

Digital Transformation of Retail Financial Services Marketing in the Information Era: Opportunities, Risks and Future

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Abstract. In the era of information technology, retail financial service providers face the challenge of adapting to the diverse and personalized needs of consumers. This paper extensively examines the potential and obstacles of applying emerging technologies, including AI, blockchain, cloud computing, big data, and IoT, within this context. These technologies offer potential to financial service providers to deliver a personalized, customized, and appealing marketing experience to customers. However, implementing these technologies entails ethical, legal, regulatory, and technical challenges. To effectively integrate these technologies and ensure customer trust and satisfaction, providers of retail financial services must adopt a comprehensive and strategic approach.

Keywords: Artificial Intelligence, Blockchain, Financial Services Marketing, Technological Integration, Customer Experience.

1. Introduction

Retail finance plays a pivotal role in helping individual consumers navigate the complex and intangible world of financial products and services. However, this sector faces unique marketing challenges [1]. Consumers must grapple with risk-return assessments, which are not only influenced by the inherent uncertainties of financial products but also by how well these products fit into their personal lifestyles. Furthermore, the current market dynamics of retail finance are shaped by fierce competition and rapidly evolving technological and regulatory environments, further complicating marketing efforts in this industry. Nevertheless, there is hope for overcoming these challenges with the advent of digital technologies such as AI, blockchain, and big data. These technologies offer promising solutions that can be harnessed within the retail finance sector. The objective of this paper is to explore how to seamlessly integrate digital innovation with retail finance marketing, guided by the customer life cycle theory, in the information age.

2. Customer understanding and acquisition

2.1. Customer understanding: Know you customer (KYC)

1) Introduction to KYC and Its Relevance in Financial Services

KYC, standing for "Know Your Customer", originated as a method for companies, particularly in financial services, to authenticate the identity of potential users to gauge credit and financial risk and ensure compliance with anti-bribery and fraud standards. Initially, the primary goal of KYC was to grasp users' backgrounds and anticipate their financial behaviors. However, with advances in big data and the evolving capabilities of retail financial entities to amass data, KYC now embodies a holistic understanding of customers [2]. This insight spans not just past behaviors but also future actions and necessities. In the digital age, it's crucial to perceive that data producers, the customers, form the crux of retail financial marketing, thus making KYC a cornerstone throughout a user's lifecycle as shown in Fig. 1.

