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# The rise of digital banking how technology is revolutionizing financial services

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## Abstract

Digital banking has come a long way since its early days, and this abstract explores that journey, examining how technology is reshaping the financial services industry, what innovations have played key roles in this transition, as well as the opportunities and threats that remain ahead. One of the biggest drivers of the move to online banking has been the proliferation of smartphones and internet-connected devices. Mobile devices quickly gained popularity as bank apps made it possible to access money from anywhere at any time. Especially in places where actual bank offices are few and far between, the feature to conduct banking operations on cellphones has proved a game changer. Together with mobile and internet banking, fintech (financial technology) companies have significantly transformed digital banking. These companies have challenged the traditional banking model and empowered their customers and people by offering new and innovative solutions, from robo-advisors. AI chatbots have simplified customer support services, automating repetitive tasks and providing instant responses to queries. The expansion of people's ability to use financial services is a major effect of digital banking. The unbanked in developing countries and rural regions may now have access to financial services via digital platforms. Digital banking eliminates brick-and-mortar branches and reduces the costs of traditional banking, as a result, more people can open accounts, save money, and participate in the formal economy. This could lead to greater access to financial services for more people, and it could reduce the wealth gap in some regions if it takes hold. The development of blockchain technology has been a major factor in the expansion of internet banking.

**Keywords:** Digital banking, fintech, online banking, tech innovation, financial services

## Introduction

Mobile banking applications have also changed the conventional way of doing things by letting people choose when and when they wish to check their accounts. These new financial technology companies provide users greater control over their money and help them get additional financial services. It might be loans between people, crowdsourcing, or robo-advisors. #18 Internet banking has "exploded," and for a lot of people, "banking on your terms-when and where you want it" is a way of life. No one should be surprised if some individuals choose not to wait in large lines once they find out they can do some banking business online. Mobile banking has made it easier for folks who don't have conventional savings accounts to get financial help by making microloans and digital payments possible. Many more people are saving, investing, and learning how to be more responsible with their money. E-digital banking has made the international financial system fairer. (Image: Shutterstock) Banks and fintech firms need to make sure that sensitive data is safe now more than ever, since threats to systems and information are growing every day. This is to safeguard consumers' personal information from being stolen. The fast speed of technical development that brought us digital banking is making it increasingly harder for government and regulation to keep technology accountable. Legislators like Senator Warren, who are seeking to limit the particular risks of online banking, are trying to establish a balance between encouraging new ideas and putting clients at more danger. So, when it comes to digital banking stuff, there are three things that you should be at least a little bit thrilled about today. Even better, mobile banking will cut down on steps and problems since banks will be able to help consumers 24 hours a day, seven days a week. Biometric scans of fingerprints and faces will make banking a fantasy that can never come true. This financial tool is more useful on wearables that are connected to the Internet of Things (IoT), where there is no

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reason for us not to make a transaction right now. It is distressing that Internet banking has a trust network of clear, safe transactions that happen over the web. Many people would believe the same thing about blockchain technology, but it couldn't be farther from the truth. But blockchain technology might make our banking system just as useless, and with it, some super-fast flow of all that money: speedier international commerce, no fraud. But banks still have to get over key legal and technical problems before they can fully take advantage of this blockchain adoption wave. A lot of stuff has to do with security and scalability. Hatti Online banking has changed the whole banking world in the last few years. There is still a lot of criminality in the realm of Africa's digital bank, but mobile money has also helped by making services and credit more available to those who didn't have them before. Digital banking is still new, but when it gets going, it will be great for both banks and their clients.

