

## INNOVATIONS FOR A CASHLESS WORLD

The 2017 edition of INNOVATIONS FOR A CASHLESS WORLD illuminates five trends shaping the future of commerce, seven research findings, nine Visa viewpoints, and an overview of how Visa approaches innovation all based on insights gleaned from Visa's third annual Future of Payments study—now made public for the first time.

The Future of Payments study collected 9,200 online surveys across 16 countries; USA, Canada, UK, France, Poland, Germany, Mexico, Brazil, Argentina, Australia, China, India, Japan, South Korea, Russia, and UAE between July 27th and September 5th, 2017. The research reflects the views and opinions of online populations in the 16 countries studied.

## INNOVATIONS FOR A CASHLESS WORLD

Consumer Desire and  
the Future of Payments

2017 EDITION

# The Transformation of Commerce

The last few years have witnessed dramatic changes in our industry with the rise of digital payments. These changes are going to accelerate as more people around the world use contactless cards and smartphones to pay each day. In fact, they are already transforming the face of commerce—as not just every person, but every device that a person interacts with, becomes a commerce opportunity.

With approximately \$5 trillion dollars in payment volume each year, 15,000 issuers, 40+ million merchant locations, and 3.2 billion cards in market, Visa pays a lot of attention to these changes. In fact, every year Visa runs dozens of payment studies to inform and guide issuers, merchants, acquirers, and other stakeholders on the future of payments. These studies are also used to influence Visa's own innovation, product, strategy, and marketing decision-making.

Here, for the first time Visa is sharing a single comprehensive study conducted in partnership with GfK across 16 of Visa's largest markets, with the goal of identifying trends, needs, behavioral patterns, and growth opportunities for the future. Throughout this book, you'll also find viewpoints from experts in the Visa network who offer perspective on the findings uncovered in the data, as well as five trends shaping the future of commerce and an overview of how Visa approaches innovation. We hope this study will move the conversation forward on payment innovation and the tectonic shifts taking place in our industry.

We believe that it is not enough to study consumers and how they approach payments. It is also important to share how we are responding to these shifts to better serve the needs of consumers, issuers, merchants, acquirers, and other stakeholders.

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01

# Five Trends Transforming Commerce



TREND #01

## From Card to Cloud

We're quickly moving toward a world where seamless payments work securely, anywhere on any device or with any form factor.

Innovation in commerce has always been about reducing friction and providing a better consumer experience. As technology evolves whether it be to contactless cards or wearables, payment security and convenience must evolve with it.

Consumers spend approximately 11 hours online every day, enjoying the power of "instantism" at their fingertips (Nielsen, June 2016). When they can find anything they need within seconds, the payment experience slips into the background and becomes part of the overall experience—rather than an additional step they need to seek out and complete.

In this new world, think of consumer credit not in terms of cards, but in terms of accounts. The question is no longer where Visa is accepted, but how it's accepted: via any device, meeting consumers in their existing digital hangouts.

# 7pp

Usage of online and mobile-only banks has increased 7 pp (or percentage points) since 2016.



### QR Codes Everywhere

Visa has enabled the growth of merchant-presented QR code payments in 15 countries around the world with its innovative mobile payments solution, mVisa, which allows consumers to pay for goods and services by scanning a QR code on a smartphone or entering a merchant number into their feature phones.

Payment goes straight from the consumer's Visa account into the merchant's account and provides near real-time notification to both parties. mVisa is completely interoperable, bringing the same convenience, security, and reliability provided by the trusted Visa brand.

And now, for merchants eager to harness the power of QR code payments, the Visa Ready Program has adopted interoperable QR standards to develop tools and capabilities that help ease generation and deployment of QR codes and merchant numbers by banks, processors, and merchant aggregators. Once enrolled, merchants can accept payments from any country or bank, knowing that Visa will efficiently process transactions in accordance with Visa's security standards.



## TREND #02

## Everything as a Point of Sale

Software and services turn almost any locale or any device into a potential POS.

Today, the line between face-to-face and remote payment environments has become so blurred in some markets, it essentially no longer exists.

The era of single-purpose transaction terminals is coming to a close. Software turns any locale, any device, into a point of sale. A transaction can now take place at any point in a shop-and-buy time line; it can be physical or digital. What this means is that the point of sale is challenged to do more than process transactions.

Retailers around the world are also demanding more of their POS to support their daily business operations, beyond single-purpose payments capabilities. New form factors—like multifunction devices running on open platforms—present new opportunities to displace cash.

The new POS is more than just a place for checkout—it's a launchpad to offers that can build relationships and reward customer loyalty.

## Rewarding Consumers, Seamlessly

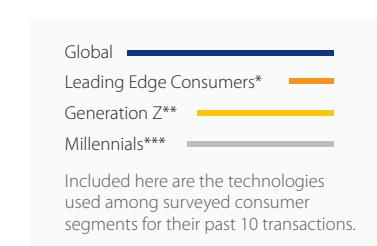
Uber riders in participating markets can now earn credits for shopping and dining under the Visa Local Offers with Uber rewards program.

Riders with an issued Visa card on file in the Uber app and upon signing up receive Uber Credits that can be applied toward future Uber rides.

Riders can use the same Visa card on file with Uber to shop or dine at any of over 5,000 qualifying merchants, and the credits are triggered automatically.

As credits add up in the Uber app, riders can redeem their Uber credits on their next ride or save them for later—an effortless way to claim their rewards.

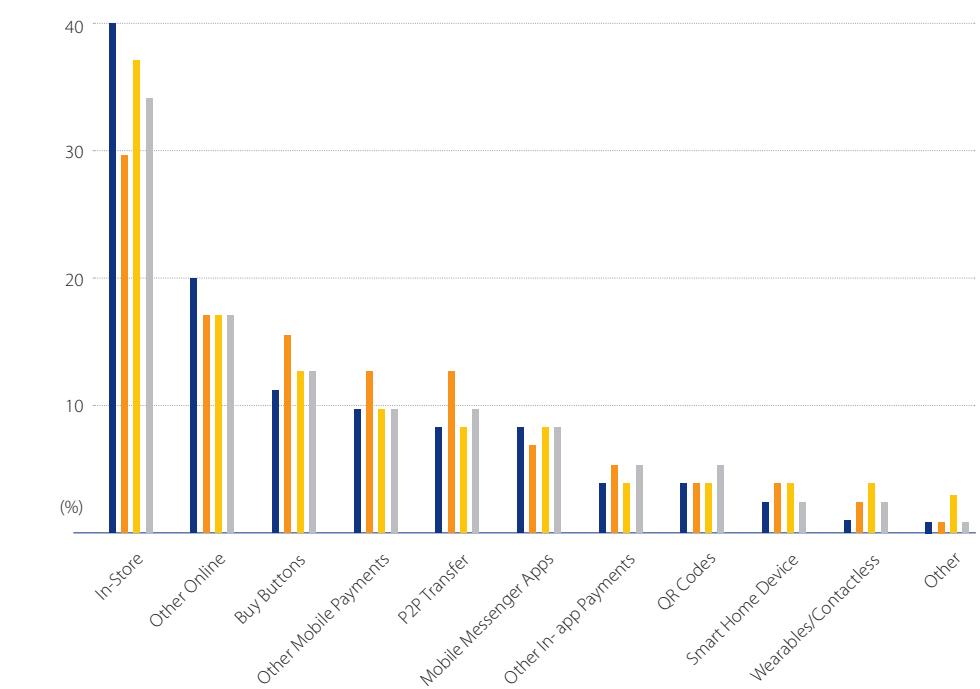
Everyday Transactions, by Payment Channel<sup>A.1</sup>



\* A proprietary population segment developed by GfK based on a consumer's propensity to be an early adopter, passionate enthusiast, and influential in a given category.

\*\* 14- to 17-year-olds who own and use a smartphone and a tablet or computer

\*\*\* 18-34 and own a smartphone, have a savings or checking account, own/use a tablet or computer, own a credit or debit card



## VIEWPOINTS

# Transforming the Point of Purchase

By **Mark Jamison**  
SVP, Innovation & Strategic Partnerships, Visa

While "visionary" pundits have been predicting the death of brick-and-mortar retail since the beginning of the Internet in the late 1990s, a paradox has emerged. Today, the proof point of success for digital-native companies is a retail location.

The leading companies in today's marketplace understand that their future success is increasingly software defined. Both digital-native companies and legacy enterprises that aggressively underwent radical digital transformations have focused on omni-channel delivery of their products and services, resulting in excellent user experiences. And while "visionary" pundits have been predicting the death of brick-and-

mortar retail since the beginning of the Internet in the late 1990s, a paradox has emerged. Today, the proof point of success for digital-native companies is a retail location.

## A Software-Enabled Future

Warby Parker, Minted, Birchbox, Kate Hudson's Fabletics, and even Amazon's

checkout-free store are all proof points that consumers inherently value social interaction and the ability to physically experience products during their purchase process.

In Visa's work across 40+ million merchants around the world, we increasingly see that consumers have growing digital expectations for in-person retail. Leading in-store experiences are now blending the

best of digital (e.g., search, browse, find, and customize according to the customer's digital profile) with the best of the physical world (e.g., feel, try, experience, and validate). The purchase journey is nonlinear, spanning multiple channels even while the consumer shops in-store, and mobile point of sale and apps are shifting payment away from checkout counters. Consumers are offered more engaging and seamless purchase experiences at the times when they are ready to pay, which can now be before, during, or after shopping.

## Why Now?

A popular exercise among Silicon Valley venture capitalists is to ask not only "Why?" but also "Why now?" Does the minimum viable ecosystem exist for the new product/service to be successful? For in-person retail, it is increasingly clear that 2017 has reached its "Why now?" escape velocity. The purchase experience is radically transforming. The days of queues leading to a bank of checkout

registers will soon be a distant memory legacy. Apple retail stores don't have checkout lines, and order-ahead apps such as Starbucks' allow customers to customize their order, set default payment, and simply walk in and pick up their coffee with zero friction or wait time. The payment process for Uber? Get out of the car and walk away. As a result, consumers are now trained to expect personalized experiences, automatic loyalty recognition, and seamless default payments in the background.

## An Evolving End State

The digitally empowered consumer is in charge, and in this new world of seamless payments there remain some significant issues around consumers' attitudes toward security and privacy. However, we are confident that the benefits of convenience and personalized experiences will drive retailers to ultimately discern the right mix of technologies and protections that will allow for mass adoption of a radically new point of purchase.

Commercial viability of new technologies also enables new point-of-purchase experiences. Market tests of new technology combinations using biometric authentication, facial recognition, geolocation, artificial intelligence, and various sensors show what will soon be mainstream.

### SQUARE

The mobile payments company recently relaunched its Card on File merchant offering, which allows retailers to check out a customer based on a profile picture and default payment.

### AMAZON

Using cameras and sensors along with a default Amazon Prime profile, the Amazon Go grocery store in Seattle will enable customers to pick up the items that they want and simply walk out of the store.

### WALGREENS

The pharmacy chain is running a multiple-authorized-users card-on-file pilot at selected pharmacies, designed to deliver both speed and convenience by completely removing the payment process from in-store transactions.

TREND #03

## Paying in Messaging Platforms

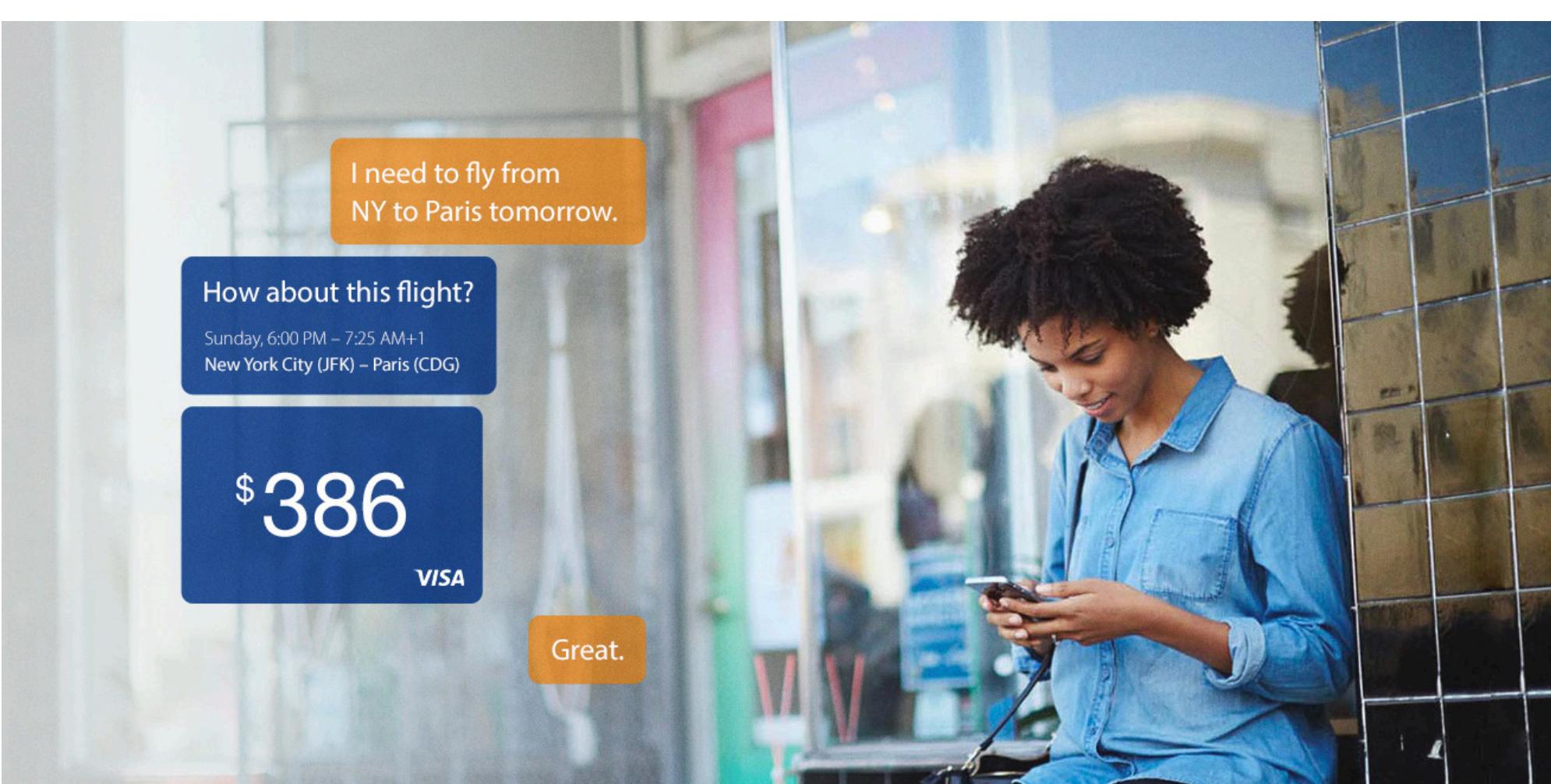
Messaging platforms enable e-commerce, peer-to-peer payment, and more.

Popular messaging platforms like WeChat, Facebook Messenger, WhatsApp, and Line reach billions of people—and give them a new commerce ecosystem. Many platforms allow consumers to make a purchase without leaving the app they're in—and do so as easily as sending a text message.

