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Factors Influencing Customer Loyalty in Mobile Banking: A Case Study of the Industrial and Commercial Bank of China (ICBC) in Hunan Province

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Abstract: This research aims at identifying the determinants of customer loyalty in mobile banking services with special reference to the Industrial and Commercial Bank of China (ICBC) in Hunan Province. This study employs qualitative interviews of 484 mobile banking users to establish the correlation between mobile app atmospherics and perceived usefulness, perceived ease of use, perceived trust, satisfaction, and customer loyalty. The study findings show that mobile app atmospherics have a significant impact on the customer loyalty with perceived usefulness and ease of use as key factors. However, perceived trust and satisfaction come out as significant variables in the present study. The study also contributes to the extension of the Technology Acceptance Model in the mobile banking environment and offers useful insights to the banks for improving the customers' loyalty. Examples of the application of the research findings are illustrated by ICBC, Bank of China, and China Construction Bank. The study adds knowledge to the subject of mobile banking loyalty in China and provides suggestions for enhancing mobile banking services and customer ties.

Keywords: Mobile Banking, Customer Loyalty, Technology Acceptance Model (TAM), and Unified Theory of Acceptance and Use of Technology 2 (UTAUT2).

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1. Introduction

As mobile devices, especially smartphones, have grown tremendously recently, mobile banking has become a popular means of banking services. The portable device banking services' evolution began at the end of the 20th and the beginning of the 21st century when mobile phones transitioned from simple communication tools to multifunctional devices. The first steps of mobile banking were the services that included balance checks and transaction notifications via SMS. This led to mobile phones changing their features and developing mobile banking services. The emergence of portable telecommunications with the help of smartphones and the increasing use of mobile internet led to banks beginning to create applications for portable telecommunications with more options for banking services. Mobile banking applications now enable customers to complete several operations such as interbank transfers, self-transfers, third-party payments, setting up of recurring instructions, and the use of various payment services.

In China, mobile banking services have gained popularity, and the use of mobile devices has increased tremendously; this has made customer loyalty among Chinese mobile banking clients an area of interest. China has become a global mobile banking leader, leading to higher customer loyalty. The convenience and practicality offered by portable banking align well with the daily habits of Chinese consumers, whose lifestyles rely heavily on mobile devices. However, mobile banking in China faces several challenges, including security risks, technological infrastructure limitations, and regulatory complexities. Concerns over illegal access, data collection vulnerabilities, and identity theft remain significant challenges. Some

regions in China still face challenges related to internet connectivity, network coverage, and infrastructure limitations. The lack of mobile banking education and limited digital literacy also pose challenges to adopting mobile banking services and hinder the improvement of customer loyalty.

Previous research has found that perceived ease of use, usefulness, trustworthiness, reliability, and response speed are crucial for increasing customer loyalty in mobile banking. However, empirical research regarding the relationship between the mobile app atmosphere and loyalty is scarce. This study aims to fill this research gap by investigating strategies for enhancing customer loyalty within the mobile app atmosphere. This study contributes to the theoretical understanding of customer loyalty in mobile banking by examining the factors influencing customer satisfaction and loyalty, particularly for customers of the Industrial and Commercial Bank of China in Hunan Province. It enriches the theoretical foundation of the Technology Acceptance Model (TAM) and the Unified Theory of Acceptance and Use of Technology 2 (UTAUT2) in mobile banking services.

The research provides important insights for leaders and managers in the Chinese banking industry, helping them understand the unique needs, preferences, and expectations of customers in the Hunan region. It offers guidance on improving customer loyalty towards mobile banking and strengthening strategic positions in the evolving mobile banking landscape. For the Chinese government, this research assists in formulating guidelines and plans tailored to the uniqueness of the mobile banking market in Hunan. It helps establish agreements that promote data security, confidentiality, and robust risk management procedures, contributing to a stronger, more integrated financial system for the nation.

The core research questions for this study are:

1. What is the relationship between the mobile application ambiance and customer loyalty?

2. What are the relationships between the mobile application ambiance, perceived usefulness, perceived ease of use, satisfaction, trust, and loyalty?

3. How does the mobile application ambiance influence customer loyalty?

The specific research objectives for this study are:

1. To determine the relationship between the mobile application ambiance and customer loyalty.

2. To identify the impact of mobile application ambiance, perceived usefulness, perceived ease of use, satisfaction, and perceived trust on loyalty.

3. To explore how the mobile application ambiance influences customer loyalty.

4.To explore strategies for enhancing customer loyalty.

This part has briefly described the current state of mobile banking in China, particularly in Hunan Province, the fast-growing nature of this industry, and its challenges. It highlighted the research gaps and explained the study's purpose, questions, and aims. The next part will give a detailed literature analysis to establish a clear understanding of the antecedents of customer loyalty in mobile banking.

