

Revolutionary Trends in Mobile Banking Technology and the Influence of Digital Financial Literacy on Consumer Adoption in the United States

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ABSTRACT: The world is rapidly becoming more digitally focused, particularly in the banking industry. Traditional banks are undergoing major digital transformations to meet the needs of today's tech-savvy customers. Online banking platforms and mobile applications now provide customers with round-the-clock access to their accounts for convenient financial management. Emerging technologies developed by tech companies significantly influence the dynamic evolution of mobile banking. This paper examines 1. Technology trends in mobile banking, future directions for banks to adapt to changing customer expectations, and the latest innovations shaping the industry. 2. investigate how digital financial literacy influences customers to adopt Mobile Banking in the United States.

KEYWORDS: Mobile banking, online banking, mobile banking adoption, financial literacy, digital literacy, digital financial literacy.

■ Introduction

Digital banking was initially started around the 1960s when banks began to automate different banking functions such as check processing, bookkeeping, and customer account management using mainframe computers. In the 1960s, Bank of America launched the first automated teller machine (ATM), which enabled customers to withdraw cash from their bank accounts without the assistance of a bank teller. Similarly, in the 1980s, Citibank launched the first Internet banking system that allowed customers to use account information and transfer funds through a dial-up connection. Although adoption was only at a moderate pace, these advancements allowed customers to personally manage their accounts in ways that were not previously feasible.

The rise of the Internet in the 1990s and 2000s prompted banks and other financial institutions to establish online portals for their customers. In 1995, Wells Fargo and Presidential Bank were among the first banks to adopt web-based banking, followed by other banks. The widespread adoption of mobile phones in the early 2010s played a significant role in this evolution. Banks then began developing mobile apps, enabling customers to manage their accounts from anywhere. In 2007, USAA Federal Savings Bank became the first bank to offer mobile banking through a mobile app. Today, mobile banking has become an essential part of the digital banking landscape.

Mobile Banking:

Mobile banking is an innovative financial service delivered via smartphone and software applications that enables interactive bank services on the go. It differs from online banking because customers transact via financial institution's banking applications. All we need is a smartphone with internet access. The process is complete when the customer downloads

the app to their phone and logs in. It lets you use an app on your phone to handle banking tasks like depositing checks, balance inquiries, checking balances, and transferring money. Nowadays, online banking is the most widely used method in America for communicating with banks about their financial needs. Customers are looking for digital ways to manage their accounts safely.¹

According to the American Bankers Association, 71% of United States consumers use mobile phone apps to manage their accounts.¹ The primary forces behind the digital transformation in banking are the use of mobile devices and the growing need for customers to remain connected.

Mobile banking is crucial for banks that value customers and wish to stay competitive in the market. Most individuals in today's society use new technologies, and the banking industry is not an exception to this evolving landscape. Digital banking innovations, such as AI-powered tools and smartphone platforms for simple payments, are transforming the banking sector and becoming increasingly popular among consumers across all age groups.²

■ Literature Review

Previously, various studies have investigated the driving factors behind mobile banking adoption. Davis proposed the Technology Acceptance Model (TAM) in 1989, which remains the most widely used framework for understanding attitudes toward and adoption of technology.³ Researchers use this framework to investigate the factors influencing people's use and adoption of the latest technology, as noted by Venkatesh and Davis.⁴ The TAM model has also been extensively used to predict customer behavior, as indicated by Venkatesh, Morris, and Davis, as well as Lee and Kim.^{4,5} According to the Theory of Reasoned Action proposed by Fishbein, the key

variables influencing a person's intention to engage with technology are Perceived Ease of Use and Perceived Usefulness.⁶

Research on customer adoption of mobile banking conducted by scholars in various countries has significantly influenced potential adopters. For Instance, Al-Jabri and Sohail emphasize the importance of mobile banking services in Saudi Arabia that are compatible with user experience, lifestyle, and beliefs to fulfill customer expectations.⁷ Similarly, Alalwan, A.A., Dwivedi, Y.K., Rana, N.P.P., and Williams, M.D. highlight the consumer adoption of mobile banking in Jordan, where perceived usefulness, perceived ease of use, and perceived risk play a critical role in adoption.⁸

The technology acceptance model proposed by Venkatesh and Davis outlines perceived usefulness and usage intentions, as discussed by Lee, Shaikh and Karjaluoto, and Mohammadi.^{4,9} Furthermore, studies by Mansumittrchai and Al-Malkawi highlight the influence of technological advances and Mexican customers' adoption of these innovations.¹⁰ Additionally, Oliveira, Faria, Thomas, and Popovic provide valuable insights for decision-makers implementing mobile banking services.¹¹

