

FinTech Adoption and Customer Satisfaction through Trust for Sustainable Digital Financial Services in Malaysian Banking

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Abstract

FinTech is transforming the banking sector by enabling more accessible, efficient and digitally delivered financial services, while also creating challenges related to usability, security, service quality and customer trust. These factors are important for the development of sustainable digital financial services because technological innovation alone does not ensure continued customer acceptance and satisfactory service experiences. This study examines the relationships between perceived ease of use, perceived security and service quality and customer satisfaction among FinTech users in the Malaysian banking sector, with trust as a mediating variable. The study adopts a quantitative, cross-sectional correlational design and focuses on Malaysian banking customers aged 18 years and above who have used at least one FinTech-enabled service offered by their main commercial bank. Data were collected through a self-administered online questionnaire using Qualtrics, with 300 valid responses obtained. Established measurement scales were adapted from Davis (1989), Abdullah and Hisamudin (2024), Parasuraman, et al., (1988), Oliver, (1980) and Đặng and Boratyńska (2026), using a five-point Likert scale. Data were analysed using descriptive statistics, Cronbach's alpha, Pearson correlation, multiple regression and mediation analysis using Hayes' PROCESS approach in SPSS version 29. The findings indicate that perceived ease of use, perceived security and service quality are positively associated with customer satisfaction, while trust significantly mediates the relationships between each of these factors and customer satisfaction. The findings highlight that trusted, secure, user-centred and high-quality FinTech services can support sustainable digital transformation in banking by strengthening positive and enduring customer experiences. The study contributes to the sustainable development context, particularly Sustainable Development Goals 8 and 9, by demonstrating the importance of customer-centred and trustworthy digital financial services in supporting sustainable financial-service innovation. The findings provide practical implications for Malaysian banks, FinTech developers and regulators in designing secure, reliable and sustainable digital banking services.

1. INTRODUCTION

1.1 Background of the Study

The banking sector is undergoing substantial digital transformation, driven by the rapid development and adoption of financial technology (FinTech). FinTech encompasses a wide range of technology-enabled financial innovations, including mobile banking applications, online payment solutions, digital banking platforms and artificial intelligence-enabled customer service systems (Hamid et al., 2024). These innovations have changed how financial services are delivered and accessed, while increasing customer expectations regarding convenience, speed, security and service quality. As banks increasingly integrate FinTech into their service delivery, understanding the factors that contribute to positive and sustainable digital banking experiences has become increasingly important.

The development of digital financial services is also relevant to the broader sustainable development agenda. Technological innovation can contribute to more efficient and accessible financial-service

delivery, while sustainable digital transformation requires financial institutions to develop services that customers can use confidently and continuously. In this context, sustainable digital financial services extend beyond the introduction of new technologies to include usability, security, service quality and trust. When digital banking services are difficult to use, perceived as insecure or provide inconsistent service quality, technological investment may not translate into satisfactory and sustainable customer experiences. Thus, understanding the customer-related conditions that support the effective use of FinTech-enabled banking services is relevant to the long-term sustainability of digital financial-service innovation.

This perspective is particularly relevant to Sustainable Development Goal 8 (SDG 8), which promotes sustained and sustainable economic growth and productive economic activity, and Sustainable Development Goal 9 (SDG 9), which emphasises innovation and resilient infrastructure. Within the banking sector, FinTech-enabled digital services represent an important component of technological innovation and the transformation of financial-service infrastructure. However, the sustainability of this transformation depends not only on technological development but also on whether customers perceive digital financial services as usable, secure, reliable and trustworthy. Consequently, examining customer responses to FinTech-enabled banking services provides an important customer-centred perspective on sustainable digital financial transformation.

From the customer perspective, the increasing availability of FinTech services has changed expectations regarding the quality and convenience of banking services. Existing research indicates that factors such as perceived ease of use, security and service quality are important in shaping customers' experiences with digital financial services. However, positive perceptions of these characteristics may not automatically result in customer satisfaction. Trust may provide an important psychological mechanism through which customers evaluate and respond to FinTech-enabled banking services. Customers who perceive a digital banking service as easy to use, secure and reliable may be more likely to develop confidence in the service provider, which can contribute to higher satisfaction.

Therefore, examining the relationships among perceived ease of use, perceived security, service quality, trust and customer satisfaction can provide a more comprehensive understanding of customer responses to FinTech-enabled banking. In particular, investigating trust as a mediating mechanism can clarify how technological and service-related characteristics are translated into customer satisfaction. Such understanding is relevant not only to customer experience but also to the development of trusted and sustainable digital financial services.

1.2 Organization Background

The present study focuses on the Malaysian commercial banking sector, comprising licensed commercial banks regulated by Bank Negara Malaysia (BNM). Malaysian banks have increasingly implemented digital banking systems and FinTech-enabled channels as part of their service delivery. Malaysia provides an appropriate context for examining sustainable digital financial services because of its growing FinTech ecosystem and continuing policy emphasis on digitalisation within the financial

sector. Bank Negara Malaysia's Financial Sector Blueprint 2022–2026 also emphasises the continued development of digital financial services.

The study focuses on Malaysian banking customers who have used at least one FinTech-enabled service provided by their main commercial bank, including mobile banking applications, digital payments such as DuitNow, online banking services and artificial intelligence-enabled customer-care services. These services demonstrate how technological innovation is increasingly embedded in everyday banking activities. The increasing integration of such technologies makes customer perceptions of usability, security, service quality and trust particularly important for the continued development of digital banking.

The scale of investment in FinTech further demonstrates the importance of understanding whether technological development translates into positive customer experiences. The Global FinTech Report (2023) reported global FinTech investment of USD 164 billion in 2022, with investment in banking-sector digitalisation accounting for approximately 38% of total FinTech investment. Although investment supports technological development, sustainable digital transformation requires financial institutions to ensure that the resulting services provide value to customers and maintain their confidence in digital channels.

1.3 Problem Statement

Despite substantial investment in FinTech and digital banking, technological advancement does not necessarily guarantee customer satisfaction or sustained positive experiences with digital financial services. Previous evidence has identified security and service quality as important concerns among digital banking customers. For example, the J.D. Power (2023) U.S. Direct Banking Satisfaction Study identified mobile application security as a major concern among dissatisfied digital banking customers, while Capgemini (2023) reported that a substantial proportion of global banking customers were dissatisfied with at least one dimension of digital banking services. These concerns indicate that the successful digitalisation of banking depends not only on technological investment but also on customers' perceptions of the quality, security and usability of digital services.

From a sustainable development perspective, this issue is important because the long-term value of digital financial innovation depends on whether customers can use and trust the services provided. Digital banking systems that are technologically advanced but difficult to use, perceived as insecure or characterised by poor service quality may not generate sustainable customer value. Consequently, there is a need to understand the factors that contribute to positive customer experiences and trust in FinTech-enabled banking services.

From an academic perspective, existing research has examined FinTech adoption and customer satisfaction using frameworks such as the Technology Acceptance Model (TAM). However, previous studies have often examined individual determinants rather than considering perceived ease of use, perceived security and service quality simultaneously. Examining these factors together can provide a more comprehensive understanding of the determinants of customer satisfaction in digital banking.

Furthermore, trust represents an important mechanism that may explain how customers' perceptions of FinTech-enabled services translate into satisfaction. While existing research has examined trust in relation to FinTech adoption and customer satisfaction, fewer studies have incorporated trust as a mediator between multiple FinTech-related service characteristics and customer satisfaction within a single model. This creates an opportunity to examine whether trust explains the relationships between perceived ease of use, perceived security, service quality and customer satisfaction.

