Payments innovation supercharges FinTech adoption

One in three digitally active individuals globally are now regular users of FinTech according to the *EY FinTech Adoption Index 2017*. We now define this as an “early majority”¹ and in our thinking about the future of the sector, FinTech in the mainstream is no longer a speculative scenario. In fact, the figures show a doubling of adoption in the past 18 months; moreover, the countries and segments that were leading the pack in our 2015 study have only accelerated.

Undoubtedly, the service that supports the fastest rate of adoption is money transfer and payments, with our detailed survey of more than 22,000 people in 20 markets showing that half of those surveyed use these services and 88% anticipate doing so in the future.

*Continued on page 3*

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Dear readers,

As an American payments professional, one of my favorite questions about the US payment system is, “Why doesn’t the US payment system behave like all the others?” This question is instructive because it highlights how fundamentally localized payment system innovations can be, even in a global economy. Today, as the payments world faces global trends, including real-time payments, new business models and new technologies, it is more important than ever to combine analysis of global trends with “on the ground” knowledge of national and regional payment infrastructure. This edition of our #payments quarterly provides insights from around the world about payments transformation initiatives. We at EY welcome the global dialogue these articles will generate. Ultimately, it is the combination of global insight and localized implementation that will help EY and our clients develop practical payment services that work in local markets.

Best,

Margaret Weichert
Head of Payments, EY Americas
As China continues to demonstrate its position as global leader in consumer FinTech innovation and adoption, it is perhaps no surprise that payments innovation is at the forefront. Supported by a huge consumer base and well-developed e-commerce capabilities, the total volume of China’s mobile payments via non-traditional platforms, primarily Alipay and Tenpay, hit US$8.6 trillion in 2016.²

The rise of the digital native
In the EY FinTech Adoption Index 2017, we evaluated five broad vertical sectors under the FinTech stable: money transfer and payments, financial planning, savings and investments, borrowing, and insurance.

Comparing the studies from 2015 to 2017, it is money transfer and payments that remains the most adopted segment within the industry, itself showing an increase from 18% to 50%. There was also a significant rise in the adoption of insurance services as another fast-developing sector.

At this point of industry maturity, there is a clear driver in terms of sector; however, the study also revealed a clear picture of those digitally active users embracing FinTech. Adoption has been faster among the under-45s globally who are increasingly looking to manage as much of their life as possible online, becoming digitally native. Moreover, individuals in emerging markets are leading the adoption charge. Driven by vertiginous mobile and online penetration rates that are redefining the “normal” curve of technology adoption, markets such as India and China are at the forefront of FinTech adoption. A common connection between these adopters is that they often don’t have particularly strong relationships with incumbent financial service providers, creating opportunities beyond the traditional players.

The Payments play
It is no coincidence that the top five countries for overall adoption of FinTech (namely, China, India, UK, Brazil and Australia) are also the top five for money transfer and payments, emphasizing the importance of this sector.

What is driving the importance of payments-related solutions, and why is this sector making such advances at this point of industry development?

First and foremost, the sheer scale of unmet needs provides considerable opportunity for non-traditional players. In many developing markets, a large proportion of consumers and small and medium entities (SMEs) have been historically underserved when it comes to payments and related products;

Figure 1: Comparison of FinTech categories ranked by adoption rate in 2015 and 2017

<table>
<thead>
<tr>
<th>2015</th>
<th>2017</th>
</tr>
</thead>
<tbody>
<tr>
<td>Money transfer and payments: 18%</td>
<td>Money transfer and payments: 50%</td>
</tr>
<tr>
<td>Savings and investments: 17%</td>
<td>Insurance: 24%</td>
</tr>
<tr>
<td>Financial planning: 8%</td>
<td>Savings and investments: 20%</td>
</tr>
<tr>
<td>Insurance: 8%</td>
<td>Financial planning: 10%</td>
</tr>
<tr>
<td>Borrowing: 6%</td>
<td>Borrowing: 10%</td>
</tr>
</tbody>
</table>

Note: The figures show the average percentage of respondents who reported using one or more FinTech services in that category.

² www.iresearchchina.com (accessed on 14 July 2017)
How hands-on a person is with managing their overall finances is a personal choice, but payments are an inescapable daily necessity.

Related to this, facilitative government and regulatory supports have clearly played a role. In traditionally cash-dominated markets, for example, initiatives such as demonetization in India and support for third-party payment providers in China have helped drive the ever-increasing penetration of e-money. In many instances, such markets are bypassing (or “leapfrogging”) developed market payment mechanisms, such as credit and debit cards, and moving straight to new forms of digital payments and stored value solutions. As Eric Jing, CEO of Ant Financial (operator of Alipay), details in our report, more than 60% of Ant Credit Pay (or Huabei) users do not own a traditional credit card. This is but one example of the rise of non-traditional payments.

Another reason is that making and receiving payments is the area of financial services that consumers have the most ongoing interaction with. As James Lloyd, Asia-Pacific FinTech Leader at EY, has suggested, “How hands-on a person is with managing their overall finances is a personal choice, but payments are an inescapable daily necessity.”

In addition, payments is often a more accessible market for new entrants than some of the other sectors in financial services – in terms of regulatory compliance and other potential barriers to entry. This provides a more fertile ground for new FinTech firms, as well as a growing secondary market where the business model of firms is to consolidate the services of other FinTech (including payment) providers.

Traditional and non-traditional players increasingly view payments as a platform – a base upon which to build additional financial and non-financial services. One of the most successful examples of this has been China’s Ant Financial (a case study in our EY FinTech Adoption Index 2017), where the Alipay payment functionality lies at the nexus of a whole range of financial and non-financial services – using this to connect to many areas of users’ lifestyles.

China rising
As previously noted, emerging markets are generally ahead of the curve in FinTech adoption. There are many reasons for this – not least of which is the scale of unmet needs and opportunity for technology leapfrog. Facilitative regulation can also play a key role.

In China, a generally permissive regulatory approach has enabled non-traditional players (the largest of which had existing and sector-leading technology businesses) to innovate across the spectrum of financial services products. As we wrote in a 2016 report on China FinTech: “While London, New York and Silicon Valley compete to position themselves as the world’s ‘FinTech hub,’ China has leapfrogged ahead to become the undoubtedly central of global FinTech innovation and adoption.”

Note: The figures show the average percentage of respondents in each market who reported using one or more FinTech service in that category.

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3 EY FinTech Adoption Index 2017
Money transfer and payments are proving to be a bedrock for development of other bundled services, and are adding value to the ecosystem and driving sustainable growth.

Whereas firms in developed markets strive to make incremental steps in line with environmental (and competitive) constraints, those in China have generally had a clearer run.

That China is the global leader in consumer FinTech adoption is now beyond doubt. EY FinTech Adoption Index 2017 demonstrates that the country has reached the “mass adoption” stage, with overall adoption at 69%, driven by an accommodative regulatory position, more smartphone users than anywhere else and the emergence of native technology giants, such as Baidu, Tencent and Alibaba. FinTech adoption in China is already embedded as a cultural norm, suggesting that it will only continue.

Ant Financial is the financial affiliate of Alibaba Group, China’s largest e-commerce provider. Starting as Alipay, a payment mechanism for shoppers ordering online, Ant Financial has since grown to encompass a whole range of financial and non-financial services – all building on Alipay’s capabilities and user base. As a result, Alipay is one of the leading payments services in the world – enabling groundbreaking numbers of transactions. During a 24-hour period within the 2016 Global Shopping Festival alone, Alipay processed 1.05 billion transactions.

Eric Jing, CEO of Ant Financial, comments in our report about how his firm is taking a wide view on its role in the development of financial services that is indicative of the forward-thinking prevalent among the participants in the country: “We aim to bring equal access in financial services to more than two billion people in 10 years. Ant Financial is building an open ecosystem, enabling traditional financial institutions to provide services in a more efficient way.”

