TCS BαNCS Research Journal

Volume 2
Issue 4

Re-Imagining Payments

TATA CONSULTANCY SERVICES

TATA

Société Générale wanted to enhance productivity by 40%.

They found a certain way.

Société Générale is a leading provider of payment and cash management services to large corporate houses around the world. To stay ahead of its competitors, Société Générale needed to adapt to the regulations and changing landscape of European payments. They needed a unified payments processing platform created by consolidating and centralizing the back-office processing of payments as well as cash management products and services. Tata Consultancy Services (TCS) implemented TCS BaNCS, an integrated product suite for financial services, to develop a centralized platform for unified payments. As one of the world's fastest growing technology and business solutions providers, TCS enabled a Pan-European payments platform for Société Générale with multi-country, multi-currency and multi-product capabilities which lead to an increase of 25% in STP rates and improvement in productivity by 40%.

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Neophyte's serendipity

(Beginner's luck)

Be it a seasoned banking whiz or a business head at any bank—large or small, the pressure to get to grips with the changing times is growing at an ever-increasing pace. To begin with, the challenges posed by multiple delivery channels, disintermediation, dynamic business models, compliance with global and local regulatory changes, among others, are having profound implications on banks today.

At Tata Consultancy Services, we believe that the need of the hour is to '**Uncomplicate**'.

To cut through these perplexing and all-encompassing demands with a time-tested, market-ready and move-as-you-grow solution, TCS BaNCS—at any time and any place. With the right mix of interactive, intuitive and instantaneous technologies that deliver flexibility, agility and greater operational control, this universal financial services platform can help your bank drive customer growth, reduce Total Cost of Ownership(TCO) and enhance new product development—all together. How can we make such a promise? Some of our success stories will tell you how. TCS BaNCS enabled a leading bank in India with a network of over 18,400 branches, 25,000 ATMs and over 261 million customer accounts with a unified technology platform to create one of the largest homogeneous banking networks in the world. On the other hand, TCS BaNCS re-engineered a Taiwanese Bank with a network of 101 branches to run 24/7 with 99.9% up-time, bringing down its TCO by a staggering 58%. TCS BaNCS has scored leadership consistently in industry analyst reports.

Now, don't you think it is time to uncomplicate?

FOREWORD

Omni-consumers, Omni-commerce and Payment skeletons…

The Payments domain is going through immense transformation globally, and it is one area where innovation and re-imagination is taking place. Firstly, it is also perhaps the most noticeable area in which non-banking firms are positioning themselves to take a share of banks' wallet, resulting in banks becoming determined to protect their turf. Secondly, interest rate volatility implies that banks depend increasingly on fee based income as opposed to interest margins for growth, leading to banks conceptualizing Payments as a "Product" as opposed to being consumed by clients as a granted "Service". Thirdly, a whole new or different way of doing business is emerging, i.e. that of 'alternate/digital currencies'.

As if the above drivers are not enough, (a) global or regional transaction flows are on the rise and there is a definite need for banks to support their clients with offerings such as cash concentration, FX and cash management type of offerings to retain loyalty; (b) the rise of point-of-sale/debit card transactions, mobile payments, financial inclusion and government payments are placing enormous challenges on the availability of systems and infrastructure resilience; and, (c) regulations and market initiatives are playing their part in the form of SEPA, FATCA and AML/KYC.

In this context, banks have been at the forefront with the aim to renew their technology options and excel in the race to offer just-in-time value. They are also reconfiguring their skeletal (legacy) infrastructures to support availability and resilience concerns. Some are leveraging the cloud for on-demand processing capacity and to manage peaks beyond a threshold; some are consciously creating a payments hub kind of infrastructure to move volumes away from core banking systems; and, a few others are segregating high value and bulk payments.

Irrespective of the above, a common thread we are seeing is increased "surveillance" and "intelligence" on payment transactions with the objectives of understanding client behavior better and thereby creating instantaneous and compelling offers for customers. These re-configured infrastructures will not only help the bank understand client behavior better but also make the client feel understood. Unless banks do this, they are bound to create high levels of customer dissatisfaction. Let me

share a real-life experience to illustrate this very point. On one of my trips abroad to an exotic (or forbidden) country, I discovered to my horror that my bank did not honor my card transactions there. I thanked the Almighty that I had carried another card with me. My efforts to reach out to my bank proved futile when I was told that I should have informed them about my impending trip before I left the country. Now, well, for this, did they point me to a web page or a branch when I had used the very same card to process my tickets and hotel accommodation before my trip? In fact, they should have sold their travel insurance or FX to me. A lot can be gleaned by mining payment transactions. Period.

So, what are we doing at TCS Financial Solutions in this regard?

We believe that the onus is on banks to ensure that they extract as much value as possible from the digitization and regulatory compliance related technology investments they make and to look at the instant benefits of enhancing customer relationships. Partnering with alternative payments solutions providers is definitely an attractive option for banks and is a much debated topic today.

At TCS BaNCS, payments, cash management and transaction banking have been and continue to be a focus area of our product research and development activities. We evolved our payments processing capabilities from a solution that processed high value, international SWIFT and domestic RTGS payments to a standalone payments engine today-- one that manages a variety of domestic and cross-border payments and integrates with commercial banking and financial institutions as a centralized payments processing hub at our customer organizations in the advanced markets. Needless to say, such an offering is helping banks gain a holistic view of their liquidity and that of their customers.

We have also created innovative apps on the retail side, be it for clients on the go or for small businesses such as restaurants or multi-brand boutiques using Surface and Touch technologies. Such solutions seamlessly help integrate the ecosystem and its stakeholders and help deliver deliver ultimate client convenience. We have adopted cutting-edge tools and hybrid and development infrastructure in our pursuit to remain current and be reflective of omni-changing device features.

We are proud to partner with some leading institutions in creating world-class solutions, in the form of:

- a pan European Payments and Cash Management solution for Societe Generale, which allows operations of 7 European countries on a single application and database;
- a multi-market Single Application Payment Services Hub at American Express to enable SEPA Compliance for payables and receivable instructions (Credit Transfers and Direct Debits) well ahead of compliance deadlines in the regulatory market place;
- a first-of-its-kind Enterprise Payments Hub for AXIS Bank in India, which enabled the bank to initiate unique offerings;
- an end-to-end Money Movement platform at Morgan Stanley Smith Barney in USA for seamless money transfer among accounts within the firm and with other banks over NACHA; and,
- a partnership with Mozido in the mobile payments space.

No doubt, we live in exciting times relative to payments. TCS Financial Solutions is closely watching market developments, and continues to invest in intuitive, interactive and integrated solutions to collaborate with our partners and customers in generating true value in the payments space.

N. Ganapathy Subramaniam (NGS as he is called) heads TCS Financial Solutions, a division of Tata Consultancy Services Limited (www.tcs.com/bancs). Part of TCS and the Indian IT Industry for more than 25 years, NGS has had numerous opportunities to perform a multitude of roles in delivering solutions to TCS customers globally, and especially, in the Banking and Financial Services sector. As a part of his current role, he is responsible for steering the financial products business, under the brand name, TCS BaNCS, globally. TCS BaNCS is a suite of products covering the banking, capital markets, and insurance domains.

NGS in-depth knowledge about IT trends and systems policies of leading global corporations, gleaned from international exposure, is evident in the leading role he has played in a number of mission-critical projects for the financial services industry. He actively participates in banking, technology and business forums in addition to specific knowledge streams in Straight-Through-Processing, risk management, front-office systems, back-office processing in capital markets and Six Sigma orientation.

N Ganapathy Subramaniam
President – TCS Financial Solutions
Tata Consultancy Services

EDITORIAL ADVISORS

Dennis is the Chief Marketing Officer for TCS Financial Solutions – Tata Consultancy Services (TCS) Strategic Business Unit 100% focused on leveraging all of TCS business applications to the financial services marketplace around the world. Dennis is responsible for establishing and enhancing TCS Financial Solutions brand equity as a leading specialty IT solutions provider to the global financial services industry. His responsibilities include the entire range of marketing, communications and research activities including branding, media & public relations, industry analyst relations, lead generation, advertising, direct & telemarketing programs, collateral & websites development and event execution.

Dennis Roman
Vice-President
TCS Financial Solutions

Nitin works in the Product Management function of TCS BaNCS and is responsible for the areas of Payments Processing , Corporate Cash Management and Transaction Banking. Out of his 20 years of experience in TCS, he has spent more than 15 years working with TCS BaNCS. During these years he has worked across many functions in the product lifecycle. With a special interest in the payments domain, he has worked on building and implementing Payments and Cash management solutions around the TCS BaNCS product. This includes a refresh of the TCS BaNCS solution based on ISO20022 standards. He has worked closely with customers across multiple countries in North America, Europe, MEA and APAC. At present, he is engaged in a program with a leading banking institution to build a first-of-its-kind Payments Hub in India. He is a keen follower of Payments related innovations and evolution across the industry.

Nitin Sirohi
Principal Consultant
TCS Financial Solutions

EDITORIAL

A Finnish company, Uniqul, hopes to turn your face into a unique PIN and make it the mode of payments transactions in the future.

Paypal's owner recently tweeted – "My card got skimmed in the UK, ton of fraudulent txns. Wouldn't have happened if merchant accepted Paypal"

These examples illustrate—and reiterate--the arrival of a new payments ecosystem wherein large scale, game-changing disruption is taking place.

- Where cash no longer is king, and digital payments (and digital money) rule
- Where you can manage money with your face, or the sound of your voice, the touch of your finger, or a wearable device
- Where a host of new players in addition to banks and retailers are playing transformative roles

Disruptive innovation of any kind inevitably results in more convenience, leading to a better way of doing things, or creating newer business models and new players. In the payments ecosystem today, it is delivering on the promise of speed and simplicity.

This edition of the TCS BaNCS Research Journal is focused on exploring the many ways in which the payments industry is going through RE-IMAGINATION.

When traditional, big firms don't rule anymore, there is a redefinition of the way financial relationships are looked at. We explore this aspect in greater depth in the article on Payments Transformation.

Brett King, a leading evangelist of digital banking and Founder, CEO of Movenbank, whom we interviewed for our TCS BaNCS Research Journal, says that for those banks wanting to stay ahead of the curve in this space, it is not about innovation so much as a more compelling user experience wrapped around a payment. An interesting point he mentioned that I found worth pondering about was that partnering forces you to think of user experience in a big way. And, this is what will happen when banks and alternative payments providers collaborate.

Gareth Lodge, Senior Banking Analyst from Celent, takes us through his experiences in the challenges--and many nuances--of creating a true, real time payments system. We also delve into how the definition of a payments transaction has morphed into not just completing a transaction within a stipulated time but also having all information about the payment reach the recipients and regulators instantaneously. This is what ISO 20022 standards are seeking to achieve.

The advent of biometric technology and the increasing use of wearable technology have resulted in biometrics products creating a positive image in both, the minds of payments players and users. When one has to remember ten passwords, and the easiest and most used password is, 'PASSWORD', it is only natural that digital footprints are tampered with. The more integrated the applications are, the easier it is to create avenues for fraud. The article on Biometric Technology takes you through the steps being

taken to curb fraud from a global point of view.

With digitization assuming significant thrust today, where is the micropayments industry headed? Our article on the evolution of micropayments illustrates the many factors that affect (and, sometimes, impede) mass adoption. Digital micropayments, in many ways, are spurring innovation to circumvent cost and complexity.

While we were exploring all these changes happening in the payments industry, one of the most contentious and controversial measures in the form of the Volcker Rules came into effect on April 1, 2014. It was only natural that we took a small deviation and understood what it meant. By curbing banks from trading for their own gain and allowing only what is designed to lessen bank risk and serve clients, the ruling is meant to curb speculative behavior akin to the run-up to the financial crises. But does it have the ability to differentiate between proprietary and legitimate trading functions of a bank, thereby, reducing incentives to gamble, or have harmful effects on liquidity resulting in increased market volatility, remains to be seen.

To sum up… total customer experience is driving disruptive innovation in the payments space. Services and solutions that assure customers that financial services players are listening to their needs and gathering insights to create relevant, available and contextual solutions are what will thrive in this hyper-connected era.

Happy Reading!

Anjana Srikanth

Editor/General Manager
Marketing, Communications and Research
TCS Financial Solutions

what's inside...

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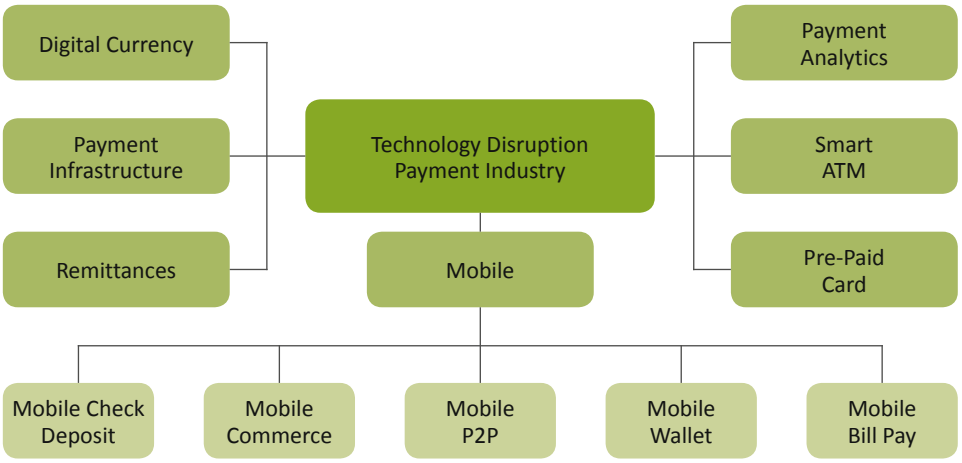
Impending Disruption in the Payment Marketplace - Should Retail Banks be Worried?

- A Validation Using Porter's Five Forces Framework

The decibel level in the payments industry is high with payment related innovations becoming commonplace. Ubiquitous mobile devices, with always-on internet access, supported by a number of path breaking technologies are providing a platform for disruption in the payment marketplace. Perpetually connected customers are quickly reclaiming control of the banking relationship with how and who they do business with.

There is friction everywhere in the payments industry with customers wanting faster and easier ways of doing banking. They are demanding a transparent and convenient payments experience that is efficient, secure, cheaper and faster. Making real time payments is still a pipe dream for many in the advanced countries. Excessive



transaction fees and delayed payment settlements continue to be big sore points. New technologies led by mobile computing, in particular, are bringing to light these glaring inefficiencies.

Is the payments industry in a dire state? It depends. For many of the newcomers, this is an exciting place to be in, as there is an opportunity to solve some of the perennial problems facing the industry through new, digital innovations. For a retail bank, however, there are more questions than answers. Are these innovations hyped? Will they move mainstream and disrupt the industry? Should banks be worried about it and what should be their response?

While it is not easy to predict if any of these could disrupt the payments industry soon, it is also certain that ignoring them will be at one's own peril. But one thing is clear - a correct understanding of this consumer-led, technology-driven payments landscape and how it will pan out in the future needs to be factored in while formulating a payment strategy.

Analyzing the payments industry using Michael Porter's Five Forces Framework

Porter's "Five Forces" theory is a popular framework for industry analysis and strategy development, designed by Harvard professor Michael E. Porter, which posits that competitive intensity and attractiveness of any market is determined by the bargaining power of customers, the threat of substitute products or services, the bargaining power of suppliers, the threat of new entrants and rivalry among existing competitors. By analyzing these forces in relation to the payments industry, one can gather a clearer picture of the competitive environment and how the current innovations collectively and separately impact its future.

Force #1: Bargaining power of customers

Consumers today live in a world that is always connected, with "always on" messaging and social networks. They expect banking to work in that context. Consumers are also rapidly adapting to the new digital-led banking experience.

From a mainstream banking point of view, it is not a satisfying experience with detailed paperwork, manual interventions, longer processing time and excessive fees. Laxity in security and frequent downtime deny a 24x7 banking experience.

Payments have become expensive, time-consuming and opaque. High churn, low switching costs and a plethora of substitute solutions from alternate providers are attracting consumers to these newer players who are providing an alternate digital experience.

The bargaining power of buyers is VERY HIGH.

Force #2: Threat of substitute products or services

The mobile phone has become a disruptive payments platform for new innovations and is attempting to replace cash and checks. Some of the recently launched products have the potential to disrupt the payments industry, namely P2P payments, mobile wallets, mobile check deposits, pre-loaded cards, digital currencies, smart ATMs, among others.

P2P payments: After registering with a bank or a trusted third-party organization, money transfers can be

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made using just the receiver's e-mail address or mobile number. Major players in the fray include PayPal, Square, Google Wallet, Ribbon, Dwolla and ClearXchange. Paym was launched in the UK recently with nine participating banks to facilitate money transfers using just a mobile phone number. Similarly, Tencent and Alibaba are battling it out in China. Vodafone led M-Pesa is a successful mobile money system for the unbanked in Kenya, which lets customers pay bills, transfer money without any bank involvement.

Mobile wallets: Contactless payment technologies allow banks and other providers to launch digital wallets that can potentially replace physical wallets and also provide a number of add-on services like ticketing, couponing, loyalty offers, payments and banking. A number of non-banks like Google, PayPal, Square, Starbucks, Isis a joint venture by AT&T, T-Mobile and Verizon among others, have taken the lead in launching the mobile wallet.

Mobile check deposits: Mobile check deposit is a technology that replaces the inefficiencies prevalent in the world of paper checks. Customers deposit a check into their bank accounts by snapping a photo of it with a smartphone. A 2012 Javelin report found that mobile check deposits can cost the bank as little as four cents per check, while the traditional branch-based deposits could cost anywhere between 75 cents and three dollars per deposit. According to Mitek, around 11% of US consumers have already used mobile check deposits.

