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The Future of Banking and Lending: Assessing the Impact of Digital Banking on Consumer Financial Behavior and Economic Inclusion

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Abstract

Through digital banking, technology, and software have already begun to disrupt and reconstitute the banking and financial landscape in numerous ways. By 2020, digital banks held an estimated 4.3 percent share of the global personal banking market. Some believe that digital banks could account for over 20 percent of the market by 2023. If this proves true, the market share of digital banks will have grown by more than 15 percent in just one decade. The shift to digital banking may be upending the previous practice of large and profitable financial firms seeking to attract clients who have relatively high incomes. In place of this segment, digital banks have increasingly sought to attract middle- and low-income clients. In the first two sections of this paper, we use a dataset of over 75,000 checks from digital bank clients to accomplish two primary goals. We measure the extent to which clients make use of two key products offered by digital banks: credit-builder loans and paycheck advances. We then go on to assess which clients take advantage of such loans, and how the repayment of these products affects consumer behavior and balance sheet positions over time. Concerning credit-builder loans, those with lower credit scores and cash flows are far more likely to take out such loans than other consumers. However, a similar distinction is not observed when it comes to paycheck advances, which are also considerably more likely to be borrowed relative to credit-builder loans.Changes in the ways that even a single consumer goes about the process of borrowing and repaying debt could have important long-term implications for economic inclusivity. The purpose of the next section is to answer these questions. If a large and representative segment of American consumers engages in digital banking and borrowing, these transactions could again serve as a useful lens through which to view at least one facet of the rapidly changing financial landscape. In the sections that follow, the paper will lay out the relationship between digital banks' business practices and consumer behavior over time. The usual caveats apply: since the dataset is only that of a single digital bank, we do not have an external control arm with which to compare the digital bank clients. Furthermore, while our check-level dataset is large, it is collected over a limited period. An important advantage, however, is that digital banks did not exist until the present decade. For this reason, the uniqueness of the dataset should, in principle, allow one to consider any findings regarding consumer behavior as not carrying a significant endogeneity or self-selection concern.

Keywords: Digital Banking, Technology Disruption, Financial Landscape, Market Share, Credit-Builder Loans, Paycheck Advances, Consumer Behavior, Economic Inclusivity, Debt Repayment, Client Demographics, Low-Income Clients, Borrowing Behavior, Financial Firms, Credit Scores, Cash Flows, Repayment Patterns, Digital Bank Clients, Financial Products, Dataset Analysis, Economic Implications, Financial Inclusion.

1. Introduction

Banking has undergone massive shifts since the 1980s, with relaxed regulation transforming the industry from a highly regulated to a free market capitalist system, from people making market bets to banks making bets, and from local financial actors to global actors. This paper endeavors to examine the ongoing widespread digital transformation of banking. Trend analysis, theory, and empirical evidence come together to understand how lending practices, with a focus on community banks, are beginning to change around the margins during this ongoing digital transformation. This analysis is pertinent because as barriers to entering new markets lower, banks need to be ever vigilant for potentially

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underfunded opportunities, like a potential market correction. The speed and character with which banking technology is changing and consumer behavior is adapting begs the question of what opportunities are being overlooked in the world of digital banking.

As it has long been a place of shelter, where families and investors can park wealth and consume services, banking remains a critical sector of the economy and society. It is this anchor in society and the potential for exclusion or exploitation that drives the questions of this research: "What impact does banking technology have on local and national economic inclusion?" and the inquiry: "Should we study technology investments as they relate to economic inclusion and sustainability?" Digital banking technologies facilitate various forms of financial exclusion that must be thoughtfully addressed in the long-term policy process, even as digital banking broadly increases financial inclusion metrics. Moreover, a growing body of evidence finds that the digitization of banking services provides banks with opportunities to exclude community borrowers. This is especially true as technology continues to evolve. This paper delves into these rapid shifts in banking technology to illicit modern applications for the age-old phenomenon of consumer exclusion or cherry-picking. The following sections seek to investigate these two main questions one subsection at a time. In both cases, we also seek to provide a derivative on where banking will be, where it has been, what it should be, and what it should not be doing.

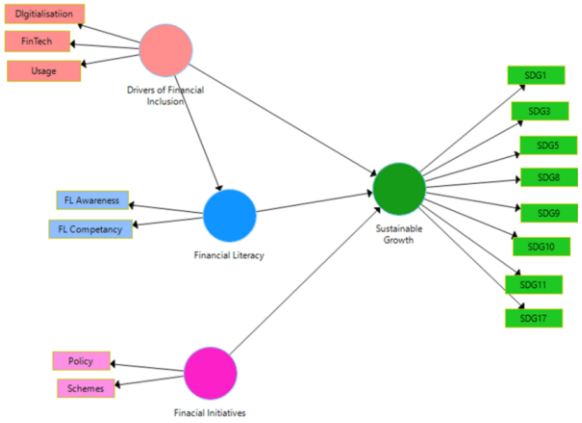

Fig 1 : Financial Inclusion Drivers

1.1. Background and Rationale

Banking and lending practices have existed for centuries in many traditional societies. These practices have subsequently undergone significant developments and have evolved in response to technological changes, wars, and financial innovations. More ad-hoc organizations for lending have also evolved according to developments. Banks have technological advancements in common over the centuries that have increasingly led to mass banking and lending. Some forms of microfinance are relatively recent evolutions. As technology and society evolve, it is therefore plausible that most lending and banking will occur on digital platforms. Changes in technological developments suggest that the world is currently moving from physical banks to mainly online and telephone banks. There have also been shifts in the larger society in terms of reduced use of cash and reduced need for physical infrastructure.

