Research Article

Marketing strategy model influences on profitability improvement in urban commercial banks in China

Zhanpeng Xu[*], Muangmee Chaiyawit, Meekaewkunchorn Nusanee, Sattabut Tatchapong

Faculty of Management Science, Bansomdejchaopraya Rajabhat University, Bangkok, 10600, Thailand

* Corresponding author: Zhanpeng Xu; 65473401004@o365.bsru.ac.th

ABSTRACT

This study examines how psychological mechanisms shape the profitability of Chinese urban commercial banks through marketing strategies. Investigating 465 urban commercial bank professions, the research integrates social psychology theories, particularly Cialdini's six persuasion principles and prospect theory, into a marketing-performance framework. We found that while core products, financial services, security, and information technology remain essential drivers, their effects are best understood through customer loyalty. The findings reveal that persuasion mechanisms—such as reciprocity, authority, and social proof—strengthen customer perceptions of value and trust, while prospect theory explains how risk sensitivity and loss aversion influence loyalty. Customer loyalty emerges as the critical mediator, translating these psychological drivers into measurable financial gains. By highlighting the role of persuasion and decision-making under risk, this research enriches marketing theory with a behavioral psychological lens. It provides urban commercial banks with actionable insights: strategies that appeal to both functional needs and psychological motivations can more effectively enhance loyalty and profitability. Without extending the empirical model, this study further offers a contextual exposition of how the social environment, cultural orientations, and macroeconomic conditions shape customers' interpretations of safety, service quality, and innovation cues, thereby influencing perceived value and loyalty.

Keywords: Urban commercial banks; Marketing strategy model; Profitability; Customer loyalty; Psychological Mechanism

1. Introduction

China's urban commercial banks trace their origins back to the mid-1990s, evolving from urban credit cooperatives[1]. Over the years, they have grown to play an increasingly crucial role within the financial system. This transformation is not only a significant milestone in the development of financial institutions but also a reflection of the continuous evolution and adaptation of the financial sector to meet the diverse needs of the economy[2]. Since 2000, the policy environment for urban commercial banks has undergone a series of crucial stages. Initially, the regulatory framework was established to clearly define the operational boundaries and standards for these banks, laying a solid foundation for their stable growth[3]. As the financial market evolved, the policy entered an adjustment phase. During this period, regulatory policies were refined

and optimized to address emerging issues and challenges, such as strengthening capital adequacy requirements and risk management regulations. Currently, in the stage of policy deepening, more detailed and targeted regulations are being implemented[4,5]. For example, greater emphasis is placed on corporate governance and internal control to ensure the long-term stability of these banks. These policy changes have been instrumental in promoting the sound development of urban commercial banks, providing them with a more favorable and regulated environment to operate in.

In the context of the market economy, urban commercial banks are intricately intertwined with the overall economic landscape. They are in a highly competitive environment, facing intense rivalry from large-scale banks, joint-stock banks, and foreign banks[6]. Comparatively, they possess distinct regional advantages. With a deep understanding of the local economic characteristics and customer needs in their respective regions, they can tailor their financial products and services effectively. Moreover, the advent of financial technology has provided with new opportunities[6,7]. By leveraging advanced technologies such as big data, artificial intelligence, and blockchain, urban commercial banks can enhance their operational efficiency, improve risk management capabilities, and offer innovative and convenient financial services[7]. This enables them to play a unique and important role in supporting the real economy and promoting the development of inclusive finance. In this sense, urban commercial banks reach out to small and medium-sized enterprises and underserved communities that larger financial institutions may have overlooked.

Despite these achievements, the urban commercial banking industry confronts several severe challenges[8]. In terms of operating scale, compared with their larger counterparts, urban commercial banks are with limited asset sizes and business coverage[8]. This restricts their market influence and competitiveness, making it more difficult for them to achieve economies of scale and engage in large-scale financial activities. Profitability is another area of concern[9]. Due to factors such as limited operating scale and the narrowing net interest margin resulting from interest rate liberalization and market competition, profit-making ability is relatively weak[9].

Additionally, risk management capabilities remain insufficient[10]. The complex and dynamic nature of the financial market requires sophisticated risk identification, assessment, monitoring, and disposal mechanisms, which urban commercial banks are still in the process of strengthening[10]. In an era of rapid technological innovation and changing customer demands, urban commercial banks also face difficulties in innovative development and differential competition[11]. They struggle to keep up with the pace of innovation in product development and service models, resulting in a lack of competitive edge in the market.

Till now, urban commercial banks (UCBs) in China have achieved notable progress in financial product marketing[12]. Their product portfolios are increasingly diverse, covering savings, wealth management, credit/loan management, and insurance products designed to meet a wide range of customer needs[13]. They employ multi-channel marketing to promote their business, combining traditional branch-based promotion with modern digital channels, including internet and mobile banking[13]. In addition, many UCBs pursue cross-industry cooperation with other financial and non-financial institutions and adopt data-driven marketing to improve efficiency and personalization[14]. Despite these achievements, significant gaps remain amid intensifying market competition. Product innovation often lags behind market trends, limiting banks' responsiveness to evolving customer preferences[11,15]. Likewise, marketing strategies are not always sufficiently segmented or optimized, which weakens their effectiveness in targeting specific demographics and high-value customers[11,13].

In the field of financial marketing, UCBs have been a focus. Scholars have conducted extensive and in-depth explorations from different perspectives, providing rich research achievements for the theoretical

development and practical application of this field. Regarding financial products, the development of financial technology has made digital currency an important area of research. Infante, Kim et al.[16] explored the potential impact of retail central bank digital currency on financial products, providing a forward-looking perspective for industry innovation and transformation. Regarding sustainable finance, Zhao, Tang and Liu[17] discussed the significance of carbon tax legislation in influencing investment decisions regarding green financial products. Related to behavioral finance, Liu, Zhang et al.[18] expanded the understanding of investors' behavior by using the perceived temperature index. Harry Markowitz pioneered the Capital Asset Pricing Model (CAPM) in his work on Modern Portfolio Theory, and it was later mathematically developed by William Sharpe and Merton Miller [19]. It plays a crucial role in investment decision-making and risk management in financial markets. Since then, the concept of financial services has evolved from simple, traditional businesses to a modern, complex business system[20].

Combined with Cialdini's six principles and prospect theory, this research project constructs a psychological framework to examine causal-effect relationships among variables. We examine urban commercial banks' characteristics, including core product innovation, service quality, product security, information technology, and their effects on profitability. Therefore, we propose four research questions. RQ 1: Does core product innovation have a significant positive effect on the profitability of urban commercial banks? RQ2: Does the quality of financial services provided by urban commercial banks have a significant positive impact on their profitability? RQ3: whether financial security has a significantly positive influence on the profitability of urban commercial banks. RQ4: Does the application of information technology have a significant positive effect on the profitability of urban commercial banks? Then, we examine the mediating effects of customer loyalty on the relationship between these independent variables and a dependent variable. RQ5: Does customer loyalty mediate the relationship between core product innovation and profitability in urban commercial banks? RQ6: Does customer loyalty mediate the effect of service quality on profitability enhancement? RQ7: Does customer loyalty mediate the relationship between financial security and profitability improvement? RQ8: Does customer loyalty mediate the effect of information technology application on profitability improvement?

From a theoretical perspective, this study offers valuable contributions. It provides an analysis of the marketing strategies and profitability of urban commercial banks, enriching and expanding existing marketing theory[9]. Second, by examining the unique characteristics and challenges of the banks studied, the research introduces psychological perspectives and insights to the field of bank marketing. Findings can stimulate further theoretical exploration and support the development of more refined marketing models tailored to the urban commercial banking industry[11,13]. Practically, the findings of this research provide valuable guidance for urban commercial banks. The study can assist banks in formulating more precise and effective marketing strategies and identifying the key factors that influence their profitability. By doing so, banks can rationally allocate resources, concentrating on areas with the greatest growth potential. This, in turn, can enhance profitability and overall financial performance. Moreover, the research can help banks improve service quality and innovation capabilities. As an empirical study, a deeper understanding of customer needs and market trends enables the development of customer-centered products and services, supports continuous innovation, and helps banks maintain a competitive edge. Given that customers of China's urban commercial banks are embedded in specific community networks and cultural contexts, and that their risk preferences co-move with macroeconomic cycles, we provide a text-based discussion of the contextual roles of the social environment, cultural background, and macroeconomic conditions in structuring the pathway from psychological mechanisms to perceptions and loyalty. This addition enhances the study's explanatory power and transferability across regions and time.

2. Definition, theoretical foundation, and hypothesis development

2.1. Definition

2.1.1. Core product innovation

Core product innovation refers to the development or substantial improvement of an organization's principal goods or services—the offerings that form the essence of its value proposition and competitive identity. It encompasses the generation of new concepts, the integration of emerging technologies, and the redesign of essential features or functionalities to meet evolving customer needs and market conditions[21,22]. Distinct from peripheral or incremental changes such as packaging or marketing adjustments, core product innovation targets the fundamental attributes that determine product performance, customer benefit, and strategic positioning. In financial services, this process may involve introducing novel investment vehicles, creating advanced digital banking platforms, embedding cutting-edge risk-management tools, or reengineering payment and credit systems. By continually renewing the central product portfolio, firms enhance customer value, sustain loyalty, and maintain long-term profitability in rapidly changing regulatory and technological environments.

2.1.2. Service quality

Service quality in commercial banking is the customer's overall evaluation of how well a bank's services meet or exceed expectations. It focuses on the core service process (such as speediness and reliability of transactions, accuracy of financial records, and responsiveness to inquiries) and the service outcome (such as successful loan approvals or effective investment advice)[23].

2.1.3. Financial security

Financial security refers to a stable, resilient condition in which individuals, firms, or financial institutions can sustain their financial resources, manage risks, and fulfill obligations under uncertainty. It implies the capacity to absorb adverse shocks—such as market volatility, credit losses, or operational disruptions—without compromising solvency or stakeholder trust[24]. In the banking industry, financial security encompasses mechanisms like capital adequacy, liquidity buffers, asset quality controls, strong risk management, and cybersecurity protections[25].