Pre-loaded cards: Reloadable prepaid cards sold at retailers and banks function like debit cards without the checking account, and are targeted at people who are unbanked, as well as those who would like to avoid high bank fees. These cards can be used

A recent Javelin report found that mobile check deposits can cost the bank as little as four cents per check, while the traditional branch-based deposits could cost anywhere between 75 cents and three dollars per deposit.

Countries like Australia are building new payment platforms that will transition to a real time system. Similarly, the Financial Conduct Authority is planning to open up the UK payment sector to new companies to improve competition.

to withdraw cash at ATMs, purchase online and, at supermarkets, reload cash, with lower fees than that of bank accounts.

Digital currencies: A digital currency is a way to exchange money in real time without any chargeback and behaves literally like cash. Bitcoin is one of the popular digital currencies without any physical borders, national sovereignty or middlemen and is an internet-wide payment system where transactions either happen with no fees or very low fees. Digital currencies have the potential to disrupt the high-fee world of banking through new ways of paying for goods and services.

The above innovations, amongst others, address the current inefficiencies in the payments marketplace and can provide a superior digital experience to consumers.

The threat from the substitute products is VERY HIGH.

Force #3: Bargaining power of suppliers

The several decade-old payment infrastructures especially in advanced countries are an impediment to supporting real time payments. There is a lack of transparency in the current settlement process with the value of free float enjoyed by banks continues to remain very high.

Unable to support innovation, various stakeholders are looking at alternate approaches to improve the current system. Countries like Australia are building new payment platforms that will transition to a real time system. Similarly, the Financial Conduct Authority is planning to open up the UK payment sector to new companies to improve competition. The Federal Reserve is also planning to overhaul the U.S. payments system to achieve faster payments than is currently offered by ACH. On the other hand, the emerging market countries have leapfrogged with state-of-the-art national payment infrastructure and are able to provide a better customer experience.

Without a modern payments infrastructure at banks, the market is open for new players for greater disruption, while also rapidly making the current systems redundant. A number of players are already innovating in this area such as Dwolla, Square, PayPal, ClearXchange and virtual currencies like Bitcoin, all with the capability to build an alternate payments infrastructure.

The bargaining power of suppliers is HIGH.

Force #4: Threat of new entrants

The payments industry has become a hotbed for innovation with new players wanting to upstage the traditional ones and dominate the market quickly. They come from varied industries ranging from startups, telcos, card companies, supermarket chains, technology companies and de-nova banks, offering simpler functionality through an exciting digital experience that appeals to everyone including the millennials. Many see greater opportunities in the payments data to generate advertisement revenues. A number of these players are today offering everything from debit cards, checking and savings accounts to money transfers and small business lending outside of traditional banking.

Cell phone carriers are pushing hard into mobile payments as a natural extension of their services e.g. Isis, Weve a similar venture of Vodafone, O2 and EE among others. Vodafone is successfully replicating the M-Pesa model in the emerging markets and even in Europe.

Square, Stripe, YapStone, Xoom and PayNearMe lead a crowd of startups, many aiming to simplify how money changes hands. Giants such as PayPal, Apple, Amazon and Google top a list of big companies that already have substantial payments operations, with Facebook recently applying for an e-money license to enter the remittances market.

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Supermarket chains like M&S, Sainsbury and Tesco are becoming financial services providers offering products such as credit cards, saving accounts, personal loans and insurance, among other services.

> Despite the looming threat, banks continue to possess inherent strengths. They have large customer bases; vast amounts of customer and transaction data; and strong capabilities to execute payments securely – all of which are difficult to replicate quickly by newcomers.

MCX , a consortium formed by retail giants Wal-Mart, Target, Home Depot, 7-Eleven, Best Buy, CVS, Sears and Shell will bypass the traditional payment networks altogether. Starbucks's spectacular success with its mobile payment application, with several million active users already, is an eye opener. Digital currency Bitcoin and its offshoots are pursuing new ways of settling money globally and on a larger scale.

The threat of new entrants is VERY HIGH.

Force #5: Rivalry amongst existing competitors

The competitive rivalry in payments has intensified over the past year with banks, card companies, telcos, de-nova banks, payment companies, supermarket chains and large technology companies all trying to engage with the consumer, with traditional players trying to hold on to their customers in spite of the many frictions that exist in their offerings.

Card companies like Visa, MasterCard, and American Express are looking at opening up their market through new offerings based on pre-paid cards, mobile wallets, among others. PayPal continues to dominate the payments settlement business. clearXchange, a network of four of the seven largest U.S. banks operates a P2P network for its member banks, while Western Union and MoneyGram maintain their domination in the remittance business.

The rivalry amongst existing players is VERY HIGH.

What should banks do?

As one can see, Porter's five forces analysis implies an approaching digital disruption that could fundamentally transform the payments industry. A number of players from diverse industries are trying to influence the outcome of this marketplace in the backdrop of a rising

Build fundamental capability to support multiple contexts of customer fulfillment irrespective of what form factors the future may take hold (Google Glass, smart watches etc) thereby helping consumers make optimal decisions on what to buy, where, when and how to buy it – whether it's dinner, a car or a new home.

customer preference for greater self-service in an increasingly integrated digital and physical world. And banks are running the risk of being relegated to back-office utilities thereby losing their customer touch points.

Despite the looming threat, banks continue to possess inherent strengths. They have large customer bases; vast amounts of customer and transaction data; and strong capabilities to execute payments securely – all of which are difficult to replicate quickly by newcomers. Much will depend on their ability to leverage these competitive advantages by providing greater customer fulfillment through rapid digital adoption. Banks should consider the following.

1. Build strong capabilities in (a) customer data consolidation (b) real time channel interfaces and (c) rapid creation of new payment products through a modern open banking platform.

2. Digitize business processes quickly, be it customer communications, channel interactions, marketing and selling, amongst others.

3. Build fundamental capability to support multiple contexts of customer fulfillment irrespective of what form factors the future may take hold (Google Glass, smart watches, etc) thereby helping consumers make optimal decisions on what to buy, where, when and how to buy it – whether it's dinner, a car or a new home.

4. Continuously evaluate new technologies to generate innovative ideas for a superior digital customer experience, through dedicated innovation labs or partnership models.

Finally, each bank will have to pick a strategy that leverages its strengths and supports its business goals, but also accept the changed context that they have to strategize for. In the meantime, consumers are embracing mobile in large numbers and are clearly showing their preference for the convenience and simplicity of transacting on the mobile anywhere, anytime and on any device. Banks need to rise up to that occasion and delight their customers in this new, digital world.

Thomas Mathew
Principal Consultant, TCS Financial Solutions, Bangalore

An Interview with Brett King on the Future of Payments

Brett King is a bestselling author, The American Banker's Innovator of the Year for 2012 and the founder of the direct mobile bank, Moven. A global thought leader in financial services and customer experience, King is a sought after-expert on innovation, technology disruption, customer experience and channel distribution strategy. He publishes regularly in his role as industry advisor on the Huffington Post, Internet Evolution, SeekingAlpha, American Banker, FinExtra and his personal blog Banking4Tomorrow.com and hosts a weekly radio/podcast, Breaking Banks with Brett King on Voice of America.

We present here an interview with Brett King, where he shares his insights about the payments industry.

In your first book "BANK 2.0", you talked about disruptive customer behavior, the rapid technology shift and emerging new banking models. In the subsequent book titled, "BANK 3.0" you covered latest trends that are redefining financial services and payments and why the gap between customers and financial services players is rapidly growing, leaving massive opportunities for new, non-bank competitors to totally disrupt the industry. In this context, what should traditional banks, in particular the payments industry, be doing to counter these developments and stay ahead of the curve?

The toughest thing to counteract or circumvent as an organization in the banking or payments space is the inertia and friction built into the current system. I think it is fair to say that a lot of banks see the changes coming down the pipeline, but they have valid concerns about turning their business on its head until it is absolutely necessary. Unfortunately, this is the same approach that organizations like Borders

As payments become faster, simpler and more efficient, the challenge will be payments simply won't be differentiated in and of themselves. Staying ahead of this curve is not about innovation so much as a more compelling user experience wrapped around the payment.

and Blockbuster took to disruption in their industry, and they learned (as banks will) that these changes can occur so rapidly that if you haven't already committed to the future direction of the industry, you rapidly lose relevance. Let's be clear, banks can't counter these developments, they have to adapt – and that's the hard bit.

In the banking space the most recent acquisition of Simple by BBVA is an example of the sort of approach to this problem that we're more and more likely to observe over the next 3-5 years. As branch revenue retreats and the economics of branch banking starts to fail, banks in particular will have a real crisis of identity, and won't be in a position to build from scratch, so acquisition and investment in new technology developments and start-ups is a real possibility, but only for the larger institutions.

For payments companies, the challenge will be the inherent value of the payment network shrinking. As payments become faster, simpler and more efficient, the challenge will be payments simply won't be differentiated in and of themselves. Staying ahead of this curve is not about innovation so much as a more compelling user experience wrapped around the payment. If the payment becomes invisible, the priority shifts to what happens before and after the payment rather than the payment itself. This requires broad collaboration.

There is also the opinion about the alternative payments industry requiring more regulation, especially with respect to non-banking players. What are your views on this? Should banks also be opening up their platforms for co-creation with third parties?

Banks have to open up their platforms for collaboration. We don't need more regulation frankly; in fact, in the US where Moven operates we need thinner regulation. The problem with regulation now is that it is so complex that it tends to reinforce old structures, product silos and approaches which prevent innovation as a sector. These is why 2/3rds of all checks are still written in the United States, and why the US has been so slow to adopt the EMV standard around card payments – both putting them 10 years behind more progressive markets. The EU (European Union) has an advantage in that the need for regulation to fit across the entire union has actually forced regulators to simplify, rather than add burden and complexity.

Friction is the big killer in all of this, and partnering forces you to think about the user experience in a fundamentally new way---one that you may not have come to within the confines of a bank. The problem is that banks tend to think like banks, and not like start-ups. Start-ups, however, often completely underestimate the regulatory burden and risk and compliance requirements. Thus the two need to work together.

Global Mobile Payments transactions are expected to rise to $945 billion in 2015 (IE Market Research). We are witnessing increasing growth in real-time payment tracking, development of new applications for mobile devices, mobile wallets, P2P payments, NFC & QR code adoptions, and so also component-driven platform-agnostic technology architecture. What new technologies do you see becoming a part of the mainstream payments space in the coming years? What should banks do to re-engineer their payments processing and stimulate innovation for increased customer intimacy?

The recent shift towards Host Card Emulation and Tokenization is creating a shift away from the card as an artifact, and from the PAN (Personal Account Number) as an identifier. Things like a signature on the back of a plastic card with a mag stripe make very little sense moving forward. This is not about shoving a debit card into a mobile wallet; however, this is about creating value day-to-day for an account holder. We're just starting to see this pivot in thinking.

> Friction is the big killer in all of this, and partnering forces you to think about the user experience in a fundamentally new way---one that you may not have come to within the confines of a bank.

When it comes to customer intimacy, then the ability to offer context to payments, or give advice in real-time, will be a real staple of the future of banking and payments. Banks need to think about their processing capability as a messaging architecture around the payment, not just a processing of payments.

Moven stands for values that empower your customers by helping them take control of their financial future and "living better". It is considered to be a customer platform offering insights about money management and not a Bank. You use social media and gamification to encourage saving and other positive behaviors. Can you share your vision for Moven with us?

Today the basic current account offers limited value – it is a secure store for your cash, and gives you the utility to move money around. However, it's limited to just about that.

If you want day-to-day engagement on a smartphone, the value has to be much more significant than a simple value store or a payments artifact. However, whatever comes next has to also satisfy another critical goal.

Margins on basic bank accounts have been declining for years, to the point where almost half of US checking accounts are unprofitable today. The solution lies in creating an app that customers use everyday, one that delivers ongoing value, so that revenue moments can be easily presented, and executed in real-time.

Rather than compete to be the primary bank, Moven is designed to be the Primary Financial Application, a tool consumers can use every day for managing their money. Instead of trying to incentivize customers to swtich banks, and then trying to up-sell other products, Moven's call to action is simply to download the app. With mobile sign-up, funding and IDV, onboarding is low friction, low cost and immediate.

Moven starts by training users to use the app daily (our best customers use the App 3-5 times per day) through real-time notifications and financial wellness insights.

Within first 90-days, customers shift their primary discretionary spending to Moven (see Typical Moven Deposits), then armed with behavioral data, aggregated data from other bank accounts and credit cards, location and social media inputs, Moven adapts stimulating smart spending and savings behavior.

We want to redefine the bank account as something you download, with day-to-day value. Where a branch has no role or value…

Brett King
Founder, Moven Bank and Author of Bank 3.0

Cathay United Bank wanted to modernize core banking and increase operational efficiency.

They found a certain way.

Cathay United Bank (CUB) is one of the leading retail and corporate banks in Taiwan. As a part of their core banking modernization project, CUB wished to focus on five primary objectives to drive growth and reduce overheads; namely, speed up transaction time, accelerate time to market for new products, provide real-time management information, improve operational efficiency and reduce overall maintenance costs. Tata Consultancy Services (TCS) implemented its Core Banking Solution from TCS BaNCS, a multichannel, industry-recognized solution to help transform CUB's transactional banking needs. TCS BaNCS helped CUB consolidate multiple systems and establish optimal business processes with the help of the flexibility afforded by the new, modularized and parameter-driven core banking solution. Furthermore, CUB has since then significantly increased the number of accounts managed from 6 million in 2006 to 14 million in 2014, while also boosting daily transaction volumes to 4.5 million from 1.2 million.

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Real-time Payments Getting Real

As an analyst, we try to balance our time by gazing out to the horizon and anticipating what might happen in the future and against focusing on the near term, advising on making the right decision, today. As such, there are a number of trends that we, at Celent, have correctly predicted, such as the inevitable move in the USA to adopt EMV, and the rise of payment services hubs. There are other trends, where we have perhaps called the trend too soon – adoption of cloud computing is mainstream everywhere now. Everywhere, that is, but in bank payments. E-invoicing is another such trend, with wide-scale adoption seemingly still just round the corner, rather than here today. Yet, occasionally there are certain trends that catch even the most seasoned trend spotter unawares. One of those has been real-time payments.

That is not to say that Celent is unfamiliar with the topic - far from it. I worked on several attempts at bringing such a system to the UK market, starting in the early 2000's, up to and including the system that went live in 2008, Faster Payments. As part of that development, we spent much time trying to find other countries that might be interested in taking the solution that we developed, but with limited success. Once I became an analyst, discussions with clients were infrequent. Yet in 2013, it was one of the most frequent topics of conversation.

Much of these discussions were driven by two key events.

First, in June 2012, there was the public announcement by the Reserve Bank of Australia mandating that Australian banks build a real-time system, and in a short, aggressive timeframe. This came as the latest step in a long line of activities to stimulate competition and innovation in the Australian banking and payments market.

September 2013 saw perhaps an even more surprising announcement from the US Federal Reserve in the form of a consultation regarding future improvements to the US payment systems. Central to the consultation was

the hypothesis that the US needed to have a near real-time payment system.

Both announcements sparked significant debate. One thing that has been clear to Celent in the ensuing debates and conversations was that there is a significant lack of understanding of what a real-time payment system is, and what it entails. And equally, what it isn't.

Defining Real-time

In our definition, real-time payments refer to retail payments that move between accounts at different organizations (and, therefore, precluding closed-loop systems) and where the recipient receives and can use the value instantly, and the sender has confirmation of the status of the transaction.

Such a simple sentence, but so many nuances, and so many challenges in actually delivering that

For example, by retail payments, we mean those that are low in value rather than defined by the purpose or participants of the payment. In a number of markets, there is an assumption that the systems are purely for person-to-person transactions, such as the oft quoted (but, rarely and actually done) splitting of bills for a meal. Yet, in the UK for example, in the Faster Payments system, corporates can pay other suppliers, and have a daily aggregate limit of £100,000. Other systems, such as SPEI in Mexico, have no limits at all. Therefore, we define retail as much as "not wholesale" as anything else. RTGS (Real Time Gross Settlement Systems) systems continue to have an important role, but, we believe, for increasingly high values. Many RTGS systems today have surprisingly low average values. CHAPS, the UK RTGS system, for example, have average values around £10,000, whereas European legislation considers a high value to be typically above €50,000.

One important thing to note is the real-time notification. Both the sender and receiver need to know that the transaction is complete, and, in the majority of cases, the receiver has the value from that point. Note that this is not the same as settlement taking place. Whilst there are exceptions to every rule, in many cases, settlement in real-time systems takes place at a later time. There are some very practical reasons for this. For example, real-time

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systems are generally designed to operate "24/7", every day of the year – but most RTGS systems are bank run. As a result, Monday to Friday 7am-330pm are the typical operating hours. As a result, a multitude of solutions have been found, to suit market practice and requirements. Poland and Sweden have sophisticated shadow accounting systems, and delegated authority for the management of settlement accounts. The UK and Singapore have pre-set settlement windows, but with rules allowing the trigger to additional settlements to prevent imbalances. One interesting thing to note is that, at the time of writing, is in proposing a market first, with the RTGS system also working "24/7". This makes sense on paper to an extent, but has numerous, technical challenges associated with it.

Myth busting

There are many myths surrounding real-time payments. Strangely, considering

ISO20022 is becoming the default format, because of the flexibility of the underlying XML message format. For countries that are still using heritage message formats, this will require significant changes across the value chain.