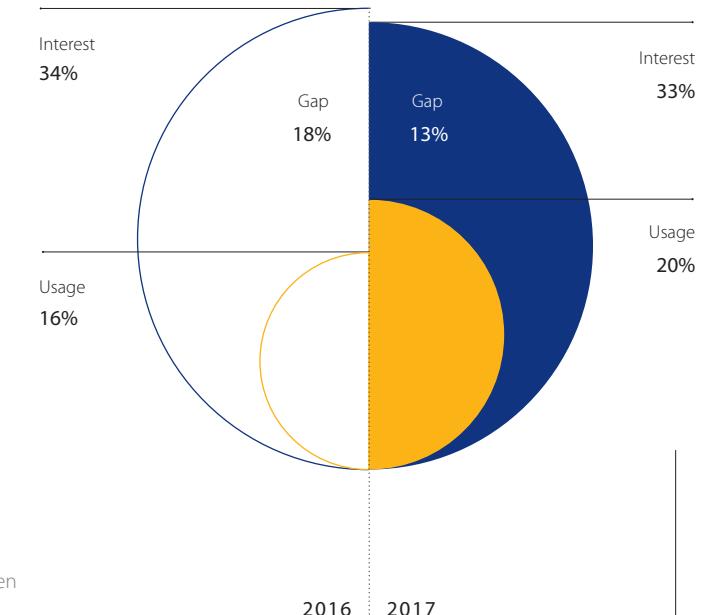
A messaging app is a natural fit with e-commerce: It's personalized. It has your contacts. By leveraging social data, it can provide rich context and recommendations. And it runs on a broad spectrum of hardware.

With interest growing in peer-to-peer (P2P) payments, messaging apps offer an easy way to meet demand. P2P payments still too often rely on analog processes, even as online and in-store payments become more electronic and seamless.

There are benefits for merchants as well: They can use messaging platforms to display inventory, manage shopping experiences, and engage with consumers by offering augmented support. When driving loyal buying behavior, these features can be just as important as the payment itself.



Pictures shown are for illustration purpose only.



Trended Usage and Interest in P2P Payments (Global Total)<sup>A,2</sup>

While adoption of P2P payments increased between 2016 and 2017, there remains a significant gap between current usage and interest.

## Frictionless, Real-Time Payments

With an experience that's moving closer to what consumers are used to on messaging platforms, Visa Direct is improving the speed, convenience, and security of sending and receiving payments among people, governments, and businesses.

The platform enables P2P payments between more than 200 million Visa debit cards in the US, including payments to non-Visa branded debit cards. In the future, PayPal and Venmo will also leverage the Visa Direct network to enable real-time funds transfers.

Funds can be transferred directly into the customer's bank account linked to a debit card—a convenience that can also be seen as more secure by the consumer. Real-time authentication enables the sender and the receiver to instantly validate the status of the payment.

Using Visa Direct can also enable the next generation of payments for shared economy platforms such as Uber, Lyft, Airbnb, and TaskRabbit, getting money into the bank accounts of service producers instantly, regardless of where they bank, via their debit cards.

TREND #04

## Transactions Without Borders

Distributed ledgers can ease the transformation to low-friction, digital cash payments.

A shared, networked digital ledger, also known as a "blockchain," can record transactions as they occur. The transaction data is shared but not copied, making it a useful platform for new kinds of currencies and payments.

First employed to support Bitcoin and other cryptocurrencies, blockchain technology will be expanded if consumers accept it, and if it can generate value on a larger scale. The use cases for blockchain will span commercial, as well as consumer, applications.

The distributed ledger protocol provides a secure, borderless mechanism on which to build complex transactions and value exchanges. With central banks seemingly poised to start issuing digitally minted currencies, distributed ledgers will help accelerate the shift to a cashless future.

2  
/3

of companies surveyed by Juniper Research said that they expected the technology to be integrated into their systems by the end of 2018.



### B2B Beyond Borders

Visa recently partnered with Chain, a blockchain enterprise company, to develop Visa B2B Connect, a new near real-time transaction system designed for the exchange of high-value international payments between participating banks, on behalf of their corporate clients. Managed by Visa end to end, Visa B2B Connect will facilitate a consistent process to manage settlement through Visa's standard practices.

With Visa B2B Connect, Visa aims to significantly improve the way international B2B payments are made today by offering clear costs, improved delivery time, and visibility into the transaction process—ultimately reducing the investment and resources required by banks and their corporate clients to send and receive business payments.

Banks and their corporate clients receive near real-time notification and finality of payment. Signed and cryptographically linked transactions are designed to ensure an immutable system of record. And all parties in the network are known participants on a permissioned private blockchain architecture, operated by Visa.

TREND #05

## The API Economy

APIs make it possible to plug into and build from others' innovations.

APIs (application programming interfaces) are the digital world's connective tissue. They're the standard by which companies exchange data and build smart, seamless, omni-channel experiences customers demand.

Now, it's no longer necessary to aspire to own the entire value chain. Companies can focus on one link in the chain, and plug into existing APIs to create the bigger picture. Multiple building blocks combine to act as a single proposition that adds value for the consumer. In this way, APIs deconstruct traditional value-chain thinking.

In commerce experience design, APIs expand opportunity for innovation. A company can combine its own APIs with externally available building blocks to create a new solution more efficiently.

APIs can also be viewed as a more efficient, more scalable distribution channel. A good API platform allows a company to deliver the most-needed capabilities of more comprehensive products.

>70%

of bankers agree that their organization's API strategy is instrumental to their brand, and 73% believe that in five years' time ecosystems will have shared responsibility for a brand, according to Accenture's Banking Technology Vision 2017 report.

### Enabling Financial Inclusivity Through APIs



In July 2017, Visa expanded its mobile payment platform, mVisa, to include Nigeria. Designed for both smartphone and feature phone users, the mVisa platform promotes financial inclusivity. To make a purchase, smartphone users scan a QR code available at the point of sale and then input the amount to be deducted. Feature phone users will be able to do this using alphanumeric codes.

One of the major barriers to the progress of mobile payments in Nigeria is the general misunderstanding of and lack of trust in electronic payment systems. mVisa will help consumers feel more in control of the process and their money.

And the system is cost-effective and easy for merchants to set up. So now they no longer have to worry about spending \$400 on POS systems—or passing transaction fees onto their customers.

The mVisa implementation in Nigeria has benefited from the Visa Developer Platform, which allows participating partner banks to integrate the mVisa APIs directly into their mobile banking apps.

## VIEWPOINTS

# APIs Unlock Digital Payment Ecosystems for Consumers

By Paul Walsh  
SVP, Platform Strategy & Innovation, Visa

**Exceptional customer experience is critical to the success of online brand engagement with digital transformation at the core.**

Today's consumers are just as comfortable transacting with new payment options from contactless cards to Venmo, and in new forms including mobile and IoT devices. Yet they are still facing challenges and are unsatisfied with options around online transactions such as shopping, hotel reservations, or booking a ride-sharing service. Over time, frustration, fatigue, and dissatisfaction will affect brand loyalty and, ultimately, lost revenue for brands.

To address these challenges, exceptional customer experience is critical to the success of online brand engagement with digital transformation at the core.

Every business will become a digital winner or loser. Visa believes that the Visa Developer Platform and our API offering will enable businesses with a digital presence to establish themselves and be a catalyst of digital innovation across multiple industries and market segments. APIs are now common and ubiquitous. Sabre makes 1.8 billion API calls a day to provide digital reservations for major hotels and airlines around the world. Netflix makes 5 billion API calls a day to stream the videos we all know and love (Netflix Techblog).

Visa's APIs, available on the Visa Developer Platform, enable our clients to implement, extend, and customize

their commerce experiences using our productized APIs in part (a-la-carte) or in full (end to end). For example, National Australia Bank (NAB) was able to empower its Visa cardholders by building a best-in-class interface within its mobile app that lets consumers set card controls and indicate when they are traveling to avoid fraud and frustration over unnecessary declines. These card controls tie to an Australian market first—where consumers will be able to instantly use (and set controls on) new digital credit cards as soon as they are approved. This new and improved NAB app is fast and seamless, gives customers more control over their everyday banking, and was designed to make banking as convenient and easy as possible. To deliver these changes, NAB leveraged its innovation partnership with Visa to incorporate Visa Consumer Transaction Control and Travel Notification Service API, and estimates that by working with Visa Developer it eliminated six months of development time (2015 Sabre Press Kit).

Beyond the banking industry, Visa is also ideating with a top HSA provider and national drug retailer in healthcare. These companies are seeing more employees establishing FSAs/HSAs as patient out-of-pocket costs rise. The HSA provider, with millions of employee benefit accounts, wants to provide enhanced services to FSA and HSA cardholders and help consumers make better real-time healthcare purchasing decisions. With a substantial percentage of cardholders' annual spend at drug stores and pharmacies where targeted communication is priority, Visa is working with both the drug retailer and healthcare company to provide cardholders with healthcare information through APIs that is relevant and actionable the minute they walk into the store.

Visa understands that our clients are relentlessly seeking to become the best imaginable provider to their customers. The core ingredients, both now and in the future, are personalization and context through APIs. Visa's unique position as the network within the four-party model gives insight to deep customer intelligence that is invaluable to our clients and enables them to be digital winners.



## VIEWPOINTS

## What Will It Take to Get to a Post-Plastic World?

By Sam Shrauger  
SVP, Digital Solutions, Visa

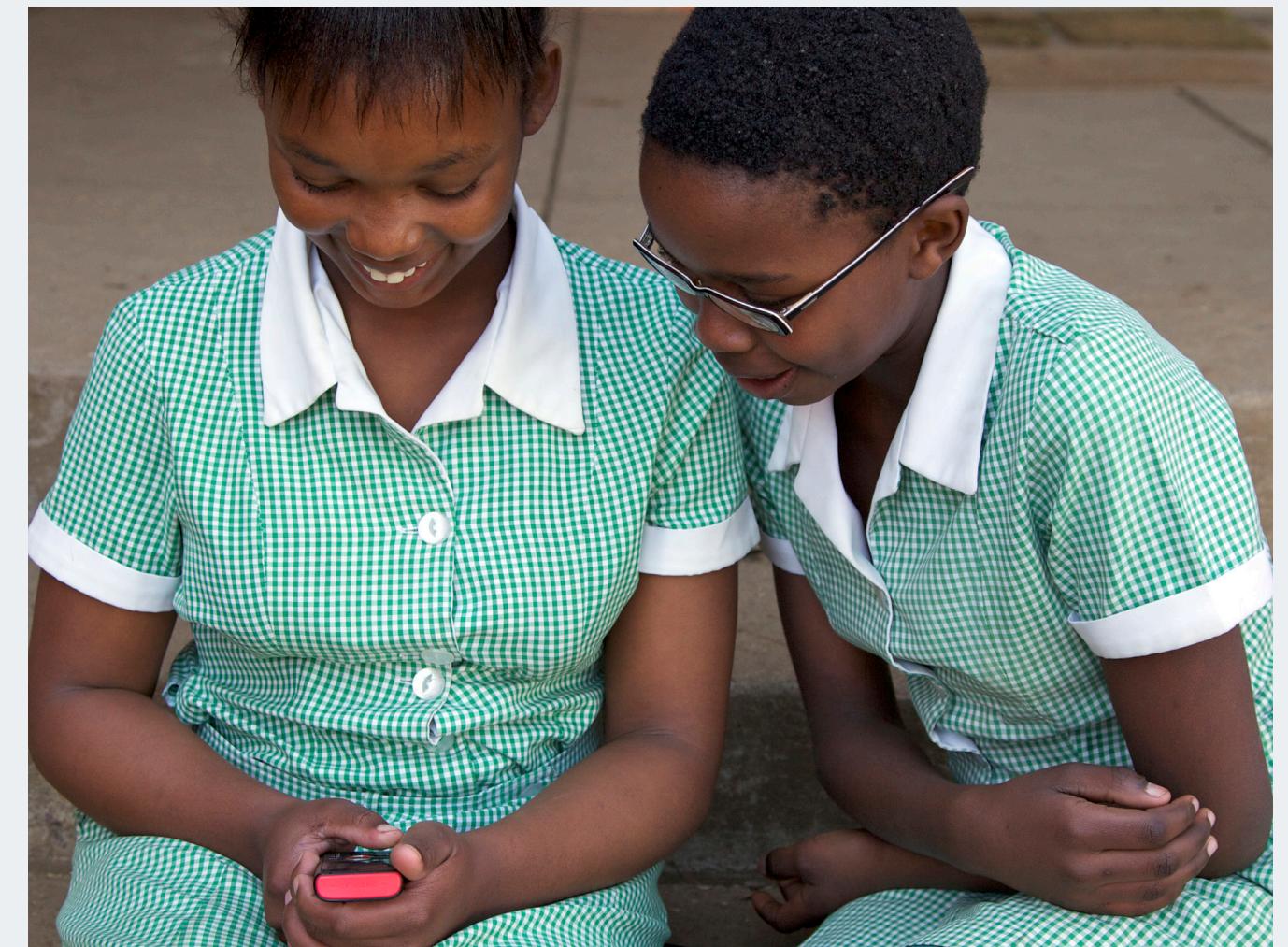
As we become more global, travel is increasing and there will be a need for our payments to be interoperable and work anywhere and everywhere.

Digital wallet adoption has risen significantly in the last couple of years due to better, faster smartphones and fast mobile data connections. Consumers find digital wallets convenient because they are freed from the burden of currency, coins, and last-minute trips to the ATM. They also make it easy for shoppers to redeem coupons, loyalty points from stores and banks, and airline miles. We know that the future holds some form of integration for these online wallets into our household devices and wearables, but whether it's the TV or the fridge that ultimately becomes most successful is still a question.

The bigger dynamic at play currently is the various paths to digital wallet adoption, driven by two distinct factors: Local markets and consumer need. Local markets tend to be quite distinct from one another due to differences in regulatory frameworks, technological infrastructure, and the domination of a phone network or merchant provider. In every case where digital wallets have taken off, consumers have had a pressing reason to transact digitally, and their options are relatively frictionless and easy to access.

In global emerging markets, a lack of financial infrastructure has led to

the rise of phone-based payment systems. PayTm in India operates 200 million wallets, making it the largest mobile payment service platform in the country (The Economic Times). Its success is due to the demonetization of the 500 and 1,000 rupee notes, which created a dire need for digital currency. M-Pesa in Kenya, which lets people transfer cash using their phones, is in use by 67% of the adult population (over 17 million), and a quarter of the country's GNP flows through it (CNN). Alipay has reached dominance in China with 450 million users and is processing almost half of all online payments (TechCrunch).



For all of these economies, the digital wallets are trusted by consumers, and in the case of Alipay and others, they fulfill a regulatory function, making sure that consumers receive what they purchase and merchants receive their payments.

But the trend has not taken off in the US, where only 13% of adults have a digital wallet on their phones (Gallup). American consumers are also hesitant to adopt one-click payments online—they prefer to slow down and receive acknowledgment of their transactions (Gallup). Because of the widespread penetration of banks

and credit cards, along with the rise of online payments between individuals facilitated by PayPal and Venmo, consumer need for digital wallets is less urgent. Yet as we become more global and travel more, there will be a need for our payments to be

**67 %**

of the adult population in Kenya uses M-Pesa, a service that lets people transfer cash using their phones.

interoperable and work anywhere and everywhere. The high level of trust that consumers have in payment brands, to facilitate payment, as opposed to other consumer brands means that the dominant providers of digital wallets will likely include credit card companies.

We believe that anchoring the future of digital wallets—in our case, Visa Checkout directly in consumer needs and reducing payment friction will drive digital wallet development and use.

02

## Findings



FINDING #01

# A Global Assessment of Payment Evolution

A new formula to determine country-specific payment maturity and readiness for innovation.