2. Literature review

This part is a comprehensive review of previous research on mobile banking and customer loyalty, focusing on Hunan, China. A literature review is a crucial step in any research as it involves acquiring and comprehending the existing knowledge on the subject. This part thus seeks to consolidate and appraise different studies, theoretical frameworks, and academic publications to identify the field's themes, findings, and research gaps. The knowledge of the determinants of customer loyalty in mobile banking is essential for financial institutions, policymakers, and researchers to enhance services and policies. The literature review will also include theoretical models like TAM and UTAUT2 and explain why they are useful in mobile banking. By conducting this literature review, the researcher will be able to lay down a good foundation on which the subsequent parts will be based, thus helping the readers better understand mobile banking and customer loyalty in Hunan, China.

2.1 Research Content

The background of this research is the mobile financial management of the Hunan Provincial Branch of the Industrial and Commercial Bank of China (ICBC) in managing customer loyalty. ICBC ranked first in the 2022 China Mobile Banking Competitiveness Top 100 Rating System with a total score of 97.71, and Hunan is rapidly expanding its financial coverage (Sun, 2022; Zhou, 2022). This study aims to explore the factors influencing customer loyalty in this real-world context. On the other hand, customer loyalty refers to customers' degree of loyalty and inclination towards a specific brand or business. Mobile banking customer loyalty specifically pertains to the degree of loyalty among users of mobile banking services towards a bank's brand, products, and services. Customer loyalty indicates the degree to which customers repeatedly purchase or continue using a particular brand, product, or service. It measures customer satisfaction with the organization and the stability and continuity of their purchasing decisions.

Building and maintaining customer loyalty is a significant challenge businesses face. The intensity of market competition can affect customer loyalty. If competitors offer better products, prices, or services, customers may switch to the competition, weakening their loyalty to the original company (Aunshi et al., 2022). Secondly, customer satisfaction is a critical factor influencing customer loyalty. Companies must ensure customer satisfaction by providing high-quality products and services and proactively addressing customer complaints and issues (Zain et al.).

In the context of mobile banking, specific challenges to customer loyalty include:

Security and Privacy Protection: Users are highly concerned about the security and privacy of their data, and any security vulnerabilities or privacy issues could lead to a loss of trust and the discontinuation of mobile banking usage (Zhu et al., 2022a).

Technical Reliability and Stability: Frequent system failures, application crashes, slow responses, and other technical issues can inconvenience and frustrate customers, potentially driving them to seek other banking services (CBS, 2023).

User Experience Design: If the mobile banking application's interface is not intuitive, the features are complex, or the operation is inconvenient, customers may feel confused and frustrated, leading them to choose more user-friendly competitors (Zhu and Wang, 2022).

Personalization and Customization: If mobile banking fails to cater to customers' personalized requirements, they may seek other solutions that better suit their needs (Sampath and Julber, 2020).

Competitive Pressure: To maintain customer loyalty, mobile banking must offer competitive products and services and continuously innovate to meet customers' evolving demands (Leung et al., 2022).

The Industrial and Commercial Bank of China (ICBC) in Hunan Province plays a pivotal role in the region's economic development and financial sector. It reflects the level and intensity of financial development in Hunan Province, engages in local economic development, supports local enterprises' development, and meets the financial demand of the people (Luo Ying, 2020; Wen et al. , 2020; Xu et al. , 2023).

2.2 Parent Disciplines

The "Parent Disciplines" emphasized in this research are two key theories: the "Technology Acceptance Model" and the "Unified Theory of Acceptance and Use of Technology."

Fred Davis established the Technology Acceptance Model in 1989 (Balaskas et al., 2022; Coskun et al., 2022; Makttoof, 2023). Davis invented TAM to describe how people accept and use digital systems and new technology. The Technology Acceptance Model consists of the following elements: perceived usefulness, perceived ease of use, attitude toward use, behavioral intention to use, and actual system usage. Overall, these components provide information about how users perceive, plan to employ, and use technology. The Technology Acceptance Model has several advantages over other theories dealing with the same concerns, including its simplicity and obvious structure. The model has a simple architecture and only incorporates two main factors: perceived utility and ease of use, making it straightforward for academics and

practitioners to implement. The aforementioned concept has numerous applications in information technology and internet infrastructure.

Venkatesh, Thong, and Xu proposed the Unified Theory of Technology Acceptance and Use in 2012 (Nan et al., 2020; Rabaa, 2021; Aranyossy, 2022). This hypothesis has the capacity to explain users' adoption and use of technology inside one framework. The Unified Theory of Technology Acceptance and Use 2 model has the following sub-constructs: user loyalty, perceived ease of use, social influence, extending conditions, user satisfaction, price value, and perceived trust. These components help in getting a clear picture on the factors that determine the adoption of technology in an organization.

The model of Unified Theory of Technology Acceptance and Use can be applied in the studies on consumer satisfaction and loyalty. Despite the fact that it is mainly focused on the consumer and his/her use of technologies and acceptance of them, these behaviours and their antecedents affect customer satisfaction and loyalty. Therefore, although the theory is precise in terms of the adoption process of a certain technology, it is more general in terms of customer relations and business consequences.

2.3 Direct Disciplines

This subsection presents a literature review of direct disciplines that include conducting research on customer loyalty when engaging in mobile financial management services. Direct discipline includes perceived ease of use, perceived utility of the mobile application, mobile app ambiance, satisfaction, perceived trust, and loyalty.

