

Technology Trends in the Global Payments Industry: 2012



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1. Highlights

With the gradual economic recovery during 2010, non-cash payment transactions gained momentum in volume. The driving forces behind this global shift from cash to non-cash transactions include:

- Consumers who are using cards more and writing fewer checks
- Technological advances, such as the ability to make e-payments online and via mobile phones, as next generation delivery models emerge
- Changing and new industry regulations, aiming to improve speed and efficiency of the payments systems and process

While mature economies contributed roughly 80% to the volume of global non-cash transactions in 2010, their 4.9% growth rate was far outpaced by a 16.9% growth rate in developing economies¹.

Key trends advancing the global payments industry include:

- Increasing investments in improving payments infrastructure
- Launching innovative product/service offerings
- Rising fraud concerns
- Cross-regional impact of regulations

As mobile and e-payments emerge as alternatives to traditional payment instruments, banks and non-banks are collaborating more for mobile payments infrastructure, as well as emerging hybrid and innovative instruments. Moreover, as banks continue to realize the importance of innovation in the payments industry, they are making strides in offering newer and more progressive ways to cater to their customers' evolving preferences.

Because banks are offering more flexibility with regard to how customers make payments, there is an increased focus on implementing payment services hubs, which would help foster flexible payment capabilities. In addition to delivering more flexibility, banks are also working toward addressing cost issues by adopting next generation delivery models, such as SaaS, cloud computing, outsourcing, and co-sourcing.

Moreover, there is an increased focus on cash and liquidity management from banks' corporate customers, which is driving banks to implement electronic invoicing or e-invoicing, solutions. E-invoicing can greatly improve the efficiency of the financial supply chain because it links the internal processes of enterprises to the payment systems. For this reason, a number of governmental and regulatory bodies worldwide are promoting it.

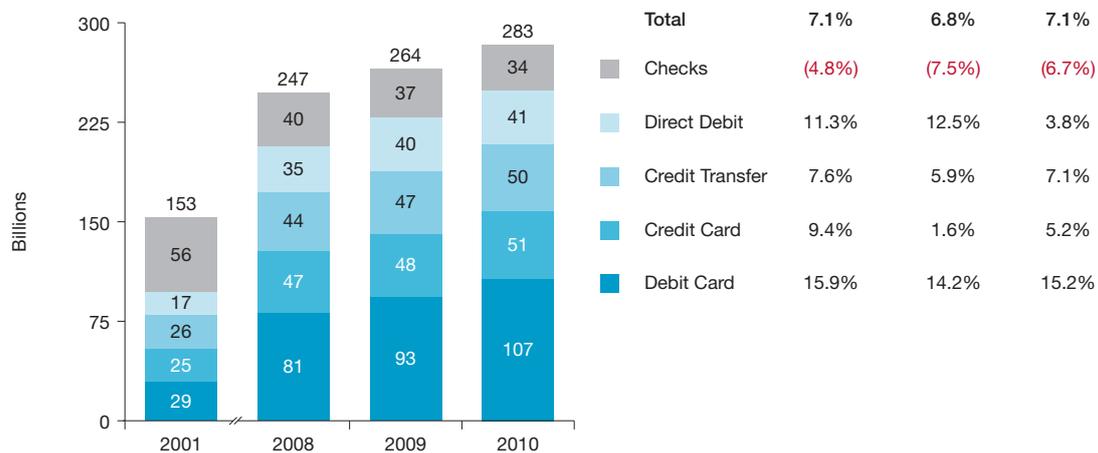
Finally, with any new innovative opportunity—particularly in e-commerce—fraudulent behavior looms close. Cyber criminals, too, are becoming more sophisticated and employing advanced technologies to defraud financial institutions and their retail customers. This has led to the emergence of specialized security service providers for retail payments, particularly mobile payments. With rising regulatory pressure on risk management, banks are looking to an enterprise approach to risk management in payments, which uses enterprise-wide data and intelligence for risk assessment, monitoring, and management.

