



Digital Transformations in Fintech

Harvard College Consulting Group

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2. Executive Summary

The fintech sector has undergone a **profound digital transformation** in recent years, reshaping the way financial services are accessed, delivered, and experienced. This shift has paved the way for **innovative solutions** that cater to the **evolving needs** of consumers and businesses alike.

OPERATIONAL EFFICIENCY

Online banking and fintech have become intertwined in a **dynamic partnership** that has fundamentally reshaped the financial landscape. Online banking, once limited to basic transactions, has evolved into a **comprehensive digital experience**, thanks to fintech innovations.

Fintech companies have introduced user-friendly mobile apps, **sophisticated digital payment solutions**, and powerful financial management tools, revolutionizing the way people access and manage their finances.



73%
of global banking customers have used **online banking** in the past year.

40%
of fintech revenue was from technological investment in **B2C payments**.



The allure of fintech has captivated the interest of **public, private, and venture capital** investors alike. This surge in deal-making has coincided with **remarkable valuations**.

As a result, a **multitude of investors** are actively seeking **growth opportunities** in fintech. However, the methods by which businesses have integrated this technology into their operations showcase both **disruptive competitive advantages** and potential costly risks associated with these adoptions.

DIGITAL CURRENCIES

Public perceptions of cryptocurrencies vary, with some seeing them as a revolutionary alternative to traditional currencies, while others remain concerned about their **volatility and potential for illicit use**.

Despite the stigma surrounding crypto, they provide **many benefits** that are less salient to the average consumer. These platforms offer a **range of financial services**, from lending to trading, without the need for traditional intermediaries, making these services **more financially inclusive**.



44%
of Americans who engage in crypto trading classify as **minorities**.

INDUSTRY FUTURE

"Innovation needs to be part of your culture - the future is making an experience customers love."

- Renaud Laplanche, CEO of Upgrade



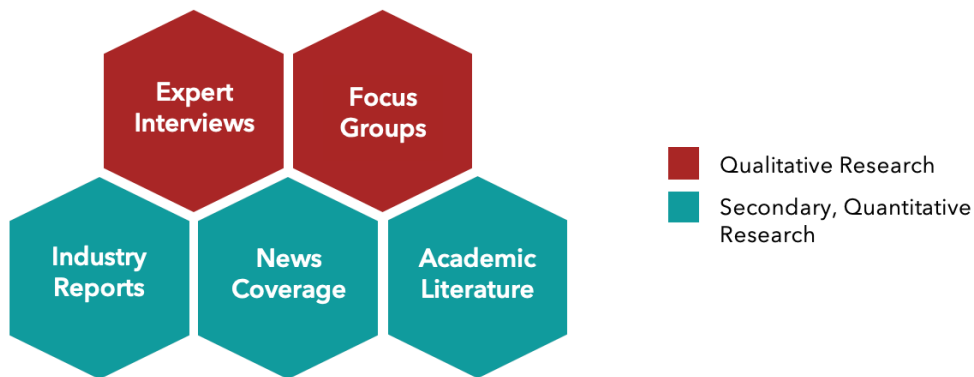
The future of fintech **faces many challenges** ranging from cybersecurity to regulatory compliance, but by the same token, it also **holds great promise** due to several advancements in AI-powered algorithms which can streamline operations.

Furthermore, the relentless pace of technological progress requires fintech companies to **allocate resources for research and development** to stay competitive and innovative.

3. Methodology

To better examine the characteristics of fintech and examine their global implications, the HCCG team conducted extensive **secondary research**, drawing from industry reports, news coverage, and **academic literature**. Collectively, the team compiled and assessed insights from **over 50 sources**. The information drawn from this secondary research played a pivotal role in molding the overarching project’s direction and served as the cornerstone for a diverse collection of case studies that are intricately woven into this report.

Building upon this secondary research, team members engaged in 6 interviews with **7 experts** from academia and the fintech industry, encompassing financial journalists, blockchain analysts, and former founders of fintech startups. Additionally, the team conducted **3 focus groups** primarily within the **age range of 18-24** to better comprehend the fintech landscape amongst a **younger demographic**. These conversations greatly enhanced the team's examination of existing and prospective regulations within the fintech landscape, while also providing valuable insights into potential **business challenges** and **innovative strategies** on both the corporate and individual level for those operating within the financial technology sector.



By utilizing a combination of primary and secondary research, the HCCG team has crafted a holistic depiction of the obstacles brought about by the integration of fintech solutions into the traditional financial sector, as well as the prospects offered by the evolution of fintech in the global market. This comprehensive approach sheds light on both the **challenges and possibilities** surrounding the adoption of innovative financial technologies in the United States and other international markets.



4. Introduction

In the rapidly evolving landscape of the United States' financial sector, the emergence of Financial Technology or “Fintech” has engendered a profound and transformative impact. Over the past few decades, fintech has **swiftly infiltrated various aspects of the financial industry**, revolutionizing how individuals, businesses, and institutions engage with money, investments, payments, and more. This technological disruption has not only led to enhanced convenience and efficiency but has also spurred significant shifts in regulatory frameworks, consumer behavior, and traditional banking models. As fintech continues to innovate and reshape financial services, its influence strongly resonates across the economy, **altering the way global citizens manage, invest, and interact with their finances**. The genesis of fintech can be traced back to 1865, with the emergence of the transatlantic telegraph cable. Since then, **fintech has undergone various transformations** as technology has evolved.

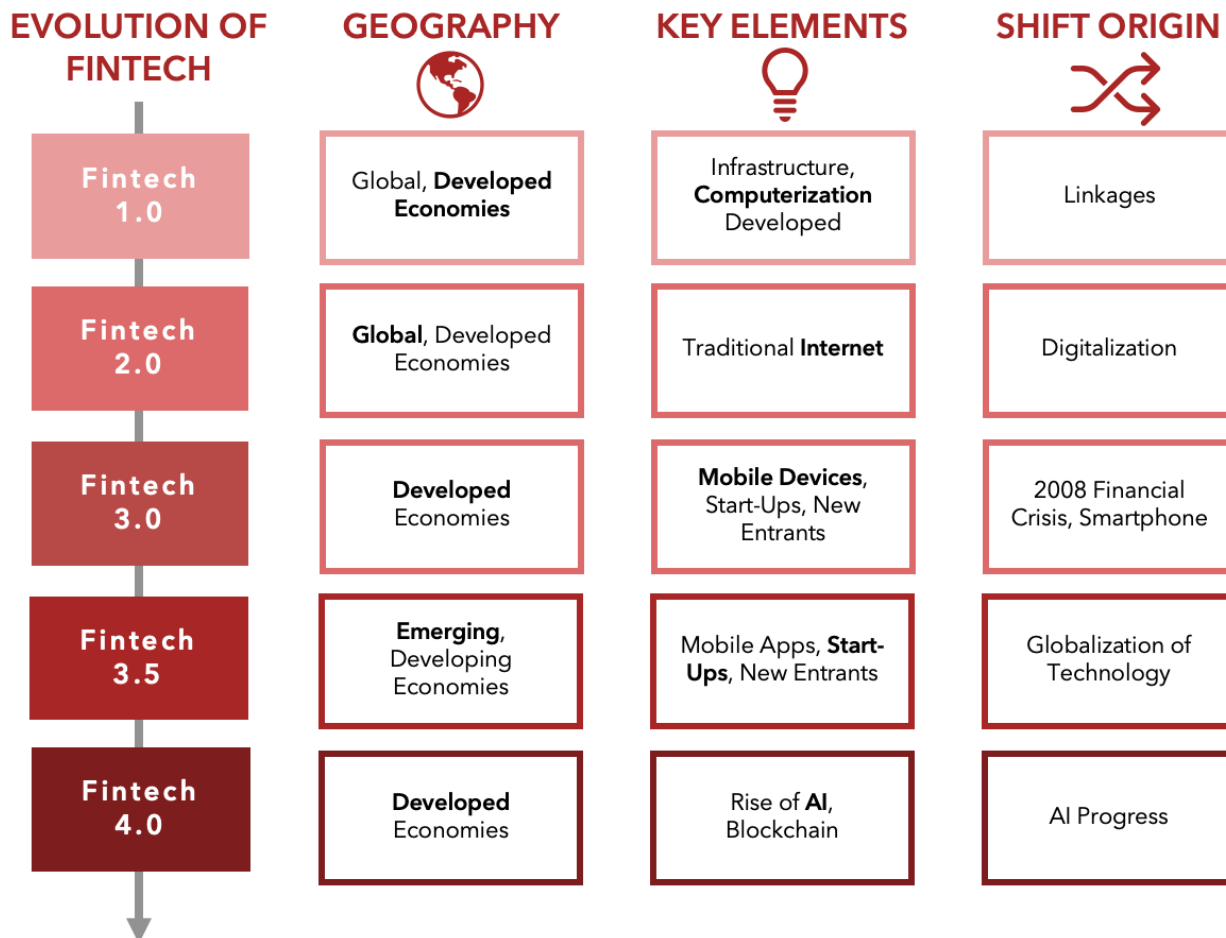


Exhibit 1: Characteristics of each stage in the evolution of Fintech ¹

¹ [Digifin Masters](#)

Notably, massive **industry shifts correspond with the emergence of groundbreaking technology**. The first notable shift came about with the digitalization of the internet, allowing for global connectivity in the period Fintech 2.0. As fintech rapidly spread across the globe, developed economies began to search for a competitive edge, bringing us to Fintech 4.0, where the rise of **AI technologies and Blockchain** have altered the way we think about finance, transactions, and asset management.

This paper **seeks to primarily explore** those subsections designated in **Fintech 2.0 and onwards**, corresponding with more modern digitization and more advanced technologies.