In fact, perceived ease of use can be described as the extent to which a user believes that certain technology or system is easy to use without putting much effort (Nan et al. , 2020). While, perceived ease of use is the extent to which the specific technology is easy to use by the user without any confusion, uncertainties or ambiguity regarding the working of the technology (Makttoof, 2023). Perceived usefulness is therefore users' perception of how effective a particular technology is in enhancing one's performance or the degree to which a particular technology can help in the completion of tasks towards the achievement of intended goals and objectives (Akdim et al. , 2022).. Perceived usefulness is another factor that determines the attitudes and intentions of using the particular technology or system concerning the specific tasks or goals accomplished by the technology (Vahdat et al., 2021). Customer satisfaction is contentment with one product, service, or whole experience. In the mobile banking industry, customer satisfaction is crucial for evaluating and providing feedback on mobile banking services. Customer satisfaction is vital in developing mobile banking services and customer loyalty.

Mobile application ambiance refers to creating a positive, attractive environment to enhance user loyalty and affection for a mobile application (Garzaro et al., 2021). Mobile application ambiance appears to be related to perceived usefulness. When a well-designed mobile banking application features an intuitive, user-friendly interface, it creates a positive mobile application ambiance (Melto et al., 2021).

Perceived trust is the subjective perception, belief, or confidence in the reliability, integrity, and capability of an individual, organization, or system (Malle and Ullman, 2021). Perceived trust evaluates credibility or honesty based on past experiences or interactions (Agesti et al.). Perceived trust refers to the ability, consistency, transparency, kindness, or integrity demonstrated by an entity or system (Christinto et al.).

2.4 Theoretical Model and Hypothesis Statements

From the independent variable "Mobile App Ambiance" to the dependent variable "Customer Loyalty," the Technology Acceptance Model serves as the theoretical underpinning for this model. In this model, the Unified Theory of Acceptance and Use of Technology (UTAUT) also supports the impact of Customer Satisfaction and Perceived Trust on Customer Loyalty.

Indirect Effects Hypothesis:

H6a: Perceived trust will mediate the relationship between mobile app atmospherics and client loyalty (supported).

H7a: Perceived trust mediates the relationship between perceived utility and customer loyalty (Supported).

H8a: The association between perceived ease of use and customer loyalty is mediated by perceived trust (Supported).

H9a: The association between mobile APP atmospherics and client loyalty is supported, with satisfaction acting as a mediator.

H10a: Satisfaction mediates the relationship between perceived usefulness and client loyalty (Supported).

H11a: Satisfaction mediates the association between perceived ease of use and customer loyalty (Supported).

These hypotheses intend to examine the links between numerous elements impacting customer loyalty in mobile banking and the mediation effects of perceived trust and satisfaction.

The second part presented a detailed literature analysis on the factors that influence client loyalty in mobile financial management. Given the discovery of research gaps in these linkages, it is critical to study the relationships between perceived ease of use, perceived utility, mobile app ambiance, customer loyalty, perceived trust, and customer loyalty. The links between these categories are explained by two theoretical models: the Technology Acceptance Model (TAM) and the Unified Theory of Acceptance and Use of Technology. The selection of research methodologies that will help meet the research objectives will be detailed in the following part.

3. Methodology

3.1 Overview of Research Paradigm and Theoretical Basis

A research paradigm is a philosophy that usually consists of a general theory, beliefs or assumptions commonly upheld or practiced in every distinctive area of academic or scientific expertise (James et al., 2020a; Qin and Krmjag, 2022). It is the general map or guide of a particular subject which prescribes the direction and range of investigation in the specific course of study and provides the researchers with the media and structure through which they can understand, study, and come up with solutions to every problem that may arise (Suxnan et al., 2021). The concept of a research paradigm can be credited to the philosopher of science, Thomas Kuhn. However, he did not wholly elaborate on it in his book The Structure of Scientific Revolutions (Kuhn et al., 2022).

It mainly identifies the research questions and hypotheses the researchers need to solve; they form the research basis for the researchers (Sun Zain et al., 2020). It also identifies the research method and theories the researchers should apply to respond to these questions (Keinda et al., 2021). The paradigm defines the type of evidence and data the researchers need to collect and guides the data analysis and meaning-making (Mwiya et al.). These empirical facts, therefore, form the research paradigm (Raza et al., 2020a; Oh and Kim, 2022). According to the analysis and synthesis of these empirical facts, scholars start working on their theoretical framework to explain them. It may be deemed theoretical in the context of a conceptual model, calculations of a mathematical model, or a theoretical assumption to understand occurrences (Angusamy et al., 2022). A theoretical model becomes a reference or model for a specific field of study when it has gained prominence and effectively explains facts (Chen et al., 2019).

Besides, the research paradigm prescribes the courses of the study, strategies for problem-solving and data analysis patterns. It also evolves and expands as the research progresses and new issues arise. It may take polymorphic forms, such as redefining, enlarging, or replacing the current paradigms with the latest empirical data to advance the discipline (Zhu et al., 2020). To elaborate, one should note that the formation of the research paradigm under consideration is accompanied by controversy, competition, and innovation (Sun et al., 2020). If the paradigm does not welcome new facts or is under pressure, the outcome will be a paradigm switch; one form of the paradigm is replaced by another (Zhou et al., 2021). Changes of such kind are quite regular for the evolution and progress in cultivating a particular field of study.

