

Research on Personalized Marketing Strategy of Financial Products Based on Big Data

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Abstract. With the rapid development of information technology, big data has become one of the most important tools for personalized marketing in the financial industry. Based on big data analysis, this study investigates the practice and impact of personalized marketing strategies for financial products in the current economic environment. Financial institutions can create customer portraits and tailored products and services by gathering and studying data on consumers' buying patterns, behavioral preferences, social circles, and interactive feedback. Using various methods, including case studies, in-depth interviews, and quantitative analysis, we took a closer look at how big data can help financial institutions improve marketing efficiency, optimize product design, increase customer satisfaction, and improve customer loyalty. Research shows that big data can greatly support the marketing of financial products, improving market segmentation, providing better opportunities for cross-selling and value-added services, and optimizing marketing resources through predictive analytics, instant marketing, and highly personalized customer experiences. Nonetheless, financial institutions must demonstrate effective skills in managing data, using analysis technology, protecting privacy, and implementing personalized marketing strategies to fully benefit from these advantages.

1 Introduction

Due to increasingly fierce competition in the modern financial market, banks and other financial institutions seek to strengthen their connections with customers and improve their market share and profitability through personalized marketing strategies [1]. With the advancement and implementation of big data technology, personalized marketing of financial products has become achievable. As an important resource, big data will facilitate financial institutions' deep understanding of customer needs, discover potential market opportunities, and provide customers with more accurate and efficient financial service solutions.

While changing the traditional marketing model, big data also brings new challenges to financial institutions' marketing strategies. For financial institutions, the question of how to capture, store, process, and analyze these vast and complex datasets and how to use this data while maintaining data security and privacy has become a pressing issue [2].

2 The Application Foundation of Big Data in Personalized Marketing of Financial Products

2.1 Data Collection and Integration

Data collection is the foundation of big data applications, and the first step of personalized marketing of financial products is to obtain multidimensional data on customers. These usually include customers' basic information, transaction history, online behavior trajectory, living habits, and social network relationships. Examples of source channels are online trading platforms, social media, surveys, and customer service data. Financial institutions must use advanced data collection technology and ensure data legitimacy and compliance to guarantee data quality.

In the process of data integration, financial institutions must concentrate on eliminating information silos, opening up internal systems, integrating customer data spread across different departments and product lines, and establishing a unified data warehouse. It often requires strong IT system support and effective data governance mechanisms to ensure that information from different data sources can be effectively combined and managed. In addition, data cleaning and quality control are essential in the integration process to ensure the accuracy, integrity, and consistency of data [3].

2.2 Customer Portrait Construction

Customer portrait refers to the ideal customer model based on data analysis, which includes key information such as the customer's basic attributes, behavior

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characteristics, preferences, and needs. Financial institutions use big data technology to comprehensively analyze customers' transaction records, behavior data, and personal preferences to build detailed customer portraits [4].

By constructing customer portraits, financial institutions can identify target customer groups more accurately and push personalized products and services according to customer characteristics. It will improve

customer experience, satisfaction, retention, and marketing conversion rates. In addition, it is very important to update the customer portrait dynamically. It is necessary to collect the latest data and customer feedback in real-time, adjust and improve the customer model in a timely manner, and better fit the actual needs of customers [5]. As shown in Figure 1:

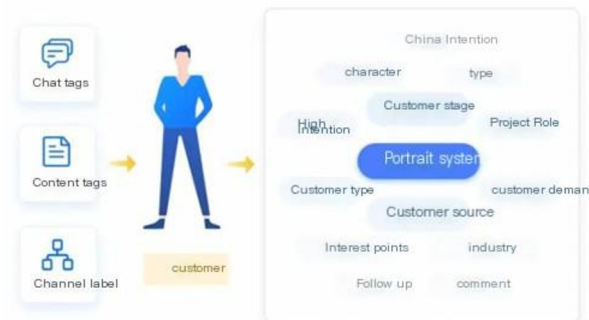


Fig. 1. Build a customer portrait model for big data

2.3 Data Analysis and Mining

Data analysis and mining are at the core of enabling personalized marketing of financial products. We use statistical analysis, machine learning, and pattern recognition to analyze large amounts of data and identify potential customer needs and market trends. In this process, financial institutions can discern customers' common patterns of use of financial products, anticipate the future direction of market development, and identify the most promising marketing methods [6].

