Global Business and Management Research: An International Journal
Vol. 17, No. 3 (2025)

Determinants of Customer Satisfaction in the Digital Banking Industry in Malaysia

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Abstract
Purpose: The rapid advancement of digital technologies has transformed the banking industry across the globe, positioning online banking as a mainstream distribution channel. In Malaysia, the number of internet users has grown substantially; however, the acceptance rate of digital banking remains relatively modest compared to other Asian economies. This disparity raises important questions about the underlying factors influencing consumer satisfaction in Malaysia's digital banking sector. The central aim of this study is to explore how key determinants, including Perceived Usefulness, Perceived Security Risk, Responsiveness and Communication, Feature Availability, and Customer Satisfaction, shape users' experiences and perceptions of digital banking services.
Design/methodology/approach: The study employs a quantitative approach to assess the strength of these relationships. Primary data were collected through the distribution of 300 structured questionnaires containing 28 items targeting Malaysian digital banking customers, while statistical analyses such as Pearson's correlation, Analysis of Variance (ANOVA), and Multiple Linear Regression were performed using SPSS to test the proposed hypotheses.
Findings: The findings suggest that consumers' satisfaction with online banking is influenced by both utilitarian and security-oriented factors, highlighting the dual necessity of functional efficiency and trust in shaping adoption. Responsiveness and effective communication further enhance satisfaction, whereas gaps in feature availability reveal limitations in service quality.
Research limitations/implications: By offering a nuanced understanding of these dynamics, this study contributes to the literature on consumer behavior and digital banking adoption in emerging economies.
Practical implications: Providing practical implications for policymakers and industry stakeholders. Banks can leverage these insights to design strategies that prioritize usefulness, mitigate perceived risks, and improve communication to elevate overall satisfaction levels among digital banking users in Malaysia.
Originality/value: The framework is contained in novel combination of antecedents that focused on digital banking user's perceptions.

Keywords: Consumer Behavior, Digital Banking, Customer Satisfaction, Perceived Usefulness, Security Risk, Service Responsiveness

Introduction

In the past, the term "bank" has been used to refer to organizations that oversee financial operations, provide loans, and protect deposits. However, in order to meet the constantly shifting needs of a technologically advanced society, the banking sector has developed beyond its historical roles. By shifting their operations from in-person to virtual encounters, digital transformation has drastically altered the way financial institutions function and made them more accessible, convenient, and efficient. Customers can now manage their money from almost anywhere thanks to the advent of digital banking, which eliminates the need for in-person visits and encourages 24/7 financial access.

Increased rivalry in the banking industry is another factor driving this change. By improving the quality of their customer service offerings, commercial banks, fintech firms, and non-traditional financial service providers are always attempting to set themselves apart from the competitors. Customer happiness is now a critical performance indicator that influences long-term profitability and industry survival, rather than just being a favorable result. Consumers today expect financial institutions to offer services that are not only efficient but also safe, easy to use, and suitable for their lifestyle requirements (Soetan & Mogaji, 2024).

Malaysia's increasing internet usage has increased the country's potential customer base for digital banking. Even though more people are using the internet, digital banking hasn't reached its full potential yet. Malaysian consumers are more conservative than those in other Asian countries when it comes to embracing digital banking services (Sulaiman & Muneeza, 2024). This discrepancy highlights how important it is to consider both behavioral and technological factors that influence consumer sentiment. For instance, concerns about security and privacy risks prevent widespread use despite the clear benefits of ease and time savings.

There are more uses for internet banking beyond just standard transactional activities like money transfers and bill payment. It involves the capacity to improve relationships between banks and their customers by providing specialized services, enabling real-time communication, and promoting transparency. These elements reflect more general shifts in consumer expectations, where timeliness, quality, and dependability are now just as crucial in assessing customer happiness as service accessibility (Mamakou et al., 2024).

Thus, this study's main goal is to examine the factors influencing customer satisfaction in Malaysia's online banking sector. Online banking, also known as digital banking can be defined as the process of using technology to carry out financial services and bank transactions through electronic distribution channels without having to visit a branch in person (Shaikh et al., 2016). In order to offer an integrated framework that explains the extent to which these aspects impact satisfaction, the study will examine elements such as perceived utility, perceived security risk, responsiveness and communication, and feature availability. By doing this, the study adds to the body of knowledge regarding the uptake of digital banking and useful tactics that Malaysian banks may use to stay competitive in a financial environment that is changing quickly. It is anticipated that researchers, company executives, and legislators would apply the knowledge acquired to create customer-centric strategies that combine technology innovation with consumer satisfaction and trust.

Literature Review

The proliferation of internet usage worldwide has mirrored the accelerated pace of technological development, leading to profound changes in the service industry, particularly in banking. Internet banking has emerged as a vital channel for financial institutions to enhance customer service, reduce operational costs, and expand market reach. Studies have consistently highlighted that online banking plays a significant role in attracting and retaining customers while enabling banks to streamline processes and strengthen long-term relationships (Ankit, 2011; Han & Beak, 2004; DeYoung et al., 2007). As digital platforms mature, scholars argue that banks must evaluate not only functional features but also experiential and relational elements of service delivery (Chauhan, Akhtar, & Gupta, 2022). This service delivery by any banks should be integrated with high level of integrity (Zainuddin, M.T 2016).

