BETWEEN INNOVATION AND CHALLENGES: UTILIZATION OF BLOCKCHAIN AND CLOUD PLATFORMS IN THE TRANSFORMATION OF BANKING SERVICES IN THE DIGITAL ERA

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ABSTRACT

Banking in the digital era is increasingly pressured to adopt new technologies to update and improve their services. Two prominent technologies in the transformation of banking services are blockchain and cloud computing. Blockchain technology offers security and transparency, while cloud computing provides flexibility and efficiency in IT infrastructure. This research aims to explore the innovations and challenges associated with the utilization of blockchain and cloud technologies in the transformation of banking services in the digital era. We seek to understand how banks implement these technologies and identify factors influencing the success or failure of implementation. The research method used is descriptive qualitative. Data were collected through literature studies from journals, articles, and books relevant to this research topic. Analysis was conducted to identify trends, challenges, and benefits of using blockchain and cloud technologies in banking services. The results show that the utilization of blockchain and cloud technologies has brought significant changes in banking services, including improved security, operational efficiency, and financial inclusion. However, banks also face several challenges, including technical complexity, initial investment costs, and regulatory compliance.

Keywords: Banking, Blockchain, Cloud Computing, Service Transformation.

INTRODUCTION

Digital transformation has become a key driver in the development of the banking industry around the world. The digital era brings new challenges along with technological innovations that continue to grow rapidly. One technology that stands out in this revolution is blockchain technology and cloud computing. Both have great potential to fundamentally change the landscape of banking services. Many private banks and Regional Development Banks (BPDs) have started to increase investment in technology to increase the presence of fintech companies in various regions. This is in line with the global trend where the banking sector is increasingly turning towards digitalization to take advantage of the wide-open opportunities of the digital economy, especially in the era of Industrial Revolution 4.0 and Digital Banking 4.0 (Putra & Sophian, 2024).

Newly issued guidelines such as POJK 12/POJK.03/2018, on the Implementation of Digital Banking Services, provide a foundation for banks to expand and improve their digital services. However, implementing new technologies is not easy. The digital era brings new features that are constantly evolving, forcing banks to continuously adapt their business to a dynamic business environment. The process of adaptation and implementation of products and services is key in facing new challenges in banking (Sofyan et al., 2023). Banks have been directly involved in the digitization process to answer market changes seriously. In the face of

a highly competitive market, banks are planning various services in line with the development of banking services.

Banks are not only competing with other banks. They also compete with high-tech companies that have emerged at various stages and started introducing similar facilities. This shows that challenges come not only from within the banking sector, but also from outside the sector (Suryawijaya, 2023). In this context, the use of blockchain and cloud platforms is becoming increasingly relevant. Both technologies offer the potential to improve efficiency, transparency, and security in banking services. However, their implementation is not without obstacles. Banks are expected to understand the challenges and risks associated with the use of these technologies, while still striving to capitalize on their potential in the face of increasingly fierce market competition.

According to (Aripin et al., 2023) Blockchain is the technology underlying most cryptocurrencies, such as Bitcoin and Ethereum. It is a distributed system consisting of a series of data blocks that are cryptographically linked to each other. Each block contains transactions that are verified and permanently recorded, forming an immutable chain of blocks. The main uniqueness of blockchain is that it is a decentralized ledger that is open to the public, meaning no single party has complete control over it. The key characteristics of blockchain are transparency, security, and resistance to change. With transparency, all transactions that occur within the blockchain are visible to all network participants, making it extremely difficult to commit fraud. Blockchain security is based on strong cryptography used to secure each transaction and ensure data integrity. In addition, due to its decentralized structure, blockchain is highly resilient to attacks or failure of a single central point (Wirajovi Aulia et al., 2023).

Blockchain has changed the paradigm in various industries, including finance, logistics, healthcare, and others. In the financial industry, blockchain offers the potential to reduce transaction costs, increase efficiency, and reduce processing time. It also enables faster and cheaper cross-border payments. In the logistics sector, blockchain can be used to track assets from source to destination, increasing transparency and accountability in the supply chain. Despite its great potential, blockchain also faces several challenges, including scalability, regulation, and mass acceptance. Scalability is a frequently discussed issue as some blockchain networks still experience performance issues when the number of transactions increases (Rizqi & Himawan, 2022). Regulation is also a complex issue as different laws in different jurisdictions may affect the use of blockchain. In addition, mass acceptance by the public and enterprises is still a challenge, despite the significant increase in blockchain adoption in recent years.