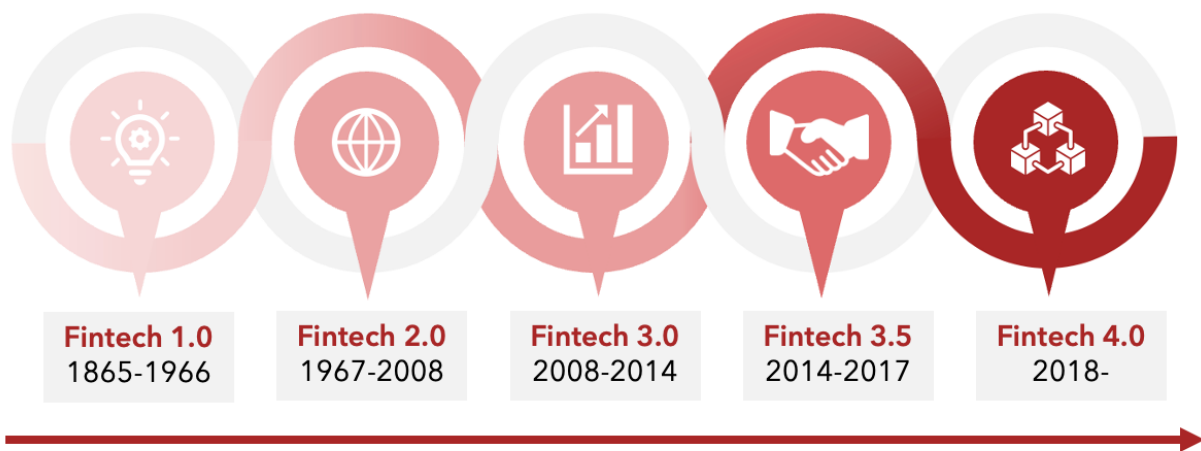


Exhibit 2: *Chronological Order of Different Fintech Stages*

Whether fintech evolution arises in the form of wholesale shifts - the transition to digitized platforms, for example - or niche breakthroughs like decentralized currency, the evolution represents a fork in the road for all institutions. For incumbent institutions like traditional banks, it's a **challenge to adapt to the demands of an increasingly digital consumer base**; many are already tapping into deep pockets to acquire and enlist fintech providers. For new entrants, it's an opportunity to service their products to both consumers (B2C) as well as businesses (B2B). This widespread penetration of fintech means that understanding **evolving demands of consumers**, as well as case studies of **adaptation strategies** is of paramount importance for any financial service provider seeking to retain or gain a **competitive advantage** over their respective landscapes.

5. Online Banking



The rapid digitization of products and services has transformed the lives of consumers on the global scale. Within the finance sector in particular, the rise of fintech has allowed for the internet to widen the physical distance between consumers and traditional banks, ultimately **redefining financial interactions** as we know it. To understand this development, we must first identify the basic services of online banking before uncovering the key roles that major fintech tools play in streamlining them. Specifically, the evolution of payment systems, the rapid advancement of new key lending platforms, and the progression of cashless societies have been crucial to fostering the new digital revolution that has given consumers unprecedented **convenience, accessibility, and connectivity** in financial transactions.

5.1 Basic Services

Online banking was developed in the 1990s by banks that sought to **leverage the increased outreach of the internet**, offering a comprehensive array of services that parallel those available at traditional brick and mortar banks. The need for in-person visits that involve speaking to a bank teller has been significantly reduced due to the creation of **online portals**, where users can independently conduct bill payments, **open new accounts, apply for loans**, and complete most other necessary transactions.²

Moreover, the integration of new fintech products such as **remote deposit capture**, which enables bank users to submit deposits by uploading images of their checks, has accelerated the transition from **“shop” to smartphone and computer** in regard to users’ primary banking device.³

“ A simplistic yet thorough platform appeals to me most - Bank of America’s system offered me services ranging from **bill pay, account transfers, and even managing** on the go through my phone! ”

Digital Banking Penetration Rate



73%
Globally



89%
in United States



88%
in East Asia

Exhibit 3: Percentage of Banking Customers Using Online Banking⁴

As online banking continues to command consumer demand globally, providing digitalized services has become a near-requisite for any bank looking to scale or expand their outreach and services.

² [Retailer Bank International](#)

³ [Deloitte](#)

⁴ [Money Transfers](#)



At the same time, some services such as **withdrawing cash from ATMs**, completing certain credit applications such as mortgages, and specific **wire transfers** remain largely **exclusive to physical** branch interactions. From a holistic standpoint, online banking, which has already gained the approval of over 200 million users in the United States alone, has covered most fundamental online banking services.⁵

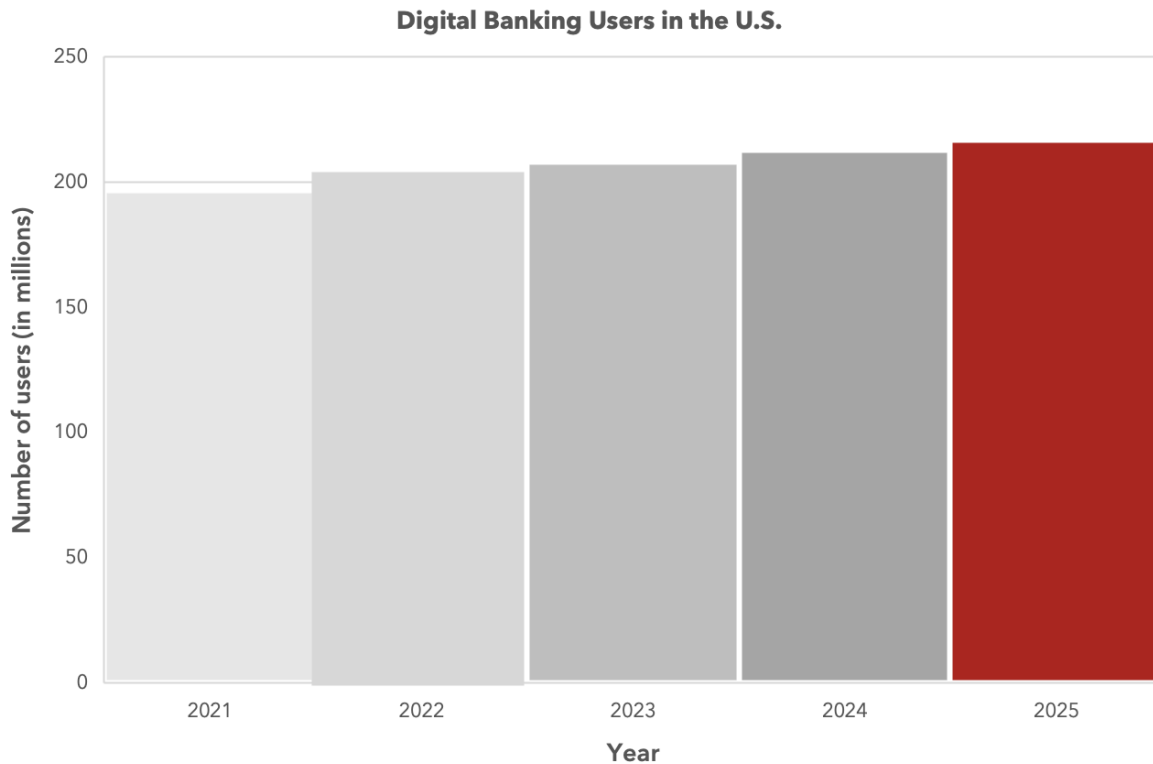


Exhibit 4: Digital banking is predicted to continue a slow but steady rise in adoption by the U.S.⁶

5.2 Payment Systems

The landscape of payment systems is undergoing a profound shift, marked by two prominent trends that are reshaping the way we conduct transactions.

The first trend, **“full digitization”**, underscores the transition from traditional dependence on cash to widespread use of the credit card and contactless technology. Other fintech products, including tap-to-pay, mobile wallets, QR code payments, and biometric-enabled services such as fingerprint and facial recognition, have even become primary payment tools in some countries, leading to the development of “cashless societies”. In fact, in 2022, mobile wallets

⁵ [Statista](#)

⁶ [Insider Intelligence](#)

held the same 12% market share as cash payment methods at point of sale, a substantial increase from merely 3% in 2017, and bank-issued cards consistently dominated the market with 40% market share.⁷

The second trend, **“financial inclusion”**, has extended payment access to underserved populations through mobile banking and digital financial services. People in remote or unbanked areas can now receive payments, save, and access financial products through their mobile devices. Fintech companies have harnessed the widespread availability of mobile phones in even **remote and disproportionately underserved** areas. Mobile banking apps and services have been designed to operate on basic smartphones, enabling individuals to access their accounts, check balances, and conduct financial transactions without needing to visit a physical bank branch.



40.1%
**Cards Were
Bank-Issued
Cards**

Additionally, fintech platforms have facilitated **microfinance initiatives and microloans** for small-scale entrepreneurs and individuals in emerging economies. These services provide access to credit for people who may not have had it before, empowering them to start or expand businesses, invest in education, or handle unexpected expenses. Furthermore, fintech companies **often provide educational resources** through their platforms to help users understand financial concepts and manage their money more effectively. This is particularly valuable for individuals who may not have had access to formal financial education.

5.3 Cashless Societies

As traditional currency exchange methods shift to **digital transactions**, the concept of a **“cashless society”** has gained substantial traction. Instead of physical coins and bills, consumers within a “cashless society” most often prefer mobile payment methods and credit or debit cards. Economics within **Asia** – more specifically, Hong Kong, South Korea, Singapore, and China – **are leading figures in this digital transformation**. Cashless transactions have steadily risen over the past few decades, likely driven by an **amalgamation of demand-side trends** such as increased **urbanization** and **greater purchasing power** of tech-savvy millennials, alongside supply-side factors such as improved smart-device ecosystems, favorable regulatory environments, and a large Asian fintech hub.

