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Factors Influencing the Adoption of E-Banking among Retail Banking Customers

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Abstract

The rapid digitalization of the banking sector has led to the widespread introduction of electronic banking (e-banking) services, fundamentally transforming the way retail banking customer's access and manage financial transactions. Despite significant investments by banks in digital infrastructure and technological innovation, the adoption of e-banking services among retail customers remains uneven across regions and customer segments. Understanding the factors influencing customers' adoption behavior has therefore become a critical issue for both banking practitioners and policymakers. This study examines the key determinants influencing the adoption of e-banking among retail banking customers.

The study investigates the effects of perceived usefulness, perceived ease of use, trust, perceived risk, and security perceptions on customers' intention to adopt e-banking services. In addition, the study considers the moderating role of demographic factors such as age, education, and income in shaping adoption behavior. A quantitative research design is proposed, employing a structured questionnaire to collect primary data from retail banking customers.

The finding of this study reveals that perceived usefulness and ease of use are primary drivers of e-banking adoption, while trust and security perceptions play a critical mediating role in reducing perceived risk. The study contributes to the existing literature by offering an integrated

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framework that combines technological, psychological, and demographic determinants of e-banking adoption. The results are expected to provide valuable insights for banks in designing customer-centric digital strategies and for policymakers in promoting secure and inclusive digital banking ecosystems.

Keywords: E-Banking Adoption, Perceived Usefulness, Trust, Perceived Risk, Retail Banking Customers

1.0 INTRODUCTION

The rapid advancement of information and communication technologies has fundamentally transformed the global banking industry, leading to the widespread adoption of electronic banking (e-banking). Early studies defined e-banking as the delivery of banking services through electronic channels such as the internet and mobile devices (Daniel, 1999; Pikkarainen et al., 2004). In recent years, the scope of e-banking has expanded significantly to include mobile banking applications, artificial intelligence–based customer support, and integrated digital financial ecosystems (Shaikh & Karjaluoto, 2015; Oliveira et al., 2019).

E-banking offers substantial benefits to both banks and customers, including improved service efficiency, reduced operational costs, and enhanced customer convenience (Laukkanen, 2007; Malaquias & Hwang, 2016). However, despite technological advancements and increased digital penetration, customer adoption of e-banking services remains uneven across regions and demographic groups (Alalwan et al., 2018; Mbama et al., 2018). Recent studies highlight that concerns related to security, privacy, and trust continue to be major barriers to adoption, particularly in emerging economies (Koksal, 2016; Dwivedi et al., 2021).

The Technology Acceptance Model (TAM) proposed by Davis (1989) remains one of the most widely used frameworks for studying e-banking adoption. Subsequent extensions, such as the Unified Theory of Acceptance and Use of Technology (UTAUT) by Venkatesh et al. (2003),

have incorporated social influence and facilitating conditions to better explain technology adoption behavior. Recent research has further extended these models by integrating trust, perceived risk, and customer experience constructs to explain digital banking adoption in complex technological environments (Oliveira et al., 2019; Tam & Oliveira, 2017).

Retail banking customers constitute the largest user segment of banking services, making their adoption behavior critical to the success of digital banking strategies. Understanding the factors influencing e-banking adoption among retail customers is therefore essential for banks seeking to enhance digital transformation, customer engagement, and long-term competitiveness. This study aims to examine both classical and contemporary determinants of e-banking adoption by integrating technological, psychological, and demographic factors into a comprehensive research framework.

2.0 REVIEW OF LITERATURE

2.1 Perceived Usefulness

Perceived usefulness refers to the degree to which an individual believes that using a system will enhance their performance (Davis, 1989). In e-banking research, perceived usefulness has consistently been identified as a significant determinant of adoption (Pikkarainen et al., 2004). Recent studies confirm that customers are more likely to adopt e-banking when they perceive it as efficient, convenient, and capable of meeting their financial needs effectively (Malaquias & Hwang, 2016; Alalwan et al., 2018). Oliveira et al. (2019) further demonstrated that perceived

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usefulness strongly influences both initial adoption and continued usage of digital banking platforms.

2.2 Perceived Ease of Use

Perceived ease of use refers to the extent to which an individual believes that using a system requires minimal effort (Davis, 1989). Earlier studies found a positive relationship between ease of use and e-banking adoption (Venkatesh & Davis, 2000; Eriksson et al., 2005). More recent research highlights that intuitive mobile interfaces, seamless navigation, and personalized features significantly enhance customers' perceptions of ease of use (Tam & Oliveira, 2017; Shaikh et al., 2020). Complexity and lack of digital skills remain key barriers, particularly among older customers and first-time users (Laukkanen & Pasanen, 2008; Dwivedi et al., 2021).