Data analysis and mining help financial institutions understand customer behavior's driving factors and how to better meet their needs through personalized marketing strategies. In addition, by segmenting customer groups, financial institutions can offer more personalized services, such as creating investment portfolios based on customers' risk preferences or suggesting credit card products based on their spending habits. Table 1 is the financial product data analysis and mining:

Table 1. Financial product data analysis and mining

Data Application	Customer Classification	Asset Analysis	Credit Analysis
	Identification and Classification	Cross-influence	Trading behavior analysis
	KPI Monitoring	Risk Analysis	Response Analysis
Data mining, analysis, etc.			
Data Processing	Marketing services, analysis steps		Alpine

To sum up, the in-depth analysis of big data not only provides a scientific basis for the personalized marketing of financial products but also promotes the innovation and optimization of financial services, providing a new way for financial institutions to maintain their advantages in the fierce market competition.

3 Personalized Marketing Strategy of Financial Products Based on Big Data

3.1 Product Customization Strategy

In the contemporary market economy, the customization strategy of financial products gives banks and financial service providers a powerful tool for accurately meeting customers' individual needs. Researchers use big data

technology to extract important insights from massive customer information, allowing financial institutions to design a unique product and service portfolio for each customer.

The application of big data technology in product customization strategy is reflected in many aspects. First, financial institutions can gain a comprehensive customer view by collecting records of customers' financial transactions, online interaction behavior, clickstream data, and social media activity data. Second, they use advanced data analysis tools such as machine learning and forecasting models to identify the types of financial products that customers may be interested in and the characteristics of specific products. The success of this process lies not only in the amount of data but also in the quality and application effect of data analysis [7].

For example, by evaluating users' financial health, risk tolerance, and investment behavior patterns, financial institutions can recommend tailor-made investment portfolios for risk-averse or risk-preference users. Similarly, we may customize loan programs or credit card products according to users' spending habits and credit history to provide a better and more optimistic financial experience. The key to a product adaptation strategy is promptly responding to market changes and customer feedback. As the market environment changes, so do the needs of customers. At this time, financial institutions must quickly adjust existing products or design new ones to deal with them. Big data technology provides the possibility for rapid iteration. Real-time data analysis helps organizations to capture the changing trend and respond quickly.

In summary, implementing a product customization strategy can improve customer satisfaction and loyalty and strengthen financial institutions' market competitiveness by providing differentiated services. However, the successful implementation of this strategy must be based on a strong data infrastructure, advanced analytical capabilities, and rapid response mechanisms. Comprehensive measures must also be taken to ensure data quality and security and protect customer privacy.

3.2 Precision Marketing Strategy

Precision marketing strategies are becoming increasingly prevalent in the financial services sector.

The fundamental objective is to leverage big data technology for targeted customer engagement, with the aim of enhancing the efficiency and effectiveness of marketing resources. Financial institutions can gain valuable insights into consumers' nuanced purchasing behaviors and preference patterns by conducting comprehensive analyses of extensive customer data sets. It enables them to tailor their marketing and service offerings more personalized, aligning their strategies with their customers' specific needs and interests.

Financial institutions use precision marketing to analyze customers' online activity data, search history, social media interaction, etc., to acquire customers' specific needs and interests. The results from analyzing the data will assist financial institutions in offering appropriate financial products to the correct customers at the appropriate times and delivering customized content through various communication channels like email, social media, and mobile apps. For example, when a customer searches online for information about auto loans, financial institutions can recommend relevant loan products and preferential terms.