According to (Rochmawati et al., 2023) Cloud computing is a model of managing and providing computing resources, such as servers, storage, databases, networks, and software, via the internet. In cloud computing, users can access and use these resources flexibly according to their needs, without the need to have their own physical infrastructure. Cloud services can be provided by cloud service providers that have large and distributed data centers around the world, which allows fast and secure access from anywhere. There are several service models in cloud computing, including Infrastructure as a Service (IaaS), Platform as a Service (PaaS), and Software as a Service (SaaS). In the IaaS model, users can rent IT infrastructure, such as virtual servers, storage, and networks. PaaS provides a fully managed development and testing environment for application developers, while SaaS provides software applications accessed via the internet, such as email or financial management applications (Avita et al., 2023).

The main advantages of cloud computing are economies of scale, flexibility, and accessibility. By using cloud services, companies can reduce the cost of initial investment in IT infrastructure, as they only pay for the resources they use. In addition, cloud computing allows companies to quickly adjust their computing capacity according to fluctuations in demand, increasing the flexibility and scalability of their business. Accessibility is another advantage of cloud computing, as users can access their data and applications from anywhere with an internet connection, improving productivity and collaboration. Despite its many benefits, cloud computing also has challenges that need to be overcome, including data security, compliance, and dependence on service providers. Data security is a major concern because sensitive data is stored in external data centers managed by service providers. To address this, companies need to adopt strict security practices and choose a trustworthy cloud service provider. Compliance is also an important issue, as many regulated industries have strict requirements regarding data privacy and security. In addition, companies should consider the risk of dependence on a particular cloud service provider and have a backup strategy to address any service disruptions that may occur.

According to (Hariatih & Sukardi, 2022) Banking service transformation in the digital era refers to fundamental changes in the way banks provide products and services to their customers by utilizing information and communication technology. In this digital era, banking services are no longer limited to physical branch offices, but can also be accessed through various digital platforms, such as banking applications, websites, and mobile devices. This transformation covers various aspects, including transaction processing, customer service, risk management, and product innovation. One of the hallmarks of banking services transformation in the digital era is the adoption of technologies that enable banks to improve operational efficiency, enhance customer experience, and expand their range of services. For example, banks have adopted technologies such as data analytics, artificial intelligence, and process automation to improve the speed and accuracy of processing transactions and provide more personalized customer service. In addition, this transformation also involves using technology to secure data and transactions, reducing security and fraud risks.

The transformation of banking services in the digital era also provides opportunities for banks to innovate in the products and services they offer to customers. Banks can leverage technology to develop new products that are better suited to customer needs and preferences, and to create more engaging and user-friendly experiences. This includes products such as digital payments, online lending, automated investments, and app-based financial services. As such, this transformation not only brings about changes in the way banks operate, but also in the way they interact with customers and meet their needs in the ever-evolving digital age. As such, this article will further explore the innovations and challenges associated with utilizing blockchain and cloud platforms in the transformation of banking services in the digital age..

RESEARCH METHODS

The research method used in this study is descriptive qualitative, which aims to deeply understand the phenomenon of using blockchain and cloud platforms in the transformation of banking services in the digital era. The descriptive qualitative approach will allow researchers to document and analyze in detail the characteristics, innovations, as well as challenges associated with the utilization of these technologies in the context of banking services. This method will involve comprehensive data collection through literature studies, interviews with banking industry and technology experts, and detailed analysis of various relevant sources of information (Sugiyono, 2017).

The data sources used in this research include scientific journals, articles from reputable publications, and books related to the fields of banking technology, blockchain, cloud computing, and digital transformation. Through in-depth analysis of the existing literature, the researcher will gain a deep insight into the latest developments, trends, and challenges faced by the banking industry in adopting and utilizing blockchain and cloud platforms. With a combination of diverse data sources, this research is expected to provide a comprehensive understanding of the dynamics of innovation and challenges that occur in the utilization of blockchain and cloud platforms in the transformation of banking services in the digital era.

