VOLUME FIFTEEN, NUMBER SEVEN • DIGITAL TRANSACTIONS.NET • JULY 2018

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DIGITAL TRANSACTIONS
Trends in the Electronic Exchange of Value

'Once the floodgates are opened, this [market] will mature very quickly. The audience exists and is ready to go [and] the technology exists.'
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Cover illustration: Jason Smith, Fotolia.com

Digital Transactions (USPS 024-247) is published monthly by Boland Hill Media LLC, 800 Roosevelt Road, Building B, Suite 212, Glen Ellyn, IL, 60137. Periodicals Postage Paid at Glen Ellyn, IL, and at additional mailing offices. POSTMASTER: Send address changes to Digital Transactions, P.O. Box 493, Northbrook, IL 60065-3553.

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THE GIMLET EYE

Notes on Sports Betting

As soon as we heard that the U.S. Supreme Court had struck down a federal law that prohibited states from legalizing sports betting, we began to wonder how much of an opportunity this landmark ruling held out for the payments industry. The results of our curiosity on the matter start on page 28, but here I want to reflect on a few interesting side notes.

First, it's important to remember that, while gambling on sports may well represent a huge opportunity for processors, financial institutions, mobile-payment providers, and anybody else who wants in on the action, not much of that is going to materialize right away. The activity is legal in only four states (five if you count New Jersey, which just authorized it as we were going to press), and full-scale sports betting—single games, mobile and online access—has been legal only in Nevada.

It will take years for this market to develop. With current legislative activity in mind, Chris Grove of Eilers & Krejcik Gaming predicts 32 states will have legalized it in some form by 2023. The odds are scant that all 50 will ever authorize sports betting.

Second, don't underestimate the moral dimension of this activity. There's a reason not all states will exercise the new discretion granted to them by the Supreme Court, and there's a reason states are tiptoeing into the market. The reason is the same in both cases. Whether or not you subscribe to a moral code that frowns on gambling, plenty of voters still do—and state legislatures have to listen to them, even as they eye the potential tax revenues.

Certainly, guardrails will have to be erected to preserve the integrity of games, professional or amateur. The infamous Black Sox scandal may be a century old now, but the way in which it utterly corrupted a sport—eight baseball players conspired to throw a World Series—remains a harrowing memory.

Third, just how big the market potential is remains shrouded in fog, precisely because so much of it is illicit. Estimates range from a low of $60 billion up to $150 billion. Suffice to say it's enticing for acquirers and tech vendors.

Finally, I would be remiss if I closed without saying a word of appreciation about George Warfel. For the better part of four years, George has conducted our Payments 3.0 column with wit, panache, and deep inside knowledge. Now, he's bidding us farewell as he transitions to new ventures. The column in this issue may be his last, but I suspect it's not the last we will hear from George. Farewell, friend, and all best wishes.

John Stewart, Editor | john@digitaltransactions.net

JULY 2018 • VOL. 15, NO. 7

DIGITAL TRANSACTIONS
Trends in the Electronic Exchange of Value

Digital Transactions, Digital Transactions News, and *digitaltransactions.net* are publications of Boland Hill Media LLC, 800 Roosevelt Road, Suite B212, Glen Ellyn, IL 60137

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First Data's Star Makes a Bid for Signature Transactions

Payment processor First Data Corp.'s Star debit network is poised to aggressively challenge Visa Inc. and Mastercard Inc. for a share of the signature-debit market. That's a business the global networks have dominated since signature debit became a payment option more than 20 years ago.

Star gained a potentially big foothold in the signature market in March when Walmart Inc., the nation's largest retailer, began using its Star Signature service, First Data executive vice president Barry McCarthy said last month at the company's 2018 Investor Conference in New York City.

"With Star Signature, we intend to challenge all the incumbents and compete for all transactions," said McCarthy, who heads First Data's Network & Security Services unit, which includes Star and processing services for debit card issuers. Star aims to capture what McCarthy termed a "mid-single-digit" percentage share of the signature market.

Star first introduced a signature-authentication service about two years ago. In 2017, the network rolled out Star Signature, which McCarthy said uses a "true dual-message protocol" that he claimed competing networks lack.

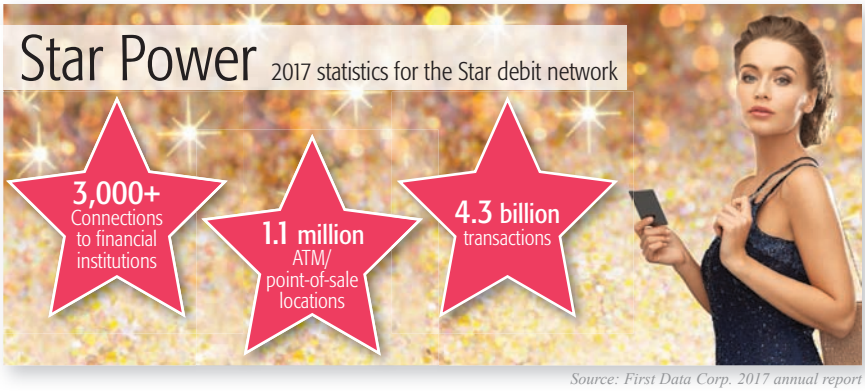
In traditional PIN-debit transactions at ATMs and the point of sale, the authorization and clearing information is contained in one message. PINless debit transactions, in which PIN authentication is eliminated, also use the single-message format. But signature debit and credit cards, typically authenticated with signatures, use the so-called dual-message format, in which the clearing/settlement message trails the authorization.

PIN-debit networks until recently have been shut out of many merchant segments because dual-messaging is essential for car rentals, ride-sharing, e-commerce orders with delayed shipments, and many other transactions in which the final payment amount may not be known at authorization.

"Dual-message capability is critical in the fastest-growing segments like digital commerce and the Internet of Things," McCarthy said. "This protocol works well in all channels, and no PIN pad is required."

How much signature volume Star may get from Walmart is unclear, since it's apparently not the only network providing the retail giant with such a service. Processor Fiserv Inc.'s Accel debit network, for example, confirmed in January that Walmart is using its signature service.

When asked by *Digital Transactions* how many debit networks it uses, a spokesperson for Bentonville, Ark.-based Walmart said by email that the company does not discuss details of agreements that have not been announced.



Source: First Data Corp. 2017 annual report

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McCarthy, however, has high hopes for Star Signature. Walmart already was using Star's PINless debit service, he noted. Star's PINless volume has been growing 40% annually over the past few years and now accounts for 10% of total network volume, he said.

"We expect to see the same thing for Star Signature over the next 18 months," he said.

Relying on 2016 figures from the Federal Reserve and internal company estimates, McCarthy said the PIN- and signature-authenticated debit market generates about $4.5 billion annually in revenue for networks.

McCarthy estimated Star currently has about 7% of that market, virtually all from PIN-based transactions and their PINless cousins, which translates into about $315 million in revenue. With its newer products kicking in, Star is aiming for about 10% of revenues.

—Jim Daly

A Report Delivers a Cold Dose of Reality on 'Frictionless Payments'

In the United States, at least, mobile wallets and contactless transactions in general have been a hard sell, but research results issued in June indicate so-called frictionless payments may themselves hold less attraction for consumers than many had thought.

Apps that allow users to set up a payment method and then let transactions unfold in the background—a system familiar to users of ride-hailing apps like Lyft and Uber—raise big security and privacy concerns with consumers, according to a five-nation survey of more than 5,000 persons conducted in April by the acquirer Paysafe Group.

Fully half of consumers said fear of fraud was holding them back from using such apps, while 52% cited concerns about how their data might be used by other entities.

These fears extend to other friction-free scenarios. Voice-activated technology, such as Amazon.com Inc.'s Alexa and Alphabet Inc.'s Google Home, are "not secure enough for shopping," according to 65% of respondents, who were surveyed in Canada, the United Kingdom, Germany, and Austria, as well as in the United States.

Nor do experimental efforts such as the Amazon Go store concept allay these fears. The store registers shoppers as they enter, tracks them as they pick up products, and charges their stored credentials as they leave. Just 11% said they'd "definitely shop this way" if a local store offered it.

The rest expressed concerns about security and privacy, said they don't know enough about it, or said they "can't see the point." That last sentiment alone claimed an 18% response (chart).

To be sure, such reactions may change over time as payments-in-the-background become more widely available. But even more familiar methods such as mobile wallets and contactless cards attracted at best mixed results, according to Paysafe's report, entitled "Lost in Transaction."

Last year, in a similar survey, fully 40% of Americans said they had at least tried contactless payment. But in this year's canvass, just 3% indicated they had used the method in the previous month. By contrast, 54% had done so in the United Kingdom, where contactless has won widespread popularity.

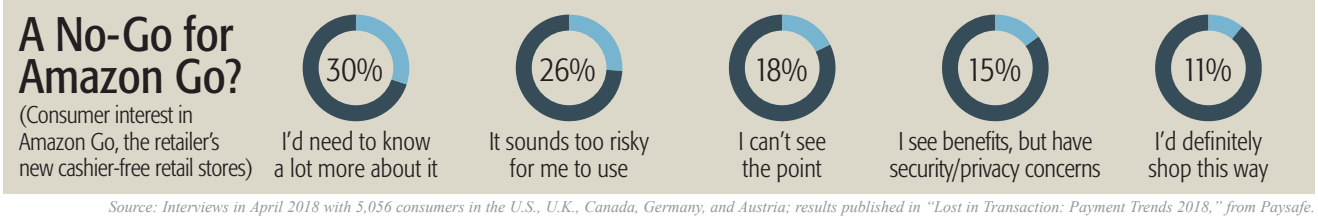
In the U.S., the initial burst of enthusiasm in 2017 "has clearly not translated into habitual usage," notes the report. While many U.S. stores have installed EMV terminals, not all have yet activated the contactless capability, based on near-field communication technology, usually built into these devices.

Similarly, mobile-wallet usage lags significantly. Only 9% of respondents said they use the wallets while shopping at physical stores. A top barrier is fear of theft of the user's smart phone or watch, a factor cited by 30%, virtually unchanged from the 2017 results. Some 28% confessed they were unaware of where they can use a mobile wallet, while 26% said using a contactless debit card was no less convenient.

Still, owners of these technologies are much more enthusiastic about using them to make payments. Some 44% of smart-phone owners have used their device to pay, while 48% of smart-watch users said the same thing.

That may bode well for future results. As the report notes, "[O]nce people are exposed to the benefits of the technology, adoption rates and attitudes improve extremely quickly."

—John Stewart



Source: Interviews in April 2018 with 5,056 consumers in the U.S., U.K., Canada, Germany, and Austria; results published in "Lost in Transaction: Payment Trends 2018," from Paysafe.

Worldpay Tests Dynamic CVV Cards

Worldpay Inc. is adding another tool for financial institutions in their efforts to curtail the pricey and nuisance-laden aftereffects of rampant data breaches. The company's solution comes in the form of credit and debit cards that use a dynamic card-verification value.

Cincinnati-based Worldpay is testing the Motion Code-enabled credit and debit cards with two undisclosed credit unions and a bank before broader availability, expected later this year. The hope is to make online shopping more secure.

Developed by smart card maker Oberthur Technologies, now known as Idemia, Motion Code technology replaces the static printed CVV on the back of a payment card with a dynamic one viewable on a small screen. The frequency of code changes is based on the issuer's specification. A dynamic CVV means a criminal may obtain the card number, but will be unable to verify the CVV because it will have changed.