¹ *World Payments Report 2012*. Capgemini, RBS, and Efma, 2012

2. Introduction

Due to a gradual worldwide economic recovery which began in 2010, the volume of global non-cash payments increased during 2010. Non-cash transactions grew by 7.1% that year to reach \$283 billion. While mature economies contributed nearly 80% of the volume in 2010, the 4.9% growth rate of mature economies was far outpaced by the 16.9% growth rate in developing economies. The volume of non-cash transactions in Brazil, Russia, India and China (BRIC) grew at a rate of 15.5% in 2010. While Brazil and India witnessed modest growth of 8.9% and 10.0% respectively, Russia and China experienced a sharp increase in volumes with growth rate of 33.9% and 30.3% respectively.

Exhibit 1: Global Non-Cash Transactions by Payment Mode (bn), 2001, 2008–10



Source: *World Payments Report 2012*, Capgemini, RBS, and Efma, 2012

Debit and credit card transactions contributed a bit more than 55% to the volume of global non-cash transactions in 2010, up from about 53% in 2009 and 35% in 2001. Card transactions were the most dominant payments mode in all regions worldwide, particularly North America and mature Asia-Pacific. Although in Europe and BRIC countries, other payment modes such as direct debit and credit transfer are also widely used.

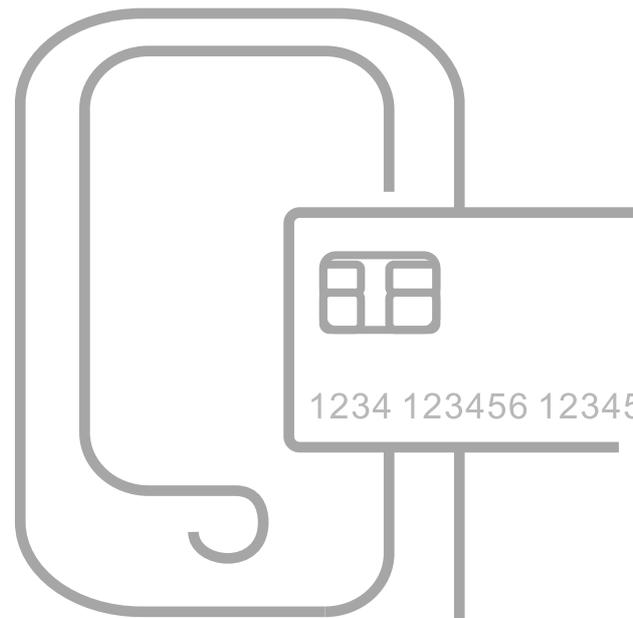
The growth in card transactions—particularly debit cards—was driven by small-ticket transactions. This indicates an upward consumer trend in a *pay-as-you-go* approach as well as merchants' increasing acceptance of small debit transactions.

Toward the other end of the payments spectrum are check transactions. The share of checks in global non-cash transactions continued to decline in tandem with many markets attempting to decommission checks, while credit transfer and direct debit transactions continued to increase in 2010, highlighting the shift in consumer and regulatory preferences of payment modes.

Driven by advancements in technology, proliferation of the internet's reach, rise in numbers of smartphones, and innovative products and services, online and mobile payments are expected to continue to grow at a rapid pace.

In an effort to capture the needs of consumers, non-bank players, such as mobile operators and non-bank payment processors, are offering innovative products. These offerings, coupled with advancements in technology and the vast population of unbanked consumers (particularly in developing economies), have been the major force behind the important role that non-banks are playing in the payments industry. To that end, banks and acquirers are also realizing the importance of innovation in the payments industry, and have begun offering new and innovative payment solutions as well.

This paper focuses on key technology trends in the payments industry and explores industry responses.



3. Emerging Trends in the Payments Industry

As consumers move away from a cash economy and favor, instead, card and e-payment transactions, there are a number of trends emerging across the global payments landscape. Among them:

- Increased debit card usage
- Declining check usage
- Focus on mobile and e-payments for innovation
- An ever-changing regulatory environment

As a direct result of these global trends, others are reshaping the payments industry from one continent to another, as the industry addresses inevitable change. These include:

- Increasing investment in improving the payments infrastructure
- Launch of innovative product/service offerings
- Rising fraud concerns
- Cross-regional impact of regulations

The catalysts behind these trans-geographic changes include customers, technology, and regulations. However, any key focus area might vary from region to region.

