Logit model (6.4696) and the Probit model (3.4224), although the direction and scale differ due to the nonlinear transformation of the dependent variable. In these nonlinear models, positive coefficients indicate an increased likelihood of IB usage, while negative coefficients indicate reduced likelihood. However, the magnitude is not directly interpretable as probabilities (as in LPM) but rather in terms of log-odds (Logit) or z-scores (Probit). For instance, a logit coefficient of 6.4696 for Age implies that for each unit increase in age, the log-odds of using IB increase by 6.47 units, which contradicts the LPM result.

Similarly, Performance Expectancy (PE) is significantly negative in LPM (-0.4158, $p < 0.001$) and aligns in direction across all models, though with differing scales (Logit: -37.3802; Probit: -21.5959). this consistent negative association suggests that when users expect lower performance or usefulness from the IB system, they are significantly less likely to use it.

Table 3: Output of Coefficients and Standard Errors of LPM, Logit, and Probit Models

		Estimation of Models			
Dependent Variable (Internet Banking)		**Linear Probability Model (LPM)**	**Logistic Model**	**Probit Model**	**Logistic Model (odds ratio)**
Independent Variables	Gender	-0.2139	144.9354	50.5383	8.8006
		(0.2559)	(45.5402)	(412.75)	(0.0010)
	Age	-0.1408***	6.4696	3.4224	645.2574
		(0.0147)	(19.1523)	(11.1589)	(12358.21)
	PerformanceExpectancy	-0.4157***	-37.3801	-21.5959	5.8301
		(0.0492)	(2105.8637)	(1334.505)	(1.2301)
	EffortExpectation	-0.3083***	69.5496	31.4213	1.6030
		(0.0910)	(5682.391)	(2616.536)	(9.1133)
	SocialInfluence	-0.0556	-13.2891	-5.5440	1.6906
		(0.0517)	(2224.299)	(1060.595)	(0.0037)
	FacilitatingCondition	-0.0039	70.0014	36.6688	2.5230
		(0.0738)	(3631.346)	(1312.182)	(9.1533)
	Attitude	-0.1805*	32.7949	15.7078	1.7514
		(0.0735)	(2656.196)	(2067.682)	(4.6417)
	SecurityPrivacy	0.5139	11.4287	6.4367	1.0438
		(0.1448)	(48.5297)	(37.5980)	(6.7704)
	GPE	0.0851***	18.3526	11.1244	9.3407
		(0.0211)	(2105.348)	(1333.622)	(1.9711)
	GEE	-0.0943	-20.051	-5.1294	1.9609
		(0.0555)	(5681.561)	(2618.583)	(0.0001)
	GSI	0.0282	-10.6831	-6.5119	0.0019
		(0.0253)	(2223.98)	(1059.531)	(0.0501)
	GFC	0.0022	3.8617	1.5876	47.5487
		(0.0417)	(3629.862)	(1312.191)	(172595.4)

GAt	0.0210	-31.8938	-14.7953	1.4114
	(0.0416)	(2656.052)	(2067.761)	(3.7411)
GSP	0.0832	5.2968	9.5117	0.0916
	(0.0357)	(145.2903)	(15.9302)	(0.0810)
APE	0.0131***	1.0361	0.5543	2.8184
	(0.0013)	(1.3157)	(0.7555)	(3.7083)
AEE	0.0122***	-1.4913	-0.7891	0.2250
	(0.0027)	(2.6952)	(1.5350)	(0.6066)
ASI	0.0010	0.3976	0.2008	1.4883
	(0.0016)	(1.0045)	(0.5329)	(1.4951)
AFC	-0.0015	-1.8030	-0.9363	0.1647
	(0.0022)	(3.0753)	(1.7091)	(0.5068)
AAt	0.0065**	0.2944	-0.1654	0.7449
	(0.0022)	(0.9673)	(0.4973)	(0.7206)
ASP	0.0038	0.6379	0.8029	2.1459
	(0.0063)	(2.7105)	(0.6950)	(1.7028)
_cons	5.2736***	-386.9862	-178.9791	8.6069
	(0.4764)	(706.7199)	(1286.075)	(6.1166)
Observations	440	440	440	440
R^2	0.8091	0.9621	0.9619	0.9621
F	105.2			
LR chi^2		257.92	257.87	257.92
Log likelihood		-5.0784	-5.1029702	-5.0784571

Source: Writer participation based on generated results by STATA 14.0

Note: *, **, *** respective significance levels of 10%, 5% and 1%. Standard errors are in parenthesis.