China still has a long way to go. While the number and penetration of FinTech-enabled payment services continues to rise, the success of the vertical also highlights the potential of the other financial sectors – including insurance and wealth and asset management. Against a general slow-down in FinTech investment in Europe and the US, China FinTech investment reached new highs in 2016, with VC-backed FinTech companies in China seeing both deals and dollars reach a five-year high with US$4.6 billion raised across 46 deals.5 This trend is backed by the country’s wealth of talent with an estimated 7.6 million financial services professionals.6

5 www.cbinsights.com/research-webinar-fintech-2016
6 China and UK FinTech – Unlocking opportunity, EY + HM Government
### The new financial services paradigm

The index shows that FinTech adoption is a positive trend that will likely gather further momentum. Our analysis of future intended adoption suggests an overall increase to 52% globally. Payments is on the crest of this wave and looks set to continue as a dominant driver; the characteristics that have led it to its leading position are unlikely to change. Money transfer and payments are proving to be a bedrock for the development of other bundled services, and are adding value to the ecosystem and driving sustainable growth.

As the industry matures, there are also more clearly defined ways in which FinTech companies can create success. With a laser focus on customer experience, they can revolutionize the economics of a market by making services cheaper, creating new data-driven business models and working with (or against) established firms to enhance (or dismantle) existing offerings.

The rise of FinTech isn't entirely a story of revolution or disruption – and the increase in FinTech adoption isn’t solely driven by startups (after all, Ant Financial’s last equity fundraise was for a reported US$4.5 billion). Existing incumbent or traditional financial services players have a hugely important role to play – whether in partnering with FinTech firms (many of who provide enabling technologies), providing the infrastructure upon which FinTech firms compete or learning from the non-traditional would-be insurgents. Above all, there is a significant opportunity in matching the distribution and data assets of traditional players with the innovation and customer centricity of FinTech firms.

Financial services “rebundling” to more astute digital natives is a global trend that is set to continue. The EY FinTech Adoption Index 2017 shows that FinTech firms – especially those in the payments vertical – are moving in the right direction and are increasingly impactful. The opportunity now is for incumbents, investors, and policymakers to react to the ever-increasing pace of customer adoption. The future is not yet set.

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**Figures:**

**Figure 3:** Comparison of current and anticipated future use of FinTech, by FinTech category

<table>
<thead>
<tr>
<th>Service</th>
<th>2017 Use</th>
<th>Future Use</th>
</tr>
</thead>
<tbody>
<tr>
<td>Money transfer and payments</td>
<td>50</td>
<td>65</td>
</tr>
<tr>
<td>Financial planning</td>
<td>10</td>
<td>18</td>
</tr>
<tr>
<td>Savings and investments</td>
<td>20</td>
<td>33</td>
</tr>
<tr>
<td>Borrowing</td>
<td>10</td>
<td>20</td>
</tr>
<tr>
<td>Insurance</td>
<td>24</td>
<td>39</td>
</tr>
</tbody>
</table>

Notes: The future use data in this chart has been updated from the first edition of our report. In this updated version, the chart shows the average future anticipated use of at least one FinTech service in each category by all respondents. The first edition of our report showed future anticipated use by current users of one or more FinTech service, which was as follows: Money transfer and payments – 88%; Financial planning – 22%; Savings and investments – 42%; Borrowing – 26%; Insurance – 55.
Will biometrics finally replace passwords?

In the science fiction blockbuster “Back to the Future Part II” from 1989, the two main characters travel forward in time to the year 2015. Here, it is not only possible to drive flying skateboards and wear self-lacing sneakers, but also to use fingerprints to authenticate payments at a device comparable to a tablet computer.

Nearly 30 years have passed since this fiction of using biometric factors for payment authorization, during which we have seen various initiatives in the field of biometric authentication by different (payment) players, e.g., banks, card schemes, point of sale (POS) terminal manufacturers, alternative payment methods or other technology providers. However, today, biometrics still play only a minor role, and authentication continues to be dominated by PIN codes, passwords and signatures. Against this backdrop, what will be the role for biometric authentication in the future world of payments?

1. Biometric authentication

Authentication can be defined as the process of confirming an identity claimed by an entity, Replace with “such as” being the true cardholder in the respective payment transaction. The authentication can be performed by one or more of the following means:

- Knowledge: something the user knows (e.g., a PIN or password)
- Ownership: something the user has (e.g., a card, token or mobile phone)
- Inherence: something the user is (e.g., a biometric characteristic)

While payment transactions are normally authenticated using the first two categories, the application of biometric factors out of the third category, “inherence”, has recently become more relevant. Biometric factors include physical and behavioral factors. Whereas physical factors are innate, such as fingerprints, iris patterns or other facial features, behavioral factors are related to the pattern of behavior of the user, e.g., keystroke dynamics or cursor movements.

One major difference between biometric authentication technologies and other methods is that one has to incorporate probabilities in the authentication process: whereas a PIN or password can either be true or false, a biometric scanner (e.g., for a fingerprint) will usually return a probability
Biometric authentication supports a uniform user experience across channels.

that the authentication is a match. This poses challenges, especially for payment transactions where authentication errors lead to financial losses or chargeback processes.

2. The future role of authentication for payment transactions

In order to assess the role biometric authentication could have in the future world of payments, we have developed different hypotheses that differentiate between payment channels (POS vs. remote), payment instruments (card vs. other) and market characteristics (traditional card-focused vs. developing).

Hypothesis 1: In traditionally card-based payment markets with established payment infrastructure, biometrics will play only a minor role in the authentication of card payments at the POS.

In our opinion, in markets with an established, working card-based infrastructure, there is simply no actual customer need that would be solved by using biometric authentication; there is a learned and working process for paying by card at the POS using PIN or signature as the authentication method. A migration to biometric authentication means would require investment in infrastructure – either at the merchant’s POS (e.g., installing a camera for face or iris recognition) or for the issued cards (e.g., by issuing cards with an embedded fingerprint scanner). We do not see a reason for merchants or issuers justifying such investments as fraud is comparably low and we do not expect any willingness on the part of consumers to pay for using biometric authentication.

Hypothesis 2: The increasing prevalence and use of biometrics-enabled devices (e.g., smartphones) and the ultimate goal of having a uniform user experience across channels will promote the establishment of biometric authentication for payment transactions in the coming years.

For this hypothesis, we have to differentiate between POS and remote payments. At the POS, we see mobile payments finally gaining traction among consumers and thereby also promoting biometric authentication. Many existing mobile devices are technically capable of analyzing biometric factors – for example, through cameras, fingerprint scanners or microphones for voice recognition. Biometric authentication is already being used for unlocking phones and computers or for confirming actions. When conducting payment transactions at the POS, biometric factors can be used to supplement or replace other factors (e.g., PIN) without extra cost, but with added convenience for consumers and merchants. Examples are ApplePay or SamsungPay, which are making use of fingerprints as a biometric authentication factor.

For remote payments there is a comparable development: more and more payment transactions are conducted on biometric-enabled devices (smartphones, tablets, laptops, etc.). Online merchants are
 constantly trying to optimize conversion rates, or instance by selecting the most convenient payment methods. When integrated neatly, biometric authentication can further improve user experience in the check-out process — again, at no additional cost. Many payment method providers are already trying to integrate biometrics into their offering; for example, the Identity Check Mobile by Mastercard, ApplePay (with its remote payment functionality) and start-ups like Dublin-based Touchtech. In the future, we expect a convergence of POS and remote payment methods, intensifying the momentum described above to use biometric-enabled devices for conducting payments.

**Hypothesis 3:** In the medium term, biometrics as a direct link-to-account will be relevant for POS payments only in a few selected markets with previously underdeveloped payment infrastructure and in specific closed-loop use cases.

Biometric features have not only the potential to act as an authentication factor, but also to provide a direct link to a payment account and thereby replace the card as a payment medium. This usually requires the installation of dedicated biometric payment hardware at the merchant. For example, the US-based payment service Keyo uses palm scanners or the service Smile To Pay by Ant Financial (Alipay) that uses cameras for facial recognition. Because of the significant investment required, we see limited potential in developed payment markets; however, we expect selected markets to leapfrog card-based payments infrastructure and directly establish a payment system based on biometric authentication methods. This is currently happening in India, where there has been a major push by the government to use a central biometric identity register (called Aadhaar) for conducting payments. Furthermore, we expect a growing number of use cases for biometric authentication in closed-loop systems, e.g., for events, festivals, specific merchants or cafeterias. Mostly, these use cases require a separate hardware infrastructure anyway, and biometric authentication would be a means to improve the customer experience. One example for this category is Liquid Pay in Japan. After having their fingerprints, passport and credit card information registered at their hotel, tourists can pay in participating stores using their fingerprint.

