

Digital Banking Experience and Customer Loyalty: Satisfaction as a Driver, Age as a Lens

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ABSTRACT: This study investigates the influence of Digital Banking Experience (DBE), Customer Overall Satisfaction (COS), and Age Group on customer loyalty within the digital banking sector of emerging markets. Grounded in Expectation-Confirmation Theory and the Unified Theory of Acceptance and Use of Technology 2 (UTAUT2), loyalty is conceptualised as an outcome of experiential quality, satisfaction-driven commitment, and generationally shaped adoption behaviours. Data were collected through a quantitative survey of 385 digital banking users across Vietnam and other Southeast Asian economies, employing a 5-point Likert scale. The findings reveal that DBE ($\beta = 0.74$) and COS ($\beta = 0.69$) have strong positive effects on loyalty, while Age Group ($\beta = 0.53$) significantly moderates the satisfaction-loyalty relationship, intensifying it among younger cohorts and weakening it among older users. By integrating digital experience, satisfaction mechanisms, and demographic diversity, this study addresses a key gap in loyalty research and advances both theoretical understanding and managerial strategies for sustaining trust and long-term engagement in digital financial services.

KEYWORDS: Digital Banking Experience; Customer Satisfaction; Customer Loyalty; Age Group; Emerging Markets

1. INTRODUCTION

The rapid advancement of digital banking has made it essential for financial institutions to identify the primary factors influencing customer loyalty. Existing studies have emphasized that digital banking quality, measured by usability, convenience, and trust, has a significant impact on customer satisfaction (Tam & Oliveira, 2017). Satisfaction, in turn, consistently functions as a major predictor of customer loyalty in digital environments (Rahi *et al.*, 2019). However, this relationship may vary across demographic groups. Age appears to play a moderating role, with older users placing greater importance on reliability and simplicity, while younger users tend to value innovation and speed (Lee & Shin, 2018). This study conceptualizes satisfaction as a mediator and age as a moderator to explore how digital banking experience affects loyalty across generations, offering insights for customer segmentation and retention strategies.

Prior research highlights that digital banking experience significantly influences both customer satisfaction and loyalty (Amin, 2016). Widely adopted frameworks such as the Technology Acceptance Model and the DeLone and McLean Information Systems Success Model have been used to explain these outcomes (Baabdullah *et al.*, 2019). However, most studies treat demographic variables as fixed controls, overlooking their potential interactive effects. The role of age in shaping the satisfaction and loyalty relationship remains underexplored (Molinillo *et al.*, 2021). This study addresses this gap by examining age as a moderating variable.

This article seeks to address gaps in the current literature by answering three key research questions. The first is: "How does digital banking experience influence customer satisfaction and loyalty?" The second explores: "How does customer satisfaction mediate the relationship between digital banking experience and customer loyalty?" The third asks: "How does customer age moderate the relationship between satisfaction and loyalty within digital banking contexts?". To answer these questions, the research pursues three interconnected objectives: to evaluate the impact of digital banking experiences on satisfaction and loyalty, to clarify the mediating role of satisfaction, and to assess the moderating effect of age. These aims collectively provide a more nuanced understanding of consumer behavior across generational groups and offer both theoretical insights and practical guidance for designing targeted customer retention strategies in the digital financial services landscape.

2. LITERATURE REVIEW

2.1 Customer Loyalty Toward Digital Banking Services

Customer loyalty is commonly understood as a firm psychological commitment to repeatedly purchase or engage with a specific product or service over time, regardless of competing marketing efforts or situational influences (Oliver, 1999). In the context of digital banking, this loyalty reflects the customer's enduring intention to use digital financial platforms consistently, maintain trust in the service provider, and recommend the service to others through positive word-of-mouth (Amin, 2016). According to Kumar *et al.* (2010) loyalty in this setting is multidimensional, encompassing both attitudinal loyalty, such as emotional attachment and preference, and behavioral loyalty, demonstrated through repeat usage. It is widely acknowledged as a crucial determinant of firm performance in increasingly competitive and technology-driven financial environments.

Viewed through a functionalist lens, customer loyalty represents a stabilizing mechanism that upholds balance and continuity within the digital banking system. Functionalist theory posits that each component of an organization serves a vital function in preserving systemic cohesion and adaptability (Parsons, 1951). In this regard, loyalty is not solely an output of marketing effectiveness but also an essential process through which financial institutions achieve resilience, efficiency, and sustainability. Loyal customers reduce operational costs by minimizing attrition and supporting more predictable financial planning. Moreover, they facilitate strategic growth through cross-purchasing behavior and higher price tolerance, thereby enhancing long-term profitability (Reichheld & Scheffer, 2000).

Empirical evidence substantiates the strategic role of customer loyalty in digital financial services. Lin and Lekhawipat (2014) found that perceived ease of use, trust, and system quality significantly influence loyalty, which in turn enhances users' commitment to continued platform use and deeper engagement. Similarly, Herington and Weaven (2009) demonstrated that high-quality service and strong relational trust are fundamental antecedents of loyalty in online banking, underscoring the interpersonal and experiential roots of digital loyalty. These findings suggest that loyalty is not merely a by-product of satisfaction but a forward-looking indicator of institutional success. Accordingly, cultivating customer loyalty in digital banking is essential not only for retention but also for long-term strategic positioning and value creation in a digitally transformed economy.