The Effort Expectation (EE) variable also shows a significant negative effect in the LPM (-0.3083, $p < 0.001$), indicating that increased perceived effort to use Internet Banking (IB) reduces its adoption. However, in the Logit (69.5497) and Probit (31.4213) models, the coefficients appear positive, which could be due to model misspecification, especially considering the enormous standard errors. Likewise, Attitude shows a weaker but still negative relationship in LPM (-0.1805, $P < 0.05$), and its negative coefficient is preserved in the Probit model (15.7078). Among interaction terms, GPE is positively significant in LPM (0.0825, $p < 0.001$), also having large positive coefficients in the Logit model (18.3526), and Probit model (11.1244). This suggests that the influence of Performance Expectancy on IB use is stronger for one gender. In contrast, GEE is negative in LPM (-0.0943) but statistically insignificant, and similarly insignificant in both the Logit and Probit models. GFC, GAt and GSP are also not significant in any model, indicating no strong gender moderation in these relationships. Among the Age-based interaction terms, APE is

significantly positive in all three models: LPM (0.0132, o < 0.001), Logit (1.0326), and Probit (0.5544), highlighting those older users who perceive IB as useful are more likely to adopt it. The same is true for AEE in LPM (0.0123, p < 0.001) and AAt in LPM (0.0066, p < 0.01). These variables have positive consequences coefficients in Logit and Probit as well though not all are statistically significant reinforcing the idea that age enhances the effect of these perceptions on IB behavior. The Logit model (odds ratio) presents the same results in multiplicative terms. For instance, the odd ratio for GPE is 9.3407 implying that odds of using internet banking increase dramatically when this interaction is present-again underscoring the strong moderating role of gender in shaping perceived usefulness.

From a model performance perspective, the Linear Probability Model (LPM) yields an R^2 of 0.8092, indicating that approximately 81% of the variance in the Internet Banking usage is explained by the model. This is a relatively high R^2 for a cross-sectional behavioral study, suggesting a good model fit. The F-statistic of 105.2 further confirms the joint significance of the model parameters, meaning that the set of predictors collectively has a statistically significant effect on IB usage. In the Logit and Probit models, the model fit is assessed using the Log-Likelihood and Likelihood Ratio (LR) Chi^2. Both models have nearly identical Log-Likelihood values of -5.08 and -5.10, respectively, indicating a very close fit. The LR Chi^2 value of 257.92 in the Logit model, with a p-value well below conventional significance levels, confirms that the full model fits significantly better than an intercept-only model. The pseudo R^2 of 0.9621 in the Logit model and 0.9619 in the Probit model indicates that over 96% of the variance is accounted for by the predictors in the model, which is exceptionally high and reflective of strong explanatory power.

Table 4: Output of Multicollinearity Test

Variable's Notation	**VIF**	**1/VIF**
Gender	3.5797	0.2794
Age	2.3480	0.4259
GEE	2.2539	0.4437
GA	2.0180	0.4955
GFC	1.4871	0.6724
GSP	1.6145	0.6194
AFC	1.0161	0.9842
AA	1.9805	0.5049
ASI	1.8350	0.5450
AEE	1.8262	0.5476
APE	1.5013	0.6661
ASP	1.3927	0.7180
GPE	1.4597	0.6851
GSI	1.4037	0.7124
FacilitatingCondition	2.3916	0.4181
PerformanceExpectancy	3.3863	0.2953

Attitude	2.3851	0.4193
SocialInfluence	2.3843	0.4194
EffortExpectation	2.2494	0.4446
SecurityPrivacy	2.2768	0.4392
Mean VIF	2.0270	

Source: Authors' estimations based on generated results by STATA 14.0

The Variance Inflation Factor (VIF) Values reflected in table 4 for all independent variables are low with an average VIF of 2.0270 which is less compared to the commonly accepted threshold of 5.00. This indicates no multicollinearity among the independent variables meaning that they are not highly correlated with each other.