Understanding customer satisfaction in digital banking requires integrating two broad strands of literature: service quality in online contexts and technology adoption theories. The service-quality literature emphasizes dimensions such as reliability, responsiveness, accessibility, and assurance (Yang & Fang, 2004). Meanwhile, technology acceptance frameworks, especially the Technology Acceptance Model (TAM), emphasize perceived usefulness and perceived ease of use as primary antecedents of behavioral intention and usage (Davis, 1993; Wang et al., 2003; Yousafzai, Foxall, & Pallister, 2010). TAM remains a foundational model for explaining IT adoption across domains and continues to be extended in e-banking research (Granić, 2023; Kaulu, Kaulu, & Chilongo, 2024).

Internet usage has increased at a rate that is roughly proportional to the level of technological development in recent years. The Internet has been used to serve customers in the service sector better, particularly the banking sector. Internet banking services can attract and retain customers (Ankit, 2011). Apart from that, internet banking helps banks save money and streamline their processes to better connect with their customers, but it also helps them strengthen customer relationships and grow their business (Han & Beak, 2004; DeYoung et al., 2007).

The prosperity or failure of a business sometimes depends on the contentment of its customer's reports. Therefore, the primary focus of the service industry, and the banking sector, in particular, should be on providing high-quality service. In order to be competitive, banks must ensure that their customers are satisfied. A high rate of return can be expected from a bank if they provide excellent services. The financial sector must learn how customers rate their experiences with the bank's services and what aspects most influence them (Yang & Fang, 2004).

Keeping customers satisfied is priority number one when it comes to internet service. Numerous businesses focus on customer satisfaction by delivering high-quality internet services. Financial institutions are now using internet banking to ensure they can keep up with the competition and retain consumers (Eddin & Zubi, 2011). Internet banking services are now expected by customers and seen as a necessity rather than a competitive advantage.

The banking side must be aware of these elements to measure service quality and enhance it where necessary. Thus, this research aimed to examine how customers of Malaysian commercial banks rate the quality of their internet banking experiences. This research has a few goals. The first stage is identifying the features and performance of various online banking platforms. Then, to examine how satisfied Malaysians are with their bank's online banking services.

Significance of the Study

Theories and frameworks concerning customer satisfaction and dissatisfaction emphasize individuals' capacity to draw insights from their previous purchasing experiences. As highlighted by Isac and Rusu (2014), such experiences not only shape how customers assess their level of satisfaction but also affect their overall perceptions and attitudes toward particular products or services. The next section provides a critical review of various theories on customer satisfaction, which serves as a foundation for this study.

The Technology Acceptance Model (TAM) has been widely recognized as one of the most reliable frameworks for examining computer and technology-related behaviors (Cheng et al., 2006; Hussain Chandio et al., 2013; Paiman & Fauzi, 2024). Davis et al. (1993) originally introduced TAM as a model designed to predict individuals' behavioral intentions regarding the use of computer technologies and information systems. Within this framework, users' attitudes and their intention to adopt technology or systems (IU) are primarily shaped by perceived usefulness (PU) and perceived ease of use (PEOU). Over the years, scholars have employed TAM extensively to investigate the determinants of acceptance and adoption of technological innovations (Cheng et al., 2006; Hussain Chandio et al., 2013; Granic, 2023).

TAM has also become the predominant theoretical model in studies focused on internet and e-banking adoption (Wang et al., 2003; Cheng et al., 2006; Kaulu et al., 2024). From another perspective, Yousafzai et al. (2010) compared TAM with other social psychology theories, such as the Theory of Reasoned Action (TRA), and concluded that TAM provides superior explanatory power in the context of technology adoption. Similarly, research by KA and Subramaniam (2024), Cheng et al. (2006), Yadav et al. (2024), and Arora, & Banerji (2024). applied TAM to examine consumer intentions toward online banking usage. Collectively, these findings reinforce the significance of TAM as a central model for understanding internet banking adoption.

Perceived Usefulness (PU)

It describes the belief that using an information system will enhance task performance, has been repeatedly validated as a fundamental predictor of technology acceptance. Empirical evidence across multiple contexts, including banking and mobile/e-banking, shows that when customers view online banking as time-saving, efficient, and capable of simplifying tasks, their attitudes and intentions to continue using digital services increase (Pikkarainen, Pikkarainen, Karjaluoto, & Pahnila, 2004; Amin, 2009; Martins, Oliveira, & Popovič, 2014; Adusei & Mensah, 2025). Consequently, banks that convincingly communicate and deliver tangible utility through features such as instant transfers, consolidated account management, and integrated bill payments are more likely to foster higher satisfaction levels.

Perceived Security Risk

It represents a countervailing force that influences adoption and satisfaction. The literature documents a broad array of perceived risks—privacy invasion, financial loss through fraud, identity theft, and transaction errors—that materially reduce consumer confidence in online banking (Ostlund, 1974; Pavlou, 2003; Gerrard, Cunningham, & Devlin, 2006). Several recent studies in emerging markets report negative effects of perceived risk on both adoption intention and satisfaction (Nor & Pearson, 2008; Damghanian, Zarei, & Kojuri, 2016). This effect has been magnified by the rising prevalence of sophisticated online fraud and social-engineering attacks, which have made consumers more sensitive to security assurances and institutional safeguards (Ge, 2023; recent reports in financial cybersecurity highlight this trend).

