VISA

The next wave in digital payments

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Introduction

The rapid growth of digital commerce, especially in mobile, is driving deep structural changes across the global payments landscape. Consumers are changing the way they shop and pay online, in-app, and in-store, pushing merchants to adopt an increasing number of new technologies and issuers to partner with third-party technology providers. This paper explores the forces accelerating the pace of change in digital payments and potential impacts on the future strategies of banks and credit unions, merchants, and technology companies.

> "'How did you go bankrupt?'
> 'Two ways. Gradually, then suddenly.'"
>
> - Ernest Hemingway, The Sun Also Rises

The new digital dynamics are here to stay

Digital technology is deeply integrated into the modern consumer's life. Cardholders are constantly connected and are able to access information instantly at their fingertips through mobile, tablet, desktop, and Internet of Things (IoT) devices. Artificial intelligence and virtual reality have blurred the line between the digital and real world. While digital technology has become integral to daily life, its impact on consumers' relationships with financial institutions has been more gradual. Many individuals remain entrenched in traditional payments behaviors including using cash, check, and physical cards. However, a growing segment is incorporating digital methods into their everyday payment experiences. These consumers are increasingly comfortable transacting with new payment options from Venmo to Bitcoin and in new forms including mobile and IoT devices.
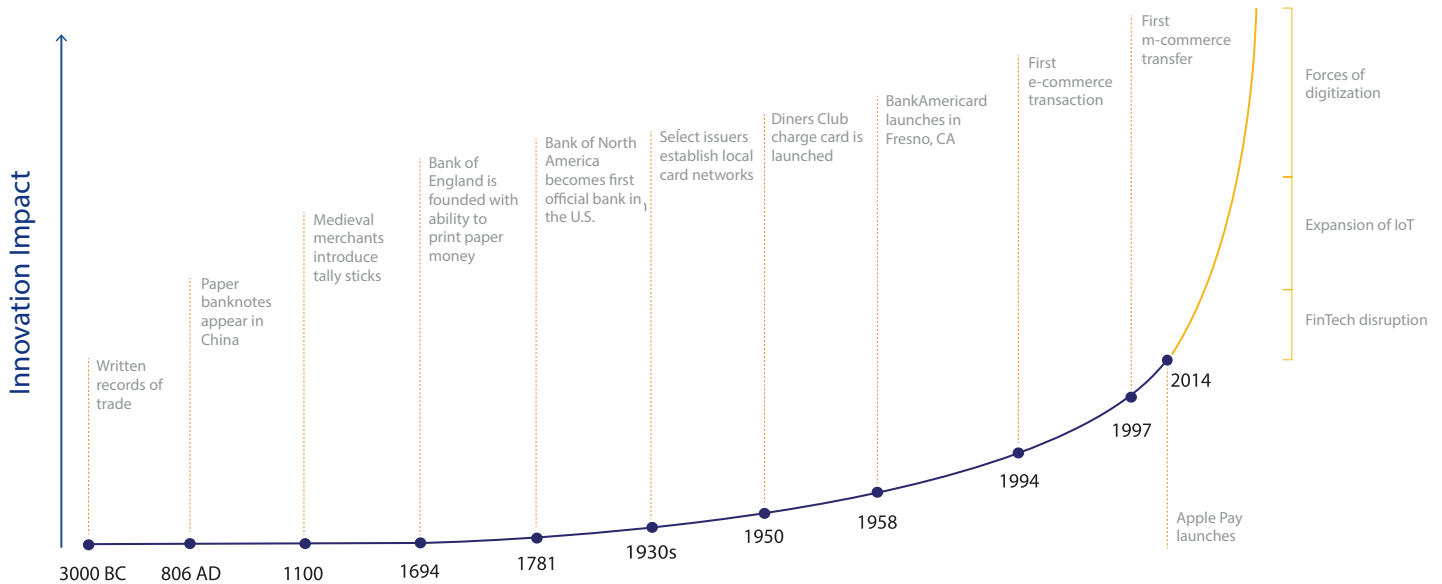
This shifting digital landscape and consumer openness has allowed for the entrance of new players into the payments space, both financial technology (fintech) startups and established technology firms. Fintech companies, which both compete against and partner with traditional financial institutions and their intermediaries in the delivery of financial services, have chipped away at the primacy of the issuer-cardholder relationship. They address consumer pain points within financial services, sometimes by disintermediating the traditional relationships financial institutions have established with their customers. Fintech's success has hinged on its ability to offer products and services that meet the needs of digitally-savvy consumers and rapidly innovate in response to changing consumer tastes.

The financial institutions, networks, and merchants that delay addressing the changing needs of consumers by not embracing digital payments innovation will be left behind. The deep changes on the horizon from these trends may not yet be readily apparent, but they will nonetheless impact financial institutions and merchant economics in fundamental ways. Traditional players should develop and execute a holistic digital strategy to adapt to changing consumer behaviors or risk meeting the fate Hemingway's character quoted above.

A brief history of payments

In order to determine how technology will fundamentally reshape the payments industry in the near future, one needs to look at the evolution of payments over time to understand how this inflection point arrived.

Elements of the payments revolution

Innovation Impact

Written records of trade — 3000 BC

Paper banknotes appear in China — 806 AD

Medieval merchants introduce tally sticks — 1100

Bank of England is founded with ability to print paper money — 1694

Bank of North America becomes first official bank in the U.S. — 1781

Select issuers establish local card networks — 1930s

Diners Club charge card is launched — 1950

BankAmericard launches in Fresno, CA — 1958

First e-commerce transaction — 1994

First m-commerce transfer — 1997

2014 — Apple Pay launches

Forces of digitization

Expansion of IoT

FinTech disruption

May 2017

One key point to consider is that technology has been interwoven with payments throughout history. Advancements in technology and payments have occurred hand in hand. For example, writing was one of the first technologies to facilitate payments. Around 3000 B.C., ancient Sumerians used written clay records to record trade and inventory. Over time writing evolved into other kinds of recorded script, which humans leveraged into more advanced payments systems like paper banknotes, which first appeared in China in 806 A.D. In the 12th century, medieval merchants developed an early version of the credit card in the form of a "tally stick" – notches were made on a wooden stick to indicate the amount lent and owed. The sticks were then split down the middle; the creditor kept one half and the debtor the other. When a payment was made, the sticks were paired up, and the payment was marked on the stick. It was nearly impossible to counterfeit, as the shape, size and grain of the wooden halves had to match up perfectly. In England, tally sticks were used for collecting taxes from local citizens until the system was abandoned in 1826. Approximately 130 years later, BankAmericard launched in Fresno, CA, later becoming the first general purpose credit card. This cycle of technological advancement sparking new payments

behaviors has intensified over the past 20 years as the first eCommerce transaction (a Pizza Hut order in 1994) and first mCommerce transaction (a Coca-Cola soda purchased through text message in 1997) opened new payment use cases. The launch of Apple Pay in 2014 has paved the way for ubiquitous digital payments by further dematerializing the card form factor.

In reflecting on the history of payments, two important trends become clear. First, the foundational ideas that underlie payments have been around for thousands of years. The transaction ledger evolved from the written clay records of ancient Sumer to today's high speed, secure Visa payment network, and the concept of a credit card morphed from the tally sticks of Medieval Europe to BankAmericard to today's globally accepted Visa payment cards. The value of payments does not come from the form factor itself, but from the innovative ways consumers became able to transact more seamlessly and securely. Second, disruption in payments is a longstanding phenomenon. Though the opportunities and risks it presents to traditional stakeholders shift over time, disruption in itself is not a new occurrence.

We believe that future changes in payments are not only inevitable, but will be deeper than ever before due to the significant fintech activity already underway in financial services, IoT's role in expanding the Point of Sale (PoS), and four technological drivers that are exposing the payments ecosystem to unprecedented disruption.

The shifting payments landscape

Disruption is already underway in financial services

The growing presence of fintech demonstrates the disruption already underway in financial services. There are over 12,000 fintech startups globally[2] that have raised $36 billion in VC funding in 2016 alone.[3] Not all of these startups will succeed, or even most. Startups can be disruptive even if they fail, so long as they introduce a new viable technology or business model into the ecosystem. Napster was a financial failure when it was first launched, yet it radically transformed the music industry over the last 20 years.[4]

Fintech startups are looking and solving for a broad array of customer pain points along the financial services value chain, from payments to financing to investing. Historically, financial institutions have created value by bundling these different products to serve their customers' holistic financial needs. Banks and credit unions offer core services, such as low-cost (or free) checking, to establish sticky customer relationships that allow them to earn higher margins in other segments, including credit-card fees and foreign exchange transactions. McKinsey research shows that while core banking products (e.g. loans) generate 54 percent of total revenues, 59 percent of the banks' profits flow from pure fee products, such as investment advice or payments, where the Return on Equity (ROE) averages an attractive 22 percent.[5] Financial institutions that are not focused on keeping their payment products competitive and differentiated increase their risk of customer disintermediation by fintech attackers focused on the origination and sales of financial products.

