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OPINION

Digital... isn't that just an app?

Who knows what "digital" really is? Bankers who think they have transformed their organisations to become digital may have to think again

CHRIS SKINNER


Rob Hampson/Unsplash

I meet a lot of senior executive teams of large banks. Some are visionary, many are committed and a large number understand that life is changing. Few understand how.

I talk to them about the fintech world of change and how millennials are reshaping banking, from Stripe, started by two brothers who were 19 and 21 years old, to Venmo started by two friends in their 20s, to Klarna created by some guys who were working at a big-brand burger chain in Sweden.

I talk to them about how distributed ledger technology (DLT), also known as blockchain, is reinventing the back office of banks along with artificial intelligence and machine-learning, and their eyes sometimes glaze over.

I talk to them about how new thinking about money is coming out of the cryptocurrency world and particularly how Africa is seeing changes by using mobile phones and DLT to move massive volumes of small transactions for no charge. They look a little non-plussed.

I related these things to you because I'm a great collector of statistics and I know for a fact that the majority of big-bank decision-makers have no idea what digital is. For example, a recent survey by CGI, an IT service provider, found that 80 per cent of the big-bank decision-makers believe they have done digital. Another survey by Gartner Group, an IT market research firm, found that 76 per cent of the decision-makers at most large banks do not believe digital requires any change to their business model.

These results are quite stunning when it is obvious that digital is a massive, fundamental shift of their business model. A bank's business model was developed in the industrial revolution to enable cross-border commerce with trust. This is why banks are regulated and licensed by governments, which gives them that trust, and why most banks are the oldest institutions in their respective countries.

The model is based around a focus on the physical distribution of paper in the localised network focused on buildings and people. Banks controlled the whole value chain of that network, and designed and built everything themselves.

Then along came technology in the 1950s and the giant computer firm IBM, which sold big back-office boxes to banks through the 1960s, 1970s and 1980s. The idea was simple: get rid of the paper transaction systems in the branch, and automate the ledger of debits and credits in a head-office system. This way the head office could track and trace their whole branch network of ledgers immediately. It cut costs, increased security and made the banks far more efficient.

When other technologies came along, they were added on to this big central system. Call centres, ATMs and internet banking all followed, and all show a record of your debits and credits. Then mobile banking made an entrance at the same time as cloud computing, big data, cryptocurrencies and open sourcing, and it has ripped that whole system to pieces.

This is why a 21-year-old university dropout could start a bank called Loot. It is why two friends could spin out of one challenger bank, Starling, and start another called Monzo. It is why a Chinese company, Ant Financial, in partnership with India's Paytm, has become the biggest financial firm in India, in less than five years.

There are many other examples, but the key to all these is that they do not do everything themselves. They use APIs (application programming interfaces) to find partnerships with other providers that can do the work for them. Loot is backed by Wirecard. Starling Bank has 25 partnerships through APIs to offer full service banking from pensions and savings to insurance and mortgages. Ant Financial offer a marketplace of APIs to companies worldwide and are used by some of the biggest banks in the world to do the things they cannot do, such as processing payments using QR codes.

These developments are called various things from platforms to marketplaces, but I like to call it open banking. I don't mean "open banking" in the regulatory sense, but in the sense of a business model. A bank that historically controlled everything is now open to everything.

This business model is a reimagination of the old physical one as it is built from the ground up using today's technologies to focus on delivering a customer experience that is exceptional, and through their tech devices rather than through a physical interaction. In other words, the industrial-era business model of banks based upon branches is replaced with the digital-era model of banks based upon servers. This is a completely different business model and focuses on the digital distribution of data through software and servers on a global network of systems called the internet.

So why would a senior decision-maker in a bank believe they have done digital, and it requires no change to their business model, when it is clearly obvious to those who know technology that digital is a massive cultural, business and organisational transformation based upon a wholly new business model?

Well, the key words in that sentence are "to those who know technology", because most senior decision-makers do not know technology. Banks are run by bankers, not by technologists, except the new digital banks need also to be technologists, otherwise they are just a bank, not a digital bank.

Can I prove this? I think so. A recent analysis of big banks' annual reports found that 94 per cent of their leadership have never had any professional experience of any role in their career that relates to technology. That's a serious flaw and is the reason why most big banks think they've done digital because yes, they've rolled out a mobile app. Guys, that's not digital. Digital is a complete transformation of the fabric and foundations of the organisation and, until you realise this, you are letting your organisation rot.

Chris Skinner is chairman of the Financial Services Club

80%
of big-bank decision-makers believe they have done digital
CGI

76%
do not believe digital requires any change to their business model
Gartner

94%
do not have any technology-related professional experience
Accenture

PSYCHOLOGY OF MONEY

Dealing with money and cashless spending

As the nature of money changes in a cashless era of big data, consumers must become financially self-aware or risk getting into debt

SHARON THIRUCHELVAM

So limited is our collective self-knowledge that until a decade ago, mainstream economic theory presumed *Homo sapiens* to be perfectly rational actors. It took Richard Thaler's Nobel Prize-winning work in the then-nascent area of behavioural economics to demonstrate that, on the contrary, the most rational approach to studying economic activity is to anticipate predictable human behavioural biases and cognitive blind spots.

Money is an area of life that carries an unusual amount of emotional and social baggage. "Money is still the biggest taboo in our society," says Michelle Highman, chief executive of the Money Charity, a financial capability organisation. It is seldom discussed openly in the UK, even among family and friends, so many people don't receive the advice and support they need. "Sometimes the first time people will have spoken about money and the impact it has on themselves and their relationships is in one of our workshops," Ms Highman says.

Personal money beliefs and values arise from a complex web of early money experiences, personality traits and self-esteem. "People's attitudes to money are set and defined at a very young age. From five to seven years old, money habits, particularly self-control, are well established," says David Haigh, financial capability director at the government-run Money Advice Service. "When a child enters the education system, it is a critical moment to help them understand value and to establish behaviours around delayed gratification that will last into adulthood."

Underpinning so many money management issues is poor numeracy. Nearly 50 per cent of working-age adults in the UK have a numerical ability equivalent to an 11 year old, the Money Advice Service reports. Alongside concerted efforts to raise numeracy levels, it recommends addressing the impact of distortions of confidence upon financial capability. Some people make poor financial decisions through underestimating their numerical ability, while others who are overconfident blunder into financial mistakes.

Given the link between money problems and poor mental health, there is an urgent need to help people build their financial capability and resilience. According to Citizens Advice, eight out of ten NHS mental health practitioners treating anxiety and depression also deal with their patients' non-health issues, most commonly debt and money problems.

The Money and Mental Health Policy Institute also finds that mental health problems exacerbate dysfunctional money management. Some sufferers spend to alleviate feelings of anxiety or low self-esteem, some avoid engaging with their finances, letting bills pile up or bank statements go unread to avoid anxiety. Research by the Dutch bank ING shows that in Europe, 10 per cent of those in debt are unaware of how much they owe.

Although it was feared that a cashless society would remove the stops on consumer spending, making it more difficult to exercise self-control, research bodies such as the Money Advice Service and the Money and Mental Health Policy Institute are optimistic about the potential of fintech apps to help consumers better comprehend how the financial environment affects them and to take control of their finances.

Hundreds of apps have sprung up that help consumers visualise, organise and analyse their spending. Applying findings from behavioural economics, such as nudge techniques in the form of push notifications, and using customer-friendly and intuitive user-experience techniques, these apps inculcate good financial habits and help consumers set, monitor and reach financial goals.

Prepaid debit card Pockit addresses the accusation frequently levelled at fintech that it caters to a self-selecting community of the financially savvy. Pockit helps the unbanked and those with a very poor credit rating gain access to services such as direct debit payments and cheaper online prices that might not otherwise be available to them.

Another, Money Dashboard, allows users see all their online accounts in one place, automatically categorising bills and outgoings, and enabling the setting of budgeting goals. While Moneybox targets first-time investors, such as millennials, training them to make small manageable investments, from as little as £1, into ISAs.

The range of these fintech apps and services is only set to increase under the UK's open banking reforms. Consumers now have the power to compel their banks to share their data with third parties, in the hope that such transparency will drive innovation and increase competition.

But others sound a note of caution. Mike McAteer, co-founder of the Financial Inclusion Sector, warns: "Fintech is not a panacea for fixing the perennial problems of information asymmetries, and sub-optimal consumer behaviours and decision-making. If anything, fintech provides more opportunities to exploit embedded consumer behavioural biases and utilise confusion-marketing and cross-selling techniques to charge higher prices and extract more value."

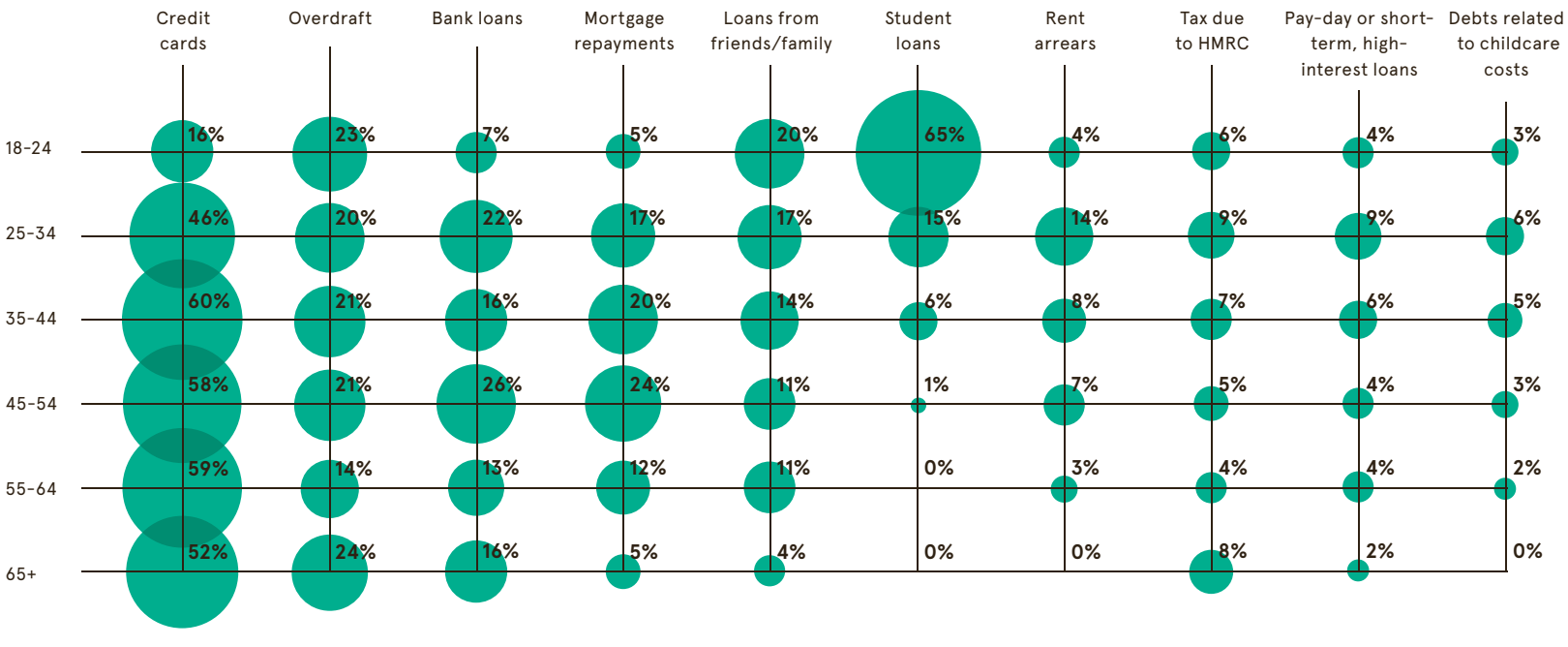
Alistair Newton, vice president of research at technology consultancy Gartner, argues that with big banks facing fierce competition from alternative providers, a new premium will be placed on customer retention and trust, particularly given the security concerns around data-sharing. He believes banks will shift focus from revenue generated through consumer overspending, to customer service-focused empathic banking that reads between the lines of their consumers' spending and forefronts wellbeing.

