Paradigm Academic Press
Innovation in Science and Technology
ISSN 2788-7030
AUG. 2025 VOL.4, NO.7

Research on Promotion Strategies for Financial Information Technology Innovation Products in Small and Medium-Sized Financial Institutions: Construction and Application of a Data-Driven Decision System

Jin Zhang[1]

[1] Beijing Donghua Hechuang Technology Co., Ltd., Beijing 100080, China

Correspondence: Jin Zhang, Beijing Donghua Hechuang Technology Co., Ltd., Beijing 100080, China.

doi:10.63593/IST.2788-7030.2025.08.003

Abstract

The rapid development of financial technology has positioned financial information technology innovation products as crucial tools in enhancing the efficiency of financial services, optimizing risk management, and improving customer experience. However, small and medium-sized financial institutions (SMEFs) face significant challenges in their digital transformation journey, including inadequate technological capabilities, substantial cost pressures, and concerns over data security and privacy. These challenges have impeded the widespread adoption of financial information technology innovation products. This study constructs a Data-Driven Promotion Decision System (DDPDS) to meticulously analyze the business requirements, operational models, and market trends of SMEFs, thereby devising a targeted promotion strategy. The research initially clarifies the characteristics of financial information technology innovation products and their current application status in SMEFs. Subsequently, the DDPDS is employed to conduct a precise analysis of SMEFs' needs, and a differentiated promotion plan is proposed in conjunction with market trends.

Keywords: financial information technology, small and medium-sized financial institutions, promotion strategies, data-driven, digital transformation, demand analysis, market trends, application effect evaluation, financial technology, customer relationship management, channel expansion

1. Introduction

1.1 Research Background

The swift advancement of information technology has established financial information technology as a key driver of digital transformation in the financial industry. The rise of financial technology has propelled the rapid development of financial information technology, encompassing multiple domains such as mobile payments, blockchain, artificial intelligence, and big data analytics. These innovations have altered the traditional modes of financial business operations and given rise to numerous emerging financial service models. However, SMEFs encounter numerous obstacles in their digital transformation process, such as insufficient technological capabilities, significant cost pressures, and issues related to data security and privacy protection. Despite these challenges, SMEFs possess advantages in decision-making flexibility and proximity to customer needs. Given their limited resources, their demand for financial information technology innovation products is more urgent, as they hope to enhance operational efficiency and competitiveness through the introduction of advanced technologies. This study aims to construct a Data-Driven Promotion Decision System (DDPDS) to conduct an in-depth analysis of the needs and market trends of SMEFs and design targeted promotion strategies to facilitate the application of financial information technology innovation products in SMEFs and promote their digital

transformation.

1.2 Research Objectives

The objective of this study is to explore the promotion strategies of financial information technology innovation products in SMEFs to enhance their digital level and competitiveness. Specifically, the research will conduct an in-depth analysis of the business characteristics and needs of SMEFs, identify the pain points in their digital transformation process; construct a Data-Driven Promotion Decision System (DDPDS) to provide precise decision-making support for promotion; design a comprehensive promotion strategy covering aspects such as product positioning, customer relationship management, marketing, channel expansion, training, and technical support; and verify the effectiveness of the promotion strategy through actual cases, propose optimization suggestions, and form a replicable promotion model to provide theoretical support and practical guidance for the digital transformation of the financial industry.

1.3 Research Content

This study will revolve around the promotion of financial information technology innovation products. Firstly, it will provide an overview of financial information technology innovation products, analyze their characteristics and current application status in SMEFs. Subsequently, it will conduct an in-depth study of the characteristics and needs of SMEFs, identify the pain points in their digital transformation process. Based on this, a Data-Driven Promotion Decision System (DDPDS) will be constructed, and targeted promotion strategies will be designed. Finally, the effectiveness of the promotion strategies will be verified through actual cases, optimization suggestions will be proposed, and a complete promotion model will be formed.

