The Connected Business

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Bank tech expenditure set to rise

The US financial services industry alone is likely to run up an IT bill of at least $74bn next year as regulatory and customer demands impel change, writes *Paul Taylor*

Illustration: Oivind Hovland

Banks and other financial institutions are facing up to a new reality. The costs of meeting an expanding roster of regulatory requirements are rising at the same time as an increasingly competitive market is putting pressure on margins. Meanwhile, the need to invest in technologies to respond to changing customer demands, reduce risks and battle cyber crime has never been greater.

Against this backdrop are to be found general IT trends, such as the shift to cloud computing and mobility, the growing influence of social media channels, and the opportunities presented by so-called "big data" analytics. Such topics are expected to dominate discussions among bankers at the Swift International Banking Operations Seminar, SIBOS, in Dubai this week.

"I expect much of the discussion to be focused on the growing cost of meeting regulatory requirements," says Werner Steinmueller, head of global transaction banking at Deutsche Bank. For some banks, he suggests, these costs could consume up to 40 per cent or more of the annual IT budget and make it harder for them to invest in the innovation they need to keep up with customer demands.

Paul Henninger, a director at Detica NetReveal, a specialist financial software provider, says it is not only the case that banks face more regulations, but that these are more detailed and targeted at more critical parts of their business.

An example of this, he says, is the US Foreign Account Tax Compliance act, designed for foreign banks to report on potentially taxable accounts and transaction activities of US citizens. "The FATCA regulation . . . is far more detailed in terms of what is required than previous money laundering regulations . . . the initial burden on banks is many times more complex than the initial release of anti-money laundering regulations over a decade ago."

The implications of this go far beyond tying up bank IT resources. "The focus on regulatory compliance can challenge banks' capacity to undertake customer-centric innovation," says Jean Lassignardie of Capgemini Global Financial Services. "For example, partly as a result of the eurozone debt crisis, European banks are complying faster than originally expected with the Basel III objectives [due to be implemented by 2018], but as a result they have less capacity to focus on innovation."

He says that, for the past few years, most financial services companies have been focused on using technology to cut costs and improve efficiencies. Now they realise that in order to increase revenues they must move to a more customer-centric model and explore the opportunities presented by mobile and online channels.

"They're doing this while simultaneously responding to the trends shaping the industry, such as ever-changing market conditions, the increasing customer demand for new services and rising compliance costs, not to mention managing the explosion of data at their disposal," says Mr Lassignardie.

To put this in perspective, Technology Business Research (TBR), the US-based research firm, estimates that large North American financial institutions alone will spend $73.8bn on IT improvements, including software, hardware and professional services, next year as they switch from IT investments designed to "run the bank" to investments focused on "changing the bank".

"The overall 2014 IT budget growth rate hovers at 2 per cent," notes TBR's Banking and Financial Services Source IT report. "Large banking organisations are increasing investment in multi-channel banking and data management to improve system performance [and] ultimately meet customer demand for improved service and an enhanced user experience."

As part of this trend, banks and other financial services businesses are changing their services delivery models. For example, they are taking services to customers via mobile devices such as smartphones and tablets, rather than forcing them to come into bank branches.

"Business requirements will not be the same as they were three or six months ago so, culturally, technology and businesses have to adapt to new methods," says Jon Warren of Rule Financial, a London-based consultancy that serves the global investment banking industry. "Those firms most able to implement internal change are the ones most able to survive a post-regulatory world."

In the meantime, financial services companies must still find ways to streamline their IT operations, cut costs and improve efficiency. However, many banks struggle with this process. "On virtualisation, there is still a fair way to go," says Lou Rauchenberger, chief administrative officer of JPMorgan's corporate and investment bank. "My view is that participants in the industry are in a very difficult place . . . there is a strong pressure to have much more integrated back-office operations, but many are still several years away."

While he believes that banks have a breathing space following an intense period of mergers and acquisitions, he says they are still struggling to consolidate applications and reduce the number of servers in their IT operations. Many still rely on bridges between different system architectures rather than achieving real integration.

Cathy Bessant, Bank of America's chief information officer, agrees. She argues that IT simplification itself is important. "Simpler is always better," she says. "It always offers more stability and higher performance quality. And simpler is always cheaper, so is a worthy objective unto its own.

"For us, we grew up as a company with hundreds – literally – of acquisitions and so, while we always were seamless in the front office, we rarely took that all the way through the hierarchy of the infrastructure of the firm. Simplification for us has meant collapsing multiple systems that do the same functions into one."

Ten years ago, she says bankers typically thought of technology as "the back office", or the infrastructure that kept the institution functioning.

"Today, no good firm thinks of it that way. Technology and the front office are one and the same, and often times we deliver our product – money, capital or payment services – through a technology. The channel and what we are delivering have become one and the same."

She shares the feeling of many other IT banking professionals that the pace of change that has been experienced over the past decade will continue unabated, but that predicting what the next popular trends remains difficult.

"I can only anticipate that the next 10 years will see that same kind of change as the past 10," she says.

Inside »

Customers slow to adopt mobiles as credit cards

Survival guide

Jane Bird **looks at how two types of contactless payment system work**

While contactless payment cards are widely used, the uptake of mobile devices as a means of payment is proving problematic. Here, we look at the pros and cons.

Technology

RFID: A card with a radio frequency identification chip can be used to pay by tapping it on to a special reader.

NFC: Near field communication is a type of RFID used in mobile phones that enables secure contactless transactions. Its two-way information exchange makes it possible to interact with customers in a more personalised way.

Deployment

RFID "contactless" payment cards are found in the US, UK, Poland and Spain to pay for public transport and items costing less than £20. Transactions are almost instantaneous.