The data analysis technique used in this research is content analysis, which involves in-depth reading and understanding of the various data sources collected, including journals, articles, books, as well as interviews with industry experts. The data will be analyzed by identifying patterns, themes, and trends that emerge in the context of innovations and challenges associated with the utilization of blockchain and cloud platforms in the transformation of banking services in the digital era. Content analysis will enable the researcher to build a comprehensive picture of how these technologies are being utilized in the banking industry, identifying their strengths, weaknesses, as well as the strategies implemented by banks in dealing with the various challenges that arise. With this approach, the research will generate a deep understanding of the complex dynamics at play in digital banking, as well as provide valuable insights for future developments in the utilization of blockchain and cloud technologies.

RESEARCH RESULTS AND DISCUSSION

According to (Gunjan & Editors, 2023) As one of the most important aspects of the digital revolution, the implementation of this technology has brought a number of significant innovations in the banking industry, but it also brings various challenges that must be overcome. Based on the results of research conducted by (Song et al., 2022) the utilization of the blockchain platform has enabled banks to increase security and transparency in the transaction process and data management. Blockchain provides a decentralized system that allows transaction records to be stored permanently and irreversibly, thereby reducing the risk of fraud and strengthening customer confidence in financial institutions. According to (Habib et al., 2022) the utilization of cloud computing has enabled banks to improve operational efficiency, reduce IT infrastructure costs, and increase flexibility in providing digital banking services.

According to the results of research conducted by (Xuan & Ness, 2023) stated that data security and privacy issues. As more and more data is stored in the cloud and blockchain, the risk of data leakage and cyber attacks also increases. In addition, the adoption of new technologies requires large investments in terms of skilled human resources and sophisticated infrastructure, which may not be accessible to all banks, especially smaller ones or those in developing countries.

According to (Bharathi Murthy et al., 2020) Banks should pay attention to regulations relating to the use of blockchain and cloud technologies, while also having to consider how to manage organizational cultural changes and address uncertainties that may arise. Thus, the results of this literature study highlight the importance for banks to comprehensively understand both the innovation potential and challenges associated with utilizing blockchain and cloud platforms in the transformation of banking services in the digital era.

The research revealed that the utilization of blockchain platforms has brought about a number of significant innovations in banking services. Through the use of this technology, banks have been able to improve transaction security and data management, as well as increase transparency and accountability. However, along with these advantages, research has also highlighted the challenges that arise, mainly related to implementation complexity and operational costs. The integration of blockchain technology requires large investments in infrastructure and skilled human resources, which may not always be accessible to all financial institutions.

The utilization of cloud computing in banking services has provided significant benefits in terms of operational efficiency, flexibility, and scalability. Cloud computing enables banks to provide digital banking services that are faster, more secure, and more accessible from anywhere. However, the research also identified challenges related to data security issues, regulations, and dependence on specific cloud service providers. Banks must ensure that sensitive data remains secure in a centralized cloud environment, while complying with applicable regulatory requirements. There will be an in-depth discussion on the implications of these findings for future business practices and banking policies. Banks should be mindful of the innovation opportunities offered by blockchain technology and cloud computing, while also considering the risks and challenges associated with their implementation. There needs to be cooperation between banks, regulators, and technology providers to create an environment conducive to the adoption of new technologies in banking services. In addition, banks also need to focus on developing the technical and managerial expertise required to effectively manage this transformation. The discussion will also address the broader implications of utilizing blockchain and cloud platforms in the transformation of banking services, including their impact on financial inclusion, economic growth, and overall financial system stability. While these technologies offer the potential to improve access to financial services for underserved communities, it is also important to consider how to address the inequalities of access and digital inequalities that may arise. As such, the discussion will highlight the importance of progressive public policies and sustainable business strategies in dealing with the complex dynamics of transforming banking services in the digital age.

1. Implications of Blockchain Technology Innovation in Banking Services

Blockchain technology has brought about revolutionary changes in various industries, including banking services. Blockchain brings a fundamental change in the way transactions are conducted in the banking industry. With this technology, financial transactions can be processed directly between two parties without the need to go through an intermediary, such as a bank or other financial institution. This reduces transaction costs and processing time, and increases efficiency in the payment system. For example, with the use of smart contracts in the blockchain, automation processes can be programmed to organize and execute contracts automatically when set conditions are met, eliminating the need for human interaction in the process (Khanna et al., 2022).