Table 5: Breusch-Pagan / Cook-Weisberg test for heteroskedasticity

Ho: Constant variance
Variables: fitted values of InternetBanking
chi2(1) = 295.11
Prob > chi2 = 0.0000

Source: Authors' estimations based on generated results by STATA 14.0

The test for heteroskedasticity reports a chi-square value of 295.11 with a p-value of 0.0000, which is less than 0.05. This rejects the null hypothesis of constant variance, indicating the presence of heteroskedasticity in the model. In simpler terms, the variance of errors in predicting Internet Banking adoption varies across observations. In Bangladesh, this could suggest that certain groups or demographics experience more variability in how factors like Performance Expectancy impact their Internet Banking usage.

Table 6: Ramsey RESET test using powers of the fitted values of InternetBanking

Ho: model has no omitted variable
F (3, 417) = 154.71
Prob > F = 0.0000

Source: Authors' estimations based on generated results by STATA 14.0

The Ramsey RESET test for omitted variables has an F-statistic of 154.71 and a p-value of 0.0000 (< 0.05), which indicates that there are omitted variables in the model. This implies that the model may not fully capture all relevant factors influencing Internet Banking. In Bangladesh, this could mean that factors such as trust in digital security, financial literacy, or government policy might also be important in predicting Internet Banking behavior (Akhter et al. 2022; Khan et al. 2017; and Safeena et al. 2018), but are not included in the current model.

In conclusion, as the model has heteroskedasticity and omitted variable bias problems in the LPM method, we have adopted the Logistic and Probit estimations for this research model.

5. Discussion and Findings

Empirical result has found that assessing the key factors of Internet Banking adoption involves examining the relationship between Internet Banking and several key factors. Age, Gender, and Performance Expectancy have a significant impact on Internet Banking adoption. The results reveal that age negatively influences Internet Banking adoption, suggesting that older individuals are generally less likely to engage with IB platforms. However, interaction effects indicate that when older users perceive the technology as useful and easy to use, they are more inclined to adopt it. This aligns with the findings of Yousafzai and Soriano (2011) who argued that age moderated perceptions of usefulness and ease of use. Similarly, the negative association between performance expectancy and adoption, as shown in the LPM model, implies that when users expect limited benefits or functionalities from IB systems, they are less motivated to use them. This is consistent with the work of Das et al. (2024) and Akhter et al. (2022), who emphasized the importance of perceived usefulness in shaping user behavior. Effort expectancy also emerged as a significant negative predictor, highlighting that when users perceive the platform as complex or difficult to negative, their likelihood of adoption decreases. This supports previous studies such as those by Sabbir et al. (2020) and Baraghani (2007), which demonstrated that usability and ease of use are crucial in driving digital banking acceptance. Attitude, although less strongly associated than other factors, was still statistically significant, suggesting that general disposition toward technology plays a modest but meaningful role. This echoes the conclusions drawn by Tsai et al. (2013), where attitude influenced adoption intention in the Taiwanese banking sector. Interestingly, gender did not significantly influence IB adoption on its own, but its interaction with performance expectancy (GPE) was statistically significant and positive, indicating that perceived usefulness has a greater influence for one gender, potentially males, as noted by Rahaman et al. (2021). This gender-based difference is further supported by Yousafzai and Soriano (2011), who observed that younger males often associate technology with performance benefits, while older females focus more on ease of use. Social influence, despite being a key variable in many Technology Acceptance Model (TAM) TAM and UTAUT-based models, was not statistically significant in this study. This contradicts findings from Rahaman et al. (2021) but aligns with Govender and Wu (2013), who found limited peer influence in the South African context. The lack of significance for social influence may reflect a more individualistic decision-making process in digital banking behavior within the studied population. The empirical models demonstrated high explanatory power, with an R^2 of 0.809 in the LPM and pseudo-R^2 values above 0.96 in the Logit and Probit models. These values suggest a robust model fit and reinforce the reliability of estimated relationships. The significance of the F-statistic and likelihood ratio tests further validates the models' explanatory capabilities.