2.1.4. Information technology

Information technology refers to the systems, hardware, software, and networks used to collect, store, process, and distribute data and information for organizational decision-making and service delivery[26]. In commercial banking, IT encompasses core banking platforms, digital channels (e.g., mobile and internet banking), payment systems, cybersecurity infrastructure, and data analytics tools that support daily operations and strategic growth.

2.1.5. Customer loyalty

Customer loyalty manifests as ongoing account retention, increased product uptake (e.g., loans, credit cards, investment services), and advocacy to others[27]. High levels of loyalty are strongly linked to greater profitability, because loyal customers typically maintain longer relationships, exhibit lower price sensitivity, and contribute to stable revenue growth[27].

2.1.6. Profitability improvement

Profitability improvement refers to the sustained enhancement of a bank's financial performance through higher revenues, lower costs, and more efficient use of capital and risk. It captures the bank's ability

to increase net income, improve return on assets (ROA) and return on equity (ROE), and strengthen margins by optimizing interest income, fee-based services, cost control, and asset quality[28,29].

2.2. Theoretical foundation

2.2.1. Theory of influence and persuasion

The psychology of persuasion presents a widely accepted theoretical model that explains how universal psychological triggers shape human decision-making. Cialdini[30] identifies six key principles—reciprocity, commitment and consistency, social proof, authority, liking, and scarcity—that act as heuristics when people face complex or high-stakes choices. Drawing from social psychology and behavioral economics, the Theory suggests that individuals tend to reciprocate benefits, remain consistent with previous commitments, follow the behavior of others, defer to credible authorities, favor those they like, and value opportunities perceived as scarce[30]. Because financial decisions often involve uncertainty and perceived risk, these mental shortcuts are particularly powerful in shaping trust, preference, and action in financial services marketing[31].

2.2.2. Prospect theory

Prospect Theory, proposed by Tversky and Kahneman, explains how individuals evaluate risk when making financial choices, offering a behavioral alternative to the expected-utility model[32]. Rather than assessing overall wealth, people judge outcomes in relation to a reference point, such as an anticipated return or their current savings level. A central finding of the Theory is loss aversion: the psychological impact of a loss outweighs the satisfaction derived from a gain of the same size. Prospect Theory also shows that decision makers distort probabilities, typically overweighting small chances and underweighting large ones[33]. These insights are directly relevant to financial marketing. Customers often respond more strongly to messages that emphasize potential losses from inaction—for instance, the erosion of savings through inflation—than to equivalent promises of gain. Financial products that highlight security and downside protection align with the desire to avoid loss, while limited-time or rare investment opportunities exploit the tendency to overweight small probabilities. Moreover, careful framing of product information—for example, presenting a retirement plan as "protecting future income" rather than "maximizing returns"—can significantly influence consumer decisions[33]. By embedding Prospect Theory into campaign design and product communication, financial institutions can craft strategies that reflect actual decision processes, ultimately strengthening trust, increasing customer loyalty, and enhancing profitability.

2.3. Theoretical analysis and research hypotheses development

2.3.1. core product innovation and profitability

Product innovation plays a crucial role in enhancing the profitability of urban commercial banks[34,35]. In a highly competitive financial market, innovative financial products enable banks to meet customers' diverse needs with greater precision. By applying big data to analyze consumption habits, risk preferences, and related factors, banks can design personalized products that improve customer satisfaction and loyalty, thereby stabilizing their customer base and expanding revenue streams. Product innovation also helps diversify income sources[36]. By enriching the range of intermediate business products and strengthening asset management capabilities, banks can increase non-interest income, reduce dependence on traditional deposit and loan businesses, and establish a more balanced revenue structure[37]. At the same time, the innovation process drives improvements in risk management systems, which promotes the internal control of banks[35,38]. Stronger risk controls lower the non-performing loan ratio, enhance asset quality, and support the sustainable development of banking operations.

Furthermore, innovative products boost a bank's brand recognition and market influence, attracting additional customers and creating new business opportunities[35]. Combined with Cialdini's persuasion theory, core product innovation strengthens product scarcity, which further consolidates the commitment and consistency of customers' choice. Therefore, hypothesis 1 is proposed: core product innovation has a significant positive effect on the profitability of urban commercial banks..

2.3.2. Service quality and profitability

Service quality is a critical determinant of profitability in urban commercial banks. Empirical evidence from meta-analytic reviews shows that improvements in service quality positively and significantly affect banks' financial performance—both directly and through mediating factors such as customer satisfaction and loyalty[39]. By optimizing internal service factors—such as strengthening employees' service awareness, enhancing training programs, and streamlining service processes—banks can deliver more professional, efficient, and convenient financial services. This elevates customers' trust and perceived value, helping banks to maintain a stable client base and stimulate business growth. In fact, research has established that service quality improvements lead to higher profitability by reducing customer attrition and increasing cross-selling opportunities[35]. Innovating service delivery models further amplifies these effects. Integrating digital (online) and physical (offline) channels, along with using technologies such as big data analytics and artificial intelligence, enables banks to match services more precisely to customer needs[38]. Such technology-enabled service innovations reduce wait times, customize customer interaction, and capture additional revenue opportunities[40]. Enhanced service efficiency also contributes to profitability by lowering operating costs while improving customer perceptions of responsiveness and reliability. This dual gain strengthens the bank's competitive position. Over time, continuous service innovation helps institutions stand out in a crowded market, reinforcing brand equity and core competitiveness. Several studies validate that banks investing in service innovation outperform their peers in profitability metrics[41]. Cialdini's persuasion theory posits that customers emphasize social reciprocity, while good service quality further strengthens their confidence in the bank. Meanwhile, prospect theory contends that customers weigh potential losses (poor service, errors) more heavily than equivalent gains. Thus, consistently high service quality prevents perceived "losses," securing customer retention and profitability.

Hypothesis 2: The financial service quality provided by urban commercial banks has a significant positive impact on their profitability.

2.3.3. Security and profitability

Financial security is a fundamental driver of profitability for urban commercial banks. In an increasingly complex and volatile financial market, customers place a high premium on the safety of their deposits. Banks that demonstrate strong security and reliability earn customer trust, attract larger and more stable deposits, and thus secure a steady funding base for lending and investment activities [42,43]. Robust risk management systems further strengthen profitability. Sound credit approval processes, strict risk‐control mechanisms, and comprehensive internal audits help lower the non-performing loan ratio, improve asset quality, and mitigate losses arising from risk events[44-46]. These practices not only safeguard day-to-day operations but also lay a solid foundation for sustainable earnings growth. Maintaining high security standards also creates opportunities for innovation and market expansion. Under conditions of well-controlled risk, banks can confidently develop new products and services, improve service efficiency, and enhance customer experience, thereby strengthening competitiveness and expanding revenue sources[47]. Authority and social proof are important aspects of Cialdini's marketing principle. In this context, product security provides strong proof of social trust and customer confidence. Therefore,

Accordingly, Hypothesis 3: Financial security exerts a significant positive influence on profitability.

2.3.4. Information technology and profitability

The application of information technology (IT) plays a vital role in enhancing the profitability of urban commercial banks. By adopting advanced core banking systems, banks can automate and standardize operations, reduce manual errors, and improve data-driven decision-making. These improvements enable faster responses to customer needs, strengthen service efficiency, and increase customer satisfaction, thereby boosting profitability[48,49]. IT adoption also helps lower operating costs. Expanding online and mobile service channels reduces the need for physical outlets and optimizes resource allocation.

Meanwhile, big data analytics and artificial intelligence enable banks to deliver personalized services, conduct precision marketing, and increase customer conversion and loyalty rates[50,51]. These capabilities broaden the customer base and open new revenue streams.

Furthermore, information technology enhances risk management. Through real-time monitoring and early-warning systems, banks can improve the accuracy of risk assessments, reduce non-performing loan ratios, and strengthen asset quality—providing a solid foundation for sustainable profitability[52]. Cialdini argues that customers expect authority, and applying advanced information technology can secure their confidence in a bank's products and further promote the bank's business. So, hypothesis 4 states that information technology has a significant positive effect on the profitability of urban commercial banks.

2.3.5. Customer loyalty mediating effect

Product and fintech innovation positively influence customer loyalty, often through intermediaries such as trust or satisfaction. For example, in the banking sector, fintech innovation and operational efficiency were found to enhance customer loyalty through trust[53]. Feedback from loyal customers offers insight into their evolving needs, prompting banks to refine or launch new products that increase satisfaction and deepen loyalty. Loyal customers' repeat usage and positive word-of-mouth generate stable revenues and attract new clients, while their brand endorsement lowers promotion costs for new products. Hypothesis 5: Customer loyalty mediates the relationship between core product innovation and profitability in urban commercial banks. In other words, core product innovation can positively contribute to customer retention, and the greater the retention, the greater the profitability banks will generate.

Empirical evidence supports that service quality influences loyalty via intermediary constructs such as trust and commitment. In retail banking, trust and commitment have been shown to mediate between service quality and customer loyalty[54]. Moreover, studies on e-banking find that service quality impacts retention or loyalty through satisfaction as a mediator[55]. By delivering high-quality, consistent services, banks enhance satisfaction, which fosters loyalty. Loyal customers repeatedly use the bank's offerings, reduce customer acquisition costs, and elevate brand value, thereby supporting profitability growth. Hypothesis 6: Customer loyalty mediates the effect of service quality on profitability enhancement.

While fewer studies examine security directly as an antecedent of loyalty mediation, the role of trust in security and perceived safety is well documented in digital banking and mobile banking contexts. Trust in bank security has been shown to mediate the relationship between perceived security and loyalty[56]. A bank's strong security posture builds customer trust, fosters long-term relationships, and reduces churn. Loyal customers engage in stable transactional behavior, lower acquisition costs, and promote the bank via word-of-mouth, all contributing to improved profitability. Hypothesis 7: Customer loyalty mediates the relationship between financial security and profitability improvement.