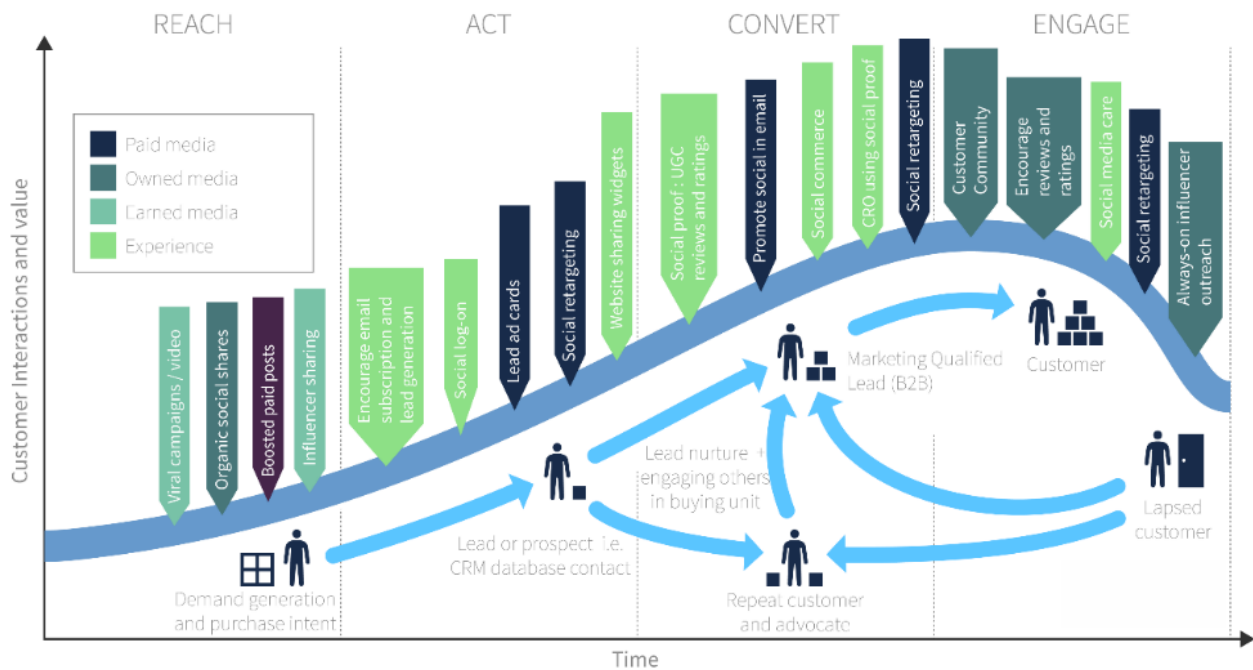


Figure 1. Customer lifetime management (CLM) theory

2) Functions of KYC in Retail Financial Marketing

KYC has the following functions in retail financial marketing:

- (1) Mining of potential users.
- (2) Generation of individual user portraits, perception of user needs through accurate prediction, and refinement of user management.
- (3) User behavior identification, anti-fraud risk management.
- (4) Value mining of existing users to achieve higher customer retention and cross-selling.

In summary, KYC serves as the foundation and primary focus of retail financial marketing. People are at the core of the marketing aspect of retail finance. In the era of digital technology, enterprises' data assets play a crucial role as important components and evaluation criteria for financial institutions. It is essential to acknowledge that the producers of this data, which are the customers of financial institutions, form the core asset and the target of retail financial marketing, as they constitute the asset portfolio and potential value of the former. From the perspective of operators and marketers, thorough understanding of users and the differentiated acquisition of asset portfolios are necessary to enable retail financial institutions to continually enhance their business value and generate more profits. KYC is of utmost importance, not only in the current user relationship but throughout the entire user life cycle.

3) Enhancing KYC with Blockchain and Big Data

Blockchain technology has emerged as a powerful tool for enhancing oversight in retail financial institutions, particularly in combatting Anti-Money Laundering (AML). AML aims to prevent a range of crimes, including drug trafficking and financial fraud. The increasing internationalization of funds has added complexity to money laundering, posing a threat to the stability of the global financial system. The decentralized, anonymous, and immutable nature of blockchain makes it invaluable in this battle. Furthermore, blockchain improves the efficiency and accuracy of Know Your Customer (KYC) processes. KYC requires firms to validate client identities and anticipate potential illegal risks in business relationships.

By applying blockchain in the financial sector, both AML and KYC procedures can be optimized, aligning with the principles of Industry 4.0. Blockchain's distributed ledger system, with non-alterable timestamps, ensures traceability of every financial transaction, thereby acting as a defense against illegal monetary flows. Additionally, blockchain's decentralized nature ensures data distribution among network nodes, promoting information sharing and eliminating redundant audit procedures.

This efficiency also extends to KYC processes, where blockchain stores and shares transaction histories and credit records, facilitating the retrieval of data for new clients. Ultimately, the integration of blockchain in financial institutions can lead to significant savings in manpower and technology expenses associated with AML and KYC.

2.2. Customer acquisition: the application of IoT

With the maturation of Internet of Things (IoT) technology and the advent of the Internet of Everything era, a new wave of marketing revolution is imminent [3]. The IoT has gradually eroded the boundary between the digital world and the physical world, as depicted in Fig. 2. Mobile communication is no longer confined to smartphones; any terminal can now serve as an interface to the Internet. This "everything is media" concept has broken down the distinction between online and offline marketing, instead creating connections and building shared spaces, which in turn drive industrial digitalization. This transformation subsequently triggers changes in the industrial chain. One significant change in customer-facing retail finance is the adoption of smart outlets. Through the utilization of the latest communication technology, cloud computing, and the IoT, previously isolated departments and machines can now be interconnected. This allows for real-time understanding of customer motivation and needs, enabling the provision of more seamless and accurate end-to-end services.