As consumer interactions shift from physical branches to digital channels and customers engage with multiple companies to meet their financial needs, the profitable consumer-facing business segments will come under increasing attack. Fintech's competitive advantage rests in having the agility to provide seamless user experiences, a byproduct of having been born in a digital-first age.

By focusing on the consumer relationship and using the existing financial system to fulfill their products, they avoid the burdensome regulations and capital requirements that traditional players face. In this new world, financial institutions will be faced with a stark choice: Either they digitally enable accounts for their customers and extend their reach in the value chain organically and through partnerships, or they become simply "dumb pipes" funding the account for their customers which feeds the digitally-enabled accounts provided by other, more agile players.

Internet of Things is accelerating the pace of disruption

The rise of the IoT further changes the payments innovation landscape by redefining the point of sale. Mobile phones are currently the largest category of connected devices, though by 2018 connected devices such as cars, machines, and consumer electronics are collectively expected to surpass them. Predictions about the number of connected IoT devices by 2020 range up to 24 billion devices.[6] Connected devices will provide consumers with multiple new methods through which to transact, and financial institutions will need to compete for top of wallet preference in these new form factors. Many of these connected devices such as appliances, cars, and utility meters will have a payment method on-file to place orders, pay tolls, or pay bills.

As IoT scales, payment volume attributable to connected devices will increase rapidly, shifting away transactions previously handled by consumers and pushing them to the background. In fact, IDC estimates that the potential revenue for processing this type of device-initiated payments will surpass $10 billion by 2020.[7] As new IoT payment experiences enter the market, financial institutions will need to further innovate, potentially through enhanced card benefits, holistic marketing, and new partnerships.

The ubiquity of connected devices will also accelerate the pace of innovation expected of merchants. Merchants can leverage connected devices and the data generated from them to improve customer experiences, ranging from more streamlined checkout to better loyalty programs. Amazon Go grocery stores are an early example of what consumers can expect from the rise of IoT. Amazon's Just Walk Out Technology detects when products are taken and returned to shelves and automatically adds them to a customer's card so that customers can leave the store without having to wait in line to pay. New payments experiences once thought futuristic are arriving soon, enabled by IoT.

Technological drivers that expose the payments ecosystem to disruption: universal connectivity, unified data, lower barriers to entry, and simplified integrations

The world is more connected now than ever before, which allows financial institutions to deliver products and services through new channels. In 2015, there were nearly 5.8 billion mobile users globally, representing 80 percent of the world's population[8] (by comparison, only 4.8 billion people have access to a flush toilet per the WHO's latest metrics[9]). Global mobile devices and connections in 2016 grew to 8 billion, up from 7.6 billion in 2015.[10] While financial institutions can benefit from the rise in mobile device usage, this change can also enable new banking and payments experiences that are detrimental to their economic models.

Online-only financial institutions are one example of this trend. Online-only providers have up to a 400 basis point cost advantage over traditional financial institutions because they have no physical distribution infrastructure, and pass on those cost savings to customers by offering higher savings interest rates, friendlier fee structures, and ATM surcharge reimbursements through a seamless online experience.[11] The popularity of online banks like Simple and Ally is set to grow in the future as more than one in four traditional banking customers would consider a branchless bank if they were to switch from their current bank (per an Accenture study), and this propensity to switch is higher among younger customers.[12] The same online-only trend is applicable to the retail space, with Amazon and Warby Parker being representative examples (although both are now expanding into physical retail).

Moreover, connected customers can compare and contrast goods and services based on price, increasing the risk of commodification as firms compete solely on price (Nerd Wallet, for example, translates the complex reward structure of credit cards into an easy-to-understand "Rewards" figure). **Universal connectivity** is driving the enablement of new payment experiences that can be controlled outside of financial institutions and retailers that can be detrimental to their business models.

The billions of connected devices globally also generate a massive amount of data every second. More than 90 percent of the world's entire stock of data has been created in the last two years, and the total stock of data is expected to double every two years going forward. Even more importantly, 99 percent of this data is digitized and

half has an IP address.[13] We call this **unified data** because it ties directly to consumer behavior and preferences. Third parties are leveraging this data in new and interesting ways. For instance, Google continually tracks the activity of upwards of 70 percent of Internet users worldwide and consolidates that information into highly structured personal profiles to send targeted ads.[14] Similarly, financial institutions can leverage new sources of data to better tailor their credit scoring models, from using college attended or major for international students to trust scores based on social network data. In fact, LendUp, a payday loan alternative provider, incorporates social media data to gauge risk and verify identity. For merchants, this is beneficial because credit may be extended to previously underserved groups that drive additional spend. They will also have access to detailed data that allows them to target customers effectively, as Amazon was able to leverage machine learning models based on customer purchase history to display relevant recommendations on its site, generating 35 to 60 percent revenue uplift.[15]

Consumers have become increasingly comfortable authorizing data collection about their behavior in exchange for benefits like app personalization, account linking, and tailored rewards or offers. Unified data allows companies to quickly and repeatedly enhance their customer experience, including data from geolocation, biometrics, and cross-device tracking. A recent Accenture study stated that nearly half of consumers report they would be interested in spending analysis based on their transaction data in real time, and half want their financial institution to proactively recommend products or services that can help meet their financial needs.[16] Players who fail to meet the growing consumer demand for the personalized experiences that unified data facilitate may fall behind their competitors.

It is becoming easier for new players to monetize the opportunities presented by increased connectivity and

unified data. Falling computing costs have **lowered the barriers to entry** over the past decade as they have allowed companies to manipulate and communicate data more broadly and cheaply. For perspective, two iPhone 6s handsets have more memory capacity than the total memory capacity of the International Space Station.[17]

The overall increase in accessible computing tools has made creating a high quality app or other digital experiences easier and cheaper to do than ever before. According to Upfront Ventures, it cost $5 million to launch a startup in 2000; by 2011, the cost of launching a startup had decreased to $5 thousand due to the availability of cloud storage and access to computing power through firms like Amazon Web Services.[18]

Traditional players may have advantages in terms of physical delivery infrastructure, but those come with higher costs and are becoming increasingly obsolete as the shift from in-branch banking to mobile banking accelerates: Per BI Intelligence, approximately 64 percent of customers surveyed visited their branch once or less over a 12-month period, excluding ATM withdrawals.[19] This trend has also led to the rise of mobile-only banks like Simple and BankMobile (the "Uber" of banking targeting millennials). In fact, online-only banks were the only category of banks to gain share in the past decade among retail customers establishing or moving their primary banking relationships, according to TNS research.[20] Online-only banks now attract approximately 12 percent of all new primary banking relationships in the U.S., compared with only 4 percent a decade ago.[21] Ally Bank, subsidiary of Ally Financial Inc., grew retail deposits by 19 percent in the past year.[22] Compare this to the 8.6 percent industry average for non-government customer domestic deposit growth in the United States for the same period reported by the FDIC.[23] Digital's lower barriers to entry weaken the value that traditional banks have generated from their brick-and-mortar networks (which they have traditionally leveraged to sell higher margin products).

Advances in IT, development platforms, and outsourced cloud infrastructure have also made **simplified integrations** the launching pad of new entrants into many industries. Startups can experiment, cheaply and rapidly, using off-the-shelf component technologies such as Application Programming Interfaces (APIs), a set of protocols that specifies how software components should interact and can enable the addition of new features not native to the application itself. This practice keeps per-unit