One of the most notable aspects of blockchain is its security. Using strong cryptography, each transaction in a blockchain is encrypted and cryptographically linked to previous transactions, forming an immutable chain of blocks. This makes it extremely difficult for unauthorized parties to falsify or alter transaction data. As a result, blockchain technology brings a high level of security in banking services, reducing the risk of fraud and data leakage. In addition, blockchain also increases transparency in banking services by providing a

decentralized ledger that is accessible to all network participants. All transactions that occur within the blockchain are visible to all participating parties, without the need to rely on a central authority or third party. This helps build trust between banks and customers, and strengthens accountability in the banking industry.

Another implication of blockchain technology in banking services is the transformation in data management. Traditionally, banking data is stored in centralized databases managed by banks or financial institutions. However, with the use of blockchain, data is stored in a decentralized manner across the network, ensuring higher data reliability and resilience. Every node in the network has a complete copy of the blockchain ledger, so data remains secure and available even if one or more nodes fail. In addition, blockchain also enables the development of decentralized applications that run on it, such as peer-to-peer financial applications, smart contracts, and decentralized digital identities. This opens the door for new innovations in banking services, such as faster and cheaper international payment services, peer-to-peer financing, and more secure and efficient identification solutions.

The application of blockchain technology in banking services not only changes processes and data management, but also has significant implications in terms of business models and regulation. Banks should consider how they can harness the potential of blockchain innovation to improve services to their customers and expand their business reach. This could involve developing new blockchain-based products and services, such as more secure digital payments, peer-to-peer lending, or digital asset management. However, along with the opportunities for innovation, banks should also be mindful of the various challenges associated with implementing blockchain technology, including initial investment costs, technical complexity, and regulatory compliance. Applicable regulations related to consumer protection, data privacy, and information security may affect how banks can use blockchain technology in their services. Therefore, banks should work closely with regulators and authorities to ensure that the implementation of blockchain technology is done with due regard to the appropriate framework and in compliance with applicable legal requirements.

Thus, the implications of blockchain technology innovation in banking services are vast and significant. It brings about a fundamental transformation in the way transactions are processed, data is managed, and services are provided by banks. By enhancing security, transparency, and efficiency, blockchain technology has great potential to improve overall banking services, while also opening the door to new innovations and sustainable business models. However, to fully capitalize on this potential, banks must address the various challenges associated with the implementation of blockchain technology and ensure that it is done with regulatory compliance and customer interests in mind.

The implementation of blockchain technology in various sectors, including banking services, has become a major focus for many organizations in recent years. Despite its great potential benefits, blockchain implementation is also faced with a number of complex challenges. In this discussion, we will analyze in detail the various challenges that arise in adopting and implementing blockchain technology in the context of banking services (Sazu & Jahan, 2022).

1. Technical Complexity:

   One of the major challenges in the implementation of blockchain technology is the technical complexity involved in building, managing, and maintaining blockchain infrastructure. Blockchain is a decentralized and distributed system, which requires a deep understanding of the underlying architecture, protocols, and algorithms.

Blockchain implementation also requires high technical skills in software development, system security, and network management. Banks looking to adopt blockchain will have to face the challenge of securing personnel who are skilled and knowledgeable in this technology, which may be scarce and expensive..

2. Initial Investment Cost:

   In addition to technical complexities, the implementation of blockchain technology also requires substantial investments in terms of infrastructure, software, and human resources. While long-term operational costs can be reduced by reducing reliance on third parties and improving process efficiency, the initial investment cost of building and integrating a blockchain system can be prohibitive for many organizations, especially smaller banks or those operating in resource-constrained environments. Furthermore, these costs may also increase if banks have to face additional challenges, such as developing and retesting existing infrastructure or addressing compatibility issues with existing systems..

3. Skalabilitas:

   Another challenge faced in the implementation of blockchain technology is the issue of scalability. While blockchain has proven effective in supporting small to medium-sized networks, increasing the number of transactions or participants in a blockchain network can lead to performance degradation and slow processing times. This is due to limitations in the original design of blockchain, such as fixed block sizes and consensus algorithms that require validation of each transaction by all nodes in the network. To overcome these challenges, innovations are constantly being made in blockchain development, including the use of sidechain technology, sharding techniques, and new, more efficient consensus.

4. Regulation and Compliance:

   In addition to technical and cost challenges, blockchain technology implementations are also faced with regulatory and compliance challenges. Financial regulators in many jurisdictions have issued guidelines and regulations related to the use of blockchain technology in banking services, including requirements on data privacy, information security, and transaction transparency. Banks looking to adopt blockchain must ensure that their systems comply with applicable legal requirements, which may vary from one jurisdiction to another. This can slow down the implementation process and increase the costs associated with legal and regulatory compliance.