These findings have practical implications for banks and policymakers. To improve IB adoption rates, financial institutions must prioritize enhancing perceived usefulness and ease of use through intuitive digital design, responsive interfaces, and user training. Special attention should be given to older users and those less familiar with

technology, as the data show they are less likely to adopt IB unless they perceive clear value and low usage complexity. The above discussion emphasizes that demographic factors, particularly Gender and Age, as well as psychological factors like Performance Expectancy and Attitude, are key drivers of Internet Banking adoption in Bangladesh. The mixed results on Effort Expectation and the insignificance of Social Influence suggest that policymakers and banks should focus on improving infrastructure and raising awareness to enhance adoption rates. These findings are consistent with the broader literature on Internet Banking adoption and provide valuable insights for promoting digital banking in Bangladesh. Furthermore, marketing efforts should consider gendered perceptions, with strategies tailored to emphasize performance benefits or usability depending on the target demographic.

In conclusion, this study contributes to the growing body of research on Internet Banking adoption by highlighting the complex interplay of demographic characteristics, user perceptions, and behavioral attitudes. While key variables like performance expectancy and effort expectation remain foundational, their effects are nuanced by age and gender interactions. Further research should aim to incorporate longitudinal data, additional moderating variables such as trust and cultural values, and broader population samples to deepen the understanding of what drives or inhibits the digital transformation of banking services.

6. Conclusion with policy implication

Based on the comprehensive empirical findings and the subsequent discussions presented in this research, a series of strategic policy implications have been identified to facilitate and enhance the adoption of Internet Banking among professionals in Bangladesh. The analysis highlights that performance expectancy, effort expectancy, facilitating conditions, attitudes toward the technology as well as security and privacy concerns significantly influence the adoption process, each with varying degrees and patterns.

At first, the study underscores the importance of performance expectancy emphasizing the perceived usefulness and practical benefits of Internet Banking systems. Banks should therefore prioritize clearly communicating these tangible benefits to potential users. Specifically, marketing and awareness campaigns should be developed that underscore the efficiency, productivity gains and convenience associated with Internet Banking usage. Banks could demonstrate these benefits through testimonials, demonstrations, and targeted advertising especially aimed at younger and tech-savvy users who were identified as being particularly receptive to these aspects. Effort expectancy representing the ease of use and accessibility of Internet Banking platforms, was also a significant determinant identified in this study. To address this, banks should ensure their digital banking interfaces are intuitive, user-friendly and easy to navigate minimizing the perceived complexity and effort required to operate the systems.

Facilitating conditions emerged with mixed results indicating that mere availability of resources is not always sufficient for encouraging adoption. Financial institutions must therefore invest in targeted and personalized support systems rather than generic provisions. Establishing dedicated customer support

services such as online chat assistance, phone helplines, and on-site customer care centers can significantly improve user experience. Such proactive assistance mechanisms will address specific user issues promptly, build trust and reinforce user confidence in the system's reliability. In addition, attitudes toward Internet Banking significantly influence adoption decisions. Creating positive user experiences through consistent service reliability, superior customer service and frequent positive reinforcement campaigns can foster more favorable attitudes toward Internet Banking. Moreover, security and privacy emerged as critical concerns among users. Banks must adopt rigorous cybersecurity practices employing advanced encryption technologies, multi-factor authentication methods and continuous monitoring systems to protect user data. Transparent and frequent communication regarding security measures and privacy policies is essential in mitigating user concerns.

Finally, considering the minimal impact observed from social influences, financial institutions should reconsider heavily relying on peer recommendations or social proof as primary drivers of adoption. Instead, resources might be better allocated to direct user engagement and robust informational campaigns.

References

Akhter, T., Mohiuddin, M. and Uddin, M.M., 2022. Factors influencing Internet Banking adoption in Bangladesh. *International Journal of Bank Marketing*, 40(1), pp.89-110.

Abdelrhman, A.B., Tayeb, M.E., Abubaker, N.M.B., Mohammed, M.I.A., Ahmed, A.A.K., & Chebbi, T. (2024). Factors Driving the Adoption and Application of Internet-Based Bank Services with Special Emphasis on e-Banking. *Pakistan Journal of Life and Social Sciences*, 22(2), 9471-9483.