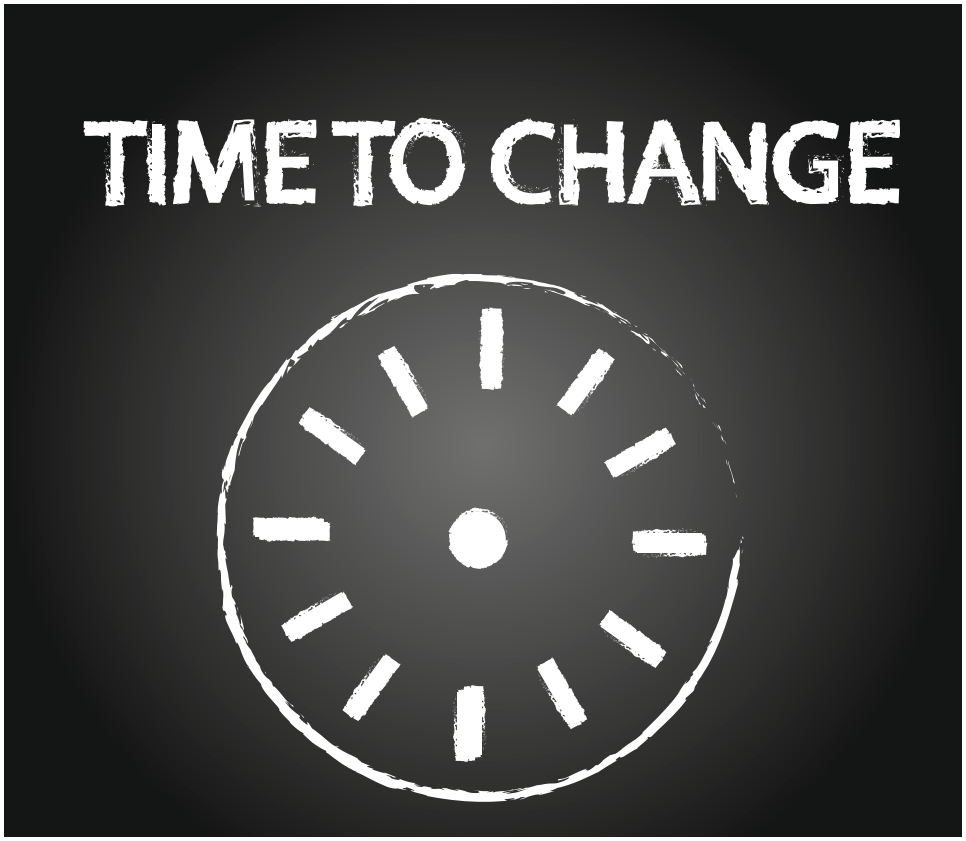
the volume of myths, one of the first to be addressed and corrected, is a belief that there are only a handful of systems globally, thus implying that this is something banks and banking communities need to consider only in the future. Certainly, there have been some very public examples, such as Faster Payments in the UK, and G3 in Singapore. Yet the reality is that there are far more countries that already have such systems, or that have committed to building such solutions. Using the Celent criteria outlined earlier, we easily identified over 35 systems, and the real number is probably higher.

This puts real-time in a rather different place on the classic adoption cycle model. Celent has used a variety of assumptions and data points to identify countries that are candidates for adopting real-time payments. This is based on criteria ranging from presence of an ACH, to economic factors such as the relative levels of GDP per capita. From this, Celent estimates that there are 115 countries that are candidate countries, and virtually all the countries we have outlined fall into this group. This then puts adoption in a very different light. Rather than the countries which have systems being "Innovators", at the bleeding edge of adoption (the first 5% of the market), or even "Early Adopters", 35 countries would suggest that actually we're somewhere between late early and early- late adoption i.e., accelerating to the top of a typical adoption Bell Curve. For many, the question around real-time has (and should) moved from an "if" to "when" to adopt, with the recent consultation in the USA being just one example. Yet, from the responses published to the US consultation, many would seem not to agree.

Real-time payments is about far more than payments

Real-time payments is more than just speeding up clearing cycles though, and has profound implications for a bank and its IT architecture. For example, real-time systems typically operate on single messages, and operate 24/7, yet most banks in non-real-time countries operate batch systems and rely on off-peak hours for maintenance. Early systems typically utilized the 8583 card standard to re-use parts of the cards value chain, but there are challenges in using that format. For example, in Europe the new IBAN numbers that are required often exceed the 16 characters allowed. This is certainly is the case in Poland, for example. Additionally, with payment cycles measured in seconds, the timestamp field is beginning to be considered as too small to include the increasingly levels of precision required. In some cases, 8583 has been adapted – after all, few standards exist in the real world without some adaptation. But there comes a point where a standard is no longer standard enough for long-term use. As a result, ISO20022 is becoming the default format, because of the flexibility of the underlying

Elixir Express in Poland is a good example. A Polish IT company created their own solution, effectively using correspondent banking principles. The banks were so slow to respond – indeed, they initially tried to stop the service, not compete with it – but the millions of transactions going through this alternate system showed that they couldn't afford to ignore it.



XML message format. For countries that are still using heritage message formats, this will require significant changes across the value chain. A good case in point is Canada. Real-time payments are being put on hold whilst the industry plans a move to adopt 20022 first.

Another obvious challenge is availability, though from the work we've done, it still seems to surprise a number of banks about how many systems are required in the process---all of which in theory no longer have any downtime (and of course, real-time, themselves). The corollary to this is that traditional customer support hours will also need to change. As customers seek to take advantage of the extended availability, they will expect to resolve any issues that arise at that same time (and speed) as well.

Zapp (UK) is seeking to effectively build an alternative to the card system, by allowing ways for a consumer to initiate payments directly from their bank account. The model has also been designed to try to reward all participants in the system.

Eating the bank's own lunch?

Some questions fall somewhere between a myth and a worry. The key question for many banks is what will be the impact on other payment types. Will it, as feared in the USA, cannibalize their wire volumes, and therefore wire revenues? Inevitably, there is no simple answer, and, certainly, no universal answer. The answer varies from country to country because the payment systems in each country that it will compete with differ. In the UK, there seems to have been no visible impact on other payment types, including CHAPS. In fact, CHAPS volumes have grown slightly over the period, though not because of Faster Payments. But, it has uncovered other issues. One leading bank lost a significant sum of money via Faster Payments. However, the issue was not Faster Payments itself, but the authentication of users. As a result of poor authentication, money was simply lost faster. A new payment scheme is a learning curve for all, and, unfortunately, for fraudsters as well.

The danger is that if banks don't create a solution, the others will. Elixir Express in Poland is a good example. A Polish IT company created their own solution, effectively using correspondent banking principles. The banks were so slow to respond – indeed, they initially tried to stop the service, not compete with it – but the millions of transactions going through this alternate system showed that they couldn't afford to ignore it.

Swish (Sweden) is a mobile wallet, built by a consortium of Swedish banks. It's a response to the wallet, WyWallet, created by the three dominant mobile operators in the country. Consumers are used to everything being instant (such as the

instant updating and availability of their pre-pay phone balances). Whilst not yet a threat, it's plain to see how it could easily become one.

Platform for Growth

After the talk of competitors, the realization of the cost of potential investments required and the potential impact on existing revenue, it's important that we point out that it's not all bad news. It is true that in many markets, adoption of real-time payments has been mandated. Here, the benefit is in the future. Payment systems are created once in a lifetime on this scale, and so the benefits ought to be measured over the long term. For example, debit cards are the overnight success that took nearly three decades to happen. It's therefore important to think of the opportunities as well, and to envision what this enables. One feature of the proposed Australian system is the view that the real-time payment system should be the platform on which innovative new offerings could be built. Consumers are increasingly used to "anytime, anywhere", particularly with mobile shaping their experiences.

Systems in other countries are showing how that might work. Zapp (UK) is seeking to effectively build an alternative to the card system, by allowing ways for a consumer to initiate payments directly from their bank account. The model has also been designed to try to reward all participants in the system. That is, rather than the merchants effectively paying the banks, both banks and merchants share the value. Both the merchant and the consumer see the transaction in real-time. For a very small merchant who may wait days for their settlement, this has a direct, positive impact on their cash flow.

The IMPS system in India puts electronic payments into the hands of millions of consumers. It works on any phone, and on any network. It's designed to be account-to-account, and it's very simple for merchants to set themselves up. At its most basic, they have to register for the scheme, and publish their mobile phone number and ID on their webpage. In theory at least, small merchants could be up and running within minutes.

Conclusion

Real-time payments are, well, real. The adoption of RTGS systems may provide clues as to what might happen. The earliest systems date back decades. But in the late 1980's, what was once an unusual feature, saw rapid adoption, and in a few short years, few countries of note were without them. Whilst we're not sure that the adoption will follow quite the same pattern, we do believe that in a relatively short period of time, many countries will feel that they too can't afford not to have one. Future Celent reports are planned exploring this topic in much more detail, but one thing is clear - I may have spent a lot of time on real-time on 2013. 2014 is only going to be busier.

Gareth Lodge
Senior Analyst - Banking

Gareth Lodge, a senior analyst in the banking group at Celent, focuses on research in payments. He has been widely quoted in the media, including The Financial Times, BBC News, CNBC, Bloomberg, Computer Weekly, CardLine, Silicon, and European Card Review. He is a frequent speaker at such events as Sibos, EBADay, NACHA Payments, and the Global Payments Forum.

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State Bank of India set out to build the world's largest homogenous banking network.

They found a certain way.

In the wake of the strengthening of the private banking sector in India in 2002, State Bank of India, one of the largest and oldest public sector banks in India felt a dire need to standardize its operations and services into a single, centralized homogenous network. It deployed the core banking solution from TCS BaNCS in 2003, successfully making its foray into real-time banking and bringing with it profitability and customer-centricity through innovative services. The state-of-the-art IT architecture enabled 24/7, multi-channel, multi-entity and multi-currency banking services. With this flexible, parameterized solution, State Bank of India witnessed revenue growth by 30% with a similar increase in its products per customer spanning 300 million customer accounts and over 70 million transactions per day across 18,400 branches in India.

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Payments on ISO20022 – Time to on-board?

Stakeholders in the payments value chain and its ecosystem have always been innovating to deliver new products and services. Interestingly, in today's world, they stand at the threshold of a global payments situation, which can deliver value manifold. ISO20022 standards are one such vehicle that will help realize this leap into future.

Traditionally, a Payment transaction was considered as complete, when the transaction amount has reached the seller from the buyer, and through the intermediaries facilitating this transfer. In today's world of financial services, this definition has to be extended to – not only having the payment completed in a stipulated time but also having the information relevant to the payment reach relevant stakeholders in its entirety with regulatory authorities being one among them.

The challenge of a successful and complete hand-off of a Payment (money as well as information) is addressed holistically in ISO20022 standards.

The challenge of a successful and complete hand-off of a Payment (money as well as information) is addressed holistically in ISO20022 standards.

Figure 1: Diverse Standards Landscape : High risk of loss of Payment Information

An interesting use case described below proves its advantage:

Party A is making a cross-border payment to Party B against an Invoice for a gross amount. Party A is also sending to party B the break-up of items (multiple items, e.g. > 10 in number, of various amounts adding up to the gross amount) in the same transaction. In the traditional set up of Payment systems, Party A will send this payment instruction to their Bank A in a format, which is proprietary , as in a MT101 or a similar message, only 140 characters (4*35X) of information can be accommodated. Even if this information is sent by Party A to Bank A, it will not be possible to send this information along with the payment over a MT103 message to Bank B owing to the restrictions on the size and structure of the Remittance information. ISO20022 has addressed this with 140 Characters* n occurrences as part of the payment initiation and clearing messages with provision for structured and unstructured information. Having this type of a remittance Information field in the customer instruction, pain.001, in the interbank clearing message, pacs.008 and in account statement, camt.053 greatly simplifies the complexity of managing reconciliations, statutory/regulatory reporting for payment transactions.

There are still challenges; e.g., in the interbank space regarding the size of data to be transmitted, which we will look at later in this article.

Mass Adoption of ISO 20022 has the potential to revolutionize the integration of market participants throughout the banking and financial services industry and realize multiple benefits across business, operations and IT.

We are in the era of 'apps' today and the future of 'apps' and collaborative platforms look bright. An app will very soon analyze the payment information available in an organization and deliver valuable outputs.

ISO20022 standards are:

1. Being adopted by banks, corporate institutions and communities playing a significant role in the payments and cash management domain

2. Already confirmed as the de-facto standards for the future for SWIFT

3. Taken as the standard for building National Payment Systems in multiple countries

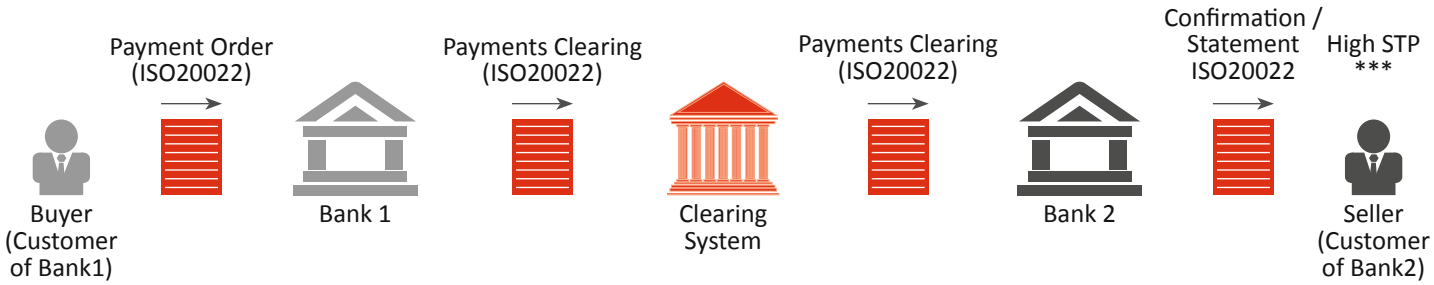
As in the adoption curve of any salient evolution, inertia against change is a significant barrier. There are leaders in some pockets and both adopters and naysayers abound in the industry – be it banks or customers.

We believe that there are compelling reasons (and leading to compelling business cases) for the adoption of ISO2022.

Collaboration

The ISO2002 standard is more seen as a set of payment messages, which tends to hide the immense potential associated with it. When looking at adopting ISO20022, one needs to adopt the whole framework – business model concept,

Figure 2: Homogeneous ISO2002 Landscape : Efficient and complete transport of Payment Information



associated data and process model, the implementation guidelines, and the messaging. Once a team is trained in all of aforementioned areas, they will be able to deliver value consistently over a longer period of time, specifically when conversations take place about onboarding/connecting/exchanging data between bank and clients or a bank's partners.

ISO20022 is becoming the standard of choice for new payments applications/solutions being built---thanks to the prudent choice of XML (Extended Markup Language) as the de-facto standard for payment message exchange.

Integration becomes much more efficient and seamless when different teams are speaking the same language such as in EndToEndIdentification, UltimateCreditor, Remittance Information (Structured or Unstructured) and more so when these conversations take place over email or the phone.

We are in the era of 'apps' today and the future of 'apps' and collaborative platforms look bright. An app will very soon analyze the payment information available in an organization and deliver valuable outputs.

ISO20022 is becoming the standard of choice for new payments applications/ solutions being built---thanks to the prudent choice of XML (Extended Markup Language) as the de-facto standard for payment message exchange. Needless to say, no-one should be lagging behind or left out from creating or consuming these solutions simply because they are not part of ISO20022 standards.

XML being a language which is easily understood by both computers and human beings, is increasingly being used for development of web-based applications. Payments Data in the form of XML files can be rapidly integrated into web and mobile based applications.

Efficiency

Global, long-standing banking and financial institutions work with a plethora of formats for payments and Cash management services that they deliver electronically to their customer in different countries. Multiple versions and layers of mapping, truncating, expanding overlaying payments and

Multiple versions and layers of mapping, truncating, expanding overlaying payments and cash management fields have built up in IT systems of a bank rendering even small changes for business or regulatory reasons, complex and time-consuming.

cash management fields have built up in IT systems of a bank rendering even small changes for business or regulatory reasons, complex and time-consuming. Also, fixed length formats are complex to maneuver with higher risks of regression, when making a change. ISO20022 standards have captured the essence of the payments experience from multiple markets and formats. They provide a more comprehensive set of data types and sizes. Making a change in XML-based data exchange formats is comparatively easier with XML also lowering the cost of IT changes and risks of regression.

The case I had mentioned earlier in this article is a good example of enhancing STP. The structure and organization of data is greatly improved in ISO20022.

For Corporates, even bigger efficiency gains can be expected in the form of improved liquidity controls and reconciliations based on enhanced information and intra-day frequency in Payment Status and Cash Reporting based on ISO20022 messages.

Remittance information in structured and unstructured formats traverse without loss, from originating customer (Creditor or a Debtor) to their banks and over interbank clearing over to the bank of the beneficiary and, finally, to the beneficiary--enabling a true end-to-end reconciliation of information and closure of an open payable or receivable without manual intervention in major percentage of the payment volumes.

For corporates, even bigger efficiency gains can be expected in the form of improved liquidity controls and reconciliations based on enhanced information and intra-day frequency in Payment Status and Cash Reporting based on ISO20022 messages. As the adoption of ISO20022 gains momentum across financial institutions in multiple countries, corporates will also have an added advantage of better flexibility in changing banking relationships as per the business priorities and needs. Today, it is extremely difficult to move out of locked-in proprietary formats.