In addition to the conventional EMV and contactless features of a standard payment card, these new cards contain an electronic ink display on the back, in place of the static CVV. The CVV is always visible and cardholders do not need to press a button to activate it.

A transaction made with a Motion Code-enabled card works like any other for the consumer and the merchant. But the process changes after the transaction data flows to the issuer for authorization. The CVV is checked against a server Worldpay hosts to ensure its veracity. The issuer still makes the final decision about the transaction authorization. No merchant integration is needed.

As a processor for approximately 1,100 financial institutions—mostly in the United States—Worldpay is keenly aware of the fraud-related issues they face, according to Kelly Gauvey, Worldpay director of debit card services. "CNP fraud is huge," Gauvey says.

While there are various measures to counteract fraud, such as EMV 3-D Secure and its upcoming second version, issuers need options, she says. Gauvey adds that payment cards need extra protection. "It was time we focused on the cards. They're not going away," she says.

The fact that consumers are not widely adopting mobile wallets in lieu of cards is another factor. Because of this, issuers need something that consumers use, Gauvey says.

Still, issuers may want to educate their cardholders, especially those who have memorized their CVVs and are used to them not changing, Gauvey says. The technology doesn't change what cardholders are used to, except for the online-shopping aspect.

The latest anti-fraudster tactic: the ever-changing CVV.

Issuers will need reassurance, too, that because the form factor is familiar to cardholders they are not likely to change their daily spending habits because of it, she says.

Motion Code-enabled cards are not cheap, ranging between $15 and $17, Gauvey says, compared to the $2 average cost for an EMV card. The idea is that the dynamic CVV will prevent the issuer's cards from being snared in a breach, yielding a return on investment. For example, Gauvey says reissuance costs per card

may be as much as $30 to $40, which includes the replacement cards and case analysis.

Then there is the actual fraud prevented. In tests by Idemia of more than 600,000 cards that made more than 4 million authorized transactions in 10 international locations, there were no reported instances of card-not-present fraud.

"My ultimate goal is to provide a complete picture of the cost of the card versus the fraud instances that would be avoided," Gauvey says.

The contactless feature is a big change, too. The idea is to give consumers every possible payment option, Gauvey says, especially now that most point-of-sale terminals are contactless-capable. "If the terminal is out there, we want to give the cardholder the complete solution," she says.

—Kevin Woodward

USAA Sues Wells Fargo Over Check-Capture Patents

USAA, the big insurance company and bank serving current and former military members and their families, filed a federal lawsuit in June accusing Wells Fargo Bank of infringing on four of its mobile remote deposit capture patents.

The lawsuit, filed in U.S. District Court in Marshall, Texas, asks for unspecified damages. The lawsuit appears to be the first legal action USAA has taken since it asked financial institutions just over a year ago to license its RDC technology, for which it holds about 50 patents.

A spokesperson for the bank's parent company, San Francisco-based Wells Fargo & Co., declined to comment on pending litigation.

With a customer base spread throughout the nation and the world, San Antonio, Texas-based USAA has only four branches. To serve its dispersed clientele, USAA in 2006 launched a scanner-based remote deposit capture service, and later rolled out remote capture services for smart phones.

"To date, USAA has invested many millions of dollars and thousands of employee-hours in the development and implementation of its mobile-deposit technologies," the civil complaint says. "USAA has not licensed its competitors such as Wells Fargo to use these patented technologies."

In light of the now-widespread use of mobile capture by banks and credit unions, a spokesperson declined to say why USAA specifically chose to sue Wells Fargo. But Nathan McKinley, USAA vice president of corporate development, told the *San Antonio Express-News* that "Wells Fargo is one of the biggest adopters of remote deposit capture. We believe they are leveraging the technology to improve their bottom line, and they failed to take a license."

The lawsuit claims Wells Fargo had 21 million active mobile-banking customers as of February. Most bank mobile apps now enable customers to snap a picture of the front and back of a check and upload the images for deposit to a checking or savings account.

USAA said in the complaint that it approached Wells Fargo last August and "engaged in good-faith negotiations" regarding its patents. The bank, however, still has not licensed any of the patents or otherwise compensated USAA, according to the complaint.

The USAA spokesperson declined to say whether the company planned to sue any more banks.

MONTHLY MERCHANT METRIC

Q1 2018 Account Attrition And Growth

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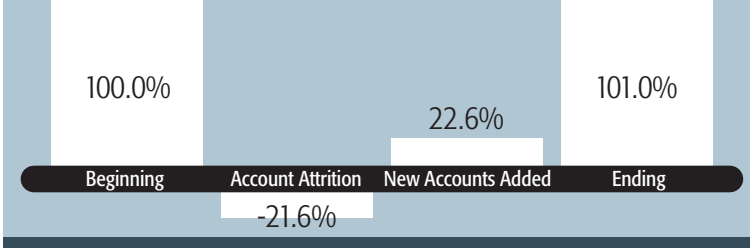
New Accounts Added—Total new accounts in given period divided by total portfolio accounts from same period of the prior year.



Note: This is sourced from The Strawhecker Group's merchant data warehouse of over three million merchants in the U.S. market. The ability to understand this data is important as SMB merchants and the payments providers that serve them are key drivers of the economy.

All data is for SMB merchants defined as merchants with less than $5 million in annual card volume.

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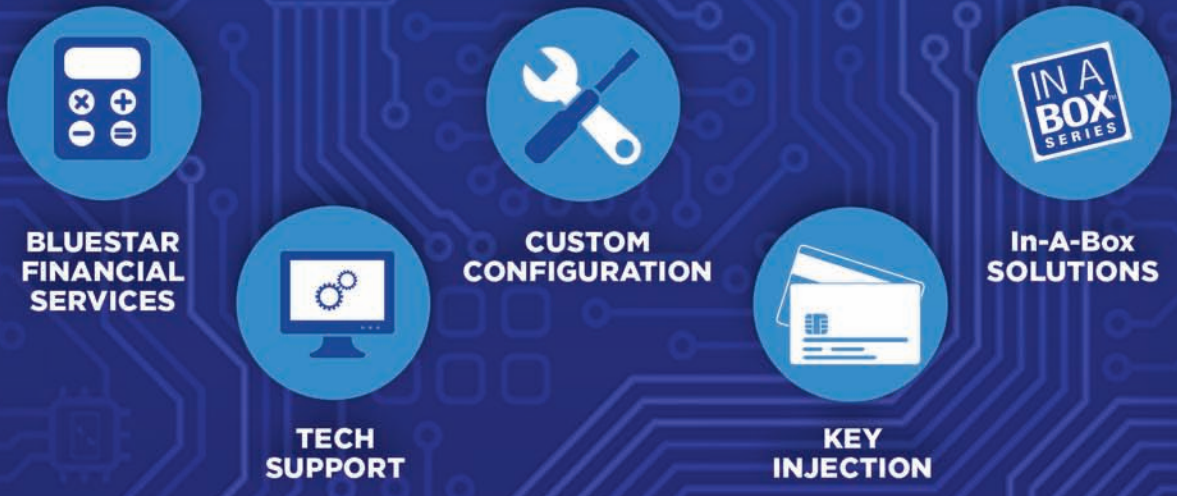

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In 2014, USAA and Mitek Systems Inc., which worked with USAA on technology development in remote capture's early years, settled patent-infringement and related allegations against each other.

Industry researcher and publisher John Leekley of Alpharetta, Ga.-based RemoteDepositCapture.com calls the lawsuit "certainly an interesting development." He notes that very few banks or credit unions have developed their own RDC technology.

"I would estimate at least 95% of all remote deposit and mobile deposit applications at financial institutions are provided by outside vendors," Leekley says by email. *—Jim Daly*

Generation Z's New Way of Thinking About Payments

Enough about Millennials.

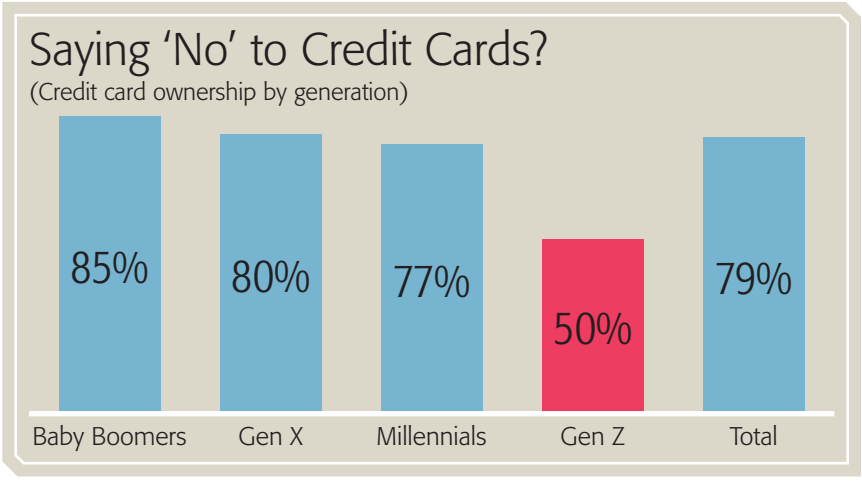
The succeeding group, Generation Z, is about to become a major force in financial services and payments, and that will change how payments providers market services to them.

That assertion, in the "Technologies Influencing Generation Z Payments Adoption" report released in May by Javelin Strategy & Research, is based, in part, on the simple fact that this generation, born since 1995, came of age with the smart phone.

"Millennials may be the Internet generation, but Gen Z is the smartphone generation," the report notes. "It's been only in the past five or 10 years that financial institutions have come to grips with how to serve Millennials, and now they are confronted with the task of adapting again for the youngest of consumers."

In a survey of 3,000 individuals, Pleasanton, Calif.-based Javelin found that Generation Z consumers used smart phones for daily activities more than Millennials, Generation X, and Baby Boomers. For example, 84% of Generation Z used a smart phone to access a social network, compared with 72% of Millennials, 63% of Generation X, and 49% of Boomers.

In another distinction, 37% of Gen Z consumers—between 18 and 22 years old—prefer using a major debit card usable anywhere, compared with 34% of Millennials when they were between 18 and 24 in 2012. Only 18% of Gen Z chooses cash, compared with 33% of Millennials in 2012.



Source: Javelin Strategy & Research

As for credit cards, 51% of Gen Z members do not plan to apply for a credit card.

This social-media engagement could have far-reaching implications for the payments industry. "Artificial-intelligence agents, or chatbots, may take on greater importance. For members of Gen Z, social media have always been the starting point for connecting with and exploring the world around them," Javelin says.

Zelle, a person-to-person payments network, might benefit from this by developing a chatbot and integrating its service into digital assistants, the report says. Mobile-banking vendors should look to develop these capabilities for their clients, Javelin says, given Zelle's position within a financial institution's app.

The convergence of social, shopping, and payments, fed by artificial intelligence, "plays directly to the habits of the Gen Z consumer," the report says. "The channels Gen Z interacts with are evolving, providing valuable insight into how they want to interact with payments—from e-commerce purchases to complex financial transactions—and what they will come to expect."

For payments providers, especially banks, understanding this and offering services that incorporate the Gen Z approach to payments will be critical. Javelin says consumers are using technology for guidance, instead of as a starting point, and the channels a consumer initiates a payment transaction from are changing.

"This requires thinking about payments in a different way, since the route to the financial institution or payments facilitator may be through another channel, such as social media or a secondary site," Javelin says. DT

—Kevin Woodward

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Security Notes

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There are many ways to inject unpredictability into payment systems. The more sophisticated means include weaving high-quality randomness into your data technology on every level. This will deny your cyber adversaries their winning asset.