The Malaysian context provides an important setting for addressing this gap. Malaysia has experienced substantial growth in digital banking and FinTech services, while the country's financial-sector development continues to emphasise digitalisation. However, the existing literature remains comparatively limited in integrating multiple FinTech-related factors and trust within a single mediation framework among Malaysian banking customers. The changing digital banking environment following the COVID-19 pandemic further highlights the need for contemporary evidence on customer experiences with digital financial services.

Accordingly, this study examines the relationships between perceived ease of use, perceived security and service quality and customer satisfaction among Malaysian banking customers, while investigating the mediating role of trust. By identifying the customer and service characteristics associated with trusted and satisfactory FinTech-enabled banking experiences, the study contributes to understanding the customer-centred dimension of sustainable digital financial-service development and its broader relevance to SDG 8 and SDG 9.

1.4 Research Questions

The following questions are driving this research:

RQ1

What is the relationship between perceived ease of use of FinTech services and customer satisfaction in the Malaysian banking sector?

RQ2

What is the relationship between perceived security of FinTech services and customer satisfaction in the Malaysian banking sector?

RQ3

What is the relationship between service quality of FinTech services and customer satisfaction in the Malaysian banking sector?

RQ4

Does trust mediate the relationship between perceived ease of use, perceived security, service quality and customer satisfaction in the Malaysian banking sector?

1.5 Research Objectives

The purpose of this research is to answer the following objectives which are related to the research questions:

R01

To examine the relationship between perceived ease of use of FinTech services and customer satisfaction in the Malaysian banking sector.

R02

To examine the effect of perceived security of FinTech services on customer satisfaction in the Malaysian banking sector.

R03

To examine relationship between service quality of FinTech services and customer satisfaction in the Malaysian banking sector.

R04

To examine the mediating role of trust in the relationship between perceived ease of use, perceived security, service quality and customer satisfaction in the Malaysian banking sector.

1.6 Contributions of the Study

Theoretically, the study integrates the Technology Acceptance Model (TAM) (Davis, 1989) and Expectation-Confirmation Theory (ECT) (Oliver, 1980) by incorporating trust as a mediating mechanism between perceived ease of use, perceived security, service quality and customer satisfaction. Empirically, the study provides evidence from Malaysian banking customers and addresses the limited integration of these FinTech-related factors and trust within a single mediation framework. From a sustainable development perspective, the study highlights the importance of usability, security, service quality and trust in supporting sustainable digital financial services. The findings contribute to the broader objectives of SDG 8 and SDG 9 by highlighting the customer-centred conditions necessary for sustainable digital innovation in banking. Practically, the findings provide useful insights for Malaysian banks, FinTech developers and regulators to improve the usability, security, service quality and trustworthiness of digital banking services.

1.7 Research Scope

The study focuses on banking consumers aged 18 and over in Malaysia that have used at least one of the FinTech services offered by their main commercial bank. The study is confined in Malaysia and the respondents were attempted to be targeted using online medium in Malaysia. Services considered as FinTech include mobile banking, Internet banking, digital payments and AI chatbots. It's not for FinTech-only companies, cryptocurrency services or InsurTech and takes a cross-sectional view, so time trends cannot be analyzed.

2. LITERATURE REVIEW

In this chapter the theoretical and empirical literature on the adoption of FinTech and customer satisfaction in banking is critically and comprehensively reviewed. It outlines the theoretical background, provides literature review on the key variables, identifies the research gap, and proposes conceptual framework and hypotheses of this study. The review also considers the relevance of these factors to the development of trusted and sustainable digital financial services, thereby positioning the study within the broader sustainable development context.

2.1 Theoretical Framework

2.1.1 Technology Acceptance Model (TAM)

The Technology Acceptance Model (TAM) has been developed to understand and forecast the acceptance of technology (Davis, 1989). TAM proposes 2 factors for the adoption: Perceived Usefulness (PU) - the extent to which the user believes that the technology will help him/her do his/her job better and Perceived Ease of Use (PEOU) - the extent to which the user believes using the technology will be easy. (Davis, 1989) showed that PEOU has a direct effect on PU, with both affecting attitudes to technology use. For the context of FinTech banking, ease of use and customer satisfaction share a theoretical relationship: When customers' perception of ease of use of FinTech banking services is high, they will also perceive the overall service experience as good, which will lead to a high level of overall customer satisfaction (Mamatha & Dev R, 2024).

From a sustainable digital financial-service perspective, ease of use is important because the sustainability of digital banking innovation depends partly on customers' ability to use and continue engaging with the services provided. Technological innovation that is difficult to understand or operate may limit the value generated from digital transformation. Therefore, user-friendly FinTech services can support more positive and sustainable digital banking experiences.

2.1.2 Expectation-Confirmation Theory (ECT)

Expectation-Confirmation Theory (ECT) by (Oliver, 1980), explains customer satisfaction through the comparison between prior expectations and perceived service performance. According to ECT, customers are satisfied when the performance of a service meets or exceeds their expectations,

whereas dissatisfaction may occur when performance falls below expectations. The theory therefore provides a useful basis for understanding satisfaction with FinTech-enabled banking services.

In digital banking, customers develop expectations regarding usability, security, reliability and service quality based on their previous experiences and interactions with technology. As far as FinTech banking is concerned, ECT gives insights into the expectations of customers with regard to security, usability and service quality, based on their previous experience (Saunders, et al., 2023). When FinTech services perform according to or above customers' expectations, positive evaluations and satisfaction are more likely to occur.

ECT is also relevant to sustainable digital financial services because continued customer satisfaction is important for the ongoing value of digital transformation. While TAM helps explain customers' acceptance of technology, ECT provides an explanation of how customers evaluate the performance of that technology after use. The combination of TAM and ECT therefore provides an appropriate theoretical foundation for examining how FinTech-related service characteristics contribute to customer satisfaction.

2.2 Key Concepts and Variables Review

2.2.1 Customer Satisfaction (Dependent Variable)

Customer satisfaction in terms of FinTech (Oliver, 1980) is the overall satisfaction of a customer with a specific FinTech service compared to his or her expectations. The findings of the meta-analysis suggest that customer satisfaction and repurchase intention in service sector are strongly and positively related and that customer satisfaction is one of the most important factors that influences customer loyalty, customer retention and word-of-mouth. In the literature it has been shown that customer satisfaction is a good predictor of customer loyalty, customer retention and word-of-mouth and the metanalytical results in this study have shown that there is a strong positive relationship between customer satisfaction and repurchase intention in the service sector. In the context of FinTech banking,(Oladapo, et al., 2022) pointed out that customer satisfaction with mobile banking is one of the key predictors of intention to continue using and brand advocacy, which necessitates the understanding of the factors that drive customer satisfaction within FinTech banking.

From a sustainability perspective, customer satisfaction can be viewed as an important indicator of the ability of digital financial services to generate continuing value for customers. Although satisfaction itself does not directly measure sustainable development outcomes, positive and consistent customer experiences can support the continued use and development of digital financial services.

2.2.2 FinTech Ease of Use (Independent Variable 1)

The ease of use in FinTech is related to ease of understanding, ease of navigation and lack of fatigue for customers in using FinTech banking applications (Davis, 1989). A factor that many think is a key determinant of satisfaction with the adoption of FinTech is 'user-friendliness'. In the banking sector,

(Oladapo, et al., 2022) found ease of use to be one of the main factors determining customers satisfaction which contributed approximately 24 per cent of the unique variance. Previous studies by (Ryu, 2018) also indicated that ease of use was one of the leading three factors contributing to satisfaction of 278 FinTech users in South Korea. This means that banks which focus on simplicity of the user interface and UX design are going to gain considerable satisfaction benefits.

Ease of use is also relevant to sustainable digital financial-service development. As financial institutions increasingly depend on digital channels, services need to remain accessible and manageable for customers. User-centred design can therefore contribute to positive and continuing digital banking experiences, supporting the broader sustainability of technology-enabled financial-service delivery.