We chose banking and lending as a topic due to the considerable historic activities in these areas, which are currently experiencing processes of change towards entirely digital platforms. This is due to technological advancements. The reasons for the interest in this topic include considerations about what uses the technological innovations are being put to. Technologies have been applied successfully in banking and lending and have long been found to provide more secure financial transactions. With economic growth, cheaper handsets, and greater access to internet technologies, these services have further evolved to ensure cheaper banking and a lower cost of remittance. A driver for potential shifts from traditional transactions to increasingly digital ones is the greater remote access and the costs of person-to-person interaction. Customers are also being reduced by an increased shift to our more impersonal and digital world. Therefore, a sizeable number of customers are expected to make this change. There is a need to also understand what change in customer behavior is taking place. Socio-economic implications must be investigated, as the transition to digital platforms may increase the banking services to a willing-to-pay population but may have excluded others. Online banks may find onboarding fees are eating up profits if banking does not lead to economic empowerment in the form of more robust financial decision-

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making. This suggests we need to investigate more recent insights as to whether the online financial world is serving poorer consumers.

Equation 1 : Digital Banking Adoption Model (Logistic Growth Model)

$$A(t) = \frac{A_{\max}}{1 + e^{-k(t-t_0)}}$$

where:

$A(t)$ = Adoption rate of digital banking at time t

$A_{\max}$ = Maximum potential adoption rate

k = Growth rate of adoption

t_0 = Time of inflection (when growth rate is highest)

1.2. Research Objectives

Digital banking is rapidly emerging as a viable alternative to traditional banking systems. Increased digital banking services have the potential to link consumers to less expensive forms of credit and payment systems and may provide the first steps out of the cash economy for the two billion people globally who remain excluded. This essay provides a critical discourse on how recent trends in digital banking affect consumer behavior and market outcomes, with a particular focus on saving behavior, financial stress, and consumer credit. This qualitative essay employs a systematic review of the existing literature, which is drawn principally from academic journals. Material that relates to trends in digital banking as well as financial transformation in non-banking financial firms is also captured and utilized in the review and analysis. The larger part of the literature chosen for inclusion in this essay comprises articles and papers published within the last decade; however, this study includes some significant pre-2000 literature given the relevance of history and precedent to the understanding of financial sector behavior and performance. It is clear from central banking strategies and other indicators of behavior in financial markets that we are facing a tipping point in digital banking, and regulatory constructs in this space will be difficult to develop without proper analysis of the issues in the offing. This study evaluates the goals of this essay, including specific objectives. There is a significant gap in the literature about the examination of either the consumer response to digital banking or new options available for lending and this research seeks to provide important empirical data that will begin to contribute to a field of study that is likely to only grow in importance in the years to come.

1.3. Structure of the Paper

I have arranged this paper to proceed as follows. Below, the paper begins with a short introduction to the problem. In subsequent sections, I will outline the process of digitalizing financial services and explore how and in what ways the movement of customers from physical to virtual platforms is expected to affect their behavior and judgment. The final sections turn to the question of financial inclusion and exclusion, formulating it in terms that likely pertain to end users. I then present a few case studies of various projects with which I have had some personal involvement.

In what follows, I first provide a brief reminder of some of the basic characteristics of banking, finance, and money as they have developed historically in the West. Since the term “bank” applies to a wide range of economic activities, I might mention that my principal reference is to the system of banking, strictly speaking, which is to be found in most industrial and some developing economies. I shall not spend much time describing the different forms that non-western banking has taken, though historians of India refer to a considerable credit system in place there until at least the end of the last century. I do not consider co-operative societies, which are mainly involved with small-scale savings, nor Islamic banks, the networks of Rotating Credit Associations which operate in many developing countries and North America, or the international banking system of Euromarkets.