Currently most consumers are not interested, with two thirds not willing to share their financial data, according to Accenture. But now that the Pandora's Box of open banking has been prised apart, the market is expected to sweep consumers along. It also leaves the door open to big tech; in America, Amazon has already made tentative moves into banking.

What is clear is that in the big data and cashless era, financial self-awareness should be a priority for consumers. Without most consumers knowing it, we are moving, in the words of digital finance commentator David Birch, from using money that we think we understand, to using money that understands us, more often better than we do. ◆

Money troubles

Kinds of debt that are worrying the following generations*



*This survey only includes people who are worried about the current level of debt in the UK

ComRes 2017

Cryptocurrency could get physical to deliver the stability it needs

The option to settle futures contracts physically with cryptocurrency, rather than receive a cash equivalent, would give institutional investors the transparency they desire in this emerging market

Cryptocurrency has progressed enormously in recent years as an alternative form of value exchange to "fiat", which is backed by central banks that can control its value through mechanisms such as interest rates and other fiscal policies.

The decentralised, distributed and algorithm-driven structure of cryptocurrency has partly driven its rapid growth in popularity, as well as interest in the secure architecture behind its underlying technology, blockchain, which enables exchange of value without intermediaries. However, this has also contributed to a lack of price stability.

The centralised nature of fiat currencies, such as sterling and yen, could lead to a central point of failure and what some people see as too much power for banks. But it also provides vital stability for the markets, something cryptocurrency needs to master to overcome the price volatility that has defined its development to date.

"The solution is to introduce market-based alternatives that provide the same effect or at least replicate most of it," says Obi Nwosu, chief executive and co-founder at Coinfloor, a group of cryptocurrency exchanges for institutional and sophisticated investors and traders. "One of the best ways of doing this would be through a reliable and transparent futures offering."

Futures contracts, which allow assets to be bought at an agreed price today, but delivered and paid for at a later date, have been around in the cryptocurrency space since 2011. They gained particular attention last year when both the Chicago Mercantile Exchange and the Chicago Board Options Exchange launched their own bitcoin futures.

Purchasing cryptocurrency in this way provides a greater surety of cost by locking in a price. Today all futures contracts for cryptocurrencies are settled in cash. This means, at the point of settlement, parties receive the cash equivalent of the underlying asset, exposing them to risk of market manipulation and price slippage.

For people who require cryptocurrency for more than speculative purposes, such as institutional and sophisticated investors and traders with business use-cases, as well as miners who must convert it to fiat regularly to cover their costs, there is a growing desire to receive the underlying asset at the point of settlement, not the cash equivalent.

To achieve this with the current futures offerings available, they have had to take the cash settlement to the spot market and convert it back to the underlying asset, adding extra steps, but also exposing them to the risk of the price increasing.

"As they start placing their orders, people on the other side of the trade can see there is a large buyer coming," says Mr Nwosu. "If you know a settlement is going to happen at a particular time on a particular day and somebody has to get the cash equivalent of the underlying asset, you have a target to focus price manipulation around."

To tackle this issue, Mr Nwosu suggests a physically settled cryptocurrency future is needed to enable investors to receive the underlying asset at settlement, as well as the ability to convert crypto assets easily to fiat at a later date.

"Physical delivery obviates any risk around price manipulation at settlement, in terms of your returns," he adds. "You would receive the actual underlying asset at the point of delivery, so it wouldn't matter if the price was temporarily being manipulated; you would just wait for it to recover to its natural price."

It's clear that the more futures contracts are adopted, the more stability they will bring to the cryptocurrency market. However, this relies on institutional investors adopting them as entities that can deliver the volumes required to increase the amount of trades needed to move the market. Physically settled futures could finally provide the transparency that institutional players crave to manage their risks better.

"The waves of the cryptocurrency market are being rode in a dinghy; you're tossed around without much control because of the small amount of liquidity and volume being traded," says Mr Nwosu. "If you're on a cruise liner, you'll feel slight movements, but they'll be reduced because you have far more mass – that's the equivalent of far more volume going around the cryptocurrency market.

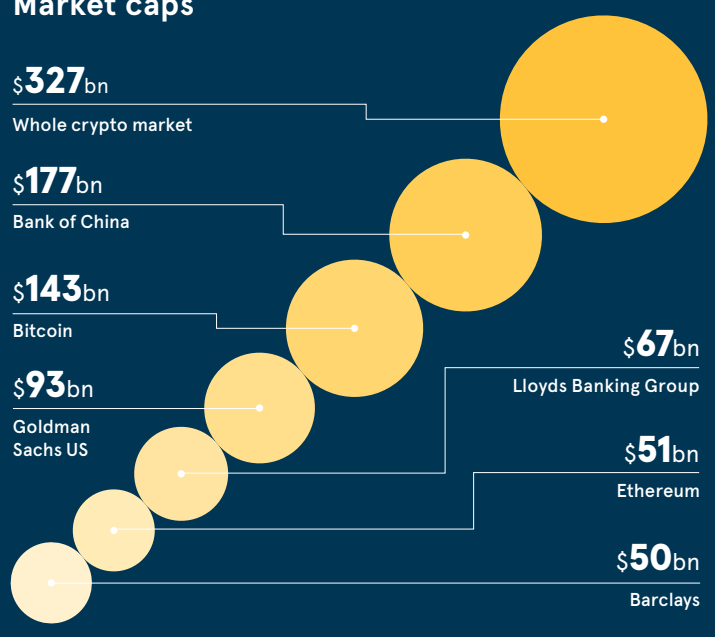
"The regulatory, social and technical issues holding back cryptocurrency's ultimate potential are being considered by policy-makers and are being addressed. The remaining piece in the puzzle, which is stability and transparency, would be greatly improved by physically settled futures."

Founded in 2013, Coinfloor is the longest-established group of cryptocurrency exchanges designed for institutional or sophisticated investors and traders. We offer stable and liquid platforms to trade and invest in cryptocurrency.

For more information please visit coinfloor.com

coinfloor

Market caps



Figures as of March 26

CoinMarketCap 2018

Bitcoin potential

44%
bitcoin share of the total cryptocurrency market

16.9m
circulating supply of bitcoin

21m
total bitcoins that can ever be mined

CoinMarketCap 2018

Investor considerations

Institutional investors

- Need to offer a wider range of high-performing assets to their clients
- Can benefit from long-term price stability as more institutionally focused products come to market

Professional traders

- Need access to breadth of asset classes to diversify their trading strategies and portfolios
- Benefit from access to a more comprehensive market with institutional liquidity

coinfloor

Governance
Coinfloor group maintains strict governance practices including robust KYC and AML policies, modelled against regulatory industry standards

Secure
Coinfloor exchanges are the longest-established group of exchanges offering 100% multi-signature cold storage custody

Trust
Coinfloor group is led by an experienced team of financiers, technologists and cryptocurrency specialists with more than 150 years' collective experience in technology and financial services

Transparent
First cryptocurrency exchange to publish monthly Provable Solvency reports

Hedge funds

- Need to balance portfolio performance against risk for their clients
- While volatile, cryptocurrencies have huge potential for future growth compared to traditional asset classes

The miner

- Need to hedge their future bitcoin revenue to match their fiat denominated costs
- Need to forward sell large amounts of bitcoin in a liquid market to receive fiat currency to settle their costs
- Need market price and liquidity information to forecast future operating expenditure investment

Commercial feature

Fourth industrial revolution: A future forged through collaboration

There's little doubt the future of money will be played out against a backdrop of regulatory change, disruptive influences and a globalised landscape that further removes boundaries, says **Phil Hickman**, interim chief executive at Earthport

Phil Hickman
Interim chief executive and executive director, Earthport

Since the financial crisis, banks have been confronted by new technologies, innovative change agents disrupting products and, latterly, new types of bank. In the UK alone, more than 50 new institutions have been granted banking licences since 2008.

Initially, this caused unease, but we are reaching a pivotal point, one that paves the way towards a collaborative future for money with digital transformation of banking critical to its success.

Global finance has, of late, been dominated by large banks that are protecting their market share from challengers, most recently from financial technology providers. However, the fintechs are no longer being considered purely as aggressors, but as enablers that can streamline efficiencies and correct shortcomings within traditional models.

It has been a slow process, but banks have been active in acquiring fintech capability, which is now seen as strategically important, as noted by a PwC survey in 2017 where 82 per cent said they plan to invest in fintech. Banks realise fintechs can create opportunities such as cost-efficiencies while enabling short-cut structural changes required to meet customer requirements.

Tomorrow's customers include the millennial generation, which has a different perspective to its predecessors and will demand tools, such as apps, mobile payments and online banking platforms, that are more aligned to contemporary lifestyles. In a poll by BI Intelligence, 71 per cent of millennials said banking apps were an absolute priority.

The key to satisfying clients not only depends on consumers' digital experience, but also banks and fintechs forming mutually beneficial partnerships. This spirit of co-operation allows banks to offer new, cost-effective services while harnessing the innovative culture of fintechs and placing it within their own structures. It is not a one-way deal; in a recent survey by CapGemini, 75 per cent of respondents said the prime business objective of fintechs was collaboration with traditional firms.

Both parties bring multiple strengths to the table. Fintechs possess innovation in abundance, along with agility and technical expertise, which can be implemented seamlessly into larger, more complex systems. Moreover, data analytics play to the ethos of fintechs that can assist banks in an increasingly strict regulatory environment, especially post-Payment Services Directive 2.

82% of banks said they were planning to invest in fintech
PwC 2017

75% of respondents said the prime objectives of fintechs was collaboration with traditional firms
CapGemini

50+ new institutions granted banking licences since the financial crisis in 2008
KPMG

Banks have a plethora of data, but hitherto they have not discovered the optimal way to calibrate, utilise and report it. Fintechs, offering a doorway to the fourth industrial revolution, are well placed to help banks, allowing them to focus on core activities. Banks have many attributes fintech partners can benefit from such as longevity, brand power, customers, infrastructure, access to capital and trusted third-party status.

Put together, bank plus fintech is an appealing proposition, creating an efficient hybrid organisation that is all about economies of scale, innovation, deeper analytics, improved engagement and risk mitigation, and product diversity. The payment sector is central to this revolution and a whole host of products have emerged in recent years driving significant improvements for businesses and consumers alike.

One of the areas under most pressure is the correspondent banking network, which has become unreliable, lacking in transparency and expensive. Hence, between 2011 and 2016, correspondent banking relationships declined by some 6 per cent, according to SWIFT.