costs related to innovation lower than larger traditional players that wrestle with legacy technology. Uber is an example of how little of the underlying technology a company must directly create and how much can be supplied by public APIs. Uber uses Google Maps, Twilio (SMS notifications), SendGrid (emails), and Braintree (payments) to power its platform. Uber's estimated valuation of close to $70 billion[24] would make it larger (by market capitalization) than many major banks including PNC and Capital One.[25] Simplified integration makes it easier for new entrants to create a layer between providers and their customers, which allows them to more easily disintermediate their customer relationships.
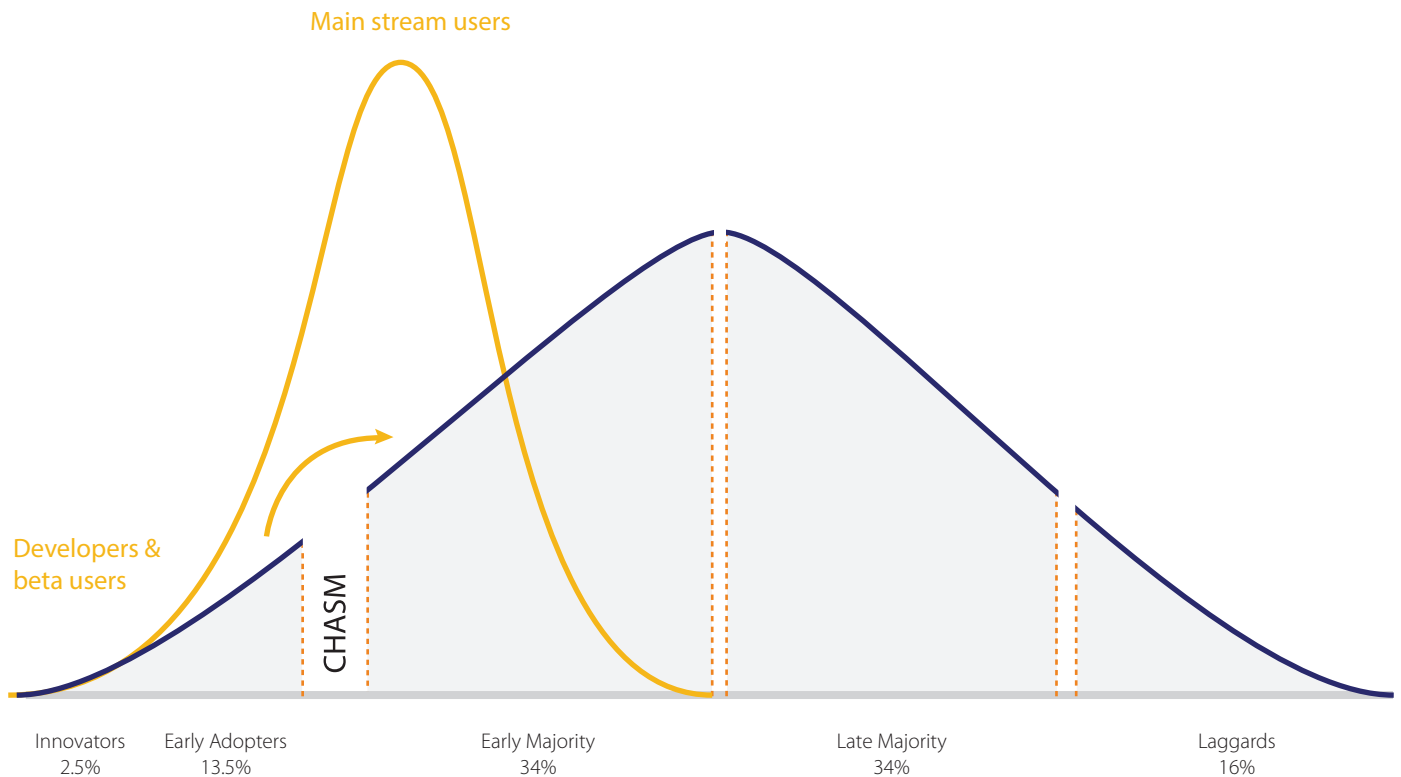
Simplified integration does not only refer to the technical build of new digital products, but also to the ways in which they can be easily integrated into the users' everyday interactions. Consumers have become accustomed to seamless, mobile-first user experiences in many aspects of their lives. For example, when calling an Uber, a consumer's entire experience including map services, communication with the driver, payment, or texting an ETA to a friend, occurs intuitively within the app. These standards can spill over into consumer expectations about financial institutions and their online and mobile banking. Consumers can expect their financial institutions to meet their needs and provide customer service on par with leading technology companies and startups.

These four technology trends— universal connectivity, unified data, lower barriers to entry, and simplified integrations through APIs— have changed consumer expectations for digital products and services. Consumers hold their products and services to a higher standard today than they did in decades past because their frame of reference is shaped by the Amazons and Googles of the world; everything must be instant, intuitive, seamless, and personalized. These expectations are industry agnostic, meaning that consumers expect even traditional industries, including financial services, to adopt digital best practices. Their brand loyalty rests with firms that offer solutions matching their connected, on-the-go lifestyles. No industry is safe from the critical eye of an increasingly digitally-enabled public.

In addition to changing consumer expectations in the financial services and retail industries, these four forces are also transforming the **adoption curve** of new technology. Geoffrey Moore's Technology Adoption Lifecycle model provides a framework for understanding the cumulative impact of these forces. The model describes how new technologies achieve mass acceptance:

Transforming the technology adoption lifecycle

Main stream users

Developers & beta users

CHASM

Innovators	Early Adopters	Early Majority	Late Majority	Laggards
2.5%	13.5%	34%	34%	16%

Note: Technology adoption curve concept based on work of Everett Rogers and Geoffrey Moore

1. **As new trends emerge and innovative startups create disruptive business models, their products and services are embraced by the early adopters.**

2. **Savvy incumbents then begin to adjust to these changes, accelerating the rate of customer take-up until the industry's level of adoption reaches the tipping point (crossing the chasm).**

3. **Eventually, what was once innovative becomes the new normal, and incumbents who lag behind their savvy peers in responding to the new trends run the risk of becoming the next Blockbuster Video.**

When it comes to digital disruption, the model provides two key realizations. First, the late majority has crossed the chasm when it comes to digital services, meaning there is near universal comfort with using smartphones and apps for a broad array of tasks. Second, and more importantly, the overall lifecycle model has also changed. The adoption timeframe has been shortened and has become more extreme, meaning that new entrants have a shorter window to take action and capitalize on disruption than ever before. Wealthfront, the automated investment services firm, provides a good example: it took just 2.5 years from its inception for the firm to reach $1 billion in assets under management. Charles Schwab took 6 years to reach the same milestone.[26] The lifecycle of adopting new technology and solutions is being compressed, creating more urgency in being first to market. With this propensity for disruption in mind, examples of past innovation help inform how issuers should approach the currents of change in payments.

# Lessons for financial institutions from past disruption

Most innovative breakthroughs share a certain progression: consumers experience a pain point, and the disruptor conceives of a new way to address that pain point through a product or service in a different, out-of-the-box way. Disruptors do not see the incumbents as competition. Disruptors do not share incumbents' approach to solving customer problems, and they look beyond offering marginally better prices or quality to gain their advantage. Usually, disruptors hope to attract customers by a completely different business model or technology than what is available.

Another noteworthy characteristic of disruption is that most disruptors reinvent an industry of which they had never been a part. PayPal was not invented by a bank, Netflix was not invented by an entertainment studio, and iTunes was not invented by a record company. There are many lessons to be learned for payment players by examining case studies of digital disruption in non-payments industries. Some of the challenges faced by the following disrupted companies and industries resemble the challenges payments incumbents are facing today.

Lesson 1: Innovate beyond your current capabilities

Much like financial services, the telecom industry has historically had high barriers to entry given the high capital expenditures necessary for infrastructure and the strongly competitive nature of the marketplace. This lack of concern for outside competitors could have been one of the reasons telecom companies did not seek to aggressively expand the capabilities of their Short Messaging Service (SMS) or its global reach despite its dramatic growth in the mid-2000s. Moreover, SMS was a profitable product as the mark up on a text message was as much as 6500 percent (telcos in the U.S. typically charged $.2 per outgoing text and $.1 per incoming text while the cost to transmit a text message was $.0033).[27]

Messages sent globally per day (in billions)

SMS — ■ (dark blue)
WhatsApp — ■ (yellow)
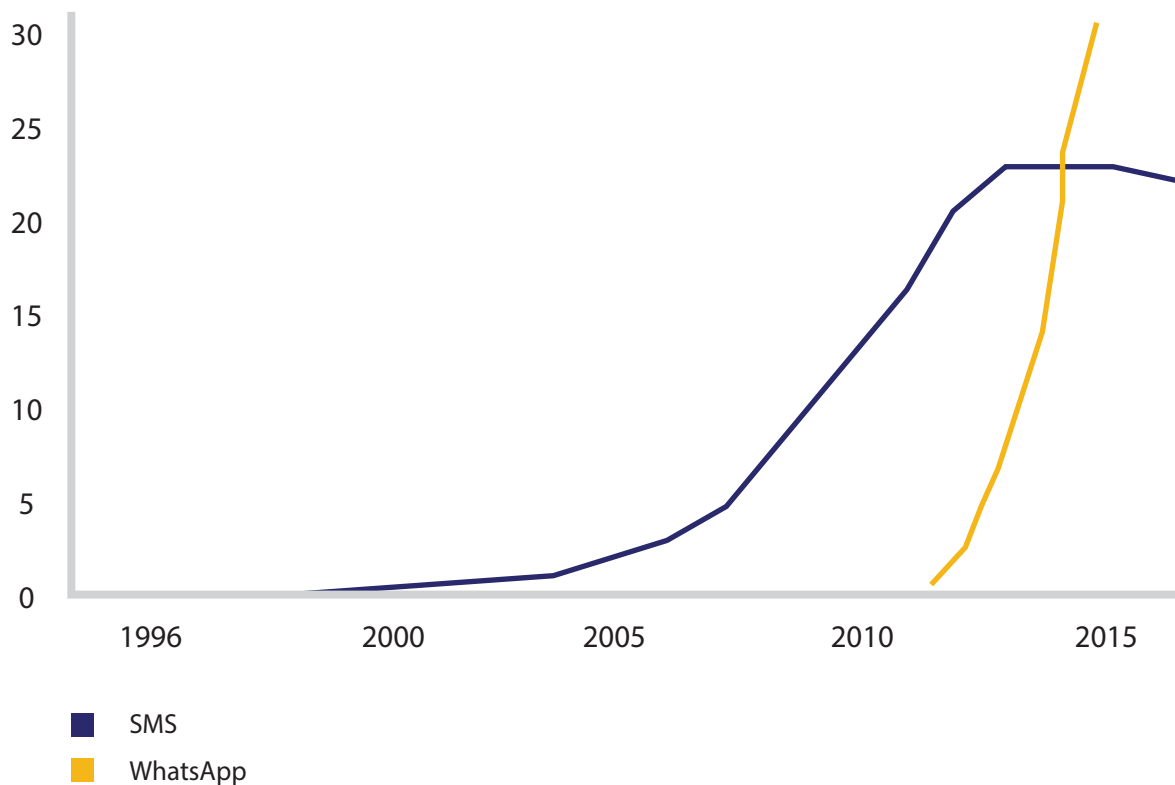
WhatsApp then entered the market with a better user interface (enhanced ability to send group texts, seamless transmission of media files, ability to text internationally, etc.) and better pricing (a $.99 annual fee that was later waived) while leveraging the existing telecom infrastructure to deliver its product. Since its launch WhatsApp has been able to garner 1 billion monthly active users globally,[28] all but halting the potential growth for SMS. In fact, the contrast between these two services is a good example of how the technology adoption curve has changed, with SMS following a more traditional path while WhatsApp experienced rapid and massive adoption (400M+ users within 4 years, while Facebook was at 145M users 4 years after launch).[29] WhatsApp's growth is projected to drive a 38 percent decline in telecommunications SMS revenue in North America by 2017. WhatsApp