2. Evolution of Banking and Lending

Banking and lending have been around for as long as humans have failed to cover their consumption needs with their resources. At its core, banking involves the use of two fundamental tools: savings and credit. The functioning and

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provision of these services have evolved in line with technological advancements and underlying social and institutional organizational changes. Those developments have turned the banking system into the institutional framework we know today and have brought sophisticated technologies for money safekeeping and exchange in digital and mobile formats. Traditionally, banks offered two main types of products: savings and credit. The costs associated with the brick-and-mortar branches and employees help explain the imposition of fees. However, banks quickly learned that the ability to offer both deposit and lending products gave them an edge by allowing them to offer lower-cost deposits to incentivize savings or to raise capital in times of need. Small depositors with few options were often offered free shipping, savings sweepstakes, or the potential to raise a higher annual return through a certificate of deposit tied to a specific product or deposit. In addition, banks may have charged fees as a way to account for higher operational costs for any products that require a purpose or goal of the loan to be underwritten. In short, the traditional banking model is fundamentally based on consumption and production finance, where the bank bears limited consumer risk in terms of possible loan delinquency. The rapid technology innovation has led to traditional banks offering a wider range of online and mobile banking services and provided potential entrants an opportunity to create full-fledged online banks without a traditional bank presence. In addition, financial technology companies began identifying ways to utilize technology to create a savings and lending system centered on the consumer. Built from the ground up, the new digitally focused banks are offering a world of function and design focused on the consumer. They not only take deposits and arrange loans, but from the ground up seek to offer both high-touch and high-tech products that range from interest-based saving products to pre-built personal loan options and advisors that help them budget and plan. Although these startups technically function as banks, they can avoid the complex web of regulations that traditional banks face by connecting consumers with bank partners, either through a model or by acting as brokers providing pre-vetted consumers to bank partners in return for a commission.

Fig 2 : The Evolution Of Banking

2.1. Traditional Banking Models

Traditional banking has been a key financial player for centuries. Banks of this kind usually have brick-and-mortar locations, and their employees build relationships with customers by conducting face-to-face services. Before the digital revolution in banking, traditional banks became commonplace throughout the U.S. and Europe during the end of the 19th century and the beginning of the 20th century. However, in some places, like India, digital banking activity remained minimal and dominated by traditional banking. Traditional banking was defined as a marketplace lacking technology; there was always a human fee for providing banking services to the consumer, and these brick-and-mortar places only provided accounts, bank deposits, cash retrieval, safe deposit boxes, ATMs, and various types of bank loans to their clients. Many of these services are stock and stable, enabling the bank to standardize the assets they fund.

As digital banking emerges, traditional banking will face some new challenges, including the need to integrate new technologies into their banking system and the new skills necessary to run the system effectively. However, while the digital banking system will mark the end of the traditional banking system globally, traditional banking in the business market still faces some disputes, including ease and satisfaction as central problems in the industry. Existing banking and finance systems are strictly regulated by government and private entities in developed countries with strong financial and banking investments, which further

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reduces the likelihood that any new banking startup can replace traditional banks. It also further supports the institutional deposits traditional banks acquire; the foundation also rests upon relationships with institutional and professional bankers or financial service providers. The scale of such a foundation is almost impossible to replicate in the age of digital banking. Furthermore, the institutional deposits that lend to retail lenders keep their money away from professional investment to make institutional profits. In contrast, the lending products are much more varied and specialized than those produced by startups. In the digital age, there is a growing demand for the production of various credit environments and lending solutions. Finally, during the early years of the new bank setup, the consumer will be able to increase their balance. But in areas where traditional banks produce a great deal of liquidity, startup banks will probably have to lend to smaller or riskier applicants with higher-margin products to onboard customers at a faster pace. In this case, traditional banks are more stable and able to attract deposits. However, traditional banks' leverage is the digital experience for strong banking. It is difficult for traditional banks to strengthen their focus. Furthermore, startups can take advantage of a cost-saving model, which allows them to reach consumers globally and on a national scale by reducing the cost base because of the investment in digital banking.

2.2. Emergence of Digital Banking

Digital banking is transforming the interaction between consumers and one of the most central institutions in the economy. Put briefly, digital banking occurs when banks outsource their provision of financial services onto contracts with information and communication technology service providers; the crucial change is that the ICT and financial services now occur at a distance, linked only by digital communication networks. The widespread use of the internet fundamentally changed the way that people communicate and share information and goods. As such, people became more open to the idea of managing their finances digitally. Following the growth in internet usage came the growth of electronic money. However, it was not until the widespread adoption of the smartphone that digital banking could bridge the gap between electronic money and today's advanced digital banking services.

The speed of technological advances, cheaper cloud storage of data, and advances in applied mathematics have all been attributed to the enormous growth in digital banking. These changes in technology have also been fueled by a mix of social and business trends that have driven both regulators and lawmakers to consider changes in laws and consumer protection. Among the many shifts are cost pressures on banks, increasing opportunities for remote provision of banking services due to the technology shifts, and an overall societal shift to the digital. A major driver of banking trends in recent years has been the number of non-bank entities—including digital firms—offering services that look like what banks typically offer. The growth of these non-bank banks, including everything from online-only operations to retailers offering point-of-sale loans, is a very important trend in global banking. Fintech entrants are capitalizing on technology to provide superior customer experiences, such as digital-only banking, flexible fee structures, and credit profiling based on non-traditional factors, such as utility bill payment timeliness or online reviews. Notably, because of their ability to keep costs low, these non-bank banks are targeting new markets of historically banked customers, such as using financial technology to bank the unbanked. Regulatory changes, both nationally and internationally, that have little to do with banking or financial services reinforce the competitive landscape. Additionally, high penalties have been ensconced in the new legislation to spur financial obligors to observe prudent credit decision-making.