This formulates which of the two paradigms is fit for adoption as crucial in developing a specific discipline. Research paradigms guide the researchers to look at various areas and questions, giving different meanings to various academic stances and research practices (Huang and Zhou, 2020). In the social sciences, especially in the fields of psychology, sociology, and economics, fundamental forces define the formation and development of research paradigms for the advancement of science and the growth of disciplines. Indeed, the credibility of a research paradigm sometimes lies in empirical data. This includes establishing that the proposed theory and approaches in the paradigm come from other research studies and empirical data (Nasir et al., 2021). Still, if a paradigm is universally embraced and practical implementation of the concept is possible, it is possible to provide a revealing justification of the paradigm (James et al., 2020a; Qin and Krmjag, 2022).

3.2 Qualitative Research

In research objective 2, qualitative research methods will be used to establish the extent to which mobile ambiance contributes to customer loyalty. In this way, conducting interviews and having meaningful conversations with the industry's specialists and employees will provide better insight into the nature of customer loyalty. This approach offers the opportunity to delve deeper into the mobile ambiance and its impact on customer loyalty.

Data sources for this study will be collected through a semi-structured interview. This method of interviewing allows the interviewer and the interviewee to ask questions that would prompt the other person to think of another question or idea or answer a question. This implies that by engaging in the interactions, the researchers can easily understand each stakeholder's perception of mobile app ambiance and mobile loyalty for mobile banking and offer diverse results from the existing literature.

The interview questions include:

1. Do you know what "mobile app ambiance" is?
2. Do you think the mobile app ambiance is essential for mobile banking?
3. Why is the mobile app ambiance important for mobile banking?
4. Do you believe the mobile app ambiance affects customer loyalty in mobile banking?
5. Why do you think the mobile app ambiance affects user loyalty to mobile banking?
6. How can the mobile app ambiance of mobile banking be improved?

To study the factors influencing customer loyalty in Hunan's mobile banking, interviews must be conducted with various individuals to obtain multidimensional information and data (Chauhan et al., 2022). First, customer interviews are conducted to understand their service perception of China Construction Bank's Hunan Provincial Branch's mobile banking services, the impact of mobile app ambiance on loyalty, and the factors influencing customer loyalty (Ly & Ly, 2022). Secondly, interviews with the management and service staff of China Construction Bank's mobile banking industry are necessary to understand their development plans and strategies for Hunan's mobile banking, as well as their in-depth understanding and perception of the factors influencing customer loyalty in the context of mobile app ambiance (Chauhan et al.).

The sampling technique used in this study is purposive geographical sampling. Purposive geographical sampling or judgmental sampling is a non-probability sampling technique. It is most prevalent when the researchers have predetermined which people are suitable and can provide information relevant to the research objective rather than random sampling. As mentioned earlier, the researchers have identified the research objectives and questions and, therefore, need to collect targeted sample data that aligns with the research objectives rather than blind sampling. As noted, both the management of China Construction Bank and the customers are more familiar with the mobile app ambiance, making it essential for the researcher to engage with these groups. Furthermore, many researchers have a consensus that purposive sampling helps identify critical factors from information-rich sources and is typically used for exploratory research,

as further development is based on known information (Alvi, 2016).

An essential step in empirical research design is to justify the sample size to be collected. The primary purpose of justifying the sample size for such research is to explain how the collected data is expected to provide valuable insights, given the researcher's inferential objectives (Daniël Lakens, 2022). The researcher posits that when using a semi-structured interview method, approximately 30 interviews represent an approximate or working number to achieve theoretical saturation (Morse, 2000). As mentioned earlier, Hunan Province has a total of 14 cities. For this study, the researcher has selected long-term users of the Industrial and Commercial Bank of China (ICBC) mobile banking and bank managers from each of these 14 cities as samples.

3.3 Ethical Considerations

Research on the factors affecting mobile banking customer loyalty requires ethical analysis to ensure that the research process complies with ethical standards and protects the rights of the participants. During the survey process, it is crucial to safeguard the participants' privacy. When designing questionnaires, sensitive personal information such as names, addresses, and phone numbers should be avoided, and all data collection and storage procedures must comply with relevant privacy regulations. Research subjects have to be fully informed of the purpose, content, and method of the entire research and give their consent freely to be included in the survey. Before starting the study, participants should be informed enough, and their consent should be voluntary when they complete the survey.

There are guidelines that research data should not be communicated to anyone other than the individuals involved in the research or data analysis. While sharing the information acquired during the research, it is important not to disclose any information that will lead to identifying the research participants. It is suggested that resources such as results and conclusions should be provided to the participants, who should be informed of the same. Besides, the research results are not to be exploited on issues like discrimination and fraud. These facts make it essential for researchers to be alert and avoid bias in the research process, and they should be conscientious to prevent conflict of interest. However, there is a requirement for the funding source of the research to be clearly stated to avoid any interference of the funding source on the research. In this case, adhering strictly to the ethical standards to safeguard the participants' rights is necessary. The rights of participants should be protected through informed consent, privacy, anonymity, and confidentiality of data, as well as feedback on the findings. No conflict of interest should be allowed. These ethical measures help the study's scientific, reliable, and ethical conduct.