**3. Conclusion and outlook**

In conclusion, we can summarize that biometric authentication will have a significant role in the future world of payments. However, for traditional card-focused payment markets, there is simply no urgent need to use biometric authentication. Therefore, in these markets, we expect the establishment of new authentication methods to be connected with the use of new payment instruments like the mobile phone.

Legal and regulatory initiatives will further promote the use of biometric authentication as an additional means to enhance the security of payment systems. For example, in Europe, there is a regulatory push towards strong customer authentication methods. Customer experience and convenience are key success factors at the POS as well as online. Therefore, we will most likely experience the use of a diverse set of authentication factors that are intelligently selected, depending on the risk of fraud associated with specific transactions across channels.
Considerations for a real-time payments (RTP) strategy

Driven by a range of market and government-driven initiatives, countries around the world have moved or are moving to introduce faster payments systems that can process both high-value and low-value transactions in near-real time. In the US, unlike in most other countries, the government is not driving the move toward faster payments, creating a level of uncertainty about exactly how faster payments will evolve in the American market.

The list of potential “faster” payment options in the US is long and growing, including established organizations such as the Federal Reserve, the NACHA, The Clearing House (TCH), Visa, Mastercard and emerging market entrants, such as Zelle, Dwolla, and Ripple. NACHA made the first step toward faster payments in the US by launching two same-day Automated Clearing House (ACH) clearing windows in September 2016. While different parties are undertaking the faster payments initiative, they are not all addressing the same use cases or strategic areas. In this rapidly changing environment, US financial institutions are asking: which market solutions on faster payments are most valuable, and what is the best way to integrate them into the overall technology road map for change? This paper discusses the key questions financial institutions need to address when defining their RTP strategy and the considerations for selecting a RTP solution or vendor.

Figure 6: Selected RTP initiatives by different US market players in relevance to financial institutions

<table>
<thead>
<tr>
<th>Market player</th>
<th>Highlights</th>
</tr>
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</table>
| The Federal Reserve | • Established Secure Payments Task Force Steering Committee, which is evaluating approaches for implementing RTP in the US  
  • Acting as an enabler and not a faster payments solution-provider |
| NACHA | • Launched Same Day ACH, introducing two same-day clearing windows in September 2016; Same Day ACH debits to go into effect in September 2017  
  • Working on other ACH modernization efforts, such as business to business (B2B) directory services, tokenization of the ACH network and application programming interface (API) standardization |
| TCH | • Designing and building a RTP solution that will facilitate real-time messaging (both for money movement and information), with near-to real-time settlement  
  • Will support all major payment use cases, such B2B, business to customer (B2C), peer to peer (P2P) and customer to business (C2B) for credit push payments  
  • Will provide options to use either TCH services (e.g., directory, tokenization and fraud) or leverage other third-party solutions  
  • Working on pilot use cases with leading US financial institutions |
| Early Warning Services (EWS) | • Provides near-real-time payment solutions to financial institutions as part of the Zelle offering using the clearXchange network  
  • Leverages its network directory of registered banks to enable money movement using customer email or mobile phone  
  • Supports P2P and also select B2C (e.g., disbursements) and C2B (e.g., consumer to Financial Institution (FI) bill pay) for credit push payments  
  • Partnerships with providers like Fiserv and Fidelity National Information Service Inc (FIS) is helping to broaden the solution reach |
| Visa and Mastercard | • Provides solutions that leverage debit networks (Visa Direct and Mastercard Send) to deliver funds in near-real-time to debit cards of participating FIs  
  • Supports P2P and select B2C (e.g., disbursements) and C2B (e.g., credit card bill pay) for credit push and pull payments  
  • Visa and Mastercard have different partnerships with providers like FIS, Hyperwallet, PayPal and Early Warning Services, helping them to broaden the solution reach |
The list of potential faster payment options in the US is long and growing.

Setting the agenda
Defining the RTP strategy and implementation approach opens a host of questions for financial institutions, such as

- What are the lessons learned from prior RTP implementations around the world?
- What are the right offerings and pricing for addressing customers’ needs? What is the best way to address RTP use cases that will overlap with existing faster payments capabilities (e.g., wires)?
- What are the technology and operations capabilities required to offer RTP solutions, and how will each impact both the core payment processing and supporting functions, such as finance, accounting, fraud, risk, controls and compliance?
- What is the impact of the existing technology landscape (from submission through middleware to system of records)?

As financial institutions answer these and other questions, they also need to evaluate the solution options, the right partners and vendor choices.

Figure 7: Key questions that financial institutions need to consider to build the RTP strategy

- What are the lessons learned from global initiatives?
- What initiatives or standards are likely to succeed in the US?
- How will these efforts ultimately fit with the Fed’s faster payment framework?
- What are the key use cases for RTP in the wholesale space?
- Over time, how will other businesses benefit?
- What solutions are available in the market and how effectively will they integrate with the TCH solution?
- How well are these solutions positioned to meet my current and potential future business requirements?
- How can the plan be structured today to allow maneuverability tomorrow?
- What are the required changes to the control environment?
- How do lines of defense change with new capabilities and solution configuration?
- Does the third-party vendor approach make sense?
- What are the process, policies, exception handling, risk and compliance impacts?
- What is required to allow 24/7 support?
- What are the process, capabilities, (process automation, core payments processing, finance/accounting, fraud, risk/controls, etc.) are required to launch a RTP solution?
- What are the gaps in the existing environment vs. leading practices?
- What scalability, availability or performance issues might be created?
- What is required for tech ecosystem readiness for transition to RTP?
- What are payment channel impacts and overlaps?
- How will new messaging and tokenization standards be impacted?
- What is required to allow 24/7 support?
- What are the gaps in the existing environment vs. leading practices?
- What are the capabilities needed to launch a RTP solution?
- What are the gaps in the existing environment vs. leading practices?
- What is required for tech ecosystem readiness for transition to RTP?
- What are payment channel impacts and overlaps?
- How will new messaging and tokenization standards be impacted?
Financial institutions should prioritize RTP in their payments road map.

Building a holistic approach
With changing customer expectations, it’s becoming important for financial institutions to prioritize RTP in the organization’s payments road map. Identifying a sample use case and building prototypes may help launch a quick product in the market. However, a more holistic approach toward RTP will help support strategic choices that are not tied to a single industry utility, while also helping you leverage this opportunity to advance broader payment initiatives. Thus, building the RTP strategy and implementation plan requires a steering program that understands the market dynamics, considers the organization’s vision and can bring together the business, technology, operations and support functions to execute on the overall vision and plan.

Figure 8: Framework for a comprehensive RTP strategy

1 Business strategy
Defining a customer centric business strategy requires alignment with market needs.

- Assess current product and, services, and align RTP core competencies with customer needs
- Identify pilot use cases, new products and strategic opportunities
- Develop pricing and non-pricing (value) strategies
- Leverage opportunity to advance broad payment initiatives (e.g., payment hub)
- Capture opportunity to upgrade digital channels

Shifting from a batch environment requires end-to-end processing alignment.

- Design cross-channel alignment for consistency across customer visibility and touch points
- Assess impact of 24/7 support
- Assess impact to supplemental functions: marketing, liquidity, reconciliation accounting and finance
- Embed flexibility to make changes to business rules in real time
- Assess changes to good funds model

2 Technology delivery
Scaling the technology architecture requires alignment with the enterprise payments strategy.

- Design solution so it leverages standards and is not tied to a single industry utility
- Model changes to intraday and batch capacity requirements
- Standardize shared RT payments rails across bank – commercial and consumer
- Share payments platform for all RT payment methods and types
- Assess impact to high availability and disaster recovery strategies

3 Operations readiness
Designing risk and control measures requires enhanced automation for RTP.

- Design operational and technical resiliency for availability
- Put security controls in place that scale to the threat
- Build and enhance real-time monitoring and alerting capability (e.g., liquidity)
- Consider regulatory inputs (e.g., anti-money laundering (AML), Office of Foreign Assets Control (OFAC))

4 Regulatory, risk and controls
Banks should mobilize today in a way that allows them to make choices that fit tomorrow.

**Defining a framework for RTP vendor selection**

Financial institutions need a well-defined framework to evaluate the solutions and vendors that will support and accelerate their RTP road map. While many vendors offer similar features, each financial institution needs to weigh several factors when determining which solutions and vendors best align with the organization's objectives, customer needs and enterprise payments strategy. It is important that financial institutions mobilize today in a way that allows them to make choices that fit tomorrow.