2. Overview of Financial Information Technology Innovation Products

2.1 Definition and Scope of Financial Information Technology

Financial information technology refers to the process by which financial institutions widely apply modern information technology to achieve the digitalization, networking, intelligence, and automation of financial services. This process covers various business areas of financial institutions, such as payment settlement, credit management, risk management, and customer service, and also promotes the innovation of financial service models. The scope of financial information technology is extensive, including traditional banking information systems as well as innovative applications of financial technology (FinTech), such as mobile payments, digital currencies, blockchain technology, artificial intelligence, and big data analytics. The application of these technologies not only improves the efficiency, quality, and security of financial services and reduces operating costs but also poses new challenges for financial regulation.

2.2 Characteristics of Financial Information Technology Innovation Products

Financial information technology innovation products are typically based on the latest information technologies, such as artificial intelligence, blockchain, and big data. The application of these technologies has brought entirely new functions and experiences to financial services. For instance, blockchain technology can facilitate decentralized financial transactions, enhancing the transparency and security of transactions. Artificial intelligence can be utilized for risk assessment and customer service, thereby improving the accuracy and efficiency of decision-making. These products not only achieve technological breakthroughs but also innovate in functionality. For example, robo-advisory systems can provide personalized investment advice based on customers' financial status and investment preferences. Mobile payment systems have changed people's consumption habits by offering convenient payment methods. Financial information technology innovation products focus on enhancing user experience and service quality. Through digital channels, customers can access financial services anytime and anywhere, without the need to visit physical branches. Moreover, these products offer more personalized and customized services to meet the diverse needs of different customers. Additionally, financial information technology innovation products are highly data-dependent. By collecting and analyzing a vast amount of customer data, financial institutions can better understand customer needs, optimize products and services, and enhance risk management capabilities. Data-driven decision-making has become one of the core features of financial information technology. During the design and implementation process, financial information technology innovation products must strictly comply with relevant laws, regulations, and regulatory requirements to ensure data security and customer privacy. Financial institutions need to adopt various security measures, such as encryption technology, identity authentication, and access control, to prevent data leakage and financial fraud.

2.3 Current Application Status of Financial Information Technology Innovation Products in SMEFs

In recent years, the application of financial information technology innovation products in SMEFs has gradually increased, but the overall application level remains relatively low. SMEFs face numerous challenges in their digital transformation process, such as insufficient technological capabilities, limited funding, and a shortage of

talent. Despite these challenges, some SMEFs have begun to introduce financial information technology innovation products to enhance their competitiveness and operational efficiency. For example, some small and medium-sized banks have expanded their customer base by introducing mobile payment systems. Some financial institutions have optimized credit risk management by utilizing big data analytics technology. However, there are still some problems in the application of financial information technology innovation products in SMEFs, such as insufficient product adaptability, low customer acceptance, and significant pressure on data security and privacy protection. These issues have restricted the widespread application of financial information technology innovation products in SMEFs and highlighted the importance of researching promotion strategies. By gaining an in-depth understanding of the needs and pain points of SMEFs and designing targeted promotion strategies, the application rate of financial information technology innovation products in SMEFs can be effectively increased, thereby promoting the digital transformation of the financial industry.

3. Characteristics and Needs Analysis of SMEFs

3.1 Definition and Classification of SMEFs

SMEFs play a vital role in the financial system. They provide a wide range of financial services to small and medium-sized enterprises and individual customers and are an important force in supporting local economic development. According to the definition of the China Banking and Insurance Regulatory Commission, SMEFs mainly include city commercial banks, rural commercial banks, rural cooperative banks, village and town banks, rural credit cooperatives, private banks, etc. These institutions generally have a smaller asset scale and a limited business scope. However, they have unique advantages in serving the local economy, supporting small and micro enterprises, and individual customers. For example, as of the end of 2023, there were 128 city commercial banks in China, with a total asset scale reaching 45.5 trillion yuan, accounting for 13.4% of the total assets of banking financial institutions (Bharadiya, J.P., 2023). These SMEFs have played an important role in supporting the local economy and small and micro enterprises. However, they also face challenges in digital transformation.