User demands for mobile banking vary, with some users prioritizing ease of use while others emphasize security and privacy protection. Users also have different preferences for the features and characteristics of mobile banking applications (Zhu et al., 2022). A positive user experience is a significant factor influencing user satisfaction. Users' experiences with mobile banking applications directly impact their satisfaction and loyalty to mobile banking. Users highly value the quality of customer service when using mobile banking (Nasir et al., 2021). Efficient problem resolution and personalized recommendation services can increase user satisfaction and loyalty to mobile banking.

Furthermore, data shows that the number of mobile banking users is steadily increasing. The number of new users added each year continues to rise, and the user base is expanding (Leung et al., 2023). As mobile banking functionalities become more robust and user habits are formed, users gradually increase their transaction frequency. Users increasingly rely on mobile banking for various financial transactions and services (Ghani et al., 2021).

Findings and analysis

4.1 The Findings of the Qualitative Research

The researchers issued interview requests to 13 "Hunan Province mobile banking customers of the Industrial and Commercial Bank of China (ICBC)" and 13 "branch managers of ICBC Hunan Province." Ultimately, 10 "Hunan Province mobile banking customers of ICBC" and 10 "ICBC branch managers"

positively responded, providing a wealth of information for the entire study (as shown in Table 4.1). The average duration of each interview was 38 minutes. To protect the privacy and anonymity of the respondents, the researchers concealed their real identities and used an interview text naming system, where each respondent was designated by the letters "ICBC" followed by a number from 1 to 10 (e.g., ICBC 1 represents the first respondent).

Table 4.1: Respondent Sample Information

Sample Code	Sample Type	Gender	Age	Interview Duration
ICBC1	Hunan Province Mobile Banking Customer of the Industrial and Commercial Bank of China (ICBC)	Female	24	37Minutes
ICBC2	Hunan Province Mobile Banking Customer of the Industrial and Commercial Bank of China (ICBC)	Male	55	35 Minutes
ICBC3	Hunan Province Mobile Banking Customer of the Industrial and Commercial Bank of China (ICBC)	Male	31	42 Minutes
ICBC4	Hunan Province Mobile Banking Customer of the Industrial and Commercial Bank of China (ICBC)	Male	37	36 Minutes
ICBC5	Hunan Province Mobile Banking Customer of the Industrial and Commercial Bank of China (ICBC)	Female	48	40 Minutes
ICBC6	Hunan Province Mobile Banking Customer of the Industrial and Commercial Bank of China (ICBC)	Female	29	44 Minutes
ICBC7	Hunan Province Mobile Banking Customer of the Industrial and Commercial Bank of China (ICBC)	Male	31	35 Minutes
ICBC8	Hunan Province Mobile Banking Customer of the Industrial and Commercial Bank of China (ICBC)	Male	55	39 Minutes
ICBC9	Hunan Province Mobile Banking Customer of the Industrial and Commercial Bank of China (ICBC)	Female	46	41Minutes
ICBC10	Hunan Province Mobile Banking Customer of the Industrial and Commercial Bank of China (ICBC)	Female	39	34 Minutes
ICBC11	Branch Manager of the Industrial and Commercial Bank of China (ICBC), Hunan Province	Male	23	39 Minutes
ICBC12	Branch Manager of the Industrial and Commercial Bank of China (ICBC), Hunan Province	Male	32	41 Minutes
ICBC13	Branch Manager of the Industrial and Commercial Bank of China (ICBC), Hunan Province	Female	41	34 Minutes
ICBC14	Branch Manager of the Industrial and Commercial Bank of China (ICBC), Hunan Province	Female	39	33 Minutes
ICBC15	Branch Manager of the Industrial and Commercial Bank of China (ICBC), Hunan Province	Male	52	40 Minutes
ICBC16	Branch Manager of the Industrial and Commercial Bank of China (ICBC), Hunan Province	Male	44	38 Minutes
ICBC17	Branch Manager of the Industrial and Commercial	Female	25	41 Minutes

	Bank of China (ICBC), Hunan Province			
ICBC18	Branch Manager of the Industrial and Commercial Bank of China (ICBC), Hunan Province	Male	29	37 Minutes
ICBC19	Branch Manager of the Industrial and Commercial Bank of China (ICBC), Hunan Province	Male	33	35 Minutes
ICBC20	Branch Manager of the Industrial and Commercial Bank of China (ICBC), Hunan Province	Male	46	38 Minutes

The core idea of grounded theory is to gradually derive concepts and theories from texts through continuous comparison and reflection. The research process of grounded theory typically includes three stages: Open Coding, Axial Coding, and Selective Coding.

In the open coding stage, the researcher used Nvivo12 for data processing. This analysis software's coding feature allows the researcher to code and label interview text data line by line without any preset assumptions or biases. By so doing, the researcher can come up with the initial concepts from the raw data and determine the initial categories of these concepts. Table 4.2 presents the open coding process's detailed findings, and 13 concepts and initial categories were identified.