Recent research indicates that technological innovation in banking (e.g., fintech) can enhance loyalty via trust and satisfaction pathways. For instance, the positive effect of fintech innovation on customer loyalty is mediated by customer trust[53]. In mobile banking, satisfaction is a key driver of loyalty, especially under the influence of technology readiness[57]. By implementing advanced IT systems, banks can better understand customer needs, provide personalized services, and improve user experience, thereby raising satisfaction and reinforcing loyalty. Additionally, loyal customers are more likely to adopt new products, reduce marketing costs, and propagate brand value. Hypothesis 8: Customer loyalty mediates the effect of information technology application on profitability improvement. Figure 1 shows eight hypotheses in the conceptual model.
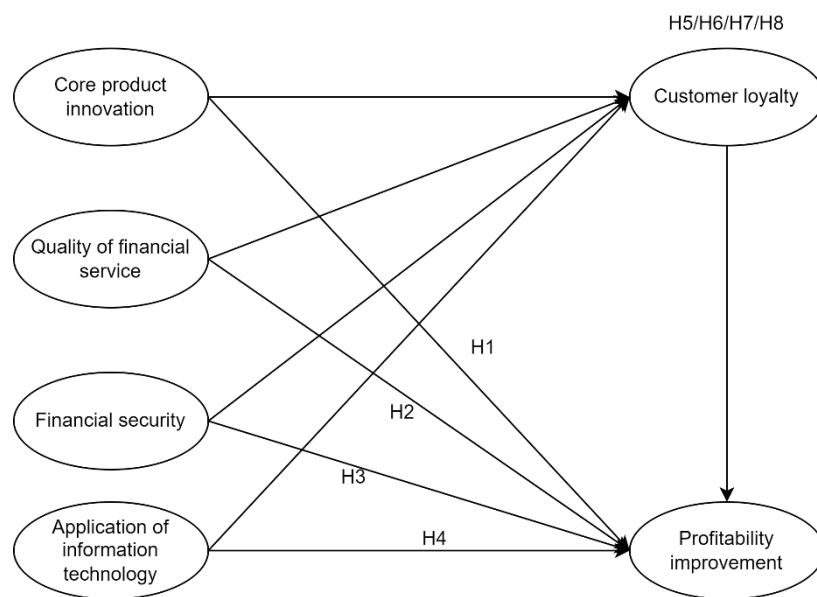

Figure 1. Hypothetical model of the project

2.4. Social environment, cultural background, and macroeconomic conditions: implications for consumer perceptions and loyalty

Marketing effectiveness in urban commercial banking is not determined solely by individual-level psychological mechanisms; the surrounding socio-cultural context and the prevailing macroeconomic environment also condition it. **Social environment.** Community trust, peer networks, and word-of-mouth diffusion reshape how customers interpret information and assess risk. Where financial experiences are frequently exchanged and trustworthy recommendations are prevalent, signals of service quality and regulatory transparency more readily translate into a sense of "safety and trustworthiness," lowering perceived search costs and uncertainty and, in turn, raising perceived value, satisfaction, and loyalty. Conversely, in settings with weaker social trust or faster spread of negative events, customers become more sensitive to fees, terms, and latent risks; banks should respond with more frequent two-way communication, verifiable service guarantees, and clearer risk disclosures to close the trust gap [58,59]. **Cultural background.** Cultural orientations shape preferences for persuasion cues and risk narratives. In more collectivist and high power-distance contexts, authority endorsements, reciprocity, and social proof more easily form a "credible and peer-validated" heuristic, strengthening relational stickiness. Where uncertainty avoidance is higher, customers prioritize principal safety, return stability, and process predictability, which results in lower acceptance of complex innovations. Narratives emphasizing "loss minimization and controllability" help reduce concern. Strong long-term orientation favors themes like pensions and education funds, facilitating

patient capital and durable relationships [60,61]. **Macroeconomic conditions.** Macro fluctuations systematically alter loss aversion and risk tolerance. During downturns or when job security weakens, signals of safety, liquidity, and fee transparency convert more strongly into trust and loyalty, and customers prefer "capital-protected and volatility-resistant" offerings. In expansions with improving income expectations, customers are more responsive to digital experience, differentiated functionalities, and innovative return features; product iteration and personalization are more readily adopted [62,63].

Overall, these three contextual layers act as amplifiers or dampeners in the translation from psychological mechanisms to behavior and performance. When the context is aligned with a bank's communication tone, product attributes, and risk framing, the "perceived value → trust → satisfaction" chain becomes smoother. This alignment is reflected in more stable deposits, higher cross-sell rates, and stronger fee-based income, ultimately improving net interest margins and returns on assets. Misalignment, by contrast, reduces conversion efficiency and can erode loyalty.

3. Research design

3.1. Scale selection and development

This study selects variables to evaluate professionals' mental responses towards firms' profitability improvement in urban commercial banks. Firstly, we referred to the scale from product innovations, such as efficiency and efficacy[58], and, in combination with commercial banking, we consulted professionals to make recommendations for the original scale. Regarding the quality of financial services, we introduced scales from previous constructs [64,65]. Regarding the financial security scale, we considered the perceived financial security developed by Munyon, Carnes et al.[66] In terms of the application of technology information, we adopted the scale from Moore and Benbasat[67] and developed it based on the commercial banking industry. In the banking industry, customer loyalty is a key variable that introduces dimensions for measuring a bank[68]. Finally, we introduce a profitability variable to assess commercial bank profitability[69]. Combined with the existing scale, we consulted experts in the urban commercial banking industry and adjusted our scale accordingly. Table 1 shows the experts we consulted on scale validation.

Table 1. Professionals for scale development and content validation

Experts	Qualifications	Number (people)
Experts with knowledge of product marketing and the profitability of urban commercial banks	Manager of Product Development Department, Beibu Gulf Urban Commercial Bank	1
Academics with knowledge and ability in urban commercial banking	Professor of Corporate Finance, Accounting Department, School of Management, Guangxi University for Nationalities	1
A typical representative of employees with good working experience in urban commercial banks	Front Desk Manager of Business Outlets, Liuzhou Urban Commercial Bank	1
Total		3

3.2. Questionnaire design

The questionnaire is structured around the research variables, which comprise several dimensions. For instance, core product innovation includes aspects such as core product features, product overview, and derivative products. The 5-point Likert scale is used for measurement, ranging from "strongly agree" to "strongly disagree", which is convenient for respondents to express their opinions and conducive to quantitative analysis (See Table 2 for details).

Table 2. Questionnaire structure

Variable	Dimension	Question Item	Data	1-5 Point
Core products innovation	Core Products Aspect	1-4	Likert Scale	Scoring 1-5
	Product Overview Aspect	5-8	Likert Scale	Scoring 1-5
	Derivative Products Aspect	9-12	Likert Scale	Scoring 1-5
Services quality	Experience in Financial Services	13-16	Likert Scale	Scoring 1-5
	Convenience in Financial Services	17-20	Likert Scale	Scoring 1-5
	Professionalism in Financial Services	21-24	Likert Scale	Scoring 1-5
Security	Credit Asset Quality	25-28	Likert Scale	Scoring 1-5
	Off-Balance Sheet Asset Quality	29-32	Likert Scale	Scoring 1-5
	Deposit Growth Rate	33-36	Likert Scale	Scoring 1-5
Information technology	Product Digitization	37-40	Likert Scale	Scoring 1-5
	Service Intelligence	41-44	Likert Scale	Scoring 1-5
	Omni-channel Integration	45-48	Likert Scale	Scoring 1-5
Customer loyalty	Satisfaction	49-52	Likert Scale	Scoring 1-5
	Purchase Intention	53-56	Likert Scale	Scoring 1-5
	Willingness to Recommend to Others	57-60	Likert Scale	Scoring 1-5
Profitability	ROE (Return on Equity)	61-64	Likert Scale	Scoring 1-5
	ROA (Return on Assets)	65-68	Likert Scale	Scoring 1-5
	Net Profit	69-72	Likert Scale	Scoring 1-5
	Cost-to-Income Ratio	73-76	Likert Scale	Scoring 1-5

3.3. Sampling strategy and data sources

To understand relationships among variables, we determine to study employees from commercial banking industry because they are professionals and familiar with customers and business needs. In this study, bank employees are selected as respondents because they possess professional knowledge and direct experience related to the bank's financial operations. As internal stakeholders, they have a clearer understanding of cost structures, risk management, and income generation processes that determine profitability[70]. Prior research has recognized that employee-based assessments can provide reliable insights into organizational performance when respondents have domain-specific expertise [70]. As a matter of fact, professionals of banks are familiar with their business and know what are key contributors of UCBs profitability.

Data collection was carried out through two methods: in-depth interviews and questionnaires. For in-depth interviews, three experts were selected, including a product development manager, a university professor, and a bank branch front-desk manager. The interviews focused on the validation of the scale. Questionnaires were distributed to bank employees directly. The researchers collected questionnaires through on-site distribution. This research project aims to investigate X commercial bank which is sorely subsidied by a western provincial government. X commercial bank has over 200 branches in China. The research population is comprise of 125 urban commercial bank branches and over 100,000 professionals. The samples are sourced from employees of these banks. The respondents include frontline staff, middle and senior level managers.

We distributed to respondents from 125 branchs of X commercial bank. A sampling method combining stratified random sampling and sampling in specific market segments was adopted to ensure the representativeness of the samples [71]. From January 2025 to April 2025, a total of 490 samples were collected.