> **"Put together, bank plus fintech is an appealing proposition, creating an efficient hybrid organisation**

Many customers do not understand why it takes days for payments to move from one country to another and why multiple fees are levied. As business continues to become more global, the efficiency and pricing of cross-border payments will remain key for customers expecting execution at the click of a button. Consequently, there has been a drive for less complexity and new systems delivering a more streamlined approach for cross-border transactions.

In this context, companies such as Earthport are enablers in providing access to the new dynamic through a variety of methods. We're not standing alone in this mission and like others we are forming partnerships that strengthen our offering. A prime example is our relationship with Ripple.

The gateway partnership, launched in 2015, spawned the Earthport Distributed Ledger Hub and achieved notable success in 2016 when the first cross-border payment was received via distributed ledger technology (DLT) for Santander UK. The Hub provides access to Ripple's system through a single Earthport contact. It also enables banks to embrace the digital world without heavy investment, and shows the marriage of fintech, utilities and banks can create something epitomising the industry's future.

The facilitation of real-time movement and settling digitised assets between banks and across borders is a clear focus point for the industry, regardless of the technology required to achieve it. While blockchain and DLT may represent the future, the demand for immediacy has been the catalyst for introducing a plethora of faster payments systems in a number of countries, even breathing new life into traditional methods such as safe and secure ACH (automated clearing house) payments.

Ultimately, banks (both traditional and challenger) and fintechs are part of an evolving inter-dependent system, a paradigm adaptable for a fast-moving and uncertain financial world.

Some developments, such as cryptocurrencies, will have to secure regulatory and investor confidence, and not all players will look the way they currently appear five years from now. But as we anticipate this fourth industrial revolution and complete digital transformation, tomorrow's financial services will be about creative co-existence.

Fintechs and banks will work together and the growth of new currencies, technology and new banking will be supported by utility services that speed up payments and make cross-border transactions cheaper and more transparent, while ensuring compliance and security underpins all transactions.

Let's be clear, this is not a landscape far away from the present day – the future of money, working around a collaborative eco-system with multiple stakeholders, is already underway.

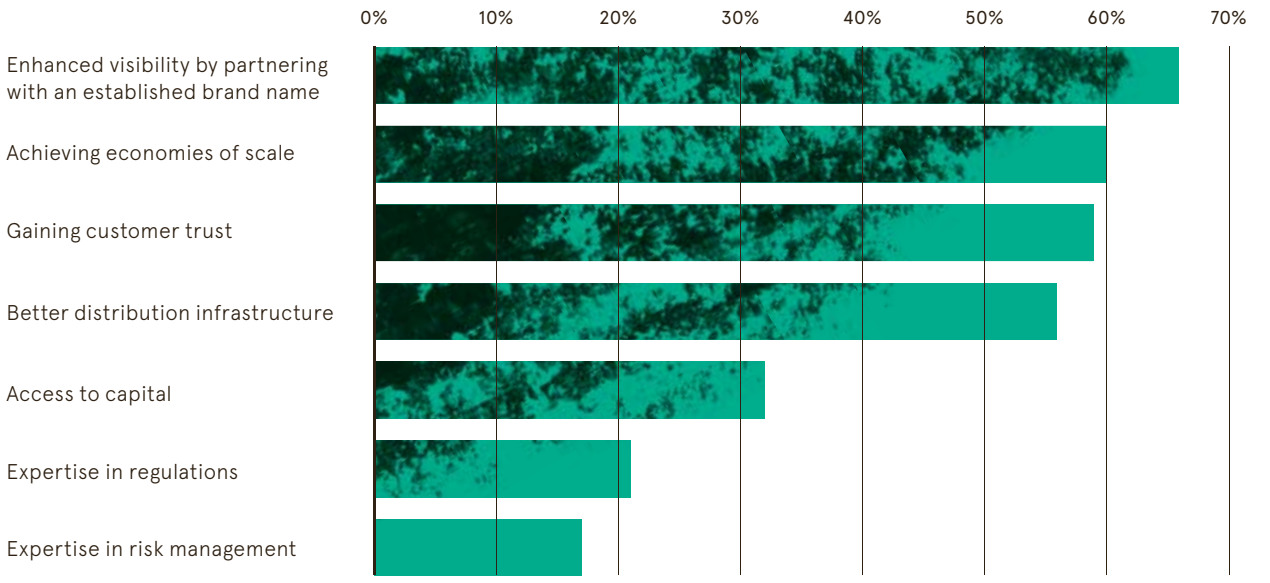
For more information please visit earthport.com

earthport™
payment network

LIZ LUMLEY

Top reasons fintechs partner with traditional financial services firms

Percentage of fintech companies that have ranked the following reasons as important



Capgemini 2018

Reaching for lofty goal of partnerships

Collaboration between financial technology startups and established banks sounds good in theory, but may be difficult in practice

Conventional wisdom in the financial world is that large incumbent banks need to partner with smaller startup and scale-up companies for a mutually beneficial relationship that aims to foster innovation and ultimately improve services.

Recent regulatory mandates, based on the European Union's second iteration of the Payments Services Directive as well as from the Competitions and Markets Authority (CMA) in the UK, have pushed traditional banks to open up their data and platforms, in the form of application programing interface (API) toolkits.

These APIs, mostly focused on retail current accounts, create an avenue for financial services start-ups to integrate their products with existing bank infrastructure more easily. The aim is to create a more competitive environment and hopefully offer increased options for consumers. All of this is known by the umbrella term "open banking".

The CMA directive is aimed at the top nine banks in Britain and Northern Ireland, banks such as Barclays, RBS and Lloyds Banking Group. Despite not being governed by the CMA mandate, Starling Bank, a year-old mobile-only bank in the UK is taking an aggressive approach to open banking.

According to Megan Caywood, Starling's chief platform officer: "Starling is taking that a step further with its API and marketplace. The API goes beyond the CMA requirements and looks to surface every Starling feature via the API, such as an API for savings goals even though that isn't mandated, and enabling accessibility tools like webhooks to make integration easier.

"The Starling marketplace goes beyond simply enabling third parties to access bank data; it enables those parties to be visible and available to customers within the Starling Bank app – it integrates the partners' APIs as well. That's appealing to third parties as it gives them a new customer-acquisition channel and a way to make it easier for Starling customers to access their products."

Last month, global professional services firm Capgemini launched its *World FinTech Report*, along with LinkedIn and in collaboration with Efma. The overarching theme was that global fintech – financial technology startups – and traditional financial institutions and banks need to partner and collaborate. While that goal sounds good on conference panels and in blog posts, the reality is much harder to actualise.

Nektarios Liolios, founder and chief executive of Startupbootcamp FinTech, an accelerator programme for global fintech startups funded by partner banks and financial services firms, sheds some light on the lofty goal of startup-bank partnerships.

Speaking as part of a transatlantic debate, hosted by Capgemini, in association with 11.FS Media, Mr Liolios says the problem lies in the chasm between an appetite for innovation and a capacity to achieve it on the part of traditional financial services firms. Conversations on how to bridge that chasm are not happening, he says.

> **Startups are not standing out from the crowd**

"How do you measure success, how do you measure what works and what doesn't work? How do you get the business excited enough to put money towards it when the innovation budget is actually shrinking?" Mr Liolios asks.

According to Carrie Osman, founder and chief executive at CRUXY & CO, a strategic UK consultancy, many banks are now overwhelmed by the possibilities opened up by the regulations fuelling open banking. "You would think, with these regulations coming out, it would make it easier for banks. What is happening is it has made the space more crowded," she says. "Startups are not standing out from the crowd."

However, startups need to focus on exactly what value they will bring to a large firm and how their offering will interact with vast, enterprise-wide technology "from day one", Ms Osman adds.

Despite the hype and noise around bank-fintech collaboration, and past struggles to make these partnerships happen, there are bright spots appearing within the financial services sector. Late last year, HSBC and their subsidiary First Direct announced a partnership with London-based fintech startup Bud. Most recently, Barclays signed a banking deal with cryptocurrency exchange Coinbase and, as part of the deal, Coinbase now has an e-money licence and access to the Faster Payments Scheme. ◆

Case study 01

Starling and PensionBee

Starling Bank recently added PensionBee, a UK-based startup, on to its marketplace. Starling uses the PensionBee application programming interface, or API, to pull a pension balance into their app, when customers give permission to share that data. Existing PensionBee customers can see their real-time pension balance alongside their real-time current account balance. According to Clare Reilly, head of corporate development at PensionBee: "A pension is not an abstract pot of money, shrouded in complexity, which bears no relation to the rest of your financial universe. Your pension balance should be visible alongside all your other balances, current account, ISA, mortgage, credit card and savings."

Case study 02

Munich Re and Buzzvault

Munich Re's Digital Partners business recently partnered with Buzzvault, a UK startup offering a home contents insurance product. The solution is a digital asset vault built on blockchain technology. "In theory, Munich Re could have built their own blockchain-based home contents insurance product," says Andy Rear, managing director of Munich Re's Digital Partners, "but the result would not be as good." Working with Buzzvault "enables us to bring our insurance and data expertise to the market in a different way". According to Becky Downing, chief executive of Buzzvault: "Collaboration has always been at the heart of successful innovation – think of Apple working with the likes of Verizon and Intel."

CRYPTOCURRENCIES

Governments make a move into cryptos

Governments around the world, from Sweden to Venezuela, are keen to develop their own virtual currencies and digital payment options

GEORGE RICHARDS

Cryptocurrencies are a prime example of the struggle of old versus new, of revolutions and resistance, as digital coins challenge people's ideas of what is possible. After the release of bitcoin in 2009 there came derision and scepticism, before gradual moves to acceptance. While regulation has lagged behind innovation, it is increasingly the case that countries and central banks are expressing the desire to build their own digital currency options.

Among countries that are exploring the potential for state-backed cryptocurrencies, Sweden is arguably the front runner. Already the poster child for advocates of a cashless society, mostly thanks to Swedes' embracing of digital payment apps and mobile banking, it was almost inevitable that Sveriges Riksbank, Sweden's central bank, would announce a plan to examine the potential issue of the e-krona.

Equivalent in value to Sweden's regular kronor, the e-krona is planned as a digital equivalent to the country's regular currency, which the Riksbank expects to be used in small transactions between consumers, companies and the authorities. However, while Sweden is still very much in the planning stage – the inquiry into the viability of the e-krona is expected to finish in 2019 – Venezuela has already launched its own state-backed e-currency, the petro.

"The petro is basically a way [for the Venezuelan government] to raise foreign money by selling nothing," says Alejandro Machado, a software designer and cryptocurrency commentator from Venezuela. "It's very clear that they have no intention of actually backing the petro using any significant resource that's actually meaningful."

The difference between the petro and Sweden's e-krona is that the petro is pegged to the price of oil. One petro has an equivalent value of $60 and represents a barrel of oil extracted from Venezuela's Orinoco oil belt. During the cryptocurrency's pre-sale, investors were offered $60 tokens at discounted rates, which they will be able to exchange for petros during the initial coin offering, or ICO, which is expected to take place this month.