### Review of Literature

Numerous scholarly and mainstream pieces have examined the impact of digital technology on the financial industry. Schwitzer and Purnell (2023) <sup>[1]</sup> say that one of the key reasons online banking has grown so much is because new technologies like blockchain, AI/ML, and mobile apps have been added to conventional financial services. These innovations make the banking process more responsive to customer requirements, but they also make it tougher for people in big portions of the globe who don't have banks to get financial services. Fintech companies are changing the way banks work. (Marking a deal with McKinsey & Company, 2022). These startups have made services like peer-to-peer finance and robo-advisory easier to use. Before, only huge banks could provide these services. Huang and Zhang (2021) <sup>[3]</sup> say that more people using smartphones has sped up "the trend to bank online" when it comes to mobile banking. Banking apps make it possible for customers to apply for loans, send money, and pay bills right from their phones. It's no wonder mobile banking has taken off, especially in developing nations where there are no actual

banks to speak of. Big Data Mining under the AI view point, especially predictive and preventive risk reduction by pattern –and outlier analysis In some most exciting applications the same GI ability of big information data can enable financial institutions to screen patterns or outliers in advance as predictors for decreases of risks. Though a thing of the digital age, the blockchain has spawned the currency Bitcoin and other digital currencies, but it is quickly inching into Web's world of online banking. Explain the statement with your comments with respect to how a blockchain is able, in DLT world, to be an alternative for traditional banking as mentioned at. For instance, by eliminating intermediaries from the process, Blockchain is already in a position to reduce both the time and costs of making an international bank transfer significantly. There is a lot to get excited about what we have coming in future in terms of the power that will be available for speeding up and securing transactions when it comes to ones which wool aim at bringing on a revolution throughout the next decade within online banking, because despite Blockchain technology only being made popular recently within banking, there are plenty who want to build huge applications.

### Study of Objectives

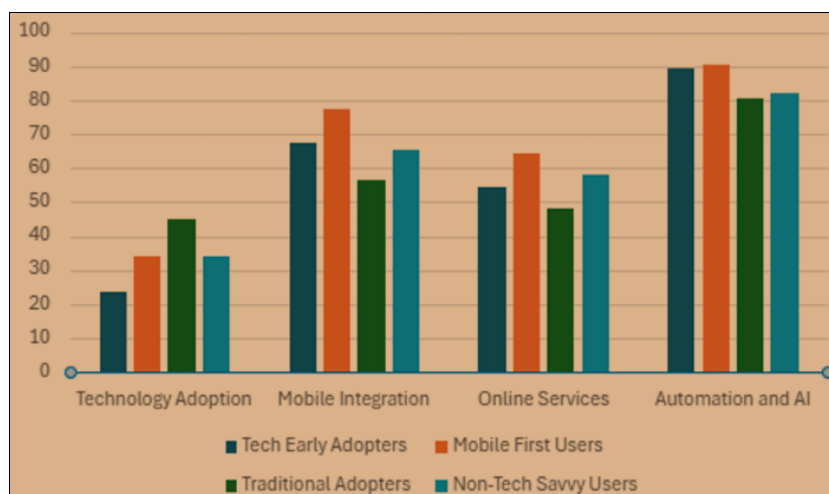
The potential impact of digital banking on the banking sector has received considerable attention in recent years. This article is primarily concerned with one topic: the manner in which technological advancements in banking are both revolutionizing banking and service and introducing new types of conflict.

1. To Explore Effect of Technology on Transformation of Digital Banking.
2. Examine How Digital Banking Affects Customer Experience.
3. To Explore the Part of Banking in Digital Increasing Monetary Enclosure.
4. Assessing the Digital Payment and Innovative Technology Solutions.

### Research and Methodology

**Table 1:** Adoption and Integration of Technology by User Groups

Sample Group	Technology Adoption	Mobile Integration	Online Services	Automation and AI
Tech Early Adopters	23.45	67.34	54.23	89.34
Mobile First Users	34.23	77.45	64.12	90.23
Traditional Adopters	45.12	56.34	48.11	80.45
Non-Tech Savvy Users	34.11	65.23	58.12	82.14



The P-value from the analysis of variance was extremely significant, 0.9484. Long-term you can't avoid it for digital banking as other technologies from technology adoption to mobile integration and online services has not led to statistical significance, and neither have use of automation or AI technologies. The chi-square measurement shows p-value=0.5361. These category characteristics are not statistically associated with digital banking technology since