After collection, the validation of the questionnaires was checked. 467 responses satisfied the requirements of the research. These respondents are from different positions in urban commercial banks. In terms of gender, men account for 45.15% and women account for 54.85%. In terms of age, people aged 18-35 are the majority, accounting for 65.3%. In terms of educational attainment, undergraduates, postgraduates, and doctoral students account for 46.09%, 32.11%, and 21.80% respectively. Among job positions, account managers account for 42.18%, financial managers account for 33.03%, and lobby managers account for 24.79%. More than 80% of the people have 1 - 5 years of work experience (See Table 3).

Table 3. Demographic statistics of samples

Profile	Details	Proportion
Gender	Male	45.15%
	Female	54.85%
	Total	100%
Age	18 - 25 years old	35.12%
	25 - 35 years old	30.18%
	35 - 45 years old	15.71%
	45 - 55 years old	13.09%
	55 years old and above	5.90%
	Total	100%
Education	Bachelor's degree	46.09%
	Master's degree	32.11%
	Doctoral degree	21.80%
	Total	100%
Job Position	Customer Manager	42.18%
	Financial Manager	33.03%
	Lobby Manager	24.79%
	Total	100%
Working Time	1 - 3 years	43.67%
	3 - 5 years	38.44%
	5 - 7 years	10.12%
	Over 7 years	7.77%
	Total	100%

4. Statistical descriptions and hypothesis tests

4.1. Statistical descriptions of responses

Table 4 shows the statistical description. Across all constructs, the mean scores cluster between 3.6 and 3.9 on a 5-point scale, indicating moderately favorable perceptions of product innovation, service quality, financial security, IT adoption, customer loyalty, and profitability. Negative skewness across variables

suggests that most respondents rated these factors on the higher end of the scale. Kurtosis values indicate distributions are generally normal, with some dimensions (e.g., convenience and off-balance sheet assets) showing a higher peak. This descriptive analysis confirms that respondents recognize the importance of innovation, service, security, IT, and loyalty in enhancing profitability, with service quality and financial security slightly outperforming IT-related aspects..

Table 4. Response statistic description (n =467)

Latent variable	Measure variable	Mean	MAX	MIN	SK	KU
Core product innovation	Core Products Aspect	3.947	5.000	1.000	-1.316	1.988
	Product Overview Aspect	3.709	5.000	1.000	-0.548	-0.605
	Derivative Products Aspect	3.704	5.000	1.000	-0.761	-0.301
Quality of services	Experience in Financial Services	3.764	5.000	1.000	-0.627	-0.544
	Convenience in Financial Services	3.838	5.000	1.000	-0.956	1.697
	Professionalism in Financial Services	3.804	5.000	1.000	-1.171	0.988
Financial security	Credit Asset Quality	3.761	5.000	1.000	-0.749	-0.442
	Off-Balance Sheet Asset Quality	3.911	5.000	1.000	-1.250	1.995
	Deposit Growth Rate	3.800	5.000	1.000	-1.262	1.330
Information Technology	Product Digitization	3.641	5.000	1.000	-0.536	-0.430
	Service Intelligence	3.739	5.000	1.000	-0.846	0.084
	Omni-channel Integration	3.648	5.000	1.000	-0.504	-0.291
Customer loyalty	Satisfaction	3.804	5.000	1.000	-1.117	1.238
	Purchase Intention	3.656	5.000	1.000	-1.113	0.717
	Willingness to Recommend to Others	3.791	5.000	1.000	-0.901	0.389
Profitability	ROE (Return on Equity)	3.592	5.000	1.000	-0.430	-0.920
	ROA (Return on Assets)	3.759	5.000	1.000	-1.025	1.585
	Net Profit	3.666	5.000	1.000	-1.004	0.365
	Cost-to-Income Ratio	3.803	5.000	1.000	-0.754	0.324

4.2. Confirmatory test

We conducted confirmatory tests on the variables. Table 5 presents the confirmatory factor analysis for the core product innovation. The model shows a good fit to the data (χ^2 = 59.064, df = 51, χ^2/df = 1.158, p = 0.205, CFI = 0.997, TLI = 0.997, SRMR = 0.024, RMSEA = 0.018), all well within accepted thresholds. At the second-order level, the construct demonstrates strong internal consistency and convergent validity, with a composite reliability (CR) of 0.828 and an average variance extracted (AVE) of 0.616. Each first-order dimension also exhibits robust measurement properties. In terms of core product innovation, CPA reports CR = 0.873 and AVE = 0.633; POA reports CR = 0.870 and AVE = 0.626; and DPA reports CR = 0.867 and AVE = 0.621. Indicator loadings across these factors range from 0.705 to 0.842, with R^2 values between 0.497 and 0.709, confirming that each item explains a substantial proportion of its factor's variance. Collectively, these results verify that the dimensions of core products are well specified, internally consistent, and exhibit strong convergent validity within the structural equation model.

Table 5. Confirmatory factor analysis for core product innovation

Variable	Dimension	Question Items (QI)	Loading Coefficient	R²	CR	AVE
CPI	CPA	QI1-QI4	0.787	0.619	0.828	0.616
	POA	QI5-QI8	0.793	0.629		
	DPA	QI9-QI12	0.774	0.599		
	Core Products Aspect	QI1: Urban commercial banks offer a wide range of core products, effectively covering customers' daily financial needs	0.842	0.709	0.873	0.633
		QI2: Core products enjoy high recognition in the market, with generally positive customer evaluations.	0.795	0.632		
		QI3: The bank continuously upgrades and optimizes its core products to enhance competitiveness and improve customer satisfaction.	0.832	0.692		
		QI4: The quality and efficiency of core products are highly praised by customers, contributing to increased customer loyalty.	0.705	0.497		
	Product Overview Aspect	QI5: City Commercial Bank's product overview system provides comprehensive information, facilitating customers' quick understanding of various products.	0.785	0.616	0.87	0.626
		QI6: The product overview interface is designed to be intuitive and easy to understand, delivering a good user experience.	0.822	0.676		
		QI7: The bank regularly updates the product overview content to ensure the timeliness and accuracy of information.	0.786	0.618		
		QI8: The product overview system offers personalized recommendations based on customer preferences, enhancing customer engagement.	0.772	0.596		
	Derivative Products Aspect	QI9: Urban commercial banks offer a diverse range of derivative products to meet the varied needs of customers.	0.765	0.585	0.867	0.621
		QI10: The design of derivative products aligns with market trends, showcasing innovation and forward-thinking.	0.804	0.646		
		QI11: The bank implements strict risk control and management measures for derivative products, ensuring the safety of customer assets.	0.765	0.585		
		QI12: Customers generally perceive the bank's derivative products as having high investment value and return potential.	0.816	0.666		

Chi-Square= 59.064, df=51, Chi-Square/df=1.158, p= 0.205, CFI=0.997, TLI=0.997, SRMR= 0.024, RMSEA=0.018

Table 6 presents the confirmatory factor analysis for the commercial bank financial services construct. The model demonstrates an excellent overall fit (χ^2 = 66.156, df = 51, χ^2/df = 1.297, p = 0.075, CFI = 0.995, TLI = 0.994, SRMR = 0.024, RMSEA = 0.025), all of which meet or exceed recommended thresholds. At the second-order level, the construct shows strong internal consistency and convergent validity, with a composite reliability (CR) of 0.845 and an average variance extracted (AVE) of 0.645. Each first-order dimension also performs well. Experience in Financial Services (EFS) reports CR = 0.858 and AVE = 0.602; Convenience in Financial Services (CFS) reports CR = 0.853 and AVE = 0.593; and Professionalism in Financial Services (PFS) reports CR = 0.886 and AVE = 0.660. Item loadings across these factors range from 0.670 to 0.863, with R^2 values between 0.449 and 0.745, confirming that each indicator explains a substantial proportion of the variance in its respective factor. Collectively, these findings confirm that the construct of commercial bank financial services is a well-specified, reliable, and valid latent variable within the structural equation model.

Table 6. Confirmatory factor analysis for service quality

Variable	Dimension	Question Items (QI)	Loading Coefficient	R²	CR	AVE
SQ	EFS	QI13-QI16	0.815	0.664	0.845	0.645
	CFS	QI17-QI20	0.766	0.587		
	PFS	QI21-QI24	0.827	0.684		
	Experience in Financial Services	QI13: Customers widely believe that this city's commercial bank has a long and trustworthy service history.	0.711	0.506	0.858	0.602
		QI14: Bank service personnel demonstrate professional knowledge and experience, satisfying customers.	0.739	0.546		
		QI15: The bank provides personalized service experiences tailored to customers' historical transactions and preferences.	0.81	0.656		
		QI16: Long-term customers are satisfied with the bank's service experience and tend to continue choosing it.	0.838	0.702		
	Convenience in Financial Services	QI17: This city commercial bank offers convenient online (e.g., internet banking, mobile banking) and offline service channels.	0.863	0.745	0.853	0.593
		QI18: The bank's service outlets are widely distributed, allowing customers to handle business nearby.	0.807	0.651		
		QI19: The bank's self-service facilities (e.g., ATMs, self-service terminals) are easy to operate, reducing customer waiting time.	0.727	0.529		
		QI20: When customers have inquiries or complaints, the bank responds promptly and resolves issues.	0.67	0.449		
	Professionalism in Financial Services	QI21: The bank's financial products are innovative and meet market demands.	0.862	0.743	0.886	0.66
		QI22: The bank demonstrates high professionalism in risk management and control, safeguarding customer asset security.	0.814	0.663		
		QI23: The bank's professional consulting services assist customers in making informed financial decisions.	0.771	0.594		
		QI24: The bank regularly provides financial education and training to enhance customers' financial literacy.	0.799	0.638		

Chi-Square=66.156, df=51, Chi-Square/df=1.297, P=0.075, CFI=0.995, TLI=0.994, SRMR= 0.024, RMSEA=0.025

Table 7 presents the confirmatory factor analysis for the construct of security of city commercial banks. The model demonstrates an excellent fit to the data (χ^2 = 61.298, df = 51, χ^2/df = 1.202, p = 0.153, CFI = 0.997, TLI = 0.996, SRMR = 0.024, RMSEA = 0.021), all well within accepted thresholds. At the second-order level, the construct shows strong internal consistency and convergent validity, with a composite reliability (CR) of 0.826 and an average variance extracted (AVE) of 0.613. Each first-order dimension is also robust. Credit Asset Quality (CAQ) reports CR = 0.862 and AVE = 0.610; Off-Balance Sheet Asset Quality (OBAQ) reports CR = 0.872 and AVE = 0.630; and Deposit Growth Rate (DGR) reports CR = 0.874 and AVE = 0.636. Indicator loadings for these factors range from 0.696 to 0.862, with R² values between 0.484 and 0.743, confirming that each item explains a substantial proportion of the variance in its respective factor. Overall, these findings verify that the security of city commercial banks is a well-specified and reliable latent construct with strong convergent validity in the structural equation model.