Despite the global rise in cashless business, its **favorability remains debatable**. On one hand, digital payment systems can lead **to safer, less costly transactions**. Instead of business owners needing to allocate budgets towards meeting bank charges and distribution cashier salaries, a smartphone app or credit card can serve as substitutes and render cash handling fees obsolete. Simultaneously, **employee efficiency rises** as they no longer need to spend time on counting and handling cash. As it shows, data from the fast casual restaurant chain giant Sweetgreen documents that cashless locations process five to fifteen percent more

⁷ [Statista](#)

transactions per hour.⁸ Moreover, the probability of **shrinkage** – another cost created by theft or wastage, most easily conducted by raiding cash registers – would be **greatly reduced**.

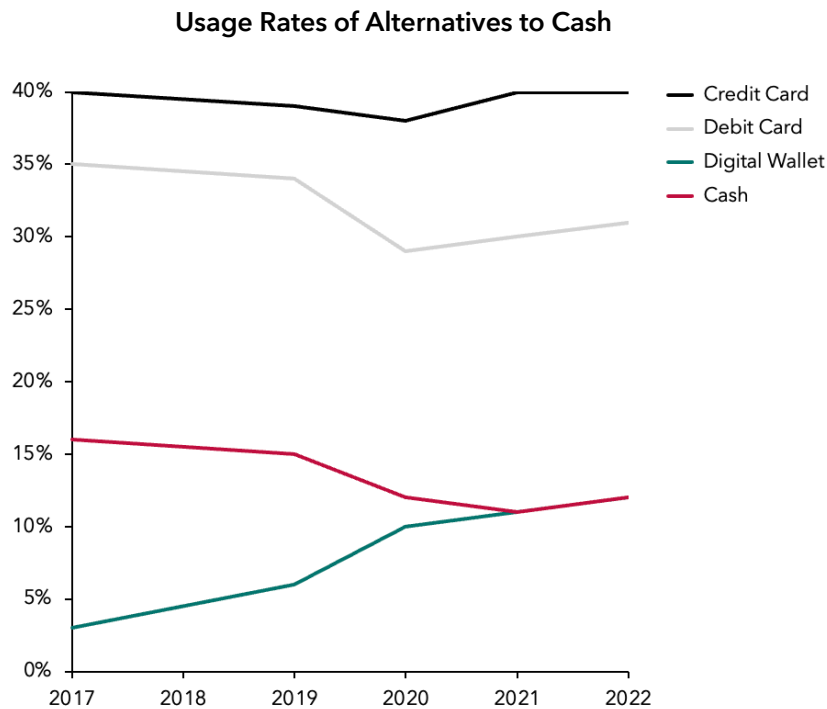


Exhibit 5: Trends in use of various payment methods demonstrate rising popularity of digital wallets and the decline of cash transactions in U.S.⁹

Yet on the other hand, cashless businesses may be exclusive and **prone to other costs**. Given that approximately 6.5% of U.S. households **lack credit and debit cards**, some consumers who do not have the financial capacity or are concerned about the degree of data privacy that banks provide, would be unable to engage in everyday transactions with as much ease as prior.¹⁰

In addition, while some costs would be dismissed, the retailer would face new card company fees. A 2011 study has shown that cash transactions only cost retailers \$0.53 per \$100 in sales, which is less than half the fee for signature debit, which takes \$1.12 per \$100 in sales.¹¹

For instance, Canada has seen an **extremely high credit card penetration**, with a global survey finding that over 80% of individuals polled owned a credit card in 2021. Similarly, the credit card has reigned as U.S. consumers’ dominant point of sale payment method.¹²

In alignment with the increasing popularity of cashless payment methods, demand for instant online transactions is also rapidly growing, as epitomized by the **rise of peer-to-peer (P2P)**

⁸ [New York Times](#)

⁹ [FIS Global](#)

¹⁰ [ERBSE](#)

¹¹ [ERBSE](#)

¹² [Statista](#)

applications and the recently established FedNow system. In 2022, 64% of Americans surveyed stated that they use a P2P app for payments between individuals, with numbers rising to 81% for the 18 to 29 age group.¹³

Overview of P2P Adoption in U.S.

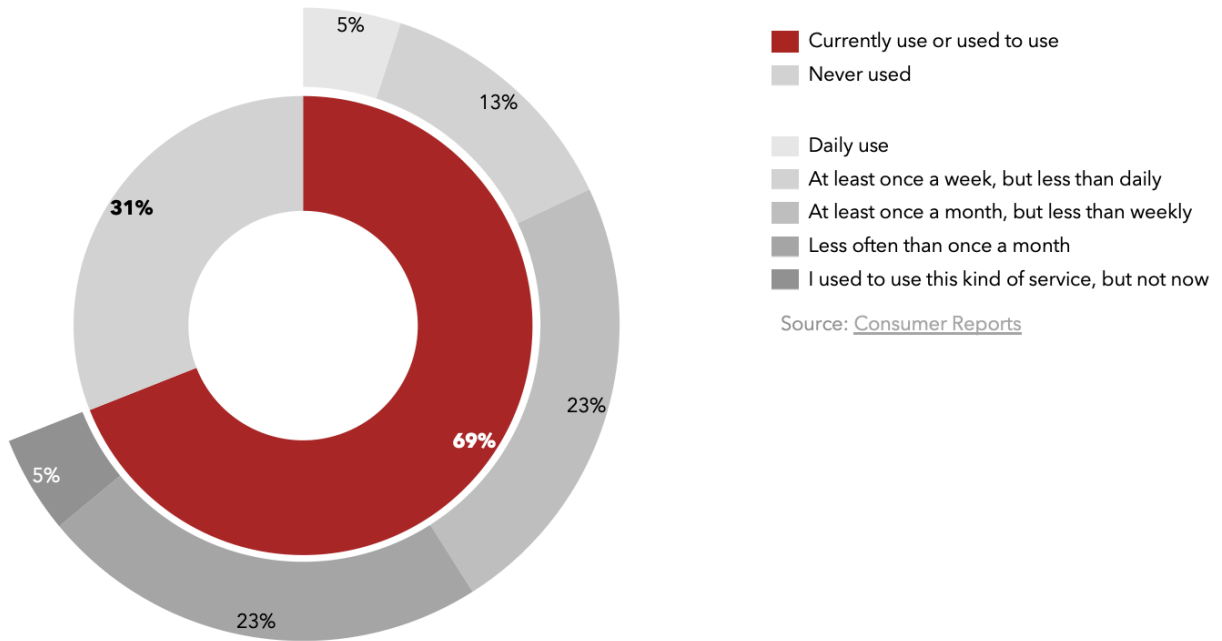


Exhibit 6: By 2022, most Americans had already adopted P2P payment services for their transactions.¹⁴

The primary advantage of P2P platforms lies in **democratizing monetary transfers**, requiring only a recipient's name and phone number for immediate transactions between individuals at little to no associated fee. According to a survey of U.S. adults who have used a dominant P2P app, 61% believed that a major reason for their use is that it “makes paying for things easier”.

To expand their functionalities and be competitive in the context of traditional banks, some P2P platforms have begun to **offer associated credit cards**, such as the PayPal Mastercard and Venmo card, and even provide services like paycheck depositing, cryptocurrency trading, and tax filing.

“A **direct bank transfer** is very difficult to set up, takes a few days, and **often costs a hefty fee.**”

¹³ [Consumer Reports Advocacy](#)

¹⁴ [Consumer Reports](#)

Despite such benefits, some users continue to **hold reservations**, particularly towards the **lack of robust fraud protection** and financial safeguards that traditional banks offer. Moreover, as P2P applications cater to smartphone users with internet access, traditional banks remain vital for those left behind in the digital divide who are not privy to such resources. However, it is undeniable that reliance on the **traditional banking system is faltering**. Ultimately however, it is pivotal to recognize the global shift towards payment systems revolving around fintech in order to best adopt the technologies it provides.

5.4 Lending Platforms

With a focus on efficiency, transparency, and inclusivity, lending platforms have **diversified the options** available to borrowers while providing alternative avenues for investors seeking attractive returns. In this section, we delve into the **multifaceted world** of lending platforms, exploring their various forms, functions, and the transformative impact they have had on the financial industry.

Venmo, with a user base of nearly 78 million, stands as the dominant application within the P2P landscape. Like other P2P platforms, Venmo has attracted users through its convenience, low entry barriers, and cost-effectiveness with regard to conducting **instant monetary transfers**. Its branding has emphasized Venmo as the ideal tool for splitting shared expenses and service payments, with co-founder Iqram Magdon-Ismail highlighting, “one of the reasons people prefer us... is just the fact that **we are social**”.¹⁵

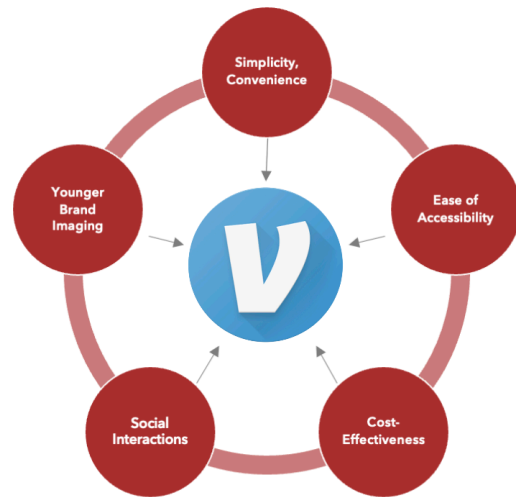


Exhibit 7: Venmo Value-Adds

Venmo’s **social dimension**, underlined by **public transaction records** and the ability to sync contacts and Facebook friends, has played a large role not only in fostering a sense of accountability but, but in transforming Venmo into a **social media-esque platform** for sharing life updates.