Smartphones with NFC technology were launched in 2007, and by 2012 comprised 55 per cent of smartphone models on the market, says London-based market research company Ovum. But very few are being used for NFC payment. NFC transactions for 2017 are forecast at $34.7bn, only about 5 per cent of the total worldwide mobile payment market.

Benefits

RFID and NFC payments use complex encryption and are more secure than conventional credit and debit cards. Customers paying with a RFID card typically have to enter the PIN every five transactions, so the most anyone could steal would be £100.

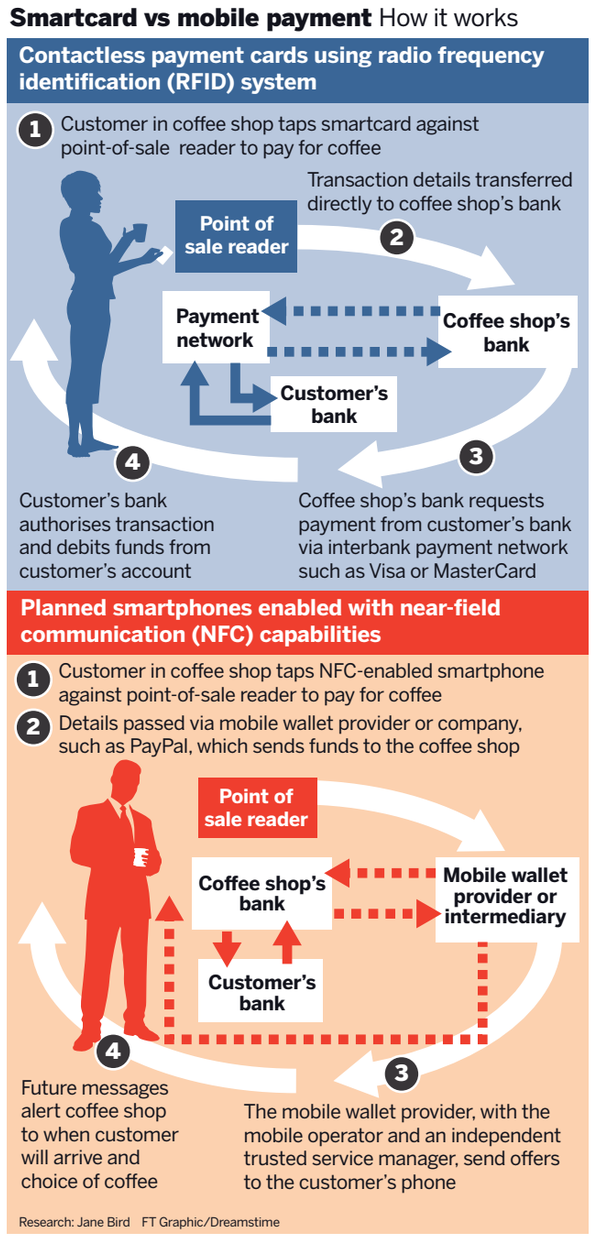
NFC-enabled phones are more versatile. Their cameras and screens can be used for identification and to display quick response bar codes. They can also help people monitor their spending by tracking and storing receipts. "But the main benefit," says Gilles Ubaghs, Ovum's senior analyst for financial services technology, "is that service providers can capture and retain customer preferences, and push out offers in the form of loyalty points, coupons and discounts."

Challenges

NFC payment systems are expensive to roll out. They require hardware, software and an infrastructure of participating telecoms operators who control the highly secure payment details, as these are stored on the SIM card on the handset. Banks are struggling to work out how to form partnerships with intermediaries and how to share out the profits.

But the biggest hurdle is persuading consumers to sign up, says Mr Ubaghs. "This is proving very difficult, because most people don't see the advantage."

Smartcard vs mobile payment How it works



Research: Jane Bird FT Graphic/Dreamstime

Growth of analytics tools helps lenders to spot criminal activity

Fraud prevention

Screening masses of data helps beat the crooks, reports *Jane Bird*

If a New Yorker's credit card is used to buy jewellery in Bangkok, the bank might suspect that it has been stolen.

However, if half an hour before, their partner's card on the same account has been used at a restaurant in the same city, the bank could surmise the couple are on holiday.

Data analytics allows checks such as this to happen in seconds – the time between the card being inserted into an electronic reader and its authorisation, says Paul Eagles, vice-president of product and future payment risk at Visa Europe.

It is a far cry from the situation 20 years ago, when attempting to use your credit card seven times in a day, or spending more than £1,500 on a single transaction, might well have led to your card being blocked.

"Fraud detection needs to be as unobtrusive as possible," says Mr Eagles. "The challenge is not to inconvenience customers."

In addition to speeding up security checks, data analytics improves detection rates by allowing many factors to be considered simultaneously. In the past, financial institutions set "rules" that computers checked to decide whether or not to allow transactions. But this meant predicting what might constitute suspicious behaviour.

Now, rule checking is used in combination with technologies such as anomaly modelling, text mining, predictive modelling, data validation and social network analysis.

This helps banks to spot the tell-tale signs they might never have previously thought of – the "unknown unknowns", as Mike Rhodes, senior fraud consultant at SAS, the software company, calls them.

Data analytics can help assess liquidity and credit risk, and identify illegal trading, rate rigging, misselling, and fraudulent loan applications or insurance claims.

Such techniques can examine anything from the frequency, length and geographic location of phone calls, to the words and phrases used in emails and instant messages.