The North American market, for example, is expected to increase its focus on Europay, MasterCard, and Visa (EMV), mobile, and near-field communication (NFC) payments, while witnessing a rise in debit card usage, number of regulations, and data security concerns.

The implementation of Single Euro Payments Area (SEPA) and the emergence of an integrated market are likely to surface as focal areas in Europe.

The Asia-Pacific region is likely to witness an increase in e-payments, number of payment options, and reach of prepaid cards. Also, credit card penetration and remittances are expected to increase in coming years, with regulators playing an increasingly important role.

A cultural shift in Latin America is driving the growth of person-to-person (P2P) payments, credit cards, e-payment enablers, and government-added incentives, leading to an increase in non-cash usage.

Africa is witnessing an increased number of innovative payment products and services, with a rapid growth in adoption of mobile payments. A large unbanked population and significantly high share of small ticket transactions are the main drivers behind these trends in the region.

Globally, mobile and e-payments are emerging as alternatives for traditional payment instruments. This has leading to an increased collaboration between banks and non-banks for mobile payments infrastructure and hybrid and innovative solutions. As banks also realize the importance of innovation in the payments industry, they are offering new innovations.

The remainder of this paper examines five key technology trends on which the payments industry is focused:

1. Implementing payment hubs in an effort to build flexible payments capabilities
2. Cash and liquidity management as a driving force behind the implementation of e-invoicing solutions
3. An enterprise approach to risk management in payments
4. Emergence of specialized security service providers for retail payments, particularly mobile payments
5. Adoption of next generation delivery models



4. Trend 1: Implementing Payment Hubs to Build Flexible Payments Capabilities

An increasing number of banks are looking to implement payment services hubs in an effort to minimize payment silos while remaining flexible to changing business needs.

4.1. Background and Key Drivers

From every corner of the world, the payments industry is experiencing exponential changes. This is largely as a result of technological advancements, changing business needs, and reshaping of regulatory environment across the globe.

Changing customer preferences remained the core reason behind changing business needs. By utilizing new technologies, innovative offerings by non-banking firms are posing a risk to banks of customer erosion. The growth of non-traditional payment services, such as P2P payments and mobile payments, are creating the need for support and integration within the payment infrastructures of banks. New regulations and initiatives also require adaptable capabilities and flexibility among banking payment systems.

The current payment engines and infrastructure used by banks do not meet today's requirements in terms of functionality, capacity, and flexibility. This has led to a serious need for a flexible yet robust systems which can accommodate growing risk and liquidity capabilities. An increasing number of banks are looking to implement payment services hubs in an effort to minimize payment silos while remaining flexible to changing business needs. Banks may, however, choose to adopt an incremental implementation strategy instead of replacing the existing systems at once.

The key drivers behind the increased focus on implementation of payment services hubs are:

- Heightened focus on reducing costs to improve profits
- Retaining and enhancing revenue
- Improving risk and liquidity management
- Increased agility and flexibility, the primary limitations of existing systems

4.2. Analysis

Cost Reduction

By implementing payment hubs, banks are more likely to reduce IT, operational, and transaction costs. For example:

- While maintenance costs would be lower, payment hubs would enable development of future solutions at low cost levels
- Straight-through processing rates can be improved and reduce the need for manual intervention
- Payment services hubs would help consolidate disparate payment groups and gain scale in operations
- Banks with payment hubs can monitor real-time information and comprehensive business activity

Revenue Retention and Enhancement

Implementation of payment hubs is a major investment. However, it affords banks an opportunity to retain and even boost revenues because such hubs offer the potential for banks to levy new chargeable services on its customers.

Improvement in Risk and Liquidity Management

Risk and liquidity management improves as a result of advanced anti-money laundering and fraud management, reduced error rates, and increased system resilience. Payment services hubs also improve responsiveness to regulatory changes, market demands, and faster integration in the event of mergers and acquisitions.

Increased Agility and Flexibility

Utilizing outdated technology hinders banks' requirements for functionality, capacity, and flexibility, furthering the need for a flexible payments infrastructure. The risks of losing customers and market share to competitors are the primary business drivers forcing banks to consider implementing payment services hubs. Banks are also facing a changing and challenging environment from customers who seek faster payments and more and better value-added services. New regulations also necessitate investments in new technology and capabilities.