ISO20022 has included additional information about parties –- including actual and on-behalf initiation, intermediate and receiving roles-- which participate in payments clearing and settlement. This makes the task of extracting and sharing information with regulatory and compliance authorities easier compared to traditional payment data and process models.

As an upcoming area of higher levels of automation, 'Exceptions and Investigation' are heavily leveraging a set of 16 ISO20022 XML messages to deliver superior efficiencies. These new standards are in the phase of implementation by

For retail customers, ISO2002 standards will benefit in a cross-channel experience on initiation and follow-up of their payment instructions. Infrastructures such as real-time clearing are expected to be beneficial to retail customers. Such infrastructures are being built on ISO20022 standards and are appearing on national economic agendas across the globe.

S.W.I.F.T. has been playing the role of an anchor in the promotion and adoption of ISO2002 standards. The roadmap of the roll out of MX is underway, and S.W.I.F.T. is driving the migration of the National Payments Infrastructure on to ISO20022 in multiple countries.

banking institutions and the number of adopters is increasing slowly but steadily.

Adoption of ISO20022

Common Global Implementation (CGI) Working Group, which was established in 2009 by major global banks, corporates, ERP vendors and S.W.I.F.T has been a determined step towards providing implementation guidelines for the adoption of the new standards by banks and financial institutions, as well as corporates. CGI has published implementation guidelines for Customer to Bank Instructions and Bank to Customer reports like Payment Status and Account Statement reports. Existing EDI formats are seriously challenged in providing better reporting and reconciliation, and this is being recognized by industry participants, leading to continuous adoption of new standards.

While SEPA implementation has been the flagship example, ISO2002 has seen adoption in Nordic countries in Customer to Bank and Interbank Clearing. CBI in Italy has adopted the standards for transformation of customer to bank space; the National Payment Infrastructure in India has moved firmly with the new RTGS and ACH being implemented on ISO20022 standards; Switzerland has adopted ISO20022 in transformation of domestic Swiss Franc payments in Interbank and Postal payments; Singapore is doing the same for G3 real time clearing; among others. There are many more cases showing a continuously expanding base of users of ISO20022 payments standards. Recently, the Federal Reserve Bank of USA has initiated a dialogue on the transformation of Payment Infrastructure and Landscape of USA for the future. This can be another opportunity for the adoption of ISO20022 standards, which can provide a boost to global payment processing.

It be gross ignorance to give an impression that the velocity of adoption of the new standards has reached desirable levels. There are still challenges in the path of full adoption of ISO2002. One of the most critical issues is the viability of the business case to undertake such a massive transformation.

For retail customers, ISO2002 standards will benefit in a cross-channel experience on initiation and follow-up of their payment instructions. Infrastructures such as of real-time clearing are expected to be beneficial to retail customers. Such infrastructures are being built on ISO20022 standards and are appearing on national economic agendas across the globe.

Much needed acceleration of the adoption of ISO20022 needs to be triggered by the originators and recipients of payments and government and corporate institutions have a big role to play here.

For corporates, rather than looking only at processing of Payment instructions, the business case needs to include improved yield in liquidity and cash reserves. Upcoming evolutions and trends such as e-Invoicing and electronic Bank Account Management (eBAM), which will bring tangible returns on investment in short periods of time can also form the premise for the business case.

Central Banks or National Payment Authorities can take best practices and lessons learnt from the European payments Council, which have led the implementation of SEPA in difficult market conditions.

It is not possible to conclude without mentioning S.W.I.F.T. in this context.

S.W.I.F.T. has been playing the role of an anchor in the promotion and adoption of ISO2002 standards. The roadmap of the roll out of MX is underway, and S.W.I.F.T. is driving the migration of the National payments Infrastructure on to ISO20022 in multiple countries.

Myths and confusion exist about ISO2002 standards, which need to be clarified or resolved. As mentioned earlier, ISO20022 payments standards should not be seen as only a payment message format change, which in turn completely undermines its value proposition. XML being performance unfriendly is another misunderstanding. Innovation and evolution of technology has proven that the cost of storage, network bandwidth and processing power are non-issues as far as the adoption of XML-based solutions are concerned.

The Way Forward

Institutions with payments at the core of their business strategy need to build urgency in developing competence on ISO2002 standards by leveraging internal resource pools or engaging with consulting partners. New standards need to form the fulcrum of the IT application and integration strategy in the payments and Cash Management domain. This may need specific awareness and training programs to be conducted inside the organization.

Software solution providers need to adopt ISO2002 standards at the level of the business process and data models to deliver true value for the investments their customers make in procuring IT solutions.

National Governments and Central banks would have to holistically review and promote ISO2002 standards and, wherever possible, incentivize the adoption, with an understanding that the new standards will provide the required assurance to the overall regulatory, statutory and economic wellbeing of the commercial ecosystem.

With market practice groups and communities engaging with multiple stakeholders in defining and refining ISO20022 standards, the industry is making a serious effort to make ISO20022 as the standard for future of payments Processing and Clearing and Cash Management. Now, whether it makes business sense to delay adoption is anybody's guess, indeed.

Nitin Sirohi
Principal Consultant,
TCS Financial Solutions

TCS BaNCS

TATA

Members of an avian species of identical plumage tend to congregate

(Birds of a feather flock together)

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Revival of Biometrics in Banking: Heralding a New Era in mPayments

Banking is now living in an omni channel world. Changing avenues for customers make banking easier, but nevertheless also potentially riskier. The transition of money --- from physical money to e-money -- has also transformed the world of crooks as well; where petty thieves are now capable of committing online fraud.

Forrester Research forecasts that US mobile payment transactions will reach USD 90BN in 2017, registering a 48% compound annual growth rate (CAGR) from the USD 12.8BN spent in 2012[1]. Gartner projects that over the next four years the mobile payments industry will experience an average annual growth of 35 percent, creating a market of more than 450 million users worth USD 721 billion by 2017[2]. Parallel to this phenomenal growth, the fraud matrix is also growing. There is a common perception that mobile payments platforms are less secure than e-commerce or traditional payment methods1. Using 2012 industry market projections on e-commerce sales in North America, CyberSource, a provider of payment processing and risk management services, has estimated that total fraud revenue loss translates to approximately USD3.5 billion[3]. Fraud incidents within a span of five years may account for 1.5

1 Denee Carrington et al, US Mobile Payments Forecast, 2013 To 2017, Forrester, 16 January 2013

2 Janessa Rivera and Rob van der Meulen, : Mobile Payment, Worldwide, 2013 Update, Gartner, 4 June 2013

3 Paul Demery, Internet Retailer, 28 March, 2013 Source: http://www.internetretailer.com/mobile/2013/03/28/online-fraud-costs-e-retailers-35-billion-2012

Using 2012 industry market projections on e-commerce sales in North America, CyberSource, a provider of payment processing and risk management services, has estimated that total fraud revenue loss translates to approximately USD3.5 billion

percent of all mobile transactions, says Avivah Litan, an analyst at technology research company, Gartner.[4] The most common threat being that almost 70 percent of mobile phones aren't protected by passwords[5].

Bankers across the world are grappling with ways to find a lever to plug these losses. How can a banker establish the fact that the person transacting is actually a client and not a fraudster? This is where the biometrics science comes into play, and has many bankers excited about its potential. Don Callahan, Citigroup CTO, says, "The idea of biometrics is something that I am excited about. Having digital print is very good. Accessibility to biometrics information is extremely important to us....having an organized back-end process to make sure you are who you say you are, is terrific for the banking industry."[6] Central Banks around the world are also in the process of formulating strategies to mitigate this risk. The Governor of the Central Bank of Nigeria (CBN) is in the process of capturing biometric data of bank customers to ensure better services. Amidst all these happenings, Apple launched the iPhone 5S and, subsequently, Samsung launched its 5S model using fingerprint biometrics for user authentication.

This article aims to bring out the relevance of biometrics technology in the banking world, and suggest why biometrics should be the basis of multi-factor authentication; diagnose fraud prevalent in mobile channels; and, review the effect of new mobile devices being released in the mass market that are embedded with fingerprint technology for mobile payments.

Evolution and Prevalence of Biometrics in Banking

Biometric technologies analyze unique biological traits that differentiate one human being from another, such as fingerprints, the retina or iris or the pattern of an individual's voice. Data gathered by some of these technologies, particularly iris patterns and fingerprints, are unique enough to distinguish a single individual from the entire global population.

Biometrics in banking has evolved over the years, starting from the 1970s, and has attained some level of maturity. On analyzing various press releases on the Finextra portal, a specific trend is seen emerging. Until 2005, the financial services world used fingerprints, signature recognition, vein pattern, and hand geometry; and after that (post 2005), the technology extended to include Voice Biometrics, Iris Scan, Face recognition, among others.

Hosseini and Mohammadi of Iran, in their analysis of 121 global banks in 2012 had concluded that fingerprints are the most

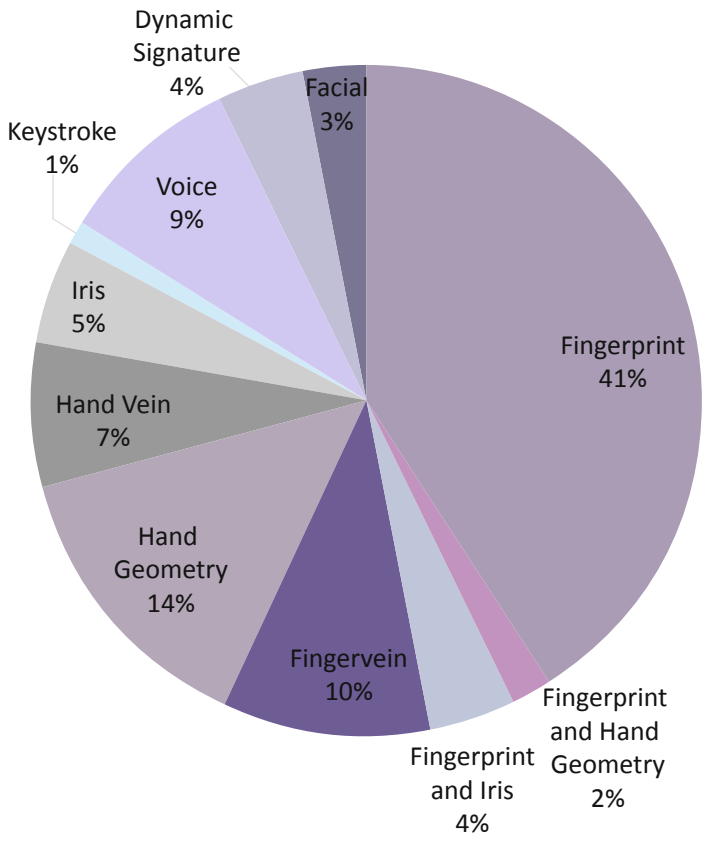
Until 2005, the financial services world used fingerprints, signature recognition, vein pattern, and hand geometry; and after that (post 2005), the technology extended to include Voice Biometrics, Iris Scan, Face recognition, among others.

4 Olga Kharif, Fraud threatens mobile payment system, Bloomberg BusinessWeek, 7 October 2012. accessed fromhttp://www.stltoday.com/business/local/fraud-threatens-mobile-payment-system/article_e49cfb01-9cbe-5b68-93f2-38578183fc5b.html

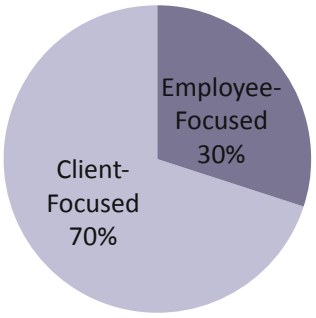
5 Carole Theriault, Sophos Naked Security blog,, 9 August , 2011. Accessed from: http://nakedsecurity.sophos.com/2011/08/09/free-sophos-mobile-security-toolkit/

6 http://economictimes.indiatimes.com/opinion/interviews/weve-changed-banking-the-way-google-changed-search-don-callahan-citigroup-cto/articleshow/16816195.cms

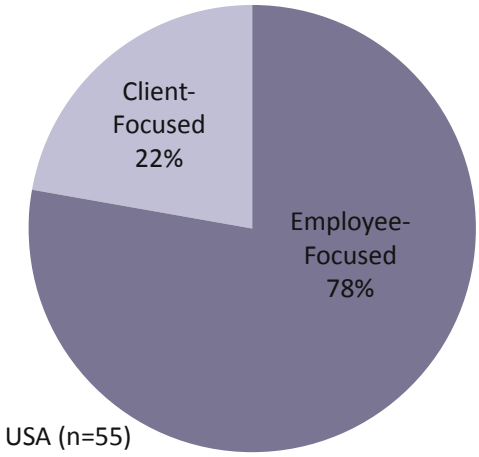
Biometrics in Banking - The Spread



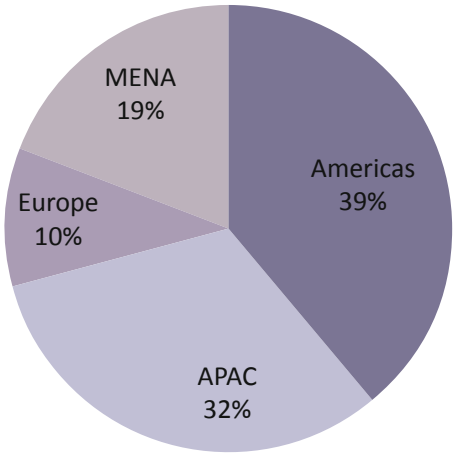
Biometrics in Action



USA: Biometrics in Action



Surveyed Banks and Their Geography



Global Banking Survey on Biometrics; N=184

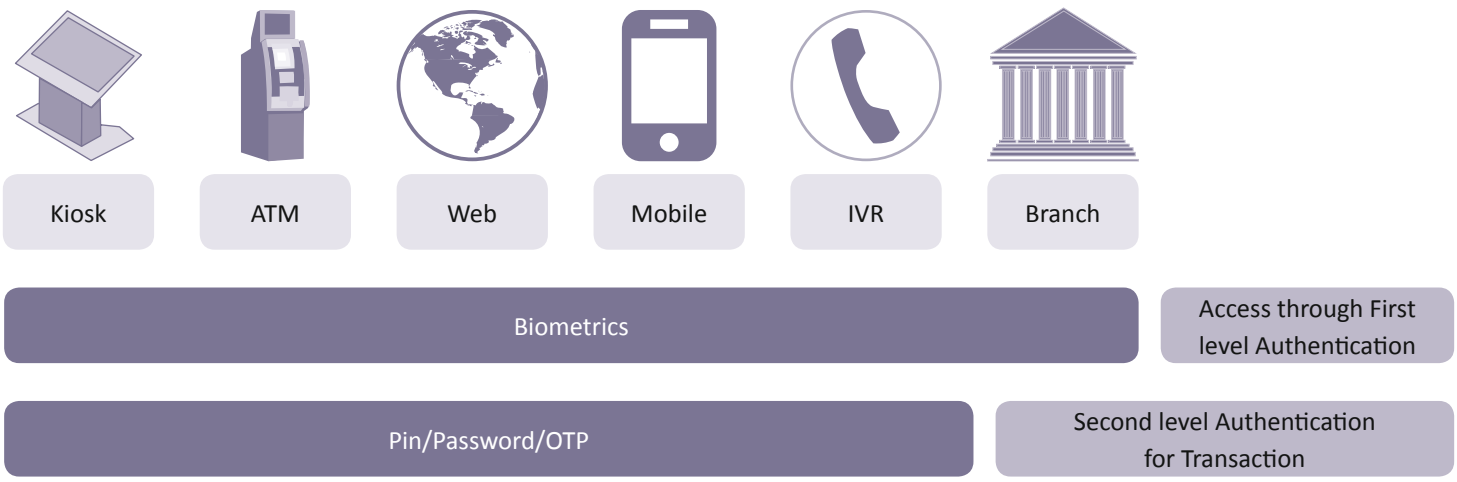
Biometrics Type	Applications Covered	Countries
Dynamic Signature	Internet banking, Branch banking, Document processing, Workflow automation	Estonia, Israel, USA, China, UK
Facial	Branch banking, Fraud Recognition, Access control (Data center), Access control (Physical, Treasury), Access control (Building, Time and attendance)	USA, UK, China, Switzerland
Fingerprint	ATM, POS, ePayments, Access control (Applications), Branch banking, online banking, Fund Transfer, Access control (Physical), Access control (Network), Checking transaction history, Check Cashing, Access control (safe deposit box), Access control (Time & Attendance), Biometric card, Online purchase, Loan Origination, Debit card, Access control(customer information)	Costa Rica, Egypt, Mexico, Singapore, USA, Bangladesh, Benin, Bolivia, Brazil, Brunei, Cambodia, Chile, China, Colombia, Germany, India, Indonesia, Kazakhstan, Kenya, Malaysia, Mauritius, Mexico, Netherland, Nigeria, Pakistan, Panama, Philippines, Puerto Rico, Russia, Saudi Arabia, South Africa, Trinidad, UAE, Uganda, USA, Vietnam
Fingerprint Plus Iris	Access Control (attendance), Access control (Network, Treasury), ATM, epayments	Oman, India
Fingerprint Plus Hand Geometry	Access control (Safe deposit), ATM	USA, Japan
Finger Vein	ATM, Access control (Server room), POS, Branch banking	Poland, USA, Turkey, Japan
Hand Geometry	ATM, Access control (Safe deposit), Access control(Time and attendance)	USA, UAE, Puerto Rico, Saudi Arabia, Ukraine
Hand Vein	Access control (Data center), ATM, ATM, Branch banking, Access control(Vaults Access)	USA, Turkey, Japan, Switzerland
Iris	Branch banking, ATM, Internet banking, Access control(Time and Attendence)	Jordan, Yemen, USA, Italy, Turkey, Lebanon, Egypt, Norway, Yemen
Keystroke	Internet banking	Ecuador, USA
Voice	Telephone banking, Branch banking, Password/PIN reset, Telephone banking, high-risk transactions, Mobile banking	Australia, Israel, Indonesia, USA, Brazil, Pakistan, China, Netherland, Canada, New Zealand

popular biometric technology[7]. We have extended this study to include 184 banks with the results being displayed above:

Our study also concludes that fingerprint continues to be the most popular technology and is used in more than 35 countries. Other important indicators are:

- Customer facing adoptability varies across countries and technology
- Mobile banking related adoptability is rare, with a few banks piloting voice biometrics
- Most of the employee-focused usage is for access to various facilities and applications, including attendance registration
- The USA has the most diverse use of biometrics technology. However, most of USA-based adoption is employee-focused, rather than client-focused, which is in variance with the rest of the world, where the technology is client-focused.