Most consumers are ready for payment innovation to have a greater impact on their lives.

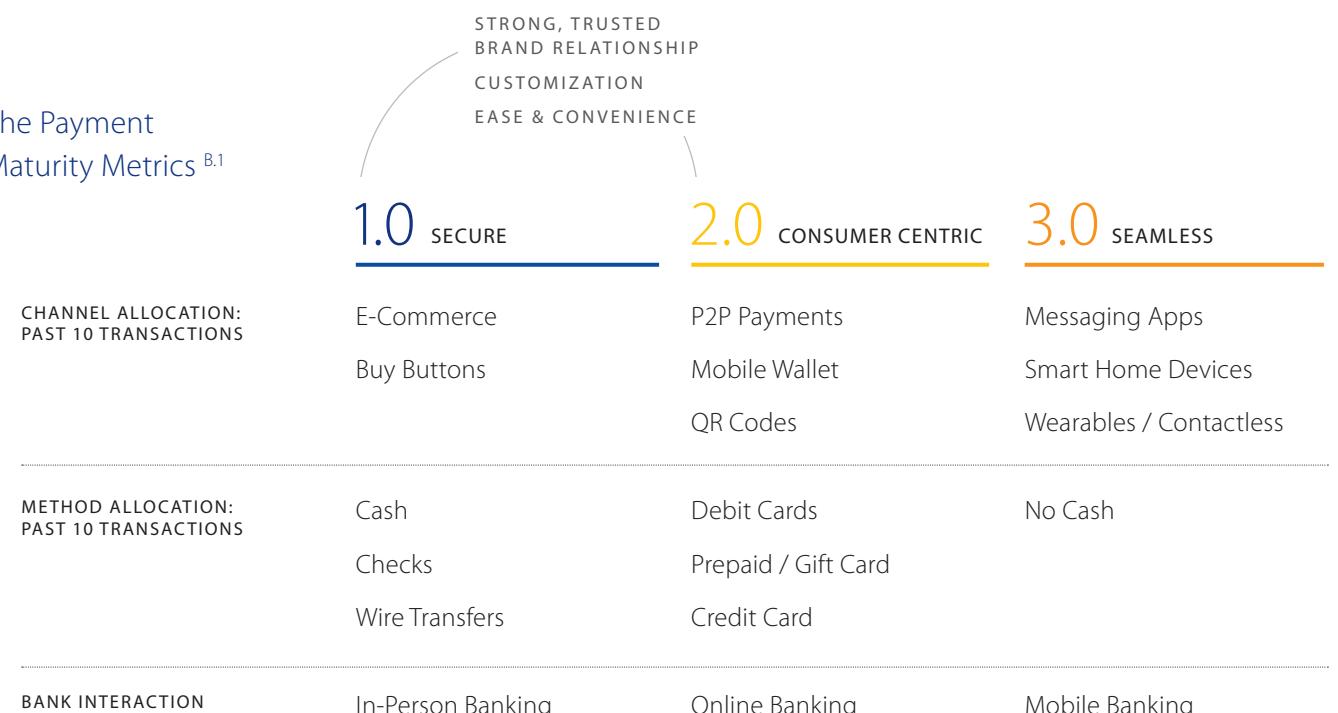
There's an emerging shift as consumers move from a focus on security to a need for more human-centered experience design—and positioning. Supported by consumer-driven value propositions and strong brand relationships, this move will create relationship-based payment experiences that drive consumer usage.

However, as we've seen, consumer attitudes vary from market to market as different countries navigate different phases of the payment revolution.

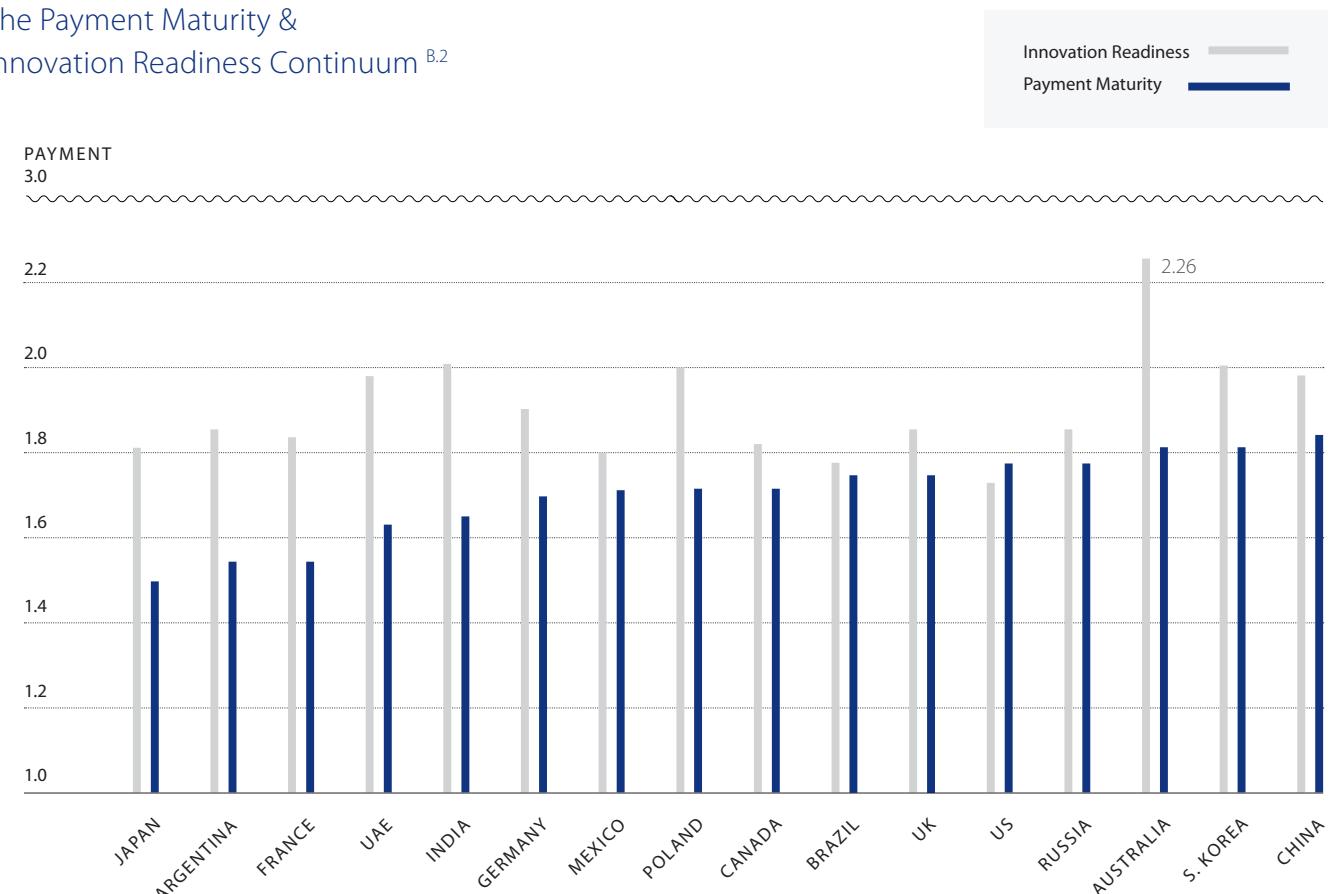
We've mapped 16 countries surveyed into one of three "stages of maturity"—as defined by consumer needs, technology adoption rates, government regulations, and the availability of new technologies.

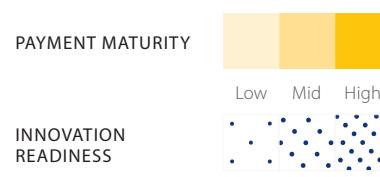
The payment maturity framework shows a country's stage of maturity based on the current usage of payment technologies. Innovation readiness reflects consumers' willingness, by country, to accept and use new forms of payment technologies.

## The Payment Maturity Metrics<sup>B.1</sup>



## The Payment Maturity & Innovation Readiness Continuum<sup>B.2</sup>



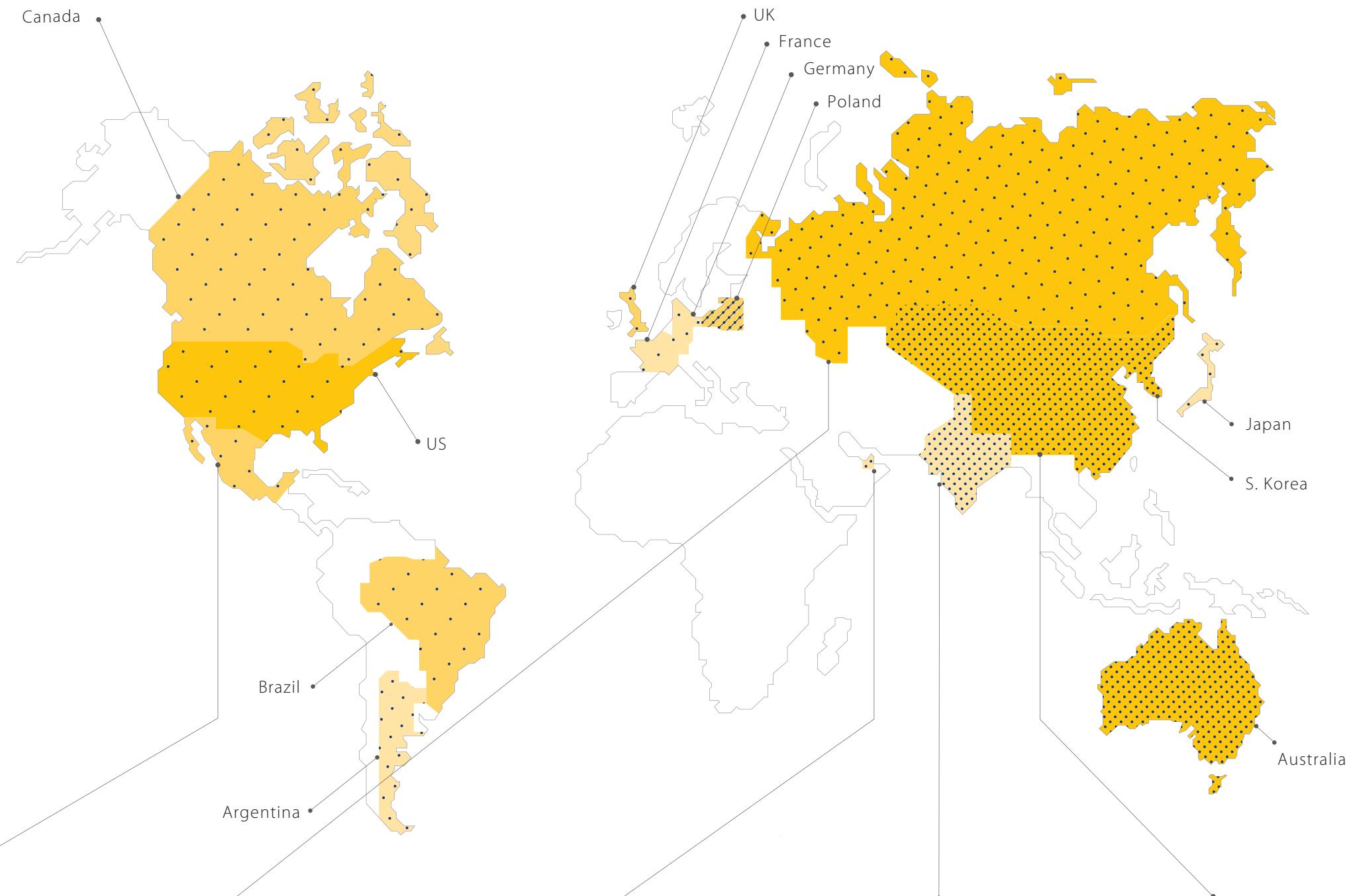


Darker shades of yellow indicate greater stages of maturity.

Increased density of dots indicates greater stages of innovation readiness.

## A Deeper Look at Payment Maturity & Innovation Readiness<sup>B.3</sup>

In our survey of 16 countries, we calculated payment maturity in three stages, based on payment channels and methods used, the importance of security for payments, and predominant banking channels. While no countries has reached the Payment 3.0 stage, each has varying degrees of maturity and readiness within the 1.0 and 2.0 range.



**US**  
Contactless cards show the most opportunity in the US, as long as consumers trust in the protection of their privacy and personal data, and trust the product will always do what it should.



**Mexico**  
The Central American country has one of the biggest opportunities for growth in biometrics, if consumers learn how the technology works.



**UK**  
Along with some of its neighbors, the UK has a big opportunity for contactless payments via phone—assuming this method always does what consumers want it to do, and it saves them time.



**Russia**  
The eastern nation has one of the biggest opportunities for growth in contactless payment technology via phone, if consumers trust that their data will be protected; the technology will save them time and address an unmet need.



**UAE**  
The UAE has one of the biggest opportunities for growth in wearables, if consumers perceive it to be compatible with their current technology mix.



**India**  
In November 2016, the government took 86% of paper currency out of circulation—in just four hours (See page 32).



**China**  
With 1 billion+ population, the country is aggressively adopting a mix of electronic and mobile-first payment technologies.



**Australia**  
The most ready for innovation—has a big opportunity for wearables provided consumers know more about how this method works, that it saves them time, and that it offers something better than existing alternatives.



FINDING #02

## Consumer Needs Vary Dramatically by Country

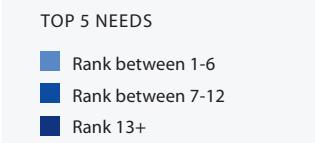
Habits, behaviors, desires, and growth patterns vary greatly by country.

For the first time, control over spending rose to the top of the list of priorities in nearly every country, followed by convenience and acceptance. Frictionless processes and those that work instantaneously also have surfaced as new priorities,

suggesting that for consumers, swiping a card is no longer enough. They're looking for a contactless experience, whether that's a card, a biometric-driven solution, or something else.

### Top 5 Global Consumer Needs by Country (Priority I Rank)<sup>b4</sup>

Since security is perceived as a table stake, we see consumer-centric needs driving payment decision-making. In a list of 18 needs (see Appendix for full graph), spending control, universal acceptance, and ease and convenience rank highest in importance.