Today, by and large, we are sitting ducks. We serve as stationary targets for our enemies to train on. We use standard, mass-produced hardware. We run the very same operating systems. Our network protocol is in the open. We download the very same application programs. In fact, this standardization is the key factor in hackers' success.

You don't need a truckload of math to appreciate this simple principle: To hack into a system, you need to know it better than its routine operator. Hackers are studious. Over time, they figure out how to hack it.

If, prior to the attack, just as a matter of security policy, the running protocol changes and the deployed tools are switched, then the hackers are left hanging. The knowledge they gathered is no longer relevant. Think about it. Now, instead of being surprised by the hackers, you surprise them by taking the initiative.

My clients frown when I talk about this. "We are in a cutthroat business," they say. "Efficiency is a top priority. Streamlining our operation and getting used to a smoothly working protocol is golden. Yet, you tell us to undo what we try so hard to do!"

"No!" I respond. "I don't ask you to use an inferior protocol, I ask you to use a different protocol, and to switch randomly."

Here's an example of this idea. A financial user kept CNN news programs open on his work computer. He got them by clicking on a phishing email. The site accurately displayed the running CNN page, except that one picture each day was stealthily loaded with malware that kept coming. It was a dormant code with an unknown ultimate objective. And then, by chance, the user switched to another news source, cutting off the hacker's channel.

One simple means is to add an extra control number to validate transactions. This can be done efficiently, and it wreaks havoc on abusive code, since hackers are unaware of the unpredictable add-on. Another simple and helpful trick is to switch the order of two procedural activities that can be done in either sequence.

You may not even be aware that your latest unpredictable protocol change has catapulted a small army of professional hackers in Latvia into a frenzy.

It takes some creativity, but changes can be initiated by anyone on the protocol sequence line.

The principle does have its high-tech side, mainly through effective use of randomness. Quantum-grade randomness is already commercially available. As Einstein, Bohr, and Feynman assured us, quantum randomness is the essence of unpredictability. A new family of ciphers is coming out, based on effective use of randomness, to build up payment technology into a thoroughly unpredictable operation, namely a thoroughly unhackable operation.

The flip side is worth mentioning: If we allow convenience to dictate our policy, if we strive to make security invisible and unburdensome, if we embrace our predictability and just pay more to some security vendors, then we will see the cost of security rising along with the frequency of security breaches.

It's so simple, yet so hard to swallow. Astute financial executives admit to but ignore the maxim, "Our predictability is our vulnerability."

"This realization creeps into me," confessed an experienced chief information officer: The more predictable we are, the more hackable we are. If we introduce random changes, or any changes, we take the initiative.

My clients often say: "The vendor pooh-poohed your advice!"

"Of course," I retort, "he has a fixed predictable solution to sell you!" ■

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Payments 3.0

Deep Trends in Banking And Payments

George Warfel • *GWarfel@haddonhillgroup.com*

As this is my last *Payments 3.0* column, I thought I'd share some of what I call deep trends that will, I expect, affect the banking and payments industry in the coming years.

Banking and payments will always be more about trust than technology. Most people aren't paying for things with their mobile phones. And the majority of those who are do it via a debit card or bank account. Even Apple has had to seek the embrace of Goldman Sachs and issue a credit card with reward points to generate volume for Apple Pay. Nor are more than a fraction of us borrowing from a loan-bot, except where a bank uses one for initial screening or for routing inquiries.

Most consumers get involved with new payments technologies when a known bank or card scheme adds one to its existing payments platform, not when a technology company decides to try its hand at payments services. In the long run, the role of most fintech firms will be that of parts supplier to banks and payments companies—much as IBM and other technology firms are today.

If there is a lesson for banking and payments in all of this, it might consist of the following principles:

- Keep the bank or payments-scheme brand foremost, regardless of who makes the technology.
- Emphasize the safety consumers enjoy when they use a regulated entity for their payments rather than a company that prioritizes disruption and breaking things.
- Think deeply before filling senior-executive ranks with people who haven't been through a banking crisis, even if they've done multiple tech startups. It's a very different kind of risk management.
- Since what financial institutions sell is products that help people use their money, how well-off people are is as important to the banking industry as water is to the agriculture business.

The last point merits some discussion. If the economy defaults on its ability to provide stable employment at good wages, housing at reasonable prices, and affordable health care, it is the banking industry that will find out first that the country's got a problem. Somewhere between 15% and 30% of purchases (e.g. payments) are discretionary. Unless individuals feel that their income is both sufficient and dependable—and also feel a major illness in the family won't wipe them out financially— there will be a noticeable drop in discretionary payment transactions, as well as in new mortgages and other lending. It won't matter how clever our financial technology becomes if there won't be enough people with enough income to use it.

This means politics matters more for the financial industry than it does for other types of businesses. Supporting political decisions that will result in dependable jobs at decent wages is far more important to a financial institution's success than getting the branches so automated we don't need any employees, or teaming up with whatever startup seems to have the slickest gizmo for sharing the cost of a pizza.

If, as I expect will happen, we make the necessary political and governmental adjustments to foster a growing customer base that needs banking services, the coming advances in banking technology are going to give us the tools to serve these customers both better and more profitably. It is Moore's law that enables how many new services can be provided via the ever-increasing amount of work a silicon chip can do as its cost continuously declines. This principle of practical engineering will continue to allow technologists and bankers to provide new banking and payments services that will make A.I. mortgage machines and sub-15-second worldwide payments very old hat. There is a lot more change to come than anything we've seen yet.

A few thank-yous as I step out the door: To John Stewart at *Digital Transactions,* who first approached me with the idea of the column; to Dick Fletcher of Beneficial State Bank, who has been both a client and a co-worker over much of our careers and has provided an example of how much good a well-run bank can do in the world; to Gordon Werkema of the Federal Reserve Bank of Chicago and Marie Gooding of FRB Atlanta, who have kept me involved on the leading edge of payments from Check 21 to faster payments. And to all of you who read the column and have e-mailed me or called with your comments and suggestions. ■

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A Cloudy Future for the Point of Sale

Kevin Woodward

Backed by cloud-based networks, tablet POS systems scramble to find the preferred configuration for merchants.

Eight years on, the notion of tablets as the future of point-of-sale systems can be dispelled. Specifically, the form factor is not the critical element in the ascendancy of POS systems and how they connect disparate business functions, including payment processing, into a single interface for the merchant.

No, the critical element is what connects the software on the tablet and the payment transaction to everything else the merchant cares about. It's the cloud, a network.

The tablet-POS system providers that emerged over the years—abetted greatly by the debut of Apple Inc.'s iPad in 2010—haven't fallen short because of a device, in most instances. Rather, it's because of a failure to understand the value of this connectivity for merchants, especially smaller ones, observers say.

"I'm not so sure it's about tablets, but about extensible software," says Thad Peterson, senior analyst at Aite Group, a Boston-based payments research firm. "It doesn't necessarily need to be a tablet."

Indeed, software is the real winner of the tablet-POS system battle. It is what separates the current field of contenders from those with diminished competitiveness. It will be what distinguishes those still winning merchants in the future.

'A Delivery System'

At first, creating software that could accept payments on the iPad was enough to get market share. The iPad was novel in design, and was cheaper and smaller than conventional PC-based POS systems. "Just say you're Revel [Systems Inc.] and you have this very cool POS that runs on the iPad," Peterson says, referring to one of a number of entrants that emerged to exploit tablet hardware. "They got a lot of interest."

Then, as cloud connectivity evolved and merchants demanded more capabilities, the opportunity to add more features came along. "All the tablet is is a delivery vehicle," he says. "It's not the tool. The tool is in the cloud."

At San Francisco-based Revel, the importance of the cloud and what it enabled was realized early, says Erick Kobres, chief technology officer. He likens the evolution of tablet POS systems and their connectivity to that of a portable automotive GPS device. "Think back 10 to 15 years ago," Kobres says. "A satellite navigation system was only as good as the version of the map purchased and loaded onto the device."

It's different today. GPS devices can easily be updated, and many consumers use mapping apps in their smart phones. "Today, you see significantly more information on your GPS, such as more traffic indicators and your estimated time to work," says Kobres. And today, cloud-based POS systems are capable of much more than payments.

At the heart of this connectivity is the cloud. "Starting with [small-and-medium-size] customers, because they are innovators and entrepreneurs, the ability to manage their businesses from anywhere is very important to them," Kobres says. "It's becoming increasingly important for enterprise customers as well."

It's a phenomenon experienced across the industry. "The conversion to what I call the cloud-connected POS is starting to accelerate," says Michael DeSimone, president and chief executive of ShopKeep Inc.

When he started at New York City-based ShopKeep three years ago, DeSimone noted a new competitor announcement almost every week, he says. That's not the case now. "The market is starting to rationalize," DeSimone says. "The ones at the top of the stack are the most likely to stay around. It's not going to be a winner-take-all market, but it won't stay as fragmented."

To be sure, the tablet's form factor still matters, DeSimone says. "It takes

up less space and can be deployed to more places to pay," he says. "[Employees] can be moving around the store. They take up less room." Plus, employees and customers are familiar with the touch-screen interface and how apps work on tablets and smart phones.

While the cloud is central to modern POS systems, most merchants will continue to rely on the tablet as their device to access services hosted in the cloud.

"Wherever we've been investing is making it easier for our merchants and their customers to interact with their businesses," DeSimone says. "It's the whole connectivity piece that's a big deal for our merchants."

Indeed, Peterson likens the connected approach to a POS system to a delivery system. Just selling POS hardware is not very profitable, he says, and the value-add it offers merchants is limited.

With services like Square Inc. and First Data Corp.'s Clover, both strong competitors that mirror what others aspire to, the goal is to solve problems for merchants, he says. "They didn't look at it as hardware. It's much more about a delivery system that would meet merchant needs beyond payments," Peterson says.

Square clearly views it as such. "Square's job is to make sure sellers of all sizes have equal access to the tools they need to grow," a Square spokesperson says. "A few years ago, local business's only options for accepting credit card payments set them back hundreds of dollars, overwhelmed their countertops with bulky hardware, and required stringent, binding contracts."

'The Complete Platform'

The appeal of cloud-connected software is its ability to network disparate business functions into a centralized control center for merchants.

"With cloud POS systems you can process payments through the Internet—without clunky and expensive services, or pricey software that makes you buy a new version to upgrade," the Square representative says.

First Data, which bought Clover in 2012 and shepherded the launch of the original Clover Station in 2013, is about to mark a milestone this year as it expects to ship its 1-millionth Clover device, said Guy Chiarello, First Data's president, during an investor event in June. Annualized processing volume is nearly $60 billion, "which has been growing over 50% recently," Chiarello said.

One of Clover's key advantages is that it offers merchants more than 350 apps produced by more than 1,000

developers. To date, there have been more than 2 million app downloads, First Data says.

It expects more, especially with anticipated launches of Clover in Germany, Canada, Argentina, and Austria this year. The Atlanta-based processor also will launch a bank partner-branded online signup process for Clover, and it will expand integration opportunities for independent software vendors.

Efforts like what First Data is doing with Clover, Square with its Square for Restaurants, Revel Systems' customized setups for different verticals, and ShopKeep's introduction this year of an Android version of its software set to debut on Clover directly address the versatility of a cloud-based POS system.

