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CARDS

Global Trends in the Payment Card Industry: Issuers

Key trends faced by card issuers and their implications for the payment card industry

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Contents

1 Highlights

The payment card industry was relatively resilient to the global economic slowdown, with cards transaction volumes up by 8.4% in 2009. The growth was primarily driven by stronger growth in the developing markets of Asia and Latin America. Transaction volumes are expected to continue to grow in 2010 with developing countries such as China and Brazil as growth engines. The average global value of card purchases has been slowly declining as consumers in developed nations cut down on their big ticket purchases.

The key payment card industry stakeholders of card acquirers[1], card processors[2], and card issuers[3] are all witnessing shifting trends. This paper identifies the key emerging trends pertaining to the issuing side of the payment card industry.

The card industry has seen an increasing amount of online frauds in the recent past with fraudsters leveraging multiple techniques, including creation of dubious websites to defraud customers. In an effort to control online fraud, most issuers are looking to implement multiple new security measures in collaboration with card network operators. Some of these fraud mitigation approaches include: Verified by Visa® and MasterCard® SecureCode™; virtual credit card; virtual keypads; and dynamic passwords.

Magnetic stripe cards have been found to be vulnerable to various card frauds such as skimming[4] and counterfeiting as they store sensitive customer data unencrypted on the rear magnetic stripe. The chip-based EMV cards are superior in this respect, as they store customer data on a chip in encrypted format which has led to increased EMV adoption in several regions across the world.

Finally, the phenomenal growth in smartphone usage has set an excellent stage for mobile commerce to prosper. Mobile wallets[5] are a transformation of a customer's mobile into a payment card with the help of near field communication (NFC) based chips. It is expected to be a game changer in the payments industry, especially with the entry of internet search engine giant 'Google' through its Google Wallet.

[1] Acquirer refers to merchant's bank

[2] Processor refers to a third party organization that aids in card authorization and settlement process (sometimes acquirers perform this task themselves)

[3] Issuer is the cardholder's bank which issues a credit/debit/prepaid card and maintains the customers' accounts

[4] Act of fraudulently copying customer's account information that is being stored on the magnetic stripe on the back side of the credit/debit and using such information to make purchases through counterfeit cards

[5] Virtual card based applications over a mobile phone

2 Introduction

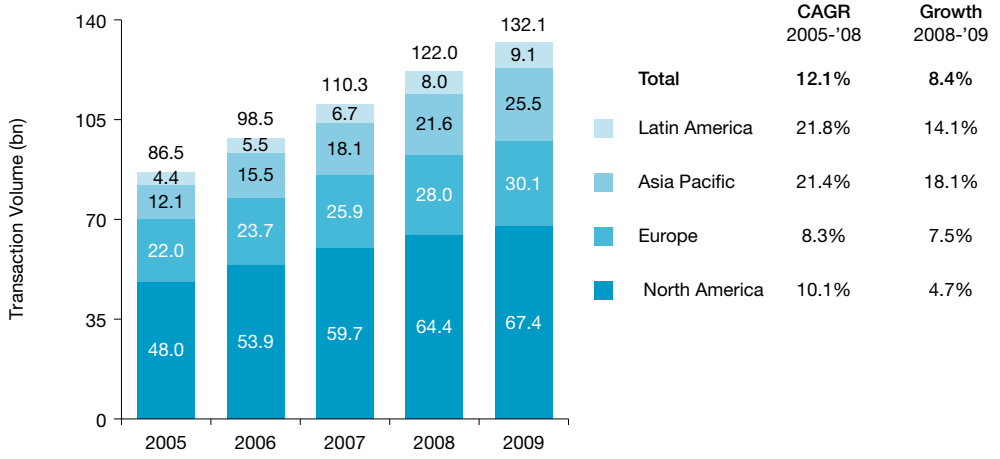
Developing nations in Asia-Pacific and Latin America are increasingly replacing their cash transactions with debit and credit cards, which is driving the card industry growth in the region.

2.1. Global Payment Card Industry Performance

The global payment card industry was relatively resilient to the financial crisis of 2008-09, as evidenced by the 8.4% growth in card transactions volume which increased to 132.1 billion transactions in 2009 (as compared to 122.0 billion transactions in 2008 as shown in the exhibit below). Cards represent one of the most preferred non-cash payment instruments, with an estimated 40% of the global non-cash payments being routed through cards[6].