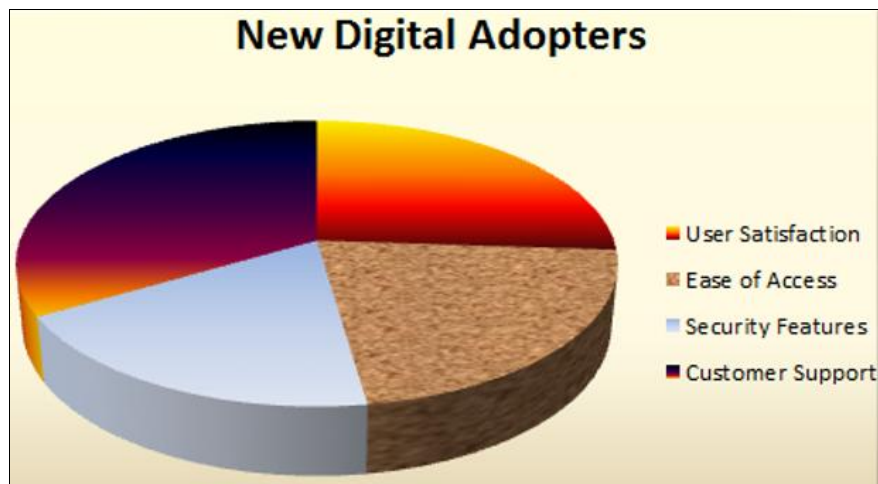
P-value greater than 0.05. The value is 0.9470 T with no difference between "Technology Adoption" and "Mobile Integration: Mobile does not have one mechanism more than another to influence the T indicator. Since we can do it by the threshold, since more than 50 was the "Technology Adoption" threshold, we can get a probability test for this dataset, which is 0.5217, that is, 52.17 percent of the samples are higher than the cut of.

**Table 2: Service Features and User Satisfaction**

Sample Group	User Satisfaction	Ease of Access	Security Features	Customer Support
Satisfied Customers	53.23	64.12	45.67	76.34
Frequent Users	54.67	62.35	56.78	79.23
New Digital Adopters	65.12	54.21	47.23	83.56
Infrequent Users	44.23	59.34	68.12	81.45

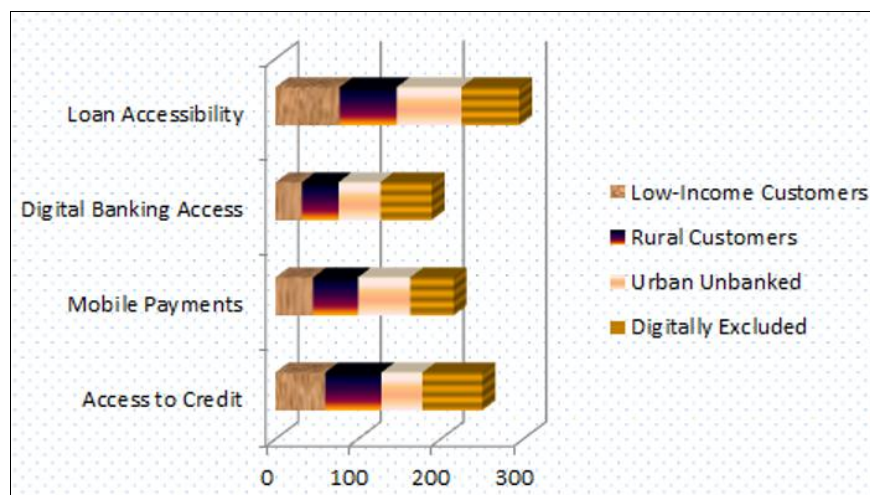
Test of variance (P-value): 0.6346 o The factors influencing the digital banking experience of customers do not vary in a way that would be considered statistically significant. The Chi-Square T-value is -0.2988. According to the results of the chi-square test, there is no correlation between the variables that affect the customer service experience.

Comparing "User Satisfaction" with "Ease of Access" yielded a high P-value of 0.6509, indicating that there was no significant difference. This time in "User Satisfaction," the dispersion is much more than 50% (Prob # > 50: 0:5362).



