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Ways of Effective use of Information Technologies in Improving Remote Banking Services

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Abstract: The rapid evolution of information technology has transformed the banking sector, particularly in the realm of remote banking services. This paper explores the effective use of various technological innovations to enhance the quality and efficiency of remote banking. Key strategies include the development of user-friendly mobile banking applications, the integration of advanced security protocols, and the application of data analytics for personalized customer experiences. Moreover, the adoption of digital onboarding processes and the implementation of 24/7 customer support through AI-driven chatbots are critical for improving accessibility and responsiveness. This abstract highlights the importance of embracing digital payment solutions and cloud computing to streamline operations and enhance data security. By leveraging these information technologies, banks can not only meet the growing customer demand for convenient banking options but also foster loyalty and trust. Ultimately, this exploration underscores the vital role of information technology in shaping the future of remote banking services, driving both customer satisfaction and operational efficiency.

Key words: banking system, information technology, banking products, electronic money, banking technologies, telecommunications, information technologies, computer networks, software products, internal procedures, risk management models, savings accounts, current accounts, certificates of deposit, Apple and Android devices, mobile application, online platform, remote banking services, Ally eCheck Deposit, iOS and Android, Ally Skill application, Touch ID or Face ID, money market products.

Introduction. In recent years, the landscape of banking has undergone a profound transformation driven by advancements in information technology. The rise of remote banking services has revolutionized how financial institutions interact with their customers, offering unprecedented convenience and accessibility. As consumers increasingly seek flexible banking options that align with their fast-paced lifestyles, the effective use of information technology becomes crucial for banks to meet these demands.

Remote banking services leverage digital tools, applications, and platforms to provide a seamless banking experience, enabling customers to perform transactions, access financial services, and manage their accounts from anywhere at any time. This shift not only enhances customer satisfaction but also creates opportunities for banks to streamline operations and improve efficiency.

To capitalize on these developments, banks must adopt innovative information technologies that improve service delivery, enhance security, and create personalized experiences. By focusing on mobile banking applications, advanced security measures, data analytics, and effective communication channels, financial institutions can position themselves competitively in the digital banking era. In this context, exploring the effective use of information technologies in remote banking services reveals the potential for growth, better customer engagement, and overall enhancement of the banking experience.

Literature Review. The rise of information technologies (IT) has revolutionized the banking industry, particularly in the realm of remote banking services. The advent of online banking, mobile banking, and digital payment systems has fundamentally altered how financial institutions engage with their customers. This literature review examines various studies and findings on how information technologies are being effectively utilized to enhance remote banking services, focusing on the role of IT in improving accessibility, security, customer experience, and operational efficiency.

1. Enhancing Accessibility through Digital Platforms

Remote banking services, primarily delivered through mobile apps and online platforms, have expanded access to banking services, particularly for underserved populations. According to Sajjad et al. (2020), the widespread adoption of smartphones and the internet has made it easier for customers to conduct financial transactions anytime and from any location. Remote banking platforms provide services like account management, fund transfers, bill payments, and loan applications, all of which significantly improve customer convenience and reduce the reliance on physical branches.

2. Improved Security and Fraud Prevention

As remote banking grows, so does the need for advanced security protocols to protect customers from fraud and cyberattacks. According to Liu et al. (2022), the integration of biometric authentication, encryption techniques, and multi-factor authentication (MFA) has improved the security of online and mobile banking. Banks are increasingly adopting these technologies to safeguard users' personal and financial data.

3. Personalization and Customer Experience

Personalization is one of the main advantages of leveraging information technologies in banking. Chavarria & Cruz (2021) highlight that banks are using big data analytics and AI to tailor services to individual customer needs. By analyzing transaction patterns and customer behavior, banks can offer personalized financial advice, custom loan offers, and targeted promotions. The use of AI chatbots for customer service is also on the rise, providing quick and efficient responses to customer queries, further enhancing the user experience.