Anomaly modelling, as the name suggests, seeks out the unusual. In investment banking, for example, a high number of calls to a mobile phone registered in Russia could flag up a warning of insider trading. In retail banking, employee emails containing bank account numbers might suggest criminal activity.

Text mining also helps to uncover dubious correspondence. It can look for specific giveaway words and phrases such as "trading illegally", "illicit trade" and "keep it quiet". For example, an alert might be triggered by an abnormally large number of congratulatory remarks, such as "great", "thank you" and "excellent work".

Meanwhile, motor insurance companies are using text mining to identify fraudulent claims. A genuine claimant who has been in a car accident and is recalling an event from memory is likely to describe the experience by reliving what actually happened, for example: "I was walking down the road and a vehicle drove into me."

> 'Detection needs to be unobtrusive, the challenge is not to inconvenience customers'

A fraudster, on the other hand, is more likely to say: "I walked down the road and a car hit me." People using the second form of words are 60 per cent more likely to be fraudulent than the first.

"They are not describing what happened to them but what they imagine inside their heads," says Mr Rhodes. "Anyone using words ending in '-ed' should be on top of the list for investigation."

Scott Paton, a partner in financial services practice at PA Consulting, says financial institutions are under pressure from regulators to invest in social network analysis and other readily available data to understand what conversations are taking place, and "where there is contact with people known to be dodgy".

Investigators can also look at share price fluctuations, Mr Paton says. "When these are outside the norm, they can see who's involved, who they're connected to and what communications are taking place."

In future, the scope of data analytics will move beyond numbers and words to include images, video and voice recognition.

For example, thanks to the increasing use of social media such as YouTube and Facebook, fraudulent whiplash claimants will find it harder to escape detection, especially if the photos or footage they have posted online show they were nowhere near the scene of an alleged car accident.

However, some compliance officers are reluctant to use data analytics for fear of breaching privacy legislation.

"They are very concerned about what they are allowed to do, even using publicly available data on social media," says Mr Rhodes at SAS.

However, he says, their fears are misguided, because this sort of analysis is allowed when it is being used for fraud detection.

Markets on the alert as hacking danger levels mount

Security The vast amount of money shooting across continents makes financial services a tempting target for crooks, says *Philip Stafford*

Wall Street was the setting for its own blockbuster thriller this summer: Quantum Dawn 2. In mid-July, banks and brokers were forced to keep on top of positions as prices fluctuated wildly.

This was not a real attempt by outside forces to manipulate the markets, but a widescale drill by regulators in concert with market participants. The torrents of trades were fictional, sent by imaginary hackers. The aim was to test the industry's readiness for a potential cyber attack.

"This issue has emerged as arguably the top systemic threat facing global financial markets and associated infrastructures," says the Depository Trust and Clearing Corporation (DTCC), which processes large securities transactions for US capital markets. "That systemic risk is manifested in a possible massive financial and reputational impact and a loss of confidence in the integrity of the market."

With their frequent, sharp movements – often driven by raw human emotions of greed and fear – financial markets have always attracted unsavoury characters. The trading floors, once populated by brokers and runners, have been largely replaced by unflappable, relentless computers that are able to execute trades across thousands of miles at supersonic speeds. The vast sums of money shooting across continents, and the high profile they are given, means financial markets remain a tempting target for criminals.

Participants point to the complexity of today's markets, which they say is enough to prevent casual attackers. Asset classes such as equities and derivatives are traded via privately owned networks that have their own computer language. Access to an exchange is available on a membership basis, usually via a broker who is responsible for conducting credit and background checks on customers.

But this is not a complete deterrent. A report in July by the World Federation of Exchanges found that more than half of the 46 exchanges it surveyed had experienced a cyber attack in the past year. So far the main targets have tended to be non-trading-related online services and websites rather than trading platforms, it said.

As the cost of technology continues to fall, it is relatively inexpensive for a criminal to launch an attack on a financial institution, while the cost of defending against them is far higher.

"The biggest one we see is a DDoS, or distributed denial of service [an attack that uses many computers and many internet connections to flood a targeted server with requests]. It's like digital vandalism," says Hugh Cumberland, solutions manager at Colt Technology Services, which operates telecom network and technology for markets.

In a DDoS attack, the networks of financial institutions are significantly slowed or paralysed by a bombardment of messages from a network of computer servers. Recent attacks have flooded some websites with up to 15 times the traffic they are built to handle.

For some hackers, bringing down a high-profile website is "a badge of honour", says Mr Cumberland.

Mark Clancy, corporate information security officer at DTCC, says there are four main types of groups that target markets. Besides hacktivists, there are criminals seeking confidential information, people conducting espionage and people conducting a cyber war.

Those seeking financial gain look for vulnerabilities in systems in order to compromise confidential data. Criminals seek to infect an entire system with hidden software that may lie undetected for many months. One such attack, in 2011, focused on Nasdaq OMX's Directors' Desk, which holds data normally only available to top corporate executives.

Finra, the US regulator, this year said there had been a "proliferation" of complaints about security breaches at broker-dealers, raising concerns that customer orders or even trading strategies could be compromised.

Combating those seeking illicit financial gain is further complicated by the interaction of the market with the web and social media. For example, Carl Icahn, the US investor, made millions and moved the share price of Apple legally over the summer when he announced on Twitter he had bought a large stake in the US computer maker. "There's a blurring between what's real and what's not," says Mr Cumberland. "Data provenance is going to become an issue based on the credibility and reliability of certain kinds of data we have."

Web warning: for some hackers, bringing down a high-profile website is seen as a 'badge of honour' Dreamstime

> Criminals often attempt to infect systems with software that can lie undetected for months

The hardest groups to defend against are those involved in espionage, says Mr Clancy, as they are usually government-backed. "They can put time and effort into getting it right," he says. "In many ways security is about removing the lightly sophisticated people so you can concentrate on sophisticated ones."