now allows free mobile voice calls, which in combination with chat services like Facebook Messenger, are projected to shift $386B in revenue between 2012 and 2018 away from global telecom companies.[30]

The lesson learned is that financial institutions need to constantly innovate their products and services, regardless of how secure their industry may seem from external competitors. For instance, the rapid growth in the adoption and usage of mobile banking apps offers financial institutions the potential to enhance their mobile banking offering by adding payment-related functions, such as proximity payment capabilities and geolocated merchant offers, which would become available to a large, growing and valuable segment of their customer base.

Lesson 2: Invest in connectivity

Garmin almost single-handedly created the consumer GPS navigation market when it introduced its StreetPilot product in the late 1990s and was the market leader through most of the 2000s. Then Google dramatically reshaped the industry when it introduced its Google Maps product for mobile phones. While one of the reasons Google introduced Google Maps may have been to increase its advertising revenue by integrating more digital data into its services, the app ended up out-performing expensive standalone GPS devices and is now the primary way millions navigate globally. Compared to standalone GPS devices, Google Maps was cheaper (free), was updated more frequently, and offered a more "customer intimate" solution by integrating with other apps like search, email, and reviews. Garmin could have potentially remained competitive by better connecting its large user base to incorporate real-time traffic updates, cheap fuel stations nearby, safety alerts, speed limit information, weather information, etc. It eventually did so, but by then it was too late. Per Google Finance data, it lost 80 percent of its market cap in only 18 months after Google Maps' introduction in November 2007.

Garmin market performance 2001-2011
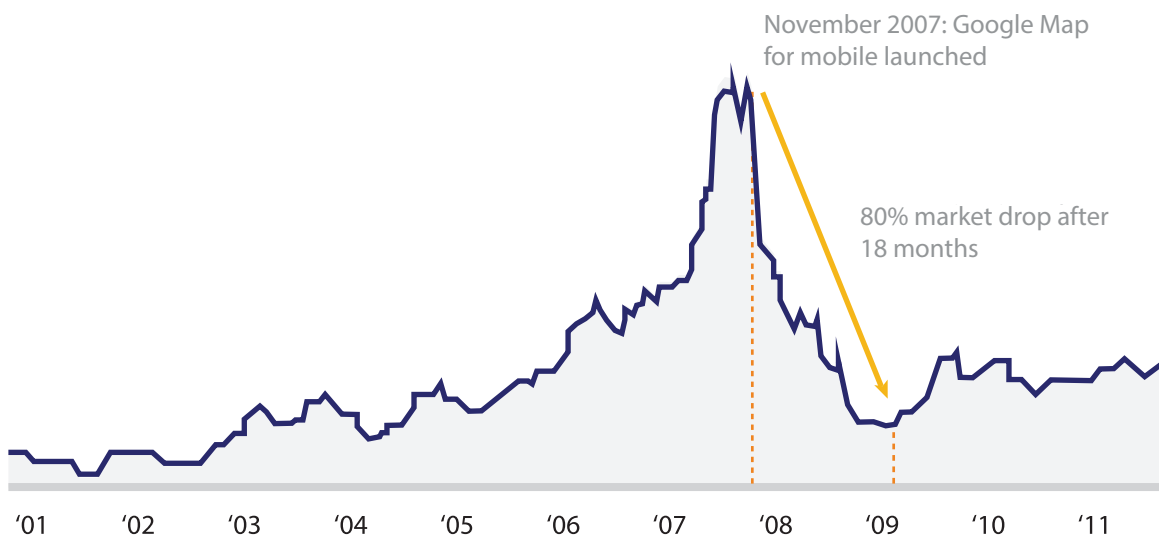

Source: Google Finance

The lesson learned is that incumbents should move away from standalone services and aim to incorporate their offerings across a whole suite of services to increase their customer stickiness. Financial institutions can leverage their engaged customers to drive organic growth by connecting them with their larger customer base through product forums hosted within the bank's digital properties, like a TripAdvisor for their financial services. Customers seeking advice on which financial products to pursue could pose the question within their issuer's online banking community and receive recommendations from other satisfied customers. By facilitating these types of exchange, customers will likely become more loyal, more likely to recommend the issuer to family and friends, and drive a bigger share of wallet.

Lesson 3: Embrace disruption and build on top of it

In the late 1990s, file-sharing technology, such as Napster, was perceived as an existential threat by the music industry. The industry largely sought to counter this threat through legal means, ignoring the underlying demands of their customer base for convenient and affordable access to music. On the other hand, Apple modified the technology and integrated it into its iTunes software, delivering a better consumer experience and a more flexible economic model. It was able to capture remarkable value from the unbundling of the album, fulfilling their customers' previously unmet need to own just the popular songs instead of the entire record. Between the introduction of iTunes in 2001 and 2014, the global music industry's revenues decreased by 60 percent. In the meantime, by 2013, Apple's gross revenues from the iTunes group were estimated to be $23.5B, which would have placed it as number 130 in the Fortune 500 ranking of companies if it were a standalone business.[31]

Similarly, relying solely on regulatory barriers to protect core business segments is not a sustainable long-term strategy. Instead, financial institutions should determine which of the technology trends discussed above are most relevant for their specific market and develop products that meet their customers' evolving behaviors, thereby reaping major benefits in terms of customer satisfaction and increased payment volumes.

## Global recorded music industry revenue (in billions)

Introduction of Napster

Introduction of iTunes

Profits decreased by 60% since 2001
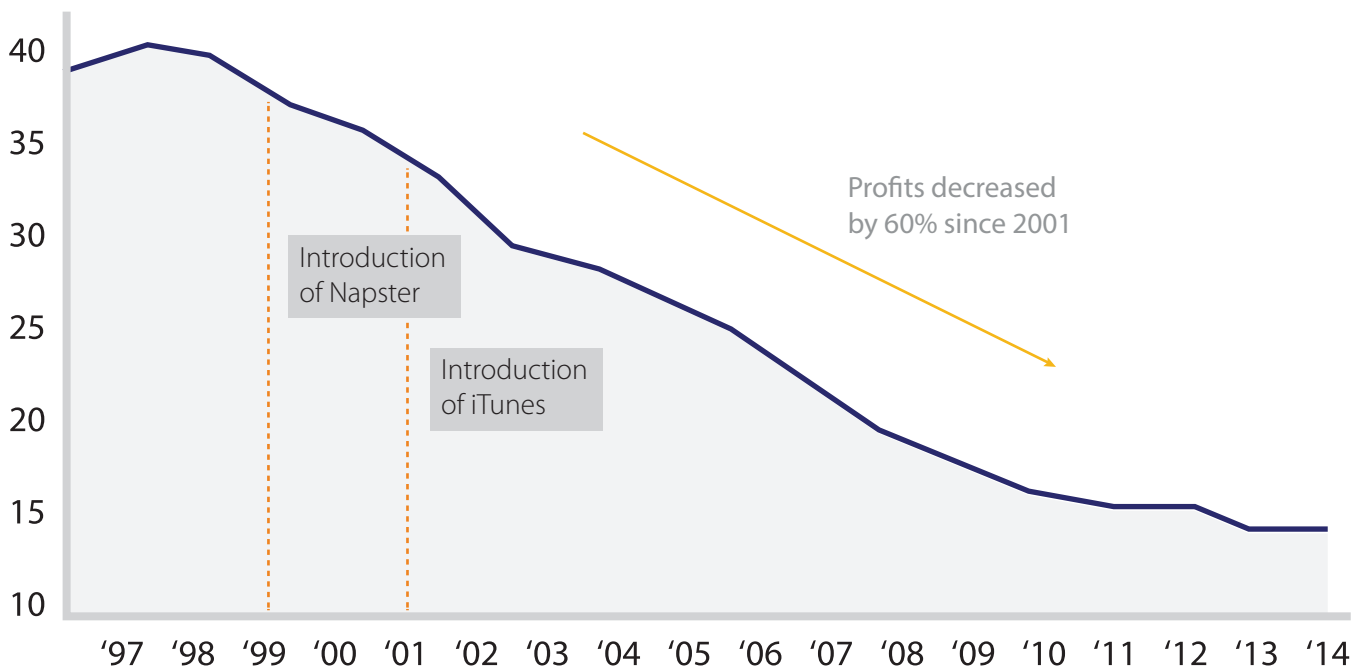
Source: IFPI Digital Music Reprot 2015, RIN Report 2014

Lesson 4: Build the change you want to see

In the music industry, value has flowed to the firms that saw and acted on the competitive shifts in their market first, as Apple did with the move from the CD to the digital download. Now, the music industry is undergoing another transformation brought on by streaming music services. Streaming is the largest revenue driver in the US music industry (35 percent of total revenue), ahead of physical sales and digital downloads,[32] thanks to subscription services like Spotify and Pandora. Streaming services are using their consumer data to suggest new music, cross-sell concert tickets, and display targeted ads, changing their business model to fit the new landscape (from pay per download to subscription). If streaming achieves wide adoption, the music industry could return to positive growth and streaming companies will be best positioned to capture the gains from this latest shift.