The ShopKeep-Clover cooperation is part of ShopKeep's plan to ensure it can operate on multiple platforms, DeSimone says. While it may seem counterintuitive for Clover to make ShopKeep's POS app available to its users, the logic is compelling, he adds. "It turns out the app market in the POS space doesn't pan out," DeSimone argues. "Merchants don't want to configure their POS systems."

He says First Data partnered with ShopKeep for the quick-service restaurant and retail verticals. "We sell Clover devices as a hardware option, and they have begun to sell Clover with ShopKeep in agreed-upon segments," DeSimone says. The move is indicative of the future of POS systems, he says. "In reality, it's coming down to the complete platform," he says. "It's a combination of hardware, software, and connectivity."

'Pricey And Tedious'

Square is another provider that is attuned to the shifting needs of merchants, says Aite's Peterson. "Square segments their business on the necessary functionality for the merchant," he says. "There's a whole standalone marketing effort for Square

Clover offers merchants more than 350 apps.

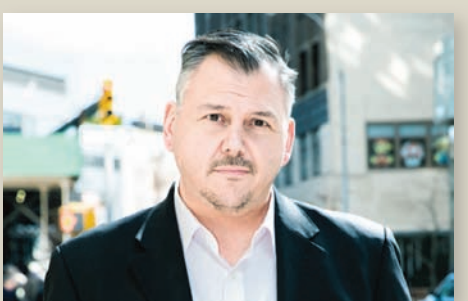
To date, there have been more than 2 million app downloads.

ShopKeep's introduction this year of an Android version of its software set to debut on Clover directly addresses the versatility of a cloud-based POS system.

A Clover device running ShopKeep software.

(Photo: ShopKeep)

'The conversion to what I call the cloud-connected POS is starting to accelerate.'



(Photo: ShopKeep)

—Michael DeSimone, president and chief executive, ShopKeep Inc.

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(Photo: Aite Group)

> 'All the tablet is is a delivery vehicle. It's not the tool. The tool is in the cloud.'
>
> **—Thad Peterson,** senior analyst, Aite Group

Capital, a separate one for Square Cash, a separate one for Square as a payment terminal."

Peterson recalls a conversation with a POS terminal maker (whose name he will not disclose) that wanted to transform itself into a platform. "I looked at those guys and said, 'You're sitting right next to First Data. You can call yourself a platform, but if I'm a merchant I'm going with someone who can meet all of my needs.'"

Small merchants finally have access to detailed analytics about their businesses thanks to the availability and adoption of cloud-based POS systems.

"Having access to analytics is a crucial business tool for sellers in order for them to make informed and accurate business decisions," the Square spokesperson says. "Most products on the market are pricey and tedious to set up, which is not the best option for small businesses. With Square Analytics, sellers see real-time charts that shows exactly which items are flying off the shelf, so they can adjust their inventory accordingly."

While powerhouse tablet POS systems have emerged, new entrants are not dismayed, says Jody Muehlegger, chief operating officer at Handpoint, an Iceland-based POS platform with a U.S. office in Palo Alto, Calif.

"Everybody is still trying to get into this space," Muehlegger says. "Handpoint has been saying for a long time that the tablet is to the cash register what the computer is to the typewriter," she says. "People are still buying cash registers and people are still using countertop terminals, but the POS will consume all of that."

There is a lot of inertia surrounding conventional countertop POS terminals, ShopKeep's DeSimone acknowledges. "People don't like to change their payment terminals," he says. That tends to be the case until they are persuaded by the benefits of a cloud-based POS system, he says, such as the ability to manage various business needs from a consolidated site, even remotely.

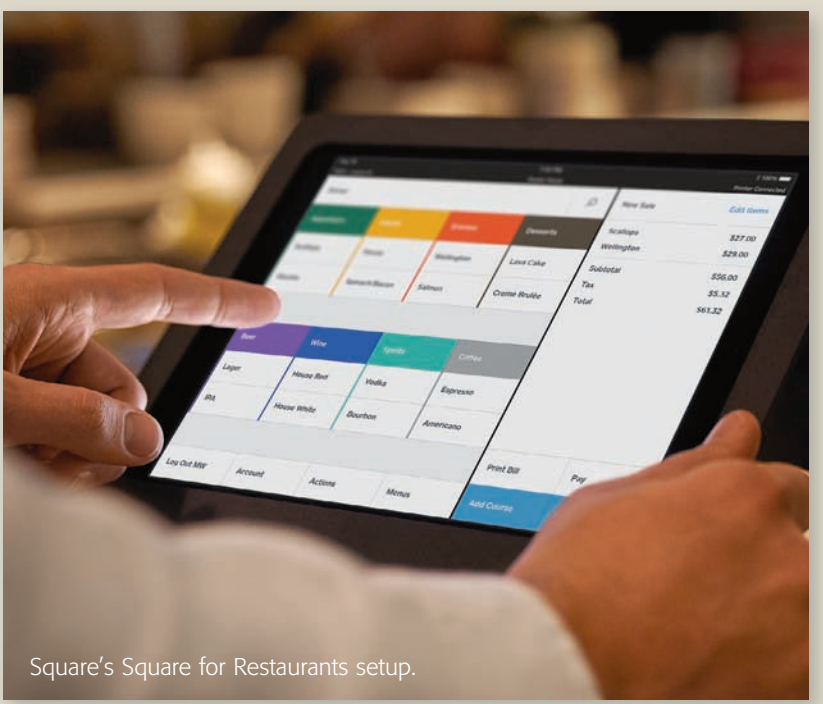
DeSimone estimates that between 15% and 20% of U.S. merchants have made the move to a cloud-based POS system. The remainder are using conventional technology, he says. As the market progresses, the tablet form factor will win out, he says, and the differentiating piece is the quality of the software running on it.

'The Differentiator Is the Cloud'

Smart phones might even be a more preferred device, especially as PIN-on-glass evolves, says Peterson. With PIN-on-glass—in which the PIN is entered directly on the mobile device instead of on a dedicated PIN pad—a smart phone could be the POS terminal, he says ("Get Ready for Mobile PINs," March). It'll depend on what merchants want.

"Those who listen to the merchants are the ones that are going to win," Peterson says. The quality of the applications will win out, he says.

"Experience is you end up with three or four major players in every separate merchant segment," Peterson says. "A lot of people will bail on the business or move into specific segments they know they can be competitive in. The differentiator is the cloud, not the device." DT



Square's Square for Restaurants setup.

(Photo: Square)

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A Future the Payments Industry Should Demand for Digital

Laura Townsend

The global networks' ambition for streamlined e-commerce with a single buy button sounds great—until you consider all the implications and ponder the unanswered questions. Here's an alternative approach.

As consumers leverage digital channels more often for transacting, there has been a sense of optimism that new technology players offering creative consumer experiences will enhance overall retail commerce. Recently, however, it has become unclear if that optimism is fully justified in light of a new remote-commerce framework being introduced by the global payment networks ("The Shared Checkout's Slow Check-in," June).

Late last year, EMVCo, the standards body controlled by the global card networks, announced a new Secure Remote Commerce Framework that promises to facilitate interoperable and secure payments in remote-commerce channels specific to network-branded payment cards. It also promises to deliver security, standardization, simplification, fraud reduction, and increased conversion for digital commerce—all of which are goals shared by the merchant community. Global networks recently announced support for this framework.

Although these are shared goals, merchants have reservations due to the limited details on implementation plans and impact to the customer experience. Moreover, the Merchant Advisory Group has concerns about other implications this framework may introduce, regardless of intent.

Not Forward-Thinking

Visa's chief executive, Al Kelly, has said the move to the SRC framework and a single buy button (which other networks seem to support) will be analogous to the situation you see in the physical world, where a single terminal processes all network payment products. He describes the current e-commerce world as equivalent to a physical checkout with multiple terminals, which he describes as a terrible experience.

I would agree wholeheartedly that the incredibly confusing and cumbersome list of payment brands a consumer must consider—as required of merchants by network brand guidelines—is quite disappointing. Layered on top of that is each network's own proprietary buy-button solution, including Visa Checkout, Mastercard Masterpass, and American Express Checkout. Indeed, the networks have fostered the very digital environment in which friction proliferates and which they now deplore.

Although improvements that would provide a simpler and easier digital-checkout experience are definitely warranted, creating a digital experience that replicates the physical experience is not a forward-thinking direction. The SRC framework or single buy-button concept that would support this approach appears to simply port over a network-centric model to the world of digital payments.

The framework and related draft technical specification for SRC are being designed under the leadership and market influence of the major global payment networks. In light of the insignificant uptake for their own digital wallets, these global networks appear to be looking to migrate those products into this new SRC system, enabling the single buy-button experience.

The implementation of this specification will be encompassed in a model with costs, rules, and requirements defined by the networks themselves. The MAG's concern is this approach may bring into the digital world some of the issues that exist in the brick-and-mortar world.

Limitations

For example, currently any merchant that accepts the EMV contactless specification (also published by EMVCo) must accept all wallets, which is a silent extension of the long-established "honor all cards" network rule.

In addition, there is no visibility provided to the merchant as to the

identity of any third-party wallet presented at the terminal, since the wallet-identifier field is an optional but unused field in the technical specification as a result of individual network implementations. I suspect this same limitation would be implemented in this new SRC buy-button model.

Another example is the limitations that payment tokenization, as designed by EMVCo and implemented by the global networks, place on debit-routing capabilities. To date, some networks have made it very clear that merchants must choose between security (in the form of network payment tokenization) and their debit-routing rights should they choose to implement MasterCard Digital Enablement Services (MDES) or Visa Token Service (VTS) for in-app or ecommerce payment transactions.

This inhibition on merchant debit routing is not due to any technology limitation. Rather, it's due to business practices, commercial arrangements, and inaction with respect to enabling this capability. These are solvable, should those global networks choose to do so.

Recently, one network offered cause for cautious optimism with respect to addressing limitations on merchant debit routing for tokenized transactions. However, until there is clarity on how this functionality would port across all networks and into SRC, respectful concern remains in the merchant community regarding this new SRC "buy button" model.

Other Issues

There are other issues. The network-centric model incorporates operating rules that haven't progressed as fast as modern-day payment experiences have. Consumers like to shop and transact across various channels, yet the rules merchants must follow to avoid compliance violations do not seamlessly support these cross-channel experiences.

In addition, the network-defined liability and cost models haven't progressed sufficiently in this omnichannel world to support the blurred lines between physical and digital shopping and transacting. Until the operating rules are modernized and the liability rules become more balanced, I suspect these challenges will remain, regardless of how the SRC technical framework and technical specification are implemented.

In this network-centric model of a single network buy button, what other implications might there be? Will a merchant, on its own e-commerce site, still be able to prompt a consumer with a seamless proprietary payment

> Let's move away from this approach by which global networks are leveraging a standards body where decisions are owned by one stakeholder group. —LAURA TOWNSEND

option such as the Target Red Card, the Kohl's private-label card, or the Amazon Pay alternative that offers customers a value exchange? Or will that flexibility be sacrificed?

How can merchants possibly integrate into a single network buy button the capability to discount or surcharge (where acceptable), or, more broadly, to prompt for payment alternatives, with incentives that benefit both the consumer and the merchant? These options foster competition, but it is difficult to ascertain what the implications will be in a single network buy-button scenario.

The question of who will fulfill the roles and responsibilities outlined in this framework is still unclear. Who will have the technical capabilities to fill these roles? How do providers understand what is required to participate in any of these roles? How do interested and capable parties onboard? What are the compliance requirements? Who will enforce compliance?