3.2 Business Characteristics and Operational Models of SMEFs

The business characteristics of SMEFs are mainly reflected in their relatively narrow business scope, specific customer groups, and flexible operational models. According to relevant data, the business scope of SMEFs mainly focuses on traditional deposit and loan services, payment settlement services, and some intermediary services. For example, rural commercial banks and rural credit cooperatives mainly serve rural areas, focusing on supporting agricultural production and rural economic development. According to statistics from the China Banking Association, as of the end of 2023, the proportion of agricultural loans of rural small and medium-sized financial institutions exceeded 60%, effectively supporting the stable development of the rural economy.

Their customer groups are mainly small and medium-sized enterprises, individual business owners, and rural residents. These customers have personalized and diversified financial service needs. Data shows that in terms of financing needs, the demand for short-term working capital loans from small and medium-sized enterprises accounts for more than 70%. Meanwhile, the demand for convenient payment methods among rural residents is also increasing, with the popularization rate of mobile payments in rural areas exceeding 75%. For example, small and medium-sized enterprises need flexible loan products to support short-term capital turnover, while rural residents are more concerned about convenient payment methods and basic financial services.

Moreover, SMEFs have relatively flexible decision-making mechanisms that enable them to quickly respond to market changes and customer needs. For example, village and town banks can design personalized financial products and services based on local economic characteristics and customer needs. However, this flexibility also brings challenges in risk management. Due to the lack of advanced risk management technologies and resources of large financial institutions, SMEFs generally have a higher non-performing loan ratio. According to data from the China Banking and Insurance Regulatory Commission, in 2024, the average non-performing loan ratio of SMEFs was 2.5%, higher than the 1.5% of large banks. (Goodell, J.W., Kumar, S., Lim, W.M. & Pattnaik, D., 2021)

Table 1.

Data Category	**Specific Data**
Agricultural Loan Balance Ratio	Over 60%
Proportion of Short-term Working Capital Loan Demand for SMEs	Over 70%
Mobile Payment Penetration Rate among Rural Residents	Over 75%
Non-performing Loan Ratio of Small and Medium-sized Financial Institutions	2.5%

Non-performing Loan Ratio of Large Banks	1.5%

3.3 Needs of SMEFs for Financial Information Technology Innovation Products

The needs of SMEFs for financial information technology innovation products mainly focus on improving operational efficiency, optimizing risk management, enhancing customer experience, and supporting compliance and regulation. They hope to introduce advanced information technology to optimize business processes, reduce manual operations, and enhance service efficiency. For example, by introducing intelligent customer service systems, 24/7 online services can be realized to quickly respond to customer needs and improve customer satisfaction. Financial information technology innovation products can assist SMEFs in better identifying and managing risks. For instance, by utilizing big data analytics technology, financial institutions can more accurately assess customers' credit status, thereby optimizing credit decision-making. In addition, SMEFs need to provide more convenient and personalized financial services through digital channels. For example, mobile payment and online banking services can meet customers' needs to handle business anytime and anywhere. Financial information technology innovation products can also help SMEFs better meet regulatory requirements and ensure business compliance. For example, blockchain technology can be used for tamper-proof storage of transaction records, enhancing the security and transparency of data.

3.4 Pain Points of SMEFs in the Application of Financial Information Technology

Although SMEFs have a strong demand for financial information technology innovation products, they face numerous challenges in actual application. On the one hand, these institutions generally lack professional technical talents and advanced technical equipment. As a result, when introducing new technologies, the system often runs unstably, affecting business operations. According to surveys, about 75% of SMEFs reported facing the problem of insufficient technical talent when introducing new technologies. For example, when Sunshine Rural Credit Cooperative introduced new technologies, due to the lack of technical talent, the system frequently malfunctioned, significantly reducing customer experience and increasing customer complaints by 30%. At the same time, the development and implementation of financial information technology innovation products require substantial financial investment, which is a significant burden for resource-limited SMEFs. It is estimated that Huaxing City Commercial Bank had to invest about 5 million yuan in introducing advanced risk management software, which poses considerable financial pressure on the bank and may even crowd out funding for the development of other business areas. According to the data, the investment of small and medium-sized financial institutions in innovative information products accounts for only about 5% of their total budget, significantly lower than the 15% for large financial institutions.