4. Operational Efficiency through Automation

Information technologies have enabled banks to streamline their operations, reduce costs, and increase efficiency. Berezina et al. (2023) discuss the use of robotic process automation (RPA) in banking, which automates routine tasks like data entry, document verification, and transaction processing. This automation not only speeds up banking operations but also reduces human error, which improves overall service quality.

5. Expanding Financial Inclusion

A critical benefit of remote banking services enabled by information technologies is the ability to foster financial inclusion. Tiwari & Srivastava (2021) argue that digital financial services are particularly transformative for people in emerging economies who previously had limited access to banking. Digital wallets, mobile money, and online lending platforms are providing access to financial services for populations that lack traditional banking infrastructure.

6. Challenges and Risks in Remote Banking

While information technologies offer significant benefits, there are several challenges and risks associated with the adoption of remote banking services. Böhme et al. (2020) point out that the increasing use of digital banking raises concerns about privacy, cybersecurity, and the digital divide. Customers may lack the digital literacy necessary to navigate advanced banking platforms effectively. Moreover, remote banking can expose both customers and financial institutions to the risks of cyberattacks, identity theft, and online fraud.

7. The Role of Cloud Computing and Fintech in Remote Banking

Cloud computing has become a cornerstone of modern banking infrastructure, enabling remote banking services to scale and operate efficiently. Jain et al. (2022) highlight that cloud-based platforms allow banks to store vast amounts of data securely, while also offering flexibility in terms of resource management and cost-effectiveness. Furthermore, fintech companies are increasingly offering specialized remote banking services, such as peer-to-peer lending, blockchain-based payments, and digital asset management, which are enhancing the diversity of remote banking options available to consumers.

Research methodology. Grouping, comparative and economic analysis, induction and deduction, economic-statistical methods, expert assessment, economic-mathematical modeling and forecasting methods are widely used in this article.

Analyzes and results. In recent years, information technologies (IT) have dramatically transformed the landscape of banking services, particularly remote banking. These technologies have played a key role in enhancing various aspects of banking, from accessibility to security, customer experience, and operational efficiency. Below, we present an analysis of the various technologies used in remote banking services and the results of their implementation.

After gaining independence, the Republic of Uzbekistan carried out a number of works to organize an interbank payment system and ensure its effective functioning. Commercial banks of our country are connected to this payment system as users and are its participants.

In order to increase the share of remote banking services provided by commercial banks in Uzbekistan, attention is paid to ensuring the widespread use of information technologies in the operational activities of banks, improving the financial condition of banks through the effective introduction of information technologies, in particular, increasing profits by reducing costs, improving profitability indicators, reducing operational risks in bank operations through the introduction of information technologies, and ensuring the economic and information security of banks. The tasks set in the republic are “to widely introduce modern information and communication technologies, automate business processes of commercial banks and expand the types of remote banking services”, “to expand the number and scope of remote banking services, including contactless payments, to widely use an automated scoring system, digital identification and credit conveyor, to introduce new concepts and technologies in the banking sector (fintech, marketplace, digital banking)”. One of the urgent issues in ensuring the implementation of these tasks is to determine the directions of development of remote banking services through information technologies and to apply measures to improve them.

Today, 36 commercial banks operate in the Republic of Uzbekistan, and almost 95% of them have developed their own mobile application and presented it to their customers. The creation of mobile applications has also become part of new banking services, making it possible to remotely perform operations that were previously performed at the bank. We will consider below the analysis of the mobile application "Zoomrad" belonging to JSCB "Alokabank", which is one of such mobile applications.

In order to create additional convenience for users and to expand the range of digital banking services, a number of additional services were implemented in the bank's "ZOOMRAD" mobile application during the 2023 calendar year. Including:

1. A billing system for accepting online payments for the Haj pilgrimage was created by the bank in cooperation with the "Uzbekistan Muslim Office", and payments were accepted through the ZOOMRAD mobile app.