Unfortunately, the rapid development of digital products and features in the banking sector has not been accompanied by increased public literacy in digital finance, known as digital financial literacy. Research on digital financial literacy by Huang and Trin and by Lyons and Kass-Hanna outlines the definition and measurement of financial literacy. It emphasizes knowledge-based awareness and skills in the digital age.¹² It is widely believed that digital financial literacy enables sound financial decisions, informed financial planning, and overall financial well-being, as noted by Balasubramanian and Sargent, Artavanis and Karra, and Philippos and Avdoulas.¹³⁻¹⁵ Most existing studies focus either on digital literacy or financial literacy instead of explicitly examining digital financial literacy and its unique attributes. Also, with the current development of digital technology-based banking products and services, financial literacy alone is not enough; financial institutions and educational institutions also need to pay attention to their people's digital financial literacy level.¹⁶⁻¹⁸

Moreover, limited studies have examined the revolutionary trends in mobile banking and the influence of digital financial literacy on customer adoption in developed countries like the United States. Therefore, this study aims to address this research gap and provide insights into these factors. Digital financial literacy will likely become an increasingly important aspect of education in the Digital Age. Despite the diversity of factors studied, key themes consistently emerge: trust, social influence, performance, and behavioral intention remain significant predictors of mobile banking adoption.^{2,5,12,14,18-21} This underscores the need for further research, particularly tailored to the United States context, to better understand these influences and refine strategies for encouraging mobile banking adoption in the digital era.

■ Mobile Banking Technology and Revolutionary Trends

Mobile Banking Technology and Evolution:

Mobile banking enables users to access their financial accounts through a combination of hardware, software, and security features. Four key players are involved: the bank, the mobile network provider, the technology vendor, and the customer. Below is an overview of how mobile banking technology functions internally.

- **Secure connection:** When the user logs in to the app, the system encrypts their credentials to protect the data before transmitting it over the internet.
- **Authentication:** Many apps use multi-factor authentication to add an extra layer of security. This can be fingerprint scanning, facial recognition, or a unique code sent via email or text to your phone.
- **Communication:** After authentication, the app communicates with the bank's servers, gets the account information, and shows it on your phone.
- **Transactions:** When the user initiates a transaction, the app sends encrypted data to the bank's server for verification. If everything is okay, the transaction is processed.
- **Data storage:** Users do not store sensitive financial data on their phones. Instead, banks use secured data centers with robust security protocols to protect the information.
- **Encryption:** Industry-standard protocols encrypt data transmission between the device and the banking systems, keeping unauthorized users from accessing private data.

The banking sector and apps have changed significantly over time. Customers can also choose from a wide variety of mobile banking apps. Banks have made their mobile apps available on various operating systems. Through these apps, customers can access many banking services, such as account information, digital payments, investments, support services, customer service, and more.

Google Wallet debuted in 2011, followed by Apple Pay in 2014 and Samsung Pay in 2015. Since then, advancements such as virtual cards and many payment platforms have emerged. Mobile and contactless payments have become common. Wristwatch banking applications have developed, with the Commonwealth Bank of Australia leading the way in 2015. Smartphones, mobile phones, and the internet have significantly transformed the global financial system.

Research by Rajaratnam, Afshan and Sharif, Chan and Lu, and Davis highlights the multifaceted influences on the adoption of information technology, focusing on perceived usefulness, perceived ease of use, and user acceptance.^{3,17,22,23}

Mobile banking App Features:

Mobile banking apps offer a range of banking services designed to enhance user accessibility, friendliness, and convenience for users. Key mobile banking features include:

- Real-time **account balance** viewing, transaction history access for tracking spending, and easy retrieval of bank statements.
- **Alerts** for upcoming bills and charges, helping you avoid missed payments and late fees.
- Bill payments and transfers by selecting the recipient, entering the amount and date, and hitting submit with just a few taps.²⁴
- **Mobile Deposit** allows customers to deposit checks remotely using the phone's camera by taking a clear picture of the front and back of the check, with funds available within a few business days.²⁴
- These features are crucial for effectively managing finances. Mobile banking apps employ robust **security** measures like multi-factor authentication (MFA) that require an additional verification step beyond your password.²⁴

Emerging Trends and innovations:

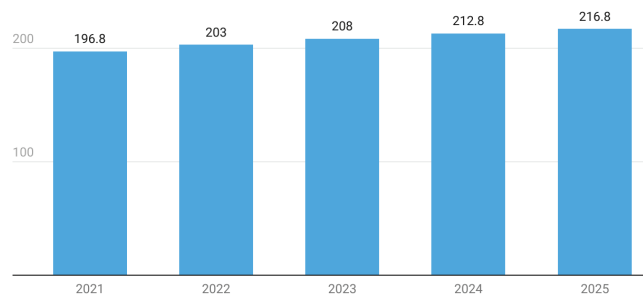
The need for financial accessibility increased as technology developed. The smartphone era has surely been the most significant factor in the shift in habits. The COVID-19 pandemic and the ongoing digitalization made up the remaining portion.²⁵

Modern technology provides useful information about how each customer spends their money. This information helps financial institutions understand customer purchasing behaviors and can tailor marketing strategies, improve customer service, and make informed business decisions on time. Smartphone usage has changed the ability to access bank accounts in just a few clicks. With mobile banking apps, customers can quickly check their bank balances, transfer funds, or make mobile payments. Customer preferences and needs are changing. As the demand for mobile banking continues to grow, financial institutions focus on developing advanced features to improve user experience and stay competitive.

According to Statista, 90% of users in the US use mobile banking apps to check their balances, 79% to view recent transactions, 59% to pay bills, and 57% to make transfers.²⁶ Experts expect the global mobile banking market to reach USD 2.2 billion by the end of 2024 and USD 11.2 billion by 2033, with a compound annual growth rate (CAGR) of 20.0%.²⁴ Prominent banks have invested significantly to enhance their mobile banking capabilities. This convenience has proven extremely valuable to customers who appreciate timely and effortless account access. The number of digital banking consumers steadily increases in the United States, showing a growth adoption rate in Figure 1.

Number of Digital Banking Users in the US (2021-2025)

in millions



Source: Enterprise Apps Today

Figure 1: The number of digital banking users in the United States from 2021 to 2025.²⁶ It shows that the digital banking consumer adoption rate steadily increases each year. By 2025, nearly 216.8 million people in the United States are expected to be digital banking users.

Technology trends and adoption are prominent topics in digital banking literature, so it is not surprising that a significant proportion of the publications analyzed in this study focus on digital banking adoption. In recent years, cutting-edge technologies (Figure 1.1) have continued to evolve, driving innovation and reshaping the banking landscape. However, the implementation of digital banking innovations is always accompanied by multiple risks, including security concerns, regulatory challenges, and potential resistance from customers or employees.³¹

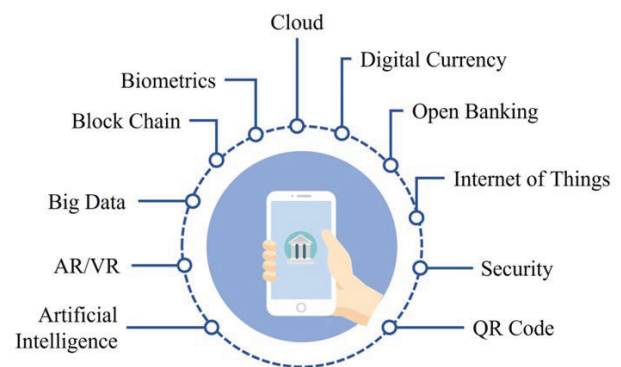


Figure 1.1: Key Technologies Driving Mobile Banking Innovations.³¹

Artificial Intelligence (AI) and Machine Learning (ML) are crucial to the future of mobile banking app development. They enable banks to offer personalized services and enhance security. Chatbots with AI capabilities offer immediate customer assistance, while machine learning algorithms examine user behavior to identify fraudulent activity. This raises client satisfaction levels while also considerably lowering the danger of cyber-attacks.²⁵

Biometric authentication methods, such as fingerprint scanning, facial recognition, and voice recognition, significantly enhanced security in mobile banking. These technologies provide a higher level of security and are more complex to replicate than traditional PINs and passwords, ensuring that only authorized users can access their accounts.²⁵

Blockchain Technology can facilitate faster and more secure cross-border payments. It reduces transaction costs and

enhances data privacy. Banks are investing significantly to provide a user-friendly experience to ensure that users can easily navigate through the app and perform their banking tasks with no hassle.²⁵

Digital wallets and contactless payment methods are driving their growing popularity. Digital wallet functionality is being integrated into mobile banking apps, enabling users to store their credit card details and do safe smartphone transactions with a single tap. There are no fees to send money via a digital wallet to someone. More banks will likely continue this trend by offering digital wallet services and supporting various contactless payment methods. Cashless transactions provide the speed and convenience that customers desire. The UK, Canada, and the US are increasingly using digital wallets and contactless tap-to-pay cards. In contrast, Mainland China and India are adopting QR code technology for mobile wallets and digital payments. The cashless trend is growing globally, and by 2025, the volume of cashless transactions is expected to double.²⁵

According to Davis, the link to opinion, belief, purpose, and conduct in technology acceptance models allows us to anticipate the handling of innovative technologies.³ Some common payment services include:

Apple Pay is only available for Apple devices. It allows users to make contactless payments in stores or online within apps by storing their debit and credit cards in Apple Pay.