Global recorded music revenue (in billions)

Forecast

Rapid shift in music revenue

Physical
Downloads
Streaming
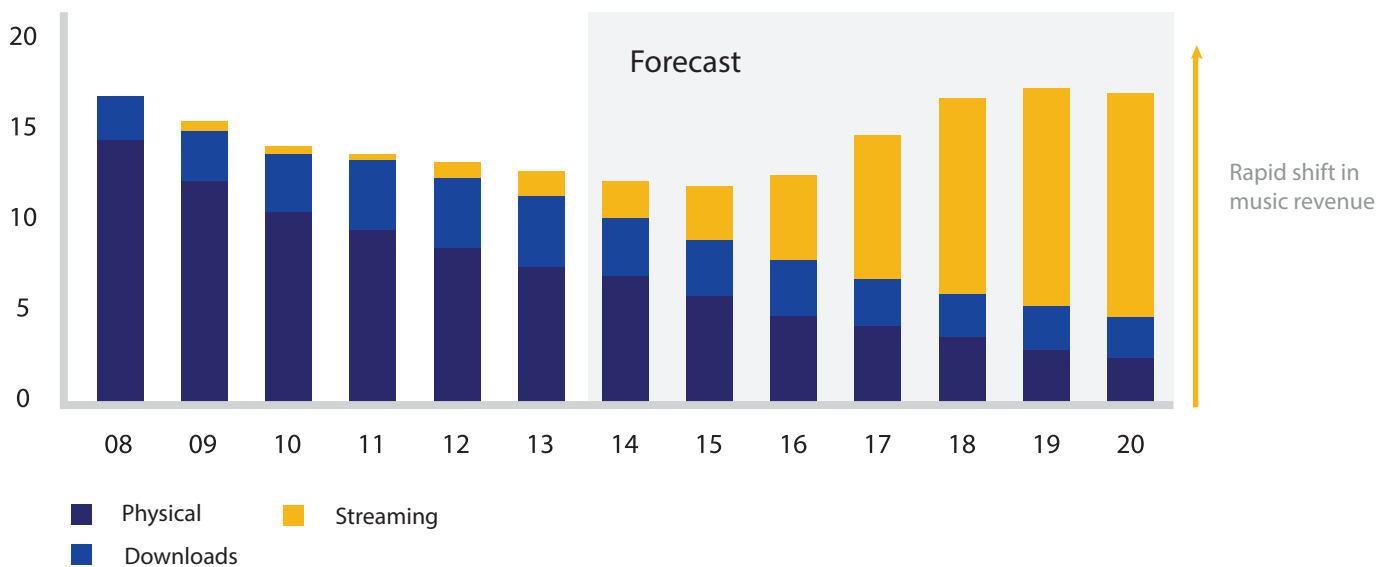
Source: Credit Suisse Analysis

Similarly, financial Institutions can better leverage their customer data (with customer consent) by building recommendation engines to suggest the products that their customers should buy next. These recommendations can be delivered digitally through banking app or website and reinforced in-branch by relationship managers. Moreover, they can build models to more accurately predict who will cancel service or default on a loan and take the necessary action.

Embracing digital disruption through a new value framework

So how can incumbent financial institutions apply these lessons to get ahead of the digital curve and become the disruptors themselves? As the digital revolution restructures traditional value chains, payments players need to leverage the resulting dynamic value ecosystem to serve their customers more holistically.

Traditionally, value chains involve a series of discrete steps where a company buys materials, adds their value, then sells to the next party in the chain to add additional value until it is ready as an end-product for consumers to purchase. The financial services industry is no different as banks accept deposits (supply), develop debt instruments and securitized products (manufacturing), and deliver these products through their offline (branches) and online (website and app) channels to consumers (distribution).

However, advances in digital technology are permeating this linear value chain, transforming it into a complex, dynamic and connected value ecosystem. This diverse architecture has consumers at the top, companies competing against traditional and non-traditional competitors at the bottom, and shared networks in the middle that connect these providers with platforms. Value is not based solely on goods and services produced, but also on the exchange of knowledge and continuous innovation. The most innovative companies will collaborate and co-create with others rather than envisioning, developing and delivering products and services by themselves. We can think of these changes as a shift from a "traditional economy" to a "digital economy".

In addition to the connected consumers discussed previously, the new value ecosystem has three key segments:

1. **Platforms:** Platforms provide traditional players with access to consumers, which enables service providers to scale more rapidly. For example, eBay, as an eCommerce platform with millions of users,

allowed PayPal to reduce its cost of customer acquisition by 80 percent when it was acquired.[33] Platforms also provide another channel for providers to engage with their existing customers. For instance, WeChat's virtual wallet "TenPay" on its platform connects merchants with users and allows them to easily book taxis and airfare and purchase advertised items via their virtual wallet. This engagement capability was largely responsible for its year-over-year revenue growth of over 50 percent in 2016.[34] In the U.S., Facebook allows Bank of America's clients to receive important real-time alerts and communications from Bank of America through the Messenger Platform.[35]

2. **Infrastructure Networks:** Networks provide access to the benefits of the new value ecosystem. They can facilitate greater levels of connectivity, collaboration and co-creation with other businesses in a secure and scalable manner. For example, Visa provides its customers with a payment infrastructure so they can focus their business and technology resources on their core offerings.

3. **Providers:** Traditional companies will continue to drive incremental improvements to their products and services, but will now also be able to partner across the ecosystem to drive greater innovation and efficiency. For instance, Google and Levi's have teamed up on Project Jacquard, which involves smart clothing that allows consumers to swipe and tap the fabric to control music or get direction on their phone.[36]