3. Digital Banking Technologies

The impact of new technologies on global banking and financial systems is fundamentally changing the way lenders deliver and collect personal and small business loans. This technological revolution includes the development of more secure mobile applications as well as streaming client data that can automate loan decision-making. Lenders continue to create feasibility studies to assess whether investment in new digital banking tools benefits lenders. To do so requires a firm understanding of how digitization relates to changes

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in customer financial behavior and factors that affect the ability of lenders to offer credit to a broader array of borrowers. Once defined and measured, digitization can be related to institutional factors that will influence the future adoption of digital banking technologies. Here, we present a summary of the technologies available to the general public and their implications for the future of banking. We begin by defining what we consider to be digital banking. Then, we examine the three primary technologies driving digital banking innovations today, which include mobile banking, online banking, and blockchain technologies. The rapid advancements in the banking industry have only been possible through the development and growth of information technology. Though banking has been transformed by many IT systems ranging from high-speed communication systems to retail technology information systems, only recently has technology begun to radically change banking. Digitization has transformed the way banks conduct their typical commercial banking functions, which until recently had changed little in 200 years. Until recently, banking largely consisted of the transfer and storage of funds into checking and savings accounts, that is, commercial banking operations. Digitization facilitated what is now known as digital banking, which is distinct from the loan generation process.

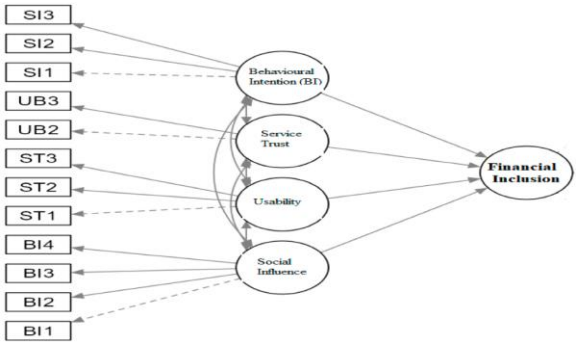

Fig 3 : The Impact of Fintech and Digital Financial Services on Financial Inclusion

3.1. Mobile Banking

Mobile banking has become an increasingly important channel for accessing financial services. A variety of enabling factors have driven the growth in mobile banking, but perhaps the most salient is the speed and convenience with which consumers can access their bank accounts. Consumers can now check their account balance with the push of a button or swipe, transfer funds between accounts, deposit checks, pay bills, and send payments to others. Transactions can be conducted on consumers' smartphones, which for many users almost feels like a constant appendage. Mobile banking typically requires the use of multiple layers of security to protect consumers' financial information against fraud or theft. One of the most common methods of authentication for verifying that the consumer is who they say they are remains the use of a username and password combination. Other authentication techniques used to verify the identity of the user are voice recognition, one-time passwords sent to a mobile phone, and fingerprint scans. Moreover, mobile device screens now offer greater security as a result of face recognition technology, where the device can be unlocked and applications launched based on a user's face or fingerprints. Research shows that mobile banking users often have even stronger relationships with a bank than other account owners. For example, a mobile banking user is significantly more likely than a non-mobile user to seek advice from the bank before making a major purchase.

While not for everyone, mobile banking has great potential for the underbanked in particular because it can allow banks to reach millions of people who might otherwise have few if any good options for managing their financial lives. Consumers mentioned convenience and time savings as notable benefits of using mobile banking. Increasingly, customers are demanding more digital options as part of their banking relationships, including more digital communication, digital customer service options, and more digital tools and applications. Mobile banking has grown in practice to provide safety, security, and ease of use. That said, it is not without its critics and challenges, which include such phenomena as digital literacy among consumers. In the case of mobile banking, customers need the necessary tools and knowledge to use devices for more than just voice calls, where among those 65 and older less than 50 percent have access to the internet today or own a smartphone. Cybersecurity threats are also a concern for mobile banking

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users. As a result of the risks, recent action has been taken by banning large banks from paying dividends. Furthermore, to help reduce cyber risks, legislation is also considering proposing a general data protection law that requires credit reporting agencies to inform customers affected by a security breach. Over the next 5-10 years, the use of mobile banking is expected to continue to grow rapidly. Some of the main trends include: (1) the replacement of in-person transactions; (2) virtual tellers and personal financial management; (3) innovation in customer service via voice and digital assistants; and (4) technology that goes beyond mobile banking to provide new business models and capabilities. Overall, mobile banking has both potential and limitations and is in part dependent on conditions precipitated by the pandemic.