Market Share of Payment Services Hub Implementations

Payment hub implementations are large and expensive projects, the benefits of which have been realized mainly by banks with strong international and corporate franchises. While smaller banks appreciate the benefits of such implementations, the high costs involved cannot be justified because of small banks' lower payment volumes.

The large scale implementation of payment services hubs is primarily due to the European Union's SEPA initiative. The European region has the highest share of payment hub implementations with over half the global implementations. Market share in North America is at lower levels as procurement practices—which sometimes fail to take into account that a hub is a solution not a product—have been a strong impediment to payment hub initiatives. The fragmented and product-focused Asia-Pacific market closely follows North America.

4.3. Implications

Payment services hub projects are a massive undertaking, which are likely to have a major impact on a bank's overall IT architecture. Analysis of existing systems and a well-planned implementation roadmap are critical to its success. Banks need to determine the scope of payment hubs both in terms of products (such as cards, credit transfers, and direct debits) and geographical coverage. Successful implementation can offer significant advantages to a bank over its banking peers.

Because payment hub implementations involve a critical phase of building strategy, professional services firms need to build strong consulting capabilities in this area. Due to the size of payment hub undertakings, financial service institutions may look for multiple partners. It is for this reason that payment services firms need to take a broad view and be prepared for a long term multi-vendor project implementation.

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5. Trend 2: Cash and Liquidity Management Implementation as E-invoicing Solutions Driver

The banking industry has traditionally been slow making investments in e-invoicing systems because of budget constraints.

5.1. Background and Key Drivers

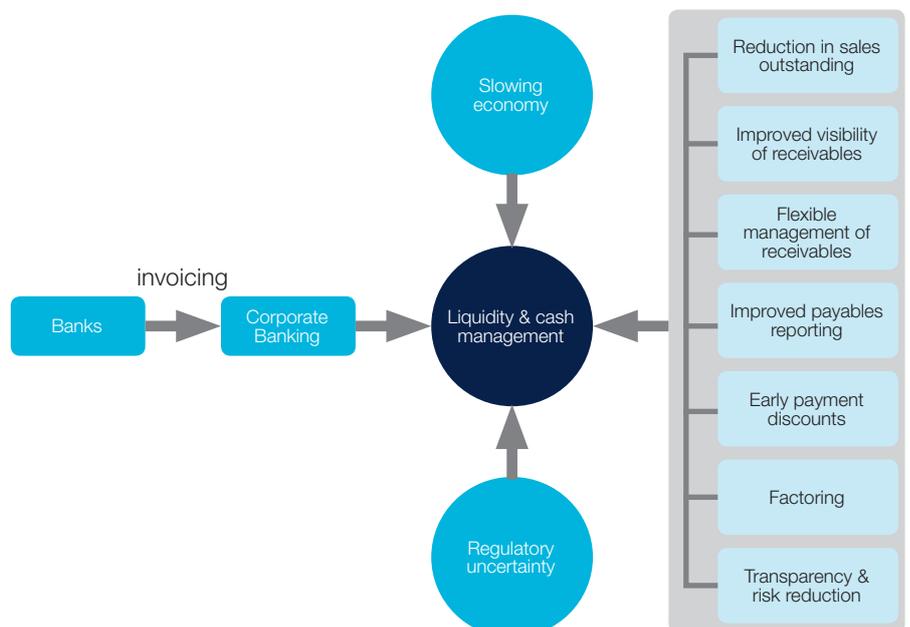
Electronic invoicing—or e-invoicing—is the electronic transfer of billing and payment information between business partners, such as suppliers and buyers. Because e-invoicing links the internal processes of enterprises to the payment systems, it can greatly improve the efficiency of the financial supply chain. Although e-invoicing is not a new concept, the banking industry has traditionally been slow making investments in e-invoicing systems because of budget constraints.

However, today's economic and regulatory uncertainties are putting pressure on businesses to more efficiently manage cash and liquidity. Bank customers, particularly corporate customers, are becoming more demanding and actively seeking to automate their invoicing processes. This is forcing banks to implement e-invoicing systems to cater to the demand of corporate customers. Various governments and regulatory bodies are also pushing for e-invoicing, in an effort to streamline their own payment systems.