Figure 9 provides an initial framework for conducting an RTP vendor analysis and can be customized to fit specific organizational requirements.

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**Figure 9: Key drivers for RTP solution and vendor selection**

<table>
<thead>
<tr>
<th><strong>Vendor selection criteria</strong></th>
<th><strong>Key questions</strong></th>
</tr>
</thead>
</table>
| **Cost**                                 | • What are the license and transaction usage costs for the solution?  
• What are the initial implementation and ongoing maintenance costs?  
• What payment modules are included in the cost, and what is the flexibility in selecting the modules? |
| **Time to market**                       | • Does the solution accelerate the time to market for the RTP solution?  
• Does the solution help launch a quick prototype of a select RTP use case? |
| **Technology blueprint**                 | • How open is the solution, and what is the support for APIs?  
• Is the solution decoupled, modular and micro-services-based?  
• Does the solution follow global messaging protocols suited for RTP (e.g., ISO 20022)? |
| **Functional depth**                     | • What capabilities are offered to connect the users (i.e., directory services)?  
• What are the core payment processing capabilities?  
• What are the reporting-, fraud- and risk-monitoring capabilities?  
• Can the solution integrate with all channels and provide capabilities, such as notifications or alerts? |
| **Fit with overall payments and IT strategy** | • What are the deployment options (e.g., on-premise vs. hosted or single or vs. multi-instance)?  
• How does the solution fit into the broader payments strategy (e.g., payments hub, digital road map)?  
• What is the DevOps cycle and the release or deployment support provided by the vendor? |
| **Maturity**                             | • Does the solution or vendor have experience in other faster payments markets (e.g., UK and Australia)?  
• Which other financial institutions are participating in the solution?  
• Is the vendor working on pilots with some of the leading RTP schemes (e.g., TCH)? |
Understanding Open Banking

Since the UK’s Competition and Markets Authority (CMA) mandated the delivery of Open Banking, banks have initiated transformation programs to comply with the new regulation and reassess the changing competitive landscape. New propositions are quickly being developed to take advantage of the new environment that will come into force in 2018 and will allow consumers to easily share their financial data with third parties. Banks are also navigating their way through a wider set of regulatory changes, some with overlapping (e.g. PSD2) or even parallel (e.g. General Data Protection Regulation (GDPR)) requirements.

While banks are working hard to understand the complex regulatory landscape and its strategic impact, consumers remain relatively uninformed about the impacts that Open Banking will have on their own choices and behavior. Hamish Thomas, EY EMEIA Payments Leader, spoke to Finextra (the leading independent newswire and information source for the worldwide financial technology community) about what consumers can expect from the introduction of Open Banking, and how banks and other payment services providers can encourage and drive adoption.

There’s clearly a lot going on across the industry with PSD2, Open Banking and other regulatory initiatives. How does all this change fit together?

Hamish: I think you’re right, there is a lot going on. I think it’s important to look at that holistically in terms of how all those things overlap. I think the most closely related are PSD2, GDPR and then from a UK perspective, the wider piece around Open Banking. On the one hand, we have PSD2 and Open Banking, which are setting a course for increased ability to share data – share our data – not just with the institutions with whom we directly ban, but also third parties, to allow them to provide a wider range of products and services, and to initiate payments on our behalf, with our permission. The counterpoint to that is GDPR, which is much more focused on data protection, data control, permissions, and being clear on how data is managed, stored and looked after. So, it’s important to strike that balance and look at these holistically when delivering against all of this regulation; so you have that balance between the openness and sharing, and also the control and protection.

Now, that is further complicated by a wider set of regulations, such as structural reform or ring-fencing, and also regulation in place to help with security, fraud and financial crime. So, again, it’s important to strike that balance between the innovation, the competition and the access, that is driving improved customer outcomes – but to balance that with the critical need for stability and security of our financial services, and to manage the threat of fraud and financial crime.

What do open APIs mean for bank consumers?

Hamish: If we look at open APIs specifically, to be honest, they don’t mean an awful lot to consumers; they’re effectively a technical enabler. Perhaps the interesting question is: what does Open Banking mean to consumers? When we look at that – there are a number of ways to look at it – I like to summarize it across four areas. Firstly, I would say “choice”: the potential for increase in choice in terms of the products and services we have access to, and also the providers who deliver them for us. Related to that, we have “customization”: when we look at those products and services, there will perhaps be more opportunity to specifically choose which products and services from which providers we can bundle together, to give us the experience and engagement with financial services that we’re seeking. I’d then add to that “control”: control over our data and control over who accesses our data, control over how we engage with this breadth of new providers. And then finally, I talk about “coverage.” When I talk about coverage, I mean those across segments of our society who are not well served by financial services, or to some degree are excluded, because of the products and services they need or can trust, or indeed other aspects, such as the sophistication of credit rating, in terms of the offers that are made to certain members of our community. We therefore look at the potential of Open Banking to provide more specific products and services to those segments who are underserved, and to increase the coverage across all participants in what can be provided and how they consume it.

In summary, I would talk about choice, coverage, control and the customization that the promise of Open Banking can bring.
**What needs to be done to instil confidence in Open Banking adoption?**

**Hamish:** Confidence in adoption comes from a number of areas. I think the most important would be trust; that is to say, the trust that we as consumers have in those institutions that are providing Open Banking services — that may be banks, other payment services providers, or third parties who might access our accounts and use our data on our behalf. We all need to trust the actions, the security and the stability of those services. Another dimension I would talk about would be awareness and education.

Some of the research we have done shows that the majority of consumers don’t really know what Open Banking is:

- What does it mean?
- What potential does it bring?
- What are the benefits it could have?
- How are the risks around that being managed?

Therefore, there is a need for coherent and simple messaging across the industry to help people understand what this means and the potential it can bring.

Finally, I would talk about the propositions; the products and services. They need to be relevant to customers. They need to be useful. They need to be things that make our everyday lives and the way in which we consume and engage with financial services easier, in terms of ease of access, ease of use, and the experience they provide. In summary, that would really be around the trust, the education and awareness, and the relevance of the products and services that all participants — both established and new — will bring into the market. Ultimately, what is really needed is the action of banks, other service providers, and all those involved in the Open Banking end-to-end service, to really put consumers and what they need into the heart of what they deliver to engender that trust, to provide that awareness and education, and to maintain that relevance. I think in that way, we will be able to increase our confidence in the success of Open Banking.

Hamish Thomas
M&A roundup

M&A activity in the payments industry declined in the second quarter of 2017, following a surge in the first quarter of the year. In Q2 2017, a total of 37 deals were reported with a total disclosed value of US$4 billion. The acquisition of CardConnect by First Data stands out, since it involves a leading integrated merchant acquiring payment gateway and security solution as well as the second largest US merchant acquirer.7

M&A activity and deal characteristics
A total of 37 M&A transactions were announced in the second quarter (Q2) of 2017. This represents a decrease of 47%, relative to the 70 deals in Q2 2016. After an increase in the number of deals in Q1 2017, driven by the recovery of deal activity in Europe and North America, and the surge in Asia, Q2 has seen a decline due to a fall-back in Asia and limited activity in the rest of the world (excluding Europe and North America). The financial terms of 15 transactions were disclosed in Q2 2017, amounting to a total volume of US$4 billion. This represents a 35% decrease over the Q2 2016 deal volume.8

The announced acquisition of CardConnect by First Data Corporation accounted for 19% of the total disclosed transaction volume in Q2 2017. CardConnect, headquartered in the US, is a registered Independent Sales Organisation (ISO) of Wells Fargo, serving 67,000 merchants across the US and processing a card transaction volume of US$22 billion. The company provides an omnichannel payments processing platform and gateway along with PCI-certified (Payment Card Industry Data Security Standard) point-to-point encryption and tokenization solutions that can integrate with leading enterprise resource planning (ERP) software, such as Oracle and SAP.9 First Data’s definitive merger agreement, submitted on 26 May 2017, offered to acquire CardConnect for US$769 million, valuing the company at an implied enterprise value of US$758 million, and representing a 26.8x EBITDA multiple and a 1.3x revenue multiple.10 For First Data, the acquisition not only increases its North American merchant portfolio and distribution capabilities, but also enhances its value proposition and technological prowess. CardConnect’s existing relationships with independent software vendors along with its technology, salesforce and integration teams will support First Data’s independent software vendors initiative. Moreover, CardConnect’s payments platform can accelerate merchant on-boarding and streamline partner management, and secure integration of payment data with ERP software remains a challenge.