Service Responsiveness and Communication

This construct has formed another critical domain in the digital-banking literature. Even as front-end interfaces automate many interactions, customers expect timely responses to inquiries and swift remediation of problems. Responsiveness—operationalized as system uptime, rapid customer support, proactive notifications, and transparent communication during disruptions, directly affects perceived service quality and satisfaction (Eddin & Zubi, 2011; Gupta & Bansal, 2018). Research indicates that hybrid support models (automated tools plus escalation to human agents) and proactive messaging during outages or maintenance reduce dissatisfaction and lower perceived operational risk (Chauhan et al., 2022).

Feature Availability

Customers evaluate e-banking platforms not only on basic transactional capabilities but also on the richness of ancillary services such as personal financial management, card controls, integrated investments, and third-party payments. The availability and usability of these features contribute to perceived value; however, excessive complexity or poor design can reduce satisfaction (Ling et al., 2016; Hassan, 2025; Arora & Banerji, 2024). Thus, a balanced feature strategy, emphasizing core utility, discoverability, and progressive disclosure of advanced functions, is more likely to improve satisfaction than simply maximizing feature count.

Customer Satisfaction (CS)

Researchers have mostly said that customer satisfaction is an attitude or an evaluation that the customer forms by analysing the performance and comparing their pre-purchase expectations with their subjective perceptions of how well the product works (Oliver, 1980; Kiling & Sarmah, 2025). Customer satisfaction and loyalty are at the heart of relationship marketing research (Oppong & Caesar, 2023). The idea that keeping customers is essential is backed up by the fact that customer satisfaction and loyalty are important to a company's profits (Chen & Hitt, 2006; Gazi et al., 2024). Many researchers kept their attention and interest on the close connection between the quality of the service and how satisfied the customer is with it. Internet banking is a growing and changing field, so traditional service quality measures cannot be used to judge it. Salem et al. (2019) say that customers will be more likely to use online banking if they are happy with the services. Satisfaction and trust are essential factors that lead to loyalty. Customers' experiences with online shopping can also affect whether or not they use online banking. Relationship marketing is growing because of fierce competition, demanding customers, and so on. Researchers and practitioners are paying more and more attention to this (Sheth et al., 2012; Sulaiman et al., 2024).

Several recent empirical studies in Malaysia and comparable emerging economies corroborate these interrelationships. Country-level and cross-sectional analyses indicate that convenience, perceived usefulness, security assurances, and service reliability are frequently cited as the most influential determinants of e-banking satisfaction. Post-COVID research also suggests that the pandemic accelerated digital banking adoption but exposed gaps in digital literacy and raised security concerns among certain demographic groups, factors that moderate the effect of functional improvements on overall satisfaction (Jena, 2023).

Methodological variations across the literature, differences in sampling frames, measurement scales, and analytical techniques, explain some heterogeneity in reported effects. While many studies prioritize Perceived Usefulness and security as primary determinants, others identify important moderators such as age, digital literacy, income, urban/rural residence, and prior online-service experience (Rahman et al., 2025). These moderating variables imply that segmentation and targeted interventions (e.g., tailored education for older users, extra reassurance for lower-trust groups) may be necessary to maximize satisfaction across diverse customer bases.

Despite the growing evidence base, several notable research gaps remain. Longitudinal studies tracking changes in satisfaction and risk perceptions over time are relatively rare; most studies are cross-sectional snapshots. Few studies integrate post-adoption behaviors (e.g., continuance intention, loyalty, switching) with service-quality metrics in a single structural model (Li et al., 2022). Moreover, the role of ecosystem dynamics, partnerships with fintech, merchant integrations, regulatory changes, and platform interoperability, has been underexplored, even though these factors influence both perceived usefulness and risk. Addressing these gaps will deepen understanding of how banks can sustainably improve satisfaction in an evolving competitive landscape.

In sum, the literature converges on an integrated view: functional utility (Perceived Usefulness), trust and safety (security risk mitigation), and service experience (Responsiveness and Communication), complemented by thoughtful feature provisioning, are central to customer satisfaction in digital banking. This study builds on that integrated foundation to empirically test these relationships in the Malaysian banking environment, with particular attention to the moderating roles of demographic and experiential variables.

Theoretical Framework and Hypothesis Development

A research framework, according to Botha (2011), serves as a means of guiding what should be done and interpreting its significance, drawing upon the ideas and findings of previous scholars. Essentially, a research framework consists of interconnected concepts or theories that are structured in a way that makes them easier to communicate and explain. Kaplan (1964) further described it as a systematic way of organizing one's thinking about the purpose of a study, the reasons behind it, and the way its processes are understood. Such a framework provides clarity on why a study is approached in a particular manner while also allowing researchers to build upon the insights of earlier works (Fraser et al., 2024). Much like a roadmap, it offers direction and coherence throughout the research process. For the present study, a conceptual framework will be developed, focusing on customer satisfaction as its central element.