Akter, S., Rahman, M., Hasan, M., & Karim, A. (2021). Extending the UTAUT model to understand internet banking adoption: The role of security and trust in Bangladesh. *Journal of Internet Banking and Commerce*, 26(3), 1–15.

Ajzen, I. (1991). The theory of planned behavior. *Organizational Behavior and Human Decision Processes*, 50(2), 179–211.

Baraghani, S.N., 2007. Factors influencing the adoption of Internet banking. *Journal of Internet Banking and Commerce*, 12(3), pp.1-6.

Das, D., Patnaik, B.C.M., & Satpathy, I. (2024). Factors affecting Digital Banking adoption: A review of Literature. *Journal of the Oriental Institute*, 73(2), 592–616.

Governer, A. and Wu, C., 2013. Adoption of Internet banking in South Africa: Factors influencing user behavior. *South African Journal of Economic and Management Sciences*, 16(2), pp.234-248.

Gefen, D., & Straub, D. W. (1997). Gender differences in the perception and use of e-mail: An extension to the technology acceptance model. *MIS Quarterly*, 21(4), 389–400.

Hoque, R., 2009. Gender differences in the attitudes of Internet users in Bangladesh. *Asian Journal of Management Studies*, 13(1), pp.45-60.

Hosein, N.Z., 2009. Factors influencing Internet banking usage in China. *Chinese Business Review*, 8(4), pp.36-49.

Hoque, S. M. S. 2012. Factors Affecting Internet Banking Behavior in Bangladesh: An Analysis on the Perspective of Gender and Educational Background. *The Jahangirnagar Business Studies*, *2*.

Islam, N., Mustafi, M., Rahman, M.N., Nower, N., Rafi, M.M.A., Natasha, M.T., Hassan, R. and Afrin, S., 2018. Factors affecting customers' experience in mobile banking of Bangladesh. *Available at SSRN 3305925*.

Jahangir, N. and Parvez, N., 2012. Factors

determining customer adaptation to internet banking in the context of private commercial banks of Bangladesh. *Business Perspectives and Research*, *1*(1), pp.25-36.

Juwaheer, T.D., Pudaruth, S. and Ramdin, P., 2012. Factors influencing the adoption of internet banking: a case study of commercial banks in Mauritius. *World journal of science, Technology and sustainable development*, *9*(3), pp.204-234.

Kesharwani, A., Bisht, S.S. and Das, N., 2011. Technology Acceptance Model extension for Internet banking adoption in India: Role of security and privacy concerns. *Electronic Commerce Research and Applications*, 10(4), pp.431-442.

Khan, M.A., AlMamun, A. and Hoque, R., 2017. Internet banking adoption in Malaysia: Key determinants and challenges. *Journal of Internet Commerce*, 16(3), pp.259-284.

Mirza, A.H., Momeni, E. and Gholipour, A., 2009. Iranian customers' adoption of Internet banking. *Middle-East Journal of Scientific Research*, 4(2), pp.132-140.

Musiime, A. and Ramadhan, A.M., 2011. Factors influencing adoption of Internet banking in Uganda. *African Journal of Business Management*, 5(12), pp.4998-5005.

Morris, M. G., & Venkatesh, V. (2000). Age differences in technology adoption decisions. *Information Systems Research*, 11(4), 342–365.

Ong, C.-S., & Lai, J.-Y. (2006). Gender differences in perceptions and relationships among dominants of e-learning acceptance. *Computers in Human Behavior*, 22(5), 816–829.

Pikkarainen, T., Pikkarainen, K., Karjaluoto, H. and Pahnila, S., 2004. *Consumer acceptance of online banking: An extension of the technology acceptance model*. Internet Research, 14(3), pp.224–235.

Qeisi, K. and Abdallah, S., 2013. UTAUT model extension: Online banking in Jordan. *International Journal of Technology and Human Interaction*, 9(1), pp.20-38.

Rahaman, M.M., Hossain, M.Z. and Ahmed, M.R., 2021. Internet banking adoption in Bangladesh: Key determinants among university students. *International Journal of Information Systems and Social Change*, 12(2), pp.89-108.

Rahman, M.M. and Sloan, L., 2015. Adoption of m-commerce in Bangladesh: Opportunities and challenges. *Bangladesh Journal of ICT Development*, 2(1), pp.34-51.