Sources:
8 Sources: EY Innovalue analysis, Bloomberg, CapitalIQ (www.capitaliq.com, accessed on 20 July 2017), Mergermarket, EY Innovalue analysis
10 Sources: EY Innovalue analysis, CapitalIQ (www.capitaliq.com, accessed on 20 July 2017)
The decline in deals in Q2 was driven by a drop-off in Asia.

Growing customer need, both in the medium and large segments. The median EBITDA-multiple from 2016 to 2017 increased from 10.6x to 14.4x. The median revenue multiple for the same period decreased from 2.3x to 1.6x. Harland Clarke Holdings’ acquisition of online couponing provider, RetailMeNot, for US$688 million at an implied enterprise value of US$455 million, equates to a multiple of 1.6x revenue or 14.6x EBITDA. Investors are constantly evaluating the potential disruptive nature of target companies in the payments sector, and, consequently, revise the transaction multiples of their offers, leading to a deal landscape that displays a diverse range of valuations.

In Q2 2017, 41% of the targets were based in North America, followed by 38% in Europe and 22% in Asia. In Europe, the German payments market appears to be in a consolidation phase. Following the acquisition of Concardis by Bain Capital and Advent International in Q1, the two private equity houses aiming to create a payments champion in the Germany, Switzerland and Austria region completed the first initiative in their buy and build strategy by acquiring Ratepay. Ratepay, formerly the payment services arm of German e-commerce retailer, Otto Group, provides processing for some of the widely accepted prominent online payment methods for German consumers, including invoicing, direct debit and prepayment, and will be integrated in the payments platform of Concardis. Meanwhile, Concardis’ key competitor in the market, B+S Card Service, has announced that it will merge with the online payment services provider, PAYONE, in the third quarter of 2017 and will be renamed BS PAYONE. In the Nordics, Swedbank acquired PayEx, a payment services provider, for an undisclosed amount. In Russia, Otkritie, a Russian provider of banking, investment management and insurance solutions, offered to buy Nasdaq-listed Qiwi, an operator of physical and online payment systems in the Russian Federation, for a total consideration of US$695 million at an implied enterprise value of US$1,381 million (4.4x revenue, and 14.1x EBITDA). In North America, FleetCor, the highly acquisitive fuel and commercial cards issuer, paid US$675 million for cross-border B2B payment provider, Cambridge Global Payments, in one of the largest transactions of Q2 2017.

11 Sources: www.investors.cardconnect.com (accessed on 14 July 2017)
13 Sources: www.adventinternational.com (accessed on 13 July 2017)
14 Sources: www.payone.com (accessed on 13 July 2017)
15 Sources: CapitalIQ (www.capitaliq.com, accessed on 14 July 2017)
16 Sources: www.fleetcor.com (accessed on 12 July 2017)
Funding activity
In the second quarter of 2017, 44 companies raised US$1.9 billion in investments, of which US$4.4 million was debt financing. This represents a 10% increase on the 40 deals announced in the previous quarter and a 157% increase in terms of total financing value. This strong growth was driven by a US$1.4 billion equity financing landed by Paytm in May 2017.

While in Q1 2017 investors were seeking opportunities in payment FinTechs across a range of maturity stages, Q2 was characterized by a higher propensity towards investments in early stage companies, especially in US and Asian-based enterprises.

Geographically, in line with the previous quarter, 45% of the total investment activity in Q2 2017 (based on number of transactions) occurred in North and Central America, followed by Europe and Asia. The growing momentum of fundraising activities in the UK continued throughout Q2, accounting for 77% of total fundraising activities in European payment FinTechs.

Investment trends
In line with the previous quarter, investors kept a strong interest around payment acceptance devices and software FinTechs; however, attention has shifted from money transfer companies to alternative payment systems. Additionally, there has been a notable and increasing interest in companies that develop data security solutions, especially with regards to digital identification and fraud management.

Throughout the last few years, Asian giants have continued to grow, thanks to billions of dollars in equity financing. Paytm raised a US$1.4 billion equity venture capital deal in May 2017.

financing round with SoftBank, a Japanese telecoms group and a technology investor, being the only investor in this round. The investment is recorded as being the largest ever funding round by a single investor in India. The deal will take SoftBank’s share of the company to approximately 20% and valued Paytm at US$7 billion (a 40% increase since its August 2016 valuation at US$5 billion). This transaction is another step in SoftBank’s vision of attempting Alipay’s Chinese success in India. During a recent interview, Masayoshi Son, CEO of SoftBank Group, stated: “In line with the Indian government’s vision to promote digital inclusion, we are committed to transforming the lives of hundreds of millions of Indian consumers and merchants by providing them digital access to a broad array of financial services, including mobile payments. We are excited to partner with Paytm in this journey and will provide them with all our support”.22

Similar to other payment players in the market, such as Revolut and Klarna, Paytm has recently received a banking license from the Reserve Bank of India, thanks to which it launched Payments Bank in May, a mobile banking solution that targets millions of unbanked and underserved Indians. The recent funding round will support the company with enhancing its proposition and increasing its customer base.

Across the analyzed payment FinTechs landscape, we have been noticing a growing number of companies that are specialized in different industry verticals. A notable example is TouchBistro, an iPad-based restaurant POS system, which enables staff to take orders and manage reservations, and allows customers to pay bills using different payment methods (including PayPal). TouchBistro received a US$16.3 million equity financing in a series C funding round led by American private equity firm Napier Park Financial Partners and Japanese technology platform Recruit Holdings. The company, which has more than 9,000 clients, has doubled size in the last year, acquiring an average of 300 new clients per month. TouchBistro reported a total revenue of US$10 million in the last year and handled approximately US$5 billion worth of restaurant orders. With the capital raised, the company is planning to expand its footprint in the US, launch in Japan and to build a holistic restaurant operating system.

In the coming months, we expect that seed or VC investment, and especially series A rounds, will drive most of the activities, followed by a shift towards financing of more mature companies. Strong liquidity of Asian giants could be another driver of M&A activities. The security sector might continue to grow because of upcoming new regulations, such as the GDPR and PSD2.

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22 Source: Livemint (www.livemint.com, accessed on 19 July 2017)
## Transaction overview