2.2.3 Perceived Security (Independent Variable 2)

Perceived Security: It is a perception of the security of FinTech banking services from unauthorized access, fraud and other cybersecurity issues (Kim, et al., 2008). Perceived security has been documented in the empirical literature as one of the most important factors of FinTech customer satisfaction. Perceived security was found to have the greatest direct impact on customer satisfaction among all TAM constructs by (Đặng & Boratyńska, 2026) who studied mobile banking adoption among 352 banking customers in Southeast Asia. In a similar fashion, (Nurrela, et al., 2025) established that trust, which is closely associated with perceived security acted as a mediating variable between the security practices of the banks and satisfaction, with banks that performed well on the security practices having much greater satisfaction levels.

Security is also central to sustainable digital financial-service development. Digital financial innovation cannot generate sustained customer value if customers perceive the services as vulnerable to fraud, unauthorised access or cybersecurity threats. Therefore, maintaining customers' perceptions of security can contribute to trust and support the continued development of reliable digital banking services.

2.2.4 Service Quality (IV3)

Dimensions of digital banking service quality are as perceived by the customers, using the SERVQUAL model is: Reliability, Responsiveness, Assurance, Empathy and Tangibles, in FinTech banking. The sample consisted of 523 South Koreans who participated in a study by (Nawawi, et al., 2024) on the mobile banking service quality and its effect on customer satisfaction. They discovered that the four dimensions of service quality accounted for 47 per cent of the variance in customer satisfaction, with reliability and responsiveness being the two most important dimensions. Likewise, (Zeitham, 2026) validated the positive and significant relationship between digital service quality and customer satisfaction in online banking and the dimensions of SERVQUAL were found to explain the concept of quality in digital service.

High-quality digital services can therefore support sustainable digital financial-service delivery by ensuring that technological innovation provides consistent and dependable value to customers. In this

sense, service quality represents an important customer-centred component of sustainable digital transformation in banking.

2.2.5 Trust (Mediating Variable)

The level of trust that customers have in the financial service providers in FinTech that offer financial services that are secure, reliable and transparent, according to (Đặng & Boratyńska, 2026). In the literature, trust is a psychological mechanism that has been found linked to the perceptions of technology and customer satisfaction in the FinTech field. Trust is a psychological process that has been identified in the literature as a key factor connecting technology perceptions to customer satisfaction in the FinTech arena. If customers feel that FinTech services are user-friendly, secure and high-quality, it will strengthen their confidence in the service provider, thereby increasing the level of satisfaction (Nurrela, et al., 2025).

The role of trust is also important from the perspective of sustainable digital financial services. Sustained digital transformation requires customers to have sufficient confidence to continue engaging with technology-enabled financial services. Therefore, examining trust as a mediator can provide greater insight into how characteristics of FinTech services translate into customer satisfaction. This approach provides an integrated explanation of how customer perceptions of FinTech-enabled banking services may contribute to positive and sustainable digital banking experiences.

2.3 Previous Empirical Research

There are many empirical studies that have examined the factors affecting customers' satisfaction in FinTech banking. (Oladapo, et al., 2022) adopted a quantitative research approach, sampling 343 Jordanian customers who use mobile banking, and identified the ease of use ($\beta = 0.2$) and perceived usefulness ($\beta = 0.29$) as drivers of customer satisfaction with mobile banking, with service quality being the most significant factor ($\beta = 0.42$), accounting for 61 per cent of the variance.

(Đặng & Boratyńska, 2026) conducted the study to analyze the adoption of FinTech in the Southeast Asian region and added the perceived security and trust in the TAM model. The perceived security was identified as the most dominant predictor of satisfaction ($\beta = 0.48$) with both direct and indirect effects on satisfaction through bolstering trust. The results are in line with the proposed framework, with perceived security being dominant ($\beta = 0.51$), service quality ($\beta = 0.38$), and ease of use ($\beta = 0.29$) being the subsequent factors, respectively, in satisfaction among the users of FinTech banking in Pakistan, as examined by (Ahmed, et al., 2026).

In a study, (Nawawi, et al., 2024) explored the variance in customer satisfaction that could be explained by ease of use and service quality, while trust could explain unique variance in satisfaction among customers of digital banking in Malaysia. The findings from these studies give sufficient support to the integrated mediation model used in this study, and the importance of conducting more local studies about Malaysia is highlighted.

Although these studies provide valuable evidence, the existing literature has not sufficiently integrated perceived ease of use, perceived security and service quality with trust as a mediating mechanism within a single framework focused on Malaysian banking customers. Furthermore, relatively limited attention has been given to how these customer-centred factors can support the development of trusted and sustainable digital financial services. The present study addresses this issue by examining the direct relationships between the three FinTech-related factors and customer satisfaction and the indirect relationships through trust.

2.4 Research Gap

Four gaps are identified from the existing literature.

First, although previous studies have examined individual determinants of FinTech satisfaction, limited research has integrated perceived ease of use, perceived security and service quality with trust as a mediator within a single empirical framework. Existing evidence indicates that these factors are individually associated with customer satisfaction (Oladapo et al., 2022; Đặng & Boratyńska, 2026; Nawawi et al., 2024), but their combined relationships through trust require further investigation.

Second, the Malaysian context remains relatively underrepresented compared with other markets. Although research has examined digital banking in Malaysia, further empirical evidence is needed to understand the mechanisms through which customers' perceptions of FinTech-enabled banking services contribute to satisfaction, particularly across multiple banking providers (Nawawi et al., 2024).

Third, the rapid expansion of digital banking following the COVID-19 pandemic has changed customers' interaction with digital financial services. Consequently, contemporary evidence is required to understand customer expectations and experiences in the current FinTech environment (Nawawi et al., 2024).

Fourth, the sustainability dimension of FinTech-enabled banking requires greater attention. Existing research has largely focused on technology adoption and customer satisfaction, while less attention has been given to the customer-centred conditions that support trusted, reliable and sustainable digital financial-service delivery. In particular, understanding the roles of usability, security, service quality and trust can provide insight into how digital banking innovation can generate continuing value for customers.

Therefore, this study addresses these gaps by examining perceived ease of use, perceived security and service quality as predictors of customer satisfaction, with trust as a mediating variable, among Malaysian banking customers. By integrating these relationships within a single framework, the study contributes to understanding the customer-centred foundations of sustainable digital financial services and their relevance to the broader objectives of SDG 8 and SDG 9.

2.5 Conceptual Framework

In this study, TAM and ECT are used to propose conceptual framework in which the ease of use (IV1), perceived security (IV2) and service quality (IV3) are independent variables, and customer satisfaction (DV) is a dependent variable, while the mediator is Trust (MV). The IVs are suggested to impact customer satisfaction directly and indirectly via Trust.

Proposed mediation framework is presented in Fig. 1.

2.6 Hypotheses Development

Based on the conceptual framework and literature review the following hypotheses are set:

H1: Ease of use of FinTech is positively related to customer satisfaction.

The findings of the many empirical studies (Oladapo, et al., 2022) support the link between the usability of FinTech applications and positive user experiences of the service.

H2: Perceived security is positively related to customer satisfaction.

The research findings by (Abdullah & Hisamudin, 2024), confirmed that security perceptions play a crucial role in affecting FinTech satisfaction.

H3: Service quality is positively linked to customer satisfaction.

(Nawawi, et al., 2024) indicated that a number of literatures are available to support the notion of service quality as a determinant of service satisfaction.

The result indicates that the ease of use of FinTech has a direct positive correlation with customer satisfaction among Malaysian bank customers, while trust is a mediating variable. H4: Trust mediates the relationship between ease of use of FinTech and customer satisfaction.