2.2. Theoretical Framework

2.2.1 Expectation Confirmation Theory (ECT)

Expectation Confirmation Theory (ECT), originally developed by Oliver in 1980, offers a comprehensive foundation for understanding the formation of customer satisfaction within service consumption contexts. The theory asserts that individuals enter service interactions with preexisting expectations, which are subsequently compared to perceived performance outcomes. Satisfaction results when actual service performance meets or exceeds these expectations. Conversely, if performance falls short, dissatisfaction occurs due to negative disconfirmation. This cognitive evaluative process is particularly significant in digital banking, where services are delivered virtually and users interact continuously with technology interfaces (Bhattacharjee, 2001).

In the realm of digital banking, customers engage in repeated cycles of evaluation. Their expectations may arise from marketing communication, previous digital encounters, and peer influence. These expectations are assessed against real-time experiences such as platform usability, system reliability, service speed, and perceived security. When these performance factors align with what users anticipate, confirmation is achieved, thereby enhancing satisfaction. Casaló *et al.* (2008) demonstrated that such confirmation significantly strengthens customer satisfaction, which in turn encourages continued engagement with digital banking platforms. Research by Lin and Lekhawipat (2014) supports the idea that repeated confirmation of user expectations is associated with stronger continuance intentions and reduced likelihood of switching service providers. In digital environments, where users may quickly evaluate and abandon services that fall short, satisfaction becomes more than an emotional reaction. It functions as a strategic mechanism that enhances loyalty, increases engagement, and reduces customer attrition.

Satisfaction also plays a mediating role within the broader relationship between digital experience and behavioral intention. When the service experience fulfills the user's anticipated value, it reinforces cognitive trust and deepens emotional attachment. This fosters ongoing commitment and strengthens the behavioral intention to remain loyal. Rahi and colleagues (2019) found that in mobile banking, satisfaction derived from usability and reliability significantly predicts not only repeated usage but also customer advocacy. Satisfaction thus serves as both an outcome of positive evaluations and a central mechanism for shaping future behavior. In addition to its mediating role, satisfaction may also interact with customer characteristics that influence evaluative processing. One such factor is age. Age influences how expectations are formed and how service outcomes are perceived. Younger users often seek innovation, personalization, and seamless technological integration, leading them to adjust expectations based on evolving digital trends. In contrast, older users typically prioritize simplicity, dependability, and clarity. These generational differences affect the interpretation of service performance and the perceived confirmation of expectations, positioning age as a relevant moderator in the relationship between satisfaction and loyalty (Kim *et al.*, 2024).

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ECT is grounded in several fundamental assumptions. It presumes that consumers are capable of developing clear expectations prior to service consumption and that they engage in rational comparisons between these expectations and perceived outcomes. The resulting satisfaction or dissatisfaction directly informs future behavioral intentions such as service continuation or switching (Bhattacharjee, 2001). Moreover, ECT posits that satisfaction not only emerges from confirmation but also shapes future expectations, creating a dynamic feedback loop essential for sustained relationships in service-oriented digital environments.

A substantial body of empirical evidence supports the application of ECT in digital financial services. Tam and Oliveira (2017) confirmed that when mobile banking services deliver on promised value, users report higher levels of satisfaction and stronger continuance intentions. Similarly, Rahi *et al.* (2019) observed that fulfilled expectations regarding convenience and trust lead to customer loyalty and advocacy behaviors. These findings validate the relevance of ECT as a theoretical framework for explaining how digital service experiences evolve into lasting behavioral commitment, making it highly applicable to the study of loyalty in digital banking.

2.2.2 Unified Theory of Acceptance and Use of Technology 2 (UTAUT2)

The Unified Theory of Acceptance and Use of Technology 2 (UTAUT2), developed by Venkatesh, Thong, and Xu (2012), offers a comprehensive model for understanding consumer behavior in technology adoption, particularly within non-organizational, user-centered contexts. This theoretical framework builds upon the original UTAUT model by integrating additional constructs such as hedonic motivation, price value, and habit, thereby enhancing its relevance to consumer-focused digital environments like retail banking. According to the theory, behavioral intention and actual system use are shaped by key determinants including performance expectancy, effort expectancy, social influence, facilitating conditions, and hedonic motivation, with these relationships further moderated by individual factors such as age, gender, and prior experience.

In the context of digital banking, UTAUT2 provides a robust foundation for explaining how customers form perceptions of service quality, which in turn influence satisfaction and loyalty outcomes. Performance expectancy, which reflects the degree to which customers believe that using digital banking services will improve transactional efficiency, remains a principal driver of usage intention (Alalwan *et al.*, 2018). Effort expectancy, defined as the perceived ease of using digital interfaces, plays a particularly critical role for older users who may be less technologically inclined or require greater simplicity in system navigation (Morosan and DeFranco, 2016). Facilitating conditions such as technical infrastructure and available support resources also significantly affect users' capacity and motivation to engage with digital banking platforms. These constructs collectively shape customers' overall experience, which then informs satisfaction and the likelihood of continued usage and loyalty.