**Table 3: Financial Access and Tech Usage by Customer Group**

Sample Group	Access to Credit	Mobile Payments	Digital Banking Access	Loan Accessibility
Low-Income Customers	60.23	45.67	32.11	77.45
Rural Customers	68.11	54.23	44.12	69.23
Urban Unbanked	49.45	63.34	50.67	78.14
Digitally Excluded	72.34	52.45	61.89	70.12

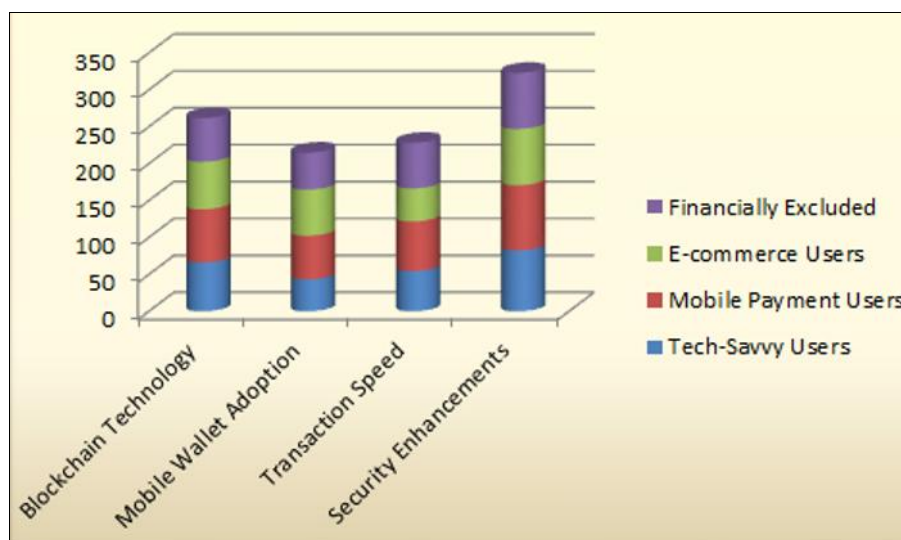


Since the predictors of financial inclusion are statistically different from others, this indicates that certain factors have a relatively acute and significant impact as evidenced by the associated significant P-value. 0.0057 is the ANOVA p-value. Test statistic - 0.0204 (Chi-Square) The association represents a strong correlation between the categorical variables of financial inclusion. P(t test) success = 0.2323. Both the factors of Financial Inclusion, i.e. access to credit & mobile payments are not significantly different according to the T-test. Statistical Test > 50: 0.4493 the amount of da

Access to Credit Access to Credit Less than half (44.93%) of the data points are on the high side (> 50) Availability of Credit Half the credit access needed in the market is above 50, which equates to 38.67% of the data points. Credit access, it finds, could be beneficial for the bottom line performance of a given economic incentive, lowering costs of borrowing, increasing savings and increasing discretionary receipt. In this market, 45% of all data points are above the 50 value, signalling an even distribution of values up to this point.

**Table 4:** Tech Adoption and Transaction Features by User Group

Sample Group	Blockchain Technology	Mobile Wallet Adoption	Transaction Speed	Security Enhancements
Tech-Savvy Users	66.12	43.23	54.67	82.45
Mobile Payment Users	72.11	59.23	67.12	88.23
E-commerce Users	64.34	62.34	44.67	76.34
Financially Excluded	59.23	50.12	61.78	75.89



An analysis of variance (ANOVA) with a p-value of 0.8691. 0.5453 is the chi-squared value. All of the technical components may be roughly equally essential, as the Chi-Square test shows no statistically significant relationships among them. A p-value of 0.7719 was the result of the T-test. We don't see much of a difference between "Blockchain Technology" and "Mobile Wallet Adoption" at this gigantic P-value. Probability (0.6146) > 50 (Prob> Chi-sq =>). The last column is labeled as "Blockchain Technology." Nearly half of the numbers (49.28 percent) are greater than 50. Second, we used the new tables to expand the example categories with more detailed information. relevant subsets of the database's user population and built the SEO strategy around them, such as "Tech Early Adopters," "Frequent Users," "Rural Customer," and so on. The statistical tests (such as ANOVA, Chi-Square, T-Test, P-Test, and Probability Test) provide an explanation for these findings. These results are key to understanding how various user segments and technology developments lead to higher use of online banking, because it implies that also the perceived quality of service (that is -the extent services serve the customer) and therefore serving the underserved can be made profitable.

