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INTRODUCTION

There is a lot of hype around mobile payments, almost on a daily basis we're hearing news about either a new mobile payment service or of a company / partnership that has / intends to enable mobile payments. The mobile payments 'revolution' is happening right around us in various ways. This is the first of many posts that will step through some of the basic concepts of mobile payments, sharing how mobile payments are made, and some of the different models being deployed around the world. With this understanding, we should be in a better position to move forward with the SEPA mobile payments deployment as and when it happens.

Payments in Mobile Environment

The mobile payments are one of the rapidly evolving businesses, changing the way it functions among the consumers and merchants. It has given a new phase of life to the people who have seen mobile just as a device for communication. The mobile payments produce big impacts on both the economies, developed and developing one (Mobile Payments 2012). In the developing economy, it raises the standards, pace of living by displacing the cash economy and increasing the electronic transactions. In the developed economies, the mobile payments changes the cycle of economy and this can be done only by the reach of availability and convince the user by overtaking the traditional payment system (Mobile Payments Survey 2011). Mobile payments are considered to be the next generation technology as it makes the transaction very simple by paying for the goods just from the place where we are.

Future technologies are based on Near Field Communication (NFC) where a contactless method of payment is done, saving a lot of time without having to stand in long queues. The major factors involving in this mobile payment industry are Mobile Network Operators, Financial institutions, Trusted Service managers, Merchants, Consumers, third party providers etc. The mobile payment business model is considered to be complex, as it is new and the existing players in market are on the verge to find out their responsibilities (Mobile Payments 2010).

It is estimated that by the end of 2020, mobile and contactless payments will be completely deployed in both developed and developing markets. It is also believed that a successful mobile payment industry's growth not only depends on the good technology that has been developed but also mainly on the collaboration made by different factors of the same field to further enhance the growth of it.

E-CASH

An e-payment system is a way of making transactions or paying for goods and services through an electronic medium, without the use of checks or cash. It's also called an electronic payment system or online payment system.

The electronic payment system has grown increasingly over the last decades due to the growing spread of internet-based banking and shopping. As the world advances more with technology development, we can see the rise of electronic payment systems and payment processing devices. As these increase, improve, and provide ever more secure online payment transactions the percentage of check and cash transactions will decrease.

Electronic Payment Methods

One of the most popular payment forms online are credit and debit cards. Besides them, there are also alternative payment methods, such as bank transfers, electronic wallets, smart cards or bitcoin wallet (bitcoin is the most popular cryptocurrency).

E-payment methods could be classified into two areas, credit payment systems and cash payment systems.

1. Credit Payment System

Credit Card — A form of the e-payment system which requires the use of the card issued by a financial institute to the cardholder for making payments online or through an electronic device, without the use of cash.

E-wallet — A form of prepaid account that stores user's financial data, like debit and credit card information to make an online transaction easier.

Smart card — A plastic card with a microprocessor that can be loaded with funds to make transactions; also known as a chip card.

2. Cash Payment System

Direct debit — A financial transaction in which the account holder instructs the bank to collect a specific amount of money from his account electronically to pay for goods or services.

E-check — A digital version of an old paper check. It's an electronic transfer of money from a bank account, usually checking account, without the use of the paper check.

E-cash is a form of an electronic payment system, where a certain amount of money is stored on a client's device and made accessible for online transactions.

Stored-value card — A card with a certain amount of money that can be used to perform the transaction in the issuer store. A typical example of stored-value cards are gift cards.

How e-Cash Works

An e-Cash user will download the electronic money from their bank account and store this on their hard drive. When they are ready to use the electronic cash to pay an Internet merchant or shareware provider, the same software is then used to take the amount from their e-Cash "wallet" and add it to the merchant's "wallet."

The e-cash goes through an e-cash bank so that the transaction can be verified. The merchant or shareware provider can then choose to pay their expenses with this eCashor upload it to a traditional bank account for use later. Transactions do not incur a fee except for a small amount charged by the e-cash company. This makes it ideal for smaller online transactions than any other payment method.

Pros and Cons of Using an E-payment System

E-payment systems are made to facilitate the acceptance of electronic payments for online transactions. With the growing popularity of online shopping, e-payment systems became a must for online consumers — to make shopping and banking more convenient. It comes with many benefits, such as:

Reaching **more clients** from all over the world, which results in more sales.

More **effective and efficient transactions** — It's because transactions are made in seconds (with one-click), without wasting customer's time. It comes with speed and simplicity.