For the present, the industry is focusing on improving safeguards and contingency plans, indicating little faith in the ability of authorities to prosecute suspects.

The WFE study found that only 59 per cent of exchanges polled said their jurisdictions had sanctions regimes in place for cyber crime. Of that total, about half suggested that current sanctions regimes are effective.

Many attackers are located in overseas jurisdictions where extradition of suspected criminals is difficult, making the chances of prosecution low. Some of the five men charged with the attempted Nasdaq hacking remain at large.

"You used to assume that if you built the wall high enough, they couldn't get in," says Mr Clancy. "It still deters many, but now you have to assume that they're in the building."

Gaming aims to take the fear out of finance

Education

Applications can boost financial skills, says *Sarah Murray*

An imaginary world filled with fantasy creatures is helping children learn about the value of money. Using the app, *Green$treets: Unleash the Loot!*, they can earn virtual cash by planting a garden or purchase decorations for a tree house while learning basic financial concepts such as earning money, making spending decisions, saving and budgeting.

The app is an attempt to overcome the biggest hurdle facing those wanting to increase consumers' grasp of money management – the image many people have that personal finance is stressful and dull.

"The fundamental problem is that it's just not very interesting," says Mark Guinibert, a partner at KPMG, the consultancy.

It is a view shared by Jason Alderman, who runs the global financial education programmes at Visa, the credit card company. "One of the biggest challenges of financial literacy, regardless of what technology you're using, is that the combination of fear, shame and boredom is a lethal cocktail," he says.

As a result, the apps and games that Visa is now designing as part of its financial literacy programmes include one that taps into the popularity of sport. *Financial Soccer* (called *Financial Football* in some markets) is a free online video game that tests players' financial management skills.

Mr Alderman argues that technology can encourage people who might otherwise shy away from the subject to start thinking about how to manage their money. "There is no app that can make you financially literate," he says. "But it can be a gateway to realising that the subject doesn't need to be terrifying."

Mobile and game technologies can add an element of fun to help consumers improve their money management skills.

In the US, for example, PNC Bank has created a mobile phone app to make saving money more entertaining. The *Punch the Pig* app allows customers to transfer money from their current to their savings account automatically whenever they punch (by shaking their phone) the piggy bank on the screen.

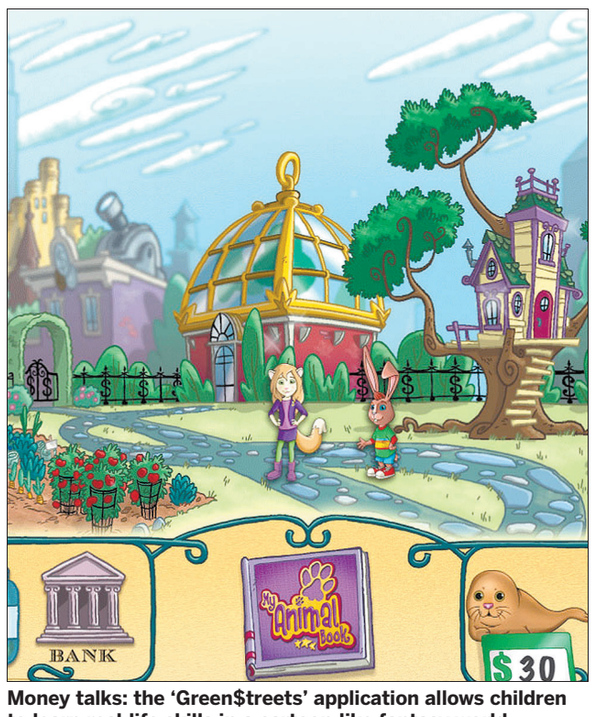
"'Gamification' is a way of getting people to save and put money away," says Mr Guinibert. "There's something in our brains that responds to that kind of addictive behaviour."

Familiarity plays a role, too, a factor that the *Green$treets* app taps into, since its creatures are the creations of Tom Hester, character designer for *Shrek*, the computer-animated film franchise.

> 'Apps can be a gateway to realising that the subject doesn't need to be terrifying'

Even in very different settings, similar principles apply. When Opportunity International – which provides poor communities in developing countries with financial services – designs its education programmes, it taps into popular culture.

In Uganda, where soap operas are widely watched, it creates dramas with similar plot lines that include messages about things such as the importance of having savings accounts. The organisation is starting to equip its loan officers with tablets, and it sees the potential of taking these messages to a larger number of people.



Money talks: the 'Green$treets' application allows children to learn real-life skills in a cartoon-like fantasy world

"It's about not trying to introduce something new but using what is already working well," says Rosa Wang, director of mobile money at Opportunity International.

Mobile devices offer other advantages when it comes to financial literacy – intimacy. "Money management concerns some of the most private information we have," says Mr Alderman. "And a phone is a screen just for you."

For microfinance institutions, the mobile phone is a way of helping clients keep on track with loan repayments. Opportunity International is among those using text message notifications to borrowers' as reminders that their payments are due.

If mobile technology is a channel for delivering financial information that people can access in private, social media is a highly public technology.

For this reason, Mark Guinibert believes banks will have to tread carefully when using social media as a money management tool. "People find it hard enough to talk to their friends about this stuff," he says.

Nevertheless, some banks are experimenting with social media as a means of increasing financial literacy. For Visa, the technology provides a way of using shared concerns to raise awareness of the importance of budgeting.