2.3 Trust

Trust is a critical factor in e-banking adoption due to the absence of face-to-face interaction and the sensitivity of financial transactions. Early research emphasized trust as a prerequisite for online banking adoption (Gefen et al., 2003; Yousafzai et al., 2003). Recent studies reaffirm that trust in the bank's technological capability, integrity, and data protection practices significantly influences customers' intention to adopt and continue using e-banking services (Koksal, 2016; Zhou et al., 2018). Mbama et al. (2018) further found that trust mediates the relationship between service quality and customer loyalty in digital banking environments.

2.4 Perceived Risk and Security

Perceived risk refers to customers' expectations of potential losses associated with online transactions (Featherman & Pavlou, 2003). In the context of e-banking, perceived risk is primarily related to financial loss, privacy breaches, and cyber fraud. Early studies established a negative relationship between perceived risk and e-banking adoption (Littler & Melanthiou,

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2006; Lee, 2009). Recent research highlights that increasing cyber threats have intensified customers' risk perceptions, making security a dominant concern in digital banking adoption (Arif et al., 2020; Singh & Srivastava, 2020). Advanced security mechanisms such as biometric authentication and multi-factor verification have been shown to reduce perceived risk and enhance trust (Rahi et al., 2021).

2.5 Research Gap

Existing research on e-banking adoption has advanced significantly over the past two decades; however, important gaps remain. Prior studies largely emphasize technological factors such as perceived usefulness and ease of use, with limited integration of security perception, trust, and demographic moderators. Additionally, recent research often focuses on specific platforms or regions, neglecting a holistic view of multiple e-banking channels. Although security and perceived risk are recognized as critical factors, empirical evidence linking them with demographic variations using traditional statistical methods is limited. This study addresses these gaps through a robust, statistically interpretable approach examining psychological and socio-demographic determinants of e-banking adoption.

3.0 RESEARCH METHODOLOGY

3.1 Research Design

The study adopts a quantitative and explanatory research design to examine the factors influencing the adoption of e-banking among retail banking customers. A cross-sectional survey approach is used, as data are collected from respondents at a single point in time. This design is appropriate for analyzing customer perceptions, attitudes, and adoption behavior using statistical techniques such as t-tests, analysis of variance (ANOVA), correlation analysis, and multiple regression.

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3.2 Population of the Study

The population of the study consists of retail banking customers who maintain savings or current accounts in commercial banks and have access to electronic banking services. Both adopters and non-adopters of e-banking are included in the study to capture differences in adoption behavior across customer groups.

3.3 Sample Size and Sampling Technique

A sample size of 400 respondents is proposed for the study. This sample size is considered sufficient to ensure statistical power and reliability when applying parametric tests such as t-tests and ANOVA. The study employs a stratified random sampling technique, where respondents are classified based on demographic characteristics such as age, gender, education, and income. This approach ensures adequate representation of different customer segments and enhances the generalizability of the findings.

3.4 Data Collection Method

Primary data are collected through a structured questionnaire administered to retail banking customers. Data collection is carried out using both online surveys and personally administered questionnaires to ensure wider coverage and higher response rates. A pilot study with 30 respondents is conducted prior to the main survey to test the clarity, reliability, and consistency of the questionnaire. Necessary refinements are made based on the pilot study results.

3.5 Measurement of Variables

The questionnaire consists of two sections. The first section captures demographic information, including age, gender, education, income, and occupation. The second section measures the key study variables using validated scales adapted from prior research.

- Dependent Variable: E-Banking Adoption
- Independent Variables:
  - Perceived Usefulness (PU)
  - Perceived Ease of Use (PEOU)
  - Trust (TR)
  - Security Perception (SP)
  - Perceived Risk (PR)
- Moderating / Grouping Variables: Demographics – Age, Gender, Education, Income

3.6 Reliability and Validity

The internal consistency of the measurement scales is assessed using Cronbach's alpha, with a minimum acceptable value of 0.70. Content validity is ensured by adapting items from well-established studies and by consulting subject experts. Construct validity is examined using exploratory factor analysis (EFA) to confirm factor structure and item loadings.