Google Pay: Similarly, Google Pay allows contactless payments, is compatible with Android devices, and integrates seamlessly with Google services.

Zelle: Over 2,000 banks' mobile apps offer Zelle a way for individuals to transfer money from bank account to bank account.

PayPal users can link their bank accounts, credit cards, and debit cards and even keep money in their accounts. It is a payment option for many online retailers that support money transfers and online payments.

Open Banking is the practice of securely sharing financial transformation information electronically with customer consent. Through the use of Application programming interface (APIs), third-party providers can access financial transformation efficiently, which enhances the service and results in an improved customer experience. For example, recurring payments such as rent or utility bills can be set for auto payment via bank transfer, streamlining the payment process for customers.²⁵

According to the Federal Reserve Survey, 74% of consumers used faster or instant payments in 2023.⁶ Although banks don't directly offer digital wallets, banks can increase the accessibility for consumers by making their bank accounts compatible with digital wallets or by integrating third-party services into mobile banking apps. While digital wallets simplify the payment process, they also increase the risk of scams. Customers often only need a phone number or email to send money. It is important to ensure customers only send money and make payments to trusted recipients.²⁵

Banks are incorporating split payment features into their mobile banking apps, enabling customers to divide expenses

easily. These features include joint accounts, expense categorization and sharing, person-to-person (P2P) payment splitting functionalities, or direct integrations with other payment splitting solutions, such as Splitwise or Zelle. Mobile payments can also help businesses to expand their reach into new markets.²

Transforming Customer Service:

AI-powered chatbots in banking technology enhance overall Customer Experience. These chatbots can handle inquiries about account balances, recent transactions, bill payments, etc. These chatbots may even provide personalized financial advice based on customer spending habits and financial goals. Banking AI chatbots can help banks increase operational efficiency and offer more individualized customer service. They are creating a new era where customers can get answers to their questions quickly, securely, and conveniently by simply talking to a bot.

They reduce customer wait time and offer 24/7 support by using natural language processing (NLP) to understand user queries and provide accurate responses.²⁵

Top Benefits of Banking AI Chatbots

- Improved Customer Experience
- Reduced Banking Costs
- Increased Operational Efficiency
- Personalized Banking Service

Banking AI Chatbot technology is changing how we do business by making financial services more streamlined than ever. 48% of business leaders have said generative AI will likely transform their organization in 1-3 years. Understanding how to use AI will be crucial in scaling and developing later on.¹⁷

AI chatbots provide a unique solution for Fraud detection by informing clients of all transactions conducted on their accounts through timely notifications and alerting them of suspicious activity. Banking AI Chatbot technology is transforming business by making financial services more streamlined than ever.²⁵

According to Davis, the link to opinion, belief, purpose, and conduct in technology acceptance models allows us to anticipate how innovative technologies will be handled.³

Future Trends:

Artificial Intelligence (AI) and Machine Learning Voice-Activated Banking Services: With the rise of voice-assisted devices, mobile banking also embraces voice commands. This trend is about enabling customers to perform banking tasks through voice-activated commands on their mobile devices. Smart speakers can readily perform sophisticated banking activities. They make use of machine learning and security to interpret money requests. These algorithms converse more naturally, which makes difficult transactions seem like friendly conversations. With ongoing advancements in AI, security, and technology integration, voice-activated payments will revolutionize the payment landscape.

According to a study by OC&C Strategy Consultants, the value of voice-based payments is projected to reach \$164 billion by 2025.² This presents a massive opportunity for retailers to build voice-enabled applications and connect them with smart devices, paving the way for a new digital-action era. The

future of voice payments looks promising, driven by increasing familiarity with technology and the desire for convenience. However, voice payments need to improve in several areas. Implementing robust security measures, like voice biometrics and additional authentication, will increase user trust.