In the US, the company's *Tooth Fairy* app and Facebook calculator help parents – who often worry about how much money to leave for children after they lose a tooth – decide on the appropriate amount by letting them see what other families have left under their child's pillow.

Meanwhile, in India, ICICI Bank is using Facebook to encourage savings among younger customers. With an iWish account, customers can choose when and how much to deposit. They can post their savings goals on a Facebook page so that their friends and family can track the saver's progress and make contributions from their own accounts.

It is perhaps no surprise that ICICI Bank has targeted younger customers with its iWish account. As the younger generation of digital natives become bank clients, they are likely to be less reluctant than older people to use social media to discuss their personal finances.

"With a younger, more online, more confident user base, it is viable," says Mr Guinibert. "It might not happen today, but it is going to happen."

IT stands to play bigger role as compliance rules tighten

Regulation

Banks need to develop increasingly sophisticated responses, reports *Paul Solman*

For leaders in the financial sector, one of the frequent reminders of the 2008 credit crisis is the mountain of new rules they face in their day-to-day operations.

Regulatory initiatives such as the US Dodd-Frank Act are forcing banks and other institutions to keep more data for longer – creating a pressing need to find extra terabytes of space on computer servers.

Storage capacity is just the beginning, as financial services are having to turn to increasingly sophisticated technology to satisfy the demands of compliance.

"The role of IT has become even more central than it was in the past, and chief technology officers are increasingly working with chief financial officers and compliance officers to improve processes," says Said Tabet, senior technologist and industry standards strategist at EMC, a data storage company.

He adds: "High levels of automation, for example, are being used to improve business processes and to deal with problems such as human error."

One of the biggest problems is data quality. Jamie Woodhouse, managing director of finance and risk services at Accenture UK and Ireland, the IT services group, points out that the global nature of banking operations means a great deal of work has to be done to ensure that all data are compatible and meet the same standards.

"In theory, the regulatory reporting problem is very simple, but in practice the complexity is bewildering," Mr Woodhouse says. "When you start looking at the data sets, you recognise that the source data are in many different systems, in many different regions and countries, and is being managed by lots of different groups with slightly different reasons for wanting to look at it."

This point is echoed by French Caldwell, vice-president and Gartner fellow at Gartner Research. "Banks have been using IT to pull data from multiple entities across the bank, and to cleanse or normalise it before they can begin to use it for operational risk and compliance calculations," he says.

Another problem is the sheer weight of legislative change.

"Even before the financial crisis, banks had plenty to deal with, with regulations like Basel II," says Mr Caldwell, referring to the international financial accord introduced in 2004.

"Most senior executives at banks think their compliance systems are OK – if only they knew what they had to comply with. Five years after Lehman Brothers and the financial crisis, a lot of the regulations under Dodd-Frank still haven't been finalised, and Dodd-Frank is only one of the regulations around the world.

"A big part of the use of governance, risk management and compliance software is change management – tracking changes to rules and regulations throughout the world, and identifying the people and operations that need to react to those changes."

Mr Caldwell believes social media will be a problem that the industry will increasingly have to deal with. "Banking regulations have not changed to reflect the spread of social media," he says.

"A post on Facebook or a tweet by a financial adviser working for a bank could be construed by regulators as advertising, and there's got to be a process in place to monitor this and check that people are obeying the rules."

> 'A post on Facebook or a tweet by an adviser could be construed as advertising'

Regulators, too, face concerns about handling data, and are deploying sophisticated systems to analyse the compliance information they receive.

"While each bank finds it a struggle to report to the regulator, the regulators are receiving multiple reports from all the banks to try to get a transparent view of the entire market," says Accenture's Mr Woodhouse. "That's a phenomenal challenge."

Could remote hosting of information on the cloud, which is finding so many uses in IT and business, be part of the solution? Opinion seems divided, especially given the need for security. A survey by Capgemini, the consulting group, revealed that 63 per cent of companies in financial services trusted the cloud with their data. But fear of a security breach was also listed as the top reason preventing cloud uptake.

"Some financial services companies have already adopted cloud solutions in different areas of their business," Mr Woodhouse says. "Some are using them internally. In other cases they are using them externally, or using cloud-based software as well as data services outside of their firm." The turning point will be when regulators turn to the cloud, he believes.

Mr Tabet at EMC thinks cloud systems have some way to go before they reach their potential. "If cloud computing is creating a lot of internal clouds, it doesn't lead to the full potential being realised," he says. "I'm very optimistic that cloud computing will be used, but we are not yet at full adoption of these kinds of services."

On the plus side, it may be that technology chiefs could start to see regulation as a way of helping to make the business case for upgrading IT systems. According to a survey by Xanthus, a management consultancy, 86 per cent of chief information officers in the financial services sector view regulation as an opportunity to innovate.

In the meantime, what seems certain is that IT and compliance will continue to converge.

"The volume of new regulation and compliance initiatives has significantly, not to say exponentially, increased," says Jean Lassignardie, a vice-president at Capgemini Global Financial Services. "IT's major role in risk and compliance is the new normal."

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Mobile systems face integration difficulties


Jennifer Miles: mobile's value lies in the interaction between brand and client

Business innovation Banks need to look beyond basic services, writes *Paul Taylor*

The problems and opportunities that mobile banking and payment systems, and electronic wallets, present for banks, card issuers, network operators and equipment makers are likely to vary from market to market and country to country.

For example, in emerging markets such as Kenya and Tanzania, M-Pesa, the mobile phone-based money transfer and micro payment systems pioneered by Safaricom and Vodacom, has been popular with those who have not previously used banking services. M-Pesa allows users with a national ID card or passport to deposit, withdraw, and transfer money easily with a mobile device.