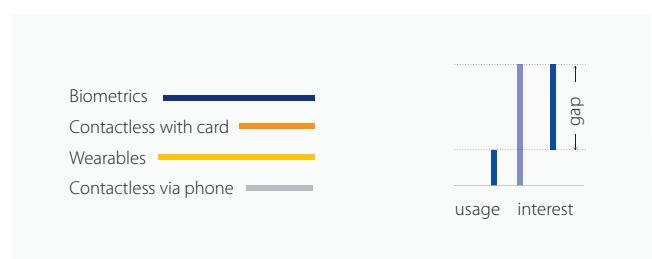
	More control over spending	Convenient to have with me	Accepted everywhere	Frictionless process	Works instantly
Global Rep	1	2	3	4	5
Global LEC	1	8	3	9	12
Global GenZ	3	2	12	1	10
Global Millennials	2	1	3	4	5
US	3	4	6	7	1
Canada	1	5	8	3	4
Mexico	3	1	13	5	8
Brazil	1	2	3	4	9
Argentina	2	4	1	6	5
UAE	6	2	9	14	1
Russia	7	2	4	6	5
Australia	4	1	11	6	5
South Korea	4	6	1	2	7
Japan	18	8	1	3	5
China	1	11	3	5	10
India	1	2	9	12	3
UK	2	1	14	5	3
France	5	2	15	1	3
Poland	2	3	1	7	5
Germany	1	16	11	6	4

## FINDING #03

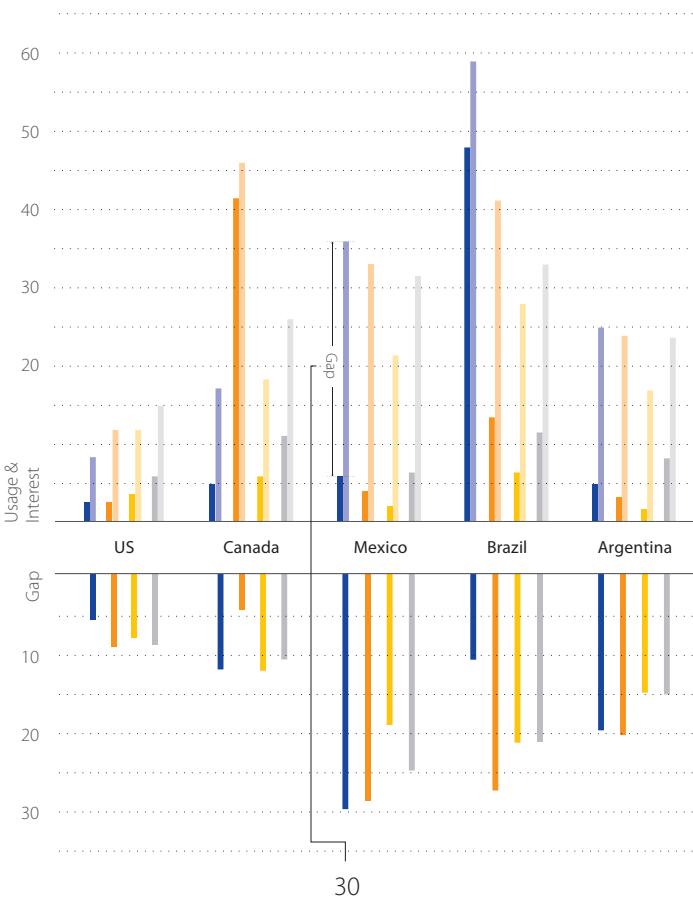
# Think Locally with Payment Technologies

Consumers express a powerful appetite for innovative payment technologies.

As the world ticks toward a cashless future, consumers are gaining interest in the emerging technologies that will enable more seamless, invisible transactions—but their interest varies by country. For instance, consumers in China express greater interest in wearable technology than those in the US. The graph here provides an analysis of consumer adoption compared to interest in innovative solutions for the technologies with the biggest opportunities.

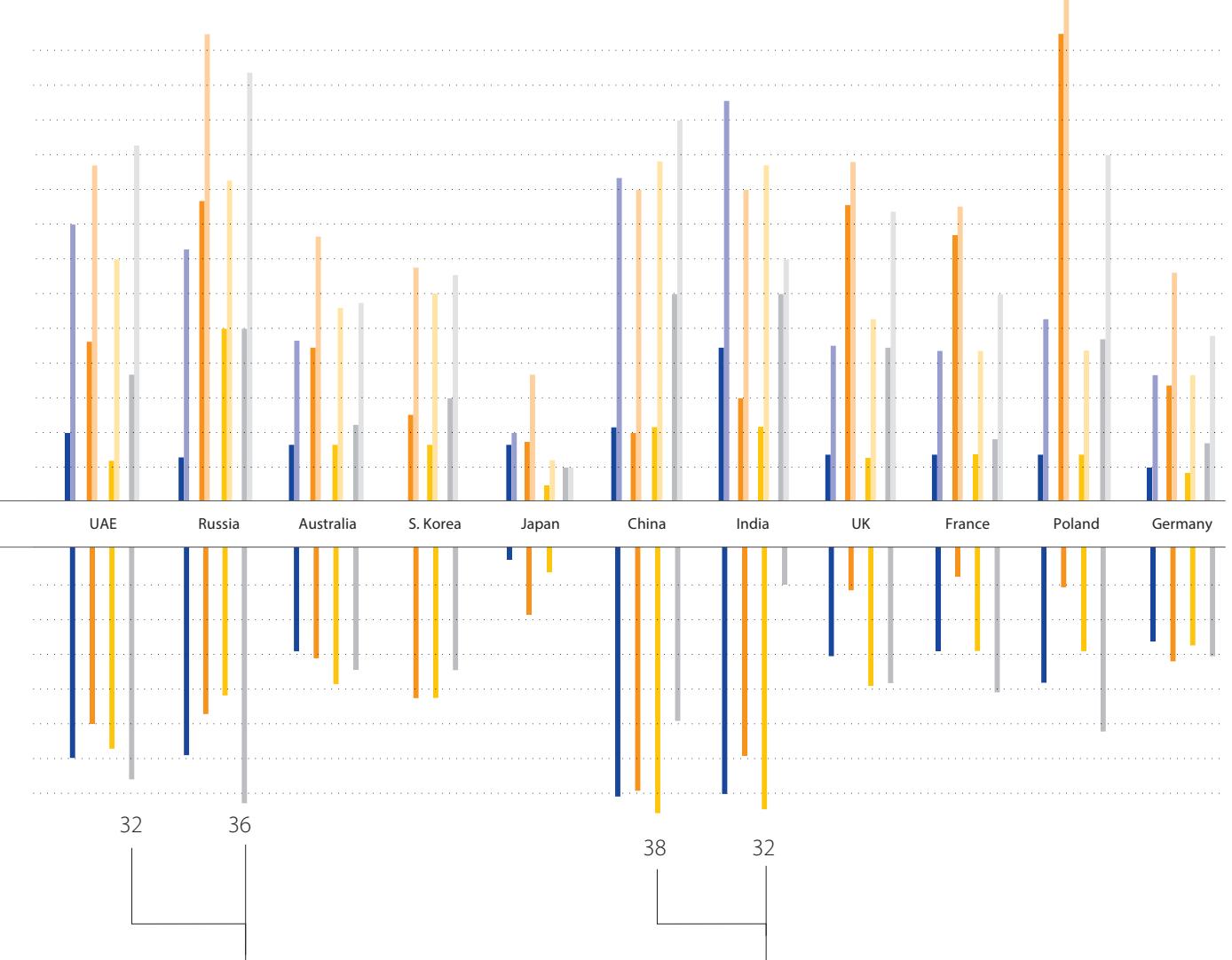


Opportunities for Growth:  
A Country-by-Country Breakdown<sup>8.5</sup>



## Biometrics

While biometrics are still rarely in use in places like Mexico (30), consumers are highly interested in seeing these technologies implemented in their day-to-day transactions.



## Biometrics

In the UAE and Russia, usage of contactless payments via mobile phones are continuing to increase. Still, interest is outpacing usage by 32 and 36 points, respectively.

## Wearables

In both India (32) and China (38), consumers expressed higher interest in using wearable technology such as smartwatches to make payments in the future, suggesting both countries would benefit from building the infrastructure that will facilitate these technologies soonest.

## VIEWPOINTS

# What the World Can Learn from a Billion-People Economy Going Cashless

By Matt Dill  
SVP, Innovation & Strategic Partnerships, Visa

The East is becoming a hotbed for digital innovation and economic experimentation on a breadth and scale that is unprecedented in the West.

The hand-rendered sign hanging haphazardly above the bank branch entrance in Mumbai says, "You can smash, mash, crash, and trash, but there is still no cash." It's a scribbled reminder of India's massive demonetization program, which was initiated by the Narendra Modi government in November 2016 and took 86% of paper currency out of circulation in just four hours. While demonetization highlighted the entrepreneurial ability of roughly 1.3 billion Indians to just "work it out" with a bit of wry humor, it also jumpstarted what has become one

of the world's most closely watched digital currency experiments.

What happens when cash goes away? The answer, it turns out, isn't that hard to imagine. It's happening around the globe—and particularly in Asia—at an unprecedented pace, due to the proliferation of mobile.

Digital currency got an early start in the West in the 1960s with the early marriage of mainframe payment processing platforms and the initiation of open-loop payment instruments. Visa's founder, Dee Hock, didn't build Visa into the world's largest payment

# 86 %

of paper currency was taken out of circulation in just four hours in India.

network with the end goal of plastic cards in the pockets of one-third of the world's population. His real vision was a global network that connects buyers and sellers anywhere and moves payments around the world at the speed of light. He was spot on.

As India's cash supply tightened, payment card usage increased exponentially and digital payments initiated by mobile devices shot up. There are more than 920 million payment cards issued in India, but the vast majority had been dormant or used primarily to withdraw cash at bank machines (MediaNama). This all changed on the night of November 12, 2016, when Central Bank circular 247 took 500 and 1,000 rupee notes out of circulation. There have been terrible stories of cash-crunched small businesses caught in the middle and incredible disruption to daily life (as captured eloquently by our Mumbai sign writer), but out of the turmoil has risen a large-scale digital transformation compressed down from decades to days.

Daily trade in the world's most populous nation continues, of course. Cash is still a significant part of commerce, but tens of millions of payment cards have been activated. Point-of-sale terminals have begun popping up at merchants of all sizes. Mobile phone-based payment applications, which were built in the cloud largely for online commerce, are returning to terra firma and providing Indian consumers with phone-first payment at retail locations.

The Indian government has accelerated "payment bank" licenses for mobile wallet applications like



# 23 %

is the usage of contactless payments via phone in India.

Paytm, following a global regulatory trend of institutionalizing payments to protect against systemic risk. Payment networks like Visa, MasterCard and RuPay are aligning around standards to facilitate the movement of value at the "speed of light," as imagined by Hock. India will soon introduce a new merchant payment system called IndiaQR, a scannable bar code for mobile devices, donated to India's payments industry by Visa.

We could lean back and say this is the most large-scale ambitious swing to digital payments ever undertaken, but oddly enough we've been here once before—in China. Another 1 billion+ consumer population weaned from cash is moving aggressively toward a potent mix of electronic payments and mobile-first experiences.

More and more, the East is becoming a hotbed for digital innovation and economic experimentation on a breadth and scale that is unprecedented in the West. Where East meets West, digital-first experiences are leapfrogging infrastructure and delivering electronic payments everywhere you want to be.

## VIEWPOINTS

# Europe Leads Digital Payment Expansion

By William Gajda  
SVP, Innovation & Strategic Partnerships, Visa

**POS could disappear altogether, moving to the cloud.**

Europe is in a key position to drive the digital payment revolution along with the US. Internet usage in Western Europe is on par with that of the US (a median of 87% usage) while smartphone penetration in Germany, Spain, and the UK is also equal to that of the US (89%). Europe also leads the world in contactless card and mobile payments, with more than 5 billion Visa transactions in 2016 (Pew Research Center).

Last year Visa successfully enabled millions of cardholders to take advantage of the expansion of Apple Pay and Samsung Pay as they launched

throughout Europe. Visa also launched the Digital Enablement Program to make it faster and easier for banks to use the Visa Token Service to join these third-party payment services. In 2017, mobile tech will continue to play a crucial role in the development of digital payments.

## Point of Sale

At the top of the list of trends in 2017 is acceleration of POS payments, particularly on mobile. Growth in acceptance should also increase notably. The expansion of affordable

mobile tech—as well as the expected expansion of services like Square and iZettle—means that mPOS will become increasingly popular for small to medium-sized businesses, many of which lose up to 25% of their footfall because they don't accept payments, according to a Visa consumer survey (Pew Research Center).

mPOS isn't the biggest revolution, however. POS could disappear, moving to the cloud. Last year, Amazon announced its Go app, which is the prime example of how retail is moving from check out to check-in.

When customers enter participating stores, they check in with the Go smartphone app. As they add items to their baskets, the prices are tallied on the shopper's Amazon account and deducted when the shopper exits the store using through computer vision, sensor fusion, and deep learning technology. No checkout needed.

## Tokenization

Behind-the-scenes payments will continue to grow during 2017. Tokenization makes mobile payments simpler, safer, and more secure by substituting a series of numbers for sensitive payment details. Currently, tokenization is supporting Apple Pay, Android Pay, and Samsung Pay, as well as a number of payment services offered by banks. Tokenization will also become a crucial supporting technology for authentication. Creating the ability to safely manage use cases and limit the payment permissions attributed to a tokenized account makes it possible to execute payments only if certain conditions are met. A token will work for mobile

payments only on a specific device, which is activated by the owner's biometric authentication. Plastic just can't do any of this!

The growth of "token on file" solutions will accelerate this year with merchants looking to make their data more secure from hackers. By replacing sensitive consumer account data with tokens, merchants effectively "desensitize" the information they keep on file. If digital thieves steal this data, it is useless. They can't employ it with any other merchant, nor can they use it to reverse-engineer primary account information.

## Push Payments

Outside of the retail environment, we expect to see the continued uptake of push payments. In this year's Digital Payment Study of more than 42,000 consumers in 22 countries, Visa found that 70% of the millennials surveyed use their mobile device to bank online, and 57% to transfer money to friends or family (Pew Research Center). Person-to-person

# 59%

of consumers surveyed used their mobile devices to transfer money to friends or family in 2016.

payments will continue to grow, but the key driver will come from sharing economy platforms such as Uber, Lyft, and Airbnb, powered by innovative payment startups like Stripe and Square. In these propositions, the customer uses tokenized card-on-file services to pay the company, which then distributes payment to the providers of the services (e.g., the Uber driver or Airbnb host).

With all of these new technologies getting solidly off the ground, Europe is poised to lead in their continued integration. At the London Innovation Center, we welcome major merchants, acquirers, and technology companies to co-create the future of payments together.

## VIEWPOINTS

# Innovating Payments in Latin America

By Ruben Salazar Genovez  
SVP, Head of Products & Solutions, Visa

**In the coming years, there will be an uptick in the adoption of mobile and digital payment options as penetration reaches more consumers and geographies.**

In Latin American and Caribbean countries, smartphone penetration has been much less than in other regions, but that is changing quickly.

As with all markets and regions, each operates in a unique and evolving payment ecosystem, and Latin America is no exception. Cash is predominant in countries that have a widely spread informal economy, therefore only a small percentage of consumer purchases—just 27% of transactions—are processed on credit and debit cards. Furthermore, an enormous amount of the population (almost 70%) is unaffiliated with a bank (Americas Market Intelligence. The State of Electronic Payments).

We have yet to see the rise of an alternative digital payment system, such as Alipay in China, PaytM in India, or M-Pesa in Kenya, operating outside the four-party model.

## Mobile Adoption Is Growing

In 2016, 50% of mobile sales were made on smartphones, while e-commerce grew faster than face-to-face transactions (Americas Market Intelligence. The State of Electronic Payments). It is likely that in the coming years, there will be an uptick in the adoption of mobile and digital

payment options as penetration reaches more consumers and geographies, particularly among the millennial generation.

The biggest innovation challenge in a region with these dynamics is driving acceptance across urban and rural areas that are still dominated by small, local commerce. The payment ecosystems are still highly dependent on wired infrastructure small merchants; mom-and-pop shops and merchants operating in remote locations depend on wired terminals to secure connectivity. This model becomes economically unsustainable to reach long-tail merchants.

The technology is available, though: mPOS, QR, and other terminal-less acceptance infrastructure are attractive options. Most every phone can become a point of sale, offering a massive opportunity to serve underserved niches across the entire region. The aggregated value of adding one new merchant in Latin America is many times greater than the value of adding one new cardholder.

Latin America is heterogeneous in terms of the different operating models that exist due to regulation, ownership structures, and processing capabilities. One size doesn't fit all, and when it comes to gaining scale in innovative platforms, flexibility in adapting to market realities is key.