**Q2 2017**

<table>
<thead>
<tr>
<th>Date announced</th>
<th>Target company</th>
<th>Country</th>
<th>Target company industry</th>
<th>Buyer(s)</th>
<th>Country</th>
<th>Transaction value (US$m)</th>
</tr>
</thead>
<tbody>
<tr>
<td>16 March 2017</td>
<td>Acculynk</td>
<td>US</td>
<td>Provides payment processing and authentication software solutions for online and mobile payments</td>
<td>First Data</td>
<td>US</td>
<td>85</td>
</tr>
<tr>
<td>20 March 2017</td>
<td>GPlshopper</td>
<td>US</td>
<td>Provides an integrated mobile commerce platform</td>
<td>Synchrony Financial</td>
<td>US</td>
<td>not disclosed</td>
</tr>
<tr>
<td>21 March 2017</td>
<td>Payplug</td>
<td>France</td>
<td>Provides an online payment solution</td>
<td>Natixis</td>
<td>France</td>
<td>not disclosed</td>
</tr>
<tr>
<td>22 March 2017</td>
<td>CHEQUM &amp; C</td>
<td>South Korea</td>
<td>Provides B2B electronic payment services in South Korea</td>
<td>CP Associates</td>
<td>South Korea</td>
<td>152.65</td>
</tr>
<tr>
<td>23 March 2017</td>
<td>First Annapolis Consulting</td>
<td>US</td>
<td>Provides strategic and tactical advisory services focusing on the payments industry</td>
<td>Accenture</td>
<td>Ireland</td>
<td>not disclosed</td>
</tr>
<tr>
<td>27 March 2017</td>
<td>FitPay</td>
<td>US</td>
<td>Develops a contactless payment platform based on wearable devices</td>
<td>Nxt-ID</td>
<td>US</td>
<td>not disclosed</td>
</tr>
<tr>
<td>28 March 2017</td>
<td>MyGate Communications</td>
<td>South Africa</td>
<td>Provides online payment gateway services in Africa</td>
<td>Wirecard</td>
<td>Germany</td>
<td>25.1</td>
</tr>
<tr>
<td>29 March 2017</td>
<td>NuData Security</td>
<td>Canada</td>
<td>Develops and markets biometrics and behavioral analytics solutions</td>
<td>Mastercard</td>
<td>US</td>
<td>not disclosed</td>
</tr>
<tr>
<td>31 March 2017</td>
<td>Areeba</td>
<td>Lebanon</td>
<td>Provides electronic payment and card issuing services</td>
<td>M1</td>
<td>Lebanon</td>
<td>220.0</td>
</tr>
<tr>
<td>3 April 2017</td>
<td>Ratepay</td>
<td>Germany</td>
<td>Provides online instalment payments and sales on account solutions</td>
<td>Bain Capital and Advent International</td>
<td>US</td>
<td>not disclosed</td>
</tr>
<tr>
<td>3 April 2017</td>
<td>The Members Group</td>
<td>US</td>
<td>Provides card processing and payment solutions to financial institutions in the US</td>
<td>CU Cooperative Systems</td>
<td>US</td>
<td>100</td>
</tr>
<tr>
<td>3 April 2017</td>
<td>2Checkout.com</td>
<td>US</td>
<td>Provides online payment processing solutions to merchants worldwide</td>
<td>Avangate</td>
<td>US</td>
<td>not disclosed</td>
</tr>
<tr>
<td>4 April 2017</td>
<td>Compte Nickel</td>
<td>France</td>
<td>Provides payment account banking services</td>
<td>BNP Paribas</td>
<td>France</td>
<td>not disclosed</td>
</tr>
<tr>
<td>4 April 2017</td>
<td>Remitsy</td>
<td>Hong Kong, China</td>
<td>Provides payment solutions to businesses, freelancers, agents and remote workers in China</td>
<td>Wyre</td>
<td>US</td>
<td>not disclosed</td>
</tr>
<tr>
<td>5 April 2017</td>
<td>Flattr</td>
<td>Sweden</td>
<td>Provides an online social micro-payment service</td>
<td>Eyeo</td>
<td>Germany</td>
<td>not disclosed</td>
</tr>
<tr>
<td>10 April 2017</td>
<td>Pennyful Online</td>
<td>India</td>
<td>Provides cashback and discount coupons</td>
<td>Zaggle Prepaid Ocean Services</td>
<td>India</td>
<td>not disclosed</td>
</tr>
<tr>
<td>10 April 2017</td>
<td>RetailMeNot</td>
<td>US</td>
<td>Operates as a savings destination for online and in-store purchases</td>
<td>Harland Clarke Holdings</td>
<td>US</td>
<td>455.11</td>
</tr>
<tr>
<td>11 April 2017</td>
<td>Banking Computer Services Private Limited and BCS Information System</td>
<td>Singapore</td>
<td>Provides electronic payment services</td>
<td>Network For Electronic Transfers (Singapore)</td>
<td>Singapore</td>
<td>27.09</td>
</tr>
<tr>
<td>12 April 2017</td>
<td>nChain</td>
<td>UK</td>
<td>Researches and develops blockchain tools, protocols, and applications</td>
<td>High tech Private Equity Fund</td>
<td>Malta</td>
<td>not disclosed</td>
</tr>
<tr>
<td>12 April 2017</td>
<td>PayVisors</td>
<td>US</td>
<td>Operates as an enterprise technology and sales consulting company with a focus on payments</td>
<td>Zift</td>
<td>US</td>
<td>not disclosed</td>
</tr>
<tr>
<td>18 April 2017</td>
<td>InfoReliance</td>
<td>US</td>
<td>Provides software engineering, cybersecurity, cloud computing, portals and collaboration, IT consulting, information technology, mobile computing, business intelligence and data warehousing, and services based on Microsoft technology</td>
<td>ECS Federal</td>
<td>US</td>
<td>not disclosed</td>
</tr>
<tr>
<td>20 April 2017</td>
<td>FS101</td>
<td>UK</td>
<td>Offers consulting services to blue chip financial services on financial crimes</td>
<td>P2CG</td>
<td>UK</td>
<td>not disclosed</td>
</tr>
<tr>
<td>24 April 2017</td>
<td>Freecharge</td>
<td>India</td>
<td>Provides a mobile wallet platform</td>
<td>Mobikwik</td>
<td>India</td>
<td>not disclosed</td>
</tr>
<tr>
<td>25 April 2017</td>
<td>Paymetric</td>
<td>US</td>
<td>Offers a software-as-a-service based integrated and processor-agnostic tokenization, electronic payment acceptance and data security solution</td>
<td>Vantiv</td>
<td>US</td>
<td>not disclosed</td>
</tr>
<tr>
<td>Date announced</td>
<td>Target company</td>
<td>Country</td>
<td>Target company industry</td>
<td>Buyer(s)</td>
<td>Country</td>
<td>Transaction value (US$m)</td>
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</tr>
<tr>
<td>25 27 April 2017</td>
<td>Slonkit &amp; Sienna Systems Resources</td>
<td>India</td>
<td>Provides prepaid card services</td>
<td>Capital First</td>
<td>India</td>
<td>0.66</td>
</tr>
<tr>
<td>26 27 April 2017</td>
<td>Systems of Secure Transactions business unit from Bancomsvjazok</td>
<td>Ukraine</td>
<td>Offers services in the areas of software development for EFTPOS terminals (electronic funds transfer at point of sale), and integration with cash register systems</td>
<td>Ingenico</td>
<td>France</td>
<td>not disclosed</td>
</tr>
<tr>
<td>27 1 May 2017</td>
<td>Cambridge Global Payments</td>
<td>Canada</td>
<td>Offers online and B2B payment solutions</td>
<td>FleetCor Technologies</td>
<td>US</td>
<td>675</td>
</tr>
<tr>
<td>28 5 May 2017</td>
<td>Payone</td>
<td>Germany</td>
<td>Provides online payment acceptance services</td>
<td>B+S Card Service</td>
<td>Germany</td>
<td>not disclosed</td>
</tr>
<tr>
<td>29 10 May 2017</td>
<td>PayEx Finance</td>
<td>Sweden</td>
<td>Provides payment services for internet and mobile trade, rating and billing, invoice and ledger management, collections, and credit management applications</td>