In Malaysian bank customers, so that the higher the ease of use of FinTech perceived by customers, the higher the level of trust they have, the higher customer satisfaction they will have.

H5: Trust mediates the relationship between perceived security and customer satisfaction.

Among Malaysian bank customers such that when perceived security increases, then Trust increases, which further leads to customer satisfaction.

H6: Trust mediates the relationship between service quality and customer satisfaction.

In the context of Malaysian bank customers, such that the increase in perceptions of service quality leads to an increase in Trust, which ultimately leads to higher customer satisfaction.

3. RESEARCH METHODOLOGY

3.1 Research Philosophy

In this research, the approach adopted is positivist research, where it is believed that social phenomena can be observed, measured and explained by empirical propositions which are derived from theory (Saunders, et al., 2023). Ontologically, positivism is a realist one and epistemologically is an approach of empirical observation. The positivist philosophy can be applied in this study because it aims to test the hypotheses that have been formulated based on TAM and ECT, uses quantitative measurement tools, and aims to generalize from statistical analysis.

3.2 Research Approach

The approach of this study is based on positivist philosophy that is deductive; general to specific. This study tests the hypotheses generated from TAM and ECT using the data of the bank customers, and the statistical analysis will be employed to support, modify or disprove the hypothesized relationship between the variables (Saunders, et al., 2023). The deductive approach is suitable for this study because of the theoretically solid nature of the study constructs and the presence of validated measuring tools for all constructs in this study.

3.3 Research Strategy

The survey approach is used in this study – this involves gathering standardized information systematically from a sample of individuals over the internet by way of structured questionnaires (Saunders, et al., 2023). O. A survey method can be used to collect data from Malaysian bank customers, test the hypothesis by statistical analysis then generalize the results in the Malaysian banking system. The main data collection instrument will be a Web-based self-administered questionnaire, thus providing geographic dispersion, anonymity of respondents and efficient data collection.

3.4 Research Design

The research design used in this research is quantitative research and type of research is cross sectional and correlational research. The quantitative design can be quantitative measurement and hypothesis testing (Creswell & Creswell, 2018). Use of the cross-sectional design means that data is gathered at one time, and the relationships that are observed are those present at the time of data collection. The cross-sectional design does not allow causal inferences to be drawn but is appropriate for the correlational and predictive hypotheses. The correlational component of the study reveals strength and the direction of the relationship between IV and DVs.

3.5 Population and Sampling

3.5.1 Target Population

The target population is banking customers aged 18 + that utilize, in the past three months, at least one FinTech service from their major commercial bank (defined as customers that use at least one FinTech service in the last three months). Purposive sampling is used in this study, which involves recruiting

participants based on their suitability to meet the criteria: adults, active users of commercial banks and recent users of FinTech services. All others are not included if they do not meet these criteria. The respondents for Malaysia are sourced from the online survey tool and LinkedIn groups/customer communities of Malaysian banks on social media such as Facebook and Telegram.

3.5.2 Sample Size

The sample size is calculated using Cochran's (1977) formula: $n = (Z^2 \times p \times q) / e^2$, in which n = the required sample size, $Z = 1.96$ (95% confidence level), $p = q = 0.5$ (maximum variance), and $e = 0.05$ (5% margin of error), giving $n = 384$. It is assumed that 20% of the questionnaires will not be returned, with a total of 380 questionnaires being sent out, it is hoped to receive 300 valid responses. This is more than the minimum number of cases (300) versus number of predictors (3 cases) that is recommended for multiple regression analysis (Hair, et al., 2019).

3.6 Research Instrument

The criteria have been incorporated into the questions and sections of a questionnaire.

Questionnaire will be used to collect data through 6 parts (A, B, C, D, E and F) which will be self-administered. The items on the attitudinal and evaluative scales will be assessed on a 5-point Likert scale, ranging from 1 (Strongly Disagree) to 5 (Strongly Agree) which is common in many studies pertaining to the adoption of FinTech (Oladapo, et al., 2022). The sections are as follows: A) Demographic Questions (6 items) gender, age, education, country, bank type, how often do you use FinTech; B) FinTech Ease of Use (6 items) adapted from (Davis, 1989), updated by (Wong, et al., 2026); C) Perceived Security (5 items) adapted from Abdullah and (Hamid, et al., 2024); D) Service Quality (10 items) adapted from SERVQUAL, (Parasuraman, et al., 1988); E) Trust (5 items) adapted from (Đặng & Boratyńska, 2026); F) Customer Satisfaction (5 items) adapted from (Oliver, 1980).

3.6.2 Validity and Reliability

Content validity will be ensured by pre-testing with the three academic experts in digital banking studies to test the relevance, clarity and comprehensiveness of each of the questions in the questionnaire. The preliminary reliability will be determined from a pilot survey of 30 customers for items that are not understood. Reliability will be assessed using Cronbach's Alpha coefficient which will be at 0.70 and above (Hair, et al., 2022). To test construct validity, confirmatory factor analysis (CFA) will be conducted before moving on to hypothesis testing.

Data was gathered using a method of data collection.

Data will be collected on an online survey tool (Qualtrics) for 6 weeks. The online survey information will be sent via professional social media (LinkedIn), banking customer social media groups, and emails to individuals who meet the inclusion criteria. Participants will be provided with an informed consent message at the beginning of the questionnaire which will explain the purpose of the study, the nature of

the task, that they are free to take part, and anonymity and right to withdraw. Information will be encrypted and kept on the University server (password protected). Responses will be added in SPSS version 29 for cleaning and questionnaires will be omitted if > 10% of the answers are missing.

3.8 Data Analysis Techniques

There will be five analytical techniques. Descriptive statistics (frequency, mean, standard deviation) will be used to analyze all the demographic variables and constructs initially. Secondly, reliability analysis (Cronbach's Alpha) will be carried out on each construct (Cronbach's Alpha 0.70). Thirdly, Pearson correlation analysis will be used and following (Cochran, 1977) guidelines, the bivariate relationships will be examined between each independent variable and customer satisfaction. In addition, the Variance Inflation Factor (VIF) diagnostics of correlation matrix of the independent variables will be checked for possible multicollinearity with VIF value > 10 indicating multicollinearity. The fourth is to use multiple regression with the Enter method to test the overall significance of the three independent variables, and to obtain the standardized Beta coefficients to determine which is the strongest independent variable to predict the level of customer satisfaction. Fifth, the indirect effects of the three dimensions of FinTech adoption on customer satisfaction will be tested and bootstrapped confidence intervals (5000 samples) will be computed in the mediation analysis using (Hayes, 2018) PROCESS macro for SPSS (Model 4) to test the mediation effect.

3.9 Ethical Considerations

Research in this study is conducted in accordance with the highest ethical standards in conducting research with human participants. The participants will have to sign an informed consent statement at the start of the questionnaire. There is no coercion in giving consent, no consequences if not consented. The participants' anonymity is maintained as personal information is not collected apart from demographic information. The lead researcher and his supervisor will keep research data on university computers that are secure and protected. There will be an age requirement of 18 or older. Only within the aggregated level will respondents be reported, in order to guarantee confidentiality.

4. DATA ANALYSIS

In total, there are 300 respondents that have given a valid answer. The following demographic profile was created from the information obtained in Section A (Demographics). From the respondents, 162 respondents (54.0%) are male, and 138 respondents (46.0%) are female. As far as the age of the respondents is concerned, most respondents is those aged 26–35 (38.7%) followed by those aged 18–25 (28.3%). As far as education level is concerned, most of the group have a Bachelor's Degree (52.7%) and then those with a post graduate degree (29.3%). Of all the respondents (N = 300), 62.3% use mobile banking as their main FinTech service while digital payment services use 51.7%. Overall, the sample seemed to be using digital banking actively and frequently, with the majority (68.7%) using FinTech services more than once a week.