Integrating AI and IoT devices is expected to boost voice application adoption further. In the next few years, voice-powered systems are predicted to be integrated into various technologies across different industries. Innovative banks are exploring Augmented Reality (AR) in Banking to provide engaging mobile app experiences, offering services like locating ATMs, visualizing savings growth, and simulating loan impacts.²⁵

■ Methods

This study used secondary data from various websites, including the American Bankers Association (ABA), a poll carried out by Morning Consult on behalf of the American Bankers Association from September 20-22, 2023, which surveyed a national sample of 2,211 adults about customer adoption.²⁹ The survey results have a margin of error of plus or minus two percentage points.²⁸ Additionally, to assess levels of digital literacy, financial literacy, and digital banking behaviors, this study utilized the data collected from Capital One Insight Center through an anonymous survey of 3000 randomly selected consumers across the USA between Aug and Sep of 2023.²⁹

■ Discussion

According to the American Bankers Association (ABA), US consumers have been banking via mobile apps more often than any other method in recent years (Figure 2).²⁸

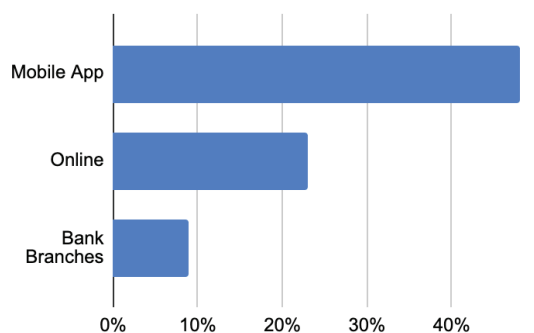


Figure 2: Usage of mobile apps by consumers to manage their bank accounts. This data highlights consumers' most common method to manage their bank accounts.²⁸

The survey data from the ABA in Table 1 and Figure 3 highlights the generational differences in mobile banking preferences, with millennials standing out as the most frequent users of mobile banking services. This is because of their tech-savvy nature and comfort level with technology and digital apps, which aligns with their overall lifestyle and familiarity with smartphones. Millennials, often categorized as "digital natives," are more likely to embrace technological innovations and are influenced by peer behaviors, which may drive their adoption of mobile banking services at a higher rate compared to other generations.²⁸

In contrast, Baby Boomers show the lowest preference for mobile banking, suggesting a slower adoption of digital solutions. This could be due to their more traditional approach to banking, along with potential concerns about security, user experience, or simply unfamiliarity with mobile technology.²⁸

Gen X presents a mixed approach, combining both traditional and digital banking methods. This indicates that banks need to cater to a broader range of preferences, offering both digital and traditional banking options to serve Gen X, who may use mobile banking for convenience but still rely on in-person or phone services for other tasks.²⁸

Table 1: Usage of mobile apps by consumers across various age groups and generations. This data shows how different generations use banking services differently.²⁸

Generation	Age Group	Mobile	Online	ATM	Telephone	Branches
GEN Z (1997-2012)	12-27	57%	11%	10%	9%	4%
MILLENNIALS (1981-1996)	28-43	60%	14%	9%	4%	4%
GEN X (1965-1980)	44-59	52%	17%	9%	9%	6%
BABY BOOMERS (1946-1964)	60-69	39%	31%	16%	5%	5%

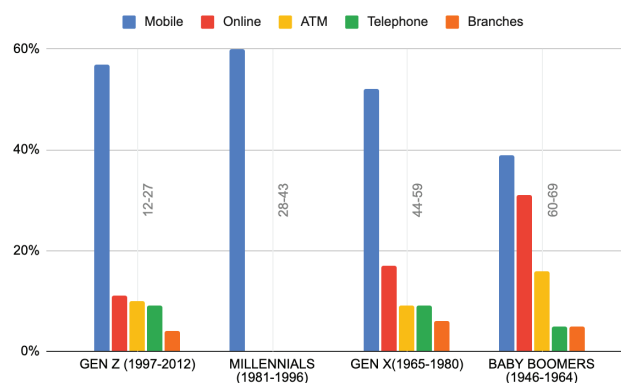


Figure 3: Illustrates the usage of mobile apps by consumers across different age groups and generations. This highlights how consumers continue to use a wide range of banking options to meet their needs.²⁸

Digital Financial Literacy in the United States:

Digital financial literacy (DFL) refers to the knowledge and ability to navigate digital financial tools and platforms for managing financial activities safely to make informed decisions. It emphasizes knowledge-based awareness and skills. Key components of digital financial literacy are:

Financial Knowledge: Understanding basic financial concepts, such as savings and spending.

Digital Knowledge: Familiarity with digital technologies and platforms that facilitate financial transactions, including apps and online banking.

Awareness of Digital Financial Services: Recognizing various digital financial services like mobile payments and online investment platforms.

Practical Know-How: The ability to use these digital financial services, including setting up accounts, making transactions and payments, and managing finances online.