For Mr Machado, who left Venezuela in 2015 and now lives in Panama City, the petro represents a desperate attempt for the government to raise foreign currency supplies. He says that while the Venezuelan government hails the cryptocurrency as a means to alleviate the economic pressures imposed on the country and its authoritarian president Nicolás Maduro due to sanctions, he is under no illusion that proceeds will help ordinary Venezuelans.

87%

of global central banks investigating distributed ledger technology are looking at state-issued digital currencies

Cambridge Centre for Alternative Finance 2017

"The government has been pushing very hard on the narrative that the petro is going to solve their problems, that it is going to alleviate the economic war which is being imposed upon them," he says. "I think they want the population to back them up with the idea that the petro is good, but I have no reason to believe the petro will make Venezuelan lives better."

While Mr Machado doubts that the government-backed e-currency in Venezuela will bring beneficial returns for society in his country, a fintech platform in Finland has teamed up with the Finnish government to help asylum seekers gain entry into the banking system.

Helsinki-based MONI has been working with the Finnish government for almost three years to make sure that asylum seekers, who often encounter barriers in traditional banking, can get access to the necessary financial services. The platform uses a combination of mobile-first accounts and prepaid Mastercards to provide customers with basic finance, so they can settle bills and receive payments.

"In 2015 we piloted the asylum seeker programme with the government of Finland which enables asylum seekers to get their government benefits paid to their digital MONI accounts," explains Antti Pennanen, MONI's chief executive and founder. "Before MONI, everything was done in cash."

Despite media reports to the contrary, MONI is not yet incorporating blockchain or cryptocurrency technology into its asylum seeker programme. However, that might not be the case for much longer. Like Sweden's Riksbank, the startup is beginning to explore the ways it can work with cryptocurrency and the associated blockchain technology, specifically with respect to mobile payments.

Ton Anurak/Shutterstock

02

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In February Venezuela launched the petro, the state-backed e-currency pegged to the price of oil

02
Sweden, now largely a cashless society, is planning to launch the e-krona, a digital equivalent to the country's regular currency

"MONI has a patent concerning the authentication of cryptocurrency transactions over mobile phone networks, working on any GSM phone," Mr Pennanen says.

Blockchain is useful because of its status as one of the most secure digital capabilities that has been developed. With asylum seekers often missing a lot of the paperwork that is necessary to establish a new life, in a new country, blockchain is a secure means of storing data and completing transactions.

"We don't do blockchain for the sake of blockchain," Mr Pennanen adds. "But we are researching its potential and using it among other new technologies where it adds value to the end-user."

While ever-increasing numbers of cryptocurrencies may seem confusing, for Ralph Hazell, chief executive and founder of The Real Asset Co, the competition created can only make for a stronger monetary system. This in turn helps to protect societies, at least to some degree, from any future financial disasters.

"My view on it is that the monetary system needs competing currency to be robust," Mr Hazell says. "The more competing currencies we have, and I include bitcoin in that, then the more tested the whole system is and the less likely we are to be exposed."

The Real Asset Co has been working on its own cryptocurrency that is 100 per cent backed by the price of gold. Known as goldbloc, a single unit is the equivalent of one-thousandth of a gram of gold and worth about three pence.

Mr Hazell attributes the success of existing cryptocurrencies for spurring governments and financial regulators into exploring their


Wil Riera/Bloomberg via Getty Images

01

own options. "Thanks to bitcoin and other cryptocurrencies, there is much wider curiosity of what alternative currencies are, what our existing monetary system is and what's wrong with it," he says.

"Regulators were just not keen to open up to this kind of alternative currency Pandora's box, but bitcoin has forced them to do it because they just can't shut it down."

For Mr Hazell, however, pegging a cryptocurrency and a commodity, such as gold, oil or silver, means while that currency will never be fully decentralised in the way bitcoin is, users benefit from decreased volatility.

"Gold has retained its value since the beginning of trade, since 5000BC Mesopotamia," he says. "This could be done with silver, with precious stones – if you can commoditise it, then you can digitise it."

Measuring the success of cryptocurrencies like the e-krona and the petro will mean a waiting game for those who are involved. Mr Machado warns that while it is great seeing national governments begin to embrace this new liberalisation of the monetary system, it could also provide means for rogue states to exploit the censorship-resistant nature of cryptocoins.

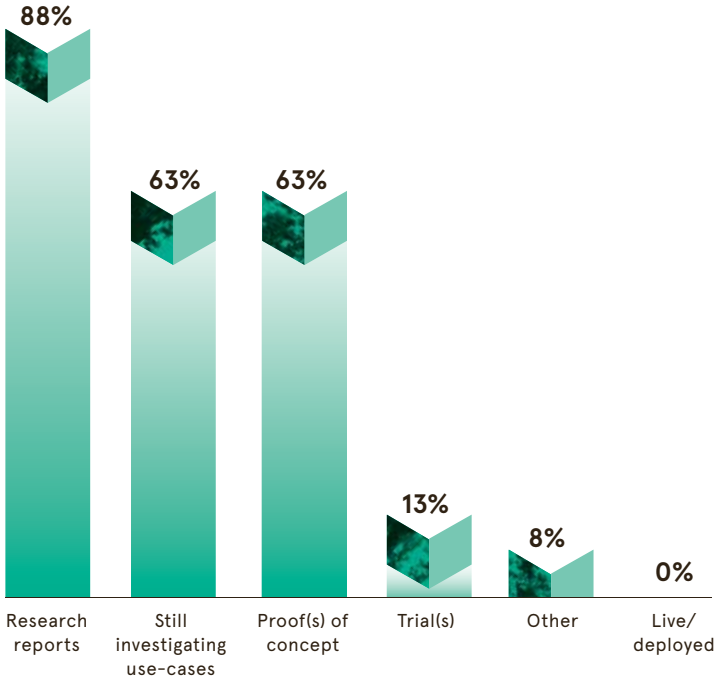
"Cryptocurrency technology can be used to bypass sanctions," he warns. "If there is someone interested in funding you, then they can. You can fund whoever you want."

There remains much to be discovered about the potential scope of cryptocurrencies, let alone whether or not they are viable options for governments. After all, some of the key draws for bitcoin users are the cryptocurrency's decentralised nature, anonymity and lack of government involvement, aspects that government-backed coins may struggle with. ◆

"Thanks to bitcoin and other cryptocurrencies, there is much wider curiosity of what alternative currencies are, what our existing monetary system is and what's wrong with it

Central bank interest in blockchain

Percentage of global central banks engaged in the following distributed ledger technology activities



Cambridge Centre for Alternative Finance 2017

Commercial feature

Making business payments seamless

A new wave of innovation is set to transform the business-to-business (B2B) cross-border payments landscape, paving the way for a seamless customer experience, says global payment platform **Currencycloud**

As the digital revolution continues to gather pace, the payments market has firmly embraced the changes it brings. From chip and pin to contactless and Apple Pay, a stream of new technologies has transformed the way in which money is moved.

The same cannot be said for businesses. Despite a boom in B2B cross-border payments, with the US market estimated to be worth $4.26 trillion alone, it remains a complex and cumbersome undertaking.

Compared with the consumer market, where customers have come to expect a virtually seamless payment experience, the process of transferring business payments across different countries and currencies is plagued by high costs, lengthy timelines and antiquated systems.

On average, companies write off 1.5 per cent of their receivables as bad debt. For a company worth $50 million, this equates to a staggering $750,000 expense every year. While large corporates possess the sophisticated tools and resources to manage their international business at competitive prices, small and mid-sized businesses are left at the mercy of the rates imposed by their banks, placing increasing pressure on margins.

However, the tide is turning. Recognising the need to help the B2B market keep pace with consumer developments, a new wave of innovation among payment providers is seeking to reinvigorate the way businesses handle their cross-border payments.

Todd Latham, chief marketing officer and head of product at Currencycloud, explains: "Traditionally, innovation has focused upon meeting the growing demands of consumers and ignored the more complex B2B market. However, with almost half of all UK businesses receiving late payments from overseas customers, there is a huge need to overhaul the outdated system currently in place.

"Advances in technology will allow businesses to expand and interact with overseas customers and suppliers, without the huge infrastructure, timelag and headache involved in dealing with banks. Maintaining cash-flow levels is critical to business profitability, so in providing a frictionless process, the payments market can remove hurdles to growth for small and medium-sized businesses."

Currencycloud has launched its own Global Collections functionality, which enables businesses to set up local, virtual bank accounts for customers, so their suppliers can pay them directly in their home currency. In doing so, businesses will be able significantly to reduce the time and expense traditionally associated with global accounts receivables, making it easier for companies to collect payments where their customers are.

Mr Latham says: "We've sought to provide our clients with flexible solutions that allow them to make international payments without any of the burdensome issues they currently encounter. Increasingly, we will see this become the norm rather than the exception, as global trade grows and payment providers recognise the need to make this space more accessible and appealing."

We are only at the beginning of what will be an interesting and revolutionary next decade for the B2B cross-border payments market. Mr Latham expects greater collaboration between the banking and fintech sectors, as the former harness the benefits of new digital solutions without having to invest time and resources to build them internally.

"In less than ten years, B2B customers won't settle their invoices in a different currency. Many companies are jumping on the blockchain bandwagon, but it won't improve the way money crosses the world. What will ultimately revolutionise the payments landscape is providing businesses with the same level of innovation and experience the consumer space has now come to expect as standard," Mr Latham concludes.

"In less than ten years, B2B customers won't settle their invoices in a different currency