7 Seyyede Samine Hosseini, Shahriar Mohammadi, Review Banking on Biometric in the World's Banks and Introducing a Biometric Model for Iran's Banking System, J. Basic. Appl. Sci. Res., 2(9)9152-9160, 2012



- Localization of technology: fingerprint and iris In India and Oman; finger vein, hand vein, finger print, hand geometry in Japan; keystroke in Ecuador and USA
- Japanese banks have shown a high level of maturity by offering their customers bank cards with a chip, that carries biometric data

All of the above point to the fact that client-focused biometrics technology in banking is yet to converge globally, and has evolved differently in different geographies. We also observe a correlation between biometric adoption and the flexibility of the core banking system. Emerging market banks were able to leverage client-focused biometrics technology as they run on modern platforms, whereas their counterparts in the developed world could not do so. For example, Capitec Bank of South Africa has been a pioneer in that geography and has been using fingerprint biometrics technology to reach economically less privileged citizens since 2006. It moved on to implement biometric ATMs in 2012.

> Our study also concludes that fingerprint continues to be the most popular technology and is used in more than 35 countries.

However, many times, banks have pioneered biometrics in a particular geography and not been able to sustain the momentum. For example, Nationwide, gave up on iris biometrics in 2003 after embarking on the same in 1998. Lack of business benefits and high costs were cited as reasons; e.g., for the ATM project the iris recognition alone was 25 per cent of the cost of the ATM, meaning it would not be cost-effective for a wider rollout[8].

8 Andy McCue, Nationwide ditches iris and fingerprint biometrics, ZNet, 23 September, 2003. Accessed from: http://www.zdnet.com/nationwide-ditches-iris-and-fingerprint-biometrics-3040126657/

> It is a strategic imperative to fall back on the multi-factor authentication with biometrics at the front. It is all about combining the facts of "what you have", "what you know" and "what you are".

It may also be noted that many cases included in our study take into account POC stage implementations, and there was no follow-up information available. A few IT solution providers have tied up with third parties and white-labelled biometrics products for employee-focused applications. However, the focus must

We now have an ISO standard 19092:2008 related to biometrics security framework in the financial industry. It clearly establishes the security requirements for the implementation and management of state-of-the-art biometric identification technology.

soon shift to client-focused applications such as channels.

Future growth of biometrics mooted around multi factor authentication

The banking world has seen the prevalence of two-factor authentication for some time now; but fraudulent transactions are growing year-on-year. When we transact virtually, our identities are determined by IP addresses, various "keys" and passwords, most of which are susceptible to tampering and fraud. Therefore, it is a strategic imperative to fall back on the multi-factor authentication with biometrics at the front. It is all about combining the facts of "what you have", "what you know" and "what you are". To carry out a mobile payment transaction, you may have the mobile device and know the transaction pin, but if you are not authenticated by personal traits, such as fingerprint, you may not be able to access the device to complete the transaction.

While we encounter technology sophistication in what we have and what we know, we still are far from achieving industry best practices on what you are, i.e. biometrics, across channels.

We now have an ISO standard 19092:2008 related to biometrics security framework in the financial industry. It clearly establishes the security requirements for the implementation and management of state-of-the-art biometric identification technology. As per the framework, the enrolment repository is connected to a management console that helps configure biometric parameters for enrolment, authenticates users and allows system access privileges. DB Research also states that biometric authentication methods enjoy a remarkable degree of acceptance among the European population. Hence, there is a growing probability that biometric technologies could also be applied in banking [9].

Changing Channel Priorities: Growth of Mobile Banking and Challenges

In an omni channel world, banks need to adopt a "bricks, clicks and touch" strategy, revolving around the concept of security, accessibility, personalization and convenience. Achieving this is a Herculean task amid changing customer channel adoption trends. Taking the trends from the CEB TowerGroup Report

titled "Planning Your Cross-Channel Future" published in December 2012; mobile banking transactions in the USA are projected to grow by 240% between 2010 and 2015. In the same period, online transactions are expected to grow at 10%, ATM transactions by 7.3%, whereas the contact center and the branch are expected to see a decline in transactions[10].

This changing channel priority has put additional pressure on banks. Banks are not equipped to handle the fraud instances related to mobile banking. Access control is the first level of security and this has generally been managed well through two-factor authentication of Password, OTP/PIN in an online channel scenario, but in the case of mobile banking, the threats are not clear. Each passing day, new malware are being identified, and many devices

9 Thomas F. Dapp, Growing need for security in online banking, DB Research, 2012. Accessed from: http://www.dbresearch.com/PROD/DBR_INTERNET_EN-PROD/PROD0000000000284825.pdf

10 Nicole Sturgill, et al, Planning Your Cross-Channel Future: The Impact of Retail Banking Delivery Channel Volumes in North America, CEB Towergroup, December 2012

are not password protected[3]. As per the Third Annual Mobile Threats Report, mobile malware has grown by 614% from March 2012 to March 2013 and 73% of all malware exploit holes in mobile payments by sending fraudulent premium SMS messages, each generating around 10 USD in immediate profit[11]. The technology platforms, iOS, Android, Symbian, BlackBerry, Java ME have varied threat indications. The most disturbing fact is that the popular platforms are threat prone. The Internet Security Threat Report 2014 reported that 97% of malicious threats by platform is reported for the Android platform. However, it was intriguing to note that 102 (82%) documented mobile vulnerabilities by platform for 2013 was recorded for the iOS platform[12]. The threat is increased when access is not secured, and if a device is used to access unwanted content, there is a greater possibility of malware infesting the system.

A paradigm shift in Mobile Payments: Fingerprint biometrics securing access control

The launch of the iPhone and the iPad are highly disruptive trends in banking. With the launch of iPhone 5S and Samsung 5S with a fingerprint scanner, embedded within the phone's hardware, the world of biometrics will open up, especially in mobile payments. Internally, Apple allows biometrics-authentication for iTunes, and this has a huge potential for the future of payments. The availability of biometrics authentication at the source is certainly a giant change in the banking world.

As per the Third Annual Mobile Threats Report, mobile malware has grown by 614% from March 2012 to March 2013 and 73% of all malware exploit holes in mobile payments by sending fraudulent premium SMS messages, each generating around 10 USD in immediate profit.

A few instances reported during 2013 and early 2014 suggest that fingerprint biometrics is gaining mainstream acceptance:

- iPhone 5S, launched with fingerprint sensor that allows users to unlock their phone with their fingerprint, and verify purchases on iTunes without having to input a password
- Samsung 5S, launched with a fingerprint scanner
- HTC has launched One Max with 5.9-inch display and fingerprint scanner
- Fujitsu Disney-branded F-07E Android device, launched with fingerprint sensors
- Motorola, working on phone with fingerprint sensor
- Microsoft Windows 8.1, offering enhanced support for fingerprint sensors
- Diebold has launched a new line of fingerprint ATMs in Kenya
- The Indian government has given a go-ahead for fingerprint or eye scan enabled ATMs to leverage the biometric-based Aadhaar number, which establishes uniqueness of every individual on the basis of demographic and biometric information
- Biometric ATMs are being filed for a new patent application by Bank of America. This patent application outlines a system for authenticating users with a combination of a pin-code and fingerprint biometrics

Mobile devices with biometrics will help provide the first level of security, which Symentec calls traditional access control. If the voice biometrics based pilot being carried out by ING Direct Canada and ANZ is successful and the Bank of America patent for authenticating mobile transactions through voice biometrics gains mainstream acceptance, we may soon see biometrics playing a role in replacing OTP/Pins.

This development may be termed disruptive, not because mobile-based payments may potentially get safer, but also because this change must be looked from a liability perspective. The fraud liability at self-service channels lies with the clients. In the biometrics scheme of things the customer has to be present

11 Juniper networks Mobile Threat Center Third Annual Mobile Threats Report: March 2012 through March 2013. Accessed from: http://www.juniper.net/us/en/local/pdf/additional-resources/3rd-jnpr-mobile-threats-report-exec-summary.pdf

12 Paul Wood, et al, Internet Security Threat Report 2014 (appendix pp 32-33), Symantec Corporation, April 2014 Accessed from http://www.symantec.com/content/en/us/enterprise/other_resources/b-istr_appendices_v19_221284438.en-us.pdf

in person, while making a transaction. And, in this context, customers are safer if biometrics evolve to the core of the mobile payment scheme of things. Customers are an important part of the mPayments value chain and the recent wave of fingerprint biometrics being circulated in the mass market embedded within the phones will, in all possibility, trim down the fraud matrix.

The Biometric Research Group expects that worldwide mobile payment transactions will reach USD 250 BN in 2014, reaching USD 750 BN in annual transactions with more than 700 million users by 2020[13]. Biometrics will accelerate mobile commerce, especially in North America, because the technology can offer a higher level of security, while providing an intuitive customer experience. It also expects that over 90 million smartphones with biometric technology will be shipped in 2014. The Group predicts that Apple will initially lead in the deployment of such devices, due to fact that the firm is the first consumer electronics provider to

introduce biometric technology to the global smartphone mass market.

Conclusion

The detrimental factors in the growth of biometrics have been higher cost, ambiguity related to standards, and the proliferation of diverse technologies. It was also a bank-led activity, where banks had to invest in costly biometrics technology. The world needs simplicity and ubiquity for a technology to succeed. And, probably we are in one such watershed moment, where biometric standards are in place, and where mobile devices with fingerprint biometrics technology can shift the cost burden from bankers to the consumer. Fingerprint biometrics seems to be the new buzzword that will bring in disruption in the mobile banking transactions space.

We must, however, remain cautious, as we have seen the failure of Motorola's Atrix Smartphone with fingerprint reading technology due to its inconvenient position at the back of the phone and its slow processing. The current phase must be seen as a resurrection, where biometrics technology is poised to occupy a central position in fraud prevention.

It assures the convenience of use and delivers the prospect of fraud prevention at the customer end — a secure first level access point to facilitate safe and seamless mobile transactions. While a few analysts still remain sceptical about the role of biometrics in future fraud-prevention capabilities, it looks like banking consumers are gradually embracing it. A survey commissioned by ANZ showed that 79 percent of Australians said that they are comfortable with fingerprint technology replacing banking PINs.[14] We may soon be seeing a safer world of mobile banking , heralding a new era in mPayments.

13 Rawlson King, Mobile commerce will drive millions of biometric smartphone shipments, billions in transactions, Biometric Update, 13 September, 2013 Accessed from: http://www.biometricupdate.com/201309/mobile-commerce-will-drive-millions-of-biometric-smartphone-shipments-billions-in-transactions

14 Spandas Lui, NFC to stick finger in biometrics banking, ZDNet, 8 October , 2012. Accessed from http://www.zdnet.com/au/nfc-to-stick-finger-in-biometrics-banking-expert-7000005295/

Biplav Panda
Associate Consultant
TCS Financial Solutions

The Volcker Rule – Seeking to Shield banks' customers

Today, Wall Street faces a 4.3 billion dollar challenge as it will be forced to implement the Volcker rule, which imposes curbs to prevent a financial meltdown. With this Rule, banks may be forced to focus on their core business lines while minimizing systemic risks and ensuring and enforcing other forms of reform.

On December 10, 2013, The Federal Reserve, Federal Deposit Insurance Corporation and three other agencies formally adopted the Final Rules, implementing section 619 of the Dodd – Frank Wall Street Reform and Consumer protection act. The Rule, which was initiated by former Federal Reserve Chairman, Paul Volcker, in response to the 2007-2008 financial crises, will prohibit banks (financial institutions) from:

- Engaging in short-term proprietary trading of securities, derivatives, commodity futures and options on these instruments for their own account
- Owning, sponsoring or having beneficial relationships with hedge fund/private equity managers[i]

The Rule attempts to reduce risk and banking instability by restricting US banks from taking part in proprietary and speculative trading by imposing strict frameworks to justify exemptions for certain activities like market trading, underwriting, hedging, trading in government obligations and organizing and offering a hedge or private equity fund.[ii] The Final Rules limit these exemptions if they involve a conflict of interest, an exposure to high-risk assets or trading strategies and are a threat to the safety and stability of the banking and financial system in the US.

Banks, in short, will not be allowed to invest in funds that have not been registered with the SEC and from partaking in hedging activities that do not have a definite, identified risk. This will lead to a number of changes in a bank's investment and hedging strategies.

What do the Rules say?

The Final Rules have defined and identified the characteristics of prohibited and permitted activities and investments.

The Rule attempts to reduce risk and banking instability by restricting US banks from taking part in proprietary and speculative trading by imposing strict frameworks to justify exemptions for certain activities like market trading, underwriting, hedging, trading in government obligations and organizing and offering a hedge or private equity fund.

Proprietary Trading Prohibition:

The Rule prohibits proprietary trading by banking entities; however, there are exemptions for:

1. Underwriting: Banking entities that act as underwriters for distribution of securities and the trading desk's underwriting position being related to that distribution are exempt as long as the position does not exceed the reasonably expected demands of customers.

2. Market making and related activities: A trading desk is required to purchase and sell one or more financial instruments; however, they would need to be designed such that they do not exceed the expected demands of customers based on historical demand and market factors. The market-making desk can hedge the risks of its market-making activity only if it is in accordance with risk management procedures that are a requirement under the final Volcker rules.

3. Risk-mitigating hedging: A banking entity would be required to conduct analyses to support its hedging strategy and be able to evaluate its effectiveness and recalibrate the strategy. Under the Rules, financial institutions would be required to record their transactions in real-time and identify the hedging rationale for certain transactions that could present a compliance risk.

4. Trading in government obligations: A financial institution can continue to engage in proprietary trading only under a US government, agency, state and municipal obligations. They are also permitted, in limited circumstances, to engage in proprietary trading in obligation to a foreign sovereign and/or its political subsets.

5. Trading activities of foreign banking institutions: The Rules do not prohibit trading by foreign banking entities, so long as the trading decisions and principal risks are held outside of the United States. Transactions could involve US institutions but only under specific circumstances.

Covered Fund Prohibitions:

The Rules, as stated earlier, prevent financial institutions from owning or sponsoring hedge and private equity funds, which are referred to as "covered funds". Under the Final Rules, the definition of covered funds was clarified and it included any issuer that is an investment company. However, the Rule excludes covered funds of certain entities with more general corporate purposes, for example, wholly owned subsidiaries, joint ventures, SEC-registered investment companies and business development companies.

Compliance Requirements and how the rule will affect information technology

The Rules hand out compliance requirements based on the size and amount of activity conducted by a bank, to reduce the burden on smaller entities. Banks will be required to set up an internal program designed to ensure and monitor compliance with the final Rules. Banks that do not engage in activities specified under the Rules do not have such compliance program requirements. The program will aim to monitor

Under the Rules, financial institutions would be required to record their transactions in real-time and identify the hedging rationale for certain transactions that could present a compliance risk.

compliance activities as well as ensure that the trading bans and restrictions defined under the Rule are complied with.

A trading desk is required to purchase and sell one or more financial instruments; however, they would need to be designed such that they do not exceed the expected demands of customers based on historical demand and market factors.

The program will require larger financial institutions to establish a detailed compliance dictate, which would include the requirement of the CEO's attestation while smaller banks will require a simplified compliance program. The entities would be required to maintain documentation so that agencies can monitor their activities in case of evasion. Banks that perform significant trade operations need to be able to report quantitative measurements, which are designed to monitor these activities. The requirement would be calibrated depending on the type and size of firms' trading activities.