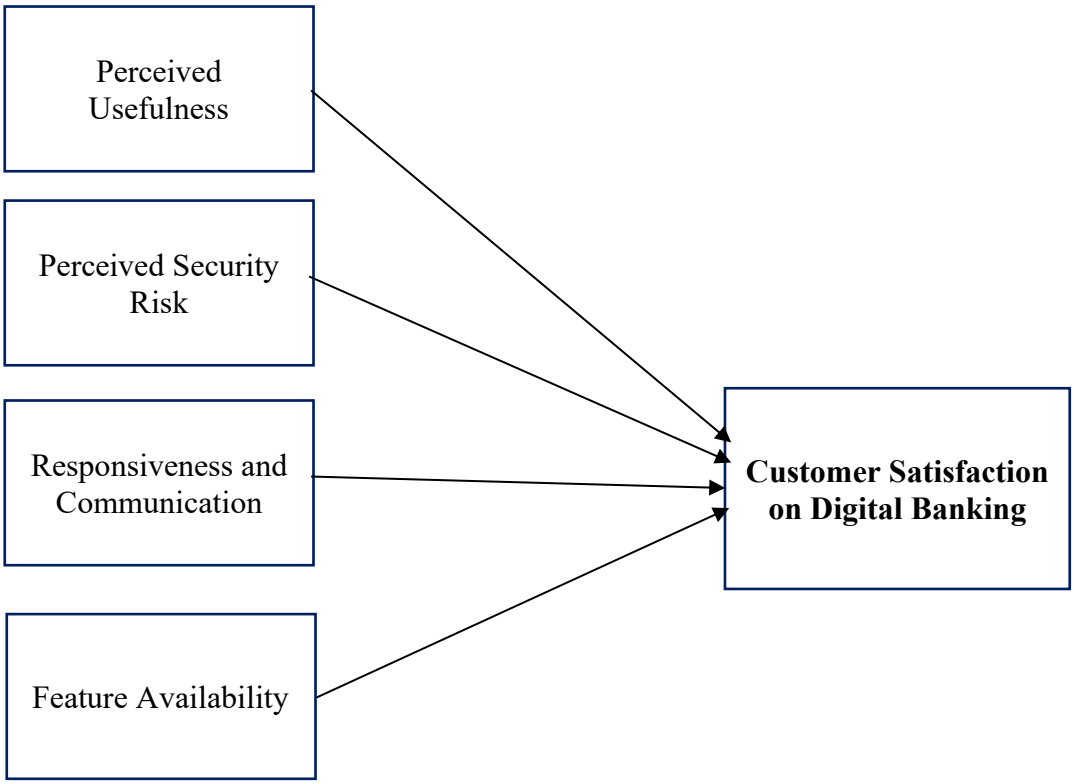

Figure 1: Theoretical Framework

This research centres on examining the factors influencing digital banking services and their contribution to satisfaction within the Malaysian context. The conceptual framework guiding the study is illustrated in Figure 1. This model incorporates key components of the digital banking service framework, namely Perceived Usefulness, Perceived Security Risk, Responsiveness and Communication, and Feature Availability.

There is a total of four hypotheses developed to get a better understanding of the research study that was conducted. The hypotheses are as follows:
Hypothesis 1: Perceived Usefulness has a positive impact on customer satisfaction in online banking.
Hypothesis 2: Perceived Security Risk has a negative impact on customer satisfaction in online banking.
Hypothesis 3: Responsiveness and Communication have a positive impact on customer satisfaction in online banking.
Hypothesis 4: Feature Availability has a positive impact on customer satisfaction in online banking.

Method

The objective of the study framework was to provide the researcher with a clear understanding of the link between independent and dependent variables. The independent variable comprises four dimensions that include Perceived Usefulness, Perceived Security Risk, Responsiveness and Communication, and Feature Availability.

Sampling and Information Gathering

A questionnaire provides primary data, and research papers, journals, and websites are used to get secondary information. Sampling was for consumers 18 years old and above. The questionnaire was distributed by the researcher using a sample facility. "Facility sampling" refers to selecting each subject (person, thing, or element) for research (Skiles et al., 2013). This approach makes getting an answer relatively simple. Presumably, respondents were chosen because they were present at the appropriate time and location. As a result, it is difficult to predict which opportunity will be chosen. As a result, a questionnaire was given to each researcher.

Additionally, researchers frequently employ the non-probability sampling technique known as snowball sampling, in which existing research participants assist in recruiting future study participants. The targeted population was the consumers with an account in a banking sector and used digital banking services. The sampling unit of our research respondents is those who use online banking services that a particular bank provides. The respondents must have a private sector bank account to use the digital banking services. In addition, respondents were expected to possess knowledge of how to utilize online banking services. The study employed a non-probability convenience sampling approach, with a total sample size of 250 participants drawn from Malaysia.

Non-probability sampling refers to a technique in which the selection of participants is determined by the researcher or by the respondents themselves, rather than through random procedures. Consequently, not all individuals in the population have an equal likelihood of being included in the study. For example, when investigating leadership styles, a researcher might request participants to identify other influential individuals within their communities. In this case, the sample grows progressively, resembling the accumulation of a rolling snowball, which is why the method is commonly referred to as "snowball sampling.". The researcher has decided to carry out the study by sending the link to close friends and family members. This allows the researcher to gather the questionnaire more easily and quickly. After the respondents have responded to the questionnaire, we kindly request that they spread the word to their connections.

Research Instruments

To accomplish the study's goals, the questionnaire was divided into two sections. Demographic information on the respondents is provided in Section A, including gender, age, educational level, income, occupation, experience in using the type of digital banking, frequency of using digital banking every three months, and digital services that use most. This section's objective can aid in deciding if sexism will impact consumer satisfaction. Questions in Part B inquire about respondents' satisfaction with digital banking services. The most important elements influencing the consumer experience are identified in the result section. The respondents indicated whether they had utilized digital banking services the previous year before moving on to the questionnaire. In section B of the survey, the respondents were questioned about their degree of perception of the four service aspects offered by digital banking. These four characteristics include Perceived Usefulness, Security Risk, Responsiveness and Communication, and Feature Availability. Four questions make up each dimension.