Equation 2 : Impact of Digital Lending on Loan Default Rates

$$D = \beta_0 + \beta_1 \cdot L + \beta_2 \cdot C + \epsilon$$

where:

D = Default rate on loans

L = Loan size

C = Credit score

β_0 = Intercept

β_1, β_2 = Coefficients for loan size and credit score

ϵ = Error term

3.2. Online Banking

Online banking — and in particular, the digital utility for lending services it enables — has important advantages. It is superior to traditional banks and payday lenders due to its wide variety of functionalities, but it is also incredibly easy to use. Interfaces for both traditional banks and digital services are in a constant process of user testing and revision to present an identity brand are proud of on your screen. The biggest difference between the two, other than online banking's extra features, is that one "reminds" you of the services you could be using at a bank, while the other invites you to explore the possibilities of its banking platform. This design invites the observer to imagine the possibilities of digital banking, creating a positively engaging experience that may also lead to "springboarding bank products." This digital environment of online banking also offers a plethora of educational resources.

This interface and the library of materials it presents also help to foster consumers' financial literacy, which is directly connected to the project's goal of economic inclusion. Here, banking services provide education and a sense of empowerment as well as financial services that enable movement along a poverty reduction spectrum. Given that the digital environment this project takes advantage of is terrain familiar to various platforms, it is also a data mining bonanza. This project intends to use consumer behavior analytics to develop and identify scalable loans and replication potential for local banking credit services. Providing service-only products in this context also has the potential to test interest rates; the willingness of customers to take on a "best interest rate loan" after being presented with a range of financial education materials is a significant building block. Another significant advantage of online transactions is that they require no travel and can be done quickly from any place with an internet connection.

3.3. Blockchain and Cryptocurrencies

Blockchain technology, introduced along with the first cryptocurrencies in 2009, is a distributed ledger that solves two major issues in the financial sector: security and trust. Due to the nature of decentralization in blockchain, transactions are verifiable, secure, and transparent. Blockchain enables new ways of tracking the distribution and flow of goods, which makes it incredibly valuable across many industries in financial institutions. Typically, the banking sector acts as an intermediary, keeping account of credits and debits. Costs are high in the legacy banking sector because transactions like these between banks can take days and result in each one losing a little en route from one consumer to another. With blockchain, this transaction is changed to a peer-to-peer network, and costs and transaction time are also decreased.

Cryptocurrencies offer an alternative to our current financial systems. There are no accounts, intermediaries, or

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intermediary services responsible for money transactions and storage in the case of crypto transactions. Consumers do all of these tasks through the use of wallets, which can be online or stored locally. Meanwhile, digital bank transactions depend on banks sitting and working behind the scenes to make the transaction happen. Over the past few years, systematic reports about banks have highlighted their poor reputation. Using blockchain, banks can make all customer transactions transparent to each other at any time and under any circumstances. All customer transactions cannot be changed or deleted. The thought is that the existence of blockchain technology will increase the credibility of financial institutions in the eyes of their customers. Blockchain, however, will affect the performance of financial transactions at banks drastically. It has served as a trend that has slowly reshaped the reality of the financial world. This revolutionary movement started in the year 2009 with the development of Bitcoin, the world's first decentralized digital currency.

4. Consumer Financial Behavior in the Digital Age

The evolution in consumer financial behavior has been driven by several external factors, including advancements in digital technologies used to provide financial products and services to consumers. The ability of financial institutions and service providers to quickly adapt their business models to accommodate and implement such innovations may potentially lead to competitive advantages. There are a variety of reasons why an average person would prefer to bank and take credit from one bank but not another, including the need for exceptional customer service. However, the top two reasons relate to convenience and personalization of services. The preference for these services is shifting in part because of advancements in digital banking tools that have made it easier for consumers to access banking services and information, such as account balances and transaction histories, instantly from virtually anywhere. Younger and middle-aged adults, who have grown up with accessible electronic media formats, including financial services, are more likely to use digital banking products compared to older adults. Access to the Internet offers an effective way to survey and compare bank products, services, and fees from the privacy of one's own home or desk, facilitating flexible financial activities like bill paying or loan comparison shopping. Digital transactions are showing strong growth. The percentage of digital bank transactions for financial transactions has been higher than for any other class of digital activities, including entertainment, business, education, and government transactions.

Innovation complements the banking industry in two important ways. First, electronic banking products and services can influence the soft side of customer behavior and preferences by providing social and emotional features. For example, many consumers have an increased radius of friends based on the friends they make on social networks. Thus, popular digital services provide an opportunity for financial institutions to reach new consumer audiences and interact with them, from informal chat sessions to formal banking or financial advice discussions. Electronic banking and lending products can help bridge that emotional gap. Second, electronic banking and lending products offer a wide range of economic and financial benefits to banking institutions and consumers, as well as the economy as a whole, in terms of reduced intermediation costs and the enhancement of market performance through effective allocation of resources. This new technological environment forms the basis for understanding consumer banking behavior, suggesting that new financial behavior emerges from the use of digital services. As streaming data reveals, personalization drives relationship satisfaction to build trust and confidence in consuming content. The personalized experience is now everywhere, from highly digitized pure online digital businesses to the full-stack hybrid digital business approach. Identifying the value components that consumers prioritize in their digital interactions is the first step in understanding the link to their outcomes.