For more information please visit currencycloud.com

Currencycloud

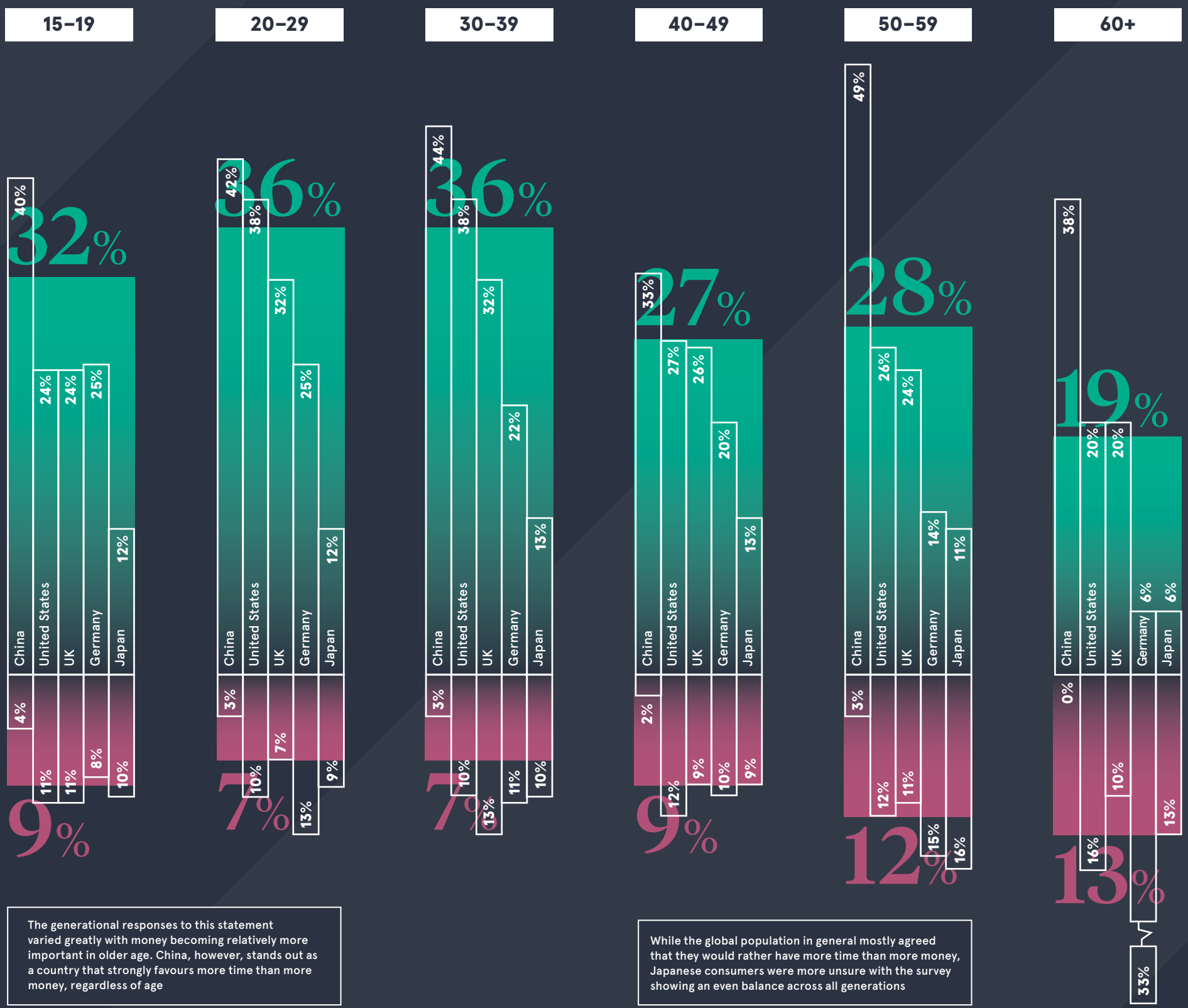
GENERATIONAL ATTITUDES TO MONEY

Millennials don't just spend their hard-earned savings on smashed avocado and flat whites, but they do have a different attitude to money than older generations

'I would rather have more time than more money'

Percentage that agreed/disagreed by age range

◆ Age range ◆ Agree ◆ Disagree ☐ Breakdown by country



The generational responses to this statement varied greatly with money becoming relatively more important in older age. China, however, stands out as a country that strongly favours more time than more money, regardless of age

While the global population in general mostly agreed that they would rather have more time than more money, Japanese consumers were more unsure with the survey showing an even balance across all generations

GfK 2017

63% of millennials say their generation is not good at managing money

73% believe their generation overspends on unnecessary indulgences

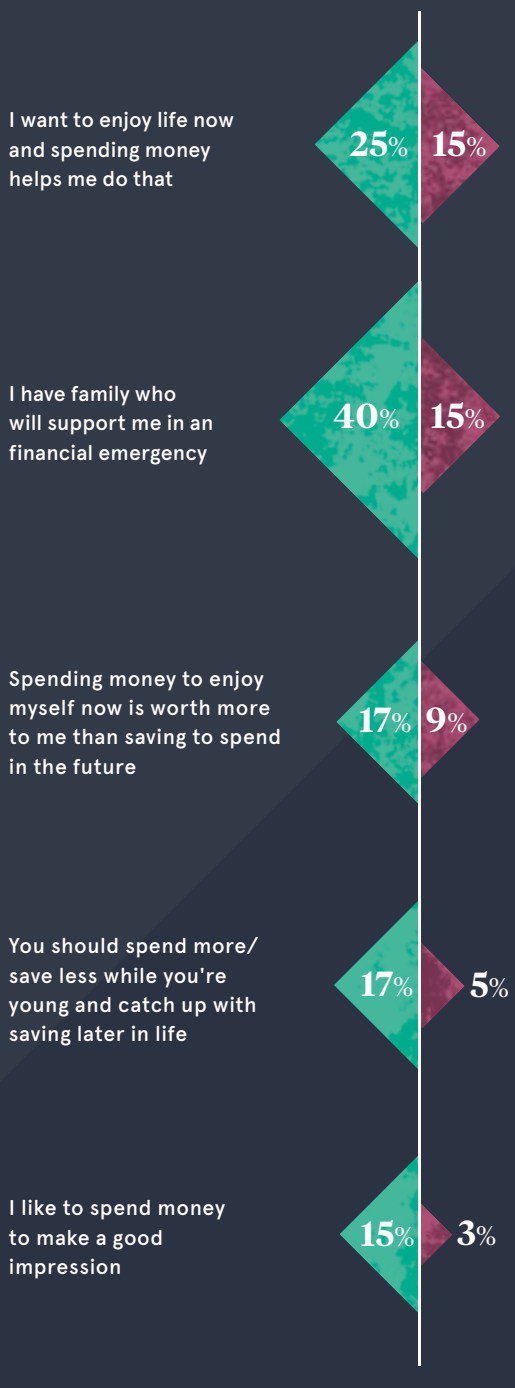
75% believe their generation overspends compared with other generations

Bank of America/GfK 2018

Saving versus spending

Net percentage of millennials and baby boomers that agreed with the following...

Millennials · Baby boomers

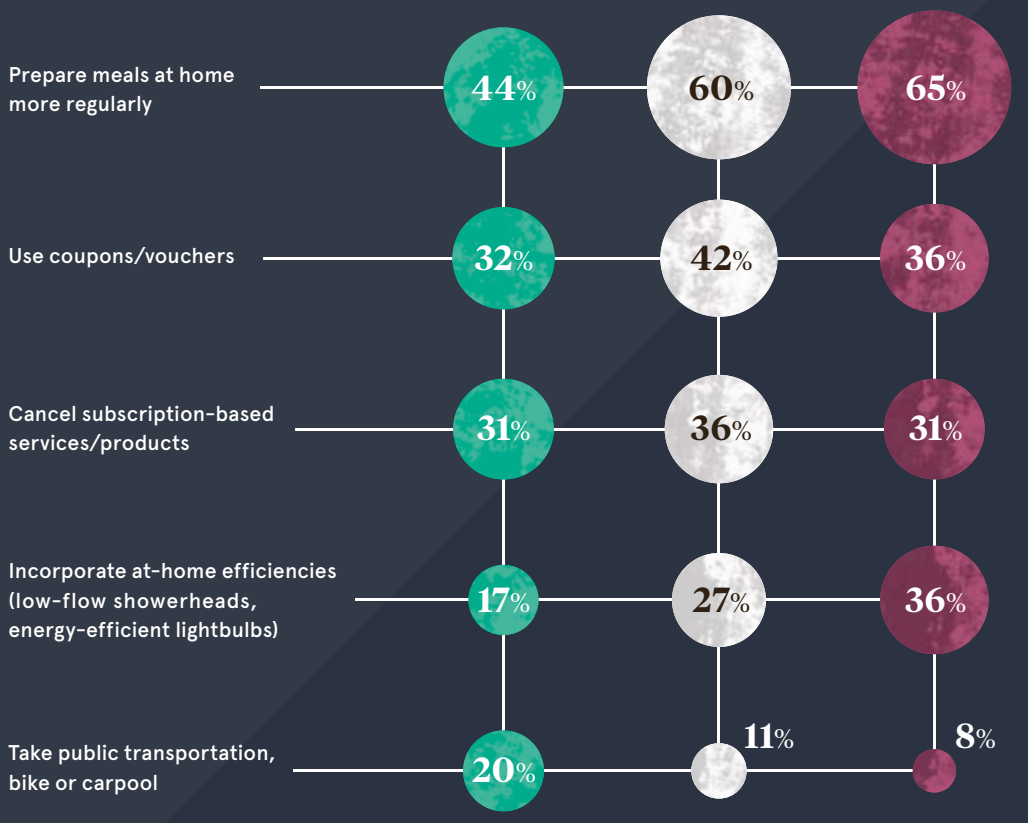


Ameritrade 2016

Saving habits by generation

Percentage of generation that do the following to save money

Millennials · Generation X · Baby boomers

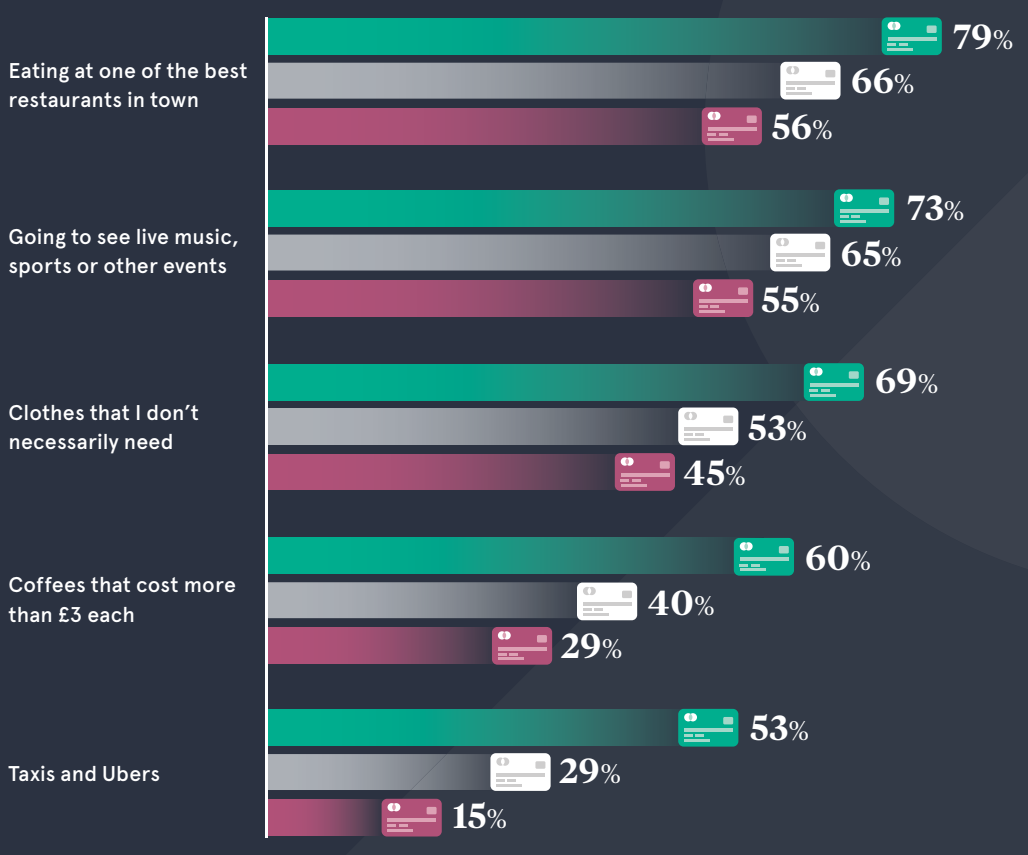


Discover 2018

Spending habits by generation

'I spend money on...'

Millennials · Generation X · Baby boomers



Charles Schwab 2017

INTERVIEW

Squaring the need for accessible financial services

Twitter boss **Jack Dorsey** tells of his other multi-billion-dollar business venture

GREN MANUEL

What happens when Silicon Valley thinking comes to the world of money? One answer is Square, Inc.