'A Far Better Approach'

Unfortunately, those parties not at the EMVCo table will continue to have more questions than answers, while those sitting at the EMVCo table are farther ahead in their influence over the design of SRC, and ultimately farther ahead in their own development and implementation plans.

Visa has already announced plans to transition Visa Checkout accounts, and those parties that support VCO, over to SRC, starting this fall. The technical specification hasn't even been published, yet Visa is able to announce a deployment leveraging the unpublished specification.

By design, go-to-market is much timelier for those parties that co-develop and obtain advance access to technical specifications, leaving those that do neither to just wait and see. This puts competition at an unfortunate disadvantage.

Finally, this lack of cross-stakeholder engagement early in the design will risk a payment product being introduced that once again will not be deployed by the industry. Why? Because the product doesn't meet the needs of all stakeholders, or the development and deployment cycle is too difficult and disruptive to retail businesses, or the return on investment is not positive or even neutral.

I encourage the global networks to engage all stakeholders now in the design of this solution, without a pay-to-play model, so we can get the digital-commerce experience right in a safe and secure manner.

In the words of the Electronic Payments Coalition, "A far better approach is to encourage retailers, issuers, and networks to collaborate on developing and implementing a holistic, dynamic security strategy that provides real protection for consumers."

The MAG couldn't agree more. We have been advocating for this approach for a decade. Let's create an open forum to collaborate among all stakeholders. Let's move away from this approach by which global networks are leveraging a standards body where decisions are owned by one stakeholder group. That fosters a "pay-to-be-informed" membership model with stringent confidentiality requirements, limiting even a paying member's ability to participate effectively.

Our mutual customers deserve a much more collaborative approach. DT

Laura Townsend is senior vice president of operations at the Merchant Advisory Group. Reach her at laura.townsend@merchantadvisorygroup.org.

> The lack of cross-stakeholder engagement will risk a payment product that will not be deployed by the industry.

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THE SPORTING CHANCE

Now that legalized sports betting is up to the states, a market some say is worth **$150 billion** in transaction value lies in acquirers' cross-hairs.

As this market goes legit, how soon can they cash in?

BY JOHN STEWART

NO SOONER did the U.S. Supreme Court rule that the question of legalized sports betting is up to the states than speculation ran rampant about who will see a payoff. State governments, sports leagues, casinos, online fantasy-sports platforms—all are expected to get in on the action. But the high court's 6-3 decision also opened a gaping opportunity for payments processors, and more of them are now preparing to step up to the plate.

"We think the potential is tremendous," says Neil Erlick, executive vice president for business development at Paysafe Group Ltd., a London-based processor with major operations in the United States.

The allure of sports wagering is such that players already in the game—such as Paysafe and Cincinnati-based Worldpay Inc.—are likely to find plenty of rivals jockeying for a piece of this nascent market. "Absolutely, it will be competitive," predicts Joe Pappano, senior vice president of Worldpay's gaming division. "It's an emerging category, and it's got great opportunity."

Since most sports betting outside of Nevada and a few other states has been illegal, nobody knows for sure just how big this market is. A common estimate puts the volume of betting—authorized and illicit—at around $150 billion annually, though some experts put the number as low as $60 billion. Nevada alone accounts for $4.9 billion, a share that has nearly doubled since 2009 (chart, page 32).

But while the market is tempting, there are obstacles that could bedevil even the most determined provider. The most obvious, of course, is the moral pall that has always hung over the subject of gambling. That creates a wide range of issues as state legislatures exercise their newly won discretion on sports betting. These range from legal injunctions to the reluctance

Sports Betting's Potential

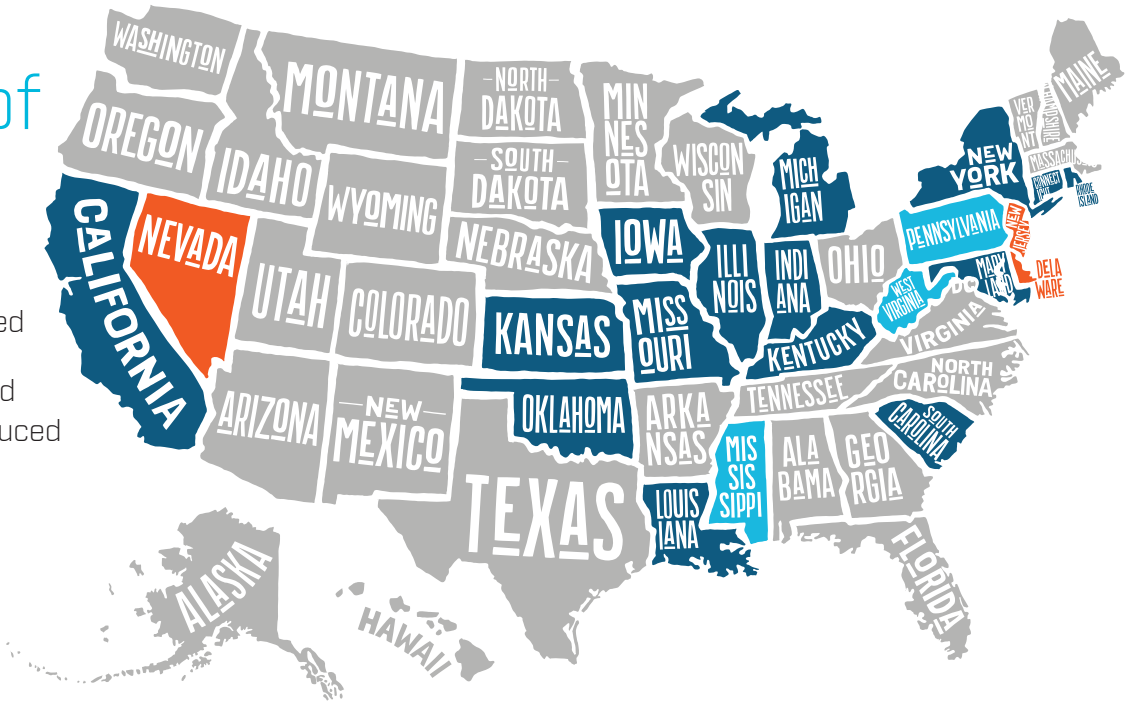
Note: Dollars at 2015 value. Scenario assumes a "future stabilized year of operations" after regulatory structures in all 50 states have been in place for some time. It also assumes online and mobile betting as well as casino gambling. Tax revenue based on average 10% rate on gaming revenue and average 0.25% on the total bet.

Source: Oxford Economics, "Economic Impact of Legalized Sports Betting," May 2017

The States of Sports Betting

- Full-scale legalized sports betting
- Recent bill passed
- Recent bill introduced but not passed
- No recent bill introduced

Source: ESPN "Sports Betting Bill Tracker"



'What banks could earn on swipe fees is huge, but banks don't take risks lightly.'

Matt Schulz,
senior industry analyst,
Creditcards.com

of many card-issuing banks to authorize transactions coded for wagering.

"What banks could earn on swipe fees is huge, but banks don't take risks lightly," says Matt Schulz, senior industry analyst at Creditcards.com. "Gambling by its nature is risky. That will give them a lot of pause."

Tiptoeing In

As of early June, just three states besides Nevada allowed sports betting in one form or another: Delaware, Montana, and Oregon. New Jersey, which had been the plaintiff in the case that went to the Supreme Court, was on the cusp of authorizing it.

All told, legislative action so far (map graphic) indicates some 32 states will have legalized sports betting online or in casino sports books, or both, within five years, predicts Chris Grove, managing director for sports and emerging verticals at Eilers & Krejcik Gaming LLC, a Santa Ana, Calif.-based consultancy.

The odds that all 50 states ultimately will allow sports betting are just about nil, says Grove. But the 50-state potential, the top estimate of what legalized operations could earn annually, is in the $16 billion to $17 billion range, according to his estimates.

Other estimates are more modest. Last year, Oxford Economics worked out just how big sports gambling could be if permitted nationwide (chart, page 29). Assuming a "future stabilized year" after all operations have established themselves and all states have had a chance to put rules in place, and also assuming widely available mobile and online access, the firm figures sports wagers that year would total $287.4 billon, generating $18.7 billion for sports books and $2.6 billion in tax revenue for the states.

States that do allow wagering on sports are likely to tiptoe into it. Delaware, for example, only last month decided to allow bettors to gamble on single games in a wide variety of sports (box, page 34). Before, only parlay-card betting (picking multiple winners from a list of the day's contests) was allowed, and only on National Football League games. Punters are still required to place their bets at one of the state's three casinos—a restriction that raises the highly charged question of online betting.

Experts interviewed for this story agree that sports betting will never

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(Sports books' growth, dollar figures in billions)

	Amount Bet	Casinos' Share	No. of locations
1984	$0.895	$0.021	51
1989	$1.366	$0.046	71
1994	$2.137	$0.122	112
1999	$2.470	$0.109	156
2004	$2.087	$0.113	159
2009	$2.568	$0.136	185
2014	$3.901	$0.227	190
2015	$4.237	$0.232	196
2016	$4.510	$0.219	192
2017	$4.868	$0.249	192

Note: Casinos' share represents cash-in minus payoffs, or the sum kept by sports books for the year. Amount bet is estimated.
Source: UNLV Center for Gaming Research, "Nevada Sports Betting Totals: 1984-2017"

About three-quarters of sports-betting dollars will be **placed by mobile** within four to five years.

Chris Grove,
managing director for sports and emerging verticals, Eilers & Krejcik Gaming LLC

reach its full potential unless online, and especially mobile, gaming is allowed. For that reason, some expect more states outside of Nevada to authorize betting through smart-phone apps. About three-quarters of sports-betting dollars will be placed by mobile within four to five years, says Grove.

That prospect is already setting off a scramble to get a share of the mobile volume. The obvious targets are the two big U.S. fantasy-sports platforms, FanDuel and DraftKings. In May, the Irish bookmaker Paddy Power Betfair PLC said it was laying out $158 million to acquire New York City-based FanDuel, which last year earned $124 million in revenue from 1.3 million active customers in 40 states.

FanDuel's Boston-based rival, DraftKings, has said it intends to roll out a sports-betting operation of its own. Details so far have been scarce, but the company recently established a wagering presence in New Jersey by forging an alliance with Atlantic City's Resorts Casino Hotel. DraftKings would not speak to *Digital Transactions* on the record.

Fantasy-sports operations have escaped most gambling restrictions by arguing they offer games of skill rather than of luck. Participants win by studying players' statistics in various sports to figure outcomes.

Now, with states working to regulate rather than ban sports betting, European powers are seeking out U.S. partners. "They all have the technology and expertise U.S. companies need, and the U.S. companies have the licenses," says Grove. "These are the sides that are trying to get together."

Even the sports leagues are looking to get in on the action. Once unalterably opposed to any sort of legalized gambling, the leagues now are talking about a so-called integrity fee amounting to about 1% of the total amount bet in any state, with the state collecting the fee on behalf of the leagues.

At the Oxford Economics nationwide estimate of $287.4 billion annually in regulated sports betting, the fee would potentially rake in more than $2.8 billion annually.

The Law

Professional and college sports associations weren't always favorable to the idea of gambling. The Supreme Court decision struck down a 26-year-old federal law called the Professional and Amateur Sports Protection Act, which Congress enacted ostensibly to shield


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the integrity of sporting contests by banning wagers in most states.