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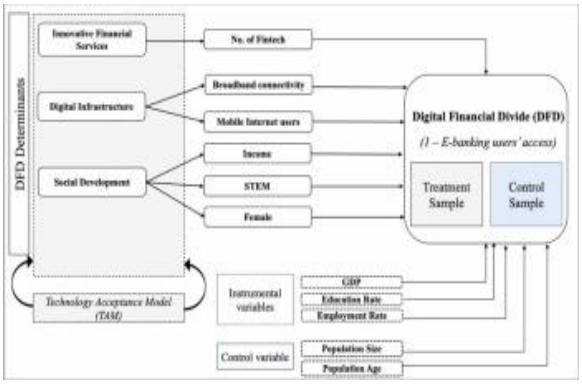

Fig 4 : The impact of FinTech innovation on digital financial literacy

4.1. Changing Consumer Preferences

The first evidence of significant change in consumer behavior as a result of this new environment is the rapid shift in preferences for the channels and how they consume banking services. An analysis of account data reveals how this came into view. There are two channels that the bank uses to serve its customer base. If its customers visit branches and transact via their tellers or supported self-service channels, which include ATMs and cash deposit machines, the bank incurs low transaction costs. Starting in 2019, the bank made a more attractive self-service channel available to its micro-account customers, which was all-digital, meaning it was a web-only bank. This entailed enabling their customers to access the full suite of micro-account services from their internet browsers. The bank's 'all-digital' customer base surged right from the month it was launched.

The stage was set for this surge by the fact that a major banking group had compounded a transactional relationship centered on physical channels for a generation of citizens and farewell two-thirds of these customers who elected not to leave the bank when it all went digital. This was a high point in the development of the stage that began with the movement of customer questions to publicly available self-help services and the use of SMS touchpoints into contact centers for mobile-only customers. That year, internet banking was the fourth most popular route onto the bank's services, while today, and for the last eight years, mobile has held this place. Not only do customers prefer the newest channel, at the cutting edge of technological change (web-only digital), but the proportion using all the most self-service centered channels is growing, and this is at the expense of the branch channel. The retail banking industry has gone through this change in consumer demand in what appears to be a short period, and this trend is likely to continue. The developing preference for digital is, therefore, not due to the decisions of individuals to deal less with people and do more themselves online. Rather, today's digital customers of tomorrow will increasingly value services that are 'intelligent', employing the data around them to tailor insights and services based not just on others 'like me' but on personalized understanding. In a sense, decades of design are gathering data to allow precisely this. An advertisement from the past has a figure passing down an endless assembly of bank managers to open an account—the past today meets the present. But unlike that day, the experience that is delivered for 21st-century bank customers through the line—all of the branches; business; telephony; mobile, smart devices, and internet—is held together by personalization and data.

4.2. Security and Privacy Concerns

Security and privacy concerns are among the most pressing issues surrounding digital banking. Consumers report a variety of privacy concerns, ranging from unwanted telemarketing and junk solicitations to a fear of identity theft where consumers' bank accounts may be accessed by unauthorized individuals. Those concerns build on a general assumption that the security of customer interactions with financial institutions is paramount and that a best practice in offering digital channels for banking services is to make that information safe and secure by using best practices in security and information privacy. The value of the convenience that digital banking offers does not motivate usage if it makes consumers more vulnerable to unauthorized invaders of their financial resources. Consumers' concerns about unauthorized financial access are also an impediment to developing any kind of trust relationship with their bank. Data breaches where personal financial information is lost or stolen also signal concerns

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for both consumers and regulators. Even if consumers do not understand the technical aspects of banking, a bank's sustenance needs to be seen as acting responsibly and prudently regarding security measures. Consumer education is paramount to mitigating this concern. It's not just enough to educate consumers and make them aware of these types of attacks. Banking customers will today expect to be informed of data breaches, attempts to compromise security and irregular transactions. In doing so, the bank stays in front of the situation and uses transparency as a risk mitigation strategy. For banks, the increased emphasis on trust and confidence through relationship management and data protection employee regulatory communications is a significant paradigm shift from methods used before the advent of digital advertising and electronic banking. Concerns for data privacy have diminished slightly, likely because consumers have accepted the trade-offs in data collection due to personalized content. In sum, addressing the concerns of privacy and security is paramount if digital banking is expected to have sustained future success.