Findings

Statistical analysis involved a series of analyses, however most important is to understand the Reliability test, and Multiple regression which led to the findings of significant factors in this

study.

Perceived Usefulness

Table 1 contains the Reliability Statistics Table, which includes the Cronbach alpha value, which in this context is 0.956, and indicates the instrument's strong reliability. In addition, it shows a high level of internal consistency for the given sample.

Table 1: Reliability Test - Perceive Usefulness

Reliability Statistics	
Cronbach's Alpha	N of Items
.956	4

Based on the Table 2, "Item Total Statistics," shows the findings for Cronbach's alpha if the item is removed. It is the reliability metric that identifies the "item" that, if removed, would improve the overall reliability of the measuring device. The item-total statistics indicate a construct's statement-wise performance. It is essential to determine whether all assertions directly measure a factor. Subsequently, item-specific statistics are measured. The lowest corrected data are for PU3, with a value of 0.868, which may have contributed to the overall decline in reliability. The item's Cronbach alpha value of 0.949 further supports this point.

Table 2: Item-Total Statistics - Perceived Usefulness

	Item-Total Statistics			
	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
PU1. I save time when I use digital banking	13.72	5.335	.912	.936
PU2. Using digital banking allows me to finish my transactions faster	13.74	5.207	.883	.944
PU3. Using online banking makes it easy for me to deal with my bank	13.78	5.233	.868	.949
PU4. The use of digital banking is helpful to me in my daily life	13.76	5.091	.905	.937

Perceived Security Risk

Table 3 contains the Reliability Statistics Table, which includes the Cronbach alpha value, which in this context is 0.918 and indicates the instrument's strong reliability. In addition, it shows a high level of internal consistency for the given sample.

Table 3: Reliability Test - Perceived Security Risk

Reliability Statistics	
Cronbach's Alpha	N of Items
.918	4

Table 4 presents the Item-Total Statistics, which display the Cronbach's alpha values when individual items are removed. This measure of reliability is used to assess whether eliminating a specific item would enhance the overall consistency of the instrument. The item-total statistics

further indicate the effectiveness of each statement within a construct. It is essential to determine whether all items contribute meaningfully to the measurement of the factor, and therefore, item-level statistics are calculated. As shown in the table, the lowest corrected item-total correlation was recorded for PR4, with a value of 0.751, which may have slightly reduced the overall reliability. This is further supported by the Cronbach's alpha value of 0.914 when the item was excluded.

Table 4: Item-Total Statistics (Perceived Security Risk)

	Item-Total Statistics			
	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
PR1. I am worried about sharing my personal information when using digital banking services	13.54	5.519	.826	.890
PR2. When I am using digital banking services, I am scared that third parties may allow access to my account information.	13.55	5.269	.833	.886
PR3. I'm terrified of entering the wrong amount during online transactions	13.58	5.184	.841	.883
PR4. I believe mistakes are likely to happen when using digital banking	13.59	5.520	.751	.914

Responsiveness and Communication

Table 5 contains the Reliability Statistics Table, which includes the Cronbach alpha value, which in this context is 0.925 and indicates the instrument's strong reliability. In addition, it shows a high level of internal consistency for the given sample.

Table 5: Reliability Test - Responsiveness and Communication

Reliability Statistics	
Cronbach's Alpha	N of Items
.925	4

Table 6 presents the Item-Total Statistics, which report the Cronbach's alpha values when individual items are removed. This reliability measure helps determine whether excluding a particular item would improve the overall consistency of the measurement instrument. The item-total statistics also indicate the effectiveness of each statement within a construct. It is important to evaluate whether all items contribute adequately to measuring the intended factor; therefore, item-wise statistics are calculated. As indicated in the table, the lowest corrected item-total correlation was observed for RC4, with a value of 0.797, which may have slightly reduced the overall reliability. This is further supported by the Cronbach's alpha value of 0.913 obtained when the item was deleted.

Table 6: Item-Total Statistics - Responsiveness and Communication

	Item-Total Statistics			
	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
RC1. Digital banking services are open all the time.	13.06	6.691	.801	.910
RC2. Digital banking responds quickly to customer request	13.03	6.722	.838	.899
RC3. There is immediate help available for any issue	13.16	6.196	.872	.886
RC4. Your questions can be answered by digital banking system.	13.19	6.276	.797	.913

Future Availability

The Table 7 given above is the Reliability Statistics Table, which provides the value for Cronbach's alpha, which in this case is 0.621 and reflects the low reliability of the measuring instrument. Furthermore, it indicates an acceptable good level of internal consistency with respect to the specific sample.

Table 7: Reliability Test - Future Availability

Reliability Statistics	
Cronbach’s Alpha	N of Items
.621	4

Table 8 demonstrates the "Item Total Statistics" table describes and shows the Cronbach Alpha results following the deletion of the item. When the "item" is deleted, the measuring instrument's overall reliability increases because it is the reliability measure used to determine the "item." The item-total statistics show a construct's statement-wise effectiveness. It is crucial to understand whether each statement accurately measures a particular factor. This leads to the measurement of item-wise statistics. The above table reveals that FA1 has the lowest corrected statistics, at -0.464, which may have lowered the reliability as a whole. This is further demonstrated by the deleted item's 0.935 Cronbach’s alpha value.