Table 7. Confirmatory factor analysis for financial security

Variable	Dimension	Question Item	Loading Coefficient	R²	CR	AVE
FS	CAQ	QI25-QI28	0.746	0.557		
	OBAQ	QI29-QI32	0.743	0.552	0.826	0.613
	DGR	QI33-QI36	0.855	0.731		
	Credit Asset Quality	QI25: The financial institution conducts comprehensive and effective assessments and management of credit risks, ensuring high-quality credit assets	0.696	0.484		
		QI26: The institution excels in controlling non-performing loans, promptly identifying and taking effective measures to reduce the NPL ratio.	0.814	0.663	0.862	0.61
		QI27: The institution is transparent in disclosing credit asset information, providing sufficient channels for customers and investors to understand.	0.85	0.723		
		QI28: The stability of credit asset returns positively impacts the financial institution's profitability.	0.756	0.572		
	Off-Balance Sheet Asset Quality	QI29: The financial institution closely monitors risks in off-balance sheet operations, ensuring their safety and stability.	0.793	0.629		
		Q30: The institution performs well in information disclosure and compliance related to off-balance sheet assets, earning market trust.	0.811	0.658	0.872	0.63
		QI31: Off-balance sheet assets complement the financial institution's core business, promoting the healthy development of overall operations.	0.765	0.585		
		QI32: The institution's off-balance sheet asset possesses good appreciation potential, supporting its long-term growth.	0.804	0.646		
	Deposit Growth Rate	QI33: The financial institution maintains a stable deposit growth rate, reflecting customers' ongoing trust and support.	0.862	0.743		
		QI34: The institution's deposit products are highly competitive in the market, effectively attracting new customers and retaining existing ones.	0.799	0.638	0.874	0.636
		QI35: Excellent customer service is a significant factor contributing to the institution's deposit growth, widely recognized by customers.	0.768	0.590		
		QI36: The institution's marketing strategies positively impact deposit growth, achieving notable results.	0.756	0.572		

Chi-Square= 61.298, df= 51, Chi-Square/df=1.202, p=0.153, CFI=0.997, TLI=0.996, SRMR=0.024, RMSEA=0.021

Table 8 reports the confirmatory factor analysis for the financial information technology construct. The overall model fit is excellent (χ^2 = 61.461, df = 51, χ^2/df = 1.205, p = 0.15, CFI = 0.996, TLI = 0.995, SRMR = 0.022, RMSEA = 0.021), all of which meet or exceed recommended thresholds. At the second-order level, the financial information technology construct demonstrates strong internal consistency and convergent validity, with a composite reliability (CR) of 0.846 and an average variance extracted (AVE) of 0.649. Each first-order dimension also exhibits solid measurement properties: Product Digitization (CR = 0.861; AVE = 0.607), Service Intelligence (CR = 0.846; AVE = 0.580), and Omni-channel Integration (CR = 0.861; AVE = 0.608) all exceed the recommended CR threshold of 0.70 and AVE threshold of 0.50. Item loadings for these factors range from 0.705 to 0.836, with R² values from 0.497 to 0.699, indicating that each observed variable explains a substantial portion of its latent factor's variance. Collectively, these findings confirm that the

financial information technology construct is measured with high reliability and strong convergent validity within the structural equation model.

Table 8. Confirmatory factor analysis for financial information technology

Variable	Dimension	Question Item	Loading Coefficient	R^2	CR	AVE
	PD	QI37-QI40	0.741	0.549		
	SI	QI41-QI44	0.904	0.817	0.85	0.649
	OCI	QI45-QI48	0.762	0.581		
	Product digitization	QI37: The financial institution's products are highly digitized, enabling customers to access and use services online conveniently.	0.782	0.612		
		QI38: The institution continuously introduces innovative digital financial products to meet market diversification demands.	0.762	0.581	0.86	0.607
		QI39: Digital financial products prioritize user experience, featuring friendly interfaces and easy operation.	0.788	0.621		
		QI40: During product promotion, the institution rigorously protects customer data security and privacy, earning customer trust.	0.785	0.616		
IT	Service intelligence	QI41: The financial institution's intelligent customer service system efficiently resolves customer issues, enhancing service efficiency.	0.798	0.637		
		QI42: Through data analysis, the institution provides personalized financial product and service recommendations.	0.775	0.601	0.85	0.58
		QI43: The application of intelligent technology in risk control effectively reduces financial risks, safeguarding customer asset security.	0.748	0.56		
		QI44: The widespread use of automation in service processes minimizes human intervention, improving service quality and efficiency.	0.722	0.521		
	Omni-channel Integration	QI45: The institution successfully integrates online and offline channels, offering seamless service experiences.	0.773	0.598		
		QI46: Offline branches are strategically located and professionally staffed, catering to customers' face-to-face consultation needs.	0.705	0.497	0.86	0.608
		QI47: The online platform boasts clear interfaces and comprehensive functions, enabling customers to complete financial transactions easily.	0.836	0.699		
		QI48: The synergy between online and offline channels enhances service coverage and customer satisfaction.	0.8	0.64		

Chi-Square=61.461, df= 51,Chi-Square/df=1.205P= 0.15, CFI=0.996, TLI= 0.995, SRMR=0.022, RMSEA=0.021

Table 9 presents the confirmatory factor analysis for the financial customer loyalty construct. The overall model fit is excellent (χ^2 = 57.145, df = 51, χ^2/df = 1.12, p = 0.258, CFI = 0.998, TLI = 0.998, SRMR = 0.025, RMSEA = 0.016), meeting or surpassing all recommended thresholds. At the second-order level, the financial customer loyalty construct demonstrates strong reliability and convergent validity (composite reliability [CR] = 0.846; average variance extracted [AVE] = 0.649). Each first-order dimension shows

similarly robust measurement properties: Satisfaction (CR = 0.878; AVE = 0.643), Purchase Intention (CR = 0.877; AVE = 0.643), and Willingness to Recommend to Others (CR = 0.886; AVE = 0.661) all exceed the recommended CR threshold of 0.70 and AVE threshold of 0.50. Item loadings across the three dimensions range from 0.714 to 0.892, with corresponding R² values from 0.510 to 0.796, indicating that each indicator explains a substantial proportion of its factor's variance. Collectively, these results confirm that the financial customer loyalty construct is measured with high internal consistency and exhibits strong convergent validity within the structural equation model.

Table 9. Confirmatory factor analysis for customer loyalty

Variable	Dimension	Question Item	Loading Coefficient	R²	CR	AVE
CL	S	QI49-QI52	0.741	0.549		
	PI	QI53-QI56	0.904	0.817	0.85	0.649
	WRO	QI57-QI60	0.762	0.581		
	Satisfaction	QI49: Customers are highly satisfied with the overall service provided by the financial institution.	0.827	0.684	0.88	0.643
		QI50: Customers are pleased with the performance of purchased financial products, meeting their expectations.	0.802	0.643		
		QI51: The institution's response speed to customer service requests is satisfactory.	0.796	0.634		
		QI52: When customers encounter issues, the institution resolves them effectively and promptly, satisfying customers.	0.783	0.613		
	Purchase Intention	QI53: Customers express their intention to continue purchasing financial products or services from the institution in the future.	0.892	0.796	0.88	0.643
		QI54: Customers are willing to try and purchase new products introduced by the institution.	0.793	0.629		
		QI55: Customers perceive the institution's products or services as reasonably priced, making them price-insensitive and willing to buy.	0.798	0.637		
		QI56: Customers are inclined to establish long-term relationships with the institution for repeat purchases.	0.714	0.51		
	Willingness to Recommend to Others	QI57: Customers are eager to recommend the institution's products or services to friends and family.	0.815	0.664	0.89	0.661
		QI58: Customers are willing to share their positive service experiences on social media, positively promoting the institution.	0.757	0.573		
		QI59: When asked by friends or family, customers actively recommend the institution as a financial service provider.	0.871	0.759		
		QI60: Customers have high brand loyalty to the institution, preferring its products or services and recommending them to others.	0.804	0.646		

Chi-Square=57.145, df=51, Chi-Square/df=1.12, p= 0.258, CFI=0.998, TLI=0.998, SRMR=0.025, RMSEA=0.016

Table 10 presents the confirmatory factor analysis for the financial performance construct. The overall model fit is strong (χ^2 = 123.451, df = 100, χ^2/df = 1.235, p = 0.056, CFI = 0.994, TLI = 0.993, SRMR = 0.029, RMSEA = 0.022), all of which meet or surpass commonly accepted thresholds. At the construct level, financial performance shows a composite reliability (CR) of 0.871 and an average variance extracted (AVE) of 0.628, indicating good internal consistency and convergent validity. All first-order dimensions—Return on Equity (ROE), Return on Assets (ROA), Net Profit (NP), and Cost-to-Income Ratio (CIR)—exhibit satisfactory loadings and reliability. ROE (CR = 0.863, AVE = 0.614), ROA (CR = 0.869, AVE = 0.626),

NP (CR = 0.896, AVE = 0.684), and CIR (CR = 0.831, AVE = 0.552) each surpass the recommended CR threshold of 0.70 and AVE threshold of 0.50. Individual item loadings range from 0.682 to 0.889, all well above the 0.60 guideline, and the corresponding R² values demonstrate that each indicator explains a substantial portion of its underlying factor's variance. Collectively, these results confirm that the financial performance dimension is measured reliably and displays strong convergent validity within the structural equation model.