5. Economic Inclusion and Digital Banking

Fair and equal access to the banking and lending sector – or economic inclusion – has implications not just for individual lives in the security and opportunity that access provides, but also for wider economic resilience and development. Digital banking is at the center of a range of interventions and experiments by commercial players and policymakers to expand financial inclusion by driving down the operational costs associated with providing banking services and finding new customers in hard-to-reach areas while providing a platform for innovation based on new and more fine-grained customer data. At the same time, combining digital banking with mobile phone ownership for services like mobile banking, remittances, or insurance can also attract customers who have often not been effectively served by banks. However, digital banking can also deepen existing digital divides. Access to digital banking, or rather to digital banking without incurring additional charges, is a function of access to technology as well as confidence and ability to use technology. Policies might, for example, focus on improving digital skills as a complement to promoting digital access. Progress such as this has prompted very optimistic accounts of the potential for digital banking to expand access to affordable and secure financial services. However, such accelerated banking has also been flagged as enabling excessive borrowing, especially for those who are simultaneously benefiting from the infusion of formal credit via score-following and direct access. Further research is needed to explore these dynamics and how they play out across different types of excluded or financially vulnerable customers. There are also questions about the ability of existing policy frameworks to support an environment in which digital banking results in improved access and fair treatment for all rather than worsened digital divides and financial exclusion.

Fig 5 : Digitalization Effect of Financial Inclusion in Banking

5.1. Challenges and Opportunities

Economic inclusion is also considered a challenge for many financial institutions. Systemic and long-lived inequities prevent people from marginalized communities from accessing certain financial services and products, such as credit. With this in mind, extending responsible credit to underbanked and unbanked people through digital banking is one strategy for addressing inequities and creating pathways for economic inclusion. The challenge is

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transferring the potential of digital banking to empowerment for these underbanked and unbanked communities. While digital banking has some significant barriers to its use for these audiences, there are also new opportunities to use digital banking to create solutions for them. Thus, the following section addresses the challenges and the companion opportunities for finding solutions for economic inclusion in digital banking.

Economic inclusion is also related to the digital divide. The unbanked and underbanked populations are at a geographic and attitudinal disadvantage in adopting digital technologies. Some underbanked individuals have access to bank branches but choose not to use them due to financial concerns, beliefs about security, relationships with banks, identity issues, and the need for control. Internet usage does not guarantee civil participation, however. About 22% of U.S. adults don't use the internet at all, and 34% have a hard time using a computer. This is the digital divide or the gap between people who have sufficient knowledge and access to technology and those who do not. For some, the digital divide is a matter of privilege and choice. This separate but equal mindset among Americans was formed long ago when online banking was infeasible and online lending was out of the question. While the majority of Americans can access the internet and use it quite easily, some people have been unintentionally deterred due to a lack of a computer, a reliable way to connect to the data network, or a basic quality digital device or internet service. If people don't have internet access or digital competence, they are by definition excluded from the consumer social networks that regulate the wider networks of consumption and economic activity in the United States.

5.2. Case Studies

Several other examples of digital banking case studies showcase this new strategy of providing social banking services. Among the innovative features they have undertaken to attract "new" customers are balancing convenience and usability, providing a turnkey platform, security and marketing partnerships, cost reductions, being non-profit, market niches, leveraging a pre-existing community, incentives, reducing information discrepancies, and building social credit systems. The deployment of the systems for each of these case studies offers important insights into the prospects and limitations of the different strategies of digital banking in the case of different "banking the unbanked" efforts. The pilot studies provide essential insights into the reaction of different customer demographics to digital banking and the specific adaptations of these products to local situations where there are mismatches in information, finance, skills, and technology. They analyze the results of adopting digital banking among various cohorts using payment card methods in developed countries. Lists of key lessons are included at the end of each case study, which draws initially on the prospective lessons described and critiqued at their broader set of case study countries discussed earlier.

6. Conclusion and Future Directions

This study identified a set of digital banking practices already widely used in the industry that are reshaping consumer engagement in financial services. It has emerged that the digital capabilities of consumers follow a pattern and are influenced by their behavior, preferences, and service experiences rather than demographic and socioeconomic characteristics. To a large extent, new digital practices represent an extension of in-person practices rather than customers substituting one channel for another. The results show the importance for banks to not only keep track of changes in consumer behavior but also to adapt it to fit their digital offering. The digital capabilities of consumers drove many of the most recent banking innovations and we expect this to continue into both retail and wholesale banking. What we show is that changes in the provision of services are reshaping customer needs and behavior. Due to the integration of digital technologies into the products and services provided by banks, financial service providers are fundamentally changing the relationship between banks and their customers. Advanced digitalization can result in both higher levels of economic inclusion and exclusivity. Contrary to our economic intuition, the relationship between digital banking capabilities and economic inclusion in banking is not one-dimensional. Several trade-offs need to be taken into account as part of future policy

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implementation. These have significant implications for future banking trends and bank business models. The digital advantage could change tomorrow, and the bank products offered today are not the bank products that will be wanted tomorrow. The results have implications for both research and practice. For researchers, this is a new research area with open questions that need to be answered. For banks, business strategy priorities will involve considering the relative importance of different banking practices. Some banking practices will involve little difference in digital interaction in the future, while others are more important. This starts to link core products and services to new potential customer segments to lay the foundation for future research.