Based on a regional comparison, Asia-Pacific has been one of the fastest growing regions in terms of card usage. Cards transaction volumes grew by 18.1% during 2008-09 within Asia-Pacific, compared to North America and Europe which grew 4.7% and 7.3% respectively for the same period.

Exhibit 1: Global Card Transactions by Volume (bn), 2005-2009



	CAGR 2005-'08	Growth 2008-'09
Total	**12.1%**	**8.4%**
Latin America	21.8%	14.1%
Asia Pacific	21.4%	18.1%
Europe	8.3%	7.5%
North America	10.1%	4.7%

Source: Capgemini Analysis, 2011; ECB; Red Book 2010; World Payments Report, Capgemini 2011

[6] World Payments Report, 2011 (Cards represent just debit and credit card transaction across the globe)

In 2008 and 2009, the payment card industry represented the two-speed nature of global economic growth, with developed nations slowing down and the developing nations growing strongly. For instance, the transaction volume growth in developed countries was modest, with the U.S. growing by 4.7% and the Eurozone growing by 6.8%. This was slower than their historic 2005-08 compound annual growth rates of 10.6% and 7.6% respectively. On the other hand, developing nations witnessed higher card usage, with China growing by 32%, Russia by 30.9%, and Brazil by 10.1% annually in 2009.

This two-speed growth is expected to continue in the near-future. The still-low absolute usage levels of cards as a payment channel in developing nations, coupled with the potential for faster economic growth, augurs well for the payment card industry in these regions. However, card industry growth measured by transaction value is expected to be subdued in the near future as weaker consumer confidence in most developed nations is likely to manifest itself through a lower amount of high value purchases as already witnessed in 2009 in the U.S. and peripheral Europe.

The slow growth in transaction values, increasing regulations designed to favor and protect card users (in terms of fees charged), and competition from other payment sources is expected to put pressure on margins for payment card industry participants. Various stakeholders therefore need to better utilize technology to deal with compliance issues, and stay ahead of the competition within the industry as well as external competition such as mobile payments.

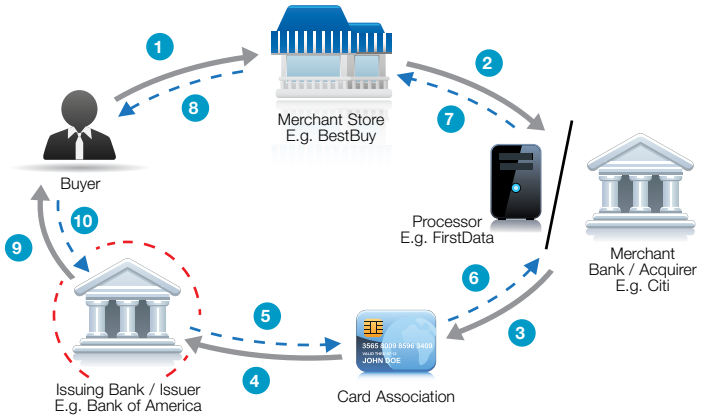
2.2. Key Payment Card Industry Participants

A simple card transaction between a cardholder and a merchant involves several players:

- **Card acquirers**: the merchant's bank.
- **Card processors**: third party organization that aids in card authorization and settlement process.
- **Card issuers**: the cardholder's bank who issues the card and maintains the customers' accounts.

Additionally, card association network providers (typically MasterCard® or Visa®) play an essential role in completing the card authorization and settlement cycle, as illustrated in the following exhibit.

Exhibit 2: Typical Card Transaction Flow Structure



1. Cardholder uses a credit card to pay for a purchase transaction
2. Merchant sends transaction information to the acquirer by swiping or manually feeding card information at the POS terminal
3. The acquirer or third-party processor on acquirer's behalf sends the transaction information to the card association
4. The card association sends the transaction information to the issuer for authorization
5. Issuing bank pays the card association network once it validates the transaction (after deducting their charge)
6. Card association pays the acquirer processors on acquirer's behalf (after deducting their charge)
7. Merchants account is credited for the transaction amount by the processor (after deducting their charge)
8. Purchase transaction is completed
9. Issuer bills the buyer for the transaction based on the billing cycle
10. Buyer settles the bill

Source: Capgemini Analysis, 2011, "Transaction Flow", Serve First Solutions, Inc., http://www.serve-first.com/resources/sfs-university/42-transaction-flow

This paper focuses on the key trends that card issuers have been experiencing and how the industry is responding.

3 Emerging Trends in the Payment Card Industry: Issuers

Card issuers play an important role in the card payment ecosystem as they bring new customers to the payment card industry and help maintain customer loyalty towards card payments. Through various initiatives, such as cash back incentives and loyalty programs, they help drive cards into one of the mainstream non-cash payment channels.