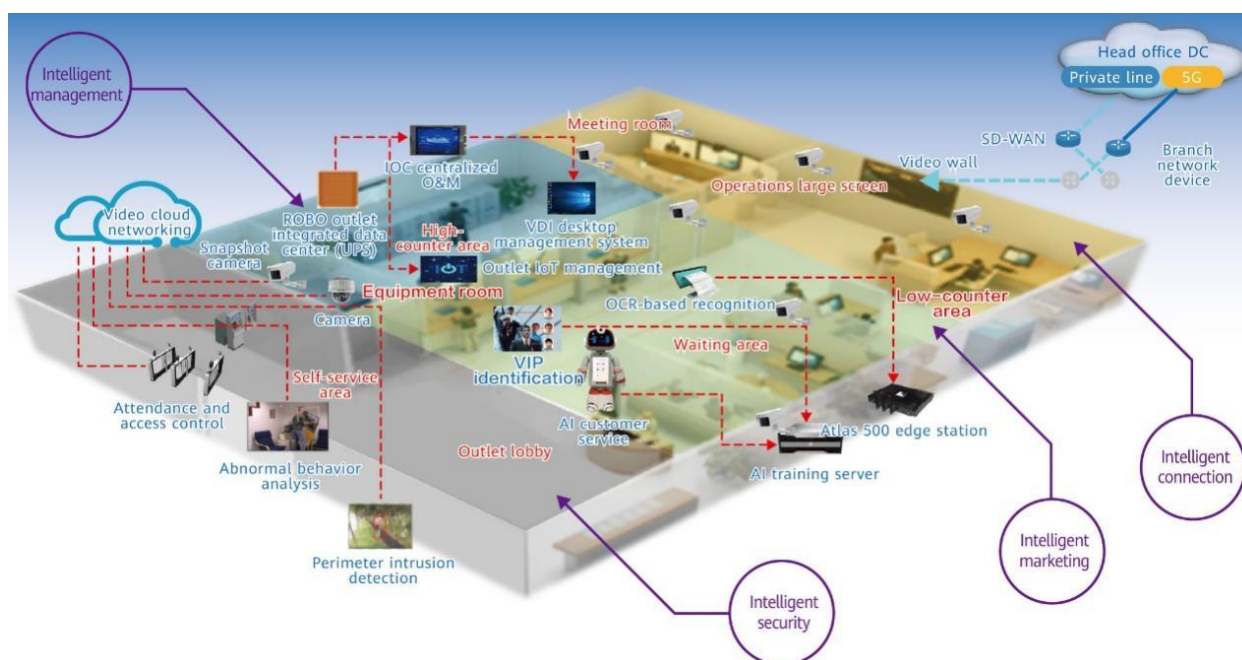


Figure 2. Smart retail financial institution branch

IoT financial marketing, leveraging big data, cloud computing, and AI, offers targeted and efficient digital strategies, reducing costs and enhancing the consumer experience. The "Bow tie theory" elucidates this logic: On one side, users' cycle from interest to purchase and then re-evaluate based on product experience. On the flip side, real-time user feedback refines financial products, reintroducing them to the market and perpetuating the user's decision-making cycle, creating a continuous loop of interaction.

Retail financial marketing's success hinges on timely insights into user decisions and feedback, and the integration of IoT technology has amplified this focus. Through the Internet of Everything, immediate feedback on various aspects, from promotion to evaluation, allows retail financial institutions to refine their strategies swiftly and accurately. IoT not only creates a synergy of product, service, and information flows with users at the nexus but also emphasizes a shift towards a more user-centric model in the digital era. Real-time insights enable institutions to provide bespoke offerings, fortifying user relationships, and continuously expanding their dedicated clientele.