The moderating influence of demographic characteristics, especially age, is one of the most salient features of UTAUT2 and is particularly pertinent to this study. Venkatesh *et al.* (2012) emphasize that age not only affects behavioral intention directly but also moderates the strength of the relationship between each predictor and intention. For instance, younger users are generally more influenced by hedonic motivation and habit, while older users may place greater emphasis on system reliability and external support. Such generational differences suggest that age moderates the path from satisfaction to loyalty by conditioning the importance of antecedent factors. Baptista and Oliveira (2015) confirmed this assertion in their study on mobile banking, demonstrating that age moderated the effects of performance and effort expectancy on user intention. Similarly, research by Slade *et al.* (2015) found that demographic moderators significantly influenced continued usage of mobile payment systems, thereby validating the sensitivity of UTAUT2 to generational and experiential variation.

Several core assumptions underpin UTAUT2. The model assumes that individuals form behavioral intentions based on a rational evaluation of perceived utility, usability, social expectations, and facilitating conditions. It also posits that the actual use of technology is a function of both intentionality and habitual behavior, especially when the technology has been in use for an extended period. Furthermore, it assumes that these relationships are not uniform across populations but vary according to demographic characteristics, thus offering a differentiated and context-sensitive approach to behavioral prediction.

Empirical research substantiates the applicability of UTAUT2 in digital financial contexts. Alalwan *et al.* (2018) found that the core constructs of UTAUT2 significantly predicted mobile banking adoption in Jordan, with age acting as a critical moderating variable. Oliveira *et al.* (2014) further demonstrated that hedonic motivation and habit were particularly salient among younger users, reinforcing the importance of demographic segmentation. These findings confirm the utility of UTAUT2 as a multidimensional framework for understanding satisfaction and loyalty formation within the evolving landscape of digital banking.

2.3 Determinants of Customer Loyalty Toward Digital Banking Services

2.3.1 Digital Banking Experience (DBE)

Digital Banking Experience (DBE) encompasses the overall quality of user interactions with digital banking platforms, including aspects such as usability, personalization, speed, accessibility, and security across mobile and online channels (Malaquias

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& Hwang, 2019). In the context of a rapidly globalizing and digitizing economy, DBE has become a strategic imperative for financial institutions aiming to enhance customer engagement and maintain competitive service delivery. As the reliance on traditional bank branches diminishes and mobile-first behavior becomes increasingly dominant, particularly among digital-native cohorts, the quality of DBE plays a central role in shaping brand perception and reinforcing customer retention (Jiradechakorn *et al.*, 2023). Consequently, an in-depth understanding of DBE is essential not only for boosting customer satisfaction but also for building sustainable loyalty within digital financial ecosystems.

The positive relationship between DBE and customer loyalty is substantiated by both theoretical models and empirical research. Expectation-Confirmation Theory (ECT) posits that loyalty results when actual user experiences meet or surpass prior expectations (Bhattacharjee, 2001). In digital banking, platforms that offer seamless navigation, intuitive interfaces, and responsive functionality enhance perceived service value, fostering continued use and deeper commitment. Redda (2023) highlights the digital upgrades at Capitec and FNB in South Africa, where enhancements such as user-centric interfaces, multilingual support, and robust security features led to marked improvements in digital engagement and customer retention, even when overall satisfaction remained moderate. These findings suggest that high-quality DBE, particularly in terms of functionality and trust, can independently drive loyalty by making routine banking more convenient, efficient, and reliable. However, the strength of this effect appears to vary across demographic and psychological segments. A meta-analysis by Shaikh and Karjaluoto (2015) revealed that while younger users associate DBE closely with loyalty outcomes, older users prioritize factors such as trust and platform reliability. Supporting this, Djibrin *et al.* (2025) found that among users aged 50 and above, features like visual appeal and transaction speed had limited influence unless accompanied by a strong sense of digital trust. This implies that DBE's impact on loyalty is not universally consistent but is moderated by factors such as age, perceived risk, and habitual preferences.

From the perspective of Perceived Value Theory, however, the influence of DBE on loyalty may be overstated. While users evaluate services based on functional, emotional, and social value (Sweeney & Soutar, 2001), these perceived benefits do not automatically translate into loyalty behaviors. For example, improvements in digital services at Finland's OP Financial Group did not significantly increase loyalty among senior customers, who continued to prefer in-person banking (Pikkarainen *et al.*, 2021). Zwick and Denegri-Knott (2009) argue that overly instrumental views of DBE often reduce customers to data points, overlooking deeper relational needs such as fairness and trust. Abikari *et al.* (2022) found that negative emotional responses, such as frustration, disappointment, and dissatisfaction, stemming from poor digital banking experiences significantly diminished e-banking adoption intentions among Swedish university students. Their PLS-SEM analysis highlights that emotional discontent, even amid functional adequacy, leads to disengagement and reduced customer loyalty.

In sum, DBE is a key enabler of customer loyalty in the digital banking landscape. When effectively designed to meet user expectations for speed, personalization, and security, it can deliver substantial value and reinforce long-term engagement. Nevertheless, DBE should be viewed as one element within a broader loyalty strategy that also considers demographic diversity, financial incentives, and relational trust. A well-managed digital banking experience often enhances loyalty, though its impact may vary by user context.

Thus, this study proposes the following hypothesis:

H1: A high-quality digital banking experience positively impacts customer loyalty toward digital banking services.