We see three key factors driving banks' current shift toward implementing e-invoicing solutions:

- Economic and regulatory uncertainty has put pressure on businesses to efficiently manage cash and liquidity
- The majority of corporate customers are demanding support for automation and standardization of invoices
- Various regulatory bodies or governments such as Finland, the European Union Commission, and Brazil are pushing for e-invoicing in an effort to achieve a faster and more efficient payment system

Exhibit 2: Factors Driving E-invoicing



Source: Capgemini Analysis 2012

5.2. Analysis

E-invoicing can greatly enhance the efficiency and effectiveness of the financial supply chain. As businesses focus more on e-invoicing, their banks are looking to implement e-invoicing primarily to cater to their needs.

The global financial crisis has tested companies on liquidity parameters forcing those with inadequate liquidity to either merge or file bankruptcy. This has made liquidity and risk management a top priority for businesses.

According to the 2012 *AFP Liquidity Survey*³, 98% of respondents felt that safety of principal or liquidity is their organization's most important short-term goal. An increasing complexity in the financial supply chain driven by globalization, regulations, such as Basel III, and rising costs have put pressure on companies' risk and liquidity management, thus illuminating an opportunity for banks to adopt e-invoicing.

Because the European Commission wants e-invoicing to be the predominant invoicing method by 2020, it is cited as among the premier money-making opportunities from SEPA. As per European Commission⁴, businesses can expect to save €64.5 billion (USD83.26 billion) per year by 2020 as a result of pan-Europe e-invoicing⁵.

North America leads e-invoicing in the business to consumer (B2C) space and is considered to be farther ahead than other markets. According to a study conducted by NACHA, The Electronic Payments Association, over five billion B2C bills were presented in 2010⁶. On the business to business (B2B) front, volumes in North America are lower than Europe on a percentage basis as firms focus on complete order-to-cash or purchase-to-pay.

Within Europe, e-invoicing trends are mixed, ranging from high adoption to no adoption at all. Varying diversity in the adoption of e-invoicing is seen as the biggest barrier for wider implementation across Europe. However, the European Commission is taking initiatives to remove those barriers.

In Asia-Pacific, e-invoicing trends are mixed. Some countries are in the early stages of development, while others show significant progress. International trading hubs, such as Singapore, Hong Kong, Taiwan, and South Korea have made rapid developments in e-invoicing. The Chinese and Indian governments are in the process of changing legislations, which will likely add significant numbers to their e-invoicing volumes.

5.3. Implications

As demand for e-invoicing from corporate customers has increased, banks need to collaborate with e-invoicing vendors to improve existing e-invoicing solutions by offering their expertise. Financial service institutions need to offer e-invoicing solutions which integrate with existing products such as supply chain finance, billing and invoicing, and B2B payments offered to corporations.

Currently a number of professional services firms offer e-invoicing solutions, although there is insufficient standardization across the different solutions. Apart from standardization, professional services firms need to address security concerns related to this new technology in order to help keep up the momentum.

Financial service institutions need to offer e-invoicing solutions which integrate with existing products such as supply chain finance, billing and invoicing, and B2B payments.

3 2012 AFP Liquidity Survey, Association for Financial Professionals, http://www.citizensbank.com/pdf/commercial/2012_AFP_%20Liquidity_Survey.pdf

4 E-invoicing: Cutting the Paperwork, Banking Technology, <http://www.bankingtech.com/48387/E-invoicing-cutting-the-paperwork/>

5 Exchange rate as of 28 Nov 2012, €1 = US\$1.2909

6 Celent: "The Opportunity for E-Invoicing," Gareth Lodge, May 24, 2012

6. Trend 3: An Enterprise Approach to Risk Management

Emerging risks can be opportunities rather than threats if they're identified, assessed, and managed to create a competitive advantage.

6.1. Background and Key Drivers

As the variety of payment methods, advanced technologies, and online and mobile payment channels proliferate, risk management in the payments industry is becoming increasingly complex. Along with the surge in payment technologies, fraudsters are at large adapting to the latest technology in their persistent effort to defraud banks and their customers. This security concern has led banks and other financial service institutions to focus on advanced approaches toward risk management of their corporate customers.