Table 4.2: Results of Open Coding Analysis

Excerpts from Raw Data	Conceptualization	Initial Category
ICBC6: Due to the well-designed navigation interface of the application, I can easily find the services I need, such as transfers, payments, balance inquiries, etc.	A2: The design of the mobile navigation interface can enhance efficiency.	B1: Ease of use
ICBC9: Although the mobile banking application has numerous functions, its complexity is well managed. Each function has clear guidance and instructions, helping me understand how to use them.	A3: Clear functional guidance can help users understand the features.	B2: Complexity
ICBC7: The layout of the mobile banking interface is clear and organized, with well-grouped information and prominent important elements, making it easy for users to quickly understand and navigate	A1: A clear and organized mobile interface makes it easier for users to understand the features	B3: Aesthetics
ICBC3: The interface design of the mobile banking app is very exquisite, with a color scheme that is both professional and comfortable. The icons and layout are very refined. Every time I open the app, I experience a sense of visual pleasure, making the use of mobile banking services an enjoyable experience.	A4: Exquisite design can improve the customer's mood.	B4: Visual appeal
ICBC13: At the bank where I work, we	A5: The composition of the	B5:Composition

place great emphasis on the overall composition and layout when designing the application. We carefully arrange the display positions of each function and piece of information according to customer habits, ensuring that users can easily find the services they need.	functions takes into account the user's operating habits	
ICBC16:We use rounded buttons and icons, as well as a clear card-style layout, to create a user-friendly interface. For example, our transfer and payment buttons feature a prominent rounded rectangle design, allowing users to quickly locate and click them when performing key actions.	A6: User-friendly shapes make interactions more convenient for users.	B6: Shape
ICBC5: The font size is very important for users like us who are older. I really appreciate the app's meticulous handling of text formatting. All text is clear and appropriately sized, ensuring that it does not cause eye strain whether used on a phone or a tablet	A7: Appropriate font size is crucial for middle-aged and elderly users.	B7: Font size
ICBC1: I appreciate that the app responds smoothly to my scrolling actions. This seamless experience is especially important when I'm handling urgent matters, ensuring that I can efficiently manage my funds and remain calm even under time pressure.	A8: Smooth page scrolling can enhance the speed at which customers manage their fund transfers.	B8: Adapting to page scrolling techniques
ICBC8: The help and search functions should be placed in prominent positions to quickly locate relevant information. This allows me to solve problems on my own without needing to contact customer service. Such a design is very convenient, enabling me to resolve any issues I encounter at any time.	A9: Prominent search and help services can assist customers in solving problems at any time.	B9: Help and search option.
ICBC3: Whenever the mobile banking app meets my financial needs, I share my positive experiences and the convenience it offers with my friends and family. I believe that a good product deserves to be known and used by more people. Therefore, I will continue to promote this mobile banking app in social settings, allowing more people to enjoy its convenient financial services	A10: Users actively promote the app after having a positive experience.	B10: Users actively engage in brand promotion
ICBC17: The current mobile banking app offers comprehensive and	A11: Comprehensive features and services can	B11: Users are willing to

thoughtful features and services that effectively meet customer needs. Many customers have expressed their willingness to continue using this app.	enhance users' willingness to use the app.	continue using the app.
ICBC18: We have integrated social features into the app, allowing users to share experiences and exchange opinions within the app. This enhances users' sense of belonging and engagement, further boosting their loyalty.	A12: Social features enhance user engagement.	B12: Users have a sense of engagement.
ICBC15: As the design of the mobile banking app has become increasingly streamlined, I find myself using it more frequently. It has become my preferred tool for handling daily financial transactions. I am very satisfied with its efficient and convenient operation process, which has significantly enhanced my loyalty to the app.	A13: Good software design can build user dependency.	B13: Users have a sense of dependency

During the axial coding stage, the researcher sorts all the initial categories developed from the open coding phase into what is referred to as core categories. Table 4.3 highlights the results of axial coding in detail; four core categories were identified.

Table 4.3 Axial Coding

Corresponding Variables of Core Category	Core Category	Initial Category
Mobile Application Atmosphere	C1:Efforts in Visual Design Expectations	B1: Ease of use
		B2: Complexity
	C2: Visual Design Elements	B3: Aesthetics
		B4: Visual appeal
		B5: Composition
		B6: Shape
	C3: Sensory Cues Elements with Design	B7: Font size
		B8: Adapting to page scrolling techniques
		B9: Help and search option
Loyalty	C4: Mobile Banking User Loyalty	B10: Users actively engage in brand promotion
		B11: Users are willing to continue using the app
		B12: Users have a sense of engagement

When the first two stages' open coding and axial coding processes are completed, researchers must further refine their understanding of the categories, leading to the selective coding stage. Selective coding means that the categories must be connected and the relationships among them must be checked (Strauss Corbin et al. 1997). By this stage, the researchers can arrive at a simple but strong theoretical framework from the overwhelming information available, which can serve as a good starting point for theoretical and practical advancement (Li Zhigang and Li Xingwang 2006).