In more developed countries, banks have offered basic mobile banking services for years. These are growing in sophistication, for example by allowing clients to use smartphone cameras to make cheque deposits, or by providing stock market investors with equity research and portfolio analysis tools on tablet devices.

But the real opportunities for banks lie beyond basic banking services. As Accenture, the consultancy, noted in a report on the sector, "rapid advances in technology are creating major opportunities for banks to build better and more loyal relationships with their customers, enhance service and drive additional revenue".

Accenture also said banks are raising expectations about how customers interact with them, including "developing new services and addressing new points of customer interaction – for example through social media such as Facebook and Twitter".

But the authors point out that, while such innovation in specific channels is necessary for growth, it will not, on its own, be sufficient. "Introducing new channels or enhancing existing ones has to take place alongside the creation of architecture that brings those channels together and integrates customer data meaningfully across them all.

"Without that integration it will not be possible to deliver the type of service experience that customers expect. And all of this has to deliver sustainable cost savings."

However, banks need to take advantage of such opportunities sooner rather than later, or they run the risk of being outflanked by mobile network operators and companies such as PayPal, that are also zeroing in on mobile banking and payments. For example, Berg Insight, a business intelligence company, estimates in-store mobile wallet payments will reach a combined total of €78bn in North America and Europe alone by 2017, up from just €600m in 2012.

Berg suggests commercial mobile wallet services will be operating in nearly half of the 27 EU members, plus Switzerland and Norway, by the end of this year. Many of Europe's largest mobile operators, banks and retailers including T-Mobile, Orange, Telefónica, BNP Paribas, Barclays and Auchan, were identified by Berg as important mobile wallet players.

In North America, where mobile wallets have been slow to take off, their use in in-store payments totalled just $500m in 2012, and the vast majority of payments used Starbucks' smartphone application. Mobile wallets that can be used at multiple merchants "have yet to gain traction", according to Berg.

But this could be about to change. Isis, the mobile commerce joint venture created by AT&T Mobility, T-Mobile US and Verizon Wireless, announced plans at the end of July to roll out its Isis Mobile Wallet nationwide this year, following successful trials in Austin, Texas and Salt Lake City, Utah.

Michael Abbott, Isis's chief executive says: "Over the past nine months, we have proven the power of an open platform, creating an ecosystem of hundreds of partners dedicated to making mobile commerce a reality."

In another indication that the Isis Mobile Wallet, which uses near-field communication technology to allow consumers to make purchases, redeem coupons and present loyalty cards with a tap of their smartphone, could win wider acceptance, Chase, the US banking arm of JPMorgan Chase, plans to offer its credit card services in the package.

In the longer term, universal mobile wallets are expected to drive the majority of mobile in-store purchases in North America, which Berg estimates will reach $44bn by 2017.

However, some believe that it will be the value-added services that accompany mobile wallet shopping that will truly distinguish mobile wallets from the traditional payment instruments.

Jennifer Miles, president of VeriFone Americas, an Isis partner, says:

> 'Gaining an early lead can be crucial, only a limited number will survive'

"The value in mobility is not in how you pay, it's about creating a more meaningful and rewarding interaction between a brand and its customer, and mobile wallets are an important part of that."

Analysts think the next few years will be a crucial time for banks and others planning to offer mobile payment and wallet services.

The Berg report said: "Gaining an early lead in the market can be crucial, as in the long term only a limited number of mobile wallet services will survive in each market due to network effects."

UK scene Convenience is the key factor likely to win over customers

A consortium of mobile phone operators in the UK has ambitions to sell banks a high-tech way of keeping customers loyal.

Launched in 2012 by Vodafone, EE and O2, Weve offers payment technology via a new generation of mobile phone chips.

These work in the same way as contactless payments tap and pay debit cards, by employing short-range radio waves known as near-field communications (NFC).

Banks feel that they missed a trick in allowing online commerce companies such as PayPal to dominate internet shopping. They see mobile phone technologies as a way to reinvigorate their relationship with a younger generation of customers.

The big question is whether NFC will live up to its hype before some other emerging technology takes the mobile payments prize.

Tony Moretta, a veteran of NatWest bank and credit card giant Visa, is marketing director at Weve. He says the UK has 30m credit and debit cards that are equipped with contactless payment chips, so consumers are accustomed to making payments by waving a chipped device at a card reader in a shop or restaurant.

Mr Moretta anticipates NFC capacity will be enhanced by Weve's mobile operator backers in the same way as a bank updates plastic cards.

New mobile devices will sport an NFC-compatible chip and, when enough are in circulation, banks can alert their customers to the options they have for using these services.

The company says it will carry out the technical integration between bank accounts and the NFC chips, giving each bank a single point of contact that will provide access to the multitude of phones that are available from the group's backers.

The theory is that consumers will leap at the speed and convenience of contactless payments as banks load the ability to use debit cards on to mobile phones.

Banks will control the branding of the service, adding extra promotions such as discount deals with retailers. The resulting avalanche of information about spending habits could put banks on a par with supermarkets in terms of their future ability to mine and exploit data from customer transactions.

Mr Moretta anticipates Weve's banking clients should be able to launch services by the end of 2014. He thinks the frantic pace of change in mobile commerce is a powerful incentive for them to sign up. "Banks are behind the consumer in terms of using mobile payments technology," Mr Moretta says.

"If the banks don't do this soon, someone else will," he adds.

Market observers say this rapid rate of change may also trip up Weve. Neil Burton, director of product strategy at cross-border payments group Earthport, warns that "the rate at which mobile technology changes is very quick, possibly faster than the banks can match".