Venmo’s advertising strategies furthers such public perception through its 2016 Pony Up Campaign, which shows Venmo reducing the awkwardness of group payment in helping young restaurant consumers to split their tabs.¹⁶ Through its Venmo Charity Profiles, which allows charities to directly raise funds within the app, Venmo has also amplified its role within community ecosystems.

¹⁵ [Fast Company](#)

¹⁶ [PayPal](#)

In response to Venmo’s popularity, other P2P platforms were founded, most notably **Zelle** and **Cash App**. Unlike the startup Venmo, Zelle began with backing from banks, with more than 1800 banks and credit unions being partners, allowing Zelle users who belong to any member of the network to directly transfer from their bank accounts instead of needing to transfer funds between the P2P account balance and private bank accounts.¹⁷ Having recognized Venmo users’ concerns regarding the security of their funds, Zelle also became FDIC insured, thereby assuring that transfers would be less prone to fraud. However, Zelle users are unable to maintain an in-app balance, link their credit card to their profiles, or interact socially with one another like what Venmo facilitates.

Whereas the basic services of online banking served primarily to increase convenience of banking, the act of banks signing on to P2P lending platforms such as Zelle represents a move to present replacements of traditional physical locations with internet-based formats. Aside from Venmo and Zelle, **Cash App** has emerged as a P2P platform that emphasizes monetary rewards. Cash App Boosts serve as discounts within the **cash back rewards program** that Cash App offers for a selection of grocery stores, coffee shops, and other merchants.¹⁸ With the advent of Cash App, P2P platforms begin to play an even more instrumental role in digitizing every aspect of **consumer life** and **increasing dependence** on online methods of banking and payment systems.

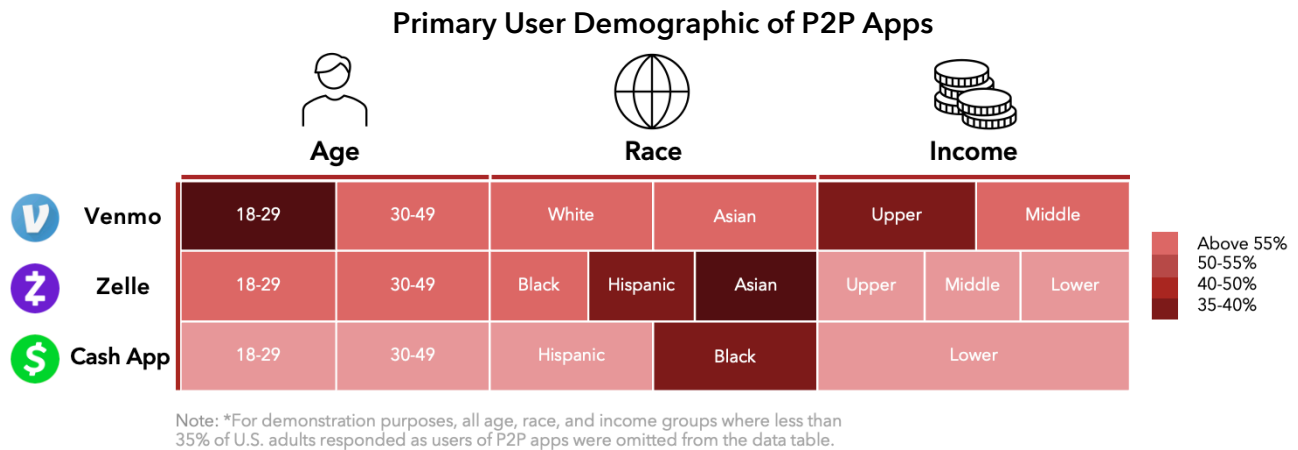


Exhibit 8: Current dominant P2P apps cover an expansive variety of consumer profiles.¹⁹

Alongside the advent of P2P platforms, particularly substantial in the Gen Z and millennial consumer groups, are bank accounts that cater towards college students. A notable example is the Chase College Checking Account by bank giant JP Morgan Chase & Co. With such a checking account, members aged seventeen to twenty-four who are typically college students, can engage in debit card purchases and online bill payments without the usual monthly fee, which is an attractive feature as they typically lack a stable source of income.

¹⁷ [Zelle](#)

¹⁸ [Cash App](#)

¹⁹ [Pew Research Center](#)

In alignment with the industry-wide shift towards online banking and a change in consumer preferences for P2P apps, JP Morgan Chase & Co. have crafted **Chase QuickPay**, a mobile payment app, which directly integrates Zelle.²⁰ In addition to student checking accounts, Chase, alongside primary competitors such as Discover and Capital One, have released student rewards programs, which are prominent for their lack of an annual fee and quick cash match, that further **substantiate their market share** in online banking for **Gen Z**.

The emergence of various new technologies in the lending platforms space have further **accelerated the growth and scalability** of fintech. Lending platforms have emerged as a cornerstone of modern finance, bringing forth a multitude of opportunities and challenges. As these platforms continue to evolve, they bridge the gap between borrowers and investors, foster financial inclusion, and drive innovation in credit assessment methodologies. Although their rapid growth has also raised regulatory concerns, risk management considerations, and questions about the coexistence of traditional banks and fintech-powered lenders, the transformative power of lending platforms remains undeniable, promising a future where access to capital is **more accessible, transparent, and flexible**, ultimately shaping the way individuals and businesses navigate the financial landscape."

²⁰ [Chase](#)

6. Asset Management



With fintech's explosive entry into the financial services scene--drawing more than **\$500B** in funding over the past decade and surging in **high-profile M&A, PE, and VC** activity--it is essential to examine how diverse market players are integrating fintech into their operations and where this technological integration is expected to move in the future.²¹ Robo-advisors, for one, are among the most popular technological innovations to be adopted by financial service providers, and this section analyzes specific case studies to identify the strengths and risks of investing in this **automated, algorithmic wealth management**. This section seeks to examine broader areas in the financial sector where fintech has proven **attractive investments**, including in private equity deals, volatility risk profiles, and REITs, drawing upon expert interviews and primary research.

6.1 Integration

Fintech has captured the fascination of public, private, and venture capital investors alike. In 2021, funding activity peaked at **7,843 deals** (at a total value of \$247.2 billion) with 84% of these deals belonging to VC, 14% to M&A, and 2% to PE. This dealmaking acceleration has also corresponded with impressive valuations; on the Public Fintech list, the valuations of its 85 public fintech practices have skyrocketed to an average revenue multiple of **20x in 2021**.²² With droves of investors seeking the growth opportunities fintech promises, the approaches through which businesses have integrated this technology into their operations demonstrate the disruptive competitive advantages and costly risks of these adoptions.

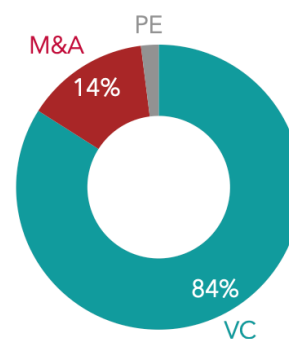


Exhibit 9: Funding Segmentation²³

Niche banks are uniquely poised to leverage digital technology to target their specific consumer segments, growing their market penetration to disruptive levels. This often comes in the form of **partnering with or acquiring fintech firms**, whose technology enables them to enter and scale control over their emerging niche markets. As a powerful operational efficiency vehicle, fintech **eliminates many fixed costs** and cuts down on variable and switching costs, helping smaller firms bootstrap and begin capturing a niche market--often **without needing any physical capital**. Niche markets are especially ripe for fintech disruption; their smaller scale yet differentiated needs complement fintech startups' early stage size and hyper-personalized services.

²¹ BCG

²² BCG

²³ KPMG



Fintech has also made for attractive investment opportunities for **larger financial institutions** due to its value in streamlining **economic efficiencies** and accelerating pushes into novel markets. The innate competitive advantages of larger providers are enhanced by investing in fintech. Software systems like digital marketing analytics, customer relationship management (CRM) solutions, Know Your Customer processes, credit assessments, and borrowing intelligence have **reduced transaction costs** and information asymmetries between consumers and firms.²⁴

Fintech’s cost-saving disruption of the value chain cyclically promotes larger banks’ economies of scale, as the already predominant market shares of larger adopters equip them with the capital and scale to fund numerous fintech advancements and acquisitions. These competitive advantages are compounded when larger, deep-pocketed banks are able to couple fintech acquisitions into **well-synergized roll-up models**.

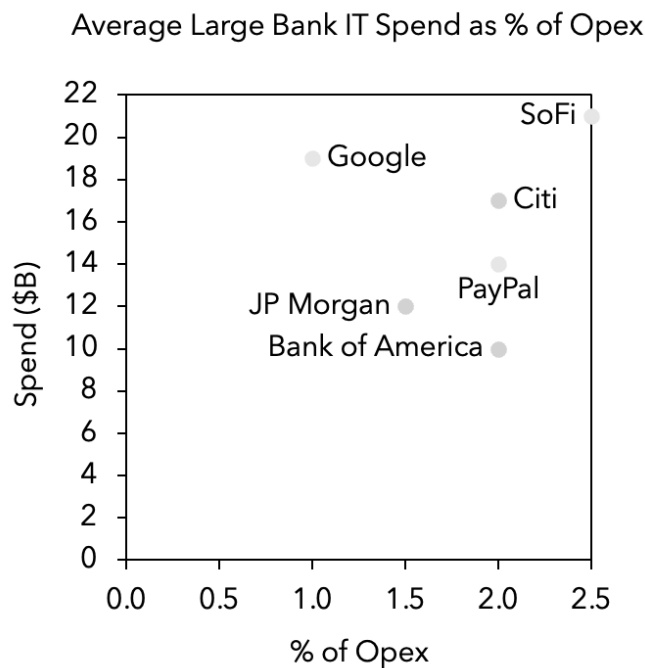


Exhibit 10: Large banks are increasingly spending on fintech advancement.²⁵

On the other hand, big tech juggernauts like **Google, Meta, Apple, and Amazon** also seek to leverage fintech, in the pursuit of integrating financial services into their broader service suites. Possessing massive customer bases and superior investment capacities, many major technology leaders are exploring moving into **payments and lending sectors** (which are relatively loosely regulated) with the help of fintech. For instance, Amazon partnered with ecommerce API company Stripe in 2017 to begin integrating fintech into their payments volume, and in January 2023, they expanded to accelerate **cross-border payments** in the global ecommerce space.²⁶

²⁴ [Vention Teams](#)

²⁵ [BCG](#)

²⁶ [AWS](#)

Larger firms, on both the technology and financial side, demonstrate interest in fintech as a **means to grow into new products** and further strengthen their economies of scale.