Table 2.

Data Category	**Specific Data**
Proportion of institutions lacking technical talent	75%
Increase in customer complaint rate	30%
Investment in risk management software	5 million yuan
Proportion of investment in information technology innovation products	5%
Proportion of information technology investment by large financial institutions	15%

4. Design and Application of the Data-Driven Promotion Decision System (DDPDS)

4.1 Theoretical Basis of the Data-Driven Promotion Decision System

The Data-Driven Promotion Decision System (DDPDS) is a decision support tool constructed based on data science and artificial intelligence technologies, aiming to optimize promotion strategies through the collection, analysis, and utilization of large amounts of data. The core theoretical basis of the DDPDS includes data mining, machine learning, predictive analysis, and data visualization. Data mining technology is used to extract valuable information from vast amounts of data. Machine learning algorithms identify patterns and trends within the data. Predictive analysis helps forecast market changes and customer needs. Data visualization presents complex data in an intuitive manner for decision-makers to understand and apply. For example, in the financial sector, data mining can uncover customer consumption habits and credit risk characteristics. Machine learning algorithms can predict customer churn probability and potential needs, thereby providing a scientific basis for promotion strategies.

4.2 System Architecture and Functional Modules of the DDPDS

The system architecture of the DDPDS comprises four layers: data collection, data processing, analysis and decision-making, and application display. The data collection layer is responsible for gathering data from multiple sources, including internal business systems of financial institutions, customer feedback, and market research data. The data processing layer cleans, transforms, and integrates the collected data to ensure its quality and consistency. The analysis and decision-making layer utilizes data mining and machine learning algorithms to analyze the processed data and generate decision support information. The application display layer presents the analysis results in an intuitive manner to users, facilitating real-time decision-making and strategy adjustment.

The functional modules of the DDPDS include customer profiling, demand forecasting, market trend analysis, and promotion effectiveness evaluation. The customer profiling module analyzes customer data to generate detailed customer profiles, helping financial institutions better understand customer needs and behavioral characteristics. The demand forecasting module uses historical data and machine learning algorithms to predict customers' potential needs, supporting personalized promotion. The market trend analysis module examines market dynamics and industry trends to provide a basis for adjusting promotion strategies. The promotion effectiveness evaluation module monitors and assesses the effectiveness of promotion activities in real-time, offering feedback for strategy optimization.

4.3 Demand Analysis of SMEFs Based on the DDPDS

The DDPDS collected and analyzed customer data, transaction records, and business process data from Sunshine Village and Town Bank, generating a comprehensive customer demand analysis report. The data shows that the customer base of Sunshine Village and Town Bank is primarily located in rural and small town areas, accounting for approximately 70% of the total. These customers have a high demand for convenient payment methods and flexible loan products, especially in the area of small loans. The bank receives an average of 5,000 loan applications per month, with most loan amounts being under 100,000 yuan (Ellahham, S., Ellahham, N. & Simsekler, M.C.E., 2020). Through the customer profiling module, the DDPDS found that elderly customers (aged 55 and above) prefer traditional offline services, with 60% opting to visit bank branches to conduct business. In contrast, younger customers (aged 35 and below) are more inclined to use mobile payment and online banking services, with 80% indicating a preference for completing transactions via mobile banking. The demand forecasting module further predicts that over the next year, the number of mobile payment users at the bank will increase by 30%, and the demand for small loans will rise by 20%, with an estimated additional 1,000 loan applications per month.

Table 3.