The leagues had lobbied heavily for PASPA, but now that the question of whether to legalize sports betting, and in what form, is up to each state, theories are emerging about how far legislatures are likely to go, and how soon. As the summer arrives, many legislatures are adjourned, leaving the question up in the air for months.

Nor is the federal government entirely out of the picture. A 2011 interpretation of the 1961 Wire Act by the Obama Administration's Justice Department confined the law specifically to sports betting. But while the Wire Act is seen to restrict online betting, many see that restriction applying to interstate, not intrastate, activity. That could open the door for more states to follow Nevada's example and allow mobile wagering.

Clearly, processors eyeing the new sports-wagering opportunity opened by the Supreme Court decision are

Delaware Gets in the Game

Delaware began allowing dramatically expanded sports betting at three casinos starting June 5, and it didn't take long for the state's citizens to respond. They wagered a total of $322,135 on sports bets on that Tuesday, well ahead of the daily rate of $131,500 in 2017.

Delaware became the first state to act in the wake of a U.S. Supreme Court ruling in May striking down a 26-year-old federal law that banned most states from authorizing sports betting. Before June 5, Delaware allowed only parlay-card betting on National Football League games. These bets totaled approximately $48 million last year. Now, touts can put down money on a wide array of sports and can also make single-game bets.

And while sports bets in Delaware must still be placed on premise at one of the three casinos, experts figure states ultimately will allow online and mobile betting as they accustom themselves to their new authority to legalize the activity. Currently, Montana, Nevada, and Oregon, along with Delaware, permit sports betting, with Nevada also allowing single-game bets.

"Delaware will launch a full-scale sports gaming operation at all three casinos in the state—Delaware Park, Dover Downs Hotel & Casino, and Harrington Raceway & Casino," read a post on the state's official Web site shortly before the broader action started. "Betting offered [June 5] will include single-game and championship wagering on professional baseball, football, hockey, basketball, soccer, golf, and auto racing."

Delaware officials acted following a May 14 ruling by the high court that invalidated the Professional and Amateur Sports Protection Act of 1992. That law prevented most states from legalizing sports betting. Now, a liberalized federal stance toward this form of gambling has at least some states looking at authorizing wagers on sports events. In many cases, the lure is the revenue that could flow into state coffers from taxation and additional tourism.

"Delaware has all necessary legal and regulatory authority to move forward with a full-scale sports gaming operation," said Governor John Carney, as quoted by the official post. "We're hopeful that this will bring even more visitors into Delaware to see firsthand what our state has to offer."

With companies ranging from payment processors to casinos to fantasy-sports sites looking to get in on the action in sports betting, the odds seem to favor a boom in this business, and soon. Now that each state can decide for itself, payments experts expect the action to be fast and furious for processors.

How many states will ultimately legalize sports betting is anybody's guess, but Eilers and Krejcik Gaming, a Santa Ana, Calif.-based research firm that follows the business, figures 32 states will have allowed regulated sports wagering by 2023. Wagers will total to about $90 billion annually by that time, the firm forecasts.

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For an acquiring bank, sports betting is 'not something somebody can come into overnight. There's more to this than just processing a payment.'

Neil Erlick,
executive vice president
for business development,
Paysafe Group Ltd.

counting on states authorizing online and mobile betting. "In order to optimize sports betting there has to be a mobile component," says Worldpay's Pappano. "Mobile has to be part of the offering."

Worldpay's expectation is that states that authorize sports betting will start cautiously by requiring players to register and place bets on-premise at casino sports books. "At the start, you'll want people to come in and sign up," Pappano says. Then, as the games become more mature and casinos register more bettors, regulators may be open to remote "credentialing," he says, which could pave the way for remote betting.

Without this option, the expansion of sports betting state-by-state will do little to wean players off illegal betting with off-shore operations, Pappano argues. "If I can go to an off-shore site and make a wager, or get to a land-based casino, that [latter option] is not going to change my behavior," he says.

In fact, online gaming and fantasy-sports platforms already boast a ready-made market for online sports betting, some experts argue. "Once the floodgates are opened, this [market] will mature very quickly," predicts Thad Peterson, a senior analyst at the Boston-based payments consultancy Aite Group LLC. "The audience exists and is ready to go [and] the technology exists."

If and when those floodgates open, experience in processing for regulated markets will be critical, some sources say, a factor that could limit the availability of acquiring banks at the start. "It's not something somebody can come into overnight," warns Paysafe's Erlick. "There's more to this than just processing a payment."

The Gatekeepers

There will also be gatekeepers at those floodgates—the banks that issue the cards gamblers will be using to finance their bets. Sports bets are assigned a specific merchant category code—7801—that issuers can identify and then either block or permit, as they see fit.

Right now, some observers predict there will be more blocking than permitting as states open up their casinos to sports wagering. But Schulz of Creditcards.com figures banks will start weighing risk against potential income very soon, if they haven't started already. That could lead some financial institutions, at least, to lower their barriers over time.

"It gets down to what default rates would they see on those transactions, and they'd have to see if it works out in their favor when considering the swipe fees," he says. "I would imagine there are smart people in banks trying to figure that out."

One such bank executive is already leaning toward allowing sports wagers—if his home state allows it. "It's an interesting problem, and if it comes up in Michigan, we'll have to deal with it," says John Schulte, chief information officer at Grand Rapids-based Mercantile Bank of Michigan. "I would say we probably won't take a step to block it unless we see a problem bigger than we expected."

As it stands now, a bill pending in the Michigan legislature would legalize sports betting if federal law doesn't stand in the way. The card networks themselves tend to leave the question up to state and federal law. A spokesman for Mastercard Inc., for example says, succinctly, "Our rules allow our products to be used for legal purchases."

So, "the devil's in the details," notes Raymond Pucci, associate director of research services at Mercator Advisory Group, a Maynard, Mass.-based payments consultancy. For all the predictions of what sports wagering could total to and how much banks, processors, states, and sports leagues could earn, he says, the current scenario "is going to have to play out a little bit."

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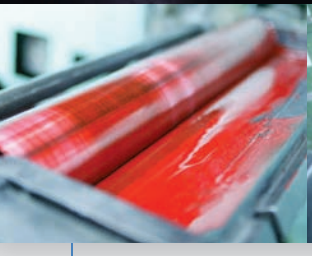
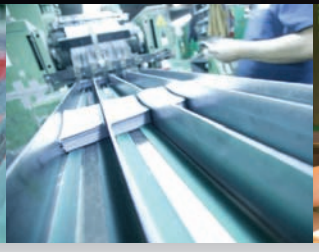

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The Practical Application of Blockchain in the Mobile Channel

Maria Arminio and Bo Berg

Three key use cases could dramatically improve rewards programs, user authentication, and supply-chain management.

Blockchain is a changing business model for the banking industry, supporting the sharing of value between and among multiple companies to their mutual benefit. While the industry may be enamored of developments on the cryptocurrency front, we believe the real opportunity for payments lies in the application of blockchain technology to other types of shared value.

Blockchain technology is a digital, distributed transaction ledger protected with cryptography and only shared by the network's members. Combining shared databases and cryptography, blockchain technology allows multiple parties to have simultaneous access to constantly updated content that cannot be altered.

Our prediction is that the early rollout of blockchain for financial institutions will focus on back-office functionality associated with payments and will not be dollar dominated. The underpinnings of blockchain technology provide a solid foundation for several aspects of the mobile channel.

A No-Brainer

There are three use cases primed for testing blockchain in the mobile channel. Ranging from simple to more complex, they include: (1) rewards programs; (2) identity management; and (3) device management. Here are some thoughts about how this might work from a practical application perspective.

Rewards programs are a no-brainer, basically using blockchain to support the transparency and traceability of transactions. The distributed ledger enables merchants to tie rewards to a specific product and then to track the success of the promotional program using audit trails and other accounting mechanisms.

In May, American Express Co. announced the launch of a Membership Rewards program using blockchain technology in this manner. Customers sign up to earn the rewards via an app or online site. Perhaps the biggest benefit is that the technology allows the merchant to track valuable customer behavioral data.

Another model for rewards programs is to use blockchain such that all participants contribute to an independent database, thereby serving multiple constituencies. The governance structure of the blockchain determines who gets access to that database.

For **identity management** in the mobile channel, blockchain and distributed ledger support user authentication by preserving the sovereign identity of information. The user creates a public certificate, using private/public key infrastructure to prove his identity. User or device tokens are verified against a shared ledger, thereby validating that the user or device is authentic. Users can add and verify the blocks of information. No personal data is shared in the process.

Identity management may be easy enough to implement but raises some issues about the predisposition of issuers (e.g., financial institutions) to relinquish control of information on their customers. It is likely that the first applications of blockchain in the mobile channel will materialize in closed-loop environments where the issuer and the acquirer are the same entity, or in private blockchains.

Device management is a big gap for issuers in support of online customer on-boarding. Here, blockchain could be used to track the life cycle of the mobile device. The Payment Card Industry Data Security Standard (PCI DSS) includes a provision for this type of estate management to ensure that device tracking and chain of custody—from procurement through key provisioning—remains immutable. Transaction activity in the card-reader mechanism can also be put into a blockchain, recording every in-app purchase transaction and wallet interaction.

In fact, supply-chain management of this sort lends itself beautifully to blockchain technology. Some

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Maria Arminio

'While the industry may be enamored of developments on the cryptocurrency front, we believe the real opportunity for payments lies in the application of blockchain technology to other types of shared value.'


Bo Berg

industry experts forecast that, eventually, device authentication will be tied inextricably to user authentication.

Apple Inc. has been in discussions with Goldman Sachs Group Inc. on the issuance of a new credit card with the Apple Pay brand. While the details are still unfolding, this event may provide some foreshadowing of the use of blockchain for device management. Apple issues its phones, inserting cryptographic secrets into them. Each phone becomes a unique token, which uses symmetric encryption to verify it. Goldman Sachs will likely play the role of white labeling value storage in this scenario.

Blockchain technology can help to protect against cyber attacks and ID theft, and to streamline the Know Your Customer (KYC) process. It pushes authenticated information to the mobile app and acts as a trusted authority, like a bank or credit union. The customer controls how much data is shared with each transaction, and ideally should be able to monitor and verify the use of his identity in real time.

A Question of Control

In many respects, the mobile channel is still in its infancy. Pilot programs for mobile provide unique opportunities to test these blockchain use cases. Industry specialists can help organizations develop a blockchain strategy, including use cases, architecture, and testing and implementation of these applications, to ensure a successful outcome.

Philosophically, blockchain changes the center of control among payment stakeholders. In the traditional payments world, control resides with the owner of the database of stored assets. Private or permission-based blockchain changes the rules. Here, control resides with the entity that is responsible not only for the governance of the public and private keys, but also for the policy that determines access to participate in building the blockchain.

This is the model that is likely to emerge in the financial-services industry. However, this is anathema to the banking industry, where one trusted authority, the bank, wants to control all information about its customers.

Notwithstanding these challenges, the payment industry must begin testing. It must continue to learn about the myriad applications that can be further secured by this innovative technology. DT

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Cross Currents in Loyalty

Jim Daly

Merchants are asserting more control over their rewards programs, and everyone in the loyalty chain is trying to figure out what works best in a fast-changing market.

If you're in the market for mixed signals, rewards programs are sending out plenty of them.

Some big merchants such as Target Corp. are taking the private-label route, shunning banks as cobranded card issuers—while private-label stalwarts such as Starbucks Corp. are bringing in cobranded partners.