Table 10. Confirmatory factor analysis for profitability

Variable	Dimension	Question Item	Loading Coefficient	R²	CR	AVE
	ROE	QI61-QI64	0.77	0.593		
	ROA	QI65-QI68	0.766	0.587	0.87	0.63
	NP	QI69-QI72	0.842	0.709		
	CIR	QI73-QI76	0.79	0.624		
	ROE (Return on Equity)	QI61: The financial institution's ROE is outstanding in the industry, demonstrating efficient capital utilization.	0.705	0.497		
		QI62: In recent years, the institution's ROE has shown a steady growth trend, indicating enhanced profitability.	0.736	0.542	0.86	0.61
		QI63: Compared to peers, the institution's ROE is at a higher level, conferring a competitive advantage.	0.809	0.654		
		QI64: High ROE generates substantial returns for shareholders, bolstering their confidence in the institution.	0.873	0.762		
Profitability	ROA (Return on Assets)	QI65: The financial institution's ROA is robust, reflecting effective management and profitability of total assets.	0.879	0.773		
		QI66: The institution is taking measures to enhance ROA, further strengthening its overall profitability.	0.803	0.645	0.87	0.63
		QI67: While pursuing high ROA, the institution balances risk and return, achieving optimal performance.	0.789	0.623		
		QI68: High ROA signifies efficient operational efficiency, boosting market competitiveness.	0.682	0.465		
	Net Profit	QI69: The financial institution's net profit has grown steadily, underscoring its robust profitability and financial health.	0.889	0.79		
		QI70: Compared to peers, the institution's net profit margin is higher, evidenced by strong profitability.	0.811	0.658		
		QI71: Net profit growth creates more value for shareholders, enhancing their satisfaction.	0.81	0.656	0.9	0.68
		QI72: The institution's net profit distribution policy is reasonable, balancing shareholder returns and future development needs.	0.796	0.634		
	Cost-to-Income Ratio	QI73: The financial institution's cost-to-income ratio is low, demonstrating strong cost control and profitability.	0.767	0.588		
		QI74: The institution implements effective cost reduction measures to optimize the cost-to-income ratio further.	0.72	0.518		
		QI75: Compared to peers, the institution's cost-to-income ratio is lower, conferring a competitive advantage.	0.75	0.563	0.83	0.55
		QI76: A low cost-to-income ratio strengthens the institution's long-term competitiveness, laying a solid foundation for future growth.	0.735	0.54		

Chi-Square=123.451, df=100, Chi-Square/df=1.235, *p*=0.056, CFI=0.994, TLI=0.993, SRMR=0.029, RMSEA=0.022

4.3. Model fit

Table 11 is the model fit test. Firstly, the model shows a very strong fit to the data. The chi-square to degrees of freedom ratio (CMIN/DF) is 1.098, comfortably below the recommended upper limit of 3, which indicates good parsimony. All incremental fit measures—the Goodness-of-Fit Index (GFI = 0.966), Incremental Fit Index (IFI = 0.996), Tucker–Lewis Index (TLI = 0.995), and Comparative Fit Index (CFI = 0.996)—are above the 0.90 benchmark, reflecting a high level of agreement between the model and the observed data. Error measures are also very low: the Root Mean Square Error of Approximation (RMSEA = 0.015) and the Standardized Root Mean Square Residual (SRMR = 0.030) are well below the 0.05 guideline, showing minimal residual discrepancy. Taken together, these results demonstrate that the proposed structural equation model provides an excellent representation of the underlying relationships without the need for further modification.

Table 11. Model Fit Tests

Goodness-of-fit	CMIN	DF	CMIN/DF	GFI	IFI	TLI	CFI	RMSEA	SRMR
Result	150.391	137	1.098	0.966	0.996	0.995	0.996	0.015	0.03
Standard			<3	>0.9	>0.9	>0.9	>0.9	<0.05	<0.05

4.4. Hypotheses identification

4.4.1. Direct relationship test

Table 12 presents the direct relationship between variables. For Hypothesis 1, the analysis shows that core product innovation has a significant positive impact on financial performance, with a standardized path coefficient of 0.189 ($p = 0.001$). This finding indicates that banks that innovate and diversify their core product offerings are better able to attract and retain customers, leading directly to higher profitability. The model also reveals an indirect effect of 0.036 through financial customer loyalty, demonstrating that innovative products not only drive direct revenue growth but also enhance customer satisfaction and purchasing intentions, which in turn strengthen financial performance.

Hypothesis 2 is likewise supported. The service quality of urban commercial banks exhibits a significant positive influence on profitability, as evidenced by the standardized path coefficient of 0.158 ($p = 0.013$). The results suggest that improvements in service quality, convenience, and professionalism directly raise customer engagement and transaction volumes, which contribute to stronger financial outcomes. In addition, the significant effect of financial services on financial customer intentions ($\beta = 0.244$, $p < 0.001$) shows that superior service indirectly reinforces profitability by fostering customer loyalty and repeat business.

The evidence also supports Hypothesis 3, which concerns financial security. The construct representing the financial security of city commercial banks—including credit asset quality and off-balance-sheet asset quality—has a significant positive effect on financial performance, with a standardized path coefficient of 0.163 ($p = 0.007$). This demonstrates that when operational risks are properly managed and assets remain sound, banks can achieve more stable growth and translate this stability into higher profitability. Its strong impact on financial customer intentions ($\beta = 0.256$, $p < 0.001$) further confirms that prudent risk management improves customer confidence, indirectly supporting financial performance.

Finally, Hypothesis 4 receives the strongest empirical support. The application of financial information technology shows the largest total effect on profitability (0.309), comprising both a direct effect of 0.213 ($p<0.001$). This indicates that the adoption of digital technologies, such as automated financial management systems and big-data-driven marketing, improves operational efficiency, reduces costs, and enhances customer loyalty.

In summary, the results confirm that core product innovation, high-quality financial services, effective financial security, and the use of financial information technology each exert significant positive effects on the profitability of urban commercial banks. Among these factors, information technology stands out as the most influential driver of improved financial outcomes..

Table 12. Path results

Path	Path Coefficient(standardized)	unstandardized	S.E.	t	*p*
PI→P	0.189	0.215	0.066	3.269	0.001
SQ→P	0.158	0.155	0.062	2.487	0.013
FS→P	0.163	0.175	0.065	2.678	0.007
IT→P	0.213	0.247	0.075	3.309	***

4.4.2. Mediating effect test

The findings of Table 13 indicate that product innovation contributes to profitability not only directly but also indirectly through customer loyalty. The bootstrap test confirms a significant indirect effect of 0.036 (95% CI: 0.004–0.101, p = 0.016), showing that customer loyalty strengthens the impact of innovation on profitability. This suggests that new product offerings are more effective in enhancing profitability when they simultaneously build stronger customer relationships, underscoring the importance of loyalty as a mediating channel.

The results provide strong support for this hypothesis. Service quality has a significant indirect effect on profitability through customer loyalty, estimated at 0.062 (95% CI: 0.016–0.145, p = 0.006). This means that high-quality service improves customer loyalty, which in turn leads to greater profitability. The mediation pathway highlights that loyal customers are more likely to sustain and expand their financial interactions with banks that consistently deliver superior service experiences.

The mediation effect of customer loyalty in this relationship is also significant, with an indirect effect of 0.065 (95% CI: 0.018–0.147, p = 0.006). This finding suggests that banks enhance financial security for their customers, not only improving direct performance but also fostering stronger loyalty, which translates into higher profitability. Customer loyalty, therefore, acts as a crucial link in converting perceptions of financial security into sustained financial gains for the bank.

Among the four predictors, information technology demonstrates the strongest mediation effect through customer loyalty. The indirect effect is 0.097 (95% CI: 0.028–0.210, p = 0.006), indicating that IT adoption fosters loyalty, which subsequently boosts profitability. This underscores the pivotal role of IT in modern banking, where digital innovations not only streamline operations and enhance direct profitability but also strengthen customer relationships, creating long-term profit advantages through loyalty.

Overall, customer loyalty has mediated the effects among variables, which support our hypotheses 5, 6, 7, and 8.

Table 13. Mediation test

Path		Effect	S.E.	95% Confidence Interval		
				Lower	Upper	*p*
PI→CL→FP	Indirect effects	0.036	0.023	0.004	0.101	0.016
PI→P	Direct effect	0.189	0.059	0.069	0.300	0.003
	Total effect	0.225	0.060	0.106	0.34	0.001
SQ→CL→P	Indirect effects	0.062	0.031	0.016	0.145	0.006

Path		Effect	S.E.	95% Confidence Interval		
				Lower	Upper	*p*
SQ→P	Direct effect	0.158	0.065	0.034	0.287	0.013
	Total effect	0.220	0.064	0.096	0.346	0.001
FS→CL→P	Indirect effects	0.065	0.033	0.018	0.147	0.006
FS→P	Direct effect	0.163	0.067	0.029	0.293	0.014
	Total effect	0.228	0.063	0.104	0.351	0.001
IT→CL→P	Indirect effects	0.097	0.045	0.028	0.210	0.006
IT→P	Direct effect	0.213	0.076	0.057	0.356	0.007
	Total effect	0.309	0.059	0.193	0.423	0.001

Table 13. (*Continued*)

5. Research conclusions, discussions, and prospects

5.1. Research conclusions

This research aimed to answer eight research questions concerning the profitability of urban commercial banks, focusing on the role of core product innovation, service quality, financial security, and information technology, as well as the mediating role of customer loyalty. RQ1 examined whether core product innovation significantly enhances profitability. The findings indicate that innovation in core and derivative products, supported by customer feedback and market needs, strengthens competitiveness and revenue generation. RQ2 asked whether service quality contributes positively to profitability. Results confirm that professional, convenient, and customer-oriented services foster satisfaction and trust, which directly translates into improved financial performance. RQ3 investigated the effect of financial security on profitability. The analysis demonstrated that strong risk management, credit quality, and deposit stability reinforce customer confidence and provide a foundation for sustainable profitability. RQ4 focused on the role of information technology. Evidence showed that digitalization, service intelligence, and omni-channel integration reduce operational costs, enhance personalization, and strengthen risk monitoring, thereby improving profitability. The next four questions assessed the mediating role of customer loyalty. In addition, this research project examines the role of customer loyalty in mediating four important variables and its impact on profitability. Taken together, these findings provide both theoretical and practical contributions. From a theoretical perspective, the study integrates Cialdini's persuasion principles[30] and prospect theory[32,33] to explain why customers respond strongly to innovation, service, security, and technology, and how loyalty magnifies these effects. Practically, the results highlight that while banks should invest in product, service, security, and IT improvements, building and maintaining customer loyalty is the key mechanism through which these investments translate into sustained profitability.