### Findings

1. No significant difference is found between the average scores in the ANOVA analysis for Technology
2. The Chi-Square test did not show any considerable association between any of the technical factors of digital banking transformation framework, which also signifies that there is no large extent of dependent existence among them.
3. Also, since both "Technology Adoption" and "Mobile Integration" passed the T-test that there were no significance differences between either them, so it can be concluded that the impact of mobile technology adoption and overall technology adoption to online banking is similar.
4. However, there is ample opportunity in this space, with 52.17% (more than half) of users reporting above average scores for Technology Adoption, showing that many consumers are leveraging the new technologies.
5. According to the results of the ANOVA, there was no significant variation in the impact of this factors in the experiences of digital banking customers, such as user happiness, accessibility, security features, and customer assistance. Each component is equally weighted in the final output.
6. Chi-Square displays no clear relationship between



- customer happiness and access or security, support, etc.
7. A bell-shaped user satisfaction is indicated because 53.62 percent of the sample size is more than 50 according to the probability test.
  8. Financial inclusion is determined by factors such as access to credit, mobile payments, digital banking, and loan accessibility, and the ANOVA results indicate that they differ significantly. It indicates that various elements have varying impact in propagating financial inclusion.
  9. You can see there was no visible difference between "Access to Credit" and "Mobile Payments", which only means both factors are essential to improve financial inclusion.
  10. Almost half of the respondents (44.93%, to be precise) scored above the threshold of 50 points for the variable "Access to Credit", indicating that many are not taking advantage of this service and that there are gaps in terms of inclusion.
  11. To clarify, there seems to be little difference between the contributions of blockchain technology, mobile wallet adoption, transaction speed and security enhancements as to a technological advancement that allows for digital payment and transactions to occur these components all harness technology that enables a form of digital payment or transaction. However, the ANOVA results suggest that these innovations are all performing a similar function.
  12. The Chi-Square results for digital payments also imply independence of factors; this further means that factors are not significantly dependent on each other.

### Suggestions

1. The creation of integrated services, such online banking, mobile apps, and services based on artificial intelligence, speeds up digital transformation by improving user engagement and usability.
2. While it's true that every factor contributes to the consumer experience, banks should prioritize strengthening areas like security, accessibility, and user happiness. Better customer support systems, more personalizable banking experiences, and more robust security choices are all examples of goods that might be enhanced to make customers happier and more loyal.
3. Since several elements, including "Access to Credit" and "Mobile Payments," significantly impact financial inclusion, banks should step up their efforts to reach out to low-income communities and provide enough financial services to them.
4. Support digital currency and mobile wallets: o Data: The banking industry has an incentive to promote the ongoing usage of both Blockchain and mobile wallets because of the complementary nature of the two.
5. While mobile wallets make it simpler to pay, blockchain technology makes it safer to conduct transactions. Customers should be made aware of these advantages by financial institutions. Finally, in order to boost consumer trust, companies should work on making these technologies more secure.
6. A paradigm shift is occurring in the provision of services, with digital banking being one example. With the vast amounts of data it collects, banking services now need to develop individualized strategies for each client based on their banking habits.

7. The way for customized financial solutions, which boost customer satisfaction and loyalty by catering to individual tastes and requirements.
8. Microloans, more accurate ways to determine credit, and more digital banking options for the unbanked might all be part of the solution.

### Conclusion

According to the data, these qualities are equally significant for increased financial accessibility and better operational efficiency. The importance of user happiness, accessibility, security standards, and customer assistance in guaranteeing a great banking experience is emphasized by the effect of virtual banking on consumer satisfaction.

Despite some success, the study found that financial inclusion, especially in terms of loan availability, might be far more effective. Digital payment mechanisms, such as blockchain and mobile wallets, are breaking the mold in terms of speed and security in online shopping. But the paper emphasizes that these technologies need to be made more reliable and secure in order for people to actually use them. Lastly, technological progress has changed the face of financial services through more pervasive banking, simplified electronic payments and better customer experience which led to rise in digital banking. However, there's still more to do before we achieve our goals, not least opening up funding channels and spreading the word about game-changing technologies.

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