<td>Swedbank</td>
<td>Sweden</td>
<td>not disclosed</td>
</tr>
<tr>
<td>30 10 May 2017</td>
<td>International Payment Services</td>
<td>UK</td>
<td>Provides electronic payment acceptance services</td>
<td>Valitor</td>
<td>Iceland</td>
<td>not disclosed</td>
</tr>
<tr>
<td>31 10 May 2017</td>
<td>Commonwealth Foreign Exchange</td>
<td>US</td>
<td>Provides corporate foreign exchange services</td>
<td>TTT Moneycorp</td>
<td>UK</td>
<td>not disclosed</td>
</tr>
<tr>
<td>32 10 May 2017</td>
<td>Card Payment services</td>
<td>US</td>
<td>Provides Visa, Mastercard, American Express and Discover credit and debit card processing services in the US</td>
<td>Cayan</td>
<td>US</td>
<td>not disclosed</td>
</tr>
<tr>
<td>33 16 May 2017</td>
<td>Offline merchants</td>
<td>POS division of PayU India</td>
<td>Provides payment processing services</td>
<td>MsSwipe Technologies</td>
<td>India</td>
<td>not disclosed</td>
</tr>
<tr>
<td>34 17 May 2017</td>
<td>Total Merchant services</td>
<td>US</td>
<td>Provides credit card processing services for small businesses and merchants in the US and Canada</td>
<td>North American Bancard</td>
<td>US</td>
<td>not disclosed</td>
</tr>
<tr>
<td>35 24 May 2017</td>
<td>Itz Cash Card</td>
<td>India</td>
<td>Provides prepaid payment solutions to consumers and various business entities in India</td>
<td>Ebix</td>
<td>US</td>
<td>120</td>
</tr>
<tr>
<td>36 25 May 2017</td>
<td>EchoSat Communications Group</td>
<td>US</td>
<td>Offers high-speed secure payment gateway (SPG) network solutions that provide a managed PCI-compliant POS, ATM, Electronic Funds Transfer (EFT) and Electronic Benefit Transfer (EBT) transaction transport network</td>
<td>ControlScan</td>
<td>US</td>
<td>not disclosed</td>
</tr>
<tr>
<td>37 29 May 2017</td>
<td>CardConnect</td>
<td>US</td>
<td>Provides payment processing solutions to small and medium business merchants and enterprise customers in the US</td>
<td>First Data</td>
<td>US</td>
<td>757.58</td>
</tr>
<tr>
<td>38 31 May 2017</td>
<td>F1 Soft International</td>
<td>Nepal</td>
<td>Provides services in the areas of internet and mobile banking, terminal products, remittance solutions, payment gateways, and other transactional banking products</td>
<td>Kantipur Publications</td>
<td>Nepal</td>
<td>not disclosed</td>
</tr>
<tr>
<td>39 2 June 2017</td>
<td>Sage Payment Solutions</td>
<td>US</td>
<td>Develops and provides electronic payment processing and merchant solutions</td>
<td>GTCR</td>
<td>US</td>
<td>260</td>
</tr>
<tr>
<td>40 8 June 2017</td>
<td>Commerz Finanz</td>
<td>Germany</td>
<td>Provides consumer credit products and services in Germany, including Mastercard and Visa cards</td>
<td>BNP Paribas Personal Finance</td>
<td>France</td>
<td>not disclosed</td>
</tr>
<tr>
<td>41 8 June 2017</td>
<td>Klarna</td>
<td>Sweden</td>
<td>Provides online payment solutions to e-stores</td>
<td>Brightfolk</td>
<td>Denmark</td>
<td>not disclosed</td>
</tr>
<tr>
<td>42 8 June 2017</td>
<td>Hexadite</td>
<td>US</td>
<td>Develops a security orchestration and automation solution to investigate and resolve cyber incidents</td>
<td>Microsoft</td>
<td>US</td>
<td>100</td>
</tr>
<tr>
<td>43 8 June 2017</td>
<td>Payfunnels</td>
<td>US</td>
<td>Provides an online payment platform for secured payments</td>
<td>Intmiyaz Momin</td>
<td>US</td>
<td>not disclosed</td>
</tr>
<tr>
<td>44 12 June 2017</td>
<td>Qiwi</td>
<td>Cyprus</td>
<td>Operates electronic online payment systems</td>
<td>Otkritie</td>
<td>Russia and Cyprus</td>
<td>1380.59</td>
</tr>
<tr>
<td>45 13 June 2017</td>
<td>Helena Activos Líquidos Internacionales</td>
<td>Spain</td>
<td>Develops and owns a system of cardless cash withdrawal from ATMs</td>
<td>Halcash North America</td>
<td>US</td>
<td>not disclosed</td>
</tr>
<tr>
<td>46 13 June 2017</td>
<td>Monetise</td>
<td>UK</td>
<td>Provides digital transformation services for banks and financial institutions</td>
<td>Fiserv</td>
<td>US</td>
<td>87.07</td>
</tr>
<tr>
<td>Date announced</td>
<td>Target</td>
<td>Country</td>
<td>Round</td>
<td>Financial volume (US$ m)</td>
<td>Total funding (US$ m)</td>
<td>Lead investor</td>
</tr>
<tr>
<td>----------------</td>
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</tr>
<tr>
<td>3 April 2017</td>
<td>Iyzico</td>
<td>Turkey</td>
<td>C</td>
<td>3.00</td>
<td>24.00</td>
<td>Amadeus Capital Partners</td>
</tr>
<tr>
<td>4 April 2017</td>
<td>AccessPay</td>
<td>UK</td>
<td>Debt</td>
<td>2.50</td>
<td>3.95</td>
<td>Other</td>
</tr>
<tr>
<td>5 April 2017</td>
<td>Aerian</td>
<td>UK</td>
<td>Debt</td>
<td>1.87</td>
<td>1.87</td>
<td>BOOST &amp; Co</td>
</tr>
<tr>
<td>11 April 2017</td>
<td>MobiKwik</td>
<td>India</td>
<td>C</td>
<td>0.93</td>
<td>127.78</td>
<td>Cisco Systems Capital</td>
</tr>
<tr>
<td>18 April 2017</td>
<td>Zoompass</td>
<td>Canada</td>
<td>Venture</td>
<td>0.19</td>
<td>0.19</td>
<td>Other</td>
</tr>
<tr>
<td>20 April 2017</td>
<td>Flinqer</td>
<td>Netherlands</td>
<td>Venture</td>
<td>3.71</td>
<td>7.17</td>
<td>NIBC Bank</td>
</tr>
<tr>
<td>25 April 2017</td>
<td>Pockit</td>
<td>UK</td>
<td>B</td>
<td>3.71</td>
<td>7.17</td>
<td>Other</td>
</tr>
<tr>
<td>26 April 2017</td>
<td>BitPagos</td>
<td>Argentina/US</td>
<td>A</td>
<td>0.43</td>
<td>7.45</td>
<td>Huiyin Blockchain Venture</td>
</tr>
<tr>
<td>1 May 2017</td>
<td>Airwallex</td>
<td>Australia</td>
<td>A</td>
<td>13.00</td>
<td>16.00</td>
<td>Tencent Holdings</td>
</tr>
<tr>
<td>2 May 2017</td>
<td>Paytm</td>
<td>India</td>
<td>Venture</td>
<td>1400.00</td>
<td>32.45</td>
<td>Softbank Group</td>
</tr>
<tr>
<td>4 May 2017</td>
<td>Signifyd</td>
<td>US</td>
<td>C</td>
<td>56.00</td>
<td>87.00</td>
<td>Bain Capital Ventures</td>
</tr>
<tr>
<td>18 May 2017</td>
<td>Cardlytics</td>
<td>US</td>
<td>Venture</td>
<td>11.94</td>
<td>202.94</td>
<td>Data analytics</td>
</tr>
<tr>
<td>24 May 2017</td>
<td>Coins.ph</td>
<td>Philippines</td>
<td>A</td>
<td>5.00</td>
<td>10.00</td>
<td>Naspers</td>
</tr>
<tr>
<td>25 May 2017</td>
<td>Soft Space</td>
<td>Malaysia</td>
<td>A</td>
<td>5.00</td>
<td>5.00</td>
<td>Sumitomo Mitsui Card Company</td>
</tr>
<tr>
<td>25 May 2017</td>
<td>Unlockd</td>
<td>UK</td>
<td>B</td>
<td>23.00</td>
<td>39.00</td>
<td>AXIATA Digital</td>
</tr>
<tr>
<td>26 May 2017</td>
<td>Linx Card</td>
<td>US</td>
<td>Venture</td>
<td>0.10</td>
<td>0.10</td>
<td>Alternative payment systems</td>
</tr>
<tr>
<td>30 May 2017</td>
<td>Wave</td>
<td>Canada</td>
<td>D</td>
<td>32.00</td>
<td>79.50</td>
<td>NAB Ventures</td>
</tr>
<tr>
<td>31 May 2017</td>
<td>Vanbex</td>
<td>Canada</td>
<td>Seed</td>
<td>0.37</td>
<td>0.37</td>
<td>Adrian Jonklaas</td>
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</tbody>
</table>
## Transaction overview