Furthermore, precision marketing includes the predictive analysis of potential customers, using big data and algorithm models to identify those who have a potential need but have yet to be customers. It requires financial institutions to excel at identifying customers' needs and accurately anticipate market trends and shifts in consumer behavior. Figure 2 is the precision marketing strategy of financial services:

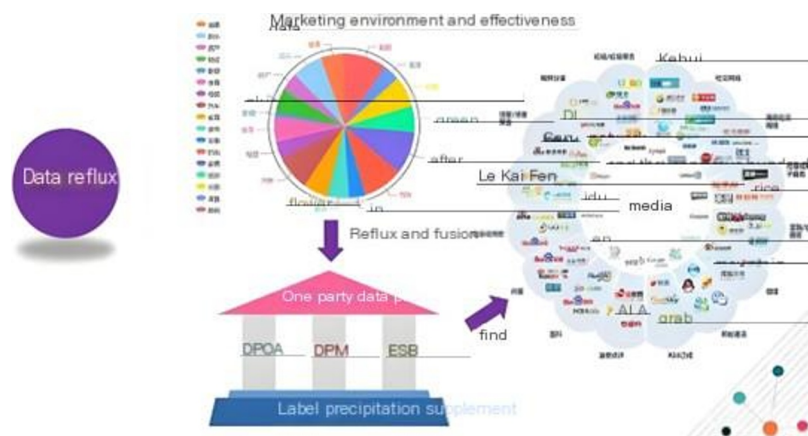


Fig. 2. Precision marketing strategy of financial services

With consumers paying more and more attention to privacy protection, the challenge of realizing accurate marketing without infringing on consumers' privacy has become increasingly significant. Therefore, financial institutions must ensure that their marketing activities comply with relevant privacy policies, laws, and regulations, ensure the transparency of data collection and application, and provide consumers with sufficient data control rights. Additionally, it is equally crucial to refrain from excessively promoting marketing information. Excessive advertising content can make customers angry or reject receiving marketing material. Hence, financial institutions guarantee the promptness and customization of marketing communication by

optimizing the frequency of delivery and the quality of content to better attract and retain customers.

3.3 Customer Relationship Management

Customer relationship management (CRM) is a systematic method used by banks and financial institutions to improve customer satisfaction and loyalty and enhance customer relations. In today's big data-driven financial services industry, CRM strategies are integrated with deep data insights to understand each customer's unique needs and provide personalized services accordingly.

By comprehensively analyzing a large number of data, banks can accurately identify customers' trading habits, financial goals, preferences, and expectations. The data analysis enables financial institutions to anticipate customer needs and behaviors, allowing them to prepare appropriate financial products and services in advance. For instance, banks can offer personalized investment advice and product suggestions by monitoring clients' investment habits and market actions.

The CRM strategy also involves consistently enhancing the customer service process. By utilizing customer feedback and interactions, financial institutions can constantly adjust and enhance their service procedures to ensure they are more efficient and customer-friendly. Personalized promotion activities and products can also be designed and implemented based on customer feedback to ensure the final results align with customer expectations.

In addition, artificial intelligence and machine learning technology also play an essential role in CRM. These technologies enable financial institutions to automatically respond to customer inquiries, provide 24/7 instant services, and personalize communication content through natural language processing and predictive analysis, thus improving service efficiency and quality. CRM is not just about managing existing customer relationships but also about identifying and transforming potential customers. By analyzing and predicting the behavior of potential customers, financial institutions can formulate more targeted market entry strategies, accurately promote financial products, and maximize the efficiency of marketing resources.

3.4 Risk Prevention and Control Strategy

Risk prevention and control strategies are also very important in the personalized marketing of financial products. Big data helps financial institutions accurately assess and predict risks, discover abnormal behaviors in time, and manage risks more efficiently. For example, we can identify fraud or credit risk by analyzing transaction data and behavior patterns and taking preventive measures.

Effective risk prevention and control strategies encompass the establishment of early warning systems, the refinement of internal control mechanisms, and the optimization of credit decision models. In addition, big data can assist financial institutions in adjusting their product strategies to balance risks and opportunities. For instance, it can aid in developing tailored products for customers with varying risk preferences.