The business model of issuers is relatively simple as they make money from their customers by charging an annual fee for the various debit/credit cards that they issue as well as interest charges on any revolving credit facilities that their customers avail (on credit cards). Additionally, they generate revenue through the interchange fee that they charge to merchants for every card transaction made by customers.

However, issuers are facing increasing competition both from other issuing banks as well as alternative channels such as mobile payments. Additionally, regulatory intervention such as the recently approved debit card interchange regulation in the U.S. called the Durbin Amendment, as well as shifting consumer trend in favor of debit cards over credit cards, are expected to further dent issuers' overall revenues and margins.

Amidst these changing dynamics of the card issuing industry, issuers are witnessing key trends which include:

1. Increased security measures for customers to prevent online fraud and identity theft.
2. Issuers across the world are moving to EMV (EuroPay, MasterCard, Visa) card technology to combat card fraud.
3. Increased innovations in mobile commerce with the introduction of mobile wallets.

4 Trend 1: Increased Security Measures for Customers to Prevent Online Fraud, and Identity Theft

4.1. Background and Key Drivers

The proliferation of the internet has driven numerous advantages for the financial services industry and its customers across the globe, primarily through the increased speed of financial transactions and client convenience. Such positive technological advances have also opened up new gateways by which fraudsters can breach the privacy of financial services institutions to access and abuse the personally identifiable financial information of customers.

In the past year, several high profile data breaches have specifically targeted the payment card industry, impacting a large number of card users. For example, Citigroup was targeted twice in a few months from different subsidiaries. In the U.S., Citibank had a data breach event in June 2011 that allegedly compromised around 200,000 customer accounts[7]. In August 2011, Citi Cards Japan experienced a possible breach through an outsourcing partner where personal and account information for about 92,400 customer accounts was accessed and sold[8]. The fact that large institutions such as Citigroup have undergone data breaches signifies the increasing sophistication of fraudsters.

The presence of high-profile identity thefts and online frauds have led issuers and card associations to increasingly focus on enhanced security measures to counter these incidents. Overall, the key drivers for issuers to invest in enhanced security measures to prevent customer online fraud and identity theft include:

- A growing eco-system of criminal enterprises which drive phishing attacks, as well as botnets, are readily available for hire. Such criminals churn large volumes of phishing mails and collaborate with the fraudsters.
- Fraudsters now have access to significant amounts of confidential personally identifiable financial information of card customers, largely due to the rise in phishing attacks and botnets.

4.2. Analysis

Issuers are continuously looking to improve the security of their customers' online experience by developing enhanced security features. In these efforts, several card issuers are also partnering with major card networks to employ new technologies and process solutions to dissuade fraudsters. Some of the new measures employed by the issuers include: Verified by Visa and MasterCard SecureCode; virtual credit card; virtual keypads; and dynamic passwords.

Verified by Visa and MasterCard SecureCode: Leading card networks offer authentication services popularly known as *Verified by Visa and MasterCard SecureCode*. Under this service an issuer can register their credit or debit cardholders for these programs which require the customer to go through an additional security pass, thus enhancing cardholder's transaction security.

[7] *Thieves Found Citigroup Site an Easy Entry*, Nelson D. Schwartz and Eric Dash, New York Times, June 13, 2011

[8] *Citi Cards suffers massive info leak*, Japan Times Online, August 7, 2011. http://www.japantimes.co.jp/text/nn20110807a8.html

Virtual Credit Cards: Virtual credit card is a service offered by some card issuers to protect their credit card customers from online fraud. Credit card issuers offer a software application that generates a temporary credit card number for online usage. The temporary number usually expires after a set number of transactions or a set time-period. The idea behind creating such temporary credit card numbers is to protect the online identity of cardholders from dummy websites and cross-site scripting[9]. Virtual credit cards were first piloted by American Express® in the U.S. in September 2000 and have gained traction recently as a good measure to reduce online fraud incidents.

Virtual Keypads: Online fraudsters sometimes use advanced programs such as keyloggers which when installed on a computer, monitors all the strokes of a user on the keyboard. Such software programs have been used to capture sensitive financial information from customers either directly or by logging passwords, especially while using public computers. To combat this approach, most of the larger financial services institutions including Citibank and HSBC have put in place online virtual keypads that are randomly generated.