2.3.2 Customer Overall Satisfaction (COS)

Customer Overall Satisfaction (COS) in digital banking denotes users' cumulative appraisal of their digital financial service experiences, encompassing aspects such as usability, reliability, responsiveness, and perceived value (Raza *et al.*, 2020). In the current socio-economic landscape, COS holds significant strategic importance, particularly as digital financial inclusion emerges as a critical component of economic resilience and consumer empowerment. The post-COVID-19 era has further intensified customers' expectations for seamless, secure, and efficient digital services, thereby positioning COS not only as a key competitive advantage but also as a fundamental driver of customer loyalty within the digital banking environment (Akter *et al.*, 2021).

Effectively managed COS serves as a strong predictor of customer loyalty. Drawing on the Service-Profit Chain theory (Heskett *et al.*, 1994), satisfied customers are more likely to demonstrate repeated engagement, positive word-of-mouth, and resistance to switching. This theoretical link is substantiated by empirical studies. Patel, Mishra, and Chishti (2024), in their PLS-SEM analysis of 800 Indian and Pakistani digital banking users, found that COS fully mediated the relationship between e-service quality and loyalty, significantly predicting users' willingness to recommend and reuse services. The impact of COS may be further amplified when tailored to specific customer segments. Rather than treating demographic factors as barriers, Schirmer, Ringle, and Gudergan (2018) argue that attributes such as education, commitment, and trust can enhance the satisfaction-loyalty link. Their findings indicate that among highly educated and strongly committed users, COS generates a more pronounced loyalty effect. A similar trend was identified in a South Korean study conducted by Chung and Kwon (2009), which found that individuals exhibiting high levels of trust not only experienced greater satisfaction with mobile banking platforms but also engaged in more

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pronounced loyalty behaviours, including repeated usage and positive customer advocacy. These findings underscore the role of trust as a critical personal attribute that intensifies the relationship between customer satisfaction and loyalty, particularly within digital financial environments.

Conversely, some economic perspectives challenge the reliability of COS as a loyalty predictor. Behavioral Decision Theory posits that customer choices are frequently influenced by cognitive biases, heuristics, and contextual cues, thereby undermining the rational linkage between satisfaction and loyalty (Bettman *et al.*, 1998). For instance, Willys (2018) observed that in Madagascar's telecom sector, many users switched providers despite reporting high satisfaction, primarily due to low switching barriers and attractive promotional offers. Similarly, Keiningham *et al.* (2015) contend that in hyper-competitive markets, even satisfied customers may defect when competitors provide superior perceived value. In this vein, COS alone may be insufficient to ensure customer retention. Aboobucker and Bao (2019) found that among Sri Lankan internet banking users, particularly older demographics, external factors such as promotions or security concerns could override initial satisfaction, highlighting COS's vulnerability as a sole loyalty determinant.

In conclusion, COS remains a central construct in fostering customer loyalty in digital banking. When user expectations regarding functionality, security, and personalization are met, COS acts as a powerful catalyst for engagement and advocacy. Although its influence may vary depending on customer characteristics such as education or commitment (Schirmer *et al.*, 2018), the underlying mechanism linking satisfaction and loyalty generally holds across diverse market segments. Even in volatile and highly competitive contexts, COS retains its relevance, particularly when reinforced by trust and perceived value.

In light of these discussions, the following hypothesis is proposed:

H2: Customer overall satisfaction positively impacts customer loyalty toward digital banking services.

2.3.3 Customer Age Group

In the context of rapid digitalisation in the banking sector, customer age group emerges as a crucial moderating factor in the relationship between customer overall satisfaction and loyalty. Windasari *et al.* (2022) note that younger generations, such as Gen Y and Gen Z, tend to respond positively to modern digital banking experiences; when satisfied, they are more likely to exhibit strong loyalty due to their heightened expectations around interface quality, speed, and digital convenience. In contrast, Mei (2024) reports that older customers, despite expressing satisfaction, often hesitate to develop long-term loyalty, primarily due to limited digital literacy and concerns over data security.

Affective gratification plays a pivotal role in shaping loyalty within digital banking, particularly where emotional experiences can distinguish otherwise standardised services. Drawing on the Stimulus–Organism–Response (S–O–R) framework (Mehrabian and Russell, 1974), emotionally resonant features, such as personalised interfaces or empathetic chatbot interactions, serve as stimuli that elicit affective responses, thereby enhancing loyalty. Sharma, Sharma, and Singh (2024) observe that Generation Z is particularly attuned to mobile banking applications that are both emotionally engaging and functionally efficient. Elements such as rapid responsiveness, visual appeal, and seamless navigation significantly enhance their satisfaction. This heightened satisfaction, in turn, exerts a stronger influence on loyalty intentions among Gen Z compared to older users. The findings suggest that Gen Z positively moderates the satisfaction–loyalty relationship, amplifying the impact of high-quality digital experiences on long-term customer loyalty in mobile banking. According to Oliver (1997), affective satisfaction is an important component in shaping customer loyalty, yet its influence can vary depending on the relative weight of cognitive evaluations such as trust, perceived value, or risk assessment. This perspective highlights that emotional satisfaction complements, rather than solely determines, loyalty outcomes, and that an optimal balance between affective and cognitive elements is essential for fostering strong, lasting customer relationships. Similarly, Foon and Fah (2011) found that while emotional satisfaction positively influenced user perception in Malaysia, it was not sufficient to sustain loyalty unless accompanied by trust and perceived reliability. These findings underscore that the effect of affective factors is often contingent on broader contextual or rational considerations.