Traditionally, banks and other financial service institutions have operated in silos primarily based on products. While the payments industry have been focused on preventing financial fraud in traditional ways, now financial service institutions need to take an enterprise approach to payment controls. An enterprise approach has received little attention because of a belief that each payment type is so distinct that it cannot be understood or managed at an enterprise level. But as customer demands and the regulatory environment drive real-time payments and increase payment volumes, banks are forced to examine a faster and more efficient approach to payments risk management.

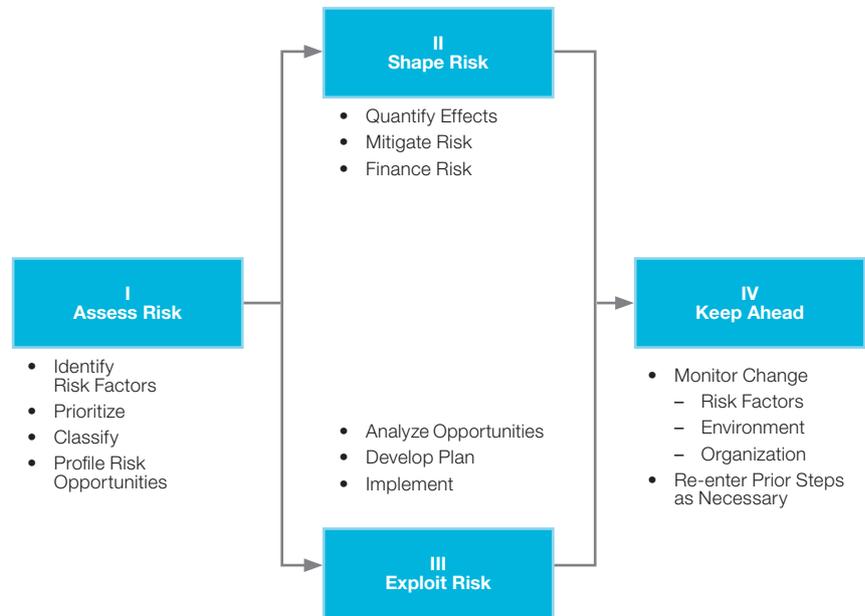
Thus, two primary factors are driving the current shift toward an enterprise approach to risk management in payments:

- As many banks have started to take an enterprise approach in other areas of the payments industry, such as initiation and processing, there is an increased focus on taking an enterprise approach toward risk management, as well.
- Adopting an enterprise approach to risk management in payments can leverage the same infrastructure and achieve similar levels of consistency across the business by consolidating redundant functions in a common infrastructure

6.2. Analysis

The rapidly changing dynamics of the payments industry are forcing banks to examine and adopt enterprise-quality approaches to payments risk management.

Exhibit 3: Conceptual Framework to Enterprise Risk Management



Source: Enterprise Risk Management: An Analytic Approach, Tillinghast – Towers Perrin

Because the nature of risk, the environment in which it operates, and the organization itself change with time, the situation requires continual monitoring and course correction.

As described above, the foundation of enterprise risk management lies in risk assessment and risk shaping. Risk assessment includes risk identification, risk prioritization, and classification of risk as a threat or opportunity for subsequent response. Because the nature of risk, the environment in which it operates, and the organization itself change with time, the situation requires continual monitoring and course correction.

Market forces, including online and mobile payments, are driving the payments industry toward real-time payments. Increasing payment volumes are enhancing banks’ focus on enterprise-level risk assessment and management. Large data availability, owing to the emergence of the internet, presents both challenges and opportunities in managing data for risk management and enterprise-level intelligence. Banks should integrate customer, business, and transactional data to create powerful enterprise risk management systems.

6.3. Implications

Due to sensitive information in customer data, the primary challenges for financial institutions to adopt an enterprise approach to crime prevention in payments are technology and regulations.

Professional services firms should be able to advise their clients on any regulatory issues they may encounter when trying to view or move data when creating an enterprise view.

Vendors who will succeed in this space will need to work actively with financial service institutions to identify and access the needed data streams. They will also need to move away from what is often a manual and error-prone process toward a more automated function. It would also be prudent to leverage customizable workflows and rules engines to create and adjust processes and business rules as their needs change in tandem with a changing business environment.