5. Reliance on Existing Infrastructure:

   Another challenge that banks face in adopting blockchain technology is the reliance on existing infrastructure. Many banks have a well-established information technology infrastructure that is integrated with other internal and external systems. Integrating blockchain into this existing infrastructure can be challenging, especially if the existing systems are not designed to operate with decentralized technologies like blockchain. This requires additional investment in the development and retesting of existing systems, as well as strong coordination between the departments and business units involved.

In addition to the technical and cost challenges of implementing blockchain technology, it also requires significant acceptance and cultural change within the organization. Banks must ensure that stakeholders at all levels of the organization understand and support the use of blockchain in banking services. This requires thorough education and training on blockchain

technology, as well as effective communication on the benefits and potential risks involved. In addition, banks must also be prepared to overcome resistance and uncertainty that may arise among employees and business partners who are accustomed to conventional ways of working.

While the challenges of implementing blockchain technology can seem intimidating, they are not insurmountable. With careful planning, strong collaboration between banks, technology vendors, and regulators, and a commitment to continuous innovation and learning from experience, banks can overcome these challenges and achieve success in adopting blockchain technology in banking services. By doing this, they will be able to capitalize on the innovation and transformation potential offered by blockchain to improve the efficiency, security, and transparency of their banking services, while also strengthening their position as leaders in the evolving era of digital finance.

2. Benefits and Challenges of Utilizing Cloud Computing in Banking Services

The utilization of cloud computing has become a major focus for many organizations, including banking institutions, in an effort to improve operational efficiency, flexibility, and scalability of their services. The utilization of cloud computing in banking services brings a number of significant benefits. One of them is increased operational efficiency. By using cloud infrastructure, banks can reduce initial investment costs in hardware and software, and avoid maintenance and upgrade costs associated with maintaining physical infrastructure. This allows banks to allocate their resources more efficiently and focus on their core business activities (Bahl Mukta Sharma Pramod Kumar Nayak Shashi Bala, 2020).

The utilization of cloud computing also increases flexibility in the provision of banking services. With cloud-based infrastructure, banks can easily adjust their computing capacity according to demand, be it increasing capacity to accommodate traffic spikes or decreasing it when demand decreases. This allows banks to respond to customer needs more quickly and efficiently, and expand their range of services without having to invest significant resources in physical infrastructure. In addition, utilizing cloud computing also brings benefits in terms of security and disaster recovery. Cloud services are often equipped with advanced security features, including data encryption, real-time security monitoring, and protection from cyber attacks. This helps banks to protect their sensitive data from security threats, as well as ensure that their services remain available even in emergency situations or natural disasters.

While the utilization of cloud computing offers a number of significant benefits, there are also a number of challenges that banks must overcome in adopting this technology. One of these is the issue of data security and privacy. While cloud services are often equipped with advanced security features, there is still a risk of data leakage or privacy breaches that can occur, especially if banks do not properly manage and secure their data. Banks must ensure that they comply with applicable regulations and security standards, as well as implement best practices in security risk management. In addition, there are also challenges associated with dependence on a particular cloud service provider. While cloud services offer great flexibility and scalability, banks must also consider the risks associated with dependence on a single cloud service provider. This dependence may increase the risk of service disruptions or policy changes from that provider, which could negatively impact the bank's operations.

While the challenges faced in utilizing cloud computing may be significant, they are not insurmountable. Banks can take a number of steps to overcome these challenges and reap maximum benefits from utilizing cloud computing in banking services. One is to conduct a comprehensive risk evaluation and develop effective risk mitigation strategies. This involves identifying and deeply understanding the risks associated with utilizing cloud services, as well

as implementing appropriate security and data privacy controls to mitigate those risks. In addition, banks can also consider using a hybrid or multi-cloud approach in cloud service utilization. By using more than one cloud service provider or a combination of public and private clouds, banks can reduce dependency on a single provider and increase the flexibility and redundancy of their systems. It can also help banks to choose the cloud service provider that best suits their business needs and requirements (Nehra et al., 2020).