Some scholars contend that the moderating effect of age may weaken, but not nullify, the relationship between customer satisfaction and loyalty in digital banking. Manyanga (2022) reports that while age does moderate the effect of satisfaction on loyalty, the moderation is relatively modest; other constructs such as trust and perceived value remain the dominant predictors of loyalty. Theoretically, Socioemotional Selectivity Theory (Carstensen *et al.*, 1999) provides further nuance, positing that older individuals prioritise emotionally meaningful experiences over utilitarian benefits. As such, satisfaction may not necessarily lead to loyalty among older users if their emotional needs remain unaddressed. Supporting this view, Aboobucker and Bao (2019) found that in Sri Lanka, older digital banking users often disengaged not because of dissatisfaction, but due to persistent concerns over digital security. In these high-risk digital environments, age-related factors may attenuate the link between satisfaction and loyalty.

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In sum, customer age group serves as a salient moderator in the satisfaction–loyalty relationship in digital banking. While younger users often convert satisfaction into loyalty due to their digital fluency and elevated expectations, older users may remain reserved, shaped by usability limitations and risk aversion. Although the moderating influence of age is not uniformly observed across all contexts (Chikazhe *et al.*, 2021), the generational divergence in digital engagement patterns offers valuable insight into the varying mechanisms by which satisfaction informs loyalty outcomes. ght for designing inclusive loyalty strategies in the digital era.

These findings collectively support the development of the following hypothesis:

H3: Customer age group negatively moderates the influence of customer overall satisfaction on customer loyalty toward digital banking services, such that the effect is stronger for younger customers and weaker for older customers.

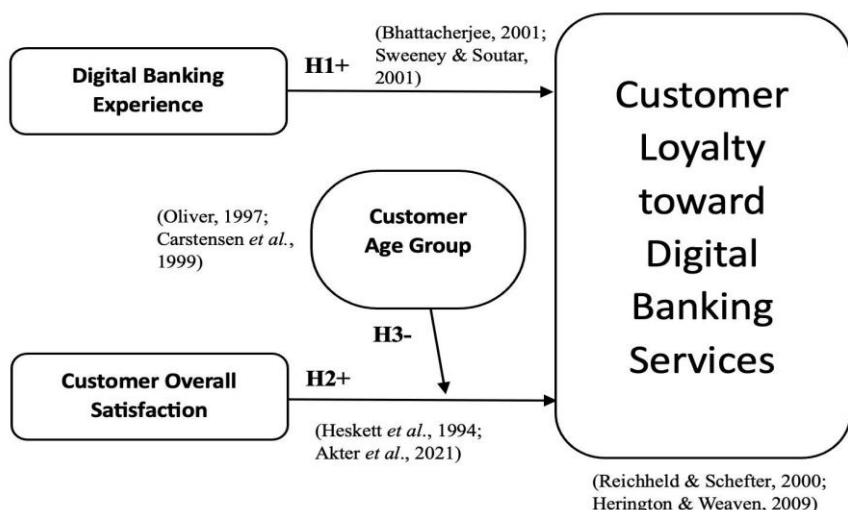


Figure 1 The Article's Conceptual Framework

3. METHODS

3.1 Participants

To strengthen empirical validity and ensure demographic representativeness, this study employed a purposive stratified sampling strategy, targeting active users of digital banking services. Eligibility criteria stipulated that participants must be at least 18 years of age and have completed at least one transaction via a bank's online platform or mobile application within the preceding three months. Stratification was undertaken across four key demographic and usage-related dimensions to achieve diversity in representation and to capture nuanced variations in digital banking engagement:

- (1) Emerging adults (18–25 years), who are in the formative stages of financial independence and typically prioritise innovation, speed, and mobile-first functionality in banking interactions.
- (2) Early-to-mid-career adults (26–40 years), who often balance professional, familial, and financial obligations, seeking both efficiency and reliability in digital banking services.
- (3) Mid-life to pre-retirement adults (41–55 years), who value security, trust, and stability in financial transactions, while progressively integrating technology into long-term financial management.
- (4) Older adults (56+ years), who may adopt digital banking more cautiously due to lower digital literacy or heightened privacy and fraud concerns, yet increasingly engage with simplified, accessible, and supportive digital banking interfaces.

Participants were further required to hold an active account with a licensed commercial bank offering digital services and to self-report at least moderate familiarity with online or mobile banking functionalities. Stratification parameters included age cohort, gender, frequency of digital banking use, and primary banking platform (e.g., mobile application versus web-based interface), enabling a nuanced analysis of generational variations in satisfaction-loyalty dynamics.

The survey instrument was disseminated via a secure online platform through participating banks' official digital channels, financial technology community forums, and targeted social media advertising. In Vietnam, selection was facilitated through collaborations with major banking institutions, fintech associations, and online communities such as "Ngân Hàng Số Việt Nam" and "Tài Chính & Công Nghệ." Internationally, the survey was promoted in regional banking and fintech networks across Southeast Asia, including Malaysia, Thailand, and Indonesia, to capture diverse perspectives within comparable emerging market contexts.