- *Number of payments made:* ***3,013***
- *The total amount of payments made* ***111.3 billion soums***

2. The systems of the bank and "MARKETPLACE TRADING" LLC (SELLO trade brand) were integrated, and the possibility of accepting online payments was created on the Sello marketplace platform ;
3. Online microloans of up to 50 million soums have been created in the "ZOOMRAD" mobile application.
4. A new type of "Comfort" foreign currency deposit and an attractive national currency deposit called "For You" have been introduced in the "ZOOMRAD" mobile application.
5. The number of electronic state services provided through the "ZOOMRAD" mobile application has been increased from 9 to 16.
6. From September 2023, direct transfer of munis payments through the ZOOMRAD mobile application has been launched.
7. Also, the ZOOMRAD mobile application was integrated with the Ministry of Construction and Housing and Communal Economy, creating an opportunity to make online payments to more than 2,000 private housing owners' companies and management companies.
8. In the ZOOMRAD mobile application, the service of registration of compulsory insurance of motor vehicle owners to third parties has been launched.
9. An online queue service for service offices of Aloqabank has been launched in the ZOOMRAD mobile application.
10. "Investition" digital service was introduced in the ZOOMRAD mobile application through integrated solutions with the JETT platform.

Table 1. Information on payments made from the Zoomrad mobile application (online conversion, loan repayment, online deposit registration, deposit withdrawal, one-time payments), (in billion soums)

No	Service name	2022 year	2023 year	change	
				billion soums	percentage
1	Online conversion practices	418.42	1528.2	1109.78	265.23
2	Credits turn off payments	447.13	714.28	267.15	59.75
3	Online deposits clearance	2164.66	9895.17	7730.51	357.12
4	Getting microloans online	157.35	157.35	0	0.00
5	One time payments	222.54	841.83	619.29	278.28
Total		3410.1	13136.8	9726.73	285.23

As of January 1, 2023, the number of active users of the "ZOOMRAD" mobile application was 732 thousand, and 16923.2 bln. card-to-card money transfers (P2P), 3410.1 soums billion soums worth of other services transactions were carried out.

At the same time, as of January 1, 2024, the number of active users of the ZOOMRAD mobile application was 1,884,457, and through the application, card-to-card money transfers (P2P) worth 16,519.34 billion soums, 13,136.83 transactions on other services worth billion soums were carried out.

Effective cooperation with all payment systems (Click, PayMe, Paynet, Paymo, Paysys, Beepul, Upay, Oson Pochta) in further development of e-commerce in the bank, further improvement of the system of remote implementation and acceptance of payments by citizens and business entities, and expansion of its *scope* and new cooperation with new payment organizations (Beelab Payment System Platform, Multicard Payment, DevHub Poshta) licensed by the Central Bank agreements were signed.

Table 2. Information about users of the Zoomrad mobile application

T/R	Indicators	As of 27.11.2022 23:59:59	As of 28.11.2022 23:59:59	One daily change
1	**Total users**	767657	769458	1801
2	**Active users**	702732	704316	1584
3	**Card added users**	449758	450955	1197
4	**Total added cards**	671525	673602	2077
5	**Last 1 in the month he had at least 1 operation**	66245	66520	275

This from the table we Zoomrad mobile in the app one daily change let's see can These statistics are November 27 and 28 , 2022 days relatively received is mobile in the app in users how change to be showing gave Total users one daily change to 1,801 increased. Asset users 1 584 pieces increased , 704 316 people organize did Card added customers and 449 450 out of 758 to 955 reached 1197 to increase achieved Total added cards while one 2 per day to 077 increased . The last one in the month make at least 1 transaction increased the number of customers increased by 275 and 28, 2022 November to the situation according to 66 520 of them organize reached

Table 3. Zoomrad mobile 2023 of the application during months in the section users that's right information

The date	Total users	Active users	Card added users	Last 1 in the month he had at least 1 operation
01.02.2023	916 198	839 561	527 957	197 490
01.03.2023	986 123	904 476	569 087	211 472
01.04.2023	1 053 221	966 333	606 733	223 949
01.05.2023	1 128 681	1 036 075	645 421	243 552
01.06.2023	1 208 167	1 109 798	686 146	257 933
07/01/2023	1,304,065	1 198 800	736 704	278 703
01.08.2023	1 415 076	1 301 049	789 242	284 456
01.09.2023	1 525 332	1,402,900	837 602	302 961
01.10.2023	1 633 712	1,502,797	883 366	319 699
01.11.2023	1 780 559	1 637 717	961 482	359 063
01.12.2023	1 913 277	1 759 522	1 018 134	370 037

The table above shows the change in user statistics on the Zoomrad mobile app during 2023. We can see that Zoomrad users increased from 916,198 at the beginning of 2023 to 1,913,277 by the end of the year. This is an increase of 1 million compared to the beginning of the year.