## A Small but Growing Fintech Community

The fintech community is emerging strong but underinvested. Several publications indicate investment below \$600 million USD, from a global investment pool of \$24 billion USD (CB Insights Inc. Fintech Scan as of June 2017). In many ways, Latin America is not receiving the right attention given its size and potential. In other regional markets like Asia, there are already big fintech companies that have set up a serious, competitive environment.

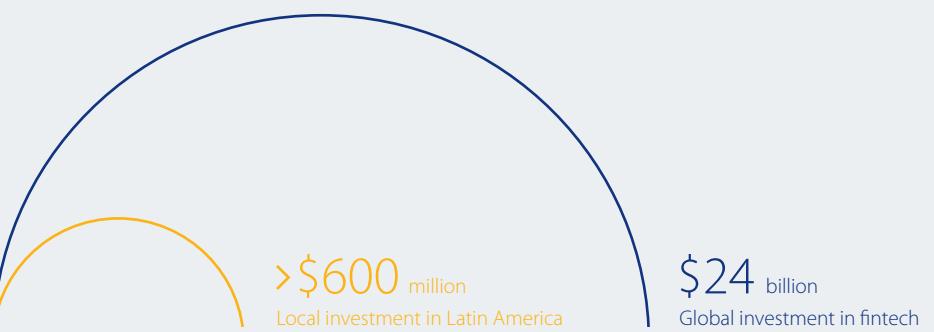
In Latin America and Caribbean countries, Visa is starting to engage

fintech companies very actively by connecting with promising startups, securing partnerships with established players, and participating in the community with mentorships and sponsorships. Our largest interest is to connect ideas from fintech with execution at the banks. We are also looking toward becoming a point of reference between the regulatory agencies, the banks, and the emerging fintech sector.

At the Visa Innovation Center in Miami and the Co-Creation Studio in São Paulo, we focus on providing a creative space and methodology for companies looking for new avenues of commerce and consumer experiences. Our engagement may span from defining critical problems to providing partners with prototypes they can leverage to build the new generation of payments.

We've assisted the integration of Bradesco and ShopFácil with chatbot

## Fintech Investment



platforms that facilitate commerce interactions. With Aeroméxico, the biggest Mexican airline, we merged AI and conversational commerce on Facebook Messenger to help travelers spontaneously book their next trip in a nontraditional user interface for airlines. Travelers can chat in the Messenger app with Aeroméxico to get flight times and prices. They can even initiate ticket booking and buy directly within the app for themselves or others as they are interacting with friends and colleagues.

Participating in the digital economy for a region like Latin America will define other human development indexes, potentially having a positive effect on the participation of more and more individuals in the formal economy; alleviating poverty; expanding access to banking; and allowing commerce will reach small and micro enterprises. Our Innovation Centers in every region become catalysts for new ideas that help the banks, merchants, fintech companies, and governments shape the future of commerce and payments.

## FINDING #04

## IoT Possibilities Are Intriguing but Mysterious to Many

Consumers express interest in the potential of IoT payment experiences—once they discover it.

Around the world, consumers express real interest in potential IoT-driven payment experiences. Home, auto, and retail IoT innovations draw the greatest interest, with transit solutions a potential early opportunity.

In more developed markets, connectivity via central internet hubs—such as kitchen appliances that order and pay for household items for you—will fuel adoption.

However, the data suggests that consumers may not fully understand IoT payments. For this reason, transformative IoT solutions may have less adoption potential at this moment than fresh payment experiences.

### Global Interest in IoT Capabilities<sup>B.6</sup>

For both leading-edge consumers and millennials, while the data suggests high interest, these technologies are still relatively unknown.

**Global LEC** Leading Edge Consumers are a proprietary population segment developed by GfK based on a consumer's propensity to be an early adopter, passionate enthusiast and influential in a given category.

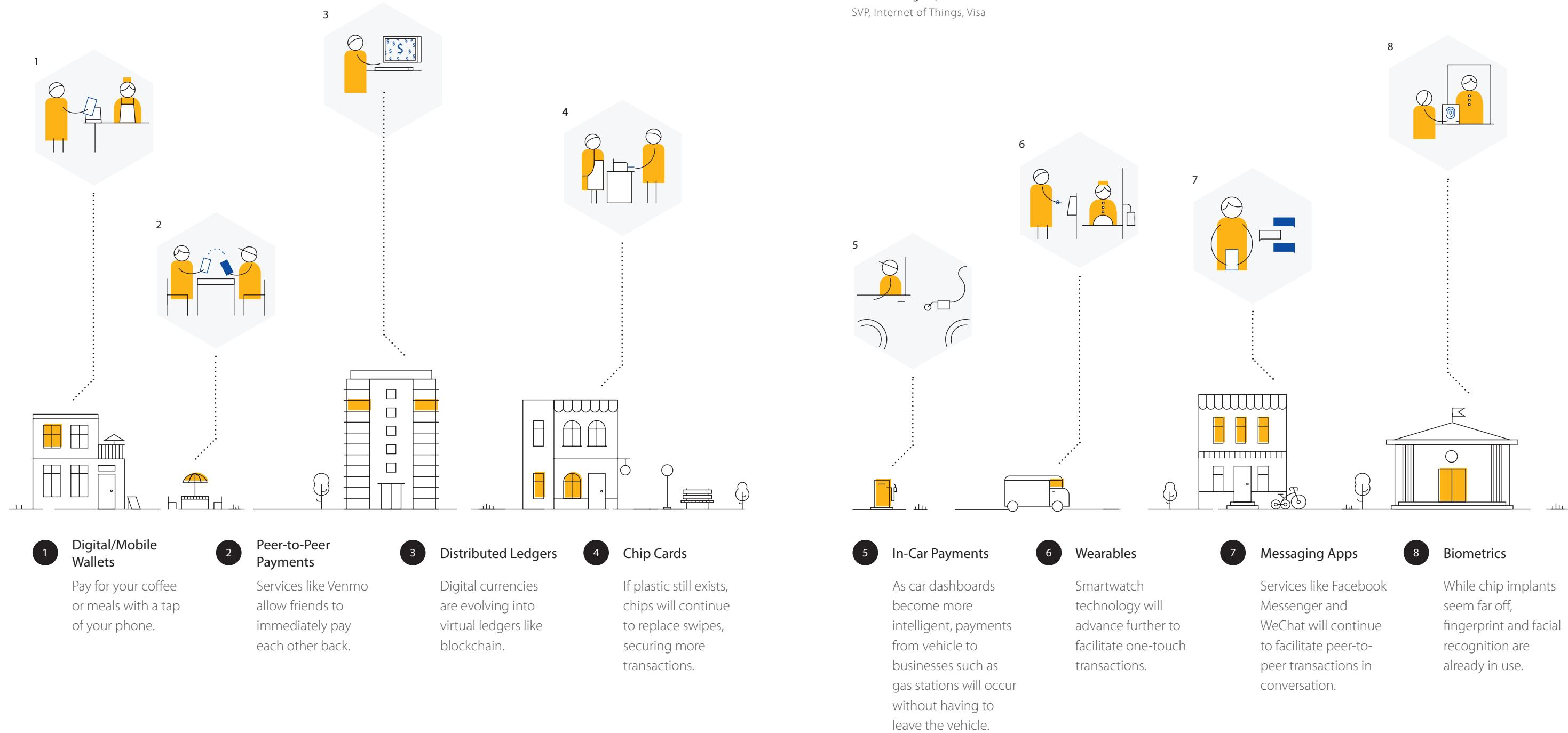
**Global Millennials** 18-34 and own a smartphone, have a savings or checking account, own/use a tablet or computer, own a credit or debit card.



## IoT Technology in the City of the Future

“The connected car is quickly becoming the new mobile phone, as vehicles evolve into platforms for entertainment, commerce-and socialization. Car shows are now more about what drivers experience inside the chassis than what the vehicle looks like whizzing down the freeway.”

Avin Arumugam,  
SVP, Internet of Things, Visa



## VIEWPOINTS

# Payments and the Internet of Things: How Will This Space Mature?

By Avin Arumugam  
SVP, Internet of Things, Visa

**IoT will likely follow the same evolutionary path as e-commerce.**

The payments world is still trying to understand IoT—that growing network of objects able to collect and share data via embedded sensors. According to Gartner, IoT holds the promise to make our lives better and more convenient, with 20.8 billion connected devices projected to be online by 2020.

After a period of adoption of these IoT devices in their lives, consumers will then get comfortable enough that they will begin making purchases through them. But for this to happen successfully, the payments industry will need to be customer-centric rather than manufacturer-focused when it

comes to implementing payments. That's because consumers have to be ready, which takes more time than simply rolling out new technologies.

Yet manufacturers who are rapidly innovating in this space cannot be ignored. They too are struggling to refine their communication strategies and better explain the value of implementing IoT to consumers, and payment companies must be there to help. Furthermore, how the payment happens is important. In some cases, the consumer needs to be aware and authorize each transaction. But payment could also be invisible or in the background.

# 20<sup>.8</sup>

billion connected devices are projected to be online by 2020.

We've traveled a similar road before in the adoption of the Internet. IoT will likely follow the same evolutionary path as e-commerce. In the first stage, devices will become connected, which is analogous to the initial days of users going online in the late 1990s. Then, devices will collect and manipulate

data, which we can liken to merchants displaying their goods online in virtual retail shops. Finally, the IoT devices will become commerce portals, offering items for sale with secure payments, similar to the development and flourishing of e-commerce on the web.

Where the trend deviates from Web 1.0 is that IoT foretells a shift from software to hardware. Because the physical functionality of the device—a watch, a car, a fridge—is crucial, we will see a new influx of engineering and design talent in hardware. Yet the consumer experience will be the priority, rather than the aesthetic appeal of the object. For instance, the connected car is quickly becoming the new mobile phone, as vehicles evolve into platforms for entertainment, commerce, and socialization. Car shows are now more about what drivers experience inside the chassis than what the vehicle looks like whizzing down the freeway.

When we project ahead to the rise of autonomous vehicles, we can see how the car will pivot from a formerly stressful driving console into a roving lounge. We will be able to truly live our lives inside the car, free from navigation and operation. Commercial opportunities abound for



taking advantage of this new time that will enable the consumer to engage with brands while riding along. Great payment integration will be essential. And as less housework is required in the connected home, there will be similar opportunities to present seamless retail payment options to help consumers make purchases from various household devices.

For example, Visa recently announced a partnership with IBM to bring digital

payments to IBM Watson's IoT platform, which will allow businesses to connect to billions of connected devices, sensors, and systems around the world and then draw actionable insights.

For payment companies, IoT presents new opportunities for collaborations, and traversing some learning curves as we experiment with diverse new partners in lifestyle and hardware manufacturing.

## FINDING #05

## Trusted Experiences Are Driving Mobile Adoption

Trusting relationships are likely to lead to higher willingness to adopt innovative technologies.

Consumers are more willing to adopt a digital innovation from a provider with whom they already have a trusting relationship. While variations in top priorities by country are not major, when trust is already established, consumers are more willing to adopt new services, especially with mobile banking apps.

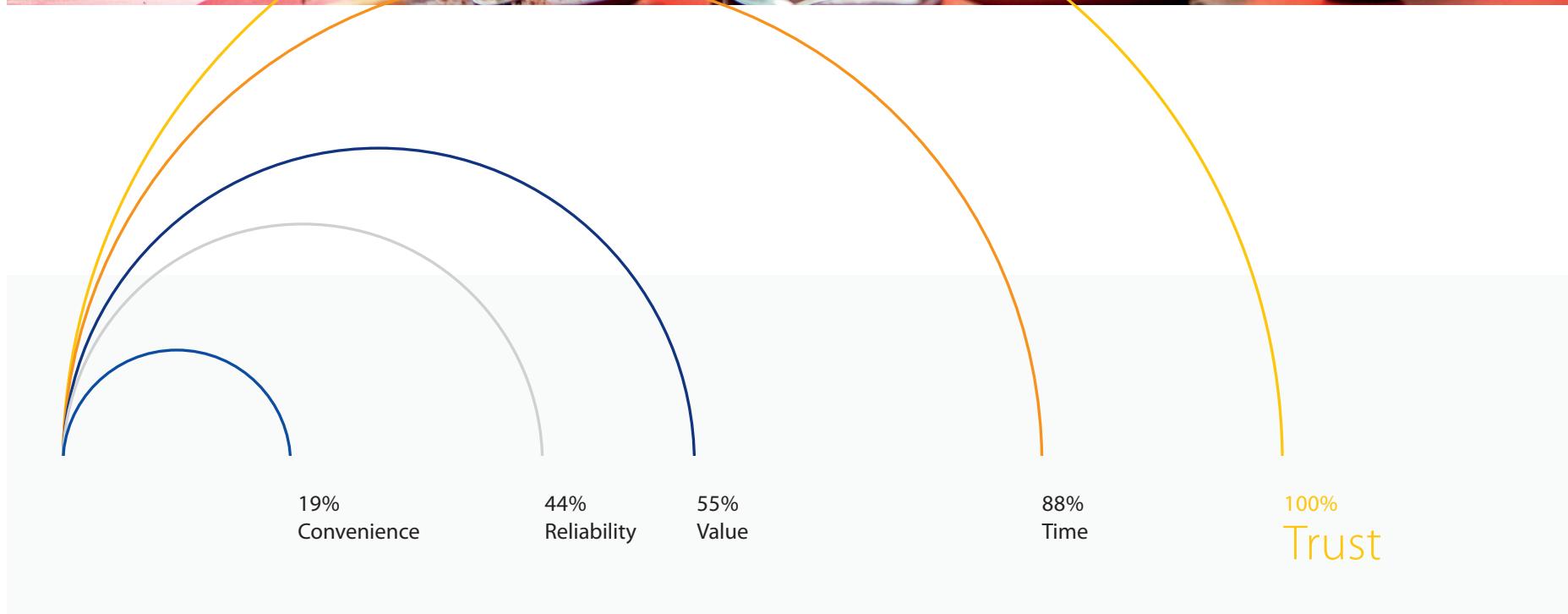


### Mobile Banking Transactions<sup>B.7</sup>

Activities on Bank Mobile App	Among Those Who Use Mobile Banking App
Check balances	86%
Transfer money between accounts	71%
Pay bills	63%
Transfer money to another person with the same bank	53%
Transfer money to another person with a different bank	45%
Deposit checks	24%
Explore product offerings	20%
Find an ATM	18%
Chat with representatives	10%
Other	1%

### Triggers to use new payment methods<sup>B.8</sup>

The percentage of countries in which the trigger ranks in the top 5.



## FINDING #06

## Security Is Table Stakes

In most countries, consumers prioritize convenience and control.

Consumers take security for granted—even when they shouldn't. Unlike in 2015, when they stated that security was most important, today, security has fallen to the bottom half of consumers' list of needs.

While globally, consumers seek out trusted brands and solutions—in countries such as Argentina, India, and France, for instance, security is still driving decisions—they also expect unique features like easy

setup, frictionless use, control, and customization.