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The instrument employed a standardised 5-point Likert scale ranging from 1 (“Strongly disagree”) to 5 (“Strongly agree”) to assess perceptions of three focal constructs: Digital Banking Experience (DBE), Customer Overall Satisfaction (COS), and Customer Loyalty (CL). Following a rigorous data validation process, only fully completed and internally consistent questionnaires were retained, resulting in a final dataset suitable for robust multivariate analysis of the relationships among DBE, COS, and CL, including the moderating role of age.

4. RESULTS

4.1. Reliability analysis

Table 1 Reliability analysis of the dependent variable “Customer loyalty towards digital banking services”

Reliability Statistics				
Cronbach's Alpha		N of Items		
.757		4		
Item-Total Statistics				
	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
CL1	9.632	9.333	.734	.743
CL2	7.888	8.059	.692	.706
CL3	9.408	8.929	.718	.735
CL4	8.580	9.228	.711	.733

Source: (The authors, 2025)

Where CL1, CL2, CL3, and CL4 correspond to survey items 1, 2, 3, and 4 measuring the customer loyalty towards digital banking services, respectively.

As presented in Table 1, all dependent variables achieved adjusted item-total correlation coefficients of at least 0.3. The overall Cronbach’s alpha was 0.757, exceeding the conventional reliability threshold of 0.6 and surpassing the alpha values that would result from removing any individual item. Moreover, for each dependent variable, Cronbach’s alpha consistently remained higher than the corresponding adjusted item-total correlations, even when individual items were excluded. Therefore, no items were removed from the analysis. Similar patterns were also observed in the Cronbach’s alpha values for the other variables included in the study.

4.2. Exploratory Factor Analysis (EFA)

Table 2 Rotated Component Matrix for the 2 independent variables.

Rotated Component Matrix ^a				
Component with loading factors				
1	2	3	4	
CL1	.768	DBE1 .656	COS1 .683	AGE1 .600
CL2	.765	DBE2 .558	COS2 .693	AGE2 .674
CL3	.814	DBE3 .663	COS3 .675	AGE3 .639
CL4	.735	DBE4 .726	COS4 .694	AGE4 .725
Extraction Method: Principal Component Analysis.				
Rotation Method: Varimax with Kaiser Normalization.				
a. Rotation converged in 7 iterations.				

Source: (The authors, 2025)

Where AGE1, AGE2, AGE3, and AGE4; DBE1, DBE2, DBE3, and DBE4; and COS1, COS2, COS3, and COS4 correspond to survey items 1 through 4 for the moderator and the two independent variables, respectively.

As shown in Table 2, the rotated component matrix grouped the eight dependent variables into two distinct factors corresponding to the independent variables, with all dependent variables retained for further analysis. Each variable exhibited a

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factor loading greater than 0.5. Additionally, a comparative analysis was conducted incorporating both the dependent variables and the moderator to examine their interrelationships.

4.3. Multiple linear regression model

Table 3 Coefficients^a

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	6.697	.744		3.821	.000
	DBE	.752	.699	.740	3.555	.000
	COS	.716	.840	.690	3.801	.000
a. Dependent Variable: CL						

Source: (The authors, 2025)

Where **CL**: mean of CL1, CL2, CL3, CL4;

DBE: mean of DBE1, DBE2, DBE3, DBE4;

COS: mean of COS1, COS2, COS3, COS4

As shown in Table 3, the significance values (Sig.) obtained from the t-tests are 0.000, which are well below the 0.001 threshold. This confirms that the independent variables, digital banking experience and customer overall satisfaction exert a statistically significant influence on the dependent variable, namely the customer loyalty toward digital banking services. Accordingly, both hypotheses are supported.

4.4. Moderator analysis

Table 4 Results analysis of customer age group

Model : 1

Y : CL

X : COS

W : AGE

Sample Size: 385

OUTCOME VARIABLE:

CL

Model Summary

R	R-sq	MSE	F	dl1	dl2	p
.719	.517	.589	6.008	3.000	381.000	.000

Model

	coeff	se	t	p	LLCI	ULCI
constant	4.331	.692	68.551	.000	5.863	5.771
COS	.631	.557	4.921	.000	.413	.408
AGE	.636	.582	4.117	.000	.383	.354
Int_1	-.530	.480	-4.096	.000	.367	.328

Source: (The authors, 2025)

Where **AGE**: mean of AGE1, AGE2, AGE3, AGE4

As presented in Table 4, the p-value for the interaction term (Int_1) is 0.01, which is well below the 0.05 threshold, indicating a statistically significant interaction between customer age group and customer overall satisfaction in predicting the customer loyalty toward digital banking services. The interaction coefficient of 0.53 further suggests that customer age group amplifies the negative effect of customer overall satisfaction. Accordingly, hypothesis H3 is supported.

5. DISCUSSION

5.1 Result summary

The findings of this study offer significant insights into the interplay between digital service experience, customer satisfaction, and generational differences in shaping loyalty within digital banking with coefficients of 0.74, 0.69, 0.53 respectively, thereby advancing theoretical understanding and contributing to ongoing debates in the literature.