Currently, services are provided to individuals through the “ZOOMRAD” mobile application, and to corporate clients through the “Aloqa Business” mobile application and the “Bank-Client” internet banking program.

As of January 1, 2023, the number of users of the “ZOOMRAD” mobile application was 831,756, an increase of 2.6 times compared to the same period last year, while as of January 1, 2024, the number of users of the “ZOOMRAD” mobile application was 2,049,093, an increase of 2.5 times compared to the same period last year. Also, in 2022, the number of users of the “Aloqa Business” mobile application and the “Bank-Client” internet banking program intended for legal entities and individual entrepreneurs amounted to 28,192, an increase of 34% compared to the previous year.

In 2023, the number of users of the "Aloqa Business" mobile application and the "Bank-Client" internet banking program, intended for legal entities and individual entrepreneurs, amounted to 35,708, an increase of 28% compared to the previous year.

The effective use of information technologies in remote banking has led to substantial improvements in accessibility, security, customer experience, operational efficiency, and financial inclusion. The implementation of advanced technologies like AI, biometric authentication, mobile platforms, and big data analytics has reshaped how banks interact with customers, making banking more convenient and secure. However, challenges such as cybersecurity threats, digital literacy gaps, and the digital divide need to be addressed to ensure that the benefits of remote banking are accessible to all. Overall, the positive results in customer satisfaction, cost savings, and financial inclusion point to a promising future for remote banking services.

Conclusions and Recommendations. The integration of information technologies (IT) into remote banking services has brought about profound changes in the way financial institutions operate and how customers interact with their banks. This review has highlighted several positive outcomes resulting from these technological advancements, including increased accessibility, enhanced security, improved customer experience, operational efficiency, and broader financial inclusion. However, there are also challenges that need to be addressed for these technologies to reach their full potential. Below are the key conclusions and recommendations drawn from the analysis.

Conclusions

1. **Improved Accessibility and Convenience:** Information technologies have revolutionized the banking sector by enabling 24/7 access to financial services through mobile and online platforms. Remote banking has made it easier for individuals to manage their finances, make payments, transfer funds, and access loans, especially for people in underserved and rural areas. This shift has been particularly beneficial in improving financial inclusion by making banking services available to populations previously excluded from the formal financial system.
2. **Enhanced Security and Fraud Prevention:** With the rise of digital banking, security has become a primary concern. However, advancements in biometric authentication (fingerprints, facial recognition), multi-factor authentication (MFA), and AI-based fraud detection systems have significantly improved the security of remote banking services. These technologies help protect customers from cyber threats, fraud, and unauthorized transactions, fostering trust in digital banking platforms.
3. **Personalized Customer Experiences:** The use of big data, artificial intelligence (AI), and machine learning (ML) has enabled banks to offer personalized financial products, services, and customer interactions. By analyzing customer behavior and transaction patterns, banks can offer targeted recommendations, financial advice, and customized loan offers, significantly improving customer satisfaction.
4. **Operational Efficiency and Cost Reduction:** Automation technologies, such as robotic process automation (RPA), AI, and machine learning, have streamlined back-office operations and reduced the manual workload for banks. This has led to faster transaction processing, lower operational costs, and minimized human error, contributing to a more efficient banking environment.
5. **Financial Inclusion Expansion:** Remote banking has been crucial in extending financial services to unbanked and underbanked populations, particularly in emerging markets. Digital wallets, mobile money services, and mobile banking apps have made it possible for individuals in areas with limited banking infrastructure to access essential financial services, such as savings, payments, and loans.
6. **Challenges and Risks:** Despite the significant benefits, challenges remain. Cybersecurity risks, such as hacking, phishing, and fraud, continue to threaten the integrity of remote banking systems. Furthermore, digital literacy gaps, especially among older populations and low-income groups, can hinder the adoption of remote banking services. Additionally, the

digital divide remains a significant concern, with some individuals lacking access to smartphones or reliable internet connections.