Avoiding Digital Fraud: Skills to identify and protect oneself from scams and fraudulent activities, including understanding phishing attacks, secure passwords, and privacy settings.

Capital One survey results reveal that approximately 86% of Americans know how to protect themselves and their personal information online, a key component of digital literacy; however, over 40% of consumers lack basic financial literacy knowledge, like how to manage debt or build credit. It identifies digital financial literacy (DFL) as an emerging concept that measures the intersection of financial skills and digital safety knowledge.²⁸ Given that online financial activities are common targets for fraud and scams, early research on digital financial literacy emphasizes the importance of understanding how to engage in mobile banking transactions using fintech tools.

Digital Financial Literacy on Consumer Adoption:

Prospective customers require essential information about the products, knowledge of the underlying technology, and a grasp of the overall benefits of adopting FinTech products. This knowledge is the foundation of users' awareness of these innovative fintech solutions. This research investigates how the awareness of digital financial literacy influences the use of mobile banking.

Based on the Capital One survey, the Digital Financial Literacy Index in Table 2 provides insights into the level of digital financial literacy among U.S. consumers. This index evaluates how well individuals understand and utilize digital financial tools, such as mobile banking apps, online budgeting tools, and other digital financial services. It reflects how well people are equipped to make informed financial decisions using technology.

Table 2: Table 2 shows that digital literacy is not a significant barrier to digital banking. Approximately 55% of Americans are digitally financially literate, scoring high in both digital literacy and financial literacy.²⁸

Mobile Banking - DFL	Digital Literacy-High	Digital Literacy-Low
Financial Literacy-Low	31%	10%
Financial Literacy-High	55%	4%

• The Impact of Age on Digital Literacy and Technology Adoption:

Table 3 and Figure 5 data show that regardless of their level of digital financial literacy, consumers across all age groups prefer to bank online. This preference indicates the benefits of 24/7 access to banking services, easy money transfers, mobile payment options, and other conveniences despite any challenges posed by digital tools. This trend signals that financial institutions should prioritize digital banking services, as it is consumers' preference, regardless of their familiarity with digital tools or financial management.²⁹

Table 3: This table presents how individuals in different age groups are distributed across four categories based on their financial resources (low or high) and use of digital tools (low or high) for managing their finances.²⁹

Age	Low Financial Low Digital	Low Financial High Digital	High Financial Low Digital	High Financial High Digital
18-24	19%	50%	2%	28%
25-34	14%	44%	3%	39%
35-44	13%	39%	4%	44%
45-54	8%	28%	5%	59%
55-64	7%	25%	4%	64%
65+	4%	17%	4%	74%

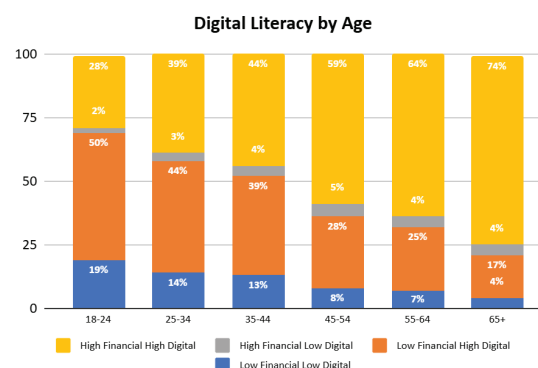


Figure 5: This chart highlights a trend where younger age groups (18-34) have a higher proportion of individuals with low financial literacy but higher digital financial literacy. In contrast, older age groups (45-64) show an increasing percentage of individuals with high levels of both financial and digital literacy. Notably, the 65+ age group has the highest proportion (74%) in the High Financial, High Digital category, indicating a significant increase in both financial stability and digital financial literacy as individuals age.²⁹

The data suggests that older consumers, such as Baby Boomers and Gen X, tend to have higher levels of both digital literacy and financial literacy. Additionally, the data shows that digital financial literacy increases with age, and proficiency in digital financial tools tends to improve as individuals age. This adaptation contributes to their higher scores in both digital and financial literacy. The data also reveals that younger consumers, such as millennials and Gen Z, are more digitally literate but tend to have lower financial literacy scores.²⁹

This highlights a potential gap in which younger consumers are comfortable using digital tools but may lack an understanding of managing their finances. This gap between digital and financial literacy could have long-term implications, especially if younger consumers do not receive adequate financial education. Despite their comfort with digital tools, they may be at risk of making poor financial decisions.