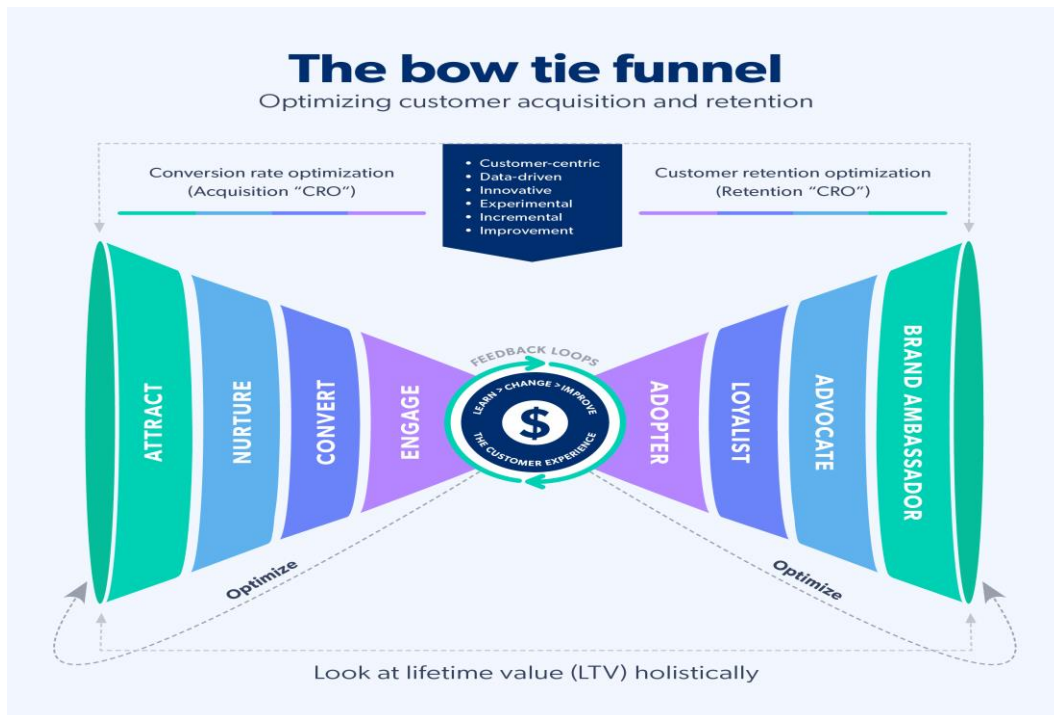


Figure 3. Application IoT with Bow tie funnel theory

To remain competitive, financial institutions are strategically weaving themselves into the IoT marketing fabric as shown in Fig. 3. They're transitioning offline outlets into digital portals, enhancing integration across platforms, and introducing intelligent systems like credit and service apps. This holistic approach, combined with the integration of financial and social services, facilitates efficient customer acquisition, stronger engagements, and positions institutions closer to their users, optimizing their overall outreach.

3. Customer and Risk management

3.1. Customer management

In the evolving landscape of retail financial services marketing, the digital age introduces both opportunities and complexities, particularly concerning data security and user engagement. With the influx of digital platforms, the protection and effective utilization of burgeoning user data becomes paramount. AI and Big Data offer insights from vast datasets, enhancing marketing strategies and fraud detection, while cloud computing provides scalable data processing. Meanwhile, blockchain ensures transactional security and transparency as shown in Fig. 4. Together, these technologies present an integrated approach to address the multifaceted challenges and optimize financial marketing in the digital era.