5.2. Discussions

The finding that product innovation positively influences bank profitability is consistent with prior studies. For example, Chen, Chiang and Storey[50] emphasize that innovation enables banks to customize products to diverse customer needs and expand revenue sources. Similarly, studies on financial institutions in emerging markets show that innovative offerings improve competitiveness and strengthen customer relationships[41]. Our results confirm these arguments by demonstrating that product innovation remains a crucial determinant of profitability in urban commercial banks. The positive association between service quality and profitability aligns with extensive literature on the service sector [39]. The present study supports

these findings, showing that service quality is not only a differentiator in competitive markets but also a direct driver of financial performance in urban commercial banks. Our results demonstrate that financial security strengthens profitability, supporting prior evidence that risk management and credit quality are central to banking performance. This finding is in line with result from Laeven and Levine[43] who claim strong governance and asset quality reduce non-performing loans, thereby stabilizing profitability. Furthermore, our studies support results that information technology contributes to banks' profitability performance assessed by bank employees. This finding is consistent with previous studies which found application of IT can lower operation costs and improve profitability performance[50,51].

Regarding the mediation variable, this research found that customer loyalty is a crucial factor in maintaining organizational profits. Feedback from customers can promote an organization's product development[53] while delivering high-quality service can enhance customer satisfaction and further improve customer loyalty. In return, this action can promote repeat consumption and support profit growth[55]. Moreover, this study found that customer loyalty also mediates the effects of security and profitability. Finally, the mediation variable of customer loyalty transfers the effects of application information and profitability, aligning with a previous study [57].

5.3. Research implications

From a psychological marketing perspective of customers, this study suggests that urban commercial banks can improve profitability by focusing on product innovation, high-quality services, strong financial security, and better use of information technology. At the same time, banks should work to build customer loyalty, as loyal customers make these efforts more effective by staying longer, purchasing more products, and recommending the bank to others. In practice, this means managers should invest in developing new products, training staff to give professional and efficient service, improving risk control systems, and adopting digital tools that make banking easier and safer. By combining these strategies in a balanced way, banks can achieve sustainable growth and competitiveness. we emphasize that understanding how employees' perceptions of work behavior and organizational factors influence bank performance provides novel insights into internal marketing mechanisms that shape service quality and customer satisfaction. By linking internal employee dynamics with profitability outcomes, the study extends existing literature on bank marketing beyond customer-focused perspectives, offering a more comprehensive understanding of how internal factors drive the success of financial products and services.

Cycle matching: Emphasize "safety, transparency, liquidity, and protection" in downturns; highlight "digital experience, differentiated features, and personalized upside" in expansions. **Community matching:** In high-cohesion/high-trust areas, leverage testimonials, peer adoption, and community co-creation; in low-trust areas, foreground verifiable commitments and visualized risk disclosures. **Cultural matching:** For collectivist/high power-distance segments, use authority endorsements and reciprocity programs judiciously; for high uncertainty-avoidance segments, stress process controllability, fee clarity, and downside-protection clauses. **Execution:** At the branch level, maintain a "context–value proposition–message" playbook and SOP to ensure consistent communication and performance tracking across scenarios.

5.4. Research limitations and prospects

This study has some limitations. First, the sample only included urban commercial banks. Other types of banks, such as state-owned banks, rural banks, or joint-stock banks, were not studied. This means the results may not apply to the whole banking industry. Second, most of the people surveyed were young employees. Their views on innovation, technology, and services may differ from those of older or more experienced staff, limiting how widely the results can be applied. Another limitation is that some variables were not studied in

depth. For example, the study did not look closely at how different parts of financial technology work together, or how specific kinds of operational risks affect profitability. In addition, outside factors such as the economy, government policies, and regulations were not included. These missing elements reduce how well the results can explain or predict real-world situations. Future research can address these gaps in several ways. The sample could include more types of banks from different regions and sizes to give a fuller picture. A more detailed analysis of how variables interact could be conducted, leading to better models. Researchers should also add external factors, such as the economic environment and regulations, to make the results more realistic. Finally, combining surveys with case studies or fieldwork would provide deeper insights and make the findings more useful for practice. To maintain parsimony and manage length, this paper provides a theoretical exposition of contextual effects without adding new hypotheses or empirical tests. Future research could examine these moderating influences across multiple cities and institutions and compare heterogeneity across cultural orientations and macro cycle phases.

Funding

Conflict of interest

The authors declare no conflict of interest

References

1. Girardin E., Ping X. 1997 Urban Credit Co-operatives in China. OECD (125), 1-85.
2. Zhou D., Li X., Yao Y., Chen G.S. 2025 "If you build it, will they come?"—Did city commercial bank development shape the spatial evolution of foreign direct investment in China? The Annals of Regional Science 74(2), 61-72. doi:10.1007/s00168-025-01386-2
3. Hu B., Yin Z., Zheng L. 2016. Development of China's financial supervision and regulation: Springer.
4. Shan S., Liu C. 2023 Research on the impact of financial deepening on digital economy development: an empirical analysis from China. Sustainability 15(14), 11358.
5. Guo S., Knaack P. Financial regulation and supervision in China-Grappling with the ups and downs of the property market. 2024. Contract No.: March 2024.
6. Loubere N., Zhang H.X. 2015 Co-operative financial institutions and local development in China. Journal of Co-operative Organization and Management 3(1), 32-39. doi:10.1016/j.jcom.2015.03.001
7. Smart Money. Major Participants in The Forex Market (Foreign Exchange Market) 2024 [Available from: https://www.angelone.in/smart-money/trading-courses/major-participants-in-the-forex-market.
8. Luo S., Yu S., Zhou G. 2021 Does green credit improve the core competence of commercial banks? Based on quasi-natural experiments in China. Energy Economics 100, 105335. doi:10.1016/j.eneco.2021.105335
9. Jigeer S., Koroleva E. 2023 The Determinants of Profitability in the City Commercial Banks: Case of China. Risks 11(3), 53-74.
10. Shi X., Yu W. 2021 Analysis of Chinese Commercial Banks' Risk Management Efficiency Based on the PCA-DEA Approach. Mathematical Problems in Engineering 2021(1), 7306322. doi:10.1155/2021/7306322
11. Li R., Zhang H. 2024 Research on risk taking mechanisms of chinese commercial banks from the perspective of digital transformation. Theoretical Economics Letters 14(3), 735-746.
12. Wen W., Liang Y. 2025 Digital transformation and liquidity creation in commercial banks: Evidence from the Chinese banking industry. PLoS One 20(2), e0318785. doi:10.1371/journal.pone.0318785
13. Xie X., Wang S. 2023 Digital transformation of commercial banks in China: Measurement, progress and impact. China Economic Quarterly International 3(1), 35-45. doi:10.1016/j.ceqi.2023.03.002
14. Soana M.G., Barbieri L., Lippi A., Rossi S. 2021 The Effect of Multiple Large Shareholders on Banks' Profitability and Risk. Sustainability 13(4), 1888.
15. Tan Y. 2016 The impacts of risk and competition on bank profitability in China. Journal of International Financial Markets, Institutions and Money 40, 85-110. doi:10.1016/j.intfin.2015.09.003
16. Infante S., Kim K., Orlik A., Silva A.F., Tetlow R. 2024 Retail CBDC: Implications for Banking and Financial Stability. Annual Review of Financial Economics 16(Volume 16, 2024), 207-232. doi:10.1146/annurev-financial-082123-105958