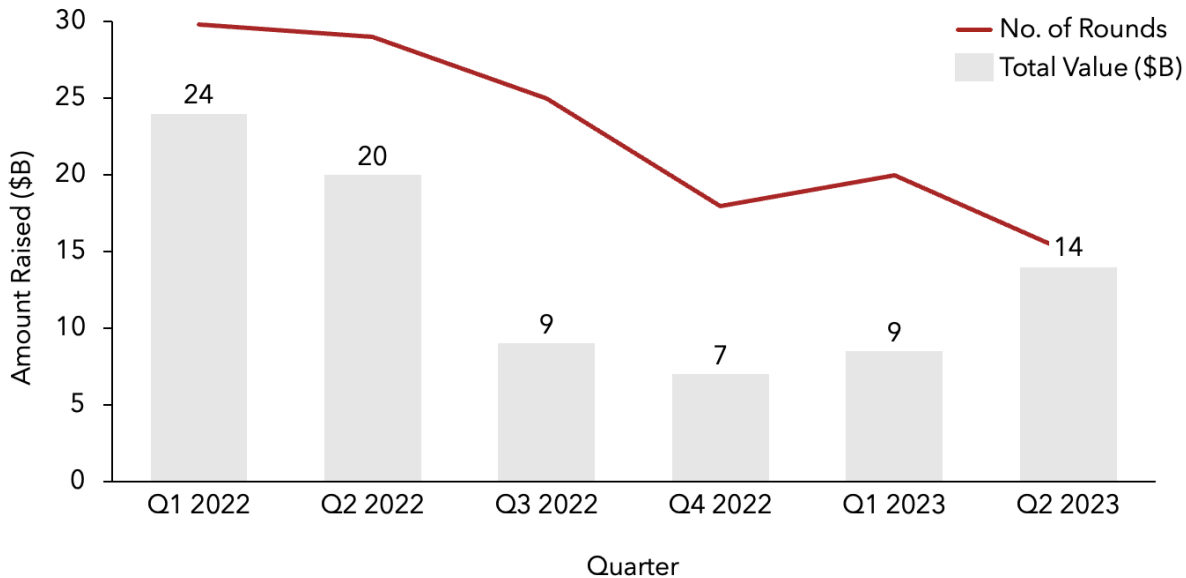


Exhibit 11: Fintech deal activity cools down.²⁷

Fintech witnessed a **significant cooldown** in deal activity since 2021, with public fintech valuations **declining by an average of 60%** and new global funding decreasing by 43%, at its lowest level since Q3 of 2017.

As the cost of raising debt increases, capital has become more expensive in a stricter market landscape, which has prompted **heightened risk** around investments. This reluctance is likely exacerbated by **strained relationships** between fintech practices and financial service providers as a result of various pressures. In PwC’s **2016 Global FinTech Survey**, over 70% of banks responded that they were **concerned about the loss** of market share and compression on margins due to the rise of fintech.²⁸ Many fintech innovations have led to discussions on whether this digital technology may threaten the competitive advantage of traditional financial institutions. Likewise, neobanks, also known as “challenger banks,” using mobile and desktop platforms to offer banking accounts may compete with traditional banks with their heavily reduced fees.

However, despite these strains between fintech players and traditional financial institutions, the general perception of these potential competitors is that there is more **opportunity for profitable collaboration** between these companies rather than an existential threat. Industry forecasts support that these cooldowns seem to be **short-term**, especially as the debt market is predicted to improve in the coming years.²⁹ While inflation is beginning to decline, interest

²⁷ KPMG

²⁸ PwC

²⁹ Sequoia

rates appear to remain elevated and contribute to higher yields, making for an attractive market for investors to borrow. Despite today’s momentary lags, revenue streams from lending, deposits, payments, trading, and investments for fintech players in banking are still projected to **grow from 4% to 13%** penetration (at a CAGR of 22%) of total banking revenue pools **by 2030**.

6.2 Business Models

New integration into fintech has also been ushered in by technological investments in new business models, namely **B2C payments**—which represented **40% of 2021 fintech revenue**—an interest spurred by banks’ desire to expand their consumer banking sectors. Between real-time payments, e-commerce platforms, cross-border payments, and payment-plus (adding other omnichannel services like billing/invoicing and tax automation), fintech’s ability to provide **hyper-personalized, 24/7 payment services** fits closely into customer needs. Today’s consumers expect to have access to financial services online at all times, with more than two-thirds of Americans expecting to have a **digital wallet** in two years. Fintech platforms generally report exhibit high customer satisfaction; according to Forrester’s 2022 survey of 96,000 U.S. customers, some fintech players scored as high as **90/100 in customer loyalty** while the U.S. banking industry at large scored an average of 23/100.³⁰

However, while the customer-personalized, real-time capabilities of fintech platforms have driven the dominance of B2C payments in the market, new industry conditions are paving the way for B2B2C and B2B2B fintech offerings to gain market share. The **B2B2X market** is forecasted to reach **\$440 billion an annual revenue** at a 25% CAGR by 2030, and while payments are still expected to retain the largest slice of the fintech industry in the near future, integration is expected to shift towards a B2B2X focus. The B2B2X model represents banks acting as an “**aggregator**” selling third-party fintech products through their own platforms to their end users, whether they are consumers or other businesses. Traditional B2X models, alternatively, entail banks developing their in-house technological infrastructure to bring to their consumers.

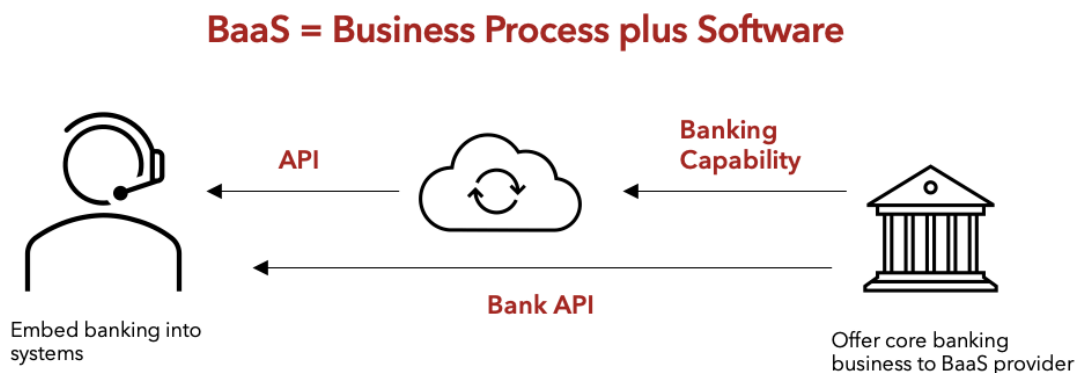


Exhibit 12: *BaaS model, a type of B2B2X partnership*

³⁰ McKinsey

A **2022 Finastra survey** of approximately 750 banking leaders found that **56%** of respondents are **turning to B2B2X** partnerships to integrate a network of fintech solutions, while only 6% would elect to build an in-house fintech platform. This B2B2X model solves major pain points for both banks and fintech providers. In a 2023 BCG survey, **59%** of fintech CEOs and other C-Suite leaders indicated that “**Customer Acquisition**” was among their top three challenges they would face over the next year. Partnering or merging with banks and financial providers provides a valuable B2B2C and B2B2B channel for fintech startups to bring their technology to an end customer—something especially attractive as customer acquisition remains fintech’s largest hurdle. On the other end, banks, the B2B2X model tends to be **subscription-based**, promoting **year over year revenue** retention in a critical period where the risk-taking cost of capital for new investments has risen significantly.³¹

6.3 Robo-Advisors

Banks and other service providers introducing **robo-advisors** into their financial planning platforms marks one of the most popular approaches to fintech integration. Robo-advisors represent **algorithm-based**, automated wealth management services used to manage asset portfolios for an investor. This technology typically involves (1) **surveying the customer** to understand their objectives, preferences, and time horizons; (2) **proposing a specific allocation** and rebalancing strategy according to the investor’s goals and risk tolerance; (3) performing automated account setup and portfolio management.

Robo-advisors, with their **lower fees** and convenient accessibility, enable industry adopters to penetrate previously underserved markets in wealth management. Particularly, **Millennial** and **Gen Z** workers who are emerging into financial independence are typically challenging customers for investment management platforms to acquire. With lower price tags and reduced minimum account balance requirements, robo-advisors offer a more affordable, less restrictive wealth management service to new customers who may have been previously deterred by traditional platforms.