Dynamic Passwords: Dynamic passwords generated from electronic key fobs provided by banks have increased customers' security. Improved security has been achieved since the password generated by these widgets is valid only for a short-time—usually a matter of seconds or minutes. Therefore, fraudsters must gain physical access to the key fob to defraud customers which is more difficult and risky. Furthermore, financial services institutions are converting customers' smartphones into password-generating key fobs by installing advanced applications. Tying up credit cards with dynamic passwords for online transactions is expected to significantly reduce card frauds.

4.3. Implications

Security measures such as virtual keypads, dynamic passwords and Verified by Visa and MasterCard SecureCode have already proven to have significantly reduced fraud incidents. Further, widespread usage of these security measures are expected to drastically reduce online fraud incidents in the future.

[9] Cross-site scripting is a type of security issue in which malicious scripts are injected into a genuine website under attack

5 Trend 2: Issuers across the World are Moving to EMV to Combat Card Fraud

The U.S. is the only developed nation that still uses magnetic stripe cards, despite the known vulnerabilities to fraud.

5.1. Background and Key Drivers

The proven superiority of EMV cards in combatting card frauds—compared to the traditional magnetic stripe cards—has resulted in the card industry increasingly adopting EMV technology globally. Most countries across the world are looking to fully migrate to EMV standards in order to mitigate card fraud. For instance, the European Central Bank has recommended that all banks within the region stop issuing magnetic stripe cards after 2012 and switch to EMV technology. Elsewhere, one of the fastest growing cards markets, China, plans to stop producing and accepting magnetic stripe cards after 2015.

EMV cards represent around 40.1% of all payment card that are operational across the world excluding the U.S[10]. While the Eurozone area has a strong EMV adoption rate at 73.9%, the non-euro member countries of the European region have a relatively low EMV adoption of mere 21.7%, highlighting the role of regulatory pressure in Western Europe. The U.S. is the only developed nation that still uses magnetic stripe cards. All other developed regions have either already shifted or are on the way to EMV-based cards adoption.

The key drivers for the increasing industry push for EMV adoption are:

- Regulatory push towards chip-based EMV cards due to proven superiority over magnetic stripe technology in combating fraud.
- Growing demand from customers to provide EMV-compliant cards for international use, as some merchants abroad do not accept magnetic stripe cards.

5.2. Analysis

Magnetic stripe cards generally demonstrate more vulnerability than EMV cards as the data stored in such cards can be easily copied and used by fraudsters. Magnetic stripe cards generally have shown a tendency to being vulnerable to card frauds such as skimming and counterfeiting. EMV cards protect cardholders from card fraud by creating a unique digital signature for every offline transaction and a cryptogram for protection against online fraud.

EMV cards provide multiple layers of security against online and offline fraud. Cardholder information is stored on an encrypted chip which makes it more secure than magnetic stripes. Additionally, through pin-based verification, EMV offers enhanced fraud protection to cardholders. Moreover, the chip-based system in EMV card is capable of storing considerably more information compared to magnetic stripe cards and therefore enables the addition of several authentication layers to prevent fraudulent transactions.

[10] As per Q1 2011 figures of the EMVCo owners' member financial institutions http://www.colloquy.com/files/v19i2.pdf

Major geographies where EMV has been adopted have significantly benefited from a lower incidence of fraud. However, shifting from magnetic stripe to EMV cards is expected to present a significant cost to the industry. In the U.S. alone, card issuers are expected to spend close to US$ 2.85bn to replace the magnetic stripe-based cards in circulation in the country[11].

5.3. Implications

Banks and merchants alike have to upgrade their infrastructure and systems to accept and authorize EMV cards. These cards generate additional data compared to the static data stored in magnetic stripe cards.

Adoption of EMV cards will increase the cost of issuance due to higher average cost of a chip-based cards. However, issuers stand to gain due to reduced incidence of fraud and other value added features they can offer to their customers due to the ability of these cards to store considerably more information on the chips.