When implementing risk prevention and control, we must focus on four aspects: First, ensure data security and customer privacy protection. Second, make rational use of big data for risk modeling and assessment. Third, remember that the model should not be relied on solely but used in conjunction with business expertise and practical application. Fourth, it is suggested to follow up on the changes in the situation and continuously update the risk control model and strategy. Financial institutions will ensure that risks are always under control while conducting personalized marketing through these measures.

4 Challenges and Strategies

4.1 Data Privacy and Security Issues

Data privacy and security issues are among the most challenging topics in the personalized marketing of financial products based on big data. Due to the improvement in users' awareness of personal information protection and frequent data leakage incidents, ensuring the privacy and security of customer data has become an urgent problem for financial institutions. Violating customer data protection rights can result in serious legal consequences, financial loss, and damage to the customer's reputation.

To address this challenge, financial institutions should take multi-level data security measures. First and foremost, technicians bolster data protection at the technical level by implementing measures such as encryption technology, data masking, and access control. Secondly, managers regularly carry out data security training to enhance employees' knowledge of data privacy. In addition, financial institutions need to establish a sound internal data usage policy and strictly regulate the management of data collection, storage, processing, and transmission. Finally, we will put in place emergency response mechanisms in the event of a data breach to ensure we can take immediate corrective action during a data security incident.

4.2 Technology and Talent Bottlenecks

In the age of big data, leveraging advanced technology is crucial for effective personalized marketing. However, the rapid pace of technological advancements and the shortage of skilled professionals are obvious obstacles. Many financial institutions are still in the initial stage of applying big data, lacking effective tools and professional technical teams to process and analyze the massive, complex data.

To solve the technology and talent bottleneck, financial institutions need to increase investment in big data technology and introduce and independently develop big data processing and analysis tools. Secondly, by collaborating with scientific research institutions and universities and providing training and recruiting professionals, we can enhance our capabilities in technology development and data analysis. In addition, financial institutions are adopting flexible employment modes such as talent sharing and telecommuting to attract and retain outstanding talents in big data.

4.3 Legal and Regulatory Restrictions

Legal and regulatory restrictions are also challenges for personalized marketing of financial products based on big data. Due to continuous improvement and stricter regulations and policies, financial institutions face increasing restrictions on data collection and utilization, which may affect the development of big data marketing activities.

Regarding countermeasures, financial institutions must pay close attention to changes in relevant laws and

regulations to ensure the legitimacy of marketing activities. Establishing a legal compliance system, participating in policy discussions and formulation, and actively reflecting the industry's demands are necessary. Based on this, managers will create data marketing strategies that comply with regulations by including a valid compliance check at every data collection and processing stage. It will guarantee that customers are informed about using their personal information and have autonomy over it. Enhanced communication and collaboration with regulators can better balance innovation and compliance requirements to accelerate the adoption of big data marketing strategies.

5 Conclusion

This study examines the personalized marketing strategies of financial products based on big data and the challenges and potential countermeasures. Through in-depth analysis, researchers find that financial institutions can achieve personalized innovation and promotion of financial products through effective data collection and integration, customer profile creation, and thorough data analysis and mining. Additionally, big data allows financial organizations to offer tailored financial services according to client's traits and requirements, ultimately enhancing customer satisfaction and boosting marketing effectiveness and operational efficiency.

Facing issues related to data protection and security challenges, technology and talent, regulations, and policies, financial institutions must take effective measures to ensure legal compliance in their marketing activities, data security, and technical team development. It requires financial institutions to strengthen internal data management, actively participate in the construction of external regulatory systems, and continuously train and introduce professionals in data science.

To sum up, if financial institutions can overcome these challenges and effectively leverage big data, data-driven and personalized marketing will significantly enhance the competitiveness of financial products in the market, promote the building of long-term customer relationships, and bring superior business growth and customer value to the financial services sector. Future research should delve deeper into the adaptability of data strategy implementation in various financial environments, as well as the specific issues and solutions, and provide more comprehensive and systematic theoretical and practical guidelines.

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