Beyond customer acquisition, the lower operating expenses of robo-advisors **drives banks and other wealth management firms to integrate**. The cost-saving of adopting a robo-advisor improves banks’ frequently thin margins, a much-needed operational efficiency that attracts a banking industry weighted under notoriously painful cost pressures. **Cost-to-income ratios** for many traditional wealth management players have **soared beyond 90%**, with the salaries and connected benefits of wealth manager **personnel making up 60% of total costs**.³² Likewise, robo-advisors allow for greater flexibility in reducing operating expenses like rent, inventory, and equipment, enabling **cost-effective remote workplaces**. Robo-advisors empower adopters to scale their services in an industry with tight margins and competition.³³

³¹ [McKinsey](#)

³² [U.S. Bank](#)

³³ [S&P Global](#)

However, robo-advisors suffer from limitations in catering personalized, nuanced services to their clients. For instance, robo-advisor questionnaires are predicated on assuming investor profiles despite their answers often being subjective or incomplete, leading to misunderstandings that can **erode the personalized customer experience** that is expected of wealth management. Robo-advisors, in their **lack of client relationship** development, are also limited in their ability to aid clients in navigating unforeseen personal life changes, defining complex financial goals, and undergoing market downturns.³⁴

As robo-advisor adoption heats up and the market begins to crowd, offering the most advanced, innovative technology becomes a key differentiator for users, which can be cost-intensive in a rapidly changing landscape.

6.4 Financial Modeling

Fintech integration enables adopters to unlock new operational efficiencies and sources of revenue growth to improve their financial models for more **favorable margins and valuations**. Based on a **2023 dataset** of 669 banks, the banking industry yields an average **EV to revenue multiple of 2.6x**.³⁵ This multiple is strengthened by the fact that banks are fortified by recurring, diversified streams of revenue, have long and secure histories of profitability, and have high levels of liquidity. Despite fintech valuations declining in recent months, its average **Q2 2023 multiples** range from **3.3x** in the lowest revenue bucket (\$1-5mm in revenue) to **7.2x** in the highest bucket (\$10-75mm in revenue), indicating fintech’s relatively **high margin** of product and perceived growth potential.

Fintech integration drives the **boosting of cash flows** through both the top and bottom line, bolstering liquidity, expanding opportunities to scale, and producing impressive valuations. On the cost saving side, fintech enables banks and other institutions to **save on labor** via task automation and overhead expenditures—such as rent, transaction fees, setup, and other major line items that would be reduced with SaaS integration. Automated management software **streamline traditionally time-consuming processes** such as accounts payables and receivables; for instance, the AR fintech service Chaser claims that finance teams can save more than 15 hours per week on credit control activity.³⁶ These combined reductions substantially grow free cash flows.



Exhibit 13: Revenue Drivers

³⁴ [S&P Global](#)

³⁵ [Wipro](#)

³⁶ [Wipro](#)

On the top line, banks and other adopters can harness fintech to **expand their total addressable market and strengthen revenue streams**. Fintech solutions like rapid cross-border transactions provide businesses **access into broader global payment networks**, one of the most prominent drivers of revenue in bank-fintech partnerships. These adoptions create new use cases, such as the emergence of **low-value P2P payments** uniquely tied to digital wallet apps.

Case Study: Mastercard

Mastercard has conducted strategic moves into the fintech partnership space, particularly in its acquisitions of **Finicity** and **Aiia**, leading open banking platforms (in North America and Europe, respectively) providing real-time, tokenized consumer financial data. Since both acquisitions back in 2020 and 2021, Mastercard’s earnings have benefited from its fintech integration. FY22’s **net revenue increased 18%** from FY21, which was primarily attributed to revenue growth from both Mastercard’s payment network and its value-added services and solutions. FY22 **net revenue from payments increased 20%**, growth that was driven by an expansion of domestic and cross-border dollar volumes. The latter most substantially increased 58% year-over-year in Q2 2022, which was likely facilitated by the acquisition of these international open banking platforms.³⁷

However, while fintech adoption contributed to Mastercard’s top-line growth, it has also led to **material expenditure increases**. FY22 adjusted **operating expenses increased by 11%** over the previous year, including a 400 basis point increase due to acquisitions. Although operating expenses have increased, Mastercard’s FY22 operating margin of 55.2% has still risen significantly from FY21’s operating margin of 53.4% and FY20’s 52.8%.³⁸ The positive trajectory of Mastercard’s revenues and operating margins, in spite of heightened costs, highlights how **fintech has likely contributed to significant growth**.

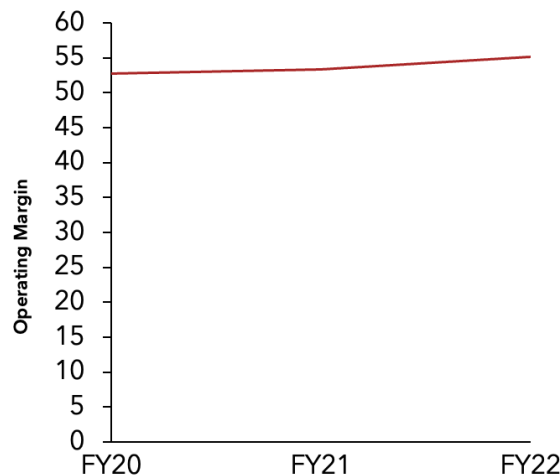


Exhibit 14: Mastercard’s operating margin has remained stable.³⁹

³⁷ [World Bank Group Research & Policy Briefs](#)

³⁸ [Wipro](#)

³⁹ [Perficient](#)

7. Digital Currencies



In a world where technology has created everything from self-driving cars to Chat-GPT, the idea of a digital currency or cryptocurrency is nothing new. Medias all over the world have globally publicized this new technology, such that **Bitcoin** or **Ethereum** have become **household names**.

While there are many stigmas regarding cryptocurrencies, many do not know the full extent of its multi-faceted nature. While proponents of cryptocurrency argue that it is a **revolutionary advancement** that has the capacity to assist supply chain management, share valuable resources, promote efficiency, and provide security, cryptocurrency's critics will point to its **volatility, lack of regulation**, and limited adoption. Invariably, cryptocurrency has become a massive part of fintech's future, and becoming more informed about this industry is paramount to the understanding of digitization of fintech.

7.1 Decentralization

One of cryptocurrency's greatest selling points is its **decentralized platform** which concurrently allows for **greater financial liberty** and internal security. When one refers to decentralization in a cryptocurrency context, one refers to the separated structure of all cryptocurrency transactions that allows for **greater autonomy and freedom** for each user. One common term used with decentralization is **DeFi**, or decentralized finance, which appertains to a more decentralized financial system consisting less of a centralized authority and more of a **"distributed network of participants."**⁴⁰

Decentralization is a beneficial aspect of cryptocurrency because it provides three primary benefits to its users: **freedom, efficiency, and security**.

Because in a decentralized system there are no central authorities to control and dictate all that occurs, many users within that system are granted greater freedom to make the necessary transactions **without a third party or intermediary** acting as a bottleneck, often leading to increased efficiency.

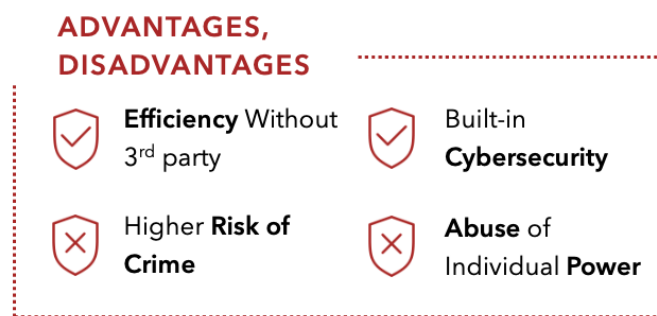


Exhibit 15: Pros and Cons of Decentralized Platforms

⁴⁰ [NASDAO](#)

Because cryptocurrency can connect two parties without a third party or mediator, however, this may **hurt current financial intermediaries** like banks or credit unions.

Cryptocurrency provides a **great deal of security** due to built-in blockchain technology. A **blockchain** is a decentralized system that allows crypto systems to remain **secure and functional** without third party intermediaries. The system consists of nodes and with every new transaction, a new node is added to the chain, allowing for the chain of all previous transactions to get stronger and stronger. This decentralized feature of cryptocurrency provides it with an almost impenetrable wall **against hackers**.

On the other hand, this greater emphasis on freedom comes with potential drawbacks, potentially leading to an **abuse of individual power** and **increased criminal activity**. Without enough regulation, big crypto buyers or sellers are not held accountable for their actions and can get away easily with things like fraud.

Additionally, **crime on the black market is much easier** to get away with on a decentralized platform because there is no authority figure that is able to consistently monitor the ethics of any transaction. This gap enables black market dealings like on the **Silk Road** website, most notoriously known for being one of the biggest **drug operations run through digital currency**. Consequently, the concept of decentralization can be regarded as having both positive and negative implications, as the freedom granted by cryptocurrency can impact users in a variety of ways.

7.2 Public Perceptions

Throughout cryptocurrency's lifespan, the **varying perceptions of its viability**, combined with ethical and social concerns, has led to a **turbulent** perception of its intrinsic value. The most recent cause of these concerns began on November 11th 2022, when a company in charge of one of the most popular and valuable types of cryptocurrencies in the world called **FTX went bankrupt**, leaving thousands of investors left with barely a cent to the dollar. A man by the name of **Sam Bankman-Fried**, the CEO and founder of this company, was responsible for this mess and when he finally filed for bankruptcy, not only did FTX fall, but the perception of all cryptocurrencies fell with it. In the current day and age, **negative connotations around cryptocurrency** still linger as many still feel the devastating effects of the former crypto behemoth.⁴¹ But what does this mean for those interested in crypto investments now and for those who would like to do the same in the future?