<table>
<thead>
<tr>
<th>Date announced</th>
<th>Target</th>
<th>Country</th>
<th>Round</th>
<th>Financial volume (US$m)</th>
<th>Total funding (US$m)</th>
<th>Lead investor</th>
<th>Market segment</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>31 May 2017</td>
<td>TouchBistro</td>
<td>US</td>
<td>C</td>
<td>16.30</td>
<td>35.39</td>
<td>Napier Park Global Capital</td>
<td>Payment acceptance devices and software</td>
<td>Develops POS for restaurants for billing and payments</td>
</tr>
<tr>
<td>1 June 2017</td>
<td>Omise</td>
<td>Thailand</td>
<td>N/D</td>
<td>19.00</td>
<td>39.40</td>
<td>Payment acceptance devices and software</td>
<td>Provides credit cards and alternative payment methods in Japan and Southeast Asia</td>
<td></td>
</tr>
<tr>
<td>1 June 2017</td>
<td>BAM Worldwide</td>
<td>US</td>
<td>Venture</td>
<td>10.00</td>
<td>10.00</td>
<td>Millstone Capital Partners</td>
<td>Processing</td>
<td>Develops solutions for invoice automation and payment processing</td>
</tr>
<tr>
<td>1 June 2017</td>
<td>Sphre</td>
<td>US</td>
<td>N/D</td>
<td>3.30</td>
<td>3.3</td>
<td>Security</td>
<td>Payment acceptance devices and software</td>
<td>Delivers secure digital identity management for both enterprise and individuals leveraging blockchain technology.</td>
</tr>
<tr>
<td>1 June 2017</td>
<td>Brave</td>
<td>US</td>
<td>N/D</td>
<td>35.00</td>
<td></td>
<td>Payment acceptance devices and software</td>
<td>Provider of a web browser that allows users to make micro-payments using cryptocurrency</td>
<td></td>
</tr>
<tr>
<td>2 June 2017</td>
<td>Greenlight Financial Technology</td>
<td>US</td>
<td>Seed</td>
<td>7.50</td>
<td>7.50</td>
<td>Relay Ventures</td>
<td>Issuing</td>
<td>Provides debit card for kids that parents manage from their phones</td>
</tr>
<tr>
<td>6 June 2017</td>
<td>FT Cash</td>
<td>India</td>
<td>Seed</td>
<td>0.15</td>
<td>500 Startups</td>
<td>Payment acceptance devices and software</td>
<td>Provides mobile payment solutions</td>
<td></td>
</tr>
<tr>
<td>6 June 2017</td>
<td>Plynk</td>
<td>Ireland</td>
<td>A</td>
<td>28.17</td>
<td>29.01</td>
<td>Prive-Swiss</td>
<td>Money transfer</td>
<td>Operates app that enables users to send money with a message to their Facebook friends without account numbers or code cards</td>
</tr>
<tr>
<td>6 June 2017</td>
<td>Dailypay</td>
<td>US</td>
<td>N/D</td>
<td>11.50</td>
<td></td>
<td>Dontari Poe</td>
<td>Alternative payment systems</td>
<td>Develops a platform that provides next-day payments for employees and contractors</td>
</tr>
<tr>
<td>7 June 2017</td>
<td>NetCents Technology</td>
<td>Canada</td>
<td>Venture</td>
<td>0.87</td>
<td>0.95</td>
<td>Payment acceptance devices and software</td>
<td>Provides electronic online payment services</td>
<td></td>
</tr>
<tr>
<td>12 June 2017</td>
<td>Loyyal</td>
<td>US</td>
<td>A</td>
<td>1.50</td>
<td></td>
<td>iNet – Integrated Networks</td>
<td>Couponing/loyalty</td>
<td>Provides a loyalty and rewards platform built with blockchain and smart contract technology</td>
</tr>
<tr>
<td>13 June 2017</td>
<td>Boost Payment Solutions</td>
<td>US</td>
<td>Venture</td>
<td></td>
<td></td>
<td>Mosaik Partners</td>
<td>Payment acceptance devices and software</td>
<td>Owns and operates B2B payment platform that transforms supplier-initiated virtual card payments into a buyer-initiated payment experience</td>
</tr>
<tr>
<td>16 June 2017</td>
<td>Midpoint Holdings</td>
<td>Canada</td>
<td>Venture</td>
<td>0.15</td>
<td>4.09</td>
<td>Money transfer</td>
<td></td>
<td>Operates a peer-to-peer international currency matching and payments platform</td>
</tr>
<tr>
<td>19 June 2017</td>
<td>Paybreak</td>
<td>UK</td>
<td>Venture</td>
<td>31.29</td>
<td>31.29</td>
<td>Payment acceptance devices and software</td>
<td></td>
<td>Operates a sale-lending platform through which it provides financing alternatives for online retailers and their shoppers</td>
</tr>
<tr>
<td>19 June 2017</td>
<td>Aimbrain</td>
<td>UK</td>
<td>A</td>
<td>5.11</td>
<td>5.66</td>
<td>BGF Ventures</td>
<td>Security</td>
<td>Provides biometric authentication services</td>
</tr>
<tr>
<td>19 June 2017</td>
<td>Danal</td>
<td>US</td>
<td>Venture</td>
<td>14.50</td>
<td></td>
<td>Payment acceptance devices and software</td>
<td></td>
<td>Provides carrier-integrated mobile commerce solutions enabling the purchase of goods and services on PC, tablet and mobile phones using their BitltuMobile platform worldwide</td>
</tr>
<tr>
<td>Date announced</td>
<td>Target</td>
<td>Country</td>
<td>Round</td>
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<td>---------------</td>
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<td>-------------------------</td>
<td>---------------------</td>
<td>-----------------------------------------------------------------------------</td>
<td>---------------</td>
<td>-------------------------------------------------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>35 20 June 2017</td>
<td>Kioson</td>
<td>Indonesia</td>
<td>Seed</td>
<td>0.45</td>
<td>0.45</td>
<td>PT Mitra Komunikasi Nusantara Tbk</td>
<td></td>
<td>Operates an online digital platform to small size and medium size retailers to make digital transactions</td>
</tr>
<tr>
<td>36 20 June 2017</td>
<td>Cyberreason</td>
<td>US</td>
<td>D</td>
<td>100.00</td>
<td>188.60</td>
<td>SoftBank Group</td>
<td>Security</td>
<td>Provides against virus protection, offering end point detection and response</td>
</tr>
<tr>
<td>37 20 June 2017</td>
<td>Sequent</td>
<td>US</td>
<td>C</td>
<td>16.00</td>
<td>28.00</td>
<td>TIS</td>
<td>Payment acceptance devices and software</td>
<td>Enables banks, transit agencies and any other issuer to securely digitize their credit, debit, transit, loyalty or ID cards, and distribute them to their own application</td>
</tr>
<tr>
<td>38 20 June 2017</td>
<td>Final</td>
<td>US</td>
<td>Venture</td>
<td>4.00</td>
<td>8.10</td>
<td></td>
<td>Issuing</td>
<td>Provides a physical card and a mobile application that protects the users account from fraud, theft, breaches and card cancellation</td>
</tr>
<tr>
<td>39 21 June 2017</td>
<td>Mswipe Technologies</td>
<td>India</td>
<td>D</td>
<td>31.00</td>
<td>56.00</td>
<td>UC-RNT Fund</td>
<td>Payment acceptance devices and software</td>
<td>Provides mobile point of sale payment services</td>
</tr>
<tr>
<td>40 21 June 2017</td>
<td>Soldo</td>
<td>UK</td>
<td>A</td>
<td>11.00</td>
<td>11.00</td>
<td>Accel Partners</td>
<td>Other</td>
<td>Provides family spending account which allows users to make purchases and online payments</td>
</tr>
<tr>
<td>41 21 June 2017</td>
<td>Truelayer</td>
<td>UK</td>
<td>A</td>
<td>3.00</td>
<td>4.30</td>
<td>Anthemis Group</td>
<td>Other</td>
<td>Provides an application to build financial applications</td>
</tr>
<tr>
<td>42 22 June 2017</td>
<td>OneEMI Technology (Kissht)</td>
<td>India</td>
<td>A</td>
<td>2.00</td>
<td>2.00</td>
<td>Endiya Partners</td>
<td>Payment acceptance devices and software</td>
<td>Provides equated monthly installment (EMI) payment digital platform</td>
</tr>
<tr>
<td>43 22 June 2017</td>
<td>Blockchain</td>
<td>UK</td>
<td>B</td>
<td>40.00</td>
<td>70.00</td>
<td>Lakestar</td>
<td>Alternative payment systems</td>
<td>Designs and develops a web-based bitcoin wallet that provides a secure and convenient way to store and use bitcoins</td>
</tr>
<tr>
<td>44 26 June 2017</td>
<td>YOYO wallet</td>
<td>UK</td>
<td>B</td>
<td>15.00</td>
<td>30.26</td>
<td>Metro group</td>
<td>Alternative payment systems</td>
<td>Platform that enables mobile payments combined with automated loyalty and rewards</td>
</tr>
</tbody>
</table>
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