17. Zhao L., Tang Y., Liu Y. 2023 How Does Environmental Tax Influence the Scale and Efficiency of Green Investment among China's Heavily Polluting Enterprises? Sustainability 15(20), 15021.
18. Liu H., Zhang W., Zhang X., Liu J. 2021 Temperature and trading behaviours. International Review of Financial Analysis 78, 101890.
19. Perold A.F. 2004 The Capital Asset Pricing Model. Journal of Economic Perspectives 18(3), 3–24. doi:10.1257/0895330042162340
20. Fama E.F., French K.R. 2004 The capital asset pricing model: theory and evidence. Journal of Economic Perspectives 18(3), 25-46.
21. Christensen C.M. 2015. The innovator's dilemma: when new technologies cause great firms to fail: Harvard Business Review Press.
22. Tidd J. 2023 Managing innovation. IEEE Technology and Engineering Management Society Body of Knowledge (TEMSBOK), 95-108.
23. Torres E.N. 2014 Deconstructing service quality and customer satisfaction: Challenges and directions for future research. Journal of Hospitality Marketing & Management 23(6), 652-677.
24. Ahmad S., Sabri M.F. 2014 Understanding Financial Security from Consumer's Perspective: A Review of Literature. International Journal of Humanities and Social Science 4, 110-117.
25. Khrushch N., Hryhoruk P., Hovorushchenko T., Lysenko S., Prystupa L., Vahanova L. Assessment of bank's financial security levels based on a comprehensive index using information technology. Proceedings of the Selected Papers of the Special Edition of International Conference on Monitoring, Modeling & Management of Emergent Economy (M3E2-MLPEED 2020) Odessa, Ukraine: CEUR Workshop Proceedings; 2020. p. 239-260.
26. Laudon K.C., Laudon J.P. 2004. Management information systems: Managing the digital firm: Pearson Educación.
27. Kim L., Jindabot T., Yeo S.F. 2024 Understanding customer loyalty in banking industry: A systematic review and meta analysis. Heliyon 10(17), e36619. doi:10.1016/j.heliyon.2024.e36619
28. Yuan D., Gazi M.A.I., Harymawan I., Dhar B.K., Hossain A.I. 2022 Profitability determining factors of banking sector: Panel data analysis of commercial banks in South Asian countries. Frontiers in Psychology 13, 1000412. doi:10.3389/fpsyg.2022.1000412
29. Citterio A., King T., Locatelli R. 2024 Is digital transformation profitable for banks? Evidence from Europe. Finance Research Letters 70, 106269. doi:10.1016/j.frl.2024.106269
30. Cialdini R.B. 2001 The science of persuasion. Scientific American 284(2), 76-81.
31. Dolan P., Elliott A., Metcalfe R., Vlaev I. 2012 Influencing Financial Behavior: From Changing Minds to Changing Contexts. Journal of Behavioral Finance 13(2), 126-142. doi:10.1080/15427560.2012.680995
32. Kai-Ineman D., Tversky A. 1979 Prospect theory: An analysis of decision under risk. Econometrica 47(2), 363-391.
33. Tversky A., Kahneman D. 1992 Advances in prospect theory: Cumulative representation of uncertainty. Journal of Risk and uncertainty 5(4), 297-323.
34. Wanjiku P. 2020 The Effect of Product and Service Innovations on the Financial Performance of Commercial Banks in Kenya. Editon Consortium Journal of Business and Management Studies 2, 56-68. doi:10.51317/ecjbms.v2i1.148
35. Onunka T., Raji A., Osafiele A., Daraojimba C., Egbokhaebho B., Okoye C. 2023 BANKING: A COMPREHENSIVE REVIEW OF THE EVOLUTION AND IMPACT OF INNOVATIVE BANKING SERVICES ON ENTREPRENEURIAL GROWTH. Economic Growth and Environment Sustainability 2, 66-78. doi:10.26480/egnes.02.2023.66.78
36. Tong X., Yang W. 2025 Empirical analysis of the impact of financial technology on the profitability of listed banks. International Review of Economics & Finance 98, 103788. doi:10.1016/j.iref.2024.103788
37. Magallón González H., Figueroa E., Prado-Román C. 2022 Banking innovations and their effect on profitability. Mercados y Negocios 23, 23-58. doi:10.32870/myn.vi47.7680
38. Baffour G.E., Appiah M., Gyamfi B.A., Achie T., Naeem M.A. 2024 Transforming banking: Examining the role of AI technology innovation in boosting banks financial performance. International Review of Financial Analysis 96, 103700. doi:10.1016/j.irfa.2024.103700
39. Ijara T. 2020 Service Quality and Financial Performance of Banks (A Meta-Analysis). International Journal of Scientific and Research Publications (IJSRP) 10, 349-359. doi:10.29322/IJSRP.10.05.2020.p10141
40. Reyes-Rubiano L., Amaya I.Y., Mayorga D.M., Muñoz-Villamizar A., Solano-Charris E. 2024 How does technological innovation impact the service time and the attraction of new customers in the financial sector? Evidence from an emerging economy. Operations Management Research 17(2), 596-611. doi:10.1007/s12063-023-00437-1
41. Nguyen H.M., Ho T.K.T., Ngo T.T. 2024 The impact of service innovation on customer satisfaction and customer loyalty: a case in Vietnamese retail banks. Future Business Journal 10(1), 61-85. doi:10.1186/s43093-024-00354-0
42. Demirgüç-Kunt A., Huizinga H. 2010 Bank activity and funding strategies: The impact on risk and returns. Journal of Financial Economics 98(3), 626-650. doi:10.1016/j.jfineco.2010.06.004

43. Laeven L., Levine R. 2009 Bank governance, regulation and risk taking. Journal of Financial Economics 93(2), 259-275. doi:10.1016/j.jfineco.2008.09.003
44. Bessis J. 2011. Risk management in banking: John Wiley & Sons.
45. Agrawal A. 2021 Research on the application potential of blockchain technology. Journal of Financial Technology 35(2), 45-58.
46. Altunbas Y., Gambacorta L., Marques-Ibanez D. 2010 Bank risk and monetary policy. Journal of Financial Stability 6(3), 121-129.
47. Allen F., Carletti E. 2013 Systemic risk from real estate and macro-prudential regulation. International Journal of Banking, Accounting and Finance 5(1-2), 28-48.
48. Tsindeliani I.A., Proshunin M.M., Sadovskaya T.D., Popkova Z.G., Davydova M.A., Babayan O.A. 2022 Digital transformation of the banking system in the context of sustainable development. Journal of Money Laundering Control 25(1), 165-180.
49. Ozili P.K. 2018 Impact of digital finance on financial inclusion and stability. Borsa Istanbul Review 18(4), 329-340. doi:10.1016/j.bir.2017.12.003
50. Chen H., Chiang R.H.L., Storey V.C. 2012 Business Intelligence and Analytics: From Big Data to Big Impact. MIS Quarterly 36(4), 1165-1188. doi:10.2307/41703503
51. Le T., Ngo T., Nguyen D., Ho T., Do T. 2025 Digitalization and bank efficiency: Evidence from an emerging market. Asian Academy of Management Journal of Accounting and Finance 97, 103837.
52. Yao M., Di H., Zheng X., Xu X. 2018 Impact of payment technology innovations on the traditional financial industry: A focus on China. Technological Forecasting and Social Change 135, 199-207.
53. Sadiya F.R., Goranta L.R., Yeareditor^editors. The impact of fintech innovation and banking efficiency on customer loyalty: Investigating the mediating role of customer trust. XXI International May Conference on Strategic Management–IMCSM25 Proceedings; 2025 Published.
54. Redda E.H., Van Deventer M. 2023 Retail Banking Service Quality and Customer Loyalty: The Role of Trust and Commitment as Mediators. International Review of Management and Marketing 13(5), 18-25. doi:10.32479/irmm.14658
55. Gazi M.A., Masud A., Sobhani F., Islam M.A., Rita T., Chaity N., et al. 2024 Exploring the mediating effect of customer satisfaction on the relationships between service quality, efficiency, and reliability and customer retention, loyalty in E-banking performance in emerging markets. Cogent Business & Management 12(1), 20334. doi:10.1080/23311975.2024.2433707
56. Ibrahim M., Yeareditor^editors. The Influence of Digital Transformation on Customer Loyalty in the Banking Sector: The Mediating Role of Customer Experience. Science, Engineering Management and Information Technology: 5th International Conference, SEMIT 2025, Dubai, United Arab Emirates, September 11–13, 2025, Proceedings, Part I; 2025 Published.
57. Ho H., Han S.-M., Cha J., Pham L. 2025 Mobile Banking Customer Satisfaction and Loyalty: The Roles of Technology Readiness. Journal of Risk and Financial Management 18(7), 403.
58. Guiso L., Sapienza P., Zingales L. 2004 The Role of Social Capital in Financial Development. American economic review 94(3), 526–556. doi:10.1257/0002828041464498
59. Guiso L., Sapienza P., Zingales L. 2008 Trusting the Stock Market. The Journal of Finance 63(6), 2557-2600. doi:10.1111/j.1540-6261.2008.01408.x
60. de Mooij M., Hofstede G. 2011 Cross-Cultural Consumer Behavior: A Review of Research Findings. Journal of International Consumer Marketing 23(3-4), 181-192. doi:10.1080/08961530.2011.578057
61. Hofstede G. 2001. Culture's consequences: Comparing values, behaviors, institutions and organizations across nations. 2nd ed: Sage publications.
62. Kahneman D., Tversky A. 1979. Prospect Theory: An Analysis of Decision Under Risk. Handbook of the Fundamentals of Financial Decision Making99-127.
63. Malmendier U., Nagel S. 2011 Depression Babies: Do Macroeconomic Experiences Affect Risk Taking?*. The Quarterly Journal of Economics 126(1), 373-416. doi:10.1093/qje/qjq004
64. Dabholkar P.A., Thorpe D.I., Rentz J.O. 1996 A measure of service quality for retail stores: scale development and validation. Journal of the Academy of Marketing Science 24(1), 3-16.
65. Roy S.K., Balaji M. 2015 Measurement and validation of online financial service quality (OFSQ). Marketing Intelligence & Planning 33(7), 1004-1026.
66. Munyon T.P., Carnes A.M., Lyons L.M., Zettler I. 2020 All about the money? Exploring antecedents and consequences for a brief measure of perceived financial security. Journal of Occupational Health Psychology 25(3), 159-175.
67. Moore G.C., Benbasat I. 1991 Development of an instrument to measure the perceptions of adopting an information technology innovation. Information systems research 2(3), 192-222.
68. Jain A.K., Pinson C., Malhotra N.K. 1987 Customer loyalty as a construct in the marketing of banking services. International Journal of Bank Marketing 5(3), 49-72.

69. Ahmad N., Naveed A., Ahmad S., Butt I. 2020 Banking sector performance, profitability, and efficiency: a citation-based systematic literature review. Journal of Economic Surveys 34(1), 185-218.

70. Richard P.J., Devinney T.M., Yip G.S., Johnson G. 2009 Measuring Organizational Performance: Towards Methodological Best Practice. Journal of Management 35(3), 718-804. doi:10.1177/0149206308330560

71. Saunders M., Lewis P., Thornhill A. 2019. Research methods for business students. 8th ed. Harlow, UK: Pearson Education Limited.