3.7 Research Objectives

The primary aim of this study is to investigate the factors influencing the adoption of e-banking among retail banking customers. To achieve this aim, the study sets the following objectives:

1. To examine the influence of perceived usefulness and perceived ease of use on e-banking adoption among retail banking customers.
2. To assess the role of trust and security perception in determining e-banking adoption behavior.
3. To analyze the impact of perceived risk on customers' e-banking adoption intentions.
4. To evaluate demographic differences (age, gender, education, income) in e-banking adoption.

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3.8 Hypotheses

- H_{01}: Perceived usefulness has a positive and significant effect on e-banking adoption among retail banking customers.
- H_{02}: Perceived ease of use has a positive and significant effect on e-banking adoption among retail banking customers.
- H_{03}: Trust positively influences the adoption of e-banking services.
- H_{04}: Security perception positively affects e-banking adoption.
- H_{04}: Perceived risk negatively affects e-banking adoption.
- H_{05}: There is a significant difference in e-banking adoption based on gender.
- H_{06}: There is a significant difference in e-banking adoption across age groups.
- H_{07}: There is a significant difference in e-banking adoption across education levels.
- H_{08}: There is a significant difference in e-banking adoption across income categories.

4.0. DATA ANALYSIS AND INTERPRETATION

This chapter presents the analysis of the data collected from 400 retail banking customers regarding their adoption of e-banking services. The objectives are to examine the effects of perceived usefulness, perceived ease of use, trust, security perception, and perceived risk on e-banking adoption and to explore demographic differences using t-tests and ANOVA. Statistical analysis was conducted using SPSS, and results are interpreted to test the research hypotheses.

4.1 Reliability Analysis

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Table 4.1 Reliability Test, Cronbach's alpha.

Variable	No. of Items	Cronbach's Alpha
Perceived Usefulness (PU)	4	0.82
Perceived Ease of Use (PEOU)	4	0.80
Trust (TR)	5	0.85
Security Perception (SP)	4	0.81
Perceived Risk (PR)	4	0.78
E-Banking Adoption (EBA)	5	0.83

Interpretation:

All constructs have Cronbach's alpha > 0.70, indicating acceptable internal consistency and reliability of the measurement scales.

4.2 Descriptive Statistics of Key Variables

- H1a: Perceived usefulness has a positive and significant effect on e-banking adoption among retail banking customers.

Table 4.2 Descriptive Statistics

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Variable	Mean	Standard Deviation
PU	4.10	0.62
PEOU	3.95	0.68
TR	4.05	0.70
SP	3.90	0.72
PR	3.20	0.85
EBA	3.98	0.69

Interpretation:

The mean scores for PU, PEOU, trust, and security perception are high, suggesting that respondents generally perceive e-banking as useful, easy to use, and secure. Perceived risk has a relatively lower mean, indicating moderate concern among customers.

4.3 Correlation Analysis

Pearson correlation was used to examine the relationships between independent variables and e-banking adoption.

Table 4.3 Correlation Analysis

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Variable	PU	PEOU	TR	SP	PR	EBA
PU	1					0.62**
PEOU	0.55**	1				0.58**
TR	0.60**	0.52**	1			0.65**
SP	0.50**	0.48**	0.55**	1		0.60**
PR	-0.42**	-0.38**	-0.46**	-0.40**	1	-0.50**
EBA						1

Note: Correlation is significant at 0.01 level (2-tailed)

Interpretation:

- PU, PEOU, trust, and security perception are positively correlated with e-banking adoption.
- Perceived risk is negatively correlated with adoption, supporting H3.
- The correlation magnitudes indicate moderate to strong relationships.

4.4 Multiple Regression Analysis

Multiple regression was used to test the influence of independent variables on e-banking adoption.

Regression Model:

$$EBA = \beta0 + \beta1(PU) + \beta2(PEOU) + \beta3(TR) + \beta4(SP) + \beta5(PR) + \varepsilon$$

Table 4.4 Multiple Regression Analysis

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Independent Variable	Beta (β)	t-value	p-value	Interpretation
PU	0.28	5.21	0.000	Positive & Significant
PEOU	0.22	4.15	0.000	Positive & Significant
TR	0.30	5.80	0.000	Positive & Significant
SP	0.18	3.70	0.000	Positive & Significant
PR	-0.25	-4.50	0.000	Negative & Significant

Model Summary:

- $R^2 = 0.62$ (62% of the variance in e-banking adoption is explained by the independent variables)
- F-value = 98.56, $p < 0.001$ (model is statistically significant)

Interpretation:

- All hypotheses H1–H3 are supported.
- PU, PEOU, trust, and security perception positively influence adoption.
- Perceived risk negatively impacts adoption, as expected.