Implementing these compliance programs under the Volcker rule regulation embodies significant changes to the banking IT infrastructure, data processing and record-keeping procedures.[iii] New, internal banking policies will need to be developed to document, describe and track trading and investment fund activities. Controls will have to be set up such that they will be able to detect and record areas of non-compliance and submit to the regulating agencies on request. The biggest challenge of such a system is that it would have to be able to differentiate between those activities that are permitted and those that are prohibited. Many financial regulations have been implemented in recent years that have pushed banks to add new controls, but with the Rule, which came into effect on 1st April 2014, the number of changes to be implemented has now become more urgent. These include the need to improve data quality, reducing end-user developed applications and spreadsheets and improving front-office systems.[iv]

Impact of Volcker Rule on Investment banks, hedge and private equity funds

With the Volcker Rule now law, investment banks and securities dealers are the most affected. Brian Moynihan, CEO of Bank of America Corporation,

The Rules do not prohibit trading by foreign banking entities, so long as the trading decisions and principal risks are held outside of the United States. Transactions could involve US institutions but only under specific circumstances.

released a statement that ending trading activities under the Volcker Rule costs the banks near USD 500 million of revenue per quarter.[v] Stephen Hoopes of IBIS World opines that the Volcker Rule is anticipated to further harm both revenue and profit for large investment banks. He notes that a number of large banks have already witnessed losing some of their best traders to hedge funds.[vi] Hoopes, however, also opines that the general increase in corporate profits and the improving US economy can more than make up for the negative trends related to the Rule.[vii]

The impact on the hedge fund and private equity industry is not as severe. With banks being restricted from speculative activity, non-banking institutions now have access to a wider market with lower competition. The firms that remain after the implementation of the Rule are expected to gain huge profits. IBIS world reports that, over the next five years, the revenue for the private equity, hedge funds & investment vehicles industry will increase at an annualized rate of 3.8% to USD 107.7 billion.[viii]

A Rule surrounded by skepticism

Since the ruling, many commentators have been writing about the lack of necessity for such a Rule. The biggest criticism being that far from stabilizing the economy, the implementation of this rule would send it into a tailspin. The ultimate goal of the Rule is to build financial institutions and also prevent any future crisis. To minimize the need for the government to act as a safety net during a crisis, regulars will need to create tools that:

i. Internalize the cost that arises during a crisis, including insurance

ii. Introduce more supervision of banks through capital requirements

iii. Limit the sort of activities that banks can do

The Volcker Rule only addresses the third component, and for the market to stay stable only three will have to work in tandem.

Banks diversified their income streams by introducing more business lines in the hope of making the financial system more stable. However, there is no evidence to back up such a claim. In fact, as per financial theory, the risk to an individual firm should be recorded separate to that of the broader market. The economic crisis was a result of a market-wide risk which increased as banks exposed themselves to more risk through diversification. A very real concern of the implementation of this Rule is its inability to differentiate between proprietary trading and the legitimate function a financial institution should partake in to remain profitable. While some activities are clearly defined as proprietary trading there are significant questions surrounding activities related to market making and hedging of risks. Regulators will have to keep a close eye on how banks change now that the Rule is implemented.

Implementing these compliance programs under the Volcker Rule embodies significant changes to the banking IT infrastructure, data processing and record-keeping procedures. New, internal banking policies will need to be developed to document, describe and track trading and investment fund activities.

The impact on the hedge fund and private equity industry is not as severe. With banks being restricted from speculative activity, non-banking institutions now have access to a wider market with lower competition.

Conclusion

The final Rules came into effect on April 1, 2014. The Federal Reserve Board has extended the conformance period until July 21, 2015. Recently, the Federal Reserve gave banks two more years to divest their collateralized loan obligations (CLOs) that fall under the Volcker rule. (CLOs are used by banks to remove loans from their balance sheets by selling the exposure as some form of securitization.) [ix] Beginning June 30, 2014, banking entities with USD 50 billion or more in consolidated trading assets and liabilities will be required to report quantitative measurements. Banking entities with at least USD 25 billion, but less than USD 50 billion in consolidated trading assets and liabilities, will be subject to this requirement on April 30, 2016. The same Rule comes into effect on December 21, 2016, for those with at least USD 10 billion, but less than USD 25 billion, in consolidated trading assets and liabilities.

A major concern for banks is that compliance with the new regulations will cost them billions of dollars just to continue to engage in permissible activities under the Rule. The Rule's ultimate impact will depend on how closely the banks are scrutinized with regards to permissible trades and the tolerance limit to speculation. Financial institutions should begin preparation of compliance programs in adherence to the Final Rule. The Rule will have a huge impact on banking activities in the near future as banks work to carve out new profitable operating models in what will now be a high regulated and scrutinized environment.[x]

i Final Rules to Implement Volcker Rule Board of Governors of the Federal Reserve System; Commodity Futures Trading Commission; Federal Deposit Insurance Corporation; Office of the Comptroller of the Currency; Securities and Exchange Commission

ii Final Rules to Implement Volcker Rule Board of Governors of the Federal Reserve System; Commodity Futures Trading Commission; Federal Deposit Insurance Corporation; Office of the Comptroller of the Currency; Securities and Exchange Commission

iii http://searchcompliance.techtarget.com/guides/FAQ-How-would-Volcker-Rule-regulations-affect-compliance-programs

iv http://searchcompliance.techtarget.com/guides/FAQ-How-would-Volcker-Rule-regulations-affect-compliance-programs

v http://www.valuewalk.com/2013/12/volcker-rule-ripple-effect/

vi http://www.valuewalk.com/2013/12/volcker-rule-ripple-effect/

vii http://www.ibisworld.com/media/2013/12/20/volcker-rule-financial-sector-2/

viii http://www.ibisworld.com/media/2013/12/20/volcker-rule-financial-sector-2/

ix http://www.reuters.com/article/2014/04/07/us-fed-volcker-idUSBREA361R820140407

x http://www.lexisnexis.com/communities/corporatecounselnewsletter/b/newsletter/archive/2014/01/06/the-volcker-rule-s-impact-on-financial-institutions-and-companies.aspx

Priyanka Sondur
Associate
TCS Financial Solutions

TCS BaNCS

Ahli Brokerage wished to launch innovative trading products for the Qatar market. They found a certain way.

Ahli Brokerage Company was looking at tapping into brokerage opportunities presented in the Qatar market. To gain first mover advantage and stay ahead of the competition, Ahli Brokerage selected Tata Consultancy Services (TCS), the world's fastest growing technology and business solutions providers as its technology partner. TCS implemented the Securities Trading solution from TCS BaNCS, a comprehensive and integrated front-to-back office brokerage system, to offer innovative trading products such as algorithmic trading and a sell-side interface to partner brokers over 'Reuters Order Routing' for the Qatar market execution. The Securities Trading solution from TCS BaNCS, being completely parameterized, reduced customization needs to a large extent. And with its breadth and depth of functionality and sophisticated implementation methodology, Ahli Brokerage went operational in just four months.

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Payments in India – A Continuing Journey

It has been more than three years since we covered Indian Payments in volume 4 of the TCS BaNCS Research Journal. Over this period RBI (Reserve Bank of India) and NPCI (National Payments Council of India) have taken progressive strides in further modernizing the payments infrastructure in India. In addition, since then, there has been increased availability of new payment instruments, especially in the P2P (Person to Person) and P2B (Person to Business) space. It is worthwhile to take a closer look at some of these key advancements achieved in the last few years. Payments being an integral part of the core infrastructure on which economic activity rides, past trends often serve as a reliable indicator of future direction.

Progress over the Last Few Years

India has seen RTGS volumes grow at 21% CAGR for the last four years with the number of participant banks increasing from around 100 to nearly 170. This growth in itself is spectacular, but is even more significant considering that the minimum threshold for RTGS was doubled from Rupees One Hundred Thousand to Rupees Two Hundred Thousand, thanks to a mass adoption of

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The aim of NACH is to centralize different regional clearing schemes and standardize processes and practices therein. Besides supporting NACH credit transactions, the system also enables financial inclusion with the AADHAR Payment Bridge that has enabled benefits and subsidies to be passed onto beneficiaries based on a unique identification number for residents of India.

the alternative scheme, NEFT (National Electronics Fund Transfer). Remarkably, in terms of the value of the total transactions in a year – more than 75% of growth was observed (only customer transactions) between the years 2011-12 and 2012-13. Due credit needs to be given to the RBI (Reserve Bank of India) for having the foresight to launch the Next Generation Real Time Gross Settlement (NG-RTGS) system, which not only places India comfortably in meeting increasing payment volumes, but also provides a platform that will enable advanced liquidity management services and future date functionality.

The NPCI (National Payments Corporation of India) has introduced a National Automated Clearing House (NACH) scheme to support high volume electronic transactions efficiently. The aim of NACH is to centralize different regional clearing schemes and standardize processes and practices therein. Besides supporting NACH credit transactions, the system also enables financial inclusion with the AADHAR Payment Bridge that has enabled benefits and subsidies to be passed onto beneficiaries based on a unique identification number for residents of India. The NACH is today used for Old Age Pension Payments, Student Scholarships and a host of other Government Welfare Schemes. In the last three financial quarters alone, the payment volumes on NACH have grown exponentially from close to 1 million per month to over 20 million per month. NPCI expects these volumes to grow significantly as more regional clearing transactions move to the NACH, and it has displayed far-sightedness in building a system capable of handling 10 million transactions per day. Additionally, NACH-Debit is ready to be launched shortly, which will not only promote digitization and centralized management of debit mandates, thereby reducing the risk of frauds, but also provide a high degree of control to the payer with regards to modifications/ cancellations. This system will also serve to expand the service network by including corporate customers and providing them with opportunities to further strengthen their liquidity management as far as collections are concerned.

Keeping pace with global payment trends and developments in Europe (SEPA), the payment infrastructure in India is also being modernized by adapting to newer and more robust standards. This is best demonstrated by the adoption of ISO 20022 standards for NG-RTGS and NACH-Debit. By enforcing ISO 20022 compliance, RBI and NPCI have enabled the flexibility of offering value-added services, and also built a standardized platform for improved efficiencies and Straight-Through-Processing.

Consumers in India are emerging as rapid adopters of alternative channels like mobile, kiosks and through business correspondents. They expect the relationship with their banks to become more conversational, and are demanding real time and complete servicing capabilities. Features like the ability to make utility payments from the mobile, receive alerts when the beneficiary is credited are now par for the course. The corporate treasurer is now more aware and expects the same level of services as provided by the best global transaction banks. Seamless payment initiation, real-time status reporting, easier reconciliation and the optimal use of liquidity are all now standard expectations from a corporate customer who is now interested in exploring the flexibility that hand-held devices can provide. Kiosks and business correspondents have played a key role in providing economical servicing channels to expand financial inclusion.

The last three years have witnessed the near doubling of the number of ATMs, and PoS machines increasing by more

By enforcing ISO 20022 compliance, RBI and NPCI have enabled the flexibility of offering value-added services, and also built a standardized platform for improved efficiencies and Straight-Through-Processing.

than 75%, and card based transactions increasing by 66% in value. RBI has also issued licenses to non-banking institutions to offer services that would enrich the ecosystem, and further increase usage of these electronic payment modes that ultimately benefit the end consumer. RBI has allowed for white labelled ATM service providers and issued licenses to five companies in the last year (2013-2014). Nearly 25 companies have been granted licenses for issuing pre-paid payment instruments and close to 10 of them are offering mobile wallets.

The Main Forces Behind the Progress

The progress made by the Indian payments industry has been the result of some key forces that have not only transformed the payments landscape but have also provided India with a platform to meet future needs in this key area.

The role played by supportive and enabling regulatory and government institutions like the RBI and NPCI cannot be overstated. These institutions have modernized systems, standardized processes and built scale to ensure that India has a sound and stable payments infrastructure. The RBI has also enabled an inclusive and structured framework in the form of facilitative regulation in addition to advisory to provide impetus to these important changes. These developments have been all encompassing and designed keeping in mind the challenges thrown up by the diverse nature of banking in India. The directive and focus towards Socially Inclusive Banking has further necessitated the need for efficient payment solutions catering to all social strata of Indian society.

The opening up of the payment ecosystem has allowed for new players to introduce a differentiated set of products and services. This has also increased competition and traditional banks have been proactively working on improving and expanding their payments portfolios.

The transition from paper-based to electronic payments in the Central and State Government bodies offered a huge confidence boost to the electronic payments infrastructure and the capabilities of banks. This has given banks the much needed impetus to modernize their payment systems, with many banks having readily embarked on this journey.

Information Technology has been an invaluable contributor to this progress by enabling unprecedented customer connectivity and developing sound back-office systems, thereby reducing the overall cost of ownership and transforming accessibility parameters across the ecosystem.

Security and risk management improvements have been continuous with examples like the introduction of PIN based chip cards and enforcing two factor authorizations for online transactions, making card based transactions more secure.

Gazing Into The Crystal Ball

The only thing that can be said with certainty is that the transformation is not yet complete. This is evident from indicators like the value of transactions (as a multiple of GDP) of electronic payments – India is still at a figure of 12-13 times GDP compared to a figure of more than 50 times in some of the more mature economies.

Further standardization of processes and reference data is on the anvil. The Northern, Southern and Western CTS (Cheque Truncation System) grids have now adopted a uniform holiday calendar. In the coming years, it is expected that efforts will be made to standardize the various bank codes being used in India. Similarly, a uniform account numbering scheme on the lines of International Bank Account Number (IBAN) may also be implemented.

Focus on interoperability with the ability to switch over from one payment system to another based on availability will be a key driving force. This has already been achieved in areas like ATMs and is expected to be a principle applied to relevant payment systems. The concept

RBI has allowed for white labelled ATM service providers and issued licenses to five companies in the last year (2013-2014). Nearly 25 companies have been granted licenses for issuing pre-paid payment instruments and close to 10 of them are offering mobile wallets.

of inter-operability will also extend to the customer servicing channels with the ability to initiate, modify, view or cancel transactions across all channels.

There has been a concerted effort to increase efficiency through the promotion of electronic payments, with more and more government bodies willing to use electronic payments for pensions, subsidies, grants, loans and other purposes. Educational institutions are moving from traditional cheque or DD (Demand Draft) payments towards NEFT/RTGS payments. Increasing number of service providers are, and will further continue to, demand faster, hassle- and paper-free payments.

India will continue to see new payment clearing schemes and payment types. Implementation of a GIRO system in India is already on the drawing board. This is expected to provide much needed automation for low value payments in the P2B (Person to Business) space. Evolving Person to Person (P2P) and Person to Merchant (P2M) payments using the mobile phone are expected to grow further. A whole host of banks, including various small, co-operative banks today offer P2M solutions. In fact, today individuals can even make donations to religious institutions using mobile payments.

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As the adoption of electronic payments increases, the legal framework will need to provide coverage to address exceptions and disputes. It is expected that the IT infrastructure inside the institutions serving financial products and services will need to become more robust. Hence, further growth and modernization of payments in India will happen under the ask of increasing adherence to new regulations. The cost of regulatory compliance is a given and banks will look at means and ways to optimally adhere to incremental enhancements in payments related regulations.

Conclusion

A lot of banks are seeing payments as a growing business and an area for differentiation. They perceive value in being able to increase transaction-based revenues and not purely rely on the traditional credit spread business model. Offering-specialized, value-added, corporate payment services are now seen as a tenable strategy to grow the wholesale banking business. The focus is going to be on revenue through cross-channel operability, real-time reporting, segregated pricing and flexible bulk file handling. In the retail space, the thrust is going to be on costs as banks will continue their efforts towards migrating customers to lower cost electronic automated channels and enhancing operational efficiencies in back-office systems to reduce human intervention. Government business would be another area especially for the larger banks centered on multiple format file handling, reconciliation enablement and easy exception management.

India has gone through a variety of payment infrastructure changes in the last few years, and a period of consolidation is expected where benefits from these changes will be reaped. The number of players in the payments space is bound to increase with new banks, MNOs (Mobile Network Operators), pre-paid instrument providers participating, but the Indian market is large enough for various banks to succeed in the payments area.

The key to success will be the ability to clearly identify addressable segments in the market space and align the business model and related IT and operations to serve those segments.

Jojoe Cherian
Consultant
TCS Financial Solutions

TCS BaNCS

TATA

Scintillate, scintillate asteroid minim

(Twinkle, twinkle little star)

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Micropayments: The Case for Wider Market Participation By Banks

Evolution of Micropayments

The evolution of micropayments has been characterized by the cyclical emergence and collapse of different generations [1], as presented in Exhibit 1. The first generation of micropayment systems were initiated in the early 1990s – with the entry of top brands (IBM and Compaq), premier institutions (Carnegie Mellon University and W3C) as well as tech startups such as DigiCash and CyberCash. However, these initial systems suffered from limited scalability and lack of customer trust. Thus, by end of the decade, most of these systems went bankrupt or were terminated. For example, IBM did not operationalize its micropayments platform, while DigiCash and CyberCash filed for bankruptcy.