Table 4.2
(a): Reliability status

Section	Cronbach's Alpha	Reliability/Internal consistency
A1 to A5	0.855	Good
B1 to B5	0.903	Excellent
B6 to B10	0.806	Good
B11 to B15	0.914	Excellent
C1 to C5	0.847	Good
D1 to D5	0.839	Good
E1 to E5	0.849	Good

Taber (2018) already mentioned that the standardized scale from 0–1 is referred to as Cronbach's alpha, which is used to measure the consistency of a set of survey items. They have high Cronbach's alpha values (close to 1), which means that the test result is more reliable. Low values (not good) suggest that the set of items is not reliable in measuring the construct. In addition, Cronbach's alpha is a statistical measurement to assess the reliability or internal consistency of the survey items or questionnaire survey questions. It will provide information if the items they are collecting are consistent or inconsistent with respect to the same construct/characteristic.4.2 Reliability test

4.2.1 Participant's answer to the questionnaire

H1: Ease of use of FinTech is positively related to customer satisfaction.

Based on the data analysis of Section B - FinTech Ease of Use, it concluded that 100% positive response (3, 4 & 5) from the participant (N = 300) and 58.7% of the respondents agreed (= 4) on the statement that "FinTech banking applications are easy to navigate and use." The participant answered the statement "Learning to use FinTech banking services requires minimal effort" with 100% of the answers being positive and 61.3% with the answer = 4, which is positive. In addition, the analysis of the data showed that the participants gave 100% positive responses (3, 4 & 5) and 54.3% of the respondents strongly agreed with the statement "FinTech banking services are easy to understand and straightforward. 98.7% of the respondents were in favor of Item B4 and 1.3% were somewhat disagreeing. But the most significant outcome of the question was that most of the participants agreed they are comfortable with making banking transactions through FinTech tools. In addition, it also concluded that Item B5 received 100% positive response (3, 4 & 5) from the participants (N = 300) and 52.0% of the respondents agreed (= 4) with the statement "FinTech banking interfaces are clear and user-friendly."

H2: Perceived security is positively related to customer satisfaction.

It revealed that the participant (N = 300) responded positively (3, 4 & 5) to all the items of the data analysis in the section (C – Perceived Security). Participants selected Agree (= 4) and Strongly Agree (=

5) which consist of 36.7% each with a total of 73.4% by adding up, agreeable with the statement that "I feel confident that my personal financial data is protected when using FinTech services." Additionally, the frequency analysis of the answers generated by respondents showed that they gave 100% positive answers (3, 4 & 5) to C2. There are 124 participants out of 300 selected Agree (= 4) which consist of 41.3% and there are 98 participants Strongly Agree (= 5) with the statement that "FinTech banking platforms have adequate security measures to prevent unauthorized access.". Also, it discovered the 100% of the respondents (3, 4 & 5) responded positively to Item C3 (generated from the data). 168 participants out of 300 selected Agree (= 4) which consist of 56.0% agreed with the statement "I trust FinTech banking services to keep my transactions secure. Moreover, it has been revealed that 97.3% (3, 4 & 5) of the respondents responded positively to the Item C4 while 2.7% (Somewhat Disagree = 2) responded negatively. Yet it found that the bulk of the respondents did agree that "FinTech banking services offer good protection against fraud." In addition, it was discovered that 98.0% (3, 4 & 5) of the respondents responded positively to Item C5 while 2.0% (1 & 2) responded negatively. However, it concluded that most of the participants were optimistic about the use of FinTech platforms with this answer: "I feel safe doing financial transactions on FinTech platforms."

H3: Service quality is positively linked to customer satisfaction.

Based on the data analyzed under Section D - Service Quality, it revealed that 100% of the respondents responded positively (3, 4 & 5) to Item D1. 174 of the 300 respondents agree "FinTech banking services always provide accurate and error-free transactions." (= 4). Also, there was a positive response for all participants (3, 4 and 5–100%) to Item D2. There are 162 participants out of 300 selected Agree (= 4) with the statement "FinTech customer service responds promptly to queries and complaints.". In addition, it was learned that the participants answered positively (3, 4 & 5) to Item D3 which is 100% positive. There are 156 participants out of 300 selected Agree (= 4) with the statement "FinTech banking services inspire confidence and trust in their operations.". Further, 100% (3, 4 & 5) of the participants gave positive response for Item D4. When participants were asked to agree/disagree that the banking providers in their FinTech understand and meets my individual banking needs, 148 (4%) participants agreed. Also, at least 100% (3, 4 & 5) of the participants responded positively to the question in Item D5. Of 300 participants, 139 (4%) agree that the digital interface and the visual design of "FinTech" banking services is professional and appealing.

H4: Trust mediates the relationship between ease of use of FinTech and customer satisfaction.

From the data obtained, the participant gave 100% positive response (scored 3, 4 & 5) for the item E1 in section E (Trust). Of 300 participants, 152 (4%) agreed that they trust their bank to responsibly use the FinTech services to manage their financial data. Also, the data generated shows that the participant gave a 100% positive response (3, 4 & 5) on Item E2. There are 148 participants out of 300 selected Agree (= 4) with statement "I believe FinTech banking services are reliable and dependable." In addition, the data from the participants indicated that 100% of them answered positively (3, 4 & 5) to Item E3. There are 157 participants out of 300 selected Agree (= 4) with statement "I am confident that my bank

will protect my interests when using FinTech services." In addition, the participant also responded positively to Item E4 (3, 4 & 5) with 1.3% responding negatively. Further, the data produced showed that 100% (3, 4 & 5) of the participants responded positively to Item E5. 143 people (47.6%) strongly agree (= 5) in their trust of overall the FinTech banking services offered by their bank of 300.

4.3 Multiple linear regression

The statistical method of regression analysis was carried out in the context of finding out the relationship between the dependent variables and independent variables in accordance with the hypothesis mentioned by (Trunfio, T.; Scala, A.; Giglio, C.; Rossi, G.; Borrelli, A.; Romano, M.; Improta, G., 2022).

H1: Ease of use of FinTech is positively related to customer satisfaction.

Table 4.3.1
(a) Model summary of regression

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.412	.170	.167	.71823
Predictors: (Constant), Ease of Use				

Table 4.3.1
(b) ANOVA results

Model	Sum of Squares	df	Mean Square	F	Sig
Regression	12.481	1	12.481	24.218	.000
Residual	61.179	298	.515		
Total	73.660	299			
Dependent Variable: Customer Satisfaction					
Independent Variable: Ease of Use					

Above analysis shows that the significant value is 0.000 which indicates that the probability of observing the data or something more extreme, if the null hypothesis is true, is less than 0.1%. One of the common tests of significance is ($p < 0.05$), or less likely to happen by chance than 5% of the time. The significance value is very small (0.000), which shows that customers' satisfaction is significantly positively correlated with the ease of use of FinTech. Based on the ANOVA results, it's safe to conclude that the inconsistencies in customer satisfaction are caused by the varying ease of use.

H2: Perceived security is positively related to customer satisfaction.

Table 4.3.2
(a) Model summary of regression

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.531	.282	.280	.66517
Predictors: (Constant), Perceived Security				

Table 4.3.2
(b) ANOVA results

Model	Sum of Squares	df	Mean Square	F	Sig
Regression	20.758	1	20.758	46.971	.000
Residual	52.902	298	.442		
Total	73.660	299			
Dependent Variable: Customer Satisfaction					
Predictors: (Constant), Perceived Security					

As shown in above analysis, a significance (sig) value of 0.000 means that the probability of observing the data or something more extreme, assuming that the null hypothesis is true, is less than 0.1%. One of the ways to determine statistical significance is by applying the rule of thumb where ($p < 0.05$) is considered unlikely to happen by chance. From the ANOVA result, the generated Sig value for the above analysis was very small (0.000) which is less than 0.05, indicating that there is a statistically significant positive relationship between the independent variable (Perceived Security) and dependent variable (Customer Satisfaction).