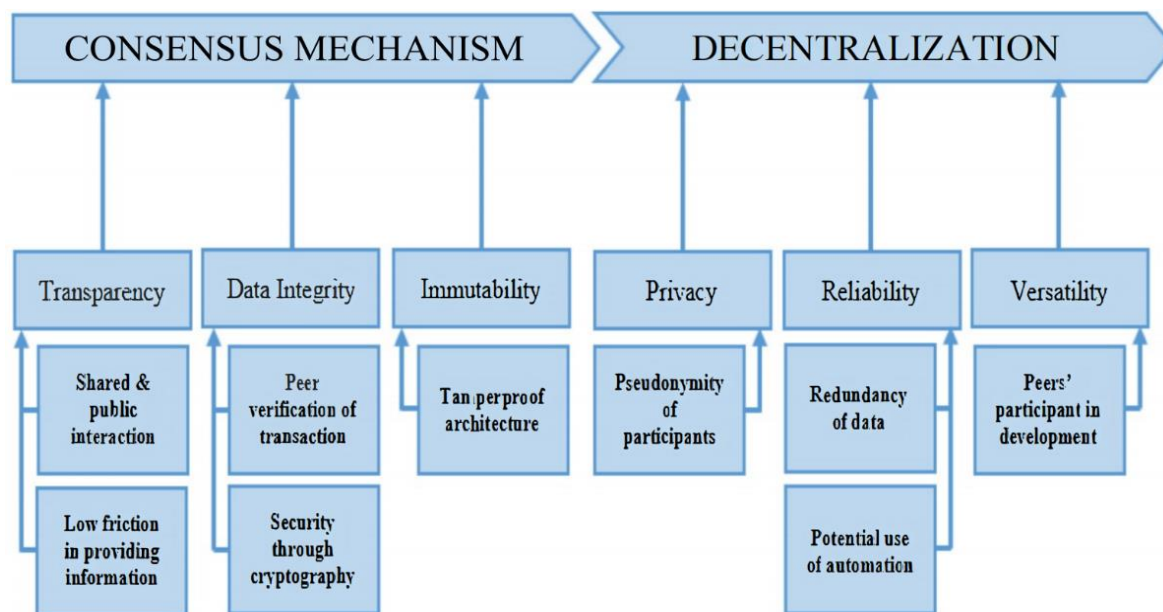


Figure 4. Blockchain technological characteristics

3.2. Risk management: relieving information asymmetry

The adoption of a digital framework in retail financial services marketing has expanded the operational horizons for financial institutions, optimizing efficiency and customer outreach. However, this transition is not without challenges, including data security, customer privacy, fraud, and intricate decision-making. The proliferation of digital platforms has amplified user data, enabled targeted marketing but also increased the risks associated with data breaches and privacy concerns.

In the face of these challenges, the capabilities of AI, Big Data, and blockchain technologies become paramount. AI, equipped with machine learning, offers advanced risk management by processing data beyond human capacity, identifying anomalies, and predicting trends, thereby enhancing data security and tailoring marketing strategies. Big Data analytics aids decision-making by translating massive datasets into actionable insights, predicting consumer behavior, and identifying potential risks. Blockchain ensures transactional transparency and security through its distributed, immutable ledger. Smart contracts on the blockchain can automate and secure financial agreements, reinforcing trust and compliance.

Collectively, these technologies provide a comprehensive solution. AI's analysis of Big Data offers insights and detects potential breaches, while blockchain guarantees data integrity and transparency. This trifecta streamlines the decision-making process, fortifies data security, reduces fraud risks, and tailors marketing efforts, ensuring a more robust, trustworthy, and efficient digital financial marketing ecosystem.

4. Build data-driven retail financial marketing under digital ecology

In Fig. 5, the changes brought about by the digital era are not limited to infrastructure and production tool upgrades; they also necessitate retail financial institutions to proactively establish thinking and operational approaches aligned with the conditions of the digital business ecology in the marketing field. In the era of big data, retail financial institutions recognize the significance of customer data and strive to enhance marketing efficiency through its utilization. However, merely possessing data does not guarantee truly "data-driven decision-making," and a larger volume of data does not necessarily equate to higher digital productivity [].