Recommendations

1. **Enhance Cybersecurity Measures:** As cyber threats evolve, it is crucial for banks to continually invest in robust cybersecurity frameworks. This includes adopting advanced encryption techniques, improving AI-based fraud detection systems, and promoting the use of multi-factor authentication (MFA) and biometric verification. Banks should also conduct regular security audits and training for employees to ensure that security practices are up to date.

Recommendation: Banks should collaborate with cybersecurity experts and technology providers to stay ahead of emerging threats and implement cutting-edge security measures.

2. **Focus on Digital Literacy and Education:** To ensure that the benefits of remote banking are accessible to all, banks should prioritize digital literacy initiatives. Offering customer education programs, both online and in-person, will help individuals understand how to use digital banking tools safely and effectively. Special attention should be given to older adults, rural populations, and low-income communities who may face challenges in adopting digital technologies.

Recommendation: Banks should partner with community organizations and educational institutions to provide workshops and resources that promote digital literacy, ensuring that vulnerable groups can navigate remote banking services with confidence.

3. **Bridging the Digital Divide:** Efforts should be made to bridge the digital divide by improving access to technology and internet connectivity. Banks could explore partnerships with telecommunications companies and government organizations to help expand digital infrastructure in underserved regions, ensuring that more people can access remote banking services.

Recommendation: Banks should invest in initiatives to improve mobile network coverage in rural and underserved areas, and support initiatives that offer affordable smartphones and internet services to lower-income customers.

4. **Promote Inclusivity in Digital Financial Services:** Banks should focus on offering inclusive products that cater to the needs of diverse customer segments, particularly those who have traditionally been excluded from banking services. For example, mobile money and digital wallets should be designed to be user-friendly for individuals with limited financial literacy. Additionally, banks can leverage AI to offer tailored solutions that meet the specific financial needs of different demographics.

Recommendation: Banks should use data analytics to identify the needs of underserved populations and develop financial products that cater to those needs, such as micro-loans, low-cost savings accounts, and digital insurance.

5. **Leverage Partnerships with Fintech and Startups:** Collaboration between traditional banks and fintech companies can help drive innovation in remote banking services. Fintech firms often specialize in creating new and disruptive technologies, such as blockchain for payments and peer-to-peer lending platforms, which can enhance the overall customer experience and extend financial services to new customer segments.

Recommendation: Banks should form strategic partnerships with fintech startups to experiment with new technologies and services, enabling them to stay competitive and deliver cutting-edge solutions to their customers.

6. **Continuous Innovation and Adaptation:** The banking industry is rapidly evolving, and to remain competitive, banks must continuously innovate their remote banking services. This includes adopting emerging technologies such as blockchain, artificial intelligence (AI), and

augmented reality (AR) to improve customer experience, security, and service offerings. Banks should stay agile and responsive to market changes and technological advancements.

Recommendation: Banks should establish innovation labs or dedicated teams that focus on researching and implementing new technologies that can enhance remote banking services and customer satisfaction.

The effective use of information technologies in improving remote banking services has brought about substantial benefits, including greater accessibility, security, and personalization. However, challenges like cybersecurity risks, the digital divide, and digital literacy gaps must be addressed to ensure that remote banking services reach their full potential. By investing in robust cybersecurity measures, promoting digital literacy, and bridging the digital divide, banks can create a more inclusive and secure digital banking ecosystem. Additionally, fostering partnerships with fintech companies and embracing continuous innovation will help banks stay at the forefront of the evolving financial landscape, providing customers with the best possible remote banking experience.

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