Apple has held out from including NFC compatibility on the iPhone, and it is clear that Weve can only be one element in a wider mobile strategy for banks.

Paul Berney, European managing director at the Mobile Marketing Association, thinks Weve is pointing banks in the right direction, although he believes Apple's eventual embrace of NFC will prove crucial.

"Weve is preparing them for the future, it is just a question of time," he says.

Michael Dempsey


Mobile ambitions: Weve's Tony Moretta

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Time to embrace digital disruption

Management Old procurement models can delay modernisation, writes *Jessica Twentyman*

Chief information officers must feel they live in a world in which the ground is constantly shifting under their feet. Their traditional focus was on picking the technologies that were most likely to result in improved internal operations. Company executives bought software if they thought it could deliver a return on investment – or they waited for the next development.

So-called digital disruption – when technology changes so quickly it interrupts existing business models – was something information technology suppliers inflicted on their competitors, not their customers.

But, in today's frenzied environment, IT leaders must not only deal with internal transformation but also identify which, if any, technologies – such as mobile, social, cloud and analytic capabilities – they should be turning to.

James McQuivey, an analyst with Forrester Research and author of *Digital Disruption: Unleashing the Next Wave of Innovation*, says the use of such technologies will allow companies to develop products and services that will help them "undercut rivals, get closer to customers and disrupt the usual ways of doing business".

Corporate information chiefs should play an active – if not leading – role in their companies' strategies for creating opportunities out of digital disruption, he says.

"When I talk to a chief information officer, I find a clear sense that their business won't survive the external threats from other disruptive businesses if someone doesn't enable it to take advantage of data and digital tools," he says.

"Since they are often the people in their company who best understand the data it holds and how it can use new tools, there is a clear role for them there."

Many technology executives are held back by old ways of thinking about procurement, Mr McQuivey says. "Their job has always been to spend money in the smartest ways possible, so they are wrapped up in thoughts of vendor management, procurement best practice and approval processes," he says. That makes it difficult to support fast, short, low-cost experiments in new ways of doing business.

Illustration: Oivind Hovland

Also, many of the tools that might underpin the most disruptive products and services – or at least enable companies to explore their possibilities – are now available in ways that do not fit traditional IT procurement methods. Simon Orebi Gann, a former chief information officer at BP and other companies during his 30-year career, says: "Sometimes wholesale shifts take place that so completely change the ground rules that companies can take advantage of technologies they would never have had access to before."

The proliferation of third-party data centres, which allow companies to tap into sophisticated IT resources without having to own or manage the equipment themselves, is one such shift. "The technology and the timing have come together in ways that represent a step-change in opportunity for businesses," Mr Orebi Gann says.

Beyond that, hardware and software resources are now made available by some suppliers on remotely hosted servers – the cloud – on a totally on-demand basis, making experimental prototypes of services easier to model and test at low cost.

Customers, meanwhile, are more accessible to companies, thanks to smartphones and tablet computers, and are comfortable giving feedback via social networking sites, creating rich sources of "big data".

Information coming from connected customers and devices increasingly can be analysed using open-source software running on cloud-based hardware, rather than costly on-site information storage and analysis systems.

But access to such tools is only part of the picture, says James Woudhuysen, professor of forecasting and innovation at De Montfort University in the UK.

"There is a real danger that in all this talk of disruption, what gets neglected is the research and development work necessary to deliver anything that might truly be considered new and that really meets customers' so-called 'needs'," he says. "There is a process of searching and sieving and judgment that needs to be conducted."

Researchers at McKinsey, the consultancy, echo his view. In a study released in August 2013, they found that while business leaders are "bullish on digital", with 65 per cent of the 850 senior executives surveyed saying digital technologies would increase their companies' operating income over the next three years, technological challenges were considered a minor factor in the success or failure of these deployments.

Factors thought to be more important were senior management interest and attention, programme management and the compatibility of an organisation's structure and goals.

Such findings underscore the shift in the responsibilities of IT leaders, as a report this year from IT research company Gartner noted. "Digital technologies provide a platform to achieve results, but only if chief information officers adopt new roles and behaviours to find digital value," wrote analyst Mark McDonald.

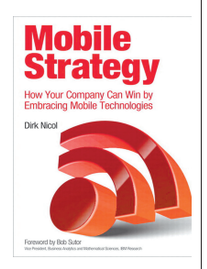
"Without change, chief information officers and IT consign themselves to tending a garden of legacy assets and responsibilities."

A handy guide to rocky terrain ahead

MOBILE STRATEGY

How Your Company Can Win by Embracing Mobile Technologies
by Dirk Nicol

Published by IBM Press
£18.99/$29.99



It is unusual to come across a book about developing a company mobile strategy and not be disappointed by it. Such efforts often stray either into technobabble or are peppered with the generalities and jargon of management consultancy.

Dirk Nicol avoids both and provides a genuinely useful manual for executives pondering the complexities of enterprise mobility. This no doubt reflects his experience as a programme director for IBM's mobile strategy and product management.

The forward by Bob Suitor, a vice-president of business analytical and mathematical sciences at IBM, points out that a successful corporate mobile strategy is about more than handing out the latest smartphones or tablets to staff, something many companies have yet to realise.

He also notes that, "mobile is not just about the latest smartphone or tablet, or 3G vs 4G vs WiFi, or even how big your device's app store is compared to mine. The societal changes being driven by the significant use of highly programmable and interactive mobile devices with fast connectivity are affecting healthcare, banking, retail, mining and almost all industries with which we engage."