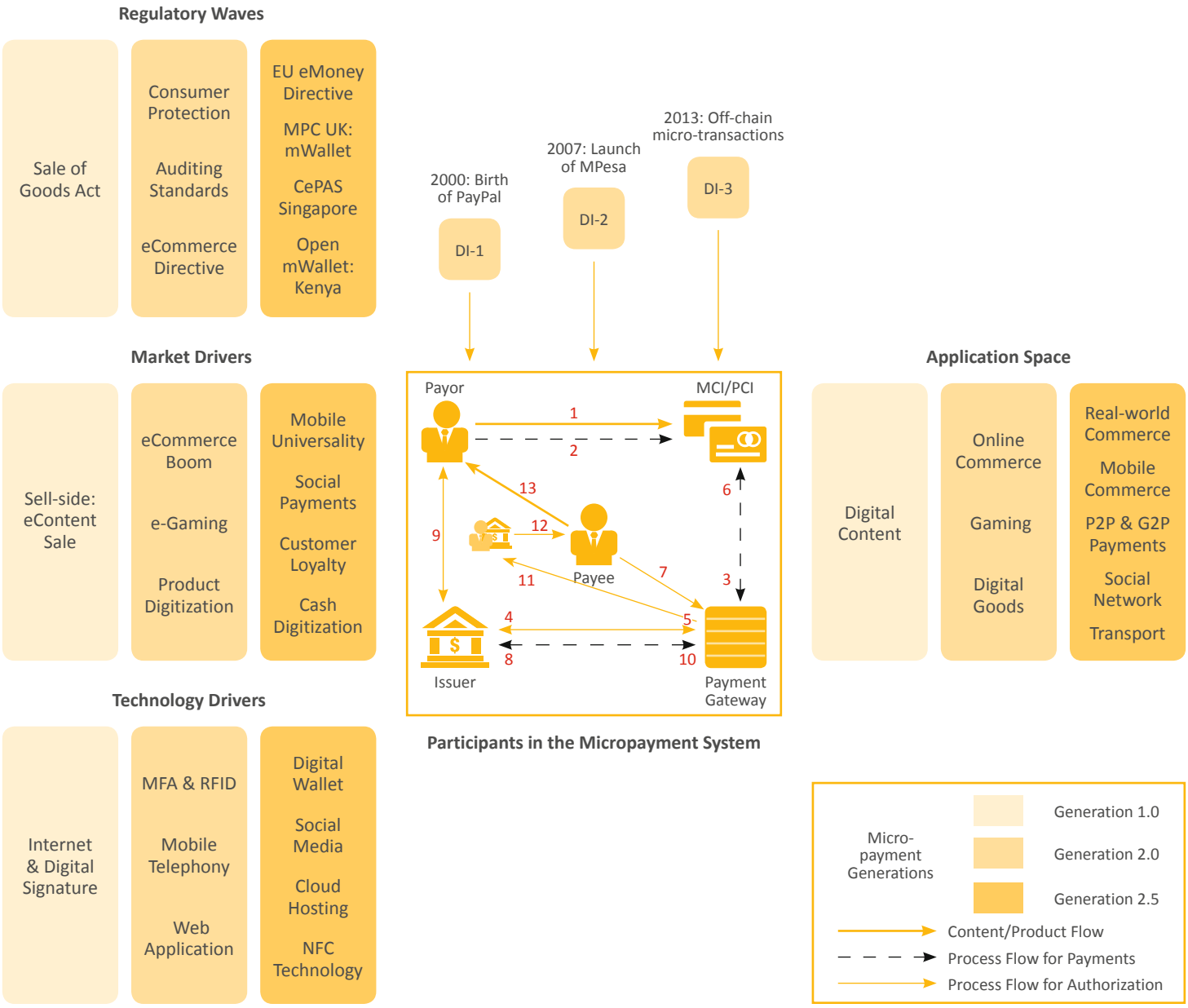
The next generation emerged around 2000-2001 with significant advances in user interface and scalability. However, these systems had to deal with increased competition and regulatory oversight. Some of the niche players that were unable to adapt, were shelved or sold out – triggering the second wave of collapse in the history of micropayments. A prominent example is PayStone – a Canadian provider, who closed its online micropayments business in 2009 due to non-compliance with regulatory directives.

1 Párhonyi Róbert, Nieuwenhuis Lambert J.M., PrasAiko.The Fall and Rise of Micropayment Systems. University of Twente, Enschede

Exhibit 1: Evolutionary Stages - Micropayment Systems

Micropayments Generation	Time Period	Definition	Key Highlights	Regulatory Governance
Gen 1.0	1994-1999	Token or account-based systems, aimed at monetizing digital content	1. Entry of top-notch tech firms - IBM & Compaq 2. Challenges - Scalability, lack of customer trust & machine-dependent user interfaces 3. Collapse by way of bankruptcy/ public trial. E.g. Digicash (Bankruptcy: 1998), NetBill (closed in 2005) and CyberCash (Bankruptcy: 2001)	Sales of Goods Act - no separate provision for electronic transactions
Gen 2.0	2000-2006	Web interface-based systems linked to real-world financial repositories of customers	1. Addressing challenges of Gen 1.0: Account-based systems, increased scalability & alliances with top banks helped gain customer trust 2. Increase in competition & regulatory costs triggering collapse E.g. Beenz (2008), PayStone (2009)	1. Federal Internet Privacy Protection Act, 1997 2. Directive 46/EC on e-money 2000 3. Uniform Money Service Act 2000 4. Electronic Fund Transfer Act 2001
Gen 2.5	2006-2007 onwards	Channel-agnostic systems targeted at all low-value real-world & virtual transactions	1. Shifts in Consumer Habits – Increased adoption of mobile devices & digital payments 2. Tech Innovations - NFC (2006), Peer-to-peer standards (2009), Smartphones (2006-7) 3. Explosion of channels (viz. mobile, point-of-transaction, TV gaming consoles) and use cases – including games, transport and social media payments	1. EU eMoney directive 2009 2. CEPAS (Contactless e-Purse Application) Singapore
Gen 3.0	Yet to Arrive	Systems characterizied by global inter-provider operability	New business models to work around the present-day challenges of high fixed costs and system fragmentation	Global & national regulations to enable & ensure inter-operability

Exhibit 2: Evolution of the Micropayments Ecosystem



Legend	CEPAS: Contactless ePurse Application	DI: Disruptive Innovation	G2P: Government-to-Person
	MCI: Merchant User Interface	MFA: Multi-factor Authentication	mWallet: Mobile Wallet
	NFC: Near-Field Communication	PCI: Payment processor User Interface	RFID: Radio Frequency Identification

Process Flow	1. Payor requests for product/online content or payment in the user interface	2. Payor shares card/wallet/account credentials through the user interface
	3. User interface forwards these credentials to the payment gateway	4. Payment gateway sends credential to issuer (bank/provider) of the payor
	5. Issuer sends authorization and confirmation for the payment to gateway	6. Payment gateway passes on this information to the interface
	7. Payee requests the payment gateway to initiate payment transaction	8. Payment gateway forwards transaction information to the issuer
	9. Issuer debits the account of payor and sends the information to payor	10. Issuer sends these funds to the payment gateway
	11. Payment gateway routes these funds to the acquirer of the payee	12. Acquirer credits the account of payee with the funds & informs payee
	13. Upon receipt of the payment, the payee either sends the goods/content promised or simply informs the payor (in case of P2P or G2P payments	

Meanwhile, in 2006-07, the industry witnessed a set of unique disruptive market forces – including shifts in consumer mindset, government policies, technological breakthroughs and business innovations. They created a dynamic ecosystem with expansion in channels and applications and cross-industry participants. We have presented the evolution of this ecosystem in Exhibit 2.

In 2006-07, the industry witnessed a set of unique disruptive market forces – including shifts in consumer mindset, government policies, technological breakthroughs and business innovations. They created a dynamic ecosystem with expansion in channels and applications and, thus, cross-industry participants. We have presented the evolution of this ecosystem in Exhibit 2.

A majority of incumbent providers managed to survive the new market conditions. However, the fundamental challenges of interoperability and high fixed costs [2] remain unaddressed till today: Over the last decade, a large variety of micropayment providers have emerged, resulting in a multitude of payment systems and standards.

While some central governments are working towards nationwide, interoperable platforms (such as the CEPAS in Singapore), there have been very few initiatives towards industry-wide standardization. This has resulted in a fragmented market, with limited compatibility among competing providers.

Moreover, the industry also suffers from prohibitively high fixed overhead costs. While top market players are experimenting with innovative techniques, these initiatives are yet to gain scale. For example, Apple introduced back-end aggregation to distribute fixed cost over a large number of transactions, while PayPal developed a new pricing model with low fixed costs exclusively for micropayments.

This demonstrated that the universality of micropayments may not be addressed completely in the near future. The next generation of micropayments, Gen 3.0, when it arrives will have to address the pressing challenges of interoperability and cost management. However, given the new wave of market innovation and government participation, we could say that a sub-generation Gen 2.5 for micropayments that originated in 2006-07 continues till date. This Gen 2.5 is distinctly different from Gen 2.0, but the change is not significant enough for us to believe that Gen 3.0 of micropayments has arrived.

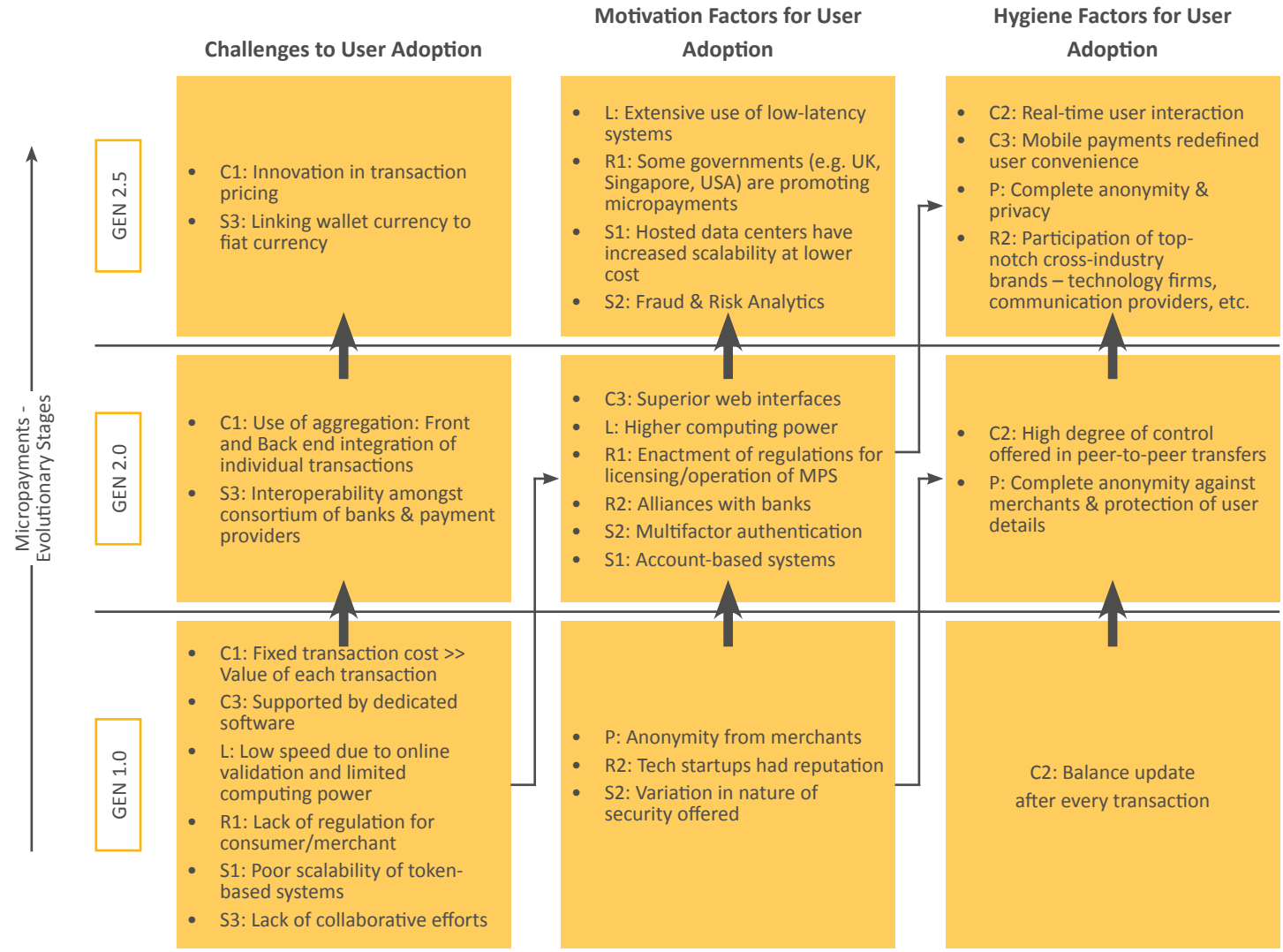
For instance, in the second generation, user convenience was a motivation factor – simple, web-based interfaces increased the adoption of micropayment systems. Subsequently, the birth of digital wallet and mobile payments redefined user convenience, making this a hygiene factor.

While the different generations for micropayments evolved from a continuous interaction between regulatory directives, market forces and technology drivers, Gen 2.5 is notable on multiple counts as illustrated above (shown in Exhibit 2):

2 Birch Dave. (1997, June). Micropayments and Microprofits – Can banks extend their payments franchise to the net.

While some central governments are working towards nationwide, interoperable platforms (such as the CEPAS in Singapore), there have been very few initiatives towards industry-wide standardization. This has resulted in a fragmented market, with limited compatibility among competing providers.

Exhibit 3: Factors Affecting User Adoption of Micropayments



Regulatory Waves – Various national governments are legislating to promote and encourage the growth of micropayments. The Payments Council in UK will bring in regulation to allow mobile numbers as proxy for bank accounts. Similarly in Kenya, the government has directed mWallet providers to develop open systems to ensure interoperability. CEPAS, a nationwide system for micropayments in Singapore, is a shining example of the impact of government endorsement on the health and success of micropayments.

Market Drivers - The emergence of customer loyalty schemes has created the need for micropayments in the retail space. The increasing universality of mobile devices and social media are other related drivers. Starbucks realized the significance of these emerging trends and benefitted from its multiple initiatives. In 2012, it partnered with Square and started accepting digital micropayments from its customers using Square's mobile app. Moreover, in Oct 2013, it launched "Tweet-a-Coffee" campaign to leverage social media-based, Peer-to-Peer payments. The campaign

was highly popular, triggering purchases worth USD 180,000 for two months. More importantly, the success of this USD 5 gift card shows that loyalty programs will be a key driver for digital micropayments in future.

Some retailers are also leveraging these trends to boost sales volume. For instance, UK-based, fast-food retailer, Greggs had been battling a shrinking topline since 2012. To counter this, it started developing a digital loyalty app based on PayPal technology, allowing transactions of GBP 50 or less. This app was launched in Feb 2014.

More than for their market size, micropayments are critical because of the demand for innovation to circumvent cost disadvantages that cannot be addressed by conventional payment systems.

Technology Drivers – The widespread popularity of mobile payments and digital wallet solutions have offered a low-cost alternative platform for the growth of micropayments. In the next few years, NFC-enabled contactless payments will open up newer use cases for micropayments such as in public transport and points of transaction. Similarly, cloud-based mobile payments promise to bring forth a massive reduction in operational costs.

Adoption of Micropayments

User adoption has been affected by 3 factors[3]: motivating user adoption, barriers to adoption and hygiene factors (with the absence of hygiene factors causing user dissatisfaction).

User Adoption of Micropayments: These factors have been presented in Exhibit 3 as 'Challenges[4] to User Adoption', 'Motivation Factors for User Adoption' and 'Hygiene Factors for User Adoption'. Exhibit 3 depicts the evolutionary stages of micropayments vertically, starting from Gen 1.0 and moving up to Gen 2.5.

Cross-Factor Transition: Sudden technological innovations and systematic efforts from industry participants convert individual factors from one type to another - redefining customer experience across generations.

Based on our observations, there are two kinds of cross-factor transitions:

a. Challenges arising from one generation transforming into Motivation Factors of the next generation: Challenges which are addressed partially or by a small set of providers, become motivation factors for consumers. For instance, latency was a major challenge in the first generation. In the second generation, this was addressed by some of the providers using offline validation, which has proven to be a significant attraction for customers.

b. Motivation Factors of one generation transmuting into Hygiene Factors of the next generation: When premium and innovative, first-of-a-kind features offered in selected systems/markets are replicated on a large scale in the subsequent generation, they

When premium features offered by certain providers cannot be provided on a large scale, such factors continue to motivate user adoption. For instance, even in generation 2.5, providers that use low-latency systems and make use of cloud-based operations (for lower cost), are able to differentiate themselves in the market.

3 Párhonyi Róbert, Nieuwenhuis Lambert J.M., Pras Aiko. The Fall and Rise of Micropayment Systems. University of Twente, Enschede

4 Gonville, Michelle Baddeley and Caius College, Faculty of Economics and Politics, Cambridge, UK (2004). Using E-Cash In The New Economy: An Economic Analysis of Micropayment Systems. Journal of Electronic Commerce Research, VOL.

5 Clark, Brent (2001). Electronic Wallets: Past, Present and Future. White paper, GPayments.

With the advent of digital payments, banks are competing head-on with digital payment and technology providers (such as PayPal and Google) as well as communication service providers. These players are constantly innovating to create new combinations of digital financial services – e.g. the debit card from Google Wallet and the Smartphone-based credit card reader launched by Square Inc.

constitute hygiene factors, becoming a part of basic consumer expectations from the service. Technological breakthroughs are major contributors in this process. For instance, in the second generation, user convenience was a motivation factor – simple, web-based interfaces increased the adoption of micropayment systems. Subsequently, the birth of digital wallet and mobile payments redefined user convenience, making this a hygiene factor.

Unless triggered by specific market conditions and collective industry efforts, these factors continue to move in the same category across generations.

a. **Motivation Factors:** When premium features offered by certain providers cannot be provided on a large scale, such factors continue to motivate user adoption. For instance, even in generation 2.5, providers that use low-latency systems and make use of cloud-based operations (for lower cost), are able to differentiate themselves in the market.

b. **Hygiene Factors:** Even when fundamental hygiene factors are addressed differently across generations, they remain a part of basic service expectations in the consumer mind space. For example, user control is one of the basic expectations from micropayment systems. Users should be able to monitor the status of their account (current balance and pending payments) and track the duration of fund transfer.

The industry is still unable to address prohibitive fixed transaction costs in comparison with transaction value.

Gen 2.5 – Why Should Banks Enter the Micropayments Space?

Till date, banks have been mostly wary of launching a full-fledged micropayments product – owing to smaller market size, prohibitive costs and regulatory oversight. However, at present, the market offers a huge opportunity in terms of market growth as well as the underlying demand for innovation.

By linking bank accounts with micropayment offerings, banks can offer an end-to-end payments solution, broadening their transaction base.

Market Size and Growth: The total value of the European micropayments market stood at EUR 6 Billion in 2011. Furthermore, under the aegis of the European Payments Council (EPC), the market is expected to grow to EUR 15 Billion by 2015 [6]. On the other hand, micropayments (transactions values <USD 25) in USA stood at nearly USD 2 Trillion in 2005 while online micropayments, a sub-segment of this market, were pegged at USD 7 Billion in 2009.