Roy, A., Chaudhuri, R. and Biswas, S., 2017. Role of perceived risk and ease of use in Internet banking adoption. *Indian Journal of Marketing*, 47(7), pp.40-52.

Sabbir, M.M., Hossain, M.A. and Rahman, M., 2020. Internet banking adoption in Bangladesh: Factors and strategies. *Journal of Internet Commerce*, 19(2), pp.149-166.

Safeena, R., Kammani, A. and Date, H., 2018. Internet banking in India: Challenges and strategies. *Journal of Internet Banking and Commerce*, 23(2), pp.89-102.

Tan, M. and Teo, T.S., 2000. Factors influencing the adoption of Internet banking. *Journal of the Association for Information Systems*, 1(5), pp.1-44.

Tsai, M.T., Chen, K.S. and Chien, J.L., 2013. The UTAUT model application in Taiwan Internet banking adoption. *Journal of Financial Services Marketing*, 18(3), pp.205-217.

Taylor, S., & Todd, P. A. (1995). Understanding information technology usage: A test of competing models. *Information Systems Research*, 6(2), 144–176.

Venkatesh, V., Morris, M.G., Davis, G.B. and Davis, F.D., 2003. User acceptance of information technology: Toward a unified view. *MIS Quarterly*, 27(3), pp.425-478.

Venkatesh, V., Thong, J. Y. L., & Xu, X. (2012). *Consumer acceptance and use of information technology: Extending the unified theory of acceptance and use of technology*. MIS Quarterly, 36(1), 157–178.

Viet, T.H. and Huynh, T., 2021. Integration of TAM and perceived risk theory in Internet

banking adoption. *Asia Pacific Management Review*, 26(2), pp.123-137.

Yousafzai, S.Y. and Soriano, L., 2011. A customer-specific Internet banking acceptance model. *Electronic Markets*, 21(3), pp.235-252.

Wang, Y.S., Wang, Y.M., Lin, H.H. and Tang, T.I., 2003. *Determinants of user acceptance of Internet banking: An empirical study*. International Journal of Service Industry Management, 14(5), pp.501–519.

Yiu, C.S., Grant, K. and Edgar, D., 2007. *Factors affecting the adoption of Internet banking in Hong Kong—implications for the banking sector*. International Journal of Information Management, 27(5), pp.336–351.

Yousafzai, S.Y., 2012. Internet banking adoption: A review through nine theories. *International Journal of Bank Marketing*, 30(4), pp.332-352.

Appendix: Following questionnaire has been used to collect primary data from respondents.

Email…….
Gender:
- o Male
- o Female

Age:
- o 20-30
- o 31-40
- o 41-50
- o 51 and above

Experience of Job:
- o 0-2 years
- o 3-5 years
- o 6-8 years
- o 8 years and above

Do you use Internet banking?
- o Yes
- o No

1. Performance expectancy:

1. Using Internet Banking enables me to accomplish tasks more quickly.
   - o Strongly disagree
   - o Disagree
   - o Neutral
   - o Agree
   - o Strongly agree

2. Internet Banking improves my job performance.
   - o Strongly disagree
   - o Disagree
   - o Neutral
   - o Agree
   - o Strongly agree

3. Using Internet Banking in my job increases my productivity.
   - o Strongly disagree
   - o Disagree
   - o Neutral
   - o Agree
   - o Strongly agree

4. Using Internet Banking enhances my effectiveness on the job.
   - o Strongly disagree

- o Disagree
- o Neutral
- o Agree
- o Strongly agree

5. I find Internet Banking useful in my job.
- o Strongly disagree
- o Disagree
- o Neutral
- o Agree
- o Strongly agree

6. Use of Internet Banking can decrease the time needed for my important job responsibilities.
- o Strongly disagree
- o Disagree
- o Neutral
- o Agree
- o Strongly agree

2. Effort Expectation:

1. Learning to operate Internet Banking is easy for me.
- o Strongly disagree
- o Disagree
- o Neutral
- o Agree
- o Strongly agree

2. I find it easy to get Internet Banking free of effort.
- o Strongly disagree
- o Disagree
- o Neutral
- o Agree
- o Strongly agree