5.2. Theoretical Implication

The first hypothesis, which posits that Digital Banking Experience (DBE) exerts a positive influence on customer loyalty, receives strong empirical support ($\beta = 0.74$). This result reinforces functionalist perspectives that regard loyalty not simply as a behavioral by-product but as a stabilizing mechanism sustaining systemic cohesion and resilience (Parsons, 1951). It also accords with Expectation-Confirmation Theory (Bhattacharjee, 2001), wherein the confirmation of expectations through usability, trust, and reliability emerges as a central driver of enduring commitment. The robustness of this relationship substantiates arguments by Lin and Lekhawipat (2014) and Herington and Weaven (2009) that experiential quality constitutes a primary antecedent of loyalty, while partially challenging Perceived Value Theory (Sweeney & Soutar, 2001), which isolates value perception as an independent determinant. Moreover, the findings counter critiques that DBE is overly instrumental and insufficient for sustaining long-term loyalty (Zwick & Denegri-Knott, 2009; Pikkarainen *et al.*, 2021). Instead, DBE is shown to integrate functional, emotional, and relational dimensions, thereby embedding loyalty as a multidimensional construct across digital banking contexts.

The second hypothesis, predicting that Customer Overall Satisfaction (COS) positively influences loyalty, is strongly confirmed ($\beta = 0.69$). This outcome supports the Service-Profit Chain framework (Heskett *et al.*, 1994) and aligns with the arguments of Patel *et al.* (2024) and Chung and Kwon (2009), who emphasise satisfaction as a driver of advocacy and repeated usage. The finding also partially concurs with Schirmer, Ringle, and Gudergan (2018), who highlighted the moderating influence of attributes such as education and trust, though in this study COS demonstrates robustness across cohorts, indicating these attributes are not essential conditions. Conversely, the results diverge from Keiningham *et al.* (2015) and Willys (2018), who regard satisfaction as unstable in hyper-competitive environments. In digital banking, where trust, reliability, and usability are structurally embedded, COS emerges as a consistently powerful predictor of loyalty. This partially contests Behavioral Decision Theory (Bettman *et al.*, 1998), as the analysis shows that while cognitive biases may trigger switching, satisfaction remains a fundamental anchor of long-term loyalty.

The third hypothesis, which examined the moderating influence of age, is supported by the findings, revealing that age significantly shapes the satisfaction-loyalty linkage ($\beta = -0.53$). Younger cohorts, particularly Gen Z, exhibit heightened responsiveness, converting satisfaction into loyalty with greater immediacy, consistent with the observations of Windasari *et al.* (2022) and Sharma *et al.* (2024). This outcome partially corroborates Mei's (2024) claim that older customers, despite being satisfied, often remain cautious due to concerns over digital literacy and security. At the same time, the strength of the moderating effect complicates Manyanga's (2022) position that age plays only a modest role, as the effect size here indicates a more substantive conditioning factor. Moreover, the findings depart from Oliver's (1997) equilibrium of affective and cognitive processes, suggesting that younger users lean more heavily on affect in transforming satisfaction into loyalty. Collectively, these results reframe age as a critical moderator rather than a peripheral demographic variable, reshaping its theoretical salience in loyalty research.

Collectively, the results lend strong support to theoretical perspectives that emphasise the experiential and relational foundations of loyalty, while partially aligning with views that highlight demographic and personal contingencies, and contradicting arguments that portray satisfaction or digital experience as fragile predictors in highly competitive environments. Theoretically, this study contributes to loyalty research by conceptualising DBE, COS, and age as interdependent mechanisms, demonstrating that loyalty in digital banking is both structurally embedded and shaped by generational distinctions.

5.3. Practical Implications

The empirical results yield several important implications for banking practitioners, policymakers, and digital service designers seeking to cultivate loyalty in an increasingly digitalised financial landscape.

First, the strong effect of Digital Banking Experience (DBE) on loyalty ($\beta = 0.74$) underscores the strategic imperative of user-centred service design. Banks should prioritise intuitive interfaces, robust security protocols, and personalised features to sustain long-term customer commitment. This finding is consistent with Malaquias and Hwang (2019), who identified usability and trust as decisive factors in driving customer engagement. Practical measures include optimising mobile navigation, offering multilingual support, and deploying AI-based personalisation tools to accommodate diverse customer segments. Such enhancements not only strengthen the overall customer journey but also provide resilience against attrition in a competitive marketplace.

Second, the significant contribution of Customer Overall Satisfaction (COS) to loyalty ($\beta = 0.69$) highlights the importance of continuous quality assurance and responsiveness. Satisfaction extends beyond functional efficiency, relying heavily on relational trust and consistent reliability. As Patel *et al.* (2024) demonstrate, satisfaction mediates the relationship between e-service quality and loyalty, signalling the need for banks to integrate structured feedback systems, responsive real-time support, and proactive

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fraud prevention measures. These interventions strengthen customer satisfaction while simultaneously converting it into repeat patronage and advocacy, thereby reinforcing loyalty.

Third, the moderating effect of age ($\beta = -0.53$) suggests that loyalty-building strategies must be tailored to generational preferences. Younger cohorts, such as Gen Z, respond positively to hedonic and innovation-driven features, including gamified platforms and rapid responsiveness (Sharma et al., 2024). In contrast, older customers tend to value transparency, security, and assisted digital literacy (Mei, 2024). Accordingly, banks should adopt a dual strategy: promoting educational initiatives, accessible interface design, and trust-building campaigns for older users, while simultaneously innovating with dynamic, experiential features for younger segments. This approach acknowledges demographic heterogeneity and avoids exclusionary practices that risk weakening loyalty.