⁴¹ [Northwestern Interview](#)

According to one of the **Pew Research Center's** recent surveys on cryptocurrency, of the 88% of Americans who already know anything about crypto, **75% think it is unreliable** (women and the older generation were specifically more skeptical of crypto than men and the younger generation, respectively).⁴² Of those who can call themselves crypto investors, **only 20% are actually confident** in the investment whereas 43% are not. These statistics tell us that most Americans, even those who take a chance on cryptocurrency, do not currently believe in it. In addition to FTX's failure, the volatility of other digital currencies like Bitcoin and Ether have painted cryptocurrency to be a **risky and undesirable** asset to have.⁴³

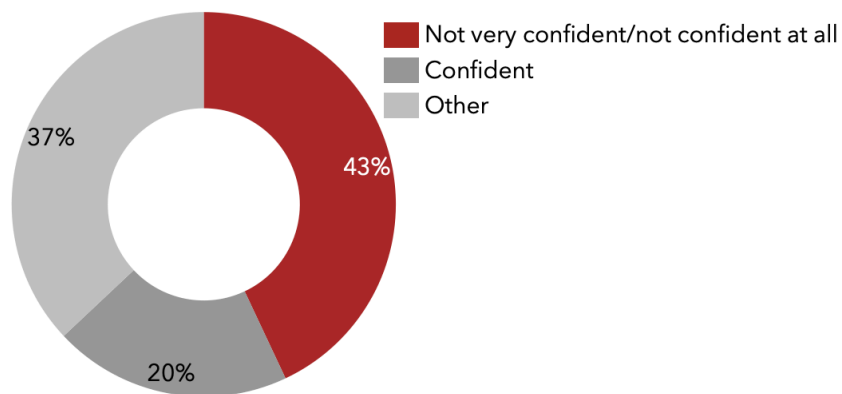


Exhibit 16: *Crypto Confidence Levels*

To supplement these findings, the **All-American Economic Survey** that CNBC annually conducts on the public's knowledge of the economy showed similar results. In March 2022, **25%** of respondents had a **negative perception**, 31% had a neutral perception, and 19% had a positive perception of cryptocurrency. However, in November 2022 **after FTX's demise**, these statistics drastically changed: **43% had a negative perception**, 18% had a neutral perception, and 8% had a positive perception of cryptocurrency. These results convey that there was a significant rise in negative perceptions (18%) while there were just as impactful drops in neutral and positive perceptions (13% and 11%, respectively).⁴⁴ This proves that more people have gained opinions about cryptocurrency since less have neutral perceptions, but more importantly, that **most of them have been negative** as shown by the increases in this type of perception and decreases in all other types.

⁴² [Northwestern Interview](#)

⁴³ [Pew Research Center](#)

⁴⁴ [CNBC All-American Economic Survey](#)

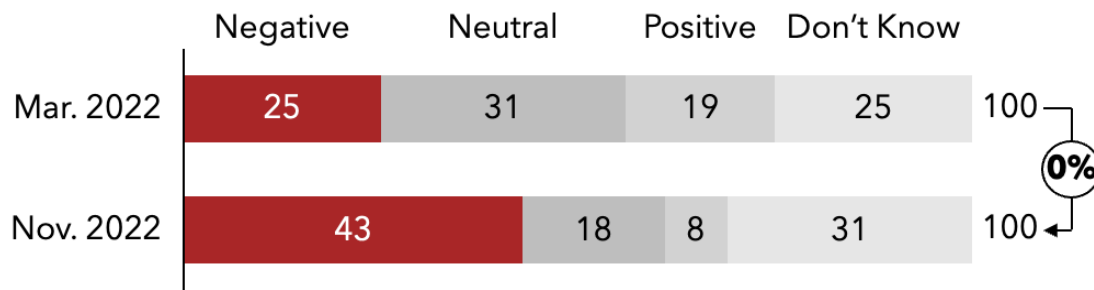


Exhibit 17: Crypto Confidence over Time

Even when surveying four fellow **Harvard students** through conducting a focus group on college students' perceptions of cryptocurrency, we see similar results. When asked if they thought cryptocurrency was safe, participants admitted that they thought cryptocurrency was **"high risk"** and were skeptical of its capabilities because of its **"security issues"**. However, the most common response among participants was that they **"don't know much about crypto"** and that a huge problem for students like themselves was **"engaging in risky activities related to crypto without a developed knowledge of the inner workings of blockchain."**⁴⁵

“Cryptocurrency **fluctuates far too much** for me to trust it.”
 - Harvard Graduate '20

Despite all these negative perceptions, the same Pew Research Center survey mentioned above provides some hope for the future of crypto. Although 45% of current crypt investors have said that their investments have performed subpar, when it came to the actual impact of their investments on their personal finances, a whopping 60% stated that it neither hurt nor helped them.⁴⁶ These results convey that **crypto potentially has not been as harmful and risky** as most Americans believe it to be. The future of crypto may rely on these findings because it can act as one of the key statistics that advocates of crypto can use to justify their investments and to convince others that crypto is safer than it seems. By understanding cryptocurrency's true impact on one's finances, society can change the culture around cryptocurrency and with time, can potentially restore its reputation in the 21st century.

“I feel like if people **knew more about crypto** they would appreciate its fringe benefits.”
 - Harvard Blockchain Member

⁴⁵ NASDAQ

⁴⁶ HCCG Focus Group

7.3 Financial Inclusion

Financial inclusion remains a pivotal challenge in our rapidly evolving global economy. An alarming **1.4 billion adults** worldwide find themselves **disconnected** from the realm of **basic banking services**.⁴⁷ This vast demographic, sidelined from conventional financial avenues, represents not just a challenge but also an opportunity for innovative solutions.

Cryptocurrencies, with their decentralized nature, offer a glimmer of hope in **bridging this gap**. Cross-border transactions often carry hefty fees and prolonged wait times when processed through traditional banking channels, whereas crypto offers a swift, streamlined alternative. The low-entry barriers of cryptocurrencies can potentially empower the unbanked, granting them access to the global financial stage without the need for intermediaries.

Statistical evidence paints an optimistic picture for **financial inclusion via crypto** in the U.S. A striking **44%** of Americans engaged in crypto trading are **people of color communities**.⁴⁸ Moreover, a quarter of Black American investors reportedly own cryptocurrencies.

Among unbanked adults, 5% turn to crypto for their payment needs, as opposed to the 3% of their counterparts with bank accounts. However, while these figures seem promising, the journey of financial inclusion via crypto is not devoid of roadblocks. A report from the American Progress challenges the utopian vision of crypto-enhanced financial inclusion, particularly in the U.S. The report posits, "The idea that crypto can significantly expand financial inclusion in the United States **does not hold up to scrutiny.**"

44%
of Americans
who engage in
crypto trading
classify as
minorities.

One of the most formidable barriers confronting the unbanked population is the **prohibitive cost**. Contrary to the popular belief of crypto being a cost-effective alternative, in many instances, the associated **fees** with crypto assets **surpass those of traditional bank** accounts. This could deter the very demographic that crypto aims to serve.

Moreover, the percentage of families with an income less than \$25,000 engaging in crypto transactions stands at 4%, contrasting starkly with their counterparts in the \$100,000 or more income bracket. Such discrepancies raise fundamental questions about the equitable distribution of the purported benefits of crypto.

While cryptocurrency holds undeniable potential in addressing financial inclusion challenges, the path is intricate. For crypto to truly democratize finance, a holistic approach, cognizant of the nuanced challenges, is imperative.

⁴⁷ [HCCG Focus Group](#)

⁴⁸ [CNBC All-American Economic Survey](#)

7.4 Technological Synergy

In the current age, cryptocurrency is strong as it stands because of its blockchain technology. Blockchains are what allow cryptocurrencies to remain secure and functional without third party intermediaries. However, supplementing this technology with other powerful technological innovations advanced society in ways unimaginable to humanity just a few years ago. This is referred to as **technological synergy**: the combined power of two or more technologies.

Two primary technologies that synergize with blockchains are **AI** and **Data Science**. When blockchain technology is combined with AI and data analytics, it makes each **more secure**, ultimately allowing for these technologies to become less prone to fraud and more reliable as a result. All of this can help **improve the public perception** and practicality of AI and data analytics. By the same token, AI and data analytics can **improve the sophistication, efficiency, and accuracy** of the current blockchain technology and algorithms it uses. This synergy can, in turn, help optimize many different business processes including making transactions quicker and more efficient, sharing and managing greater masses of data in a secure manner, and streamlining supply chain management.⁴⁹

Outside of other innovations, blockchain technology can also **improve IT** as a whole by not only ensuring optimal security and efficiency, but also by providing **greater transparency** since there is no single body controlling the system. This forces authorities in the IT world to be held accountable for their actions, allowing for better business practices and less inconveniences down the road. Additionally, cybersecurity within IT systems is heavily improved, **preventing greater crime and hacking**.⁵⁰ This could be especially impactful in the financial, medical, and legal world since this makes confidential information and records more secure.

Central Bank Digital Currency (CBDC) is another testament to this technological nexus. A CBDC, as defined by the United States Federal Reserve, is a “digital form of central bank money that is widely available to the general public”. Among their myriad benefits, CBDCs provide households and individuals with a seamless electronic interface with central bank money, positioning them at the forefront of the digital financial realm. Additionally, they act as a springboard for the inception of innovative financial products and services, thus enriching the offerings available to the public. On the operational front, CBDCs ensure **transactions are quicker and more cost-efficient**, optimizing the financial experience for users and expanding the available asset base.

⁴⁹ [HCCG Focus Group](#)

⁵⁰ [HCCG Focus Group](#)

8. Future Trends



The fintech industry as a whole continues to see **rapid spurts of growth** brought about by varying **creative cycles of destruction**. There are many concerns that fintech players must take into account regarding the evolution of fintech, varying from competition to consumer preferences. While the future may be uncertain, there are many reasons for optimism, such as the **rise of AI**, due to its ability to streamline processes and make them more efficient.

8.1 Digital Transformation Challenges

The fintech industry, despite its rapid growth and innovation, faces several challenges that can impact its continued development.