Retailers are letting customers who don't have their credit card earn rewards. And others, including mid-priced department-store chain Kohl's Corp., are simplifying their programs to make sometimes complicated rewards programs easier for customers to use.

Years after card-linked loyalty programs debuted, debate still rages about just how many entities should be involved in creating and operating them, what are the most effective rewards, and how customers should redeem them.

"There's so many forces, if you will, so many entities, involved in rewards," says Kevin Morrison, a senior analyst at Boston-based Aite Group LLC who researches the loyalty market. While the market has given mixed signals, Morrison believes the underlying message is becoming clearer: merchants, which pay for most rewards, want to call the shots. "If you look at what merchants are doing, they're really starting to move to a store card," he says.

Cash Back's Comeback

This debate is dominated by larger merchants, since many small businesses have yet to embrace loyalty programs. Market insiders say a leading reason for that is a lack of knowledge about how to create and operate an effective program—but that could be changing.

Loyalty programs remain highly popular, and industry executives still expect them to grow. Americans last year had 3.8 billion memberships in loyalty programs, up 15% from 3.3 billion memberships in 2015, according to the 2017 Colloquy Loyalty Census from Colloquy, a part of the marketing-services unit of Plano, Texas-based retail payment processor Alliance Data Systems Corp.

Also popular: cash. Despite the growth of mobile-linked loyalty programs and redemption options, cash remains the most popular reward, according to results of an Aite Group survey released in February. Half of the more than 1,400 Americans surveyed said the rewards credit card they use the most provides cash back (chart, page 42).

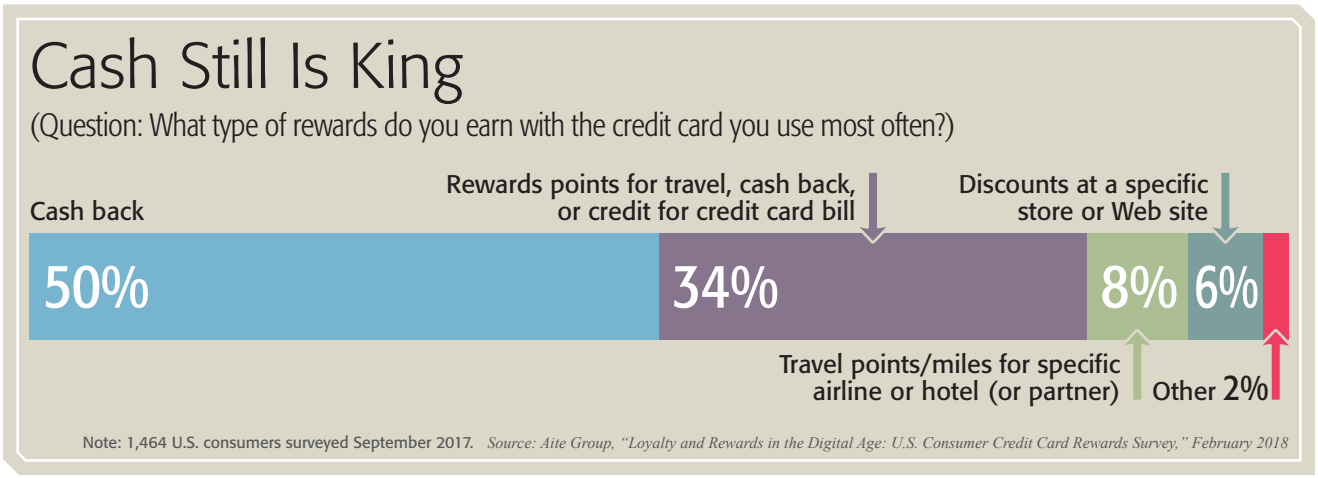
"Cash back is now coming back as the leader in rewards because you can use cash wherever you want," says Morrison.

Anecdotal evidence of faith in loyalty's future comes from investors who have strongly embraced merchant-funded rewards program provider Cardlytics Inc., which had an initial public offering of stock on Feb. 8. As of mid-June, Cardlytics's stock had risen 65% since the IPO.

"Loyalty programs are here to stay," Theresa McEndree, vice president of marketing at Lewisville, Texas-based Hawk Incentives, tells *Digital Transactions* by email. "Shopper habits have evolved and the world has become increasingly digitized, but the research demonstrates that loyalty programs and modern reward options have kept up with consumer trends and continue to appeal to younger generations."

Still, there are warning signs that marketers can't sit back. The 2017 Colloquy study noted that the 15% growth rate was considerably lower than the 26% increase the company found in its similar 2015 study.

"The membership growth slowdown signals the U.S. loyalty market is maturing, and retailers need to up their game on how to attract and retain members within their loyalty programs," Melissa Fruend, author of the Colloquy research report, said in a statement last summer. "In order



to improve loyalty marketing, brands must optimize the overall experience by creating more personalized and relevant experiences for their best customers."

A Double-Edged Sword

Just how to "up their game" is now top of mind for many merchants. Keeping it simple is the formula being pursued by Menomonee Falls, Wis.-based Kohl's, which offers a private-label credit card and mobile app with payment functions, electronic coupons, and rewards redemptions.

In late May, Kohl's said it would unify its three loyalty programs—the Kohl's Charge card, Kohl's Cash coupons, and the point-based Yes2You Rewards program with 30 million active members—into one, dubbed Kohl's Rewards. The new program, which focuses heavily on Kohl's Cash, is being tested in about 100 stores in eight markets, with chain-wide rollout planned for next year.

Features include 10% in Kohl's Cash coupons for every Kohl's Charge purchase, and non-cardholders can earn 5% back regardless of how they pay. Sales events will offer $10 in Kohl's Cash for every $50 spent. To encourage redemptions, customers can track Kohl's Cash balances through the mobile app and get balance reminders at the point of sale.

"[Customers] asked for more savings, made easier," Kohl's chief marketing officer Greg Revelle said in a blog post. "With this input, we set out to evolve our loyalty platform to make it simpler, more convenient, and bring greater value."

The big department-store operator Macy's Inc. in May announced it was opening its Star Rewards loyalty program to customers without its credit card. Similarly, Minneapolis-based Target began testing a loyalty program earlier this year in the Dallas-Fort Worth area called Target Red, which isn't tied to its Redcards, according to the Minneapolis *Star-Tribune*.

Still, credit cards remain closely linked to loyalty programs. Private-label cards, which lost ground for decades to ascendant general-purpose cards, today are making a modest comeback, in part because some retailers have paired them with mobile-payment apps.

The Kohl's Charge card accounts for nearly 60% of store sales, the company reports. Target, once a strong promoter of a Visa-branded cobranded card issued by its own bank, has chucked it in favor of its private-label credit and debit Redcards.

Banks today issue most private-label cards on behalf of retailer clients. But private-label cards generally leave the merchant calling more of the shots than in a cobranding program, which will involve a general-purpose card network and an issuer partner that will get transaction-based interchange.

While a private-label card can be used only at the sponsor's locations or online site, some executives consider cobranded cards, despite their broad utility, to be a double-edged sword because they can used for purchases with the sponsor merchant's competitors.

'Loyalty programs have kept up with consumer trends and continue to appeal to younger generations.'

—Theresa McEndree, vice president of marketing, Hawk Incentives

"The merchants are looking to take back the relationship to where it all started—the merchant and the consumer," says Aite's Morrison.

No More 'Minor Partner'

But cobranded cards sponsored by airlines, hotel chains, and other merchants remain highly popular. If the cobranded shoe fits, even a private-label stalwart like Starbucks, whose Starbucks Rewards program and mobile app is linked to the coffee giant's prepaid card, will put it on. Starbucks is facing slow-growing sales in the U.S., so cards that promote point counts and potentially drive more redemptions could be a sales booster.

In February, Starbucks introduced a Visa cobranded credit card issued by JPMorgan Chase & Co. In June, it followed up with a Chase-issued reloadable Visa prepaid card. Both cards allow holders to earn Starbucks Stars, or points redeemable for free drinks and food, on purchases outside of Starbucks.

'Merchant processing used to be the only relevant conversation,' but it's not any more.

—Doug Mearkle, senior vice president and head of U.S. merchant services, TD Bank

"It's important to us to make earning rewards as easy for our customers as possible, and the Starbucks Rewards Visa Card is a powerful tool for us to do that because of how easily it fits into their daily lives," Matt Ryan, executive vice president at Seattle-based Starbucks, said in a news release announcing the new credit card.

Merchants and their bank partners closely guard details of their cobranding contracts, but some experts believe merchants are becoming more assertive with card issuers than they were in cobranding's earlier days.

"I don't think the merchants are willing to hand over the reins to the big banks," says Mark Horwedel, chief executive of the Merchant Advisory Group, a Minneapolis-based association of 140 mostly large merchants concerned with payments issues. "In partnership arrangements, the merchant will cease to be the minor partner."

Horwedel, however, sees the Chase-Starbucks pairing as different from traditional cobrand relationships because Starbucks could take advantage of ChaseNet. That's the service in which transactions from Chase Visa cards used at merchants served by the bank's huge merchant-acquiring affiliate are processed in a closed-loop network.

Chase says the service can save merchants money, and generate valuable data. Starbucks happens to be a Chase merchant. A Chase spokesperson confirmed to *Digital Transactions* that Starbucks is participating in ChaseNet.

More services similar to ChaseNet are likely to be developed as merchants try to create better rewards programs that will attract and retain customers, Horwedel predicts.

"I think that's what's going to happen, because it's not just interchange any more," he says. "There's data to be harvested, as well as a better shopping relationship."

At the same time, Chase's new prepaid card could be one sign of that such cards are becoming a bigger part of loyalty programs (box). "Prepaid is getting into the space a little bit," notes Morrison.

The Right Mix

While large merchants wrestle with the particulars of their loyalty programs, many small merchants have yet to offer them at all. Some that do are still using old-fashioned paper punch cards, according to Doug Mearkle, senior vice president and head of U.S. merchant services at Cherry Hill, N.J.-based TD Bank, the U.S. affiliate of Canada's TD Bank Group.

TD's U.S. portfolio consists of 20,000 mostly small merchants generating about $5 billion in annualized volume. Very few of them offer an electronically based rewards program, though "we're seeing about 20% of customers inquiring about a loyalty program," says Mearkle.

TD Bank's answer to those merchants is the Clover system from its processor, First Data Corp. Clover provides card-accepting hardware and an app marketplace of business-management programs, including loyalty.

"Punch cards don't provide data" such as frequency of shopping, average spend, what type of product users are buying, says Mearkle. "What small-business retailers don't realize is that that technology is available to them."

Mearkle says merchants themselves can set up a loyalty program through Clover, though they can get help through First Data if they need it. If they do set up a program, TD Bank as the acquirer stands to generate revenue, he says, but the real payoff is reduced attrition and more growth among customers.

"Merchant processing used to be the only relevant conversation," says Mearkle. Now, helping small businesses grow is "becoming more and more relevant."

Also increasingly relevant to loyalty-program providers is finding the right mix of convenient signup and redemption options for customers, rewards amounts, form factors, technology, and partners.

"The merchants are tying all that together," says Morrison. DT

Younger Adults Are Loyal to Loyalty

Young adults like loyalty programs even more than older consumers, and the so-called Millennial generation has its own preferences for loyalty form factors for connecting merchants and consumers, according to recent research from Hawk Incentives.

As a group, respondents to a Hawk Incentives survey belong to an average of 6.2 loyalty programs. But the Millennials surveyed belong to an average of 6.5 programs, according findings from the Lewisville, Texas-based unit of gift and prepaid card services provider Blackhawk Network Holdings Inc. And while the overall group is active in 3.9 loyalty programs on average, Millennials are active in 4.2.