Convenience. Customers can pay for items on an e-commerce website at anytime and anywhere. They just need an internet connected device. As simple as that!

Lower transaction cost and decreased technology costs.

Expenses control for customers, as they can always check their virtual account where they can find the transaction history.

Today it's **easy to add payments to a website**, so even a non-technical person may implement it in minutes and start processing online payments.

Payment gateways and payment providers offer highly **effective security and anti-fraud tools** to make transactions reliable.

Drawbacks

E-commerce **fraud** is growing at 30% per year. If you follow the security rules, there shouldn't be such problems, but when a merchant chooses a payment system which is not highly secure, there is a risk of sensitive data breach which may cause identity theft.

The lack of anonymity — For most, it's not a problem at all, but you need to remember that some of your personal data is stored in the database of the payment system.

The need for internet access — As you may guess, if the internet connection fails, it's impossible to complete a transaction, get to your online account, etc.

M-pay

Mobile payment (m-payment) is a point-of-sale (PoS) transaction made or received with a mobile device. A mobile payment is a money payment made for a product or service through a portable electronic device such as a tablet or cell phone. Mobile payment technology can also be used to send money to friends or family members, such as with the applications PayPal and Venmo.

- Initially more popular in Asia and Europe, mobile payments spread to North America and experienced considerable growth.
- Merchants unwilling to retool existing terminals have contributed to the slow growth of mobile pay compared to physical credit cards.
- Mobile payments offer additional privacy and security benefits compared to physical cards.
- There are mobile payment apps for both Apple and Android (Apple Pay and Google Pay).

Understanding Mobile Payments

Many banks have recently adopted technology into their banking apps that allow customers to send money instantly to friends and family members directly from their bank accounts. Mobile payments are also made on site at stores by scanning a barcode on an app on your phone, accepting payments from convenience stores to large, multi-national retailers.

The cost of the purchase may be deducted from a pre-loaded value on the account associated with the particular store, or paid by credit or debit card. Payment information is encrypted during transmission, so it is thought of as being a safer payment method than paying with a debit or credit card.

Mobile payments first became popular in Asia and Europe before becoming more common in the United States and Canada. Early on, mobile payments were sent by text message. Later, technology allowed for pictures of checks to be taken via cell phone camera and sent to the payment recipient. This technology eventually morphed into mobile check deposit capabilities for banking apps.

Since 2014, apps such as PayPal[3] and Apple Pay[4] were developed that allow payment by passing a smart phone screen displaying a special barcode under a store's barcode scanner. They also allow the user to simply tap their phone against a contactless credit card terminal, paying instantaneously.

Soon to develop applications were competitors to Apple, companies like Google and Samsung, who released their respective mobile payment apps in the wake of Apple pay's success.

Types of Mobile Payments:-

1. Premium SMS based transactional payments

SMS payment means using text messages to pay for products or services.To pay, the customer can simply send an SMS message. In return a code or password is sent to them, enabling access to the premium content. The mobile phone carrier will then add the cost to the user's normal monthly bill or deduct it from the prepaid balance.

2. Direct Mobile Billing

The consumer uses the mobile billing option during checkout at an e-commerce site to make a payment. After two-factor authentication involving a PIN and One-Time-Password, the consumer's mobile account is charged for the purchase.

3. Mobile web payments (WAP)

The consumer uses web pages displayed or additional applications downloaded and installed on the mobile phone to make a payment. It uses WAP (Wireless Application Protocol) as underlying technology and thus inherits all the advantages and disadvantages of WAP.

3.1. Direct operator billing

Direct operator billing, also known as mobile content billing, WAP billing, and carrier billing, requires integration with the mobile network operator.

3.2 Online Wallets

Online companies like PayPal, Amazon Payments and Google Wallet also have mobile options. The process usually is registration, entering the phone number, receiving the PIN via SMS, entering the PIN, entering credit card information or other payment type to validate the payment. In subsequent payment only the PIN number is needed.

3.3. Credit Card

A simple mobile web payment system can also include a credit card payment flow allowing a consumer to enter their card details to make purchases.

4. QR code payments

QR Codes are square bar codes. QR, or “Quick Response” barcodes were designed to contain the meaningful info right in the bar code.

QR Codes can be of two main categories: The QR Code is presented on the mobile device of the person paying and scanned by a POS or another mobile device of the payee. Or the QR Code is presented by the payee, in a static or one time generated fashion and it’s scanned by the person executing the payment.