Market Relevance: More than for their market size, micropayments are critical because of the demand for innovation to circumvent cost disadvantages that cannot be addressed by conventional

6 Hernandez –Verme, Paula L, and Valdes Benavides, Ruy A. Virtual Currencies, Micropayments & The Payments Systems: A Challenge To Fiat Money & Monetary Policy. Universidad de Guanajuato, Mexico

payment systems. This demand is three-pronged and comes from:

1. Consumers: High fixed transaction costs associated with micropayments prove to be a significant hindrance[7]. Even though providers use aggregation techniques at present, these do not fit a one-time purchase. They are also inconvenient in cases where the customer has to pay upfront for the products/services.

   The emergence of mobile and social-media based payments is also driving consumer demand for real-time low-value transactions.

2. Business: Merchants are battling against existing market fragmentation. The micropayments industry is characterized by a large number and variety of providers, each controlling a small part of the market. Buy side customers can use any of these micropayment providers. Few providers allow interoperability among themselves. For instance, Facebook Credits incorporated PayPal payments to increase user adoption in 2010. Later, it also adopted PayPal's micropayments service launched for digital goods. However, the alliance was short-lived, with Facebook eventually phasing out its digital payments platform. Facebook today is preparing to join the mobile payments race again with its own payments system.

   Thus, merchants have to tie-up with a large number of operators to ensure payment acceptance for a substantial volume of customers. In Singapore, the government recognized this challenge towards universality of micropayments and developed CEPAS 2.0, a standard to allow interoperability of different payment schemes. Globally, the emergence of digital currency exchangers, which provide interoperability among different digital currencies, is a move towards addressing this fragmentation.

3. Government: Public institutions across the globe are taking active interest in the micropayments industry.[8] There are regional nuances in their underlying objectives though. However, all these objectives favor a greater adoption of micropayment systems. For example, the European Payments Council (EPC) is driving the acceptance of digital payments and micropayments to circumvent the complex, highly expensive cash generation process.

   On the other hand, in emerging markets, micropayment systems offer a powerful means to achieve financial inclusion[9]. The success of M-PESA in Kenya is a case in point.

> Consortium Rules resulted in the adoption of a unified micropayment standard and set of instruments throughout the globe. Alternatively, we see the emergence of a global Micropayment Exchange, with interoperability among multiple systems/currencies.

Market Dynamics - Role of Banks vis-à-vis Other Market Participants:

Banks: In those markets where we see a regulatory push towards micropayments and payments innovation, top-notch banks have successfully launched micropayment services. For example, Barclays launched Pingit – a mobile app that allows person-to-person (P2P) payments of minimum GBP 1. However, as is evident in this case, the approach has been indirect, leveraging popular consumer trends such as P2P (person-to-person) payments and social media payments. Moreover, most of these initiatives have been launched in relatively mature markets such as the UK and The Netherlands.

Beyond these few instances, banks haven't participated in micropayments. The industry has been dominated mostly by non-banking participants. The first generation was driven by technology start-ups and venture capitalists. Generations 2 and 2.5 have produced a wider spectrum of players.

7 McGrath, James C. (2006, June). Micropayments: The Final Frontier for Electronic Consumer Payments. Discussion paper from Payments Card Center.

8 Analysis Mason (2010, Dec). The marketplace for and regulation of micropayment services in the UK. PhonepayPlus

9 The World Bank (2012, Oct). Innovation In Retail Payments Worldwide: A Snapshot. Outcomes of The Global Survey on Innovations In Retail Payment Instruments And Methods. Research from Payment Systems Worldwide.

Digital Payment Providers [10]: In the second generation, digital payment processors such as PayPal, Allopass and Square came into existence. They have been instrumental in the creation of new services and in introducing pricing innovation, such as transaction tier pricing in the market.

Mobile Network Operators: The advent of mobile payments was another major development for micropayments. The popularity and widespread adoption of mobile devices helped mobile operators in gaining market traction. This wide customer base helped in spreading infrastructure costs, while the absence of specific regulations helped maintain profitability. In some of the emerging markets, such as Africa, telecom providers are playing a pivotal role in reaching out to the unbanked population and thereby helping increase GDP and lower transaction costs.

The rapid adoption of mobile payments also prompted other market players, such as the digital payment providers, to leverage mobile as part of their digital channel mix for micropayments.

Technology Giants [11]: Apple forayed into the market of micropayments primarily to support its products. Nevertheless, the revenue-sharing model with the app seller was an instant success, driving the adoption of micropayments. Google, Amazon and Microsoft are the technology players of mark in this space.

Social Networking Providers: The consumer-led proliferation of social media and the rise of social gaming paved the way for two important trends - commercialization of content exchanged over social networks and peer-to-peer payments on social media. These trends in turn created a unique opportunity for micropayments in social media. To exploit this market, some social networking providers started partnered with third-party payment providers, such as Twitter's alliance with Twitpay, Twollars and Flattr. Others explored the opportunity to launch virtual payment currencies and platforms, such as Facebook Credit (2011). This market segment is still evolving, with Facebook switching back to real-world currencies and Twitter dropping some of its partners.

Traditional Payment Processors [12]: Payment intermediaries such as Visa have made a late entry into the market – primarily because the overall market size is much smaller compared to macro-payments. The high cost associated with card-based systems caused another hindrance. However, gradually these providers launched the digital wallet and micropayment services. For e.g. Visa launched Payclick in 2010 and American Express launched Serve in 2011.

To sum up, the inability of banks to respond in the near future can prevent them from playing a dominant role in micropayments in the future. Moreover, banks will lose out on a huge opportunity to reposition themselves.

Preventing Erosion of the Banking Value Chain: With the advent of digital payments, banks are competing head-on with digital payment and technology providers (such as PayPal and Google) as well as communication service providers. These players are constantly innovating to create new combinations of digital financial services – e.g. the debit card from Google Wallet and the Smartphone-based credit card reader launched by Square Inc.

In some cases, non-banking payment providers are part of the communication loop linking merchants, payer and banks (e.g. PayPal), while in others, they are offering payment portals, bypassing banks altogether. M-Pesa in Kenya is an example of a mobile network operator (MNO) providing a cheaper and more efficient alternative to banks for financial inclusion.

The end result is that multiple competitors are eating up parts of the banking value chain [13] and banks face the risk of being reduced to the limited role of offering basic transactional features. Given the huge interest of governments across the world, the micropayments market will play a significant role in defining payment systems of the future.

Diversifying Revenue Pipeline: Banks are exploring alternative means of revenue generation and micropayments offer multiple opportunities for this. Even without direct market participation, banks can rely on their existing infrastructure such as channels, IT applications, among others, and earn revenue by leasing them to participants from other industries. By linking bank accounts with micropayment offerings, banks can offer an end-to-end payments solution, broadening their transaction base.

10 Bradford, Terri, and Keeton, William R (2012). New Person-to-Person Payment Methods: Have Checks Met Their Match. Economic Review, Third Quarter 2012

11 Analysis Mason (2010 Dec) The marketplace for and regulation of micropayment services in the UK, PhonepayPlus

12 McGrath, James C. (2006, Jun). Micropayments: The Final Frontier for Electronic Consumer Payments. Discussion Paper from Payments Card Center.

13 Dapp Thomas F, Stobbe Antje, Wruuck Particia (2012 Dec). The Future of (Mobile) Payments – New (online) players competing with banks. Deutsche Bank Research

Marketing and Restoring Market Reputation: In recent times, the reputation of banks has suffered due to multiple litigations and regulatory fines. Customer trust is also at an all-time low. In this situation, by actively participating in the micropayments market, and helping various governments in establishing financial inclusion, banks can regain consumer confidence and recover some of their lost reputation.

However, the specific nature of bank participation will depend upon the evolution of micropayments and the course of action taken by market participants and regulators.

Guidance: What Banks Can do in Response to the Evolving Scenario of Micropayments?

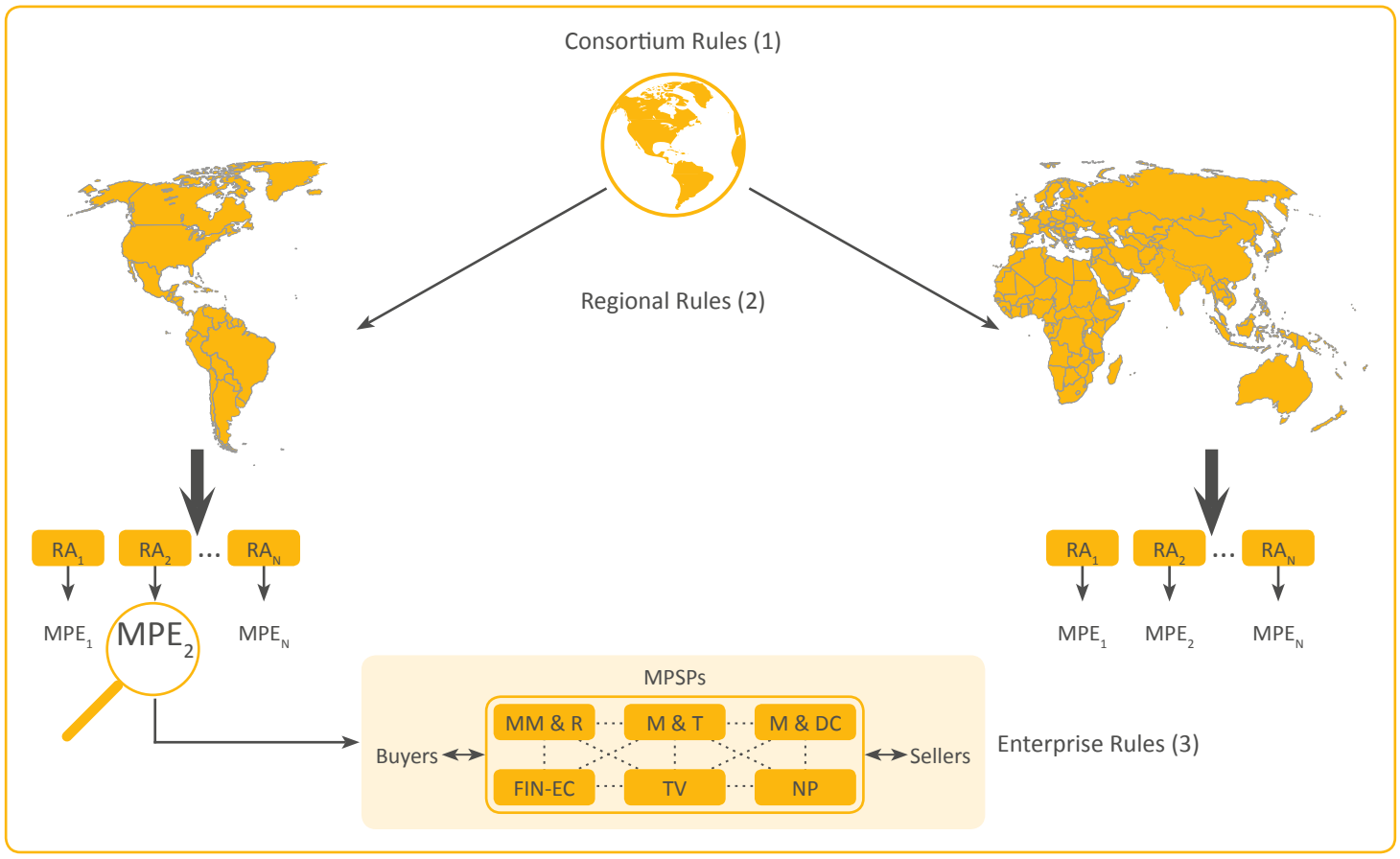
The market for micropayments continues to evolve differently across regions.

However, based on the development of the payments industry and specific market events in the past, we envision three probabilistic scenario[14] for the global micropayments industry, which are:-

Scenario 1 - Consortium Rules resulting in the adoption of a unified micropayment standard and set of

14 Párhonyi Róbert, Quartel Dick, Pras Aiko (2004). Collaborative Micropayment Systems. University of Twente, the Netherlands. 19th World Telecommunications Congress (WTC).

Exhibit 4: Scenario Analysis for Micropayments



Legend	MM&R: Micro-Merchants & Retailers	M&T: Mobile & Telecommunication Providers	M&DC: Media & Digital Content Providers
..... MPSP Interaction	FIN-EC: Participants from Financial Ecosystem	TV: Technology Vendors (including start-ups)	NP: Niche Players, specializing in micropayments
	RA: Regulatory Authority of the economy	MPE: Micropayment Ecosystem in an economy	MPSP: Micropayment System Providers

Exhibit 5 – Future of Micropayments and the Strategic Positioning of Banks

Scenario	Consortium Rules	Regional Rules	Enterprise Rules
Market Evolution	1. Adoption of a single micropayment standard and instrument – with global operations and platform independence 2. Worldwide Micropayments Exchange: Interoperability among multiple systems & digital currencies across the globe – e.g. foreign exchange markets	1. Emergence of nationwide and regional micropayment standards 2. Strong regulatory governance and regional co-operation – with governments defining market space, participation and interoperability	1. Lack of global/regional consensus among market participants 2. Market Fragmentation 3. Partial interoperability based on vendor alliances
Present-Day Simulative Cases	**Gen 1.0 : Microtransaction Standards from World Wide Web Consortium (W3C)** 1. Birth of Mircopayment Markup Working Group (MPM-WG) 2. Common applications programming interface (API) & interoperable language 3. The initiative was aborted later due to operational challenges Gen 2.0: Digital Currency Exchangers(DCEs) 1. DCEs offer interoperability among different digital currencies 2. Exchange of digital currencies for conventional fiat money 3. Instances: EcurrencyZone in US; Exchange Plus; Kraken Digital Asset Trading Platform	**CEPAS (Contactless e-Purse Application) in Singapore:** 1. e-Payment initiative by IDA - Infocomm Development Authority of Singapore 2. Single MPSV (Multi-Purpose Stored Value) card for micro-payments across Singapore 3. Enforcing interoperability in the fragmented micropayments market dominated by NETS (retail and monitoring space) & EZ-Link (transport) 4. CEPAS can lead an ASEAN-level market integration	**M-PESA in Kenya: Enterprise-centric market in the absence of government regulations** 1. 2007: Mobile payment launched by Kenyan network operator, Safaricom 2. Penetration of unbanked rural markets – growing to 17 Mn accounts 3. Banking system bypassed by engaging airtime resellers/retail outlets 4. Failure of mobile banking systems launched by banks to replicate M-PESA's success E.g. Eazzy 24/7 from Equity Bank 5. Other banks have successfully teamed up with Safaricom E.g. CFC Stanbic Bank
Strategic Positioning for Banks	1. Single Universal Framework: Adoption of a unified global micropayment standard: with platform/channel independence 2. Worldwide Micropayments Exchange: Interoperability among multiple systems & digital currencies Banking Strategy: 1. Cross-Regional Acquisitions & Alliances: Global banks acquiring regional micropayment provider OR regional banks partnering with global micropayment providers 2. Revenue Generation: Investment banking services for access to global markets, linking trading accounts with micropayments to offer micro-trading transactions, generating fee-based revenues by offering market infrastructure services	1. Strong regulations favor market competition & uniform interoperability standards help in market entry 2. Banks work in similar conditions under the Central Bank of a nation Banking Strategy: 1. Minority Stake/Acquisition: Minority stake in leading micropayment providers, followed by full-fledged acquisition. Mutual synergy from payments infrastructure and customer set of banks & micropayment providers 2. Channel Expansion: Banks introducing newer channels for micropayments – such as ATMs and bill payment kiosks. In an integrated regional/national micropayment system, such innovative moves help in enhancing visibility to customers and gaining market share	Stiff competition from incumbents with strong credibility & market presence Banking Strategy: 1. Marketing Alliances: Mutual alliances -> low-cost strategy of penetrating the target audience. Promoting banking services through 3rd party micropayment websites/ channels 2. Cross-Industry Alliances: Client-sharing partnerships with micropayment providers of other industries – telecom operators, technology providers, etc. 3. Leasing/Outsourcing: Indirect revenues from existing physical/ digital infrastructure E.g. Leasing out banking channels; Outsourcing engagements bagged by in-house IT teams

instruments throughout the globe. Alternatively, we see the emergence of a global Micropayment Exchange, with interoperability among multiple systems/ currencies.

Scenario 2 - Regional Rules causing the emergence of nationwide and regional standards for micropayments, alongside strong regulatory governance.

Scenario 3 - Enterprise Rules creating a lack of a consensus across nations or regions, which can in turn hinder interoperability, leading to market fragmentation and the emergence of closed ecosystems.

Exhibit 4 provides a visual summary of these future scenarios: Collaboration at a global level is expected to drive a worldwide micropayment consortium. Alternatively, governance by regional/ national regulatory authorities will result in regional clusters of micropayment systems. In the absence of any such collaborative efforts, the market of micropayments will mostly likely be dominated by individual enterprises from various industries. The Exhibit $ is a representative micropayment ecosystem with buyers and sellers interacting with multiple cross-industry players, including technology vendors, retailers and financial service providers.

In order to win banks will have to chart out a strategy and take up specific actions to penetrate the micropayments space. In Exhibit 5, we illustrate each of the scenarios with present-day cases and recommendations for positioning.

Natasha Roy
Corporate Research Group
Tata Consultancy Services

Himadri Sikhar Pramanik
Lead, Corporate Research Group, Tata Consultancy Services

Manish Kirtania
Manish - Global Corporate Research and Campaign Support Service
Tata Consultancy Services

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