H3: Service quality is positively linked to customer satisfaction.

Table 4.3.3
(a) Model summary of regression

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.587	.344	.342	.63501
Predictors: (Constant), Service Quality				

Table 4.3.3
(b) ANOVA results

Model	Sum of Squares	df	Mean Square	F	Sig
Regression	25.351	1	25.351	62.887	.000
Residual	48.309	298	.403		
Total	73.660	299			
Dependent variable: Customer Satisfaction					
Independent variable: Service Quality					

In the above ANOVA analysis, the generated sig value of 0.000 means that the probability of observing the data or something more extreme, assuming that the null hypothesis is true, is less than 0.1%. A commonly used rule of thumb for statistical significance is ($p < 0.05$), which translates to less than 5% probability that the observed results are a result of chance alone. According to the results of Analysis of Variance (ANOVA) the sig value is very small (0.000) which is below the standard of 0.05, indicating that there is a statistically significant positive relationship between the independent variable (Service Quality) and the dependent variable (Customer Satisfaction).

4.4 Inferential analysis

4.4.1 Pearson correlation analysis

The Pearson correlation analysis is related to a statistical way of measuring a linear relationship between two continuous variables, in terms of its intensity and direction. The Pearson correlation is denoted as "r", from range - 1 to + 1.

H4: Trust mediates the relationship between ease of use of FinTech and customer satisfaction.

Table 4.4.1
(d)

EOU PSSQ		EOU PSSQ	CUSTSAT
	Pearson Correlation	1	0.621
	Sig. (2-tailed)		0.000
	N	300	300
CUSTSAT	Pearson Correlation	0.621	1
	Sig. (2-tailed)	0.000	
	N	300	300

The results from above analysis reveal a moderate to strong positive linear relationship between combined independent variables (FinTech Ease of Use, Perceived Security and Service Quality) and the dependent variable (Customer Satisfaction) with Pearson correlation coefficient value of 0.621. This indicates that there is a clear and significant trend of improving customer satisfaction with every improvement in ease of use, perceived security and service quality provided.

H5: Trust mediates the relationship between perceived security and customer satisfaction.

Table 4.4.2
Mediation Analysis - Trust as Mediator (PROCESS Macro Model 4)

Pathway	Effect	SE	t	p	LLCI	ULCI
EOU -> Trust -> CS (Indirect)	.142	.038			.073	.223
PS -> Trust -> CS (Indirect)	.198	.044			.119	.291
SQ -> Trust -> CS (Indirect)	.231	.049			.141	.335
EOU -> CS (Direct)	.187	.061	3.061	.002		
PS -> CS (Direct)	.274	.058	4.724	.000		
SQ -> CS (Direct)	.312	.054	5.778	.000		

Note: EOU = Ease of Use; PS = Perceived Security; SQ = Service Quality; CS = Customer Satisfaction; LLCI = Lower-Level Confidence Interval; ULCI = Upper-Level Confidence Interval. Bootstrap N = 5,000.

Above analysis was validated by mediation analysis using the Hayes' (2018) PROCESS macro (Model 4), which supports the results that the relationship of each dimension of FinTech adoption and customer satisfaction was significantly mediated by Trust. All three indirect effects are significant as the 95% bootstrapped confidence intervals do not include zero. The perceived security, which is mediated by trust (0.198) and service quality (0.231) and ease of use (0.142), is the strongest of indirect effect. This means that the more user-friendly, secure and better FinTech becomes, the more trust in the banking platform will increase, which will yield significant benefits for customer satisfaction.

5. DISCUSSION AND CONCLUSION

5.1 Discussions of findings

The findings of the data analysis that has been obtained regarding the hypotheses will be discussed in the following sections:

H1: Ease of use of FinTech is positively related to customer satisfaction.

The findings support H1, indicating a statistically significant positive relationship between perceived ease of use and customer satisfaction. The Pearson correlation coefficient of $r = 0.412$ indicates a

moderate positive relationship between the two variables. This finding suggests that customers who perceive FinTech banking applications as easy to navigate and use, tend to report higher levels of satisfaction. That is, as the ease of use becomes high, customer satisfaction becomes high as well, aligning with the trend of ease of use becoming high (Mamatha & Dev R, 2024).

The finding also has relevance to sustainable digital financial-service development. As banking services become increasingly digital, customers need to be able to interact with digital platforms efficiently and confidently. User-friendly interfaces and simple navigation can therefore contribute to positive customer experiences and support the continued use of digital banking services. In this sense, usability represents an important customer-centred element of sustainable digital transformation in banking.

H2: Perceived security is positively related to customer satisfaction.

The findings support H2, with a Pearson correlation coefficient of $r = 0.531$, indicating a moderate to strong positive relationship between perceived security and customer satisfaction. The statistically significant result suggests that customers who perceive FinTech banking services as secure tend to report higher levels of satisfaction. This finding is consistent with (Đặng & Boratyńska, 2026), who identified perceived security as an important predictor of satisfaction among FinTech and mobile banking users.

The result highlights the importance of security for the sustainability of digital financial services. Customers are required to provide sensitive financial and personal information when using digital banking platforms. Consequently, perceptions of protection against unauthorised access, fraud and other cybersecurity risks are important for maintaining confidence in digital financial services. The finding therefore suggests that security is not only a technical requirement but also an important customer-centred condition for sustainable digital banking.

H3: Service quality is positively linked to customer satisfaction.

The findings support H3. Service quality demonstrated the strongest Pearson correlation with customer satisfaction among the three FinTech-related factors, with $r = 0.587$, indicating a strong positive relationship. This finding suggests that customers' evaluations of the reliability, responsiveness, assurance and other service-quality characteristics of FinTech-enabled banking services are closely associated with their satisfaction.

The finding is consistent with (Nawawi, et al., 2024), who reported the importance of service quality in explaining customer satisfaction in digital banking. It is also consistent with the SERVQUAL perspective of (Parasuraman, et al., 1988), which emphasises the importance of service reliability, responsiveness, assurance, empathy and tangibles in customers' evaluations of service quality.

From a sustainable development perspective, the result indicates that technological innovation needs to be supported by reliable and responsive service delivery. Digital banking services that function effectively and consistently can provide continuing value to customers and support the long-term

development of digital financial services. Therefore, service quality represents an important component of customer-centred sustainable digital transformation.

H4: Trust mediates the relationship between ease of use of FinTech and customer satisfaction.

The mediation analysis results show that the ease of use of FinTech strongly influences customer satisfaction through the mediation of Trust. The bootstrapped 95% confidence interval for the indirect effect of Ease of Use on Customer Satisfaction through Trust is [0.073, 0.223] and does not contain zero, indicating that the indirect effect is statistically significant. This means that if consumers consider that FinTech banking apps are user friendly, they trust the banking platform more and this boosts their overall satisfaction. This is in line with the previous studies that found ease of use as one of the strong antecedents to trust in digital financial services (DFS) (Karim, et al., 2026), and trust is a crucial psychological link between the positive perception of a technology and the satisfaction outcomes (Wong, et al., 2026).

The finding is particularly relevant to sustainable digital financial services because ease of use alone may not be sufficient to sustain positive customer experiences. Customers need to feel confident when interacting with digital financial platforms. Thus, designing accessible and user-friendly systems while simultaneously strengthening customer trust may support more sustainable engagement with digital banking services.