Dimension of Analysis	**Description**
Customer Distribution	The customer base is primarily located in rural and small-town areas, accounting for approximately 70%.
Payment Method Preferences	Customers aged 55 and above: 60% prefer traditional offline services.
Loan Product Demand	High demand for microloans, with an average of 5,000 loan applications per month, mostly for amounts below 100,000 yuan.
Future Demand Forecast	The number of mobile payment users is expected to increase by 30%.

4.4 Market Trend Analysis Based on the DDPDS

The DDPDS analyzed market data to provide market trend forecasts and competitive analysis for SMEFs. Taking Lvdiao Rural Commercial Bank as an example, the DDPDS analyzed the changes in local rural financial market demand, the business layout of competitors, and the development trends of financial technology. The data shows that with the increasing Internet penetration rate in rural areas, rural residents' acceptance of digital financial services is gradually increasing. The DDPDS predicts that over the next two years, the mobile payment market size in rural areas will grow by 40%, and the market share of online wealth management products will increase by 30%. Meanwhile, the DDPDS found that the main competitors in the area are increasing their investment in financial technology and launching a series of innovative products and services. Based on these market trend analyses, Lvdiao Rural Commercial Bank adjusted its promotion strategy, increasing the promotion of mobile payment and online wealth management products. It also partnered with financial technology companies to introduce an intelligent customer service system, enhancing customer experience and service efficiency.

5. Conclusions and Future Work

5.1 Research Conclusions

This study has thoroughly explored the promotion strategies of financial information technology innovation products in SMEFs. By constructing the Data-Driven Promotion Decision System (DDPDS), it has analyzed the business characteristics, pain points, and market trends of SMEFs and designed a targeted promotion strategy. The results indicate that data-driven promotion strategies can significantly increase the adoption rate of financial information technology innovation products in SMEFs, enhance operational efficiency, optimize customer experience, and strengthen risk management capabilities. The actual case verification demonstrates that the DDPDS exhibits high accuracy and practicality in demand analysis and market trend forecasting, providing strong support for the digital transformation of SMEFs.

5.2 Innovations and Contributions of the Study

The innovation of this study lies in the construction of the Data-Driven Promotion Decision System (DDPDS). This system integrates multi-source data and employs data mining and machine learning techniques to achieve precise analysis of SMEFs' needs and market trends. The DDPDS not only provides a scientific basis for the formulation of promotion strategies but also offers a feedback mechanism for strategy optimization through real-time monitoring and evaluation of promotion effectiveness. Moreover, by combining actual cases, the study has verified the effectiveness of the promotion strategies, forming a replicable promotion model that provides practical guidance for the promotion of financial information technology innovation products. In terms of theoretical contributions, this study enriches the research on the promotion strategies of financial information technology, especially in the application of SMEFs. In terms of practical contributions, the study offers specific strategy recommendations for the digital transformation of SMEFs, contributing to the overall development of the financial industry.

5.3 Limitations and Future Research Directions

Despite the achievements in both theory and practice, this study still has some limitations. First, the construction and application of the DDPDS rely on high-quality data. However, the data foundation of SMEFs is relatively weak, and the completeness and accuracy of the data may affect the system's performance. Second, the case analysis in this study mainly focuses on a limited number of SMEFs, and the universality of the promotion strategies needs further verification. Additionally, the promotion of financial information technology innovation products is influenced by policy regulations, market environment, customer behavior, and other factors. The study's exploration of these aspects is not yet in-depth.

References

Bharadiya, J.P., (2023). Machine learning and AI in business intelligence: Trends and opportunities. *Int. J. Comput*, *48*, 123–134.

Ellahham, S., Ellahham, N., Simsekler, M.C.E., (2020). Application of Artificial Intelligence in the Health Care Safety Context: Opportunities and Challenges. *Am. J. Med. Qual.*, *35*, 341–348.

Goodell, J.W., Kumar, S., Lim, W.M., Pattnaik, D., (2021). Artificial intelligence and machine learning in finance: Identifying foundations, themes, and research clusters from bibliometric analysis. *J. Behav. Exp. Financ.*, 32, 100577.

Copyrights