Fintech companies operate in a **heavily regulated environment**, and compliance with financial regulations can be a daunting task. **Regulatory compliance** can be difficult, as regulations vary from one jurisdiction to another, and fintech firms must navigate a complex web of rules, licenses, and permits. Compliance challenges can **slow down product** development, increase costs, and pose legal risks.⁵¹

Additionally, fintech firms often rely on traditional banking infrastructure to facilitate transactions and **provide essential services** like payment processing. Access to these systems can be challenging, as established financial institutions may be hesitant to collaborate with or provide access to fintech startups that are seen as potential disruptors. This can hinder the scalability and growth of fintech ventures.⁵²

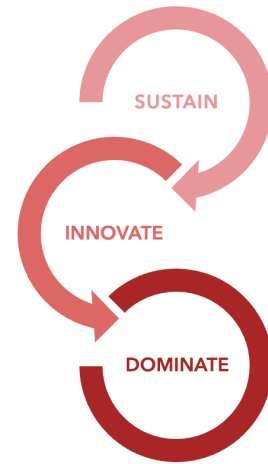


Exhibit 18: *Competitive Cycles*

As the fintech industry matures, **competition intensifies**. The market is becoming saturated with new entrants, making it increasingly difficult for startups to stand out. Established players and big tech companies are also entering the space, further raising the competitive bar. Differentiating products and services in a crowded market is a significant challenge.

Fintech relies on trust from consumers who are often wary of **new financial technologies**. Building trust and convincing users to adopt fintech solutions can be challenging, especially when dealing with **sensitive financial matters**. Overcoming the perception that traditional financial institutions are safer can be an ongoing struggle.

⁵¹ [Ripple](#)

⁵² [Ripple](#)

Furthermore, fintech companies may experience **difficulties scaling** their operations, particularly when their services rely on robust technology infrastructure. Managing rapid growth can strain systems and lead to **performance issues or downtime**, which can erode customer trust and result in lost opportunities.⁵³



Exhibit 19: Most Frequent Problems Arising During Globalization and Scaling

Lastly, while fintech has the potential to expand financial services to underserved populations, there are challenges related to ensuring that these solutions are accessible and affordable to all. Addressing issues of **financial inclusion** and bridging the digital divide remains a significant challenge for the industry.

8.2 The Rise of AI

Artificial Intelligence has undeniably transformed the landscape of financial technology, or fintech, in numerous ways, leading to significant improvements across the industry. From **streamlining operations** to enhancing customer experiences and **managing risk** more effectively, AI has become a game-changer in fintech, with **profound implications** for financial institutions, businesses, and consumers alike.

One of the most notable areas where AI has brought about substantial improvements in fintech is in **fraud detection and prevention**. Traditional methods of identifying fraudulent transactions relied heavily on rule-based systems, which often missed more sophisticated fraudulent activities. AI, particularly machine learning algorithms, has revolutionized fraud detection by continuously learning from vast datasets to **detect abnormal patterns and deviations** in real-time. This proactive approach has significantly reduced the incidence of fraudulent transactions, **saving billions of dollars** for financial institutions and ensuring greater security for consumers. This easily makes **AI a worthwhile investment**.⁵⁴

⁵³ [Ripple](#)

⁵⁴ [Ripple](#)

AI-driven **chatbots and virtual assistants** have also made a tremendous impact on customer service within fintech. These intelligent virtual agents can provide **instant responses** to customer queries, guide users through various financial processes, and even offer personalized financial advice.⁵⁵ This has not only improved the **overall customer experience** but has also reduced **operational costs** for financial institutions by reducing the need for human customer support staff.

Credit scoring and lending have witnessed a substantial transformation with AI as well. Traditional credit scoring models often overlooked individuals with limited credit histories, making it difficult for them to access loans or credit cards. AI-driven credit scoring models **analyze a broader range of data**, including social media activity, utility bill payments, and online shopping behavior, to provide a **more accurate assessment** of an individual's creditworthiness. This has opened up access to financial services for a wider and more diverse population, promoting financial inclusion.⁵⁶

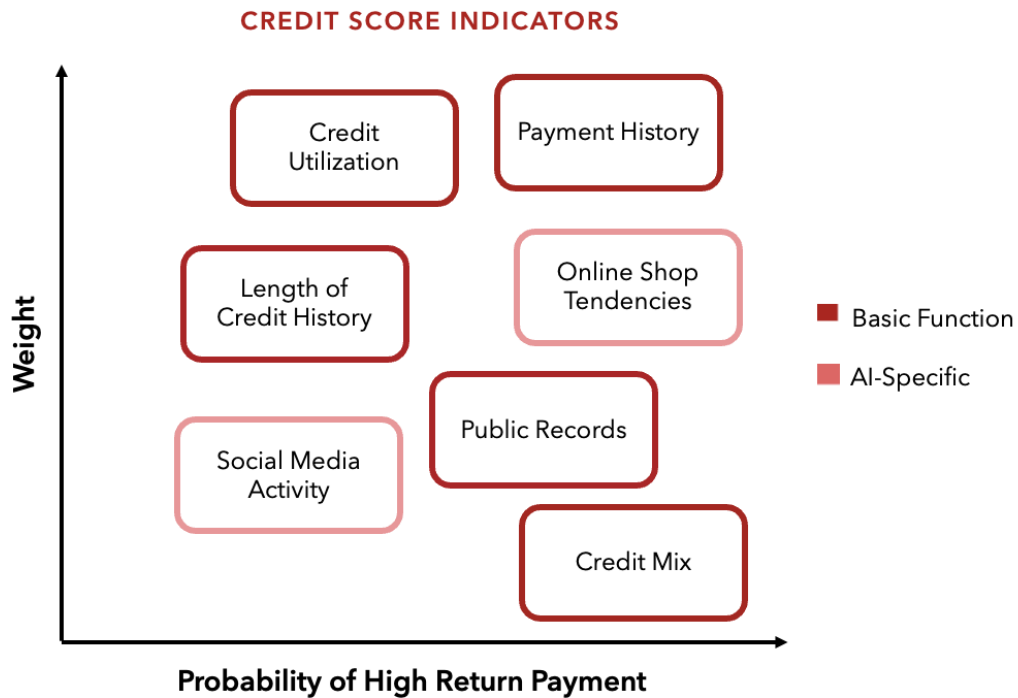


Exhibit 20: Value-Add of Artificial Intelligence in Credit Score Calculation⁵⁷

Risk management and investment decisions have also been enhanced through AI. Financial institutions and asset management firms use AI algorithms to analyze historical market trends and news sentiment to make informed investment decisions. AI can **identify potential market**

⁵⁵ [Ripple](#)

⁵⁶ [Ripple](#)

⁵⁷ [Provenir](#)

anomalies and **predict market trends more accurately** than traditional methods, helping investors optimize their portfolios and minimize risks.

Furthermore, AI has greatly improved compliance and regulatory processes within the fintech industry. Financial institutions must adhere to strict regulatory guidelines and reporting requirements. AI can automate the monitoring and reporting of transactions to ensure compliance with **anti-money laundering** (AML) and **know-your-customer** (KYC) regulations. This not only reduces the risk of regulatory fines but also enhances the overall transparency and security of financial transactions.⁵⁸

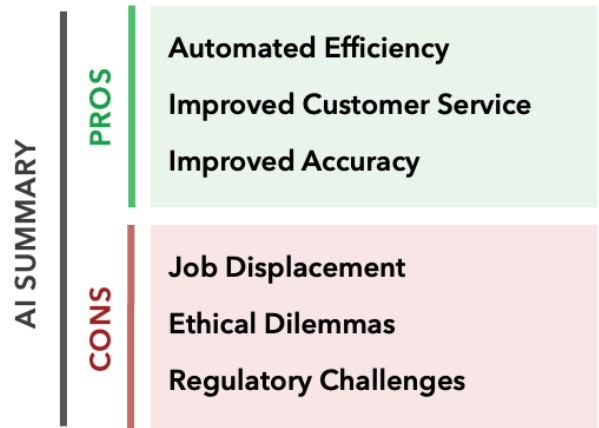


Exhibit 21: *Summary of AI*

In conclusion, AI has indisputably led to **substantial improvements** in fintech across various aspects of the industry. From bolstering fraud detection and prevention to revolutionizing customer service, credit scoring, risk management, and investment decision-making, AI has become an **indispensable tool** in the fintech toolbox. As AI technologies continue to evolve, we can expect even more innovations and enhancements in the fintech sector, ultimately benefiting financial institutions, businesses, and consumers alike. However, it's crucial to address ethical concerns and data privacy issues to ensure that AI's potential is harnessed responsibly and in a manner that benefits society as a whole.

⁵⁸ [Ripple](#)

9. Conclusion

In a mere generation of time, fintech has completely reinvented the financial services industry. Some of these changes have occurred in the strikingly obvious **day-to-day of transactions**, like tap-to-pay, while others take form through P2P **lending platforms** like Venmo and Paypal. By aptly understanding and their digital consumer base and coupling their competitive advantage with ease and social connectivity, these companies have reinvented transactions not just as an assistive function, but part of a **culture and way of life**.

As this sweeping wave of digitization continues, this shift has paved the way for financial institutions to **leverage technology in innovative ways, streamlining operations**, enhancing customer experiences, and optimizing decision-making processes. The integration of advanced technologies has not only revolutionized traditional financial service but also catalyzed the development of more sophisticated **financial modeling techniques**, enabling institutions to analyze vast amounts of data, making more informed decisions to mitigate risks in an increasingly complex financial environment.

Moving forward, as artificial intelligence, blockchain, and decentralized finance gain prominence, financial institutions must **adapt to stay competitive**. The convergence of these technologies promises to reshape traditional business models, redefine customer engagement, and possibly democratize access to financial services on a global scale.

Ultimately, in order to fully capitalize on this global shift, companies must transcend the boundaries of traditional finance as the industry is **propelling towards a digitally empowered future**. The journey from online banking to advanced financial modeling, from digital currencies to cutting-edge technologies, reflects an ongoing process of adaptation, innovation, and collaboration within the fintech realm. As financial institutions and technology providers continue to collaborate and innovate, the future holds immense promise for a more **inclusive, efficient, and resilient financial ecosystem**.



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