Traditional value chains are being restructured into dynamic value ecosystems
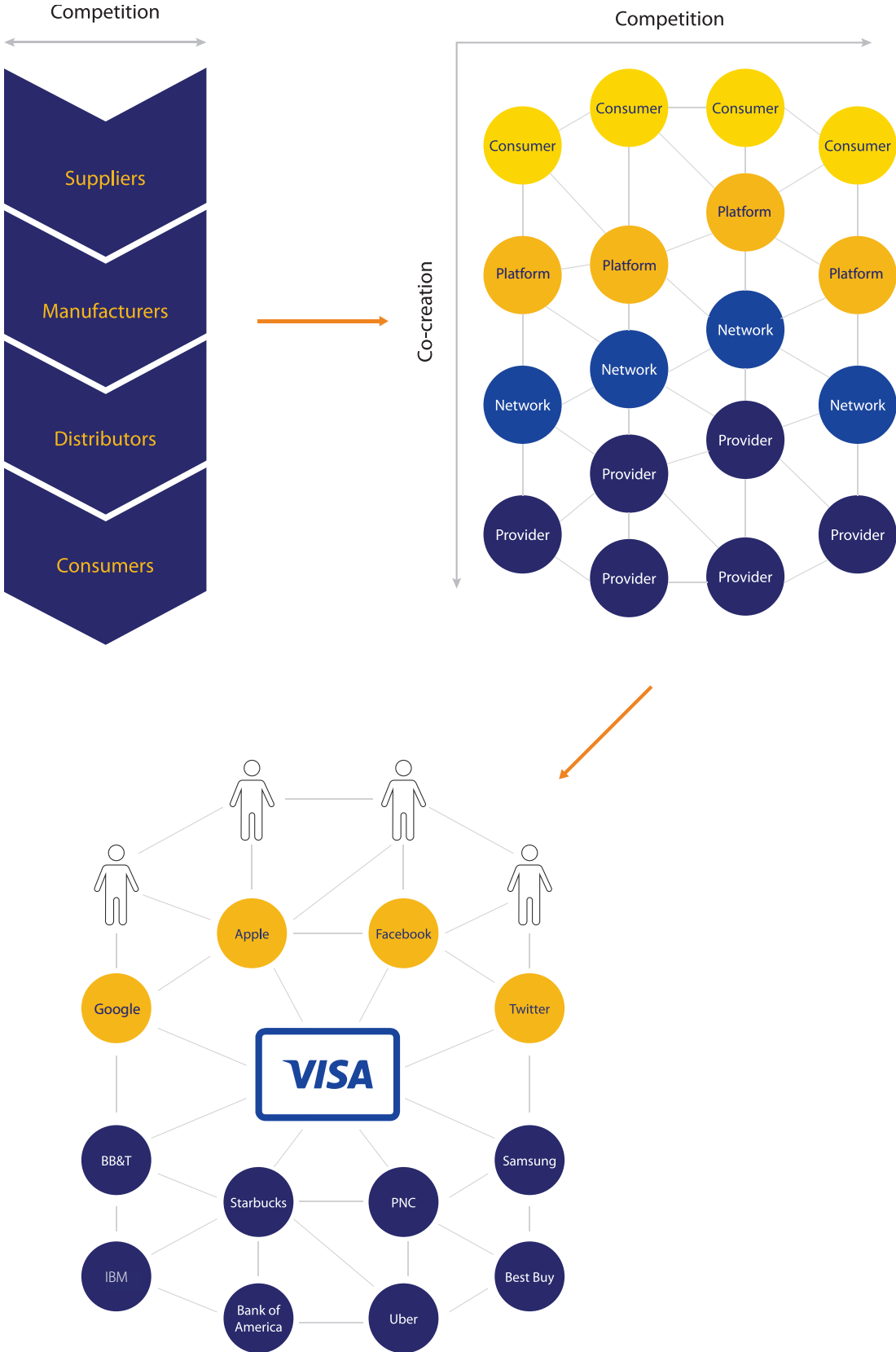
One of the differences between the "traditional" value chain versus the new value ecosystem revolves around boundaries. In the former, roles are more rigidly defined but in the latter the boundaries are more malleable. Banks and credit unions have been providers of traditional financial services, but are now also acting as a platform that enables payments processing on behalf of third parties like Stripe and Square. In this new ecosystem, the idea of an industry becomes anachronistic: what industry is Apple, Google, or Amazon in? Digital disruption brings different industries to overlap with one another and creates new forms of value.

Another key difference is the need to become even more customer-centric. To fully leverage the value ecosystem, players need to segment their customer base, analyze which platforms, providers, and networks customers are interacting with, and determine how their firm can be better ingrained in that ecosystem. If they are solely focused on their historical core competencies or on serving a single customer need, they increase their disintermediation risk. How will you partner across the ecosystem to serve your customers more holistically, and which competitors (both new and traditional) do you need to consider?

Value of Visa in the changing economy

As financial providers and technology platforms integrate and intertwine to meet the consumers' various financial needs, there is a need for a network that is **scalable**, **innovative** and, most importantly, **secure**. Visa is continually working to build a suite of capabilities so its clients can embrace the disruption in payments and deliver innovative payment experiences, revolutionizing the way consumers pay digitally in the same way that it has for consumers paying in stores.

And if the revolution in the industry and shift in competitive dynamics were not enough, the digital economy is marked by increased global interactions. **VisaNet's** customizable solutions allow financial institutions to connect across geographies and regulatory frameworks. VisaNet connects 1.8 billion cardholders to 35+ million merchants and ATMs globally. Visa's connectivity options scale to its clients' needs while reducing infrastructure investment and managing

processing complexities. This allows cardholders to transact at millions of locations anywhere and our clients to focus on game-changing business outcomes.

With innovations across product platforms such as **Visa Checkout, Visa Token Service, Visa Developer Platform** and **Visa Direct**, Visa is committed to making network-based payments futureproof with consumers' evolving needs. Both start-ups and technology giants turn to Visa for scale, infrastructure and expertise as they think about adding payment capabilities to their digital products. Enabling clients to take full advantage of these strategic partnerships and ongoing advancements in the network is at the core of Visa's innovation strategy.

VisaNet also gives clients access to an array of services that provide security amidst dynamic industry currents and in the face of unfamiliar fintech partners. Visa's predictive analytics technology, known as Visa Advanced Authorization, monitors transactions in real-time for suspicious activity no matter whether a consumer inserts, swipes, clicks, taps, or uses biometrics to make a payment. Visa's risk innovations leverage over 500 data points, including previous purchases made with an account. Visa Advanced Authorization has lowered Visa's system-wide fraud rates to historic lows, even with the migration of payments to new use cases. A combination of Visa's core authentication services, product platforms, and APIs transforms data into valuable Advanced Authorization information that helps clients make more informed authorization decisions.

Building capabilities for a digital future

Visa offers several services and solutions that help financial institutions, merchants, and technology players develop and execute their payments strategy in an environment being rapidly transformed by the key trends discussed previously. These trends — universal connectivity, unified data, lower barriers to entry, and simplified integration — demand that financial institutions continually innovate to stay relevant to their consumers. An enormous opportunity exists for financial institutions of all sizes to assume a position of innovation leadership and improve consumer payment experiences. The first step is taking advantage of Visa's playbook for becoming a digital disruptor: issuers should speak to their processor and Visa about the digital products and services available today and the timeline for future enhancements.

Universal Connectivity	Unified Data	Lower Barriers to Entry
• Extend customer offerings to new channels (Visa Token Service - Mobile/IoT) • Incorporate P2P technology to enhance product suite (Visa Direct) • Digitize and streamline manual processes (Connected Card)	• Provide digital lifecycle management (Visa Token Service) • Serve customers holistically using analytics (Visa Performance Solutions, VisaVue Online) • Address fraud using next-gen products (Mobile Location Confirmation, Transaction Controls, Travel Tags)	• Deepen customer loyalty through digital engagement (Visa Commerce Network) • Differentiate with integrated, on-demand solutions (Digital Controls) • Offer seamless, omni-channel experiences (Visa Checkout)

Simplified Integration	• Design customer-centric services (Human Centered Design)	• Innovate at the boundaries for high-impact solution (One Market Center)	• Build digital capabilities at scale using APIs (Visa Developer Platform)

Universal connectivity

As consumers have increased their connectivity through new devices and applications, Visa has enabled solutions across emerging digital form factors delivered through emerging channels. To meet the expectations of connected consumers, Visa has extended customer offerings to new channels including mobile and the IoT through the **Visa Token Service**, new use cases like P2P through **Visa Direct**, and newly digitized and streamlined manual processes through **Connected Card**.
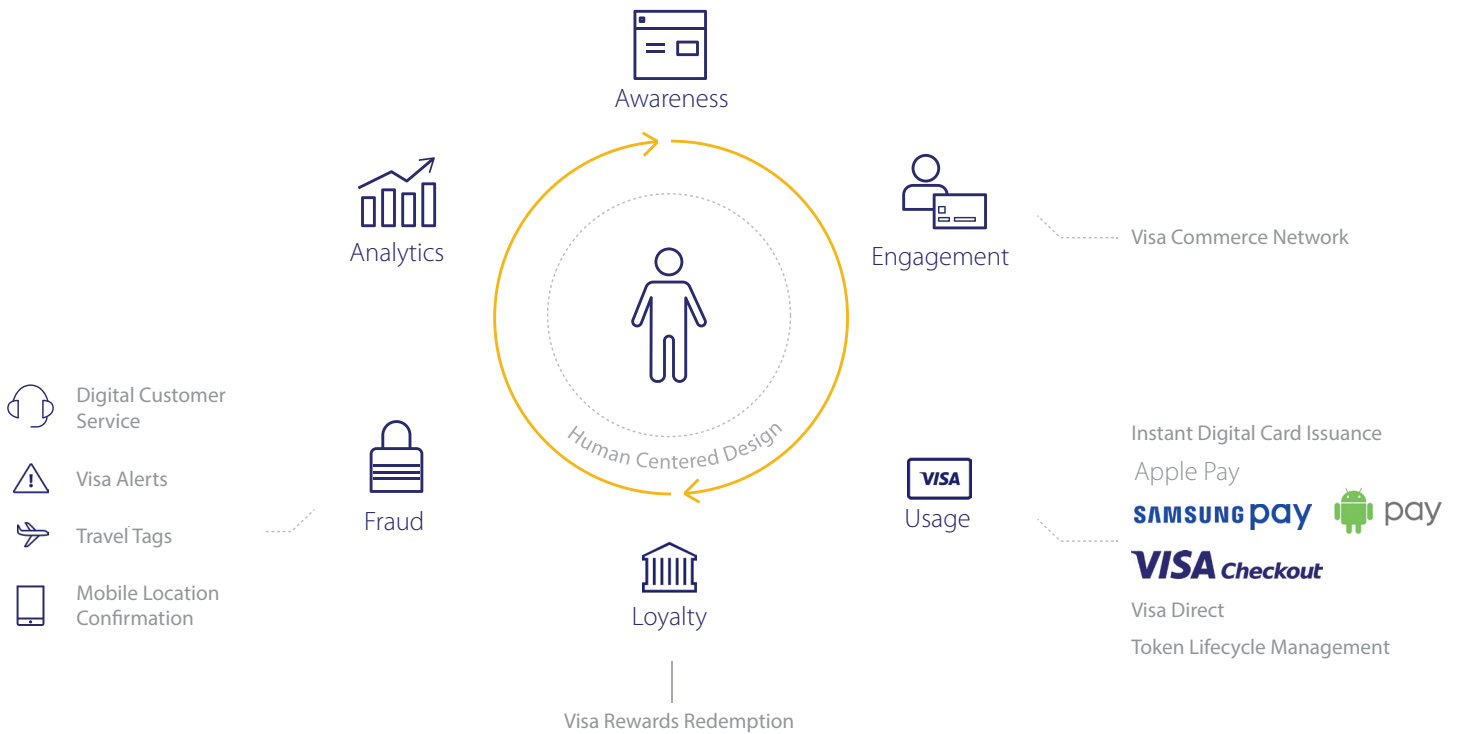
The **Visa Token Service** is a turnkey solution that streamlines the process by which financial institutions, merchants, and technology partners enable new payment form factors. The Visa Token Service has evolved since its launch in 2014 to support experiences including third-party and financial institution mobile proximity payments, card-on-file and eCommerce tokenization, and payments through IoT devices. By 2020, IoT devices are expected to exceed 24 billion, approximately four devices for every person on the planet[37] with wearables generating $501 billion in payment volume.[38] For example, wearable companies can leverage the Visa Token Service to enable their devices with payments capabilities. In this use case, the Visa Token Service helps the wearable company to deliver payments for on-the-go connected consumers, while also maintaining the issuer's brand by presenting card art during the transaction on the wearable. With this anticipated rise of connected devices and eCommerce and mobile transactions, Visa expects that the demand for secure tokenized payment credentials will only increase in the future.