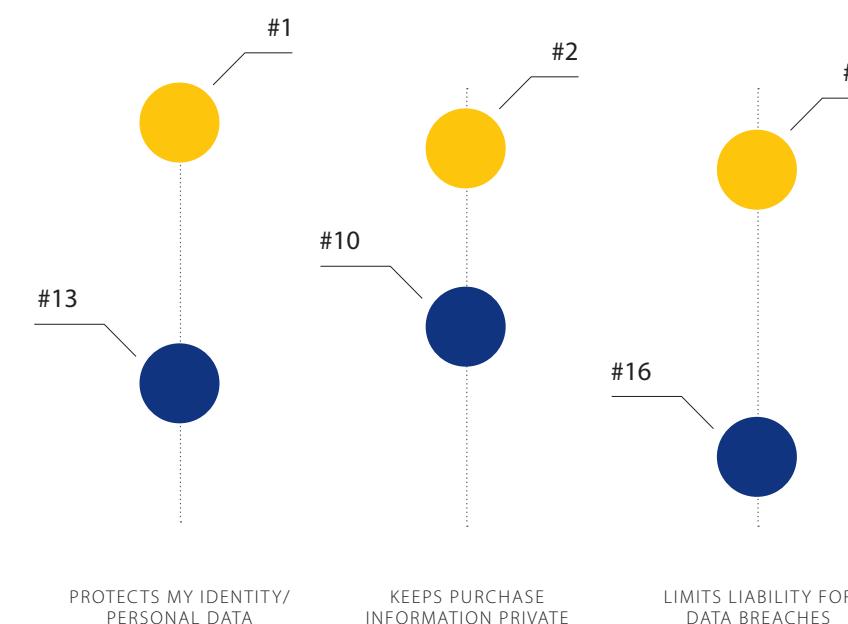
Both trust and value-adds remain crucial for adoption of new payment methods.

And while consumers may take it for granted today, even with the data breaches that may happen, the industry remains aggressively focused on security.

### Security Stated & Derived Importance<sup>8,9</sup>

In 2015, consumers stated that security topped their list of important needs. Looking at current derived importance findings, security-related attributes fall to the bottom half of the list, showing that security is not driving payment decision-making.

- 2015 Stated Importance Rank
- 2017 Derived Importance Rank



## VIEWPOINTS

## Keeping Payments Secure in a Changing Ecosystem

By Mark Nelsen

SVP, Risk Product and Business Intelligence, Visa

The global payment ecosystem faces persistent and ever-changing threats from numerous sources.

As payments become more digital and threats to payment confidentiality and integrity escalate, challenges in payment security are increasingly acute. Data breaches, phishing attacks, spoofed websites, skimming, malware, and infiltration of retail point-of-sale systems are becoming more prevalent and costly. In addition, more options for where and how payments can be initiated are creating growing hurdles to authenticate transactions, end users, and their devices. As new entrants bring to market innovative payment solutions, new risks may be introduced and must be identified, monitored, and managed.

Technology is rapidly changing many elements that support the payment process. High-speed data networks are becoming ubiquitous, computing devices are becoming more sophisticated and mobile, and

information is increasingly processed in real time. These capabilities are changing the nature of commerce and end-user expectations for payment services. The same frictions that shoppers encounter on a laptop or desktop—typing in card numbers, shipping and billing addresses—are simply not tolerated when shopping on a mobile device.

Technologies such as encryption, tokenization, and stronger authentication can strengthen payment security. However, the development of standards and protocols is not keeping pace with changes in the threat environment, and adoption is not always consistent across payment participants. Often implementation of suboptimal technologies or improper implementation can expose compromise points that are

broadly visible and damaging. We must improve industry coordination to increase timely adoption and implementation of technology that addresses weakness in traditional and emerging payments. Most important, we must improve the protection of sensitive data (e.g., account information or credentials) that can be used to perpetrate fraud, including devaluing or eliminating the need for such data from the payment process.

The card-not-present environment is a key area where the better use of data can be used to manage fraud. Card-not-present has grown steadily since its inception a few decades ago and is still growing at a strong rate. However, there is widespread use of strong authentication and fraud prevention methods globally in this space. As a result, the amount of lost sales, or attempted sales resulting in declined transactions, is significantly higher than instances of fraud. To better secure the global payment ecosystem, we must reduce fraud and increase approved sales.



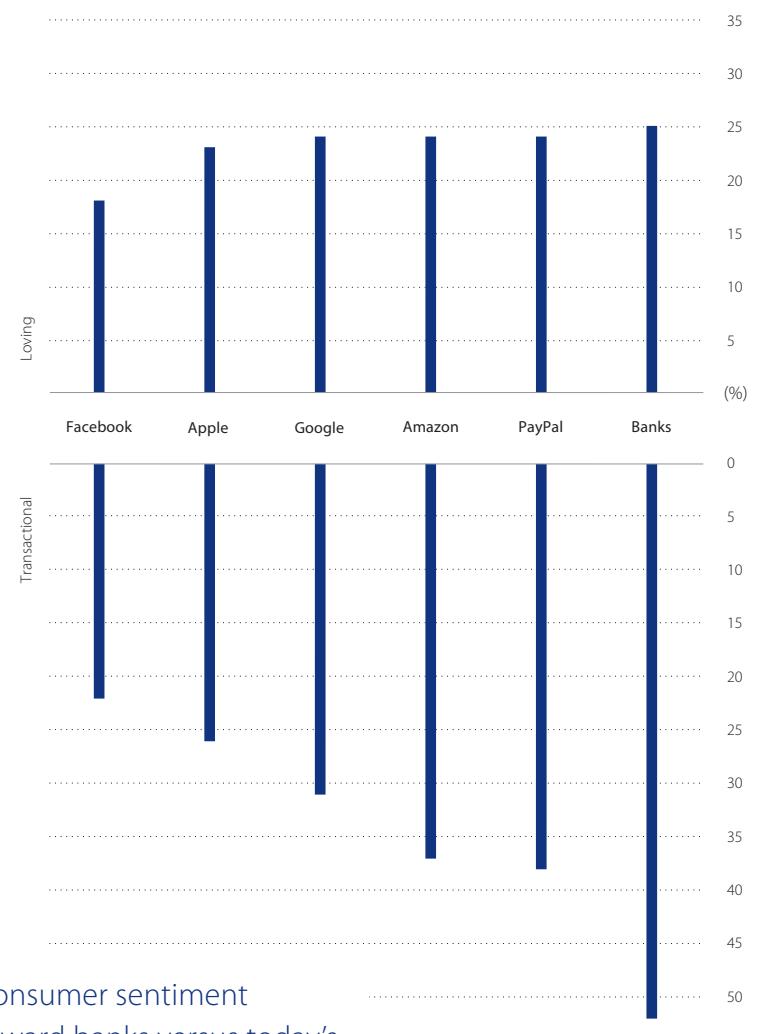
## FINDING #07

## Transform the Experience, Own the Relationship

Consumers love transformative solutions that introduce ease and convenience into their everyday lives.

To create more customized payment experiences, the industry must deliver transformative Uber-type solutions to consumers that make transaction mechanics slip into the background and become part of the overall experience.

As the data suggests, today's leading technology companies succeed when they are able to go beyond transactional experiences and establish an emotional connection with their users.



Consumer sentiment toward banks versus today's tech giants <sup>B.10</sup>

This data shows consumers' relationships with these brands regarding digital payments.

## VIEWPOINTS

# Electronic Payments Are Approaching “Peak Plastic” in Asia Pacific

By Christopher Boncimino

SVP, Innovation & Strategic Partnerships, Visa

## Next Year, the Credit Card will Turn 60 Years Old.

Back in 1958, Visa became the original fintech company when we piloted the BankAmericard with 60,000 people in California.

Over the past six decades, the plastic card has become inextricably linked with the very idea of electronic payments. Visa—and others in our business—became known as “credit card companies.” However, Visa has never defined itself that way. To us, it’s never been the physical card that actually matters.

Fundamentally, Visa is a payments network that connects people or businesses who want to pay and those who want to be paid. For the past 60 years, a plastic card has been a secure, convenient mechanism to do just that.

But a card is just one physical form that payments can take in an increasingly digital world.

Today, the industry is approaching peak plastic. The technology, infrastructure, and consumer appetite are all at a point where payments can evolve beyond the physical card.

What do we mean by peak plastic? We’re not saying that cards are going away overnight. Anything that’s been part of commerce for over half a century is so embedded that there will be a long tail of cards still in use for quite some time. But we are saying that the conditions exist to support a mass adoption of electronic payments that are no longer solely dependent on plastic.

## The Infrastructure Is Already in Place

The electronic payments ecosystem doesn’t change even as the form factors keep evolving. The Visa network that processes the payment when a

card is dipped or tapped on a shop terminal is the same one that can process an automated payment from an internet-connected refrigerator that is programmed to order milk when it runs out. The only difference is that the plastic card doesn’t necessarily need to be part of the transaction anymore.

The important part that remains is the 16-digit card number. It’s this 16-digit number that makes electronic transactions possible, not the plastic it’s printed on. But the card number is evolving too; they are slipping into the background, as payments become automatic and invisible. Instead of having to enter a 16-digit card number in an app or on a website, people can use their thumb to authenticate payments from their mobile phone. Consumers can store their card details on file with the merchants they repeatedly shop with or subscribe to, eliminating the need to enter their information each time they transact.

Tokenization makes these invisible payments possible by creating a layer of security that removes sensitive account

information from the transaction, including that 16-digit number.

There’s a parallel here to mobile phone numbers: How often do you look at the digits in someone’s mobile number? It’s not visible anymore—you just tap on a name in your contact list. And now with a few more taps you can send that contact money, without needing to know anything more than who they are.

## The Technology Is Available Today

A greater number of seamless payment experiences in-store, online, and in-app are being made available to consumers and businesses. Payments are happening—today—via mobile wallets, QR codes, chatbots, virtual assistants and IoT-connected devices. These new experiences aren’t everyday life for everyone yet, but they are beginning to scale. The Visa Ready Program brings payments to this broader range of devices and services in a secure, convenient manner, so that payments can happen on just about any form factor.

Over time, the proportion of payments that don’t involve a plastic card compared to those that do will continue to increase. We’re seeing examples of digital issuance: Where a consumer can apply for a card and be issued digital credentials, including their 16-digit card number, immediately, without having to wait for the physical card to arrive to begin transacting.

## Consumers Are Ready to Be Convinced, if We Can Prove the Value Is There

Taking into account the many ways in which payments are changing, what matters most is a seamless, intuitive and ubiquitous customer experience. Our consumer research shows that the vast majority (over 80%) of consumers across Asia Pacific are open to trying out new ways to pay, such as mobile phones, wearables or other connected devices (Visa/YouGov research).

But there are barriers holding them back from changing their behavior and embracing new forms of payment beyond cards. They’re often nervous about whether new technology is secure, or they feel that the methods they use to pay today are already good enough. There’s a sense among consumers that new payment technology needs to be proven useful before they start using it.

It’s the responsibility of all of us in the payments industry to establish that utility by ensuring that the payment experiences beyond plastic are adding value and solving pain points in ways the physical card cannot, such as integrating loyalty programs into mobile shopping experiences or using contextual information like location or spending habits to provide targeted offers, for instance.

## What We Need to Do to Move Beyond Plastic

All the right conditions are in place for card-free electronic payments to grow. This will take time, but there are things we can do as an industry to drive change:

*Continue to invest in future-proofing our infrastructure and technology.*

We can’t possibly anticipate what new devices people might want to pay with in five or ten years’ time, but we can keep developing standards and capabilities that can adapt to make payments possible in any context.

*Maintain a relentless focus on the customer experience.*

Ultimately, customers decide what payment methods succeed by voting with their feet (or thumbs or facial recognition) for the best experience.

*Don’t innovate just for innovation’s sake.*

Technology can do anything. But—crucially—that doesn’t mean it has to do everything. It’s about identifying where technology adds value and moves an experience forward.

At Visa, our role is to create the right conditions for our bank and merchant partners to deliver innovation to their customers, for any payment form factor. We’re excited to enable the future of commerce and payments beyond cards.

03

## How Visa Innovates



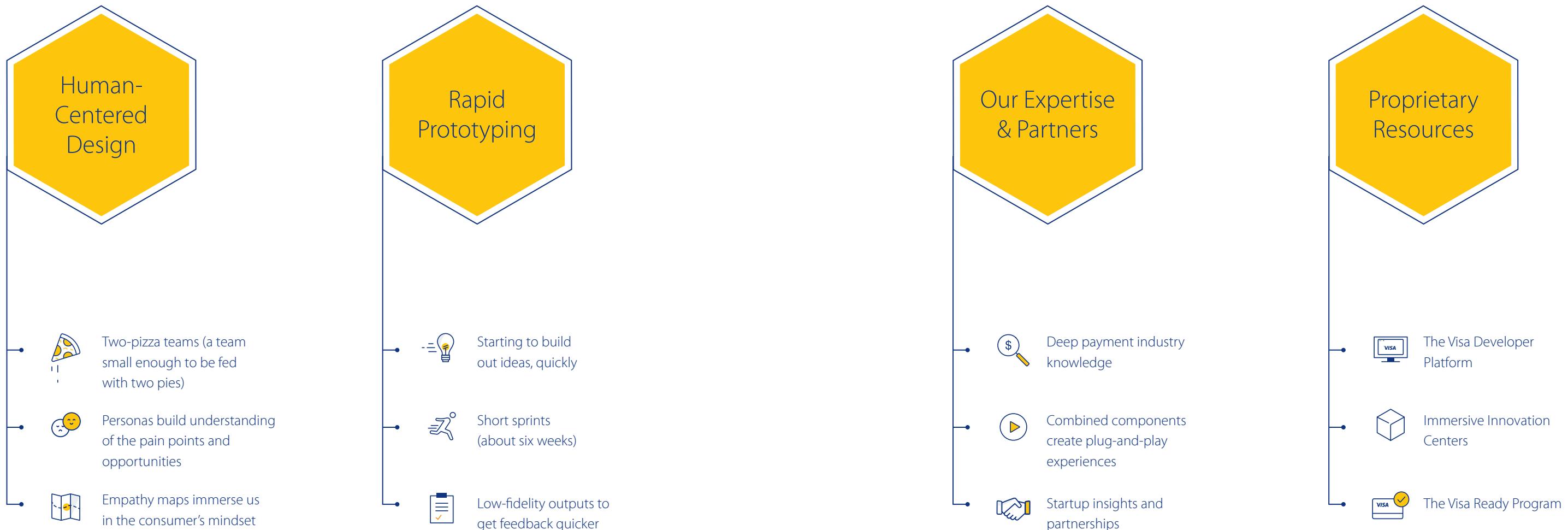
## HOW WE INNOVATE

# Innovation at Visa: A Unique Approach

We partner with our clients to discover, design, and develop the future of commerce.

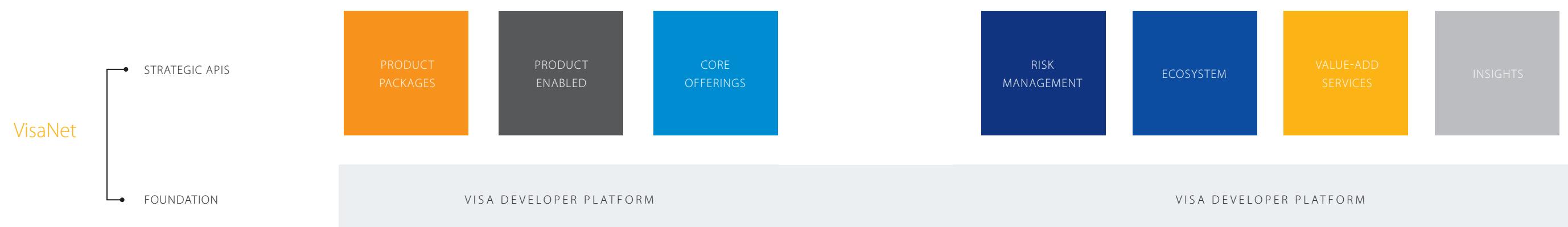
“ You’re not just creating and launching an innovation; you’re creating an experience that may lock in your consumers for years to come. ”

Shiv Singh,  
SVP, Innovation & Strategic Partnerships, Visa



# Visa's Payment Stack

From products to solutions, an API for every payment need. Visa is opening up the network via strategic APIs and extending access to payment capabilities with new partners and new use cases.