As the author says, mobile's opportunities are enormous – he goes so far as to say its development is a milestone in computing, of the same magnitude as the mainframe, the PC or the internet's commercialisation.

Mr Nicol underlines the fact that many companies considering harnessing mobile's power face considerable challenges, not least the constant flux the technology seems to be in, while customer – and employee – expectations are often sky-high.

Also, and perhaps most importantly, "security and privacy [is] a fundamental issue because [a] device contains a mixture of personal and corporate data".

Mr Nicol identifies the main question executives have as "How do I get started?" and the rest of his book is mostly a practical guide to answering that question against the backdrop of trends such as the consumerisation of IT – or bring your own device, to work – though I would have liked a more detailed examination of the use of tablet devices in enterprises and by clients.

The author argues that the first step to developing a successful mobile strategy is to define what having one can add to the value of your business and says, "in the end, mobile technologies can transform business in untold ways. However, the potential value can be lost if you do not execute correctly."

For example, the smartphone, he says, has three important capabilities that, when brought together, can become transformational: contextual interacting (enabling a user to interact with other people, their environment and data); mobile intelligence (having powerful computational resources when you need them); and engagement (delivering an easy, helpful user experience).

The author explains the implications of these attributes in chapters that consider aspects such as frameworks, development, security and the management needed to bring about mobile business transformation, as well as one on international considerations.

Each chapter follows a similar simple structure: an introduction; key considerations for a mobile strategy; and a conclusion summarising the main concepts. It is a structure that guides the reader through what otherwise could be confusing territory.

My favourite section comes almost at the end, where Mr Nicol briefly outlines specific case studies including Air Canada, Visa and Tesco's Home Plus service in South Korea, although these would have benefited from being longer.

But, overall, this is an easy book to read, and it manages to address complex issues of developing a mobile strategy without being overly technical.

Paul Taylor

Companies urged to take note of big data's wider social benefits

Analytics

There are plenty of non-commercial uses for information, says *Maija Palmer*

In June 2012, Orange, the mobile telecoms operator, threw down a challenge to the scientific community. It provided access to anonymised records of mobile phone traffic in Ivory Coast and asked whether research teams could suggest productive ways in which the information could be used to help developing countries.

More than 260 proposals came in, ranging from improving the public transport network to monitoring carbon dioxide levels.

First prize in this Data for Development challenge went to a team from the University of Birmingham in the UK. It proposed using the data to monitor how diseases spread throughout the country, leading to better ways to contain epidemics.

The number of proposals indicates the huge variety of ways in which companies could be harnessing big data. But if you speak to big data experts, they all complain about the same thing: although 82 per cent of large companies are planning or running big-data projects, most of these are similar and are often simply about how better to target customers to increase sales.

Viktor Mayer-Schönberger, professor of internet governance and regulation at Oxford university in the UK, says: "Most of the companies I talk to think about how to use data for better targeted marketing. They don't understand they have a much bigger opportunity."

Theo Priestley, vice-president at Software, the German IT company, agrees: "People are still thinking very small. We have lots of data, but don't know what to do with it. We don't even know what questions to ask."


Disease monitoring: data from mobile operator Orange is being used to help suffering communities in Ivory Coast Getty

Prof Mayer-Schönberger says companies struggle to use big data well, because the information that is being generated requires a very different mentality from previous forms of data analytics.

Consider, for example, one of the most famous big data projects: Google's Flu Trends. This involved using the terms people search for on the internet to see where influenza was breaking out, and recording epidemics a full two weeks ahead of the Centers for Disease Control and Prevention in the US.

The idea that people might search more for certain terms, such as medical expressions, when they fall ill is not a new one, says Prof Mayer-Schönberger.

Other scientists were already looking for correlations before Google's Flu Trends site was launched, he says, but because Google took a different approach, it got more useful results.

Where other researchers had tried to guess likely search terms that would correlate with flu and then tested them, Google ran tens of millions of possible search terms through its systems, in hundreds of millions of combinations, until a handful of terms emerged that correlated with the most flu incidents.

Frank Buytendijk, an analyst at Gartner, the technology research company, says this is the difference between deductive reasoning – the top-down approach of starting with a hypothesis and testing it – and inductive reasoning, where conclusions emerge from the data themselves.

Second, the term "big data" is an unhelpful misnomer, as it is not always big and is often not really about data. The trouble is that "contextualised inductive analytics" – a better description for what is happening – is not as catchy, says Mr Buytendijk.

Volume is only one of the so-called "three Vs" of big data, he says, and the other two, variety and velocity, are possibly even more important.

Big data technology allows companies to combine information sources in a way they could not do before – analysing photos, text and videos together, for example.

One European railway operator is testing whether this could be used to get the security cameras on train carriages to count the number of passengers inside, says Mr Buytendijk. The system would be able to tell people waiting on platforms how full each carriage was and whether it would be better to board, say, the emptier carriages at the back rather than the busier ones at the front.

The same technology might count people going in and out of a supermarket and alert staff to open more tills when footfall was high.

Similarly, about 350 aircraft operated by Lufthansa, the German airline, have been equipped with software that collects meteorological data during flights. Even with this small number of planes reporting, the airline says it has improved its weather forecasting accuracy by 5-7 per cent.

"Big data does not have to be just about retail or sales, or about social media," says Mr Buytendijk. "It could be about process improvement."

For example, in 2009 a Massachusetts Institute of Technology study attached sensors to pieces of rubbish discarded in Seattle and tracked where they went.

It discovered that some recycling was travelling to the other side of the US for disposal. In one case, a printer cartridge travelled 6,152km, revealing that the carbon footprint created by transporting much of the waste negated the economic benefits of recycling it.

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