In addition to the Visa Token Service, Visa is expanding its offerings to meet changing consumer preferences with **Visa Direct**. Visa Direct is a fast and convenient technology for Person-to-Person transfers and Business-to-Consumer disbursements, especially when compared to checks or ACH bank transfers. Traditional debit transactions over the Visa network involve "pulling" money from a cardholder's bank account when they make a purchase or use an ATM. Visa Direct reverses the flow by allowing businesses to use the debit card to "push" money to the linked checking or savings account. Visa Direct enables processing in real-time, which eliminates the need for consumers to wait for the check or ACH bank transfer to clear. It requires United States issuers to make funds available to cardholders within a maximum of 30 minutes of approving the transaction. VisaNet, Visa's network, has 80 percent of the United States' debit market share,[39] and Visa Direct is interoperable with other payment networks so consumers or businesses can push payments into virtually every bank account. Companies like Lyft, Uber, Square and Facebook have already taken advantage of this opportunity and the Visa Direct platform processes over $1 billion payments a month and is growing rapidly. At its core, Visa Direct aligns with connected consumers' expectation of instant and omnichannel experiences. With Visa Direct, issuers can offer real-time payments solutions to their customers without needing significant investment in back-end infrastructure.

Both the Visa Token Service and Visa Direct are integral to Visa's overarching **Connected Card** product vision, to use mobile devices as a central touchpoint that removes friction from the cardholder lifecycle. Many aspects of the cardholder experience today are full of friction and involve multiple touchpoints with distinct financial institutions, merchants, and technology players. For example, consumers wait five to seven days for new cards to come in the mail, call 1-800 numbers to activate their new cards, and manually enroll in digital wallets, apps, and merchant websites separately. The goal of Connected Card is to turn a friction-filled journey into a seamless, integrated experience that drives immediate card issuance, consumer activation and usage (in addition to selling additional issuer services) to the cardholder. Accordingly, **Instant Digital Issuance**, Visa's capabilities which allow integrated financial institutions to provision card credentials to a customers' mobile device instantly, are central to the Connected Card experience. Instant Digital Issuance allows cardholders to add their card seamlessly into Visa Checkout upon signing up through the issuer's digital properties for online payments. It also enables cardholders to seamlessly provision and use the card into their mobile wallets for proximity payments. Given that the average weekly consumer eCommerce spend is $58 for credit and $30 for debit, providing consumers with access to their card five to seven days faster than through physical mail stands to bring financial institutions additional revenues of approximately $1.25 for credit and $0.20 for debit.[40] Moreover, we believe instant digital issuance enables the issuer to drive top of wallet behavior, engage their cardholders more deeply through their mobile app, and establish a more innovative brand position.

The Connected Card Framework

Awareness

Analytics

Engagement ········· Visa Commerce Network

- Digital Customer Service
- Visa Alerts
- Travel Tags
- Mobile Location Confirmation

Fraud

Human Centered Design

Usage

Instant Digital Card Issuance
Apple Pay
SAMSUNG pay   pay
VISA Checkout
Visa Direct
Token Lifecycle Management

Loyalty

Visa Rewards Redemption

Note: All brand names and logos are the property of their respective owners and usage herein may not imply product endorsement or affiliation with Visa

Unified data

Visa's network is capable of processing over 65,000 transactions per second, all of which contain rich information about where consumers are buying and how much they are spending. Visa's financial institution partners can leverage this data, or use Visa's tools to incorporate their own data, to increase the value of their card products in the eyes of their customers. Through the **Token Lifecycle Management Tool** financial institutions can provide digital lifecycle management for their cardholders, which removes friction caused by reissuing a plastic card. **Visa Performance Solutions**, Visa's consulting and analytics experts, are available to help financial institutions generate strategy based on data insights from client, third-party, and VisaNet data. **VisaVue® Online** gives clients powerful insights into their portfolio quickly and easily by gathering transactional data, then interpreting and transforming it into easy-to-understand reports. A suite of risk products solutions, such as **Consumer Transaction Controls**, **Mobile Location Confirmation**, and **Travel Tags**, allow financial institutions to use data to make better-informed authorization decisions. These data-focused solutions help Visa partners optimize and personalize customer experiences in an age where smart use of data can set them apart from their competition.

Visa Token Service's **Token Lifecycle Management** tool is aimed at eliminating the problem of stored card credentials going "stale" when physical cards are reissued due to expiration, fraud, or loss. Through the token lifecycle management tool, financial institutions are able to leverage their cardholder data and inform Visa about key phases in the cardholder lifecycle. Financial institutions are able to update the PAN-to-token mapping when the card is reissued or the expiry date is modified, ensuring that the cardholder can continue transacting with the provisioned token while the underlying card information changes. Moreover, issuers are capable of deleting a token when an account is compromised and suspending/resuming a token when a device is lost or while a possibly fraudulent account is under review. Updates occur without prompting the cardholder to replace their card with an alternative payment method due to reissued or expired credentials, preserving the issuer's "top of wallet" status. This smart application of data is a win-win for all players in the ecosystem because financial institutions gain close control over their payment accounts to prevent fraud and customers are free from the friction of card reissuance.

In addition to taking advantage of Visa's data-centric products, clients can also partner with **Visa Performance Solutions** to gain deep analytics expertise. Visa Performance Solutions is a global team of industry experts in strategy, marketing, operations, risk, and economic consulting with decades of experience in payments. Visa Performance Solutions leverages data analytics to optimize client performance. For example, their Visa Integrated Marketing Solutions (VIMS) service helps clients leverage VisaNet, client, and third-party data to improve targeting and segmentation efforts, which ultimately leads to more impactful marketing campaigns. In addition to VIMS, Visa Performance Solutions also diagnoses client data, conducts industry benchmarking studies, and generates recommendations based on VisaNet data. Partnering with Visa Performance Solutions can be helpful for clients that would like additional analytics expertise or assistance in fully leveraging their data.

Whether issuers need to review their merchant portfolio performance or create custom reports to analyze market opportunities, **VisaVue Online** enables them to quickly and easily segment their cardholder base according to specific spending habits, and then use this information to refine their marketing, prepaid or co-brand programs for greater profitability. They can also examine operational data, including authorization information, fee information

and exception processing data. In addition, VVO's enriched geographic data lets issuers track purchases by cities within a geographic region. With VisaVue Online, issuers can plan, execute, monitor and measure their portfolio—from the overall performance of the portfolio to the spending behavior of a select group of accounts. VVO gives clients quick answers to some of their pressing questions, putting cardholders' spending behavior data to work so issuers can build their business on insights, not hunches.