All brand names and logos are the property of their respective owners, are used for identification purposes only, and do not imply product endorsement or affiliation with Visa.

# We're Already Building What's Next

We're helping our clients build relationships with their customers.

The strength of those relationships depends on how well clients understand, and can anticipate, customer needs and behavior. So we're building new capabilities via the Visa Developer Platform to transform contextual data—from payment activity to life events—into predictive intelligence. With this insight, clients can go beyond transactions to provide more relevant and frictionless experiences.

And we're looking beyond our doorstep to find what's next in payment technology.

Our innovation starts with the best of Visa talent working in collaboration with clients at our Innovation Centers around the world—San Francisco, Miami, London, Dubai, Singapore, São Paulo, New York, Berlin, and Tel Aviv—but we don't stop there. We're opening up the network via APIs and extending certification to new partners all around the world through the Visa Ready Program. And through Visa's Everywhere Initiative and Visa Ventures, we seek, partner and invest in promising startups that are solving tomorrow's business challenges in innovative ways.

## Capabilities

### Core Offerings

- Co-Brand Card
- Credit Card
- Debit Card
- Prepaid Card
- Corporate Card
- Private Label Card
- Gift Card
- Proximity Acceptance
- O2O Acceptance
- Remote Acceptance

### Insights

- Pricing Analytics
- Data & Analytics
- Cardholder Analytics
- Retail Analytics
- Performance Solutions
- Cardholder Retention
- Cardholder Acquisition
- Cardholder Segmentation

### Payments Enablement

- Swipe
- Dip
- Click
- Tap
- Stream
- Fund
- Scan
- Push

### Product Packages

- Visa Checkout
- CyberSource
- Visa Direct
- Visa Commerce Network
- Visa Developer
- mVisa
- Visa Token Service
- Auth.Net
- Proximity Acceptance
- O2O Acceptance
- Remote Acceptance
- Verified by Visa

### Risk Management

- Tokenization
- Cardholder Authenticate
- Real-Time Risk Scoring
- AML & OFAC Checks
- ID & Verification
- Risk-Based Authentication
- Biometrics
- Risk Manager
- Cardholder Acquisition
- Cardholder Segmentation
- Risk Replay

### Ecosystem

- Beacons/Sensors
- Geolocation Services
- Mapping Services
- Data Visualizers
- Messaging Platforms
- Social Media Platforms
- Android OS
- Apple iOS
- QR Code / Reader
- WeChat
- Messenger
- Line
- Blockchain
- Internet of Things
- Amazon
- Samsung
- Square
- Artificial Intelligence
- Printed Text Reader
- Digital Wallet

### Value-Add Services

- Fast Funds
- Card on File
- Aggregation
- Micropayment
- Points
- Recurring Payments
- Transaction Alerts
- Card Controls
- FX Rate Check
- Real-Time Redemption
- Digital Receipt
- Instant Issue
- Loyalty
- Real-Time Offers
- Statement Credits
- Transaction History
- Sourced Offers
- Card Link
- Account Updater
- Location-Based Alerts
- Cash Back
- ATM Locator
- Account Attributes
- Travel Notifier
- Token Controls
- Stop Payment
- Push Provision

# Innovation Starts with Finding the Best New Ideas from Within and in Partnership with the Startup Community

## Visa's Everywhere Initiative

Learn how we leverage the startup community to solve real-world business challenges. Since the program launched in 2015, over 1,500 startups have participated, leading to 60 finalists and 14 winners. Below are some of the winners from Visa's Everywhere Initiative around the world.

**Bitemojo**  
An iOS and Android app tailored for independent travelers to explore the unique tastes each destination has to offer the same way they discover other aspects of the city they are visiting. EU 2017

**Cura**  
CURA is a leading brand in Indian Medical Equipment and Instruments space with its own and re-engineered solutions. AU 2016

**Eyebuy**  
They are built to monetize content and connect brands to fans (shoppers), turning every item seen in every frame into a potential sale or engagement opportunity. USA 2017

**FlyMoney**  
The company aggregates exchange rates from currency providers all around the globe, and allows travelers order currency at the best rates in the market. EU 2017

**Grata**  
wechatconcierge and customer service / chatbots solves complex WeChat customer care implementations for MNCs in China. China 2016

**HYP3r**  
HYP3r makes it easy for businesses to engage influential customers at specific locations on a personal level, in real-time. USA 2016

**Jude**  
Jude delivers an amazing banking experience via two of the hottest trends in technology right now; artificial intelligence & messaging. Check your balance, pay your bills & stay on top of your finances. AU 2016

**Kompass**  
Kompas is an online marketplace where you can get your CV/profile reviewed by HR professionals, get feedback regarding their CVs/LinkedIn-profiles from HR professionals before applying. EU 2017

**Losant**  
Losant is an easy-to-use and powerful developer platform designed to help you quickly and securely build complex connected solutions. USA 2017

**Msg.ai**  
msg.ai provides turnkey software for brands to fully manage 1-on-1 conversations across the world's most popular messaging apps.

**Octor**  
Vizualizing Visa travel service and content through augmented reality to drive commerce. China 2016

**Persollo**  
A instant check-out and conversion optimization platform that allows big online businesses, media groups and independent merchants to streamline the transaction process with an instant check-out URL. AU 2016

**Proximit**  
Help companies across Asia Pacific to get closer to their customers with our leading location-based services & analytics platform. AU 2016

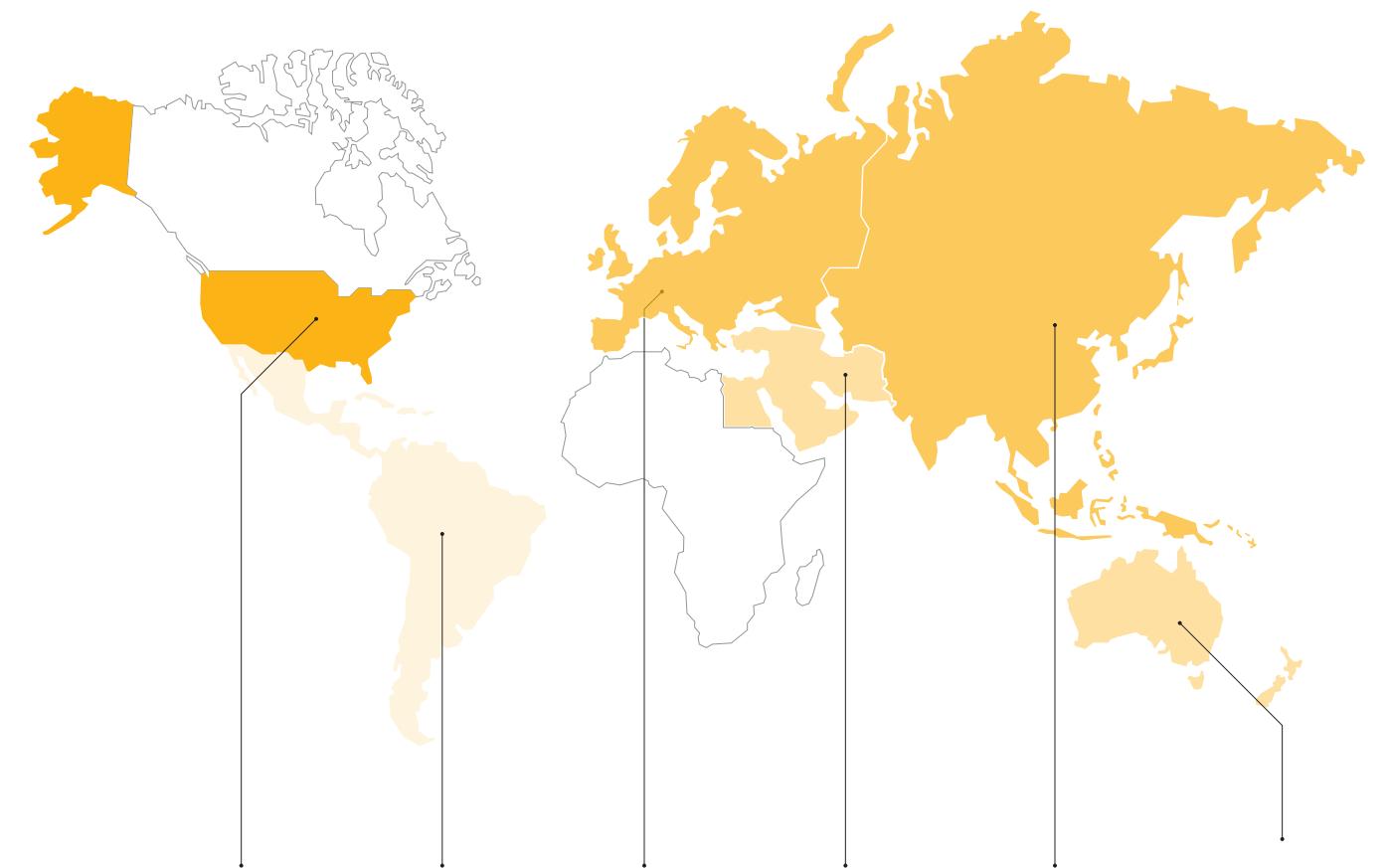
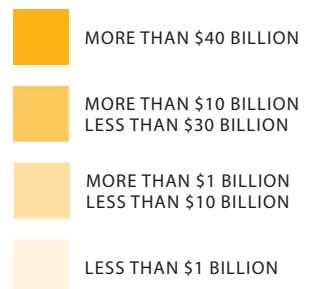
**Rikai.co**  
WeChat Travel Bot- AI Chatbot that responds to travelers in Visa's wechatwith automated travel services, activities and offers. China 2016

**Smyte**  
Smyte protects millions of actions a day. Smyte code into any website or mobile app, which gives Smyte access to a data feed. USA 2017

**Stampay**  
Stampay is the next-gen development platform that allows to build backend of apps using APIs as building blocks. USA 2016

**Thought-Wired**  
Thought-Wired's NOUS is a thought-controlled communication tool for people who cannot move and talk because of severe physical disability. AU 2016

Fintech funding increases dramatically around the world



	US	Latin America	Europe	Middle East	Asia	Australia & New Zealand
<b>TOTAL</b>	<b>57.3 B</b>	<b>543.8 M</b>	<b>11.2 B</b>	<b>1.96 B</b>	<b>27 B</b>	<b>1.47 B</b>
2016	17.7 B	264.9 M	2.8 B	564.5 M	14.6 B	287.1 M
2015	13.3 B	91 M	2.9 B	398.9 M	8.2 B	767.1 M
2014	12.8 B	75.5 M	1.7 B	246.3 M	2.3 B	121.7 M
2013	4.9 B	36.1 M	2.6 B	101.9 M	891.7 M	176.2 M
2012	3.4 B	49.6 M	270.9 M	28.4 M	179.4 M	79.1 M
2011	2 B	23.7 M	491.7 M	66.4 M	246.8 M	34.1 M
2010	3.2 B	3 M	437.2 M	554.8 M	655.4 M	6.7 M

Total Funding and Funding per Year in USD (Crunchbase, KITE and Tracxn 2017).

# Visa Ventures

Discover how we're putting investing power behind innovative fintech companies, with over 300 considerations and 3–6 investments annually. Notable investments include Square, Stripe, and Chain.



## stripe

Square "makes commerce easy" by providing tools that helps merchants start, run, and grow their businesses.

Square's ecosystem of online and offline point-of-sale services offers tools for many parts of running a business, from accepting cards and tracking inventory, to real-time analytics and invoicing.

## »» MARQETA

Marqeta is the first modern card issuing and core processing platform, powering prepaid, debit, and credit cards for the world's top commerce innovators. Marqeta's advancements represent the first fundamental updates in the past 20 years to card issuing platforms, a \$30 trillion addressable market covering all possible cardable spending.

## Klarna

Klarna is one of Europe's leading payments providers that aims to make the payment process simple, smooths and safe for customers and its merchant partners. Klarna works together with 70,000 merchants to offer payment solutions to more than 60 million users in Europe and North America.

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# Visa Ready

Visa Ready launched four years ago as a partner program to support the next generation of third-party payment solutions, meeting Visa's security standards and specifications. Partners benefited from a clear path to solution certification; and Visa from the opportunity to accelerate acceptance and innovation.

Competitive business conditions and rapidly changing technology has seen the program grow and evolve. It is now our primary point of contact for payment technology providers wanting to launch new technology and collaborate with key industry players.

Current Visa Ready verticals include; Mobile Point of Sale, QR Payments,

Token Service Providers, Business Solutions, Biometric Authentications solutions and IOT.

The Visa Ready program will continue to make the path to certification and commercialization of payment technology hassle free whilst at the same time providing participants in the payment ecosystem confidence that if its Visa Ready certified, it's good to go.

## Third-party Solutions that Meet Visa's Payment Security Standards



Tokenization



Mobile POS



Mobile Payments



Biometrics



Business Solutions

## Visa's Ready Easy Set Up



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# 04

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## Conclusion



# 7 Lessons for Bringing Innovations into the Marketplace

By Shiv Singh

SVP, Innovation & Strategic Partnerships, Visa

Something very unusual happened on March 31, 2016, when the CEO and founder of Tesla, Elon Musk, announced the Model 3, his new all-electric, four-door compact luxury sedan. Very little marketing was done outside of a live-streamed webcast and a few tweets to his Twitter followers. But within a week, the company had received 325,000 Model 3 reservations, more than triple the number of Model S sedans Tesla had sold in all of 2015. Nobody had ever seen, let alone test-driven, this car.

Anyone whose livelihood is dependent on bringing product innovations into the marketplace can learn from Elon Musk's experience. For an industry going through as much change as financial services, with massive investments in fintech startups in 2016 alone, the lessons are even more perilous. What follows are seven to consider.

01

Breakthrough innovations should be launched in breakthrough ways.

Consumers can become your best advocates if you tap deeply into their values with innovations that also help them construct their identities. You're not just creating and launching an innovation; you're selling what the consumers should stand for in the future. You're also selling what they should be telling their friends to buy next. If it is done right (where you make your innovation not just technical, but social), you'll be able to shift your marketing budget to other efforts and spend less on promoting the innovations.

02

Use growth hacking techniques to hockey-stick the adoption of your innovation.

Growth hacking is considered a murky art, but it's time it got its moment in the sun. The more you invest in the growth hacking techniques for an innovation in its very design and development, the more likely it is to succeed. That includes designing for sharing, virality, creating habits, and social rewards based on usage. Does your banking app, retail loyalty app or wearable have enough growth hacking techniques baked into its design? Here's where we can all learn from Facebook and its secretive growth hacking team.

03

Design products that other companies yearn to integrate.

One of the biggest innovations at the 2017 Consumer Electronics Show was Alexa from Amazon—except that Amazon had no actual presence at the show itself. Rather, every other company on the show floor was integrating Alexa into their products and promoting it at their booths. Designing and building an incredible product that enhances every other product in the marketplace and builds an ecosystem is a win-win; it's an under-leveraged strategy for most companies today. And that's exactly why the API economy matters so much today.