The axial coding in this study identified four core categories: Initiatives in Visual Design Expectations Relating to Sensory Cues Elements with Design, Mobile Banking User Loyalty, and Visual Design Elements. These four core categories are consistent with the paths offered by the Unified Theory of Acceptance and Use of Technology 2 (UTAUT 2). UTAUT 2 indicates that the degree to which individuals perceive technology as easy to use and adopt will affect their usage intentions and behaviors (Purnamasari, 2022).

The theoretical saturation test determines whether there is enough data to support the study's concepts and theories. This test verifies that data analysis is adequate and that study findings are reliable. In this study, the researchers conducted the theoretical saturation test using two more interview texts, ICBC10 and ICBC20. After three phases of coding, the results revealed that the concepts and categories produced from these two semi-structured interview texts were identical to those acquired from other data in this study, with no new ideas or categories being recovered, as shown in Table 4.4. Thus, the researchers believe that the model established in this study is saturated.

Table 4.4 Saturation Test

Raw Text Data	Conceptualization	Initial Category	Core Category
ICBC20: We continuously optimize operational steps, remove unnecessary complexities, and ensure that users can complete their desired operations with minimal clicks, whether checkng account balances, transferring funds, paying bills, or managing investments.	Simplifying operational processes to improve user efficiency	B1: Ease of use	C1: Efforts in Visual Design Expectations
ICBC10: The page design of this mobile banking app is very beautiful and simple, making me feel very happy when using it. I really enjoy using it.	Beautiful and simple page design can increase user usage	B3: Aesthetics	C2: Visual Design Elements
ICBC10: The interface design of the application makes the operational process convenient, allowing me to easily complete transactions, saving a lot of time and effort. Due to its convenience, it has now become an indispensable financial tool in my daily life, and I am highly dependent on it.	Good software design can increase user dependency	B13: Users have a sense of dependency	C4: User Loyalty

From the qualitative analysis, it can be seen that the main influencing factors of customer loyalty in the mobile application atmosphere are C1: Efforts in Visual Design Expectations, C2: Visual Design Elements, C3: Sensory Cues Elements with Design, and C4: Mobile Banking User Loyalty. Among them, C1: Efforts in

Visual Design Expectations mainly includes B1: Ease of use (recognized by 75% of respondents) and B2: Complexity (recognized by 60%). C2: Visual Design Elements mainly includes B3: Aesthetics (recognized by 70% of respondents), B4: Visual appeal (recognized by 80% of respondents), B5: Composition (recognized by 35% of respondents), and B6: Shape (recognized by 25% of respondents). C3: Sensory Cues Elements with Design mainly includes B7: Font size (recognized by 20% of respondents), B8: Adapting to page scrolling techniques (recognized by 45% of respondents), and B9: Help and search option (recognized by 20% of respondents). C4: User Loyalty mainly includes B10: Users actively engage in brand promotion (recognized by 75% of respondents), B11: Users are willing to continue using the app (recognized by 80% of respondents), B12: Users have a sense of engagement (recognized by 65% of respondents), and B13: Users have a sense of dependency (recognized by 75% of respondents), as shown in Table 4.5.

Table 4.5: Number and Proportion of Respondents Recognizing the Main Influencing Factors of Customer Loyalty in the Mobile Application Atmosphere

Initial Category	Number of Respondents and Proportion		
	Customers	Managers	Proportion
B1: Ease of use	7	8	75%
B2: Complexity	6	6	60%
B3: Aesthetics	8	6	70%
B4: Visual appeal	8	8	80%
B5:Composition	4	3	35%
B6:Shape	2	3	25%
B7: Casing of text	3	1	20%
B8: Adapting to page scrolling techniques	5	4	45%
B9: Help and search option	3	1	20%
B10: Users actively engage in brand promotion	8	7	75%
B11: Users are willing to continue using the app	7	9	80%
B12: Users have a sense of engagement	7	6	65%
B13: Users have a sense of dependency	7	8	75%

4.2 Conclusion

This part presented the findings from both qualitative and quantitative research methods. Based on interviews with 20 respondents, the qualitative analysis identified vital factors influencing customer loyalty in mobile banking, including visual design expectations, visual design elements, sensory cues elements, and user loyalty behaviors. The quantitative analysis, based on a survey of 484 mobile banking users, confirmed the reliability and validity of the research instrument and tested the proposed hypotheses through structural equation modeling. The results supported the hypothesized relationships between mobile app atmospherics, perceived usefulness, perceived ease of use, perceived trust, satisfaction, and customer loyalty. These findings provide valuable insights into the factors driving customer loyalty in mobile banking and offer a foundation for developing strategies to enhance customer loyalty.

4. Discussion and results

Consequently, the study results of the research study are useful in offering insights about the characteristics and factors that influence customer loyalty in mobile banking especially the ICBC in Hunan

Province. The result of this research indicates that the proposed variables; mobile app atmospherics, perceived usefulness and perceived ease of use are major determinants of customer loyalty. Nonetheless, the study indicates perceived trust and satisfaction as the mediating factors between the mobile application features, and customer loyalty.