Co-founded by Jack Dorsey, also a founder and chief executive of Twitter, the nine-year-old company offering financial services to both companies and individuals has a market value of $23 billion, almost half the value of 328-year-old Barclays.

Yet in an interview during a recent visit to London, Square's chief executive Mr Dorsey doesn't sound like a fintech boss. While many tech firms brag about trying to destroy the banks, he says: "That's not our intention. We think the banking system works – it's just not accessible." And while many other US tech firms, in particular, are dismissive of regulation, Mr Dorsey declares that "regulation is really important" in finance.

And the phrase "disruptive innovation", so beloved of fintech startups, doesn't seem to be in his vocabulary. His favourite word, perhaps, is "customer" and a relentless customer-centric approach is why Square and other firms with the same mindset represent such a threat to established financial services.

All tech companies need a founder's tale and Square's appropriately enough is about focusing on the customer. Jim McKelvey, a friend and former boss, had a business making artistic glass sculptures-come-water fountains and in 2009 lost a $2,000 sale because he couldn't take credit cards.

The two of them looked at the merchant side of the credit card business and asked basic questions about why it was so hard for a small business to accept cards. Mr Dorsey admits their knowledge of the credit card business was negligible, but it is clear that he regards this, in the circumstances, as an advantage.

In only a month, the two engineers developed the concept of a simple gadget that plugs into a smartphone and allows a small trader to take cards, using the florist across the street from Mr Dorsey's apartment as a one-person focus group.

He says only 30 to 40 per cent of small traders in the United States who ask to process cards get accepted by banks. For Square, he says, the figure is 99 per cent, but the company watches customers closely and if they don't like the transactions being processed the service can be suspended.

> "We think the banking system works – it's just not accessible

However, Square wouldn't have reached $23 billion in market value without two further insights. First was that the square gadget was just the start of a business serving people underserved by traditional finance. "We don't want to replace a bank; we don't want to replace a financial institution," he says. "We want to make what they have, which works, more accessible."

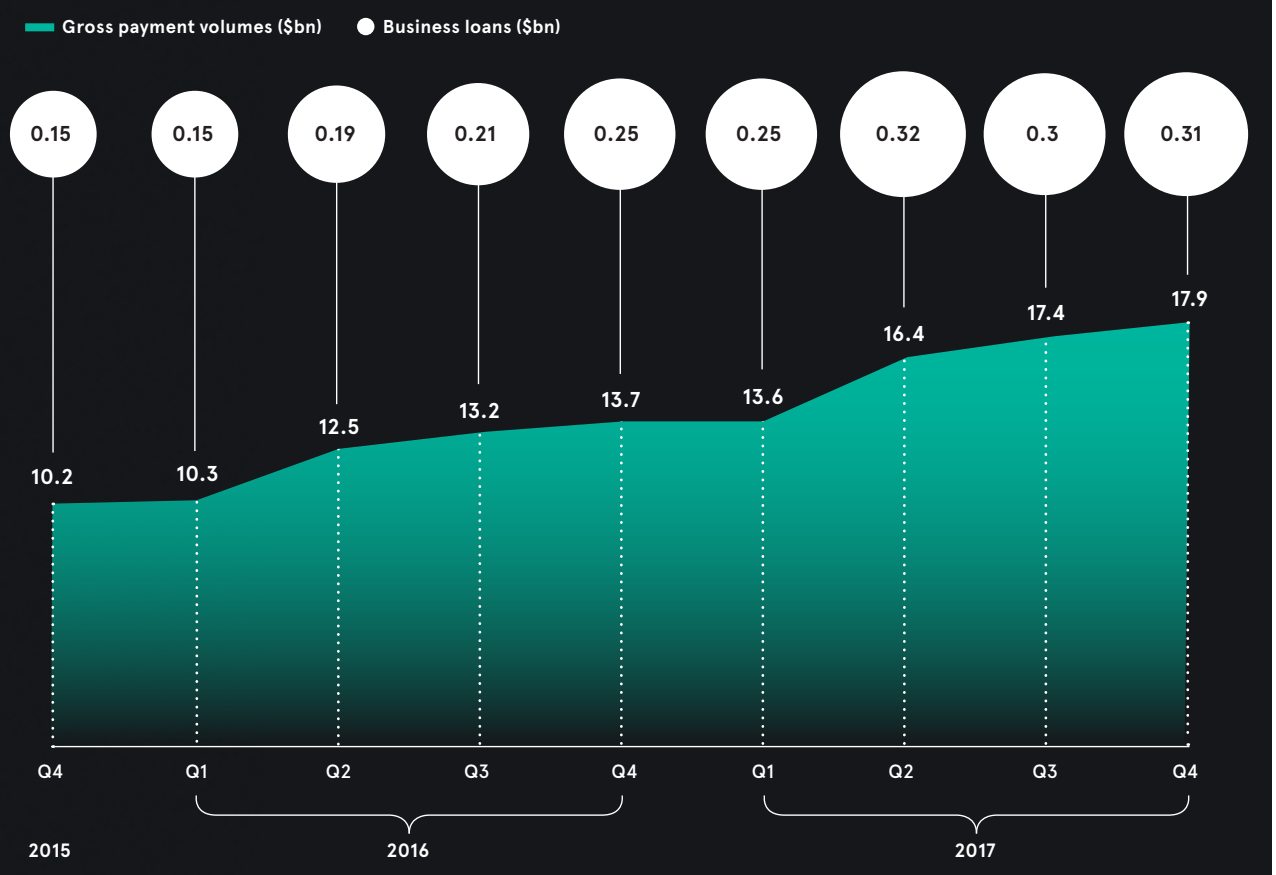
The second was that a relationship that starts with the card reader could get much deeper, powered by the data collected. The power of data in financial services is well understood in the US. A firm named Credit Karma, for instance, offers free credit checks and then uses that data to tout extra services, generating revenues of $500 million in 2016, according to its latest figures.

Jack Dorsey CV

2000	2006	2008	2010	2013	2014	2015	2015	2017
Starts a company to dispatch couriers, taxis and emergency services	Launches Twitter as chief executive (CEO); sends the first tweet	Steps down as Twitter CEO and becomes chairman	Launches Square with co-founder Jim McKelvey: first service allows small firms to take card payments using small, square card reader	Twitter lists on the New York Stock Exchange	Square Capital starts offering loans to small businesses, paid back from their card receipts	Becomes Twitter CEO once more	Square lists in New York, so he is now CEO of two public companies	Square launches its card payment service in the UK

Bloomberg/Contributor

Square's gross payment volumes and business loans by quarter



Square 2018

Although in many ways the UK is ahead of the US on payments – Americans were swiping and signing long after Europe was using chip-and-PIN – but on using data it lags. Square's operations in the US show how data can be put to work. In 2014 the firm launched Square Capital, which lends to Square customers. After analysing card receipts and other data, an algorithm will send an email offering an entrepreneur a modest loan, instantly. The customer can click a box and have funds the next day, to be repaid from the card receipts.

This may sound very much like banking business and indeed Square uses a banking partner to offer this service. However, with the typical loan around $6,000, the amounts are less than those considered viable for a big bank, with its overheads, to make a profit.

Mr Dorsey says this isn't taking a bank's business because a small-business owner needing this kind of loan will not usually get it from a bank. "What we're replacing is people having to go to their friends and family to ask for that money. And that's a huge market," he says.

The eventual aim is to bring all products to all markets. However, in the UK, Square's only market in Europe, it currently offers its core card service and, just launched, an instant-deposit add-on which allows small business to get their card payments in minutes instead of, usually, the next day.

Its portfolio is much wider in the US. There Square has also launched Square Cash, which started out as an app that allows peer-to-peer payments between individuals, with the classic example being friends splitting a restaurant bill after a night out, in competition with PayPal's Venmo. Square Cash customers can now get a payments card and pay in their salary. Mr Dorsey says some users find they don't need a conventional bank account.

> "We don't need to become a bank to save a trip to the bank

As he notes: "If you look at any bank's website and look at the services they offer, and look at our website, we're ticking a lot of the boxes."

Square is not a bank so it needs to partner with banks to offer its services. "Partnership with a bank was the fastest way we could move and also the best way we could move," he says. It has applied for a banking licence in the US because it brings "operational efficiencies" rather than from a desire to do conventional banking business. Yet it's clear that Square and other tech-focused outfits are increasingly doing jobs that were previously moneymakers for banks and other traditional financial firms such as Western Union.

Snapchat, for instance, makes it very easy for a user who has entered their card details to flick some cash to a friend. Google's Gmail, although few have noticed it, allows users to send funds as easily as sending an attachment.

Helped by their quick decision-making and flexible technology platforms, tech-based firms have a natural tendency to expand their services that most banks would envy. In the case of Square, although it started with small businesses that struggled to get banks' attention, their payments platform is now attracting larger businesses.

In 2017 Square moved $65.3 billion of payments, up 31 per cent from 2016, with one of the biggest increases from accounts with annual payments more than $500,000, the sort of firm the average high street bank would very much welcome as a customer.

Some of these firms were using Square's payments infrastructure as a platform, connecting their system into Square's rather than using the reader or the other packaged services.

"Platform" is one of the biggest tech buzzwords as many entrepreneurs dream of emulating Airbnb or Amazon Marketplace in providing a critical middle role in transactions, taking a percentage cut along the way. But Mr Dorsey's view is that the platform concept is only useful if it helps solve a customer's problem.

"I think less about how we define these things versus what problems we're solving," he says. "Is a platform mindset going to be the best way to solve a seller's need to grow their business? If the answer is 'yes', we do that."

One of Mr Dorsey's more unusual metrics is how many trips to a bank he has saved his customers. He checks them off. Downloading Square Cash instead of opening a bank account – that's a trip saved. Getting a quick loan from Square Capital – that's another trip saved. He says: "We don't need to become a bank to save a trip to the bank." ◆

GEOFFROY VAN DER HASSELT/AFP/Getty Images

Insight

Blockchain and bitcoin

The $65.3 billion of payments handled by Square in 2017 were overwhelmingly old-fashioned dollars processed using conventional systems. Co-founder and chief executive Jack Dorsey is, however, eying a change.

He says the firm is looking to deploy blockchain, the technology that powers bitcoin and other digital currencies, as its internal ledger to improve reliability.

"It would be very hard to attack the entire thing or for the entire thing to have a failure. So it will add to more reliability, more uptime," he says.

Mr Dorsey has scars from reliability problems. Ten years ago, as co-founder and chief executive of Twitter, the service was notoriously unreliable as user numbers surged higher, with its error message that featured a blue whale achieving internet celebrity status.

The move to cloud computing has now dramatically increased reliability. Firms encountering surges of demand can simply request more computer power from their cloud provider instead of seeing their systems melt down.

Nevertheless, Mr Dorsey is convinced that blockchain and cryptocurrencies are an innovation with huge potential. The internet and the cloud are decentralising technologies, he says, but most businesses including Square still rely on centralised ledgers for record-keeping.

He foresees blockchain changing the way not only transactions are recorded and processed, but also leading to deeper changes in the way identity and trust are handled online.

"We're just at the brink of understanding what it can do," he says. "It's really exciting. And not just for finance – for everything."

Square is connected to the bitcoin blockchain because it allows users of its Square Cash service to send the cryptocurrency to each other. But bitcoin is not primarily used as a medium of exchange, as originally intended, it is mainly used as a vehicle for investment or speculation.