Thus the utilization of cloud computing in banking services offers a number of significant benefits, including improved operational efficiency, flexibility, and data security. However, banks are also faced with a number of challenges to overcome, including data security and privacy concerns, dependency on cloud service providers, and risk management complexities. By taking the right steps to address these challenges and manage the associated risks, banks can reap the maximum benefits of utilizing cloud computing in banking services, while also strengthening their position as leaders in the evolving era of digital finance.

One of the important implications of utilizing blockchain and cloud technology in banking services is the increase in financial inclusion. Blockchain technology, with features such as decentralized digital identity and peer-to-peer payments, has opened up access to financial services for people who were previously underserved by the conventional banking system. For example, by using blockchain-based digital wallets, individuals who do not have access to traditional bank accounts can conduct financial transactions easily through their mobile devices. Likewise, cloud computing services have enabled banks to provide more accessible and affordable digital banking services, especially for those living in remote areas or underserved by conventional banking infrastructure. As such, the utilization of blockchain and cloud technology has contributed to increasing financial inclusion and expanding access to financial services for previously marginalized communities (Akter et al., 2020)..

1. Economic Growth:

   In addition to increasing financial inclusion, the utilization of blockchain and cloud technology has also contributed significantly to economic growth. By enabling new innovations in banking services and supporting the ecosystem of startups and small companies, blockchain and cloud technologies have created new opportunities for job creation and economic growth. For example, by facilitating peer-to-peer financing and tokenization offerings, blockchain technology has opened the door to easier and cheaper financing for small and medium-sized enterprises. Likewise, cloud computing services have enabled startups and small companies to access the necessary technology infrastructure at an affordable cost, allowing them to develop and test new products and services quickly and efficiently. As a result, the utilization of blockchain and cloud technology has increased innovation, productivity, and overall economic growth..
2. Regulation and Compliance:

   The utilization of blockchain and cloud technologies also presents a number of regulatory and compliance challenges. Financial regulators in various jurisdictions have issued guidelines and regulations related to the use of blockchain and cloud technologies in banking services, including requirements on data security, consumer protection, and tax compliance. Banks looking to adopt these technologies must ensure that they comply with applicable regulatory requirements, which may vary from one jurisdiction to another. In addition, banks should also be mindful of the compliance risks associated with the use of blockchain and cloud technologies, including the risk of inappropriate use of the technology, data security risks, and privacy-related risks..
3. Financial System Stability:

The utilization of blockchain and cloud technology also has implications for overall financial system stability. By enabling faster, efficient and secure exchange of data and information between various financial institutions, blockchain and cloud technologies have improved coordination and collaboration among market participants, which in turn can enhance the overall stability of the financial system. However, the successful implementation of these technologies also depends on the reliability and security of the underlying technological infrastructure. Disruptions or failures in blockchain or cloud technology systems can negatively impact the operations of banks and financial markets as a whole, thereby posing systemic risks. Therefore, banks and regulators should work together to ensure that the technological infrastructure underlying the utilization of blockchain and cloud technology is sufficiently robust and resilient to external threats.

Thus the utilization of blockchain and cloud technologies in banking services has brought about far-reaching implications, including increased financial inclusion, economic growth, regulatory and compliance challenges, and financial system stability. While there are a number of challenges and risks associated with utilizing these technologies, the benefits are clear in improving access to financial services, accelerating innovation, and enhancing operational efficiency. By addressing the challenges and capitalizing on the opportunities offered by blockchain and cloud technologies, banks can continue to strengthen their position as leaders in the ever-evolving era of digital finance.

CLOSING

The utilization of blockchain and cloud technology has been key in the transformation of banking services. The innovations brought about by these technologies have enabled banks to improve operational efficiency, increase financial inclusion, and respond more quickly to increasingly complex market demands. However, despite the potential benefits, there are also complex challenges that banks must overcome in adopting these technologies. Challenges such as technical complexity, high initial investment costs, and regulatory compliance test the success of blockchain and cloud technology implementation in banking services. Banks must meet these challenges with a well-thought-out strategy, strong collaboration, and a strong commitment to innovation and excellence in customer service. Only by addressing these challenges will banks be able to reap the maximum benefits of transforming banking services in the digital era. Amidst intensifying competition and rapid changes in the banking industry, the utilization of blockchain and cloud technology is becoming increasingly important for the future survival and success of banks. By continuously strengthening their technology infrastructure, developing innovative products and services, and maintaining quality customer service, banks can position themselves as leaders in the evolving digital finance era.

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