Overall, these findings indicate that loyalty is most effectively secured through a multilayered strategy that integrates technological refinement, relational trust, and demographic sensitivity. Banks that neglect these interdependencies risk eroding satisfaction-driven loyalty, particularly in environments where switching costs are low and competition remains intense.

5.4. Limitations

Despite its contributions, this study is subject to several limitations. The cross-sectional design constrains causal inference, as the relationships among DBE, COS, and loyalty may shift over time. The use of self-reported data also raises concerns of social desirability and recall bias, particularly in the measurement of satisfaction and loyalty intentions. Although purposive stratified sampling enhanced demographic representation, the sample disproportionately reflected digitally literate users, potentially underrepresenting marginalized populations with limited access. Moreover, while age was examined as a moderator, other demographic and psychographic factors (e.g., income or cultural orientations toward digitalisation) were excluded, narrowing the scope of moderation analysis.

5.5. Future Research Directions

Future studies should employ longitudinal designs to trace how DBE and COS shape loyalty over time, particularly against the backdrop of rapid technological change. Incorporating mixed-methods approaches would enrich understanding by integrating qualitative accounts of users' lived experiences with quantitative evidence. Cross-national comparisons between developed and emerging markets could further reveal how factors such as financial literacy and regulatory frameworks condition satisfaction-loyalty dynamics. Beyond age, future research should examine moderators including cultural orientation, digital trust, and privacy concerns to enhance theoretical precision. Experimental designs evaluating interventions, such as personalised platforms or digital literacy initiatives, would yield actionable insights for practitioners aiming to strengthen loyalty across heterogeneous customer groups.

5.6. Conclusion

This study contributes to both theoretical and practical understandings of customer loyalty in digital banking by empirically examining the roles of DBE, COS, and age. The results demonstrate that superior digital experiences and high overall satisfaction are critical drivers of loyalty, while age significantly moderates these effects, strengthening them among younger cohorts and tempering them among older users. Theoretically, the findings reaffirm Expectation-Confirmation Theory and extend UTAUT2 by illustrating how demographic heterogeneity reshapes the satisfaction-loyalty nexus. Practically, they highlight the necessity of multilayered strategies that integrate technological sophistication, relational trust, and demographic responsiveness. Moreover, the study challenges perspectives that regard satisfaction or digital experience as unstable predictors, instead showing their durability when embedded in user-centred, trust-based systems. Although constrained by its cross-sectional design and its singular focus on age as a moderator, the research provides a valuable platform for future exploration of contextual and psychological contingencies. Ultimately, the findings underscore that loyalty in digital banking is not purely transactional but relational, shaped by the dynamic interplay of experience, satisfaction, and demographic diversity.

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Appendix: Survey

Table 5: Survey design

Background information					
1	What is your age group?	18-25	26-40	41-55	Above 56
2	What is your gender?	Male	Female	Prefer not to say	
3	How often do you use digital banking services (mobile app or online banking)?	Daily	Weekly	Monthly	Rarely
4	How long have you been using digital banking services?	Less than 1 year	1-3 years	3-5 years	More than 5 years

No.	Variables	Coded Sub-variables	Content
1.	Dependent Variable: Customer Loyalty	CL1	I intend to continue using my bank's digital services regularly despite offers from other banks. (Oliver, 1999)
		CL2	I feel emotionally attached to my bank's digital platform. (Kumar <i>et al.</i> , 2010)
		CL3	I often recommend my bank's digital services to others. (Amin, 2016)
		CL4	I prefer using my bank's digital channels even when alternatives are available. (Lin & Lekhawipat, 2014)
2.	Independent Variable 1: Digital Banking Experience (DBE)	DBE1	The navigation of my bank's digital platform is seamless and easy to use. (Malaquias & Hwang, 2019)
		DBE2	The personalization and speed of my bank's digital services enhance my satisfaction. (Jiradechakorn <i>et al.</i> , 2023)
		DBE3	The security features of my bank's digital banking increase my trust and loyalty. (Redda, 2023)
		DBE4	High-quality digital banking services make me more likely to remain committed to my bank. (Shaikh & Karjaluto, 2015)
3.	Independent Variable 2: Customer Overall Satisfaction (COS)	COS1	I am satisfied with the overall reliability and responsiveness of my bank's digital services. (Raza <i>et al.</i> , 2020)
		COS2	My satisfaction with digital banking motivates me to continue using it in the future. (Patel <i>et al.</i> , 2024)

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4.	Moderator Variable: Age Group	COS3	I am likely to recommend my bank because of my satisfaction with its digital services. (Chung & Kwon, 2009)
		COS4	My satisfaction with digital banking reduces my likelihood of switching to another bank. (Heskett <i>et al.</i> , 1994)
		AGE1	My age influences how I perceive the usefulness of digital banking services. (Venkatesh <i>et al.</i> , 2012)
		AGE2	Compared to other age groups, I may need more simplicity and reliability in digital banking. (Morosan & DeFranco, 2016)
		AGE3	The impact of my satisfaction on loyalty depends partly on my age group. (Baptista & Oliveira, 2015)
		AGE4	My age affects how digital banking experience translates into loyalty to my bank. (Slade <i>et al.</i> , 2015)

Survey link: https://docs.google.com/forms/d/e/1FAIpQLSda_fXXIyYyjhYhwLdw6lZQ3TXMoOMLK-OD04a1jkresgNMeA/viewform?usp=header



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