Theoretically, Cronbach’s alpha was employed to assess the reliability of the coefficients, providing an estimate of the internal consistency of the measurement scale. In general, Cronbach’s alpha values below 0.60 are considered to indicate poor reliability, values between 0.60 and 0.70 suggest fair reliability, values ranging from 0.70 to 0.80 reflect good reliability, and values exceeding 0.80 demonstrate excellent reliability (George & Mallery, 2003; Zikmund, Barry, Jon, & Mitch, 2010). The minimum alpha value for each independent variable should be at least 0.70, which means that the proposed independent variables are reliable and acceptable (Zikmund et al., 2010).

Table 8: Item-Total Statistics - Future Availability

	Item-Total Statistics			
	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
FA1. The digital banking services simplifies banking transactions.	5.36	10.175	-.464	.935
FA2. My bank does not provide digital banking	8.15	3.864	.761	.233
FA3. I am not familiar with digital banking system.	8.07	3.537	.803	.170
FA4. The digital banking method does not appeal to me.	8.15	3.776	.791	.203

Based on the above discussion, in summary all statements of Perceived Usefulness acquired the highest value of Cronbach's alpha, at 0.956. Because their values have exceeded 0.8, Perceived Usefulness is classified as having excellent reliability. In addition, Perceived Security Risk, Responsiveness and Communication, and Customer Satisfaction also obtained excellent reliability as their values have exceeded 0.8, which is at 0.918, 0.925, and 0.944. The lowest value of Cronbach's alpha, 0.621, is on the feature availability factor, which is categorized as having fair reliability. Cronbach's alpha values for four variables range from 0.918 to 0.956, which exceed 0.8, and only one variable falls on 0.621, which is the lowest value and indicates "fair" reliability. As a result, all four variables are classified as having excellent reliability because their values exceed 0.8. The results of Cronbach's alpha range between 0.6 and 0.9. It has surpassed the lowest acceptable limit value in the study. Thus, the proposed variables are reliable and consistent.

Multiple Regression

This statistical test was performed to anticipate the relationship between a dependent variable and numerous of variables that were evaluated. As for independent variables, these observed variables include Perceived Usefulness (PU), Perceived Security Risk (PR), Responsiveness and Communication (RC), and Feature Availability (FA), whereas Customer Satisfaction (CS) is the dependent variable.

Furthermore, based on the outcome shown in the coefficient Table 9, it can be further identified whether there is any association between those independent variables and the dependent variable, Customer Satisfaction (CS). Based on each independent variable evaluated, the findings show that three variables are significant: perceived usefulness (PU) (= -0.430, t = -0.4456, P 0.05 = 0.00), responsiveness and communication (RC) (= -0.260, t = -2.293, P 0.05 = 0.23), and perceived security risk (PR) (= 0.352, t = 3.917, P 0.05 = 0.000). The other two independent variables show the opposite result, which is not significant: feature availability (FA) (= 0.020, t = -0.329, P > 0.05 = 0.742), and satisfaction (S) (= 0.74, t = 0.678, P > 0.05 = 0.499).

Table 9: Coefficient

Coefficients[a]					
Unstandardized Coefficients		**Standardized Coefficients**			
Model	B	Std. Error	Beta	t	Sig.
(Constant)	1.132	.043		26.262	.000
PU	-.048	.011	-.430	-4.456	.000
RC	-.026	.011	-.260	-2.293	.023
PR	.039	.010	.352	3.917	.000
FA	.002	.007	.020	.329	.742
a. Dependent Variable: CS					

Consequently, Table 10 concludes the result of hypothesis as follows:
H1: Perceived Usefulness (PU) has a significant association with Customer Satisfaction (CS).
H2: Perceived Security Risk (PR) has a significant association with Customer Satisfaction (CS).
H3: Responsiveness, and Communication (RC) have a significant association with Customer Satisfaction (CS).
H4: Feature availability (FA), also known as Physical Evidence, had no significant association with Customer Satisfaction (CS).

Table 10: Results of Hypothesis

Hypothesis	**(P) Value**	**Findings**
Hypothesis 1	0.00	Accepted
Hypothesis 2	0.00	Accepted
Hypothesis 3	0.02	Accepted
Hypothesis 4	0.74	Rejected

Based on the above result, only hypothesis 1, hypothesis 2, and hypothesis 3 are accepted. While the hypothesis 4 is rejected.

Discussion

The multiple regression analysis results revealed that Perceived Usefulness, Perceived Security Risk, Responsiveness, and Communication emerged as significant predictors of customer satisfaction in the digital banking context. Interestingly, the nature of these relationships was not always aligned with prior theoretical expectations, pointing to nuanced mechanisms at play in shaping consumer experiences in Malaysia's digital banking landscape. The statistical evidence demonstrated that perceived usefulness, perceived security risk, responsiveness, and communication all had significance levels below the threshold of 0.05, indicating their robustness as explanatory variables. Specifically, Perceived Usefulness (PU) showed a negative association with satisfaction ($\beta = -.430$, $p < .001$), Perceived Security Risk (PR) demonstrated a positive and significant effect ($\beta = .352$, $p < .001$), while Responsiveness and Communication (RC), although significant, negatively influenced satisfaction ($\beta = -.260$, $p = .023$). In contrast, Feature Availability and Satisfaction did not demonstrate any significant influence, suggesting that their contribution to digital banking satisfaction may be more complex and context-dependent. These results collectively highlight the importance of interpreting customer experiences beyond traditional frameworks such as the Technology Acceptance Model (TAM) and instead considering contextual, cultural, and behavioral moderators that may shift expected patterns of influence (Sharma et al., 2024; Rahimi & Oh, 2024).