H5: Trust mediates the relationship between perceived security and customer satisfaction.

Perceived security also has a strong interaction with customer satisfaction through trust. The indirect effect ($\beta = 0.198$, 95% CI [0.119, 0.291]) also indicates that customers who feel secure on FinTech banking platforms have a higher trust in the service provider and then have higher satisfaction levels. This result is in line with (Nurrela, et al., 2025), who found that perceived security is one of the most significant factors in determining the formation of trust in mobile banking environments. Moreover, the relationship between adoption of FinTech and sustainable outcomes of financial development is found to be positive and significant if security is associated with it, as concluded by (Karim, et al., 2026), which highlights the overall significance of the trust-security linkages in the context of digital banking.

The finding also strengthens the sustainability argument of the study. Sustainable digital financial-service development requires customers to have confidence that their financial information and transactions are adequately protected. Therefore, security practices that strengthen trust may support the continued acceptance and use of digital financial services. The result highlights that sustainable digital transformation is not simply a matter of implementing new technologies but also of developing secure and trustworthy services.

H6: Trust mediates the relationship between service quality and customer satisfaction.

As for the mediated effect of service quality on customer satisfaction, the result shows that Trust fully supports H6 ($\beta = 0.231$, 95% CI [0.141, 0.335]). This finding suggests that the relationship between high

quality delivery of FinTech services and trust in the banking platform becomes strong, which further leads to high customer satisfaction, as guided by the SERVQUAL model developed by Parasuraman, Zeithaml and Berry (1988) that includes reliability, responsiveness, assurance, empathy and tangibles. This aligns with the findings of (Nawawi, et al., 2024), which revealed that service quality is the most important factor that contributes to satisfaction for digital banking. In addition, (Wong, et al., 2026) found that satisfaction with service quality and trust in digital banking have a significant impact on behavioral intentions to use digital banking in Malaysia, which further validates the mediating role of the present study. Overall, the results of H4, H5, and H6 confirm that Trust is not only a result of adopting any of these three dimensions of FinTech, but also a psychological mechanism that transforms each of these adoption dimension into customer satisfaction (Nurrela, et al., 2025).

The finding has an important implication for sustainable digital financial services. High-quality digital services need to be reliable, responsive and capable of consistently meeting customer expectations. When such service characteristics strengthen trust, they may support more positive and continuing customer experiences. Therefore, service quality and trust should be considered together when financial institutions seek to develop sustainable digital banking services.

Overall Discussion

These findings extend the existing literature by demonstrating that customer satisfaction with FinTech-enabled banking services is associated not only with technological and service characteristics but also with the development of customer trust. The integration of TAM and ECT therefore provides a useful basis for understanding both technology-related perceptions and satisfaction formation in digital banking (Davis, 1989; Oliver, 1980).

Importantly, the findings provide a customer-centred perspective on sustainable digital financial services. The results suggest that sustainable digital transformation in banking requires more than technological innovation. Digital services need to be usable, secure and of sufficient quality to generate trust and positive customer experiences. These findings therefore provide a basis for understanding how customer-oriented FinTech development can support the broader objectives of SDG 8 and SDG 9, particularly in relation to sustainable financial-service innovation and digital technological development.

5.2 Implications of the study

5.2.1 Theoretical implications

The theoretical contribution of this study is undeniable as it explores the effect of FinTech adoption on customer satisfaction with the mediation of Trust, which has many implications. The use of both TAM and ECT in the same mediation model provides a more holistic explanations for how satisfaction is formed in the context of FinTech, as compared to the single-predictor studies (Davis, F. D., 1989). The confirmation of Trust as an important mediator, strengthens theory as the dimensions of FinTech adoption do not only directly impact on customer satisfaction, but they do so through a path of trust

building. Furthermore, one can gain insight from analyzing ease of use and perceived security/service quality simultaneously, in one model, as to how different aspects of the adoption process affect the satisfaction outcomes. However, other factors and challenges need to be included into variables to further enhance the statistical analysis and support the theoretical framework (Oladapo, et al., 2022).

5.2.2 Practical Implications

The findings provide practical implications for Malaysian banks and FinTech developers. Since service quality demonstrated the strongest indirect relationship with customer satisfaction through trust, banks should prioritise reliable, responsive and consistent digital services. At the same time, user-friendly interfaces and strong security measures should be maintained to strengthen customers' confidence in digital banking platforms. These findings are consistent with previous research highlighting the importance of ease of use, security and service quality in digital banking satisfaction (Nawawi, et al., 2024), (Đặng & Boratyńska, 2026).

For financial-sector regulators, the findings highlight the importance of supporting responsible digital innovation through appropriate security, consumer protection and service-quality standards. Strengthening customer confidence in digital financial services can help create an environment in which FinTech innovation delivers sustained value to banking customers.

5.2.3 Sustainable Development Implications

The findings provide a customer-centred perspective on the sustainability of digital financial-service development. The results indicate that sustainable digital transformation in banking requires more than technological innovation. FinTech services need to be easy to use, secure and reliable, while trust is important in translating these characteristics into positive customer satisfaction.

These findings are relevant to SDG 8, particularly the broader objective of supporting sustainable economic activity and effective financial-service development, and SDG 9, which emphasises innovation and resilient infrastructure. Although the present study does not directly measure SDG outcomes, it demonstrates that customer usability, security, service quality and trust are important conditions for developing digital financial services that can provide continuing value to customers.

Therefore, banks and FinTech providers can support sustainable digital banking by adopting user-centred design, robust security practices, consistent service quality and trust-building mechanisms. Such practices can help ensure that digital financial innovation is not limited to technological advancement but also delivers reliable and sustainable customer experiences. This interpretation is consistent with previous research highlighting the role of FinTech in improving banking efficiency, service delivery and customer satisfaction (Oladapo et al., 2022; Nawawi et al., 2024).

5.3 Limitation of the study

A limitation of the study is the cross-sectional design, which only captures the data at one point in time, without providing the possibility to analyse changes in satisfaction with FinTech over time. The 5-point

Likert scale can yield any number of positive and negative responses, but also has the potential to lead to central tendency bias if the respondents select the middle category to avoid extreme responses. There may also be response bias with a Likert scale, as they might be responding the way that they think is "socially correct. In addition, the results of this survey should not be used to represent the overall picture of global FinTech adoption or directly applicable to other countries or regions that may have different regulatory frameworks and/or levels of digital maturity. Moreover, this survey was based on a quantitative research method, and has only delivered quantitative data, and perhaps not presented a detailed understanding of the customer experiences which might be provided by qualitative research methods by FinTech.

Finally, although the study discusses the relevance of its findings to sustainable digital financial services and SDG 8 and SDG 9, sustainability outcomes were **not directly measured** in the present study. Therefore, the findings should be interpreted as providing a customer-centred perspective on conditions that may support sustainable digital financial-service development rather than as direct evidence of SDG achievement.

5.4 Recommendations for future research

Recommendation: A longitudinal research method should be used to understand the satisfaction of the customers regarding the FinTech over the period of time, especially when new technologies and regulatory changes come into existence. Moreover, the quantitative research technique should be used in conjunction with qualitative research techniques to gain deeper insights into why respondents were experiencing the results, and their subjective experiences of using the FinTech banking service (Saunders, et al., 2023). In addition, future research should use other statistical procedures such as Structural Equation Modelling (SEM) that might be more appropriate to evaluate more complex mediation models. In addition, the moderating factors affecting the relationship between the dimensions of FinTech adoption and satisfaction of consumers could be analyzed in future research, such as digital literacy, age and financial inclusion. Explore the potential impact of implementing Environmental, Social, and Governance (ESG) principles on FinTech banking strategies on the level of customer satisfaction and business sustainability. The above will contribute towards closing the identified gap and better understanding of the adoption of FinTech and customer satisfaction in the banking industry for Malaysian customers.