6.1. Summary of Findings

This paper has explored the impact of digital banking on the consumer, in which financial services are bought and sold, and considerations of economic inclusion. The introduction provided a brief overview of how technological innovations are likely to continue to shape financial services and the needs of a subset of the population who are, for several reasons, pushed away from mainstream financial markets. Sections uncover some important findings in understanding how UK consumers have shaped and are considering digital banking services, and this has implications for policy and practice. Overall, the analysis contributes to the debate about the changing nature of financial relationships, which are becoming less bank-led and more digitally led by public demand. This is attractive to particular groups who are currently not served well by a bank-centric financial hub.

This study has highlighted how the UK banking and financial services landscape is beginning to be transformed by digital technologies and consumer demand. The rise of digital banking, meaning the use of digital channels to access a range of financial services online or through an app, is, as in other economic sectors, data-informed. A fifth of UK households has witnessed the bypassing of 'e-money' or plastic card payments in favor of market-led exchange technologies which offer fees far below current prices, with some counter-producers in the area of exchange just under 10 cents on the international dollar. The overall trend is mimicked by wealthy and poor individuals, most of whom have encountered a downward impact of avoiding fault in day-to-day or payday finance transactions.

Summary of Findings. To summarize and reiterate, our research suggests that there is no strong reason to suppose that any currently unbanked and underbanked groups cannot access digital solutions, so the new ICTs can be regarded as a potential harbinger of inclusive financial digital markets that can complement or subsume mainstream banking to different degrees.

Fig 6 : Digital banking future trends

6.2. Implications for Policy and Practice

Forward-looking, the results of our study suggest a role for policy in ensuring that no individual or community is unable to access digital banking due to factors outside their control. Moreover, the findings suggest implications for banking practitioners moving towards a digital future in a manner that increases financial access. Policies could help in identifying where the weakest points of access exist and suggest areas to focus on for competitive investments in digital financial services. This could include reducing consumer switching costs for digital banking services. Policymakers need to ensure the safety and privacy of customers' banking data and could, for example, forbid banks from charging for paper or in-branch services while the elapsed time has not reached that critical point where technologies are embraced by wider groups. Partnerships between traditional banks and fintech companies may help improve access to finance. This synthesis suggests that for digital services to be shared as a public good and if they are to be supplied by a competitive financial market, policies may be necessary to create an environment where such competition or collaboration can develop and prosper. We would argue that incentives for these new business models

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could be posed by both regulators as well as development donors. Outreach and marketing to disenfranchised and underserved populations is necessary. Pilot programs for online financial products could make people living in outlying areas an attractive proposition for the company to undertake to increase its account base. Such a business model exists in the mobile telephone industry in the U.S. to increase wireless service coverage in rural areas. The fund could also supply matching or incentive funds to support village agents or for other marketing initiatives needed in the U.S. Financial service providers also need digital literacy training for the public to use digital financial services. The financial sector should lead collaborative efforts with the education system to foster not just general skills but also interest in the technology sector to develop a pipeline of job applicants with the necessary computer skills and mindset. Innovation is needed to ensure that digital services are designed with these users in mind, not simply as an afterthought. Given the evolving nature of the technological environment, the ability to adopt universal best practices as public goods are limited; hence, regional collaboration as well as further innovation on appropriate financial technologies for the U.S. market should be promoted. The government and the larger partner in the STG have espoused payment partnerships while I have labeled mine as the USDA Certified Lending Program. I plan to include these strategies in building venture opportunities for underserved rural communities.

Equation 3 : Financial Inclusion Index (FII)

$$FII = \frac{1}{n}\sum_{i=1}^{n} f_i$$

where:

FII = Financial inclusion index

f_i = Indicator of financial inclusion for individual i

n = Total population surveyed

6.3. Areas for Future Research

The findings generated several exciting possibilities for future research. First, the constant evolution of financial products, services, and fintech entities necessitates continued, deep-dive examinations into consumer behavior and the social dimensions of financial transactions. The growth of digital banking and the use of digital payments may be creating new narratives and stories for people. Are there new opportunities for re-legitimating money, mutual aid, and love? To date, do people dislike or distrust personal financial narratives due to potential privacy issues? In general, more research is needed to understand how digital banking intersects with social equity and personal politics, as well as dimensions of study outside of technological literacy, such as privacy and age factors.

Scholars could also investigate the efficacy and messaging of digital literacy programs and interventions for those who do not use digital banking. Additionally, much like the negative effects of bank branch closures on a community seem to be both place-based and occur over several years, a longitudinal study of digital banking would also be welcomed to track trends and effects on communities over time. Scholars could also look more into the regulatory and perennial regulatory challenges that rapid technological innovation presents. To that end, is AI customer service regarding common banking problems an emerging grey market that is opaque to regulators? Finally, as previously held views on the role of technology in benefiting society are increasingly under stress, due in part to social media, we concur that further collaboration among multidisciplinary researchers using mixed methods may provide comprehensive frameworks and much-needed answers.

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