Big Data Analytics

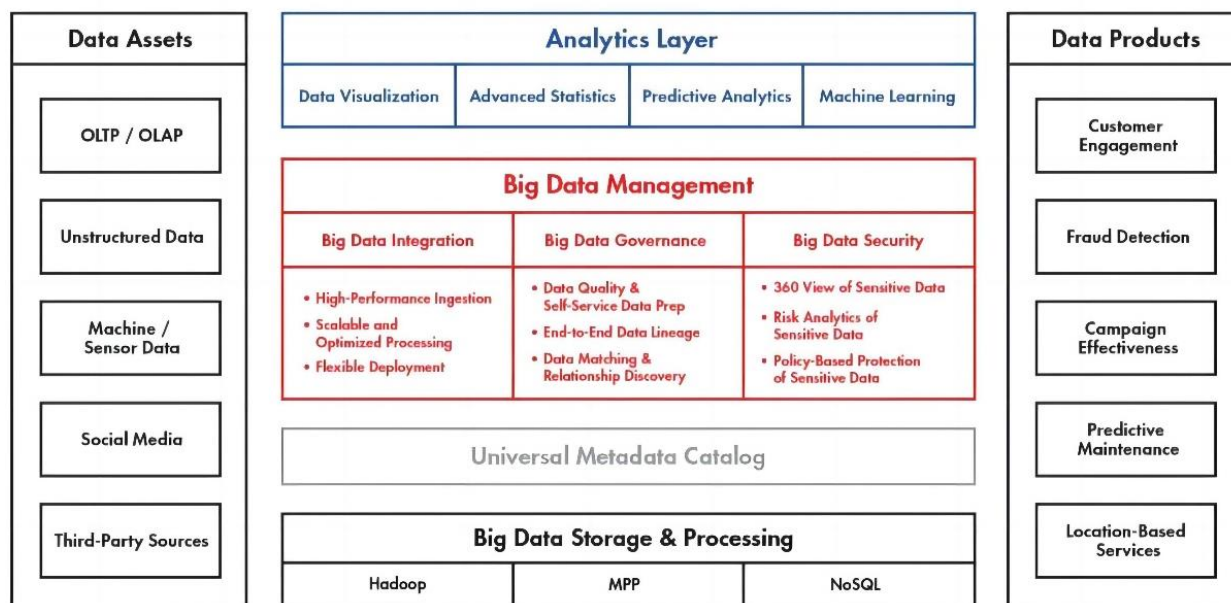


Figure 5. Financial institutions’ big data system structure

Based on the above database structure in retail financial institutions, companies usually need four teams to effectively form big data productivity:

(1) Strategic analysis and planning teams, equipped with expertise in big data tools and financial product marketing, play a crucial role in cultivating a data-driven company culture. These teams possess a deep understanding of the principles and rules governing various products and marketing techniques. Consequently, they can effectively identify business scenarios and match them with suitable data tools. Through international data mining and analysis, these teams can explore innovative models for marketing promotion and scene applications. Moreover, they provide valuable suggestions for integrated marketing strategies to front-end marketers.

(2) Big data mining team with advanced AI deep learning and Internet of Things interaction analysis: This is the technical fulcrum of the whole big data team, mainly responsible for the innovation of algorithm tools, model development and improvement, and the realization of data visualization.

(3) The efficient data engineering team is responsible for constructing and maintaining the underlying database system and implementing programs such as the Internet of Things and cloud computing to ensure timely delivery of required data to front-line marketing staff, data mining team, and decision analysis managers. Additionally, the team ensures stability in cluster performance and optimizes resource allocation to maximize digital production efficiency.

(4) Rigorous data governance team: They will sort out the data assets inside and outside the company in a timely manner, specify strict data asset interaction and management standards, protect data security and privacy norms, while ensuring data quality and availability.

The digital transformation of retail financial marketing goes beyond just acquiring data and fostering collaboration between the technology and marketing departments. In traditional retail financial enterprises, the primary focus of marketing personnel is to enhance the performance of marketing customers by considering marketing strategies and customer needs. They identify business queries and convert them into data-driven questions, which are then communicated to data analysts. However, this traditional model of treating data teams solely as technical tools for financial services marketing is no longer applicable to today's needs. It is crucial to recognize that the data analysis team should play a more significant role as an internal think tank and actively contribute to decision-making processes. They should move from the background to the forefront, directly engaging in business operations and providing innovative digital marketing strategies.

5. The risk and regulation for ABCDI technologies

The digital transformation in retail financial services marketing, powered by AI, Blockchain (Fig. 4), Cloud Computing (Fig. 6), Big Data, and IoT, brings both immense opportunities and inherent risks. Key among these risks are data security breaches, privacy concerns, and operational challenges. The enormous data repositories demanded by these technologies' present vulnerabilities, with potential data breaches posing financial and reputational threats. Furthermore, the analytical depth of AI and Big Data can be a double-edged sword, potentially infringing on user privacy rights. Operational challenges emerge when integrating these technologies, with failures having wide-reaching implications, from flawed decision-making to service disruptions [5].