This is partly because transaction fees are high; late in 2017 the fee to clear a transaction was as much as $50, although it has come down since. In a personal capacity, Mr Dorsey has invested in Lightning Labs, a startup with technology that could make bitcoin transactions cheaper and faster.

While even ardent advocates of cryptocurrencies express reservations about bitcoin and say the future belongs to other types of electronic coins, he is convinced the cryptocurrency that started it all will emerge as the winner.

The entrepreneur behind Square and Twitter even went as far as encouraging an audience at the British Library to go home and read the academic paper that first proposed bitcoin, saying with passion that "the philosophies behind it are amazing".

Mr Dorsey concludes: "I believe the internet wants and deserves its own currency that is global, that is free, that is electronic, that is convenient and that is decentralised as the internet is. I believe that it will be bitcoin. It's been through a lot, it's been tested a lot, it has a brand name."

Commercial feature

Banking on collaboration

Against a backdrop of changing regulation and rapid digitisation, financial organisations and fintechs must collaborate if they are to evolve, innovate and remain competitive, says leading payments and e-commerce expert **Verifone**

From chip and pin to mobile wallets, the payments industry has undergone a rapid transformation in recent years. The advent of the digital age has given rise to new services and technological innovation on an unprecedented scale.

Increasingly, consumers have come to expect a connected, customer-centric purchasing experience that goes beyond a simple exchange of money. Against this backdrop, financial organisations are recognising the importance of partnering with fintech and payment providers to deliver new solutions. The key to success will be collaboration.

June Felix, Europe and Russia president at payments and commerce giant Verifone, says: "The new financial ecosystem will be collaborative. Banks have huge regulatory constraints and legacy systems. In contrast, fintechs are nimble, creative and digitally savvy. What they share is a desire to retain and grow their customer base."

Regulation will only serve to accelerate this growing need for collaboration. The introduction of the Payments Service Directive 2 (PSD2), which seeks to enhance competition by opening the field to new entrants, is a game-changer and will catapult the industry into an era of open banking.

"PDS2 brings with it a huge opportunity for new and innovative services, and deeper ownership of customers, especially for banks whose brand and legacy give them a distinct advantage" says Ms Felix.

Certainly, the rise of mobile services and open application programming interfaces, or APIs, is driving banks beyond their traditional confines and partnerships present the best opportunity for competitive advantage. While some may view the changing environment as challenging, Ms Felix says by leveraging the banking industry's expertise, partnerships have the potential to revolutionise customer journeys.

> **Consumers have come to expect a connected, customer-centric purchasing experience**

Consumers have never had so many options at the retail checkout with cash, card, contactless, smart tap and mobile payments all now accepted. Verifone prides itself on not only creating nifty devices, but also innovating with partners to enable shoppers to experience payment at the point of sale in an easy, stress-free way.

An example is Verifone's partnership with Alipay, which allows stores in the United States and Europe to accept Alipay anywhere in the store and implement marketing campaigns designed for Chinese consumers who use the Alipay app.

As a trusted partner to global and national retailers, Verifone has transformed everyday transactions into connected, next-level commerce. Part of this innovation includes Verifone Connect, an adaptable, end-to-end product that accepts payments, but also adds value at the point of sale. With features including payment services, estate management, and merchant and consumer-facing apps, Connect enables merchants to improve consumer engagement.

Verifone also recently partnered with Mash, offering consumers a "pay later" solution in stores across Europe. For Verifone, the development of services such as Mash is testament to the growing need among consumers and businesses for disruptive solutions.

Ms Felix explains: "The payments bar is set higher than ever and today's consumer expects options. In creating a secure and open platform, Verifone has evolved and added new and exciting payment solutions to a global market."

Indeed, what might once have been seen as purely the domain of the larger outfits has become accessible to even the smallest of retailers thanks to the development of open, agile platforms.

Ms Felix concludes: "The future is connected commerce and collaborative banking, with a shared vision for an evolved financial ecosystem that puts consumer-orientated technologies at its heart."

For more information please visit verifone.co.uk

Verifone®

SOCIAL MONEY

Taking credit from big-tech social giants

Virtual currencies launched by online social platforms would have the potential to revolutionise payments and other exchanges of value

STEPHEN ARMSTRONG

What exactly is Facebook up to regarding cryptocurrencies? Earlier this month, Facebook updated its advertising policy to include a clause on financial services. "Ads must not promote financial products and services that are associated with binary options, initial coin offerings or cryptocurrency," according to Rob Leathern, a product management director at the social network. "We want people to continue to discover and learn about new products and services through Facebook ads without fear of scams or deception."

And yet Facebook's board of directors includes investors such as Peter Thiel and Marc Andreessen who are crypto-evangelists, and in January Facebook's founder Mark Zuckerberg mused about starting a Facebook cryptocurrency. In his "2018 Year Ahead" post, he explained that users are concerned about big-tech companies and spying governments. As part of his desire to win back trust, he speculated Facebook might adopt what he called "important counter-trends... like encryption or cryptocurrency" which "take power from centralised systems and put it back into people's hands".

It's ground Mr Zuckerberg has trodden before, but it hasn't proved successful. Back in 2009, the company launched Facebook Credits, a virtual currency for buying in-game items and non-gaming applications on the site. In January 2011, Facebook told all Facebook game developers they would have to process all payments through Facebook Credits from July 2011.

The problem, according to Peter Vogel, co-founder and chief executive of online-offline loyalty programme Plink, is that Facebook misunderstood its own users. "Facebook experimented with ways to encourage adoption, giving away Credits to some users and offering a highly discounted rate on a first purchase of Credit, but these efforts didn't encourage sharing and users were not allowed to give Facebook Credits to their friends," he says. In 2012, Facebook stopped using Credits and in 2013 the virtual currency was officially removed from the site.

The company is still keen on payments – in December 2017, Facebook introduced a peer-to-peer payment option in its Indian version of WhatsApp – and analysts think a cryptocurrency would solve the key sharing problem because cryptocurrencies, the best known of which is bitcoin, work on a sharing system called blockchain.

Blockchain is the technology that allows bitcoin to function, originally invented by the

Trust will be key to social cryptocurrency success

34%
of people do not think social media is a force for good in society

62%
think social media platforms are selling people's data without their knowledge

Survey of 33,000 people worldwide
Edelman Trust Barometer 2018

01

02

01
Facebook founder Mark Zuckerberg has mused about starting a Facebook cryptocurrency

02
E-Corp, the fictional tech conglomerate from USA Network's *Mr Robot*, launched the E-Coin digital currency to extend its monopoly on everything from computers to consumer credit

mysterious coin-chain creator Satoshi Nakamoto in 2009. In essence, it's a giant decentralised electronic ledger with duplicate copies on thousands of computers around the world. This number of duplicates means transactions can't be altered retrospectively, so in effect it's an irrefutable ledger that allows ownership and transfer of assets without the need for trusted third parties.

Sir Mark Walport, the government's chief scientific adviser, believes the real-world uses of blockchain could stretch from "helping governments collect taxes, deliver benefits, issue passports, record land registries, assure the supply chain of goods, and generally ensure the integrity of government records and services… to helping protect the internet of things". It could even be used to transfer patient health records and monitor the position of a driverless car.

Startups have been quick to realise what this means: traceability. London-based Everledger, for instance, uses the distributed ledger to track individual diamonds from the mine to the consumer, helping detect conflict diamonds and combat insurance fraud. Chief executive Leanne Kemp says they're "putting bling on the blockchain" and more than 980,000 diamonds have been registered since its 2015 launch. The company plans to expand into the art world, which will bring it into competition with Berlin-based Ascribe, which was launched to help artists claim ownership of their work as it spreads online.

A social media cryptocurrency would move this form of transaction from the fringes of the internet into the mainstream via the billions of people who use social networks around the world. In China, social network WeChat hosts apps within its app, so that users click through to buy using channels entirely controlled by the brand, which offers unique experiences and simple payments. Daniel Murray, co-founder of fashion m-commerce startup Grabble, says this sidesteps the problem of getting your app on to a shopper's phone. "No one downloads apps any more," he says. "But 89 per cent of all time spent on mobile is spent in apps, so something is wrong."

In an age where trust is faltering, millennials especially have trusted social media platforms and tech giants; they have been comfortable sharing pictures, intimate thoughts and much of their lives online, so it could be a natural progression to trust them to perform financial transactions.

But trust in social platforms may have been eroded by what is probably Facebook's biggest crisis yet with boss Mr Zuckerberg admitting the giant social network "made mistakes" that led to millions of Facebook users having their data exploited by a political consultancy. A "breach of trust" had occurred, said Mr Zuckerberg.

Facebook now faces an uphill climb to rebuild its reputation and regain trust, but if it were to launch a cryptocurrency, the results could change the way the internet does business. "Facebook, with over two billion monthly active users, can basically drive the mass adoption of anything," according to Clement Thibault, senior analyst at Investing.com.

And Facebook isn't alone. Google's parent company Alphabet has started investing heavily in fintech and crypto-startups. GV, Alphabet's venture capital fund, recently invested $25 million in London-based cross-border payments provider Currencycloud.

Twitter chief executive Jack Dorsey, meanwhile, has invested in Lightning Labs, which is building its own version of blockchain, and rumours that Amazon has plans for its own coin have been circulating since late-2017. This followed a series of crypto-related domain name registrations made by Amazon's legal department in October when the company acquired AmazonEthereum.com, AmazonCryptocurrency.com and AmazonCryptocurrencies.com.

> **A social media cryptocurrency would move this form of transaction from the fringes of the internet into the mainstream**

There are many problems ahead. "Blockchain and distributed ledgers have the potential to revolutionise international payments," explains Currencycloud co-founder Steve Lemon. "We're already seeing smart applications using a blockchain as an alternative to traditional payment rails in hard-to-do and illiquid corridors, but it will take time before these technologies are used en masse because they are still too slow and illiquid."

Paul Unterberg, vice president of product management at Prudential Financial, argues: "Bitcoin was created as a trust-free currency – just like a central bank-backed currency, you don't need to trust the other party – and it's by definition decentralised, so there's no point of failure. A corporation's coin would be the opposite – it would be centralised and require users to trust the company that issues it."

And trust is easily lost. USA Network's hacker drama *Mr Robot* features E-Coin, Evil Corp's attempt at issuing a US dollar-equivalent digital currency. Evil Corp has a monopoly on pretty much everything, rather like the big five tech giants right now. Is it safe to put more power in their hands?

According to Karen Pepper, head of UK at Amazon Pay: "Millennials want shops with in-store technology to operate seamlessly alongside online, so bricks-and-mortar stores need to embrace online payment platforms like Amazon Pay." But Grabble's Mr Murray counters that this could actually cause more confusion. "Amazon are famously tricky with data and that has to stop if an Amazon coin were to progress," he claims. "It's their duty to provide transparent data to business customers."