Hawk Incentives commissioned Montreal-based market-research firm Leger to do the poll of 1,500 Americans age 18 and older, including 645 Millennials. Leger conducted the research online between Feb. 5 and Feb. 15. The firm defined Millennials as respondents age 22 to 37.

A majority of Millennials, 55%, told the researchers that some type of loyalty card would keep them most engaged with a loyalty program compared with only 47% of Baby Boomers, the generation entering retirement.

Some 82% of Millennials also said they would be interested in redeeming loyalty points for a prepaid or gift card. Millennials were more likely to prefer to redeem loyalty points for a prepaid card than any other generation, according to the findings.

"Millennials entered the financial world in the era of digital payments, alternative payments, and gift cards as everyday tools," Theresa McEndree, vice president of marketing at Hawk Incentives, says by email. "They have an inherent familiarity and trust of digital payments and gift cards."

Millennials also were most likely to prefer digital rewards in the airline, retailer, and gym categories, and were more likely than any other age group to belong to online retailers' loyalty programs, according to the findings. But they were less inclined than older adults to belong to airline and hotel loyalty programs.

The findings have a margin of error of plus or minus 2.5 percentage points at the 95% confidence level.

WHITE-LABELING MOBILE SOLUTIONS FOR A COMPETITIVE ADVANTAGE

By Scott Dowty, Chief Revenue Officer at Apriva, LLC

With smartphones becoming the dominant tool for personal and business communications, mobile commerce is critical for businesses. Mobile payments are projected to reach $503 billion by 2020[1], and an estimated 75% of all financial transactions may be cashless by 2025[2], so businesses must be prepared for the transition from traditional payment models to mobile commerce options.

The rapid adoption of mobile devices demonstrates a clear and increasing demand by consumers for mobile payment acceptance—something businesses must be ready to deliver to remain competitive in consumer markets.

MOBILE AS MARKET DIFFERENTIATOR

Competing for commercial business is challenging, but as customers and small businesses demand more advanced mobile solutions, financial institutions (FIs), independent sales organizations (ISOs), merchant service providers (MSPs) and independent software vendors (ISVs) have a unique opportunity to win new business relationships and drive desired customer behavior.

Specifically, companies able to deliver mobile commerce solutions can expand their revenue opportunities and grow business relationships. But how can providers deliver mature, robust mobile solutions without incurring high overhead costs such as development, connectivity, and regulatory compliance?

Partnering with a proven mobile solution, and white-labeling that solution to your brand, speeds your go-to-market timeline and avoids the high overhead of developing or buying a custom solution.

Delivering a mobile commerce strategy with secure mobile payments not only improves customer experiences, but arms FIs, ISOs/MSPs, and ISVs with a key competitive engine for winning new commercial relationships with businesses and merchants.

MOBILE COMMERCE STRATEGY

Mobile commerce (mCommerce) spans several channels—including mobile payments via mobile points of sale (mPOS) and those business operations performed on-the-go such as digital invoicing. Ready examples include service professionals working at customers' homes or worksites, mobile businesses, or merchants offering line-busting within their stores.

Mobile platforms also provide the opportunity to capture subscription services on-the-fly via recurring billing—a hugely valuable feature for direct sellers and membership-based businesses such as gyms and yoga studios, coaches and instructors,

wine clubs, personal services, etc. Mobile payments also complement existing POS systems as backup or auxiliary payment paths for expanded customer experiences.

YOUR BRAND, OUR R&D

Providing commercial businesses and merchants with a branded, robust mCommerce platform can be a competitive differentiator in aggressive markets. But the idea of building a mature, secure solution set and supporting it is understandably daunting and certainly cost-prohibitive.

With Apriva, financial institutions, resellers, and integrators can propagate their brand to businesses and merchants *without the overhead of development, payment processor connections, or regulatory compliance.* Apriva's unique white-label capabilities deliver a secure and robust mCommerce solution—including mobile payments—making even small providers competitive with much larger organizations.

Partnering with Apriva delivers a branded version of our mCommerce platform: enabling FIs, ISOs/MSPs, and ISVs to win new business relationships without prohibitive costs, while simultaneously providing a competitive new offering for secure payments and improved customer experiences.

1. http://www.businessinsider.com/nearly-half-of-millennials-have-used-a-mobile-wallet-2016-9/
2. https://www.financemagnates.com/fintech/bloggers/fintech-the-death-of-cash-and-bank-branches-but-a-boost-to-retail/

Real-time payment is capturing consumers' attention, but to keep up, banks will want to have real-time fraud-detection capabilities ready before they jump into the dance.

Use Layered Authentication to Secure Real-Time Payments

Eric Woodward is group president for risk solutions at Early Warning Services, Scottsdale, Ariz.

Real-time processing heightens risk for providers that aren't prepared. Here's what financial institutions should be doing now, says Eric Woodward.

Instant downloads. Instant delivery. We live in an age of instant gratification. The banking industry is no exception. An overnight batch process is a lifetime, and three-day settlement feels like an eternity. With so much information available at people's fingertips, real time is the only time. Networks are delivering on the promise of real-time payments by allowing money to be moved from one bank account to another, typically in minutes when both the sender and the recipient are enrolled in the service.

While speed and ease-of-use have made these technologies popular with consumers, financial institutions should balance their potential with the need for new approaches to security to reduce the risk of fraud, without adding unnecessary friction to the consumer experience.

Not All Payments Are the Same

When you use a check to pay someone, you share your routing/transit number, your account number, your home address, and your personalized signature. That's a lot of personal financial information to share, even with your friends.

At least you don't have to make a trip to the branch or the ATM any more, thanks to cool technologies like remote deposit capture, but the recipient still has to wait days for the check to clear and settle before they can get access to the funds.

Real-time payments, on the other hand, rely on funds being pushed by the payer to payee. These digital transactions go to a secure token, like an email address or mobile-phone number, which is unique to the individual. The payment is pushed from one account to another in near real-time without revealing sensitive or identifiable information about the consumer.

A network, for example, may be able to answer questions about whether the email or mobile number are associated with the right account and take into consideration the history of that account when making a payment decision.

Credit-push models allow paying banks to authenticate the customer and confirm funds are available to support the transaction. It's the foundation for real-time person-to-person and business-to-person payments.

The Need for Layered Security

But mapping and analyzing token information to account information at the network level is just one risk strategy. This approach can be coupled with other risk layers to further authenticate a consumer and keep payments from being intentionally misdirected. Also, financial institutions have to be careful not to have so much friction in the authentication process that they frustrate customers, have too many false declines, or get too relaxed and allow fraud levels to rise.

When you're battling real-time fraud, solutions should be varied, continuous, and adaptable. They need to move from passive authentication and validation to active, but still appear seamless to the customer.

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THE KEY TO YOUR ISO's SUCCESS

Every day, fintech companies invest in their product offerings, attempting to stay on par with rapidly advancing payment and point of sale technologies; but there is oftentimes an oversight when it comes to making that same investment in support and service. While continuous product development is vital to all of our businesses, this misstep can negatively impact your ISO's growth and potential without you realizing it. The team who backs your ISO and merchants 24/7 is the key ingredient to merchant retention, satisfaction and, ultimately, your success in building a profitable and stable portfolio.

It may seem elementary, but service is more relevant in our industry than ever before. It is also an area that is markedly underdeveloped. You may earn a great residual and resell leading products, but have you developed a rapport with the individuals who service your portfolio day in and day out? If not, it may be because your processor outsources their internal departments, or perhaps they redirect incoming inquiries to a myriad of affiliate call centers abroad. While technology helps merchants operate in a more independent fashion, they still value accessibility and seek triage-based care with immediate responses. Has a merchant ever expressed a willingness to consult the Internet to resolve a timely issue? Likewise, while providing localized service is effective, are you eager to receive all technical calls in lieu of pursuing additional sales opportunities?

As we see more companies shift their focus to product, it's our responsibility to remain vigilant and react to what is happening behind the scenes on the support side. Is your processing partner continuously recruiting talent to keep up with demand and maintain an exceptional level of service? If you're not sure, we suggest monitoring not just hold times, but response times, and inquire about any ongoing training programs for their internal staff. Staff development and established in-house processes ensure continuous advancement and guarantee that your merchants are well cared for from the moment that they're onboarded until the time they're ready to upgrade their system.

It is becoming increasingly rare to find a processing partner that is laser-focused on building YOUR wealth. When evaluating pricing, residual splits, and bonuses, assess the company's ability to expand your resources long-term. Do they offer continuous education via partner conferences and webinars; are they able to elevate your brand with complimentary in-house marketing services, such as branded promotional campaigns, merchant statements and websites; will they supplement your sales efforts with live POS product demonstrations tailored to the prospect; is there a team readily available to assist with reviewing merchant statements and preparing proposals? If you do not have access to this level of support and these invaluable sales tools, it's time to reevaluate. Your partner's ability to meet each of these ongoing expectations will have an immediate influence on your growth.

Electronic Payments empowers our ISO partners with an array of services to ensure that you can concentrate on every sale and work towards the bigger picture—securing your own success and wealth. In today's competitive market, we need to focus on all of the components of success and leave nothing to chance.

Real-time payment is capturing consumers' attention, but to keep up, banks will want to have real-time fraud-detection capabilities ready before they jump into the dance.

Authentication layers that offer strong validation and are relatively unobtrusive include the following:

▶ **Mobile Network Operator (MNO) intelligence** identifies daily activities that are potentially high-risk moments. It answers questions such as: Is this the same wireless persona, regardless of the MNO, mobile number, SIM, and device? Does the phone number tie to the SIM that ties to the carrier? Is the phone valid on the network? Has anything changed on the consumer's account? Is this person authorized to transact on behalf of the account?

▶ **Mobile-device binding** identifies if a phone has been spoofed or if it's proving difficult to validate. When a customer uses a banking app, there is an ability to bind him to a device. It helps banks identify whether there is a profile for this device. Is there encrypted communication for this device? Has the application been re-installed?

▶ **Device intelligence** provides a permanent device ID to help to authenticate customers, reduce risk, and improve the customer experience. It also identifies whether the device is healthy or malware is installed. It will also tell the banks if they have seen this hardware before. Has it been jailbroken? Does the software match up to the last time this customer came?

In addition to a passive, multilayered risk approach, financial institutions can use more active, stepped-up authenticators such as one-time passcodes or driver's-license scanning to further authenticate a customer who is deemed a potential risk.

Importantly, machine-learning or behavioral-data analytics collected at the network level is essential for monitoring for real-time payments fraud. A network view sees patterns of behavior not visible at any individual financial-institution level.

For example, participant financial institutions in the Zelle network share information on fraud with Early Warning for constant learning and to improve overall network fraud-prevention efforts. Current data is key in real-time security, because data that is just weeks old can be stale and may not provide accurate information on the customer to authenticate her.

Trust is Essential

Ultimately, financial institutions can better secure digital payments by instituting a multifactor risk-authentication approach. They can start by taking small steps on the journey, like verifying that the device and phone enrolled on the network are tied to their customer, or confirming the token is accurate and up-to-date.

To ensure easy, fast, and safe payments, we need to work together at real-time fraud detection. The banking relationship starts and ends with trust. We need to have trust in the network and trust in the solutions. To maintain that trust, we must have the proper risk controls in place today, and prepare for what new technologies bring tomorrow. DT

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