• Digital Usage and Financial Literacy:

A significant portion of consumers prefer managing their finances using digital tools like mobile banking apps or through their bank's website, regardless of their level of digital literacy. Table 4 and Figure 6 show digital tools are increasingly preferred over traditional banking methods as consumers' financial and digital engagement rise. Mobile apps and websites are the dominant methods for managing finances, especially among digitally savvy, financially higher segments. It also reveals that some consumers, particularly older generations, still prefer traditional methods of visiting branches.²⁹

Table 4: US Consumers preferred method of managing finances based on the financial management and digital usage.

Manage By	Low Financial Low Digital	Low Financial High Digital	High Financial Low Digital	High Financial High Digital
Mobile App	45%	53%	44%	40%
Website	19%	22%	26%	39%
Branch	9%	9%	11%	10%
Phone Call	11%	8%	7%	5%
ATM	7%	4%	4%	2%
Mail	3%	2%	3%	3%
Texts	5%	2%	3%	1%
Other	1%	1%	2%	1%

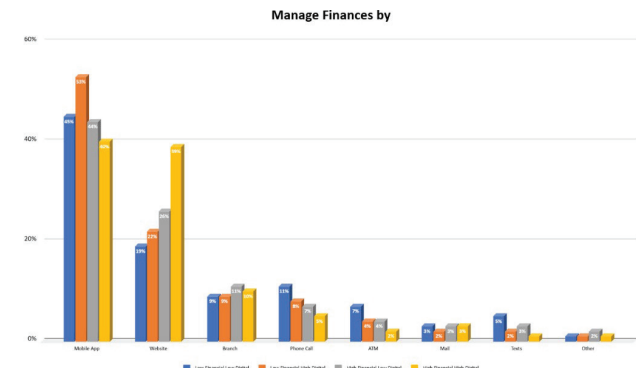


Figure 6: This table illustrates the varying preferences of U.S. consumers for managing their finances, segmented by financial and digital engagement levels. It contrasts the use of digital tools such as mobile apps and websites with traditional banking methods like branch visits, phone calls, and ATMs.²⁹

Financial institutions must bridge this generational gap by offering solutions that cater to tech-savvy, mobile-first consumers and those who value personalized service and face-to-face interactions. Technology Adoption is not just using new technology, but also the acceptance, understanding, and utilization to improve efficiency, productivity, and overall outcomes. Financial institutions must ensure that their digital offerings are accessible, secure, and user-friendly while also addressing customer concerns around trust and security.

• Digital Engagement and the Frequency of Financial Activity:

Table 5 and Figure 7 below illustrate how different consumers interact with digital banking based on their frequency of use. Despite variations in frequency, most consumers participate in banking activity at least occasionally, with only a small percentage indicating no engagement at all.²⁹

Table 5: The data indicates a correlation between both financial and digital engagement and the frequency of the financial activity.²⁹

Activity	Low Financial Low Digital	Low Financial High Digital	High Financial Low Digital	High Financial High Digital
Often	51%	62%	49%	72%
Occasionally	37%	32%	37%	34%
Rarely	12%	5%	13%	3%
Never	0%	1%	0%	0%

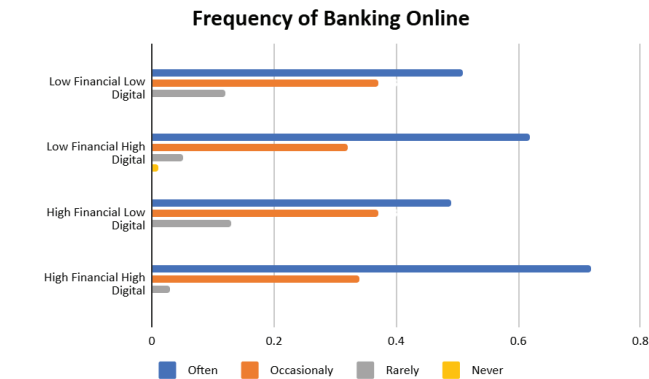


Figure 7: Illustrates the frequency of digital banking usage by U.S. consumers for managing financial accounts. While customers bank online "often" or "occasionally," those with low digital literacy remain less frequently engaged in online banking activities. Some consumers never use digital banking due to low digital literacy or prefer traditional banking methods due to trust and security.²⁹

As digital engagement increases, consumers also become more concerned with the security of their financial data. Financial institutions have made significant strides in ensuring security through encryption, biometric authentication, and real-time fraud alerts. Building and maintaining trust in these digital tools is crucial for encouraging their ongoing and frequent use.

• The Impact of Financial and Digital Engagement on U.S. Consumers' Digital Banking Activities:

Consumers with high digital literacy, regardless of financial literacy, tend to use digital banking capabilities more frequently. Table 6, Figure 8, and Figure 9 illustrate the top five banking activities that US consumers often perform when enrolled in digital banking. This data represents the percentage of consumers using specific digital banking activities based on their financial and digital literacy levels. The data is segmented by financial literacy (Low or High) and digital literacy (Low or High), illustrating how these factors influence various digital banking activities.