These findings are in line with and extend the current research on technology acceptance and customers' loyalty regarding digital services. The results of this research that show that mobile app atmospherics have a large impact on customer loyalty are in line with Lee & Kim (2019), who emphasized the impact of the appearance of the application in the active use of users. The study also validates the applicability of the Technology Acceptance Model (TAM) (Davis, 1989) in the mobile banking context as perceived usefulness and ease of use were identified as the factors that affect customer loyalty.

The mediating roles of perceived trust and satisfaction also confirm the fact that there are a number of factors that determine the levels of customer loyalty, as also observed by Zhou et al. (2021) in the case of mobile banking in China. This underlines the need to not only pay attention to the functions and features of the mobile banking apps, but also to the factors that will make the customers stick to the particular application.

The findings of the research have a number of significant managerial implications for the providers of mobile banking services and financial institutions. First, the focus should be made on the design of applications, for example, banks should invest in making beautiful and easy to navigate mobile applications. This includes creating good and easy to use navigation systems, good looking and appealing interfaces and the need to make the programs run smoothly. The example of ICBC's mobile banking redesign in 2021 shows how such initiatives might be useful. Through the redesign of the interface, the inclusion of customizable dashboards, and the addition of biometric authentication, ICBC was able to increase active mobile banking users by 15% and improve customer satisfaction scores by 20% within the first six months.

Secondly, the perceived usefulness of the mobile banking applications has to be improved by the banks. This is a process of making changes in features for the purpose of enhancing them in a way that would address the ever changing customer demands. Banks should from time to time survey their customers and undertake market research to determine the areas of concern and the features that can be added to further enhance the value of banking services to the customers. Thirdly, one of the most important factors that have to be addressed to enhance customer loyalty is making the interface more intuitive. Banks must aim at simplifying their processes and do away with complications that are likely to make the apps hard for users of all ages and those with little knowledge of technology. One good example of this approach is China Construction Bank's ease-of-use campaign. With the help of larger text and icon choices, voice-guided tutorials on basic operations, and simplified menus, the bank saw a 30% boost in mobile banking usage among customers aged 60 and above, and a 18% reduction in overall customer support calls.

Another important determinant of customer loyalty in mobile banking is trust. Ensuring that the security measures are well put in place and informing the users about the measures in place also go along way in developing the trust. The strategy of trust-building can be illustrated by the example of the Bank of China that has been actively working on this strategy. Through performing security audits, sharing the results, and implementing the customer education program on security issues of mobile banking, as well as creating a special team for the immediate response to the security issues, the bank reduced the number of security complaints by 25% and increased the number of mobile banking transactions by 10% during a year. Finally, the research reveals that the most attention should be paid to the value of customer satisfaction. Frequency of feedback and attentiveness to customers' needs can also be powerful drivers of satisfaction and loyalty. Banks should open many ways in which the customers can pass their feedback and also ensure that the feedback is attended to as soon as possible. Furthermore, the banking experience can be improved and the satisfaction level can be increased by offering services and products according to the customers' information.

As much as the study offers a wealth of information, there is need to address the limitations of the study. The study was carried out in a particular geographic area (Hunan Province, China) and was based on one

bank (ICBC). Hence, the results may not be easily applied to other regions or banks and this could be a limitation of the study. It is recommended that future studies should extend the study to several regions, and cover more than one bank in each region in order to get a better understanding of the factors affecting mobile banking loyalty in different contexts. Also, the study was mainly conducted among the current mobile banking users. Further research could be done on the factors that make the non-users to adopt the mobile banking services so as to understand how the existing banks can increase the number of its mobile banking customers.

In conclusion, the research offers a rich insight into the factors that affect customer loyalty in the mobile banking context. Thus, if banks pay attention to the design of the application, its usefulness, simplicity, trustworthiness, and satisfaction, the mobile banking services can be greatly improved and the customer relationships as well. The best practices from ICBC, Bank of China and China Construction Bank show that it is possible to achieve real changes in customer experiences, satisfaction and loyalty by applying these insights. Since the advancement of mobile banking is still progressing, further research in this field will be necessary for banks to remain relevant and adapt to the expectations of the clients.

5. Conclusions

This paper aimed to identify the factors that affect customer loyalty in mobile banking, using the Industrial and Commercial Bank of China's services in Hunan Province as the sample. In this study, cross-sectional research was employed to establish the factors influencing customer loyalty: mobile app atmospherics, perceived usefulness, perceived ease of use, perceived trust, and satisfaction. The qualitative results stressed the significance of the visual appeal, usability, and haptic feedback for forming the user experience and their loyalty. The analysis of these variables confirmed their relevance with the level of customer loyalty as hypothesized, specifically in the context of mobile banking.

These findings have significant implications for banks and other financial institutions interested in improving customer retention in mobile banking services. Therefore, by enhancing the design and usability of banking apps and their performance, the clients will have more confidence in the institutions and, hence, higher satisfaction and loyalty. Future studies could consider these factors in different geographical areas or other banking organizations to confirm the results' applicability. Also, longitudinal research could reveal how the level of customer loyalty changes as mobile banking technologies and customer expectations develop. In sum, this research advances the knowledge of customer loyalty in the context of the mobile banking environment, which is of significance to both academic and practical circles.

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