7. Trend 4: Emergence of Specialized Security Service Providers for Retail Payments

The amount of online fraud is increasing as fraudsters become more sophisticated.

7.1. Background and Key Drivers

With new and changing customer demands, financial service institutions are introducing new payment products and services. As consumers adopt them, fraudsters are using new ways to defraud consumers and financial service institutions. To this end, the security of these new products and services has become the key concern for consumers as well as for financial service institutions.

Online payment methods—particularly mobile payments—are gaining popularity as a result of the high growth of e-commerce. The amount of online fraud is increasing as fraudsters become more sophisticated using advanced technologies, themselves, to steal money and sensitive information. This has led to an increase in demand for better security measures throughout the payments industry.

Moreover, as the number of mobile phones proliferates, with increasing adoption of mobile as a payment medium, an increased perception of threat related to security has emerged.

There are two primary factors driving the emergence of specialized security service providers for retail payments, particularly mobile payments:

- Increased connectivity and proliferation of payment methods present new challenges and increased demands on payment security
- The costs of fraud and fraud prevention have been rising, leading to a need for specialized security service providers

7.2. Analysis

Owing to the emergence of new payment methods and technologies, as well as increased sophistication of fraudsters, payments fraud has been on the rise. An increase in the number of smart phones and their use for mobile payments has heightened security concerns regarding these payments.

Ensuring payment security and managing fraud in mobile payments has been a primary concern and fundamental requirement for the success of payments offerings. The number of mobile malware samples has been growing steadily over last few years. A sharp spike was seen during 2012 as number of mobile malware crossed 20,000 from less than 2000 in 2011.

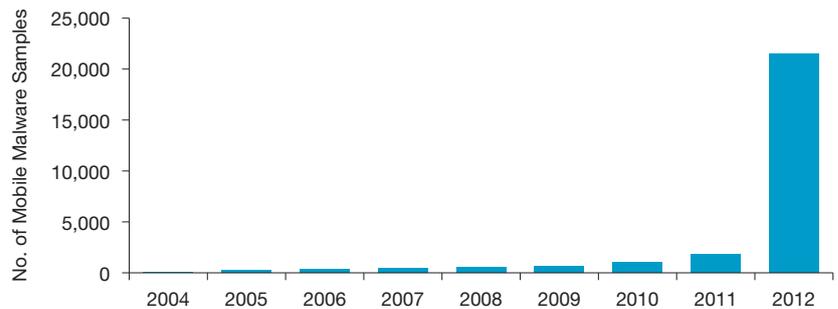
Mobile and smart phone devices have been prime targets for malware. Mobile devices are even more susceptible than PCs because of the following:

- Apps distributed through apps stores have increased the risk of customers downloading a virus or Trojan
- Smaller screens and limitations of mobile browsers have magnified the risk of customers downloading phishing links

Payment service providers need to adopt robust technologies to prevent mobile payments fraud and ensure minimal impact in the event of a breach.

To ensure appropriate security, the industry has agreed that payment credentials should be stored on the phone in what is known as a secured element. The **secured element** should be limited and managed by a Trusted Service Manager (TSM),

Exhibit 4: Total Mobile Malware Samples in McAfee Database (2004–3Q2012)



Source: McAfee Threats Report: Third Quarter 2012, McAfee Labs, <http://www.mcafee.com/us/resources/reports/rp-quarterly-threat-q3-2012.pdf>

creating a new role in the payments ecosystem. Because of increased connectivity and the proliferation of payment methods and access devices, new security challenges have generated new opportunities for TSMs. Banks offering a mobile payment service should partner with reputable TSMs that are in line with their unique business model and requirements.

A TSM can provide the following services to financial as well as professional services firms:

- **Mobile network operator management.** Secure connection; business rules and authentication; billing, reporting and reconciliation; and user registration
- **Over-the-air provisioning and handset management.** Over-the-air provisioning; over-the-air post issuance/content delivery; chip management; wallet management; handset management; secure element key management; mobile network operator, handset and end-customer lifecycle management; fraud/security management; end-customer support
- **Service provider management and application management.** Chip data preparation; application key management; service provider, application and end-customer lifecycle management; fraud/security management; end-customer support
- **Additional TSM services.** Call center; data center hosting; application testing and certification

7.3. Implications

Financial service institutions need to devise new processes and policies (such as transaction limits) to reflect the new and growing e-invoicing environment and ensure minimal impact in case of a security breach. As the TSM is a new role in the payments industry, financial institutions should perform due diligence to ensure that the service providers they under consideration offer appropriate credentials and technological capabilities.