Table 4.5 t-Test Analysis (Gender)

Gender	N	Mean EBA	t-value	p-value
Male	210	4.02	1.95	0.052
Female	190	3.93		

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Interpretation:

- There is no statistically significant difference in e-banking adoption between male and female respondents at 5% significance level.

4.6 ANOVA Analysis (Age)

Age Group	N	Mean EBA	F. Value	P. Value
18–25	80	3.80	4.20	0.007
26–35	150	4.05		
36–45	100	4.00		
46+	70	3.85		

- ANOVA F-value = 4.20, p = 0.007

Interpretation:

- Significant differences exist in adoption across age groups.
- 26–35 years old showing the highest adoption.

4.7 ANOVA Analysis (Education)

Education Level	N	Mean EBA	F-value	P-value
High School	60	3.70	8.12	0.001
Graduate	200	4.05		

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Education Level	N	Mean EBA	F-value	P-value
Postgraduate	140	4.10		

- ANOVA F-value = 8.12, p = 0.001

Interpretation:

- Higher education levels are associated with higher adoption.

4.8 ANOVA Analysis (Income)

Income Level	N	Mean EBA	F-value	P-value
<25000	120	3.80	3.90	0.022
25000–50,000	180	4.00		
> 50,000	100	4.10		

- ANOVA F-value = 3.90, p = 0.022

Interpretation:

- Higher income is associated with higher e-banking adoption.

4.7 Findings

1. Perceived usefulness, perceived ease of use, trust, and security perception have a significant positive influence on e-banking adoption.
2. Perceived risk has a significant negative effect on adoption.

3. Demographic analysis shows that age, education, and income significantly influence adoption, whereas gender does not.
4. Overall, the proposed hypotheses are largely supported, providing empirical evidence for the role of technological, psychological, and demographic factors in e-banking adoption.

5.0 SUGGESTIONS AND CONCLUSION

5.1 Suggestions

Based on the analysis of the study, several practical and theoretical suggestions can be made to enhance the adoption of e-banking among retail banking customers:

Improve Perceived Usefulness

The study found that perceived usefulness (PU) is a significant determinant of e-banking adoption. Banks should focus on:

- Offering features that clearly save time and effort for customers, such as instant fund transfers, automated bill payments, and personal finance management tools.
- Educating customers about the benefits of e-banking through marketing campaigns, workshops, and tutorials to increase awareness of usefulness.

Enhance Perceived Ease of Use

Perceived ease of use (PEOU) was also positively linked to adoption. Banks can:

- Simplify mobile and internet banking interfaces with clear navigation, minimal steps for transactions, and user-friendly design.

- Provide 24/7 customer support or chat bots to help users overcome difficulties during their initial experience.
- Implement on boarding tutorials and demonstration videos for first-time users.

Strengthen Trust and Security Perception

The study revealed that trust (TR) and security perception (SP) are critical in influencing adoption. Banks should:

- Enhance security measures such as two-factor authentication, biometric verification, and transaction alerts.
- Communicate security protocols clearly to customers to build confidence in digital transactions.
- Maintain transparency regarding privacy policies and data protection practices.

Reduce Perceived Risk

Perceived risk (PR) negatively impacts adoption. Banks can:

- Offer fraud protection services and ensure rapid resolution of complaints.
- Provide insurance or guarantees for online transactions to reduce customers' financial risk concerns.
- Regularly educate customers on safe banking practices to minimize fear of cyber threats.

Targeted Strategies for Demographics

The study found significant differences in adoption based on age, education, and income:

- Younger and more educated customers adopt more readily, so targeted awareness programs can help older or less-educated groups.
- Tailored training sessions for senior citizens and rural populations can reduce digital exclusion.
- Income-sensitive strategies, such as fee waivers for e-banking transactions, may encourage adoption among lower-income customers.

5.2 Conclusion

In conclusion, the adoption of e-banking is a multifaceted phenomenon influenced by a combination of technological perceptions, psychological trust factors, risk considerations, and demographic characteristics. Banks that address these determinants effectively are more likely to achieve higher adoption rates, customer satisfaction, and long-term loyalty in the digital era.

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