3. My interaction with Internet Banking is clear and understandable.
- o Strongly disagree
- o Disagree
- o Neutral
- o Agree
- o Strongly agree

4. I find Internet Banking easy to use.
- o Strongly disagree
- o Disagree
- o Neutral

- o Agree
- o Strongly agree

5. Using Internet Banking takes too much time (e.g., data input, buffering, etc.).
- o Strongly disagree
- o Disagree
- o Neutral
- o Agree
- o Strongly agree

6. Working with Internet Banking is so complicated; that it is difficult to understand what is going on.
- o Strongly disagree
- o Disagree
- o Neutral
- o Agree
- o Strongly agree

3. Social Influence

1. People who influence my behavior think that I should use Internet Banking.
- o Strongly disagree
- o Disagree
- o Neutral
- o Agree
- o Strongly agree

2. I use Internet Banking because of the proportion of co-workers who use Internet Banking.
- o Strongly disagree
- o Disagree
- o Neutral
- o Agree
- o Strongly agree

4. The senior management of my office has been encouraged to use Internet Banking.
- o Strongly disagree
- o Disagree
- o Neutral
- o Agree
- o Strongly agree

5. People in my organization who use Internet Banking have more prestige than those who do not.
- o Strongly disagree
- o Disagree
- o Neutral
- o Agree

- o Strongly agree

6. Using Internet Banking is a status symbol in my organization.
   - o Strongly disagree
   - o Disagree
   - o Neutral
   - o Agree
   - o Strongly agree

4. Facilitating Condition

1. I have control over using Internet Banking.
   - o Strongly disagree
   - o Disagree
   - o Neutral
   - o Agree
   - o Strongly agree

2. I have the resources necessary for Internet Banking.
   - o Strongly disagree
   - o Disagree
   - o Neutral
   - o Agree
   - o Strongly agree

3. I have the knowledge necessary to use the system.
   - o Strongly disagree
   - o Disagree
   - o Neutral
   - o Agree
   - o Strongly agree

4. Guidance was available to me in the use of Internet Banking.
   - o Strongly disagree
   - o Disagree
   - o Neutral
   - o Agree
   - o Strongly agree

5. A specific person (or group) is available for assistance with Internet Banking difficulties.
   - o Strongly disagree
   - o Disagree
   - o Neutral
   - o Agree
   - o Strongly agree

6. I think that using Internet Banking fits well with the way I like to work.
   - o Strongly disagree
   - o Disagree

- o Neutral
- o Agree
- o Strongly agree

5. Attitude toward using Internet Banking

1. Internet Banking is a wise idea.
   - o Strongly disagree
   - o Disagree
   - o Neutral
   - o Agree
   - o Strongly agree

2. I like the idea of using Internet Banking.
   - o Strongly disagree
   - o Disagree
   - o Neutral
   - o Agree
   - o Strongly agree

3. I find using Internet Banking is enjoyable.
   - o Strongly disagree
   - o Disagree
   - o Neutral
   - o Agree
   - o Strongly agree

4. The actual process of using Internet Banking is pleasant.
   - o Strongly disagree
   - o Disagree
   - o Neutral
   - o Agree
   - o Strongly agree

5. Internet Banking makes work more pleasurable and, interesting.
   - o Strongly disagree
   - o Disagree
   - o Neutral
   - o Agree
   - o Strongly agree

6. Security and Privacy for using Internet Banking

1. I trust that my personal and financial information is safe when using Internet Banking.

   - o Strongly disagree
   - o Disagree
   - o Neutral

- o Agree
- o Strongly agree

2. I am confident that Internet Banking platforms implement adequate security measures.
- o Strongly disagree
- o Disagree
- o Neutral
- o Agree
- o Strongly agree

3. I am concerned about the privacy of my financial transactions conducted via Internet Banking.
- o Strongly disagree
- o Disagree
- o Neutral
- o Agree
- o Strongly agree

4. I frequently worry about the potential risks of fraud or hacking associated with Internet Banking.
- o Strongly disagree
- o Disagree
- o Neutral
- o Agree
- o Strongly agree

5. Banks adequately communicate about security threats and privacy policies related to Internet Banking.
- o Strongly disagree
- o Disagree
- o Neutral
- o Agree
- o Strongly agree