Perceived Usefulness (PU)

The results indicated that perceived usefulness, instead of positively influencing satisfaction as predicted by TAM and related adoption frameworks, was negatively associated with customer satisfaction ($\beta = -.430$, $p < .001$). This finding diverges from an extensive body of literature that consistently underscores perceived usefulness as a cornerstone of technology adoption and satisfaction (Al-Maroof et al., 2023; Matar & Al-Oqaily, 2025). Typically, when customers perceive that digital banking services add value, improve convenience, and save time, they report higher levels of satisfaction and loyalty. For instance, Al-Okaily (2025) confirmed that perceived usefulness enhances not only satisfaction but also post-adoption behaviors such as continued use and word-of-mouth recommendations in the context of digital wallets.

However, the negative coefficient uncovered in this study suggests a more complicated dynamic. One potential explanation may be the paradox of complexity: as banking systems integrate more advanced functions designed to increase usefulness, customers may experience higher cognitive loads, greater decision fatigue, and a perception of technological overcomplexity. This aligns with the argument of Lee and Park (2023), who found that customers often equate highly "useful" systems with steep learning curves and usability challenges, thereby reducing satisfaction. Similarly, Al-Qudah et al. (2022) highlighted that usefulness without simplicity can frustrate users, especially those with limited digital literacy.

Furthermore, contextual and cultural factors may play an important role in this outcome. Malaysian digital banking users may perceive that the more "useful" services become, the more dependent they are on digital platforms, potentially raising concerns about hidden fees, system failures, or privacy vulnerabilities. These perceived burdens might translate into diminished satisfaction, even when objective usefulness is high. Another plausible explanation relates to multicollinearity among predictors, where usefulness may interact with responsiveness or security perceptions, inadvertently suppressing its positive impact on satisfaction (Chen et al., 2025). Taken together, this finding highlights the importance of designing digital services that not only maximize functional usefulness but also minimize perceived complexity and ensure seamless user experiences.

Perceived Security Risk (PR)

Contrary to conventional expectations, Perceived Security Risk exhibited a positive and significant association with customer satisfaction ($\beta = .352$, $p < .001$). Traditionally, higher perceptions of security risks are expected to decrease satisfaction by fueling distrust and discouraging usage (Cheng & Lee, 2023). However, the present findings suggest a counterintuitive effect where acknowledgment of risks, when paired with visible safeguards, strengthens trust and satisfaction.

This interpretation is supported by emerging fintech research. Suprapto et al. (2024) found that transparent disclosure of security vulnerabilities, combined with clear communication of risk mitigation, enhances consumer trust in online banking platforms. Similarly, Budianto and Nugraha (2024) noted that risk awareness can actually function as a reassurance mechanism: when users recognize that risks exist but observe that their bank actively addresses them, they report stronger satisfaction compared to users who are unaware of potential risks. This dynamic resonates with research by Chen et al. (2025), who showed that risk communication strategies that emphasize protection and accountability significantly bolster satisfaction levels in mobile payment ecosystems.

From a psychological perspective, this outcome may reflect customers' preference for proactive institutions. Customers tend to reward transparency, as it signals accountability and competence. As argued by Kim and Shin (2023), the perception of security risk is not inherently negative; rather, its impact depends on whether organizations demonstrate strong risk management capabilities. In this study's context, the acknowledgment of risk, alongside clear demonstrations of digital banking security protocols (e.g., two-factor authentication, fraud monitoring, biometric identification), may have instilled a sense of reassurance that translated into higher satisfaction. Thus, the finding underscores the importance of reframing perceived security risk not only as a threat but also as an opportunity for banks to strengthen their credibility and consumer trust.

Responsiveness and Communication (RC)

Responsiveness and communication were statistically significant predictors of satisfaction, but they showed a negative relationship ($\beta = -.260$, $p = .023$). This contradicts a substantial body of research indicating that timely responsiveness and clear communication improve satisfaction, trust, and long-term loyalty (Hussain et al., 2023; Rahman & Idris, 2024). In most service industries, customer satisfaction increases when service providers respond quickly and clearly to inquiries or issues.

One possible explanation for the negative effect in this study is the situational context in which responsiveness occurs. As suggested by Shin and Kim (2023), responsiveness is often most visible when problems arise, such as system outages, transaction errors, or account access issues. In such instances, even highly responsive communication may be interpreted as reactive damage control, thereby signaling preexisting deficiencies in service quality. Consequently, customers may perceive responsiveness as evidence of failure rather than competence.

Another factor could be communication overload. With the growing use of automated chatbots, push notifications, and promotional messaging in digital banking, customers may experience fatigue, perceiving excessive communication as intrusive rather than supportive (Lee & Choi, 2024). Similarly, Rahman and Idris (2024) reported that customers in Southeast Asia express frustration when communication lacks personalization, viewing generic messages as irrelevant. In this study's context, the negative impact of responsiveness and communication may reflect customer irritation with excessive or poorly targeted interactions.