**04**  
We live in the fake news era. But don't let your customers think your business is fake.

Trust in brands across the globe is at an all-time low. This doesn't mean you give up on your brand. Rather, you fight tooth and nail to make it a truly loved one. If your brand isn't loved, that means it's a transactional one with no preference or loyalty. As our research shows, if you're loved and trusted, it's much easier to birth innovations and get traction with them. Those Model 3s got sold because Tesla was already a loved brand in a way that no other auto manufacturer is even remotely close to today. The same applies to financial services and to the merchant ecosystem.

**05**  
Trojan Horses are critical to prevent you from becoming a one-hit wonder.

Here's the strategy: Sell the container in which your innovation is housed when you launch. This way your future innovations have a home without requiring as much investment. Container experiences, like mobile banking apps, play that role. That's why some major banks in the US are spending millions and millions of dollars and are leveraging the hottest of media placements to promote their apps and not the next card product or mortgage offer. Once you have an app on the customer's phone or a device in their homes, you can push generations of product innovations through it.

**06**  
Think about the innovation, product, marketing and customer service efforts holistically.

The traditional boundaries between product, innovation, and marketing are artificial. Look at SoFi—its product experience is as much a marketing play and vice versa. Who'd have thought that a financial services firm would offer singles nights, wine tastings, and career counseling as a part of its business? And yes, that gets press and drives brand love too. Start by asking yourself how much transparency exists between your innovation, product, marketing, and customer service organizations. Do they even sit near each other?

**07**  
*Don't get hypnotized by the data world — always put your customers first.*

Yes, companies like Amazon have built incredible businesses by knowing your exact preferences on any given day or even moment. However, the way you gather and use the data is going to get harder in the future and you will need to depend on artificial intelligence more. Consumers are staging revolts against form-filling (if you're a financial institution with lots of forms—beware!) and furthermore, consumers are increasingly wary of cyberattacks. To win the trust of your consumers and to deliver innovations that they will accept, be extremely mindful of what you ask of your customers before you give them something incredibly valuable in return. It all starts with what personal data you request.

At Visa, we're on a journey to constantly improve how innovations are brought to market. Our recent Connected Car partnership announcement with Honda sprung from a co-creation exercise in our San Francisco Innovation Center. That exercise had the goal of making parking toll payment easier. The even more recent announcement with IBM was similar but anchored in integrating payments into IoT solutions. These are just two more recent examples of Visa partnering to bring innovations to market as a payments ecosystem player. Visa Checkout, with its 22 million users, is designed to take form-filling out of the customer experience. The Visa Payment Ring at the last Olympics was a perfect example of a product being designed and launched in a Tesla Model 3 fashion (USA Today). Still, these are early days for all of us. One thing is for certain: bringing innovations to market in the future is going to look very different than it does today. What Elon Musk did with the Model 3 was just the beginning. We're excited to co-create on new solutions with our partners in the years to come.

We hope that the 2017 edition of INNOVATIONS FOR A CASHLESS WORLD provides a thought-provoking look into where we are now, and sparks a sense of the possibilities for the cashless—and inspiring—future. A future that we can create together.

# Appendix

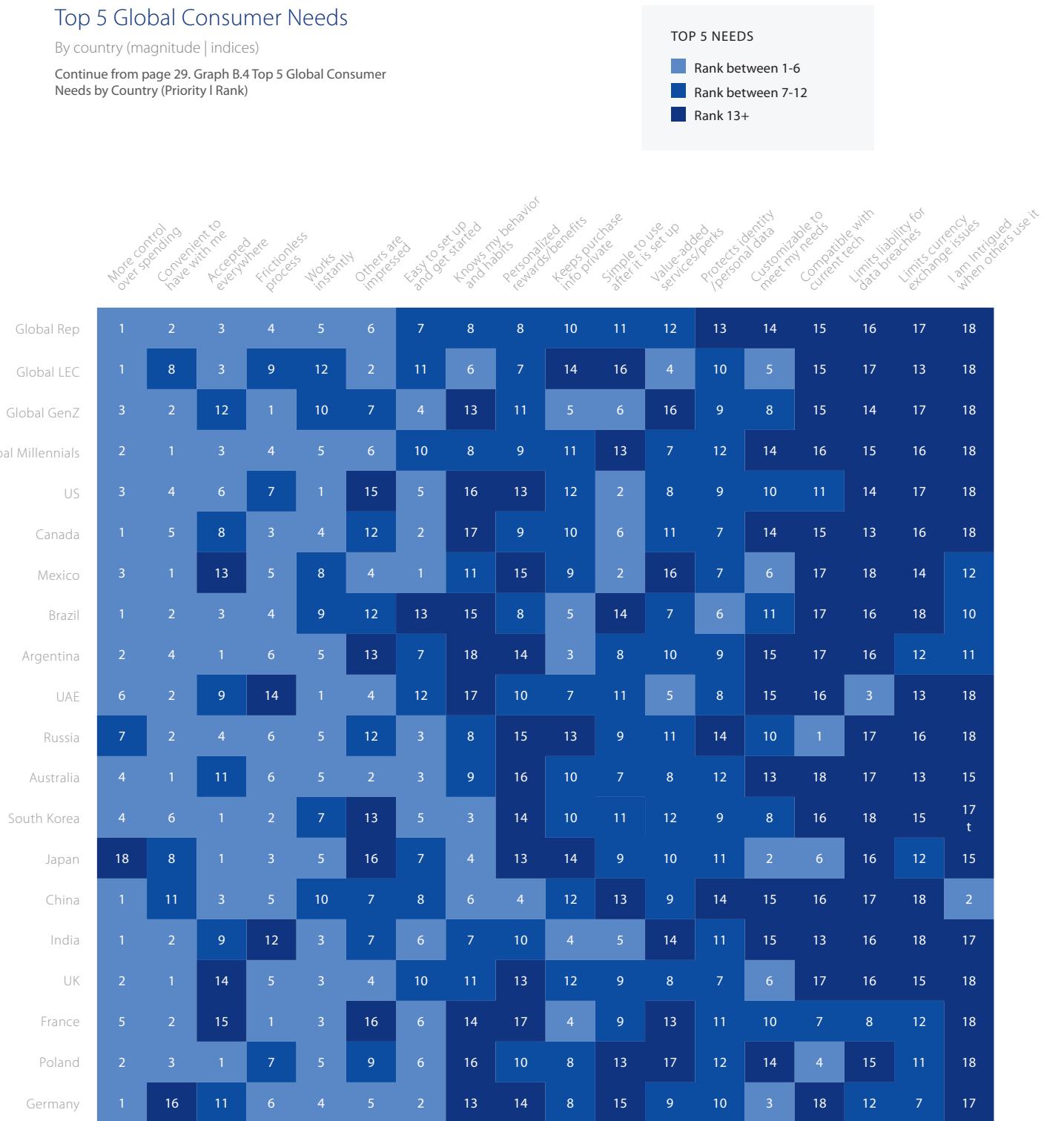
From Card to Cloud	006	B.2 The Payments Maturity & Innovation Readiness Continuum	025
"The Total Audience Report: Q1 2016." Nielson, 27 June 2016, <a href="http://www.nielsen.com/us/en/insights/reports/2016/the-total-audience-report-q1-2016.html">www.nielsen.com/us/en/insights/reports/2016/the-total-audience-report-q1-2016.html</a>		1. How interested would you be in potentially using each of the following in the next 18 months? 2. How interested are you in having each of the following capabilities available to you for use in your life today?	
A.1 Everyday Transactions, By Payment Channel	009	B.3 A Deeper Look at Payments Maturity & Innovation Readiness: Reference questions from B.2	026
Please think about the payments you make for everyday transactions (excluding rent, mortgage, or other larger, infrequent payments). Thinking of your past 10 everyday transactions, how many were made in each of the following ways?		B.4 Top 5 Global Consumer Needs by Country (Priority I Rank)	029
A.2 Trended Usage and Interest in P2P Payments (Global Total)	013	1. Please select the statements that best match the brands, you are free to choose all statements that apply for each brand concerning new ways of paying for products and services. 2. Please use the following scale to describe your preference to use each of these brands for financial transactions: [(1) I prefer to never use this brand, (2) I prefer another brand, but use this occasionally, (3) Is one of many brands I use, (4) Is my preferred brand, but I also use others, (5) Is the one brand I prefer to use, whenever possible] More control over spending, Convenient to have with me, Accepted everywhere, Frictionless process, Works instantly, Others are impressed, Easy to set up and get started, Knows my behavior and habits, Personalized rewards/benefits, Keeps purchase info private, Simple to use after it is set up, Value-added services/perks, Protects identity/personal data, Customizable to meet my needs, Compatible with current tech, Limits liability for data breaches, Limits currency exchange issues, I am Intrigued when others use it	
1. Below is a list of innovative payment and banking methods. For each method please indicate if you are aware of it and if you currently use it. 2. How interested would you be in potentially using each of the following in the next 18 months? Chip Cards, Online or mobile only banks, Digital/Mobile Wallets, Peer-to-Peer payments, Prepaid reloadable cards, Contactless with card, Contactless via phone, Biometrics, Interactive tellers, Kiosks, Wearables, Financial aggregator apps*, Digital Payment Advisors, Crypto Currency, Implants *Financial aggregator apps was asked in a separate question last wave, potentially inflating 2016 responses.		B.5 Opportunities for Growth: A Country-By- Country Breakdown	030
APIs Unlock Digital Payment Ecosystems for Consumers	018	1. Below is a list of innovative payment and banking methods. For each method please indicate if you are aware of it and if you currently use it. How interested would you be in potentially using each of the following in the next 18 months? 2. Contactless with card, Contactless via phone, Biometrics, Wearables, Chip Cards, Online or mobile only banks, Digital/Mobile Wallets, Peer-to-Peer payments, Prepaid reloadable cards, Interactive (bank) cashier, Retail Kiosks, Financial Aggregator App, Digital Payment Advisors, Crypto Currency, Implants	
Christensen, Ben. "Optimizing the Netflix API." Medium, The Netflix Tech Blog, 15 Jan. 2013, <a href="http://medium.com/netflix-techblog/optimizing-the-netflix-api-5c9ac715cf19">medium.com/netflix-techblog/optimizing-the-netflix-api-5c9ac715cf19</a> .		What Will It Take to Get to a Post-Plastic World?	033
"Data Solutions." Sabre, <a href="http://www.sabre.com/our-technologies/data-solutions/">www.sabre.com/our-technologies/data-solutions/</a>	020	Variyar, Mugdha. "Paytm Wallet Reaches 200 Million Users." The Economic Times, ET Rise, 28 Feb. 2017, 8:55 AM IST, <a href="http://economictimes.indiatimes.com/small-biz/startups/paytm-wallet-reaches-200-million-users/articleshow/57371236.cms">economictimes.indiatimes.com/small-biz/startups/paytm-wallet-reaches-200-million-users/articleshow/57371236.cms</a>	
Monks, Kieron. "M-Pesa: Kenya's Mobile Success Story Turns 10." CNN, Cable News Network, 24 Feb. 2017, 9:26 AM ET, <a href="http://www.cnn.com/2017/02/21/africa/mpesa-10th-anniversary/index.html">www.cnn.com/2017/02/21/africa/mpesa-10th-anniversary/index.html</a> .		Monks, Kieron. "M-Pesa: Kenya's Mobile Success Story Turns 10." CNN, Cable News Network, 24 Feb. 2017, 9:26 AM ET, <a href="http://www.cnn.com/2017/02/21/africa/mpesa-10th-anniversary/index.html">www.cnn.com/2017/02/21/africa/mpesa-10th-anniversary/index.html</a> .	
Russell, Jon. "Alipay, China's Top Mobile Payment Service, Expands to the U.S." TechCrunch, TechCrunch, 9 May 2017, <a href="http://techcrunch.com/2017/05/09/alipay-first-data-us-point-of-sale-expansion/">techcrunch.com/2017/05/09/alipay-first-data-us-point-of-sale-expansion/</a>		What the World Can Learn from a Billion-People Economy Going Cashless	034
Yu, Daniela, and Beth Youra. "No One Is Winning the Battle for Digital Wallet Customers." Gallup News, 8 July 2015, doi: <a href="http://news.gallup.com/businessjournal/184034/no-one-winning-battle-digital-wallet-customers.aspx?utm_source=WWWV7HP&amp;utm_medium=topic&amp;utm_campaign=tiles">http://news.gallup.com/businessjournal/184034/no-one-winning-battle-digital-wallet-customers.aspx?utm_source=WWWV7HP&amp;utm_medium=topic&amp;utm_campaign=tiles</a> .		Verma, Sandeep. "India Had 30.86M Credit Cards, 880.03M Debit Cards in May 2017." MediaNama, 5 July 2017, <a href="http://www.mediamana.com/2017/07/223-india-credit-cards-debit-cards-may-2017/">www.mediamana.com/2017/07/223-india-credit-cards-debit-cards-may-2017/</a>	
B.1 The Payments Maturity Metrics	025	Europe Leads Digital Payment Expansion	037
1. Please think about the payments you make for everyday transactions (excluding rent, mortgage, or other larger, infrequent payments). Thinking of your past 10 everyday transactions, how many were made in each of the following ways? 2. Continuing to think about your past 10 everyday transactions, how many were made using each of the below forms of payment? 3. Which of the following best describes how you interact with a bank?		Mitchell, Travis. "Technology Usage Rates Increasing in Emerging Economies, but Still Lag behind Rich Countries." Pew Research Center's Global Attitudes Project, 18 Feb. 2016, <a href="http://www.pewglobal.org/2016/02/22/mobile-ownership-and-internet-usage-continues-to-climb-in-emerging-economies/technology-report-01-03/">www.pewglobal.org/2016/02/22/mobile-ownership-and-internet-usage-continues-to-climb-in-emerging-economies/technology-report-01-03/</a>	
B.6 Global Interest in IoT Capabilities		Innovating Payments in Latin America	039
		"The Global Fintech Report Q2 2017." CB Insights, <a href="http://www.cbinsights.com/research/report/fintech-trends-q2-2017">www.cbinsights.com/research/report/fintech-trends-q2-2017</a>	
		How interested are you in having each of the following capabilities available to you for use in your life today? Use mobile contactless/touch payments in everyday transactions, Book and pay for additional travel services through your airline's app, Use automatic payments at the gas station without a card or going inside   Park your car at a gas pump and have it automatically fill up and pay, Order and pay for the delivery of food/drinks to a certain location from your car, Order delivery to your door via drones or robots (pizza, online shopping)   Order food or shop online and	



## Top 5 Global Consumer Needs

By country (magnitude | indices)

Continue from page 29. Graph B.4 Top 5 Global Consumer Needs by Country (Priority | Rank)



## About GfK

GfK is a global market research firm and the trusted source of smart, relevant and trusted market and consumer information with 13,000 employees in over 100 countries. Growth from Knowledge [www.gfk.com](http://www.gfk.com)

## Methodology

About the survey: The Future of Payments study was conducted by GfK Research on behalf of Visa, 9200 online surveys were collected across 16 countries; USA, Canada, UK, France, Poland, Germany, Mexico, Brazil, Argentina, Australia, China, India, Japan, South Korea, Russia, UAE between July 27th, 2017 and September 5th, 2017. All respondents do not work in Financial Services, Marketing, Marketing Research, Advertising, or Public Relations; own and currently use a smartphone; have a savings or checking account; own/use a computer or tablet; and own a credit or debit card. The research reflects the views and opinions of online populations in the 16 countries studied.

## Contact Visa

For more information, please contact your Visa Account Executive or email Visa Innovation & Strategic partnerships at [innovations@visa.com](mailto:innovations@visa.com). You can visit us at [Visa.com](http://Visa.com) or on [YouTube](https://www.youtube.com).