To address client concerns relating to risk and fraud, Visa has built innovative digital products to empower consumers. **Consumer Transaction Controls (CTC)** supports issuers in offering simple, convenient and effective spending controls (blocks and alerts) to empower their consumers. Visa has found that consumers who use alerts can reduce fraud by 40%.[41] Additionally, Visa introduced a new mobile service designed to reduce unnecessary purchase declines often triggered when consumers travel away from home. **Mobile Location Confirmation (MLC)** uses the consumer's mobile geo-location information to more reliably predict whether it is the cardholder or an unauthorized user making a purchase. Visa provides the geo-location analysis in the VisaNet message and Visa Advanced Authorization score, helping issuers to have more confidence in approving transactions that previously might have appeared suspicious. **Visa Travel Authorization Tag** is another way for financial institutions to use travel data in authorizations without requiring cardholder notification of their travel plans. When cardholders make eligible travel-related purchases such as an airline ticket with their Visa card, Visa uses a proprietary, analytics-based algorithm to analyze available trip data (currently from certain airlines, rail operators, cruise lines, and hotel purchases) to determine the cardholder's travel destination and dates of travel. When the cardholder uses that same Visa card during the trip, the transaction at the merchant is compared to stored itinerary data, and if they match, this information is included in the Visa Advanced Authorization (VAA) scoring and as an indicator in the authorization message. With these solutions, Visa helps financial institutions solve consumer pain points

and take advantage of their digital touchpoints to deliver greater value to their cardholders.

Lower barriers to entry

As barriers to entry for competitors in financial services are becoming lower, Visa is dedicated to creating products and services that enable financial institutions to increase their customer stickiness and evolve their value proposition. **Visa Checkout**, **Digital Controls**, and **Visa Commerce Network** demonstrate ways that Visa is assisting clients to rapidly experiment with cutting-edge payments innovation and offering easily integrated solutions. Visa has proven its ability to partner with clients to facilitate secure and seamless payments to satisfy customers' evolving financial needs.

Visa Checkout facilitates eCommerce payments with little technical investment, providing merchants with an easy and secure way for customers to pay online and in-app and issuers a digital product to further engage with their cardholders in the rapidly-growing digital commerce channel. Visa Checkout's convenience helps to increase conversion rates and has been proven to drive higher transaction size and volume.[42] Its code is lightweight, meaning that merchants can add Visa Checkout to their pages with just a few HTML and JavaScript lines of code, minimal front-end updates, and without changing existing gateway accounts. Visa also does not impose any additional costs for using Visa Checkout, making Visa Checkout both a far more cost-effective and seamless payment experience when compared with traditional form fill checkout. Moreover, as Visa announced at Money 2020 in 2016, Visa Checkout is opening its platform to partners so they can integrate the payment service into their digital wallets for online and in-app payments, collaborating with Android Pay and Samsung Pay to enable consumers to pay with their preferred mobile wallet at merchants that accept Visa Checkout. This allows financial institutions that have partnered with Visa Checkout to highlight to their consumers an easier method of paying, while still protecting their card volumes and keeping their brand

at the center. These partnerships will enable cardholders to pay across more digital use cases, and will extend issuers' mobile leadership and reach as consumers further habituate to shopping and paying on their mobile devices.

The **Visa Commerce Network** shows how digital technology makes it easier for merchants to deepen customer loyalty. Through the Visa Commerce Network, merchants can offer personalized digital marketing, offers, and rewards that can increase sales and customer loyalty. Merchants can reach new customers that have shopped at other merchants within Visa's network with relevant offers, which will appear seamlessly within merchant experiences on their mobile devices. Upon completing the relevant contract and integration requirements, the Visa Commerce Network allows merchants to scale their marketing efforts, building loyalty and reaching potential new customers. Visa is also working to extend the benefits of the Visa Commerce Network to issuers by enabling them to publish relevant offers on their digital properties, increasing payment spend on their issued cards.
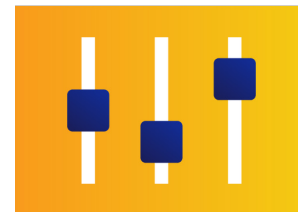
Through Visa's suite of **Digital Controls** financial institutions can help consumers manage their digital payment relationships on an ongoing basis. Digital Controls give consumers visibility into where their card is stored on file and when it has been updated for them in the event of a reissuance, allow them to push provision credentials to multiple token requestors (including digital wallets, Card-on-File merchants, and IoT devices) through a single issuer integration point, and enable them to share and manage restricted card access to friends, family or even employees. Through these features financial institutions deepen their cardholders' digital engagement and deliver a holistic, frictionless customer experience.

Simplified integration

To ensure speed to market for its partners, Visa is committed to simplifying the integration process for clients interested in delivering these products. Visa designs products to be secure yet lightweight, and welcomes clients to collaborate with its experts to streamline their integration process. Visa's focus on Human Centered Design, APIs available on the Visa Developer Platform, and Visa's One Market Center shows how Visa is making it increasingly easier for partners to innovate at scale and win cardholders with engaging experiences.

Visa offers deep capabilities in user experience and user interface architecture based on **Human Centered Design**. Visa focuses on creating excellent payment experiences from a consumer perspective during product development. It empathizes with consumer pain points to gain insights about end-users that can feed back into product refinements. When working alongside clients to adapt the network for solutions that fit their business needs, Visa leverages this expertise to help clients create solutions that meet their goals and consumer needs. Visa's design process kicks off by engaging with clients and users to discover desired solutions, and then involves multiple sessions of prototyping and rapidly iterating to refine products based on user feedback. Rounds of user testing generate quantitative and qualitative data from end-users that Visa uses to optimize product fit. These capabilities allow all of Visa's partners in the ecosystem to bring their best possible commerce experience to life. Consumers have grown to expect best-in-class user experiences from all their online and mobile interactions, and partners can work towards delivering them by collaborating with Visa.

The **Visa Developer Platform** exposes many of the capabilities Visa has created through Human Centered Design. The Visa Developer Platform opens VisaNet to business leaders and developers to create new applications and payment experiences for consumers using APIs. With access to the Visa network, data, risk, offers, and value-added processes, the Visa Developer Platform enables partners to leverage Visa's reach, security, and expertise, and innovate on one of the world's largest payments networks. Using Visa solutions off the platform allows business leaders and developers to innovate faster and more cost effectively to create value in any connected consumer experience. There are already over 180 API endpoints available today, and Visa has plans to add many new products in 2017. The Platform requires a simple email registration and agreement to standard terms and conditions to enable access to sample code, documentation and test data for APIs and SDKs that can enhance applications. Partners can work directly with the Developer Platform's solution architects to discuss and ideate against their digital pain points and consumer use cases to determine how to create cardholder value with APIs. In short, the Visa Developer Platform can help speed up a partner's digital innovation roadmap.

One Market Center provides a space for partners to ideate solutions and interact with Visa products like the Visa Developer Platform in a real setting. Clients have access to Visa staff that provide digital payments thought leadership, designers that guide solution development, and engineers that bring prototype ideas to life. For example, Morpho and Visa collaborated to develop a system that allows cardholders to pay by just waving their hand. Morpho's technology scans the hands, ties that information to the Visa card, and then lets the cardholder pay at merchants by just swiping their hand over a device. Visa has opened similar engagement centers ready for interaction around the world ranging from Singapore to Dubai to Miami.

Fueling the payments innovation ecosystem

Visa encourages all players in the payments ecosystem to take advantage of the opportunity to innovate in a collaborative manner. The value proposition and ability to scale new digital payments solutions will increase as players invest in both issuance and acceptance of new solutions. Innovations introduced by issuers, merchants, and third-party technology partners will quicken and deepen the potential change and opportunities for other players. There are numerous ways for payments players to fuel developments in digital payments and adapt to the changing digital economy:

1. Innovate beyond your current capabilities.

Revolutionary disruptors are able to innovate rapidly, then use their innovations to gain market share and scale far faster than challengers still holding on to traditional business models. Competitive advantage flows to the businesses that see and act on these shifts first. The key takeaway for financial institutions is to continue innovating their offerings to cardholders. Digital devices provide financial institutions with access to consumer and transaction data that they can leverage to personalize their cardholders' experiences and create new products and services. Connected devices also present financial institutions with the opportunity to create consumer-centric user experiences that take the friction out of banking and payments.

2. Invest in connectivity.

Players investing in greater connectivity to continue to stay relevant to customers will win out. Financial institutions can deepen their relationship to their cardholders by opening up payments and banking within new digital channels ranging from IoT to social media. In some cases, financial institutions can also collaborate with fintech to solve consumer pain points while still retaining their brand and protecting their economics. As the world continues to become increasingly connected, it will be critical for financial institutions to evaluate new channels and partnerships to ensure they are adapting to consumer preferences.

3. Embrace disruption and build on top of it.

Relying solely on regulatory barriers to maintain current market position is an unsustainable long-term strategy. Financial institutions should instead hack their own industry, their own companies, and their own teams to make sure they are aware of what trends are coming and how they can take advantage of future opportunities that new technologies are unlocking. Consumer preferences are changing rapidly and the firms that are able to meet them stand to reap significant benefits. Incumbents should become consciously aware of how their business can be transformed and improved as technological capabilities change the lives of their consumers.

4. Build the change you want to see.

Players can leverage new technologies and their customer data to enhance their offerings. Data allows financial institutions to improve their cardholders' banking and payments experiences, by enabling them to do everything from personalize experiences to make smarter product recommendations. In addition, financial institutions can leverage their data to develop new products and services that improve the lives of cardholders. Despite the shifts so far in digital banking and payments, many consumer pain points persist. Digital technologies and data, however, are unlocking opportunities for financial institutions to take action and transform their cardholders' experiences with their business.

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