These insights emphasize that communication strategies should prioritize quality and personalization rather than sheer frequency. Banks should focus on proactive, anticipatory responsiveness that prevents service failures and ensures seamless transactions, rather than relying on reactive problem-solving after issues have occurred.

Feature Availability (FA)

The regression analysis revealed that Feature Availability ($\beta = .020$, $p = .742$) had no significant effects on customer satisfaction. This aligns with the Kano Model of customer satisfaction, which emphasizes that not all features contribute equally to overall satisfaction (Lee & Newcomb, 2023). Instead, features are often divided into basic needs (must-have), performance needs, and excitement needs. In many cases, once basic features are available, adding more functions does not significantly improve satisfaction unless those features are perceived as unique or highly valuable.

The insignificance of feature availability in this study could indicate that customers already consider certain features, such as mobile transfers, bill payments, and account monitoring, to be baseline requirements. As such, their presence does not generate incremental satisfaction, whereas their absence could lead to dissatisfaction (Shilpi 2025). Similarly, feature redundancy, where too many options overwhelm the user, may further reduce the salience of availability in shaping satisfaction (Karunarathna, 2024).

Theoretical and Practical Implications

The findings of this study contribute new perspectives to the digital banking literature by demonstrating that commonly assumed positive predictors of satisfaction, such as perceived usefulness and responsiveness, may produce counterintuitive results under certain conditions. From a theoretical standpoint, the study extends the Technology Acceptance Model by showing that Perceived Usefulness can diminish satisfaction when it is associated with complexity or cognitive overload. It also supports the argument that perceived risk, when managed transparently, can function as a trust-enhancing mechanism rather than a barrier (Suprapto et al., 2024; Chen et al., 2025).

From a practical standpoint, the results emphasize three key considerations. First, banks must balance usefulness with usability: providing advanced features while ensuring simplicity and user-friendly design. Second, responsiveness must shift from reactive to proactive engagement, focusing on anticipating customer needs and preventing issues before they arise. Third, transparent communication about risks, combined with visible safeguards, should be positioned as a strategic trust-building tool. By operationalizing these insights, banks can strengthen satisfaction and customer loyalty in increasingly competitive digital environments.

Conclusion

This study demonstrates that digital banking satisfaction is influenced by complex and sometimes paradoxical relationships. Perceived Usefulness, typically associated with positive outcomes, was negatively related to satisfaction, likely due to complexity or hidden burdens. Conversely, Perceived Security Risk strengthened Customer Satisfaction when paired with effective risk communication and mitigation strategies. Responsiveness and Communication, while significant, negatively influenced Customer Satisfaction, suggesting that customers may perceive responsiveness as reactive to failures rather than proactive engagement. Finally, Feature Availability did not significantly shape overall satisfaction, reinforcing the idea that not all features or constructs equally drive customer experiences.

These findings highlight the importance of contextualized interpretations of consumer behavior in digital banking. Future research should expand the scope by incorporating moderating factors such as digital literacy, trust disposition, cultural differences, and prior banking experiences. Additionally, qualitative methods such as interviews or focus groups could provide richer insights into the reasons behind paradoxical effects. Exploring interaction effects among predictors, for instance, whether security risk moderates the relationship between usefulness and satisfaction, may also yield valuable contributions to both theory and practice.

Recommendations

The study results suggest that Perceived Usefulness, Perceived Security Risk, Responsiveness, and Communication are central to shaping digital banking satisfaction. However, the counterintuitive directions of some effects point to the need for more nuanced strategies.

Digital banking providers should prioritize the following recommendations:

Enhancing Perceived Usefulness Without Complexity: Banks should simplify digital interfaces, reduce unnecessary steps in transactions, and ensure that newly introduced features do not overwhelm customers. Designing with usability in mind can transform perceived usefulness into a genuine satisfaction driver (Al-Okaily, 2025).

Managing Security Risk Transparently: Institutions should adopt transparent communication about security policies, proactively educate customers on potential risks, and highlight their protective measures (Chen et al., 2025). Regular updates on cybersecurity enhancements can reassure users and convert risk awareness into trust.

Shifting Responsiveness Toward Proactive Engagement: Rather than relying on communication after issues arise, banks should implement predictive analytics to anticipate customer problems, such as detecting failed transactions in real time. Personalization of communication, sending relevant, timely, and tailored messages, can prevent the negative perception of communication overload (Lee & Choi, 2024).

Re-evaluating Feature Strategies: Since feature availability did not significantly affect satisfaction, banks should focus on optimizing existing core features rather than continuously adding new ones. This approach ensures depth and reliability rather than breadth of services (Karunarathna, 2024).

Addressing Research Limitations: Future studies should extend the timeframe for data collection and increase sample sizes to improve reliability and generalizability. Larger and more diverse respondent pools, especially from different occupational and demographic groups, would provide stronger validation. Additionally, refining survey instruments to minimize construct overlap can help generate more accurate results.

By adopting these recommendations, digital banking service providers can refine their customer experience strategies, ensuring that digital banking evolves not just as a transactional platform but also as a source of trust, confidence, and long-term satisfaction.

Acknowledgement
The author would like to thank the Institute of Islamic Finance and Wealth Management (IFWMI), Faculty of Economics and Muamalat, Universiti Sains Islam Malaysia, for supporting this publication and providing the necessary facilities.

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