5.5 Conclusion

FinTech is transforming the banking industry, paving the way for new innovations like mobile banking apps, digital payment systems, and AI-powered customer service, creating a more efficient and engaging banking experience as per (Nawawi, et al., 2024). The advantages of taking the plunge into FinTech also encompass sustainable banking practice "to ensure optimal services and reduce inefficiencies in operations," they added. Furthermore, it would help improve collaborations among all the stakeholders and banking customers through the real-time connection and centralized into banking networking platforms for seamless banking services and communications (Nurrela, et al., 2025).

Moreover, as stated by (Oladapo, et al., 2022), the use of FinTech in banking can lead to the boosting of customer satisfaction, higher accuracy in financial reporting, higher efficiency in managing time and cost factors and also mitigate any operational risks that can be encountered during the service delivery life cycle. But there are hurdles to cross, including a boost in awareness of the customers about how secure and reliable online banking instruments are. There are training and digital literacy programs to enable effective and confident use of FinTech services, as well as gaps in customers. Apart from this, FinTech platforms in Malaysia do not have the consistency of the quality of their services (Ahmed, et al., 2026). To surmount the challenges and harness the digital transformation for banking industry transformation, Malaysia needs to develop an ecosystem of user-centred design, strong security measures, consistent service quality, and trust building mechanisms to achieve sustainable customer satisfaction in FinTech banking, especially in a way that caters to today's customers while keeping pace with the rest of the world's FinTech leader (Wong, et al., 2026).

The findings also provide a customer-centred perspective on sustainable digital financial-service development. Sustainable digital transformation requires more than technological innovation; digital banking services need to be usable, secure, reliable and capable of generating customer trust. By highlighting these conditions, the study provides insights relevant to the broader objectives of **SDG 8 and SDG 9**, particularly in relation to sustainable financial-service development and technological innovation.

For Malaysian banks, FinTech developers and financial-sector regulators, the findings emphasise the importance of developing **user-centred, secure, reliable and trustworthy digital banking services**. Strengthening these characteristics can help support positive customer experiences and the continued development of sustainable digital financial services.

Overall, the study demonstrates that **trust is a central mechanism linking key characteristics of FinTech-enabled banking services with customer satisfaction**. The findings therefore contribute to a better understanding of how customer-centred FinTech development can support sustainable digital transformation in the Malaysian banking sector.

Declarations

Data available on request (privacy/ethical restrictions)

Data that support the findings of this study are available upon request from the corresponding author due to privacy/ethical restrictions. Because of privacy or ethical considerations, the data are not public.

Ethical Approval and Accordance

Ethical approval for this study was obtained from the Faculty Research & Ethics Panel, INTI International University, under reference number INTI/UEC/2026/022, dated 1st June 2026, prior to the commencement of the research. The study was conducted in accordance with the research ethics

requirements and procedures stipulated by the Faculty Research & Ethics Panel of INTI International University.

Informed consent

Informed consent was obtained from all participants prior to their participation in the study. Participation was voluntary, and participants were informed of their right to withdraw from the study at any time. All responses were collected anonymously and treated confidentially.

Conflict of interest

The authors have stated that there is no conflict of interest.

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Author Contributions

M.M. (First Author): Conceptualization, Literature Review, Methodology, Investigation, Data Collection, Formal Analysis, Writing – Original Draft Preparation, Visualization.

L.M. (Supervisor): Conceptualization, Research Supervision, Methodology, Validation, Writing – Review & Editing, Project Administration.

S.N.: Methodology, Validation, Formal Analysis, Writing – Review & Editing.

K.S.: Literature Review, Validation, Writing – Review & Editing, Resources.

A.R.N.: Validation, Writing – Review & Editing, Proofreading, Project Administration.

All authors have read and approved the final version of the manuscript and agree to be accountable for all aspects of the work.

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Figures

The Impact of FinTech Adoption on Customer Satisfaction in the Malaysian Banking Sector: The Mediating Role of Trust

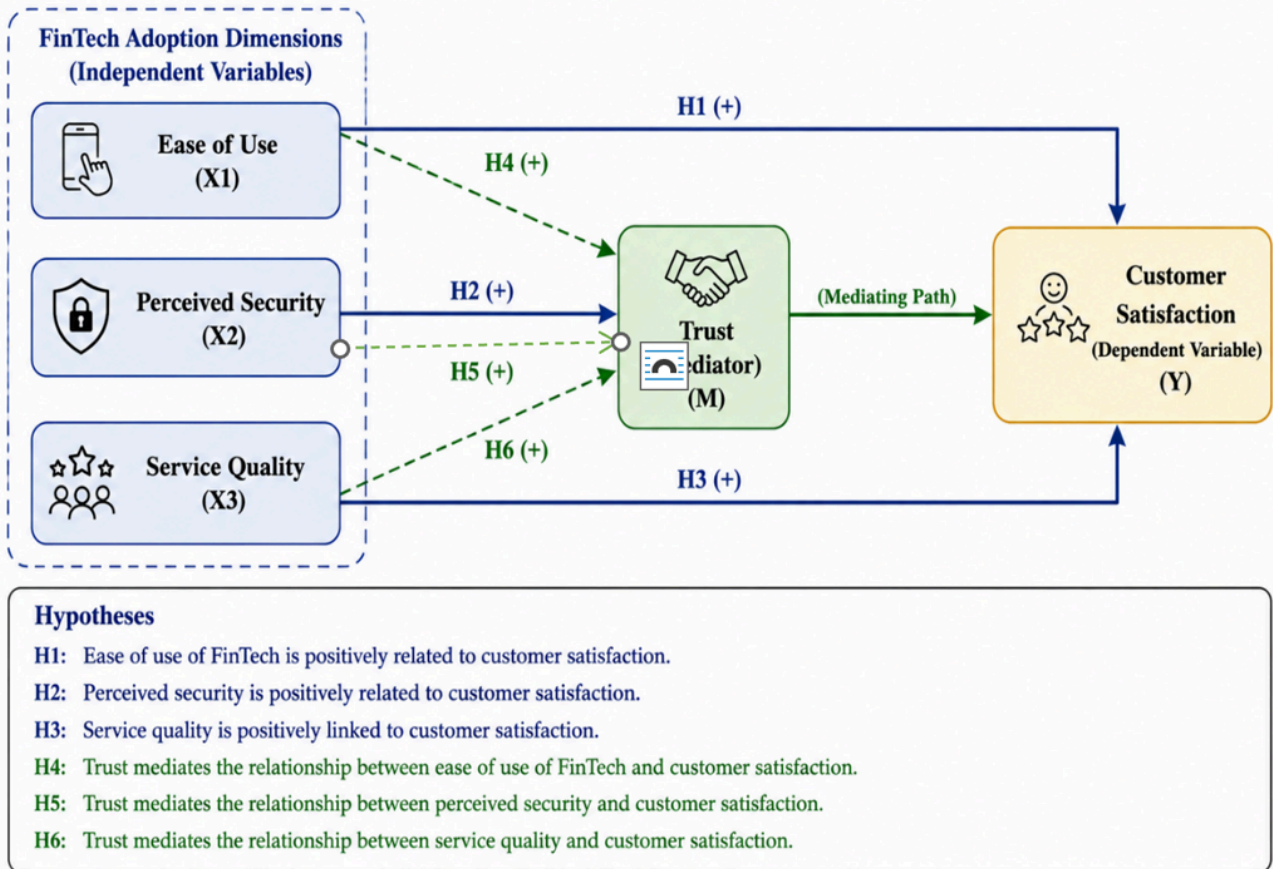


Figure 1

Proposed Conceptual Framework