[11] *EMV in the USA: Waiting on Debit, a Mandate, or Just the Opportune Moment*, George Peabody, Mercator Advisory Group, December 2010

6 Trend 3: Increased Innovations in Mobile Commerce with the Introduction of Mobile Wallets

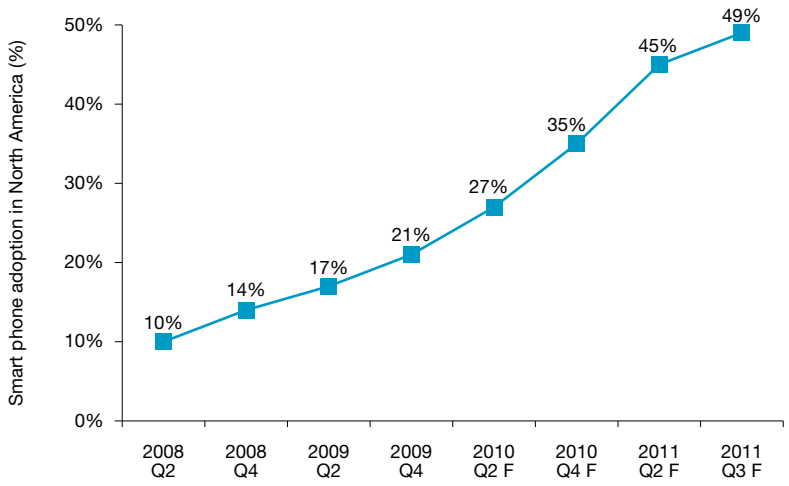
The growth in smartphone usage, especially in developed nations, has set an excellent stage for mobile wallet services to prosper.

6.1. Background and Key Drivers

Innovation is key to the payments industry with new technologies trying to oust existing ones by providing extra advantages to customers in terms additional security, enhanced features, and greater convenience. Mobile wallet service is one such innovation which has seen an enormous amount of interest from various payments industry stakeholders.

The growth in mobile-commerce—using mobile phones to complete a purchase transaction—has been bolstered by increased smartphone usage, especially in developed countries such as the U.S., falling prices, the increasing capabilities of smartphone devices, and an exponential rise in mobile device applications have been instrumental in driving smartphone usage across the globe.

Exhibit 3: U.S. Smartphone Penetration and Projections (%), FY2008 Q2 – FY2011 Q3F



Source: "Smartphones Projected to Overtake Feature Phones Next Year", Nielson, March 2010

While increased smartphone adoption provides an excellent platform through which to leverage mobile wallet[12] services, full-fledged support for such a payment system will only be possible through greater acceptance from the merchant acquiring side of the business. Merchant acceptance is expected to grow gradually, especially with the entry of some big names such as 'Google' through Google Wallet.

The key drivers for increased mobile payment services, and mobile wallet services in particular, are:

- Falling prices and increasing capabilities of smartphone devices and applications which provide an excellent platform for such services to flourish.
- A cross-industry collaborative approach including players from the financial services, mobile, and processing industries.
- Ability of mobile payment systems to drive higher financial inclusion in certain emerging nations.

6.2. Analysis

Mobile wallets can be described as mobile payment applications which store customer credentials over a mobile device and enable purchase transactions over a wide array of merchant outlets. Mobile wallet services such as Google Wallet or Isis™ Mobile Wallet operate with a near field communication (NFC) embedded chip, through which a customer's smartphone is converted into a mobile payment device that can be tapped in front of a supported point of sale device to complete a purchase transaction.

The recently launched Google Wallet through the Sprint Nexus S 4G phone is touted to be a game changer in the mobile payment industry due to Google's brand equity coupled with strong payment card industry association with MasterCard, Visa, Discover®, and American Express partnerships. However, the key success factor for a mobile wallet will rest in its ubiquity, which can only be achieved by creating a set of standards for payment applications that co-exist in a mobile wallet open to all cards—credit, debit, and prepaid—and automated clearing houses (ACH). Additionally, the wallet will have to work across all mobile network carriers and enjoy widespread acceptance at merchants' point of sale terminals.

[12] Virtual card-based applications over a mobile phone

The advent of mobile wallet services is expected to drastically change the dynamics of the payment card industry by creating new participants across mobile network carriers, handset OEMs, and NFC chip makers as they aim to capture payment card industry revenue. On the other hand, traditional stakeholders such as issuers, payment networks, and acquiring banks will need to focus on maintaining their current share of revenue from a card transaction.

Presently, card networks and banks profit from card payments. However, payment system handset makers, telecommunication operators, and software vendors will also increasingly seek a share of the card industry revenue. While consumers stand to benefit with the growing acceptance and consumer interest in mobile wallets, issuers are expected to be challenged to respond to the potential for a loss of customer accounts and profits.

6.3. Implications

Mobile wallets are expected to completely change the card payment ecosystem with the entry of new stakeholders such as NFC chip makers and mobile carriers vying for a pie of the card industry revenue.

While projecting the universal success of mobile wallet services might be a difficult task at this point of time, any level of success that it meets would result in reduced customer accounts and reduced business for issuers.

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