Professional services firms need to ensure that appropriate security measures are implemented, while building mobile payment solutions for payment service providers. Before selecting a service manager to partner with, professional services firms should thoroughly assess them.

8. Trend 5: Rising Adoption of Next Generation Delivery Models

Banks are expected to adopt cloud computing on a project-by-project basis, depending on the nature of the applications and data to be managed.

8.1. Background and Key Drivers

Most financial institutions are saddled with aging payment solutions, which do not offer the flexibility to meet today's new business requirements. Financial institutions are at risk of losing out to new entrants in the market, which primarily use the latest technology to cater to increasing and changing customer preferences. To that end, financial service institutions are focusing on adopting solutions which can provide the flexibility needed to change in tandem with business needs. Next generation delivery models—such as SaaS, cloud computing, outsourcing and co-sourcing—provide such flexibility.

SaaS and cloud computing offer a midway point between payment services hubs and full-blown outsourcing. Although cloud-based solutions are associated with security concerns, interest in SaaS and cloud computing is expected to grow, as increased adoption and technological advancements are likely to largely mitigate security issues.

Pressure on budgets, coupled with a need to improve technology to continue operating, has created an imperative need for solutions that fix the problem. We see this as the key driver in the adoption of next generation models.

8.2. Analysis

Banks are expected to adopt cloud computing on a project-by-project basis, depending on the nature of the applications and data that need to be managed. Moreover, they are expected to explore developing, operating, and testing cloud applications in the near term. Initially, banks may be interested in building test and development environments in the cloud to reduce hardware and software costs during the application development cycle. It is expected that they would focus on leveraging cloud computing for resource intensive and high transaction volume functions, such as payments processing. Banks are also expected to host resource intensive non-critical business applications on the cloud.

Based on the unique requirements of implementing a cloud computing solution, here are four operating models that financial institutions can consider:

- **Business Process as a Service (BPaaS).** In an effort to deliver the true value of cloud computing, BPaaS provides business process services, based on specific industry requirements of the client. Service providers require deep domain knowledge, as well as understanding of various cloud-based delivery models to provide an optimal cloud solution.
- **Software as a Service (SaaS).** SaaS provides either domain-specific or domain-agnostic applications that can be customized by clients and delivered over the internet or accessed through browsers. Service providers require delivery expertise for applications with specialized industry knowledge for domain-specific solutions.

- **Platform as a Service (PaaS).** PaaS provides a complete platform for application development, interface development, database development, storage and testing services. Service providers require deep understanding of cloud architecture to build domain-independent tools and techniques to exploit the cloud infrastructure.
- **Infrastructure as a Service (IaaS).** IaaS provides hardware, such as processors, storage, memory, network, and devices to enable clients to access the solutions hosted by the providers. Virtual hosting, utility storage, and utility computing form the building blocks for cloud infrastructure. Service providers require deep technical expertise of storage, servers, and networks.

Although there are security concerns related to cloud-based solutions, increasing adoption and technological advancement is likely to mitigate this concern to a large extent. With that in mind, cloud computing is expected to grow over the next several years as a result of its inherent cost effectiveness and flexibility.

8.3. Implications

Cloud computing offers demand elasticity, closer correlation between cost and use, and faster implementation. Banks consider these attributes to be attractive, and are considering cloud computing as a longer-term approach to acquiring critical business services.

In addition to cloud computing's attractive cost structure, other benefits are pricing/cost transparency and opportunities for banks to increase fees for offering cloud-based services.

IT partners should help banks seeking cloud-based delivery models for rapid deployment by determining what current or desired functions can be obtained using SaaS or cloud computing. Vendors would be prudent to work with the Enterprise Cloud Leadership Council, a collection of banks, communications providers, and technology providers to improve the security and effectiveness of cloud computing solutions.



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