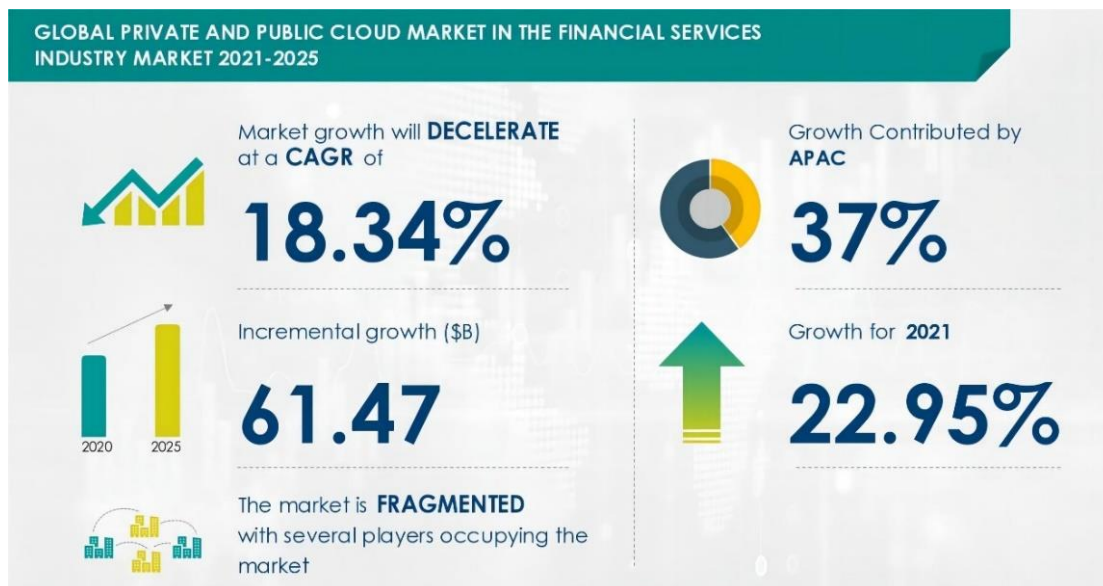


Figure 6. Cloud computing market share in the financial service area

Financial institutions need to strengthen their security infrastructure to address the concerns raised by ABCDI technologies. This can be done through the implementation of encryption protocols, strict access controls, and regular security audits. Blockchain technology can be used to employ advanced cryptographic methods, while IoT devices can be protected with a combination of hardware and software measures.

In terms of privacy, it is essential for financial institutions to comply with data protection regulations. They should prioritize transparent data practices, giving users control over how their data is used. Techniques such as differential privacy can be used to ensure data anonymity.

Operationally, financial institutions should focus on adopting reliable technology, conducting regular system maintenance, and implementing robust backup strategies. Systems should be thoroughly tested, with failover contingencies in place to ensure operational efficacy and reliability.

Government regulations play a crucial role in bolstering this framework. They can set data security standards, define data handling procedures to protect privacy, and ensure operational efficiency and reliability. For example, specific cryptographic standards can be advocated for in blockchain, secure protocols can be endorsed in cloud computing, and regular updates of AI systems can be required.

In conclusion, while ABCDI technologies bring advancements to retail financial services marketing, they also bring significant challenges. Proper risk management, combined with stringent regulations, will ensure that the benefits of these technologies are realized while maintaining a balance between innovation and security.

6. Summary

The retail financial services sector is at the cusp of a digital revolution, driven by transformative technologies such as AI, big data, IoT, blockchain, and cloud computing. For financial institutions to

thrive, a top-down strategic approach that seamlessly integrates these technologies is crucial. This not only ensures alignment with their core objectives but also taps into the potential of modern digital platforms. However, this digital surge also underscores the need for stringent regulations to safeguard data integrity and customer privacy. Regulators must craft guidelines that strike a balance between facilitating innovation and ensuring security. Central to this transformation is the adept management of data. Financial institutions must prioritize advanced data governance and focus on customer-centric services. By intertwining technology into their operations, these institutions can not only enhance their business processes but also position themselves at the forefront of the digital economy's opportunities.

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