There is one possible solution, according to Yonatan Ben Shimon, chief executive and founder of cryptocurrency-social activity company Matchpool, who believes collaboration with existing experts is crucial for success. "To do it right, Facebook would have to be with a partner from the crypto space that understands how to build it in a decentralised way," he says, seemingly throwing Matchpool's hat into the ring. ◆

TECH FOCUS

Money tech is fuelling SME growth

Technology is helping to unlock money, particularly for smaller businesses that might otherwise struggle to find finance

IAN FRASER

01 Cashplus

An established online business banking provider that doesn't like to shout from the rooftops, Cashplus offers prepaid Mastercards and digital-only current accounts to startups and small and medium-sized enterprises (SMEs). Its business account can be opened in minutes, not weeks. "We just need to verify your company name and address, and approval is guaranteed – within seconds," says the website. The account offers a range of bolt-on features including application programming interfaces and a centralised account management system that enables bosses to keep tabs on employees' expenses. Since launching as Advanced Payments Solutions in 2005, Cashplus has gained 1.3 million customers in the UK, including more than 100,000 business owners. Last November, Cashplus declared its intention to apply for a full banking licence, which would permit it to convert some £200 million of customer funds into bank deposits, prompting founder and chief executive Rich Wagner to say: "This is an exciting time in our history as we now move to become a challenger bank." Cashplus has been consistently profitable for six years, partly because of transparent pricing that includes low transaction charges and an annual £69 charge for the business account.

02 Funding Options

Aggregator service Funding Options, launched in 2012, matches credit-starved small businesses with around 50 potential lenders, many of which are in the alternative finance, peer-to-peer space. The company prides itself on having unbureaucratic, fast, flexible and transparent processes that cut the time it takes from inquiry to loan approval down to about ten minutes. With open banking – the new European Union-wide data-sharing rules introduced in January – approval times could be reduced even further. Funding Options benefited from a boost in November 2016, when it was selected by the Treasury to help businesses that have tried and failed to obtain credit from major banks, as part of the Bank Referral Scheme. "We're changing the market," says Funding Options' founder and chief executive Conrad Ford. "Our vision is we don't want a world where SMEs just go to their banks, get rejected and then give up. We want a world where they come and look around the market, something we have made it very easy for them to do with technology, and obtain the funding they need."

03 Iwoca

Offering small businesses access to working capital, with facilities ranging from £1,000 to £100,000 for up to 12 months, Iwoca aims to eliminate the hassle, delays, upfront fees and punitive demands made by traditional banks. It has a quick-and-easy application process, and its platform is geared towards faster and fairer lending decisions. "Customers love our straightforward and user-friendly process, which is unparalleled in the industry," says co-founder and chief executive Christoph Rieche. Founded in May 2012, Iwoca started out providing finance to firms trading on eBay and Amazon, but has since broadened its appeal and partnered with other fintech players. Iwoca has lent some £300 million to 15,000 small firms in the UK, Poland, Spain and Germany. Mr Rieche is confident the model could be scaled up to a million customers. He believes the real-time access to customers' transactional data that comes with open banking will enable Iwoca to serve them better and accelerate credit approval. In January, Iwoca won a £100,000 prize from innovation foundation Nesta which described its products as "most likely to have a positive impact on UK small businesses in 2018 and beyond".

04 Klarna

Showing a clean pair of heels to the banks in online payments for e-commerce, Klarna reduces risk for both merchants and customers through its simple, one-click user experience. The Stockholm-based firm's selling point is that it offers customers flexible ways of paying, including direct payments, pay-after-delivery options, "try before you buy" and instalment plans. For retailers and online sellers, this can build customer loyalty. Klarna aims go beyond being a payments gateway; it obtained a banking licence from the Swedish regulator last year and intends to disrupt the wider European retail banking market, where co-founder and chief executive Sebastian Siemiatkowski argues there has been an absence of innovation for a very long time. He believes that Klarna can become the "Ryanair of banking" and one of the best-known Swedish exports since Abba. Founded in 2005, Klarna handled €18 billion of transactions last year, a 42 per cent rise on 2017. It already has 60 million customers and 89,000 merchants signed up in in 14 countries. Its $2.5-billion valuation makes it one of Europe's most valuable fintech firms.

Receipt Bank

05

The first software company that could automatically process information from uploaded images of receipts and invoices, Receipt Bank launched in 2011. Today, the London-based company works with around 5,000 accountancy and bookkeeping firms, and tens of thousands of smaller businesses, enabling them to use cloud accounting to the full, while taking the pain out of making and managing expenses claims. Director Michael Wood says: "We're constantly evolving, challenging the industry to be better, and developing new ways to reduce costs and fully realise the benefits of bookkeeping and real-time accounting." He claims Receipt Bank, which employs 200 staff based in offices in the UK, France, Australia and the United States, has largest team of artificial intelligence developers working in the bookkeeping space anywhere in the world. The company raised $50 million in a Series B funding in July 2017. Businesses that use Receipt Bank speak highly of it. "It's a proven thing. We are huge fans," says Funding Options boss Conrad Ford. One advantage is it ensures employees, who make business expenses, get reimbursed very quickly.

MarketInvoice

06

Specialists in providing loans to small businesses, secured by their accounts receivable, MarketInvoice was founded in 2011. It uses machine-learning and artificial intelligence to assess risk and make quick lending decisions, providing a forum where customers' sell their unpaid invoices to investors, who include wealthy individuals and asset managers. In March, MarketInvoice passed through the £2-billion lending threshold and believes it can surpass £3 billion by the year-end. "We have an ambitious programme to get more money to more businesses. We're looking to collaborate more widely with the onset of open banking," says co-founder and chief executive Anil Stocker. The firm branched out into business lending in November, lending sums of £10,000 to £100,000 to companies with turnovers of more than £70,000 for maximum periods of 12 months, and is targeting a £100-million loan book within two years. Funds are promised within 24 hours of application though, with open banking, Mr Stocker believes this can be reduced to two hours. MarketInvoice is looking to raise "tens of millions" in a fundraising this summer to fund global expansion in markets including Portugal, Spain, Czech Republic Indonesia, Malaysia and India.

Xero

07

New Zealand-headquartered Xero is a cloud-based provider of accounting software that enables small firms to keep track of their spending and bills in real time. Xero, which automatically imports and codes bank transactions, also permits small firms to manage expenses through mobile-based review and approval of each receipt. UK managing director Gary Turner says: "We're now at a scale that it's no longer just an accounting application. We have over 600 apps [including Curve, Receipt Bank and Vend] that connect to Xero and each adds some other functionality." Founded in 2006, Xero has 1.2 million subscribers, of whom 250,000 are in the UK. Here it is focusing its marketing efforts on 20,000 UK-based accountants, who it sees as the gatekeepers to the UK's five million SMEs. Listed on the New Zealand and Australian stock exchanges, it has a market capitalisation of A$4.7 billion. In early-March, Xero's founder Rod Drury declared he was stepping down as the company's chief executive from April 1, passing the baton to Sydney-based tech executive Steve Vamos, who has been tasked with driving Xero's international growth.◆

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SECURITY


Scott Webb/Unsplash

What we need to know about cyberscams

Digital money is at risk from hackers who breach businesses' security and pull off a cyberheist through trickery and deceit

DAVEY WINDER

Whether you call it social engineering or phishing, the perpetrators of cyberscams are becoming increasingly sophisticated. Targeted attacks against the financial sector produce lucrative cash payloads for the criminals, and huge costs by way of regulatory fines and reputational damage to the victims. So, what does the chief financial officer (CFO) really need to know to mitigate the risk?

Hold on a minute, what has this got to do with the CFO anyway? Isn't security the remit of the chief information security officer (CISO) or chief technology officer (CTO) instead? Yes, but the role of the CFO is more complex than ever, with financial oversight stretching beyond the alpha accountant stereotype and demanding a tech-savvy and security-aware incumbent. The dangers of ignoring this are regularly writ large across the cybersecurity threatscape.

Edward Whittingham, managing director at the Business Fraud Prevention Partnership, who provides GCHQ-certified security awareness training, recounts the story of a financial-sector client. "The fraudster impersonated an employee from the organisation's bank claiming there were a number of fraudulent transactions taking place," Mr Whittingham explains. "Despite being initially hesitant, the CFO then provided the fraudster with a variety of security information with the intention of stopping the alleged fraudulent transactions from taking place." The cost to the organisation ended up being more than £50,000 fraudulently withdrawn from the bank.

This kind of scam is known as whaling, a targeted spear-phishing variant with the well-researched victim a member of the C-suite. It's a tale that resonates with John Donaldson, CFO of payments compliance and data security specialists Semafone. "I have been targeted by whaling attacks after it became common industry knowledge that I had joined Semafone as CFO," Mr Donaldson admits. He recalls various attempts to initiate money transfers that appeared to come for the chief executive, using spoofed email addresses. Social engineers are, as the name suggests, very adept at convincing people to ignore their doubts.

Take Tom Roberts, who is a "social engineer". As a senior consultant at Pen Test Partners, he is what's known as a white hat, tasked with uncovering human fallibilities within a business as part of a security-testing brief. He has hands-on knowledge of just where the softer internal processes sit within an organisation and reveals the main financial risks fall into three categories of old school, process weakness and new frontiers.

> **Senior management buy-in is vital in getting staff to take security seriously**

Old school refers to the fact that some in the finance sector are notorious hoarders of paperwork to meet regulatory requirements or simply because full digital transformation is still a work in progress. "Documents are often left in open storage for ease of access, making them easy targets for snoops," Mr Roberts warns.

Then there's process weakness which is where the attacker has either learnt the processes of an organisation, or intuitively made successful inferences, and attempts to inject bogus documents into the flow. "These attacks get the victim to do the work for the attacker and follow all the normal process flows with small, barely noticeable, changes that result in payments being made to the wrong account," he says.

New frontiers include synthetic identity fraud where organised gangs sell grown identities of fake individuals who have created a credit history over several years of small purchases and prompt payment. These enable the attacker to make one big hit and vanish, and as the person never actually existed it becomes even harder to trace them.

So how can the CFO mitigate the risk of falling victim to these cyberscammers?

Ning Wang, CFO at the hacker-powered security platform HackerOne, advises the development of a good process with appropriate level of internal control. "Set up dual control for payment processing, without any exception," he says. "This means it takes one person to set up the payment and another to approve it." Most importantly, never allow any exceptions to a process with proven good internal controls.

Jim Gee, head of forensics and counter fraud at Crowe Clark Whitehill, was the founding chief executive of the NHS Counter-Fraud Service and has advised ministers, parliamentary select committees and the attorney general, among others. He says the CFO and others in the C-suite should never post details online of when they will be out of the office, which could help sophisticated scammers to launch an attack. Mr Gee also advises the CFO "buys up domain names similar to the organisation's so they cannot be used to create similar email addresses to those used by senior managers and directors".

After hacking into a British Telecom computer system, Robert Schifreen was arrested back in 1985. His subsequent conviction on six counts of forgery was eventually overturned by the Court of Appeal and led to the introduction of the Computer Misuse Act in 1990. These days, he runs SecuritySmart which provides IT security-awareness training. Mr Schifreen concludes: "One of the best contributions that a CFO can make is to lend his or her name to any training or awareness campaigns. Senior management buy-in is vital in getting staff to take security seriously." ◆

Most common malicious attachment filename categories

Analysis of more than 32,000 of malicious attachment samples with filenames that could be clearly categorised

6,456 Purchase order

6,396 Payment

5,629 Invoice

5,061 Receipt

2,919 Slip

2,261 Bill

2,251 Advice

1,262 Transfer

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