Table 6: The data indicates a correlation between both financial and digital engagement and the frequency of the financial activity.²⁹

Activity	Low Financial Low Digital	Low Financial High Digital	High Financial Low Digital	High Financial High Digital
Redeem offers and rewards	24%	38%	37%	43%
Update my Information	30%	44%	28%	44%
Transfer Money	51%	63%	53%	60%
Pay my bill(s)	57%	72%	72%	83%
Check balance and transactions	65%	83%	73%	92%

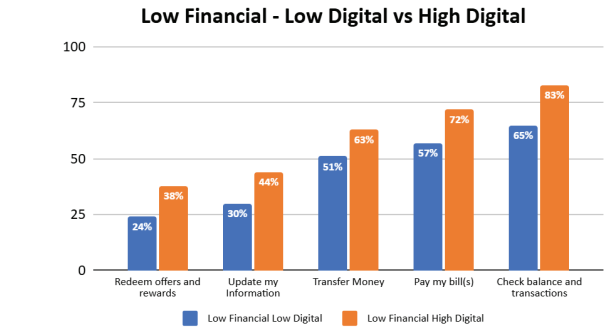


Figure 8: Figure 8 shows consumers with lower financial literacy levels engage with digital banking platforms highlighting their use of online tools for managing everyday finances.²⁹

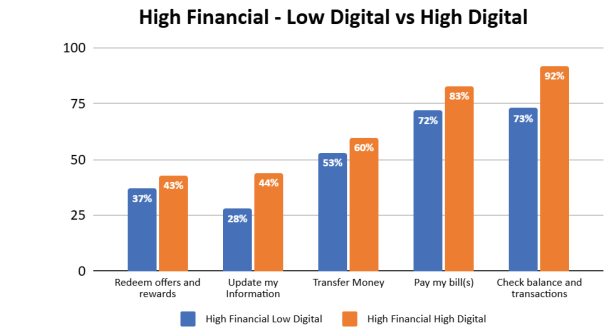


Figure 9: Figure 9 shows consumers with high financial literacy using digital banking tools to manage their finances. It highlights their engagement with various online activities such as redeeming rewards, updating personal information, transferring money, paying bills, and checking account balances and transactions.²⁹

The data indicates that consumers with higher financial literacy levels engage more frequently and more broadly with digital banking services, taking full advantage of features like money transfers, bill payments, and account management. In contrast, consumers with lower financial literacy show more limited engagement, especially in areas that require a deeper understanding of financial management or advanced digital capabilities. The data also suggests that consumers with low digital financial literacy are often more likely to use online tools, suggesting the need for help understanding and managing their finances. Additionally, consumers with low digital literacy still conduct routine financial transactions online or on mobile apps, even if they are less likely to engage in complex digital banking activities.²⁹ Digital financial literacy plays a critical role in the successful adoption of digital banking by consumers, particularly in understanding how to navigate the tools and build trust in new technologies.^{30,32,33}

■ Results

Data analysis reveals that young consumers remain vulnerable to scams despite the digital age's growth. However, findings also indicate that younger consumers with high digital literacy can improve their financial literacy through preferred digital channels, such as online education, automated reminders, and just-in-time notifications. Regardless of their level of digital literacy, consumers prefer mobile banking.

■ Conclusion

The journey of mobile banking from its inception to its current state is a testament to rapid technological advancement and changing consumer expectations. Mobile banking has transitioned from a novelty to a necessity in the United States and globally, driven by the demand for convenience, speed, and personalized banking experiences. The findings from the Capital One Insight Center survey highlight key trends in digital banking and consumer behavior, with emerging technologies from tech companies playing a significant role in this dynamic evolution of mobile banking.

Digital financial literacy greatly influences mobile banking usage in the U.S. By enhancing financial literacy, we can improve the adoption and overall utilization of mobile banking technologies. This research underscores the importance of boosting financial literacy to enable consumers to effectively leverage fintech products and services while minimizing the risk of cyber fraud. These insights are crucial for designing and promoting educational and training programs to enhance digital financial literacy.

The United States should implement these findings across various age demographics using targeted communication strategies to raise awareness. Additionally, the study reveals a strong connection between consumers' mobile banking preferences and their financial literacy knowledge. Although many high schools in the U.S. offer financial literacy classes, the curriculum must be updated to include knowledge about digital fintech tools and the skills required for their practical use.

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