5. Contactless Near Field Communication

Near Field Communication (NFC) is used mostly in paying for purchases made in physical stores or transportation services. A consumer using a special mobile phone equipped with a smartcard waves his/her phone near a reader module. Most transactions do not require authentication, but some require authentication using PIN, before the transaction can be completed. The payment could be deducted from a pre-paid account or charged to a mobile or bank account directly.

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7. Audio Signal Mobile Payments (NSDT)

The audio channel of the cell phone is another wireless interface that is used to make mobile payments. Several companies have created technology to use the acoustic features of cell phones to support mobile payments and other applications that are not chip-based. The technologies Near sound data transfer (NSDT), Data Over Voice and NFC 2.0 produce audio signatures that the microphone of the cell phone can pick up to enable electronic transactions.

Advantages of the Mobile Payments:

- NFC (Near-field Communication) payments are the newest form of accepting credit cards, and if you like to be on the cutting edge of technology you won't want to be left out
- Nearly two-thirds of Americans in 2015 owned a smart phone. Chances are if your customer has a smart phone they will likely have a mobile wallet. The more options you can offer your clients the happier they will be.
- Mobile payments are secure. The POS system does not have access to the full card number so malware cannot take the information. Apple Pay, for example, does not store your card information at all.

Disadvantages of the Mobile Payments:

- You must have NFC equipment. No NFC hardware = no mobile wallet payments
- There are many mobile wallets out there, and they don't all work the same, you will have to figure out which one is right for you.
- The rewards for the customer to use a mobile wallet are not 100% clear yet. The customer may not receive certain "perks" at that approved retailer because the system would show the charge coming from Google instead of the authorized retailer.

Pay-Box

Pay-Box is a mobile payment collection platform secured in banks' standards. We enable financial institutions and non-FIs to introduce a branded mobile payment collection & wallet service. One of the most important payment procedures in Germany is offered by the Pay-box AG. So far Pay-box is also offering its services in Austria, Sweden, Spain and the United Kingdom. This service works throughout all of the described payment scenarios and can be used for any payments higher than 0.01 €. After registration the customer can send and receive money to other participants and pay for goods or services using his mobile device. All that is needed within the payment process is a SMS-capable mobile device and a special "pay-box-PIN" which can be chosen by the customer. Pay-box – who owns the customers individual data – is then responsible for the settlement and does not give the personal data to any other parties involved in the process (e.g. the merchant). It therefore acts as a trusted third party for the merchant as well as the customer. Since the payment process is settled via the customers' current account only, the customer can – until now – not chose between different payment options but he may use pay-box for various payment frequencies. The other introduced SMS-based payment methods vary only little from the process described above and therefore only their special differences are mentioned.

EMPS

The Directorate General of foreign trade (DGFT) has launched the concept of the e-MPS facility to support, ease and promote online payments for various applications made with the DGFT department. By facilitating online payment and the submission of applications online, the DGFT department wishes to usher in an era of fast processing and transparency. Before making a E-MPS payment with the DGFT department, the applicant must have the following requisites:

Requirement for Making E-MPS Payment

To make an E-MPS payment, the payee must have the following:

- Valid Import Export Code
- Class 2 or class 3 Digital Certificate with IEC embedded in it
- Personal Computer with web browser IE 11.0 or Higher version
- Good internet connectivity

Using E-MPS Payment

E-MPS payment can be used by importers and exporters for making online payment for miscellaneous purposes. E-MPS payment need not be used for import export code registration, as there is already an online payment facility for IE Code registration. For all other payments to the DGFT department, E-MPS payment can be used by an importer or exporter. Before making an E-MPS payment, the exporter or importer will generate an ECOM Reference Number and can make the single / multiple payments against it after selecting the appropriate subject, scheme, DGFT officer or other details.

After making an E-MPS paymentm the applicant must print the receipt through print option and present it to the concerned DGFT RA authority along with the

application for which he has made payment. On submission, DGFT official will authenticate the payment details using ECOM Reference Number and mark it as USED. In case of multiple payments on a single ECOM Reference Number, DGFT official needs to select all the payments one by one and mark them USED. A unique DGFT Reference Number will be generated for each payment detail which can be used by concerned DGFT office for reference purpose.

E-Ticket

E-tickets, or electronic tickets, have become the norm in airline travel. Most travelers purchase spots on airplanes through a website and receive e-tickets with all the flight details delivered to their emails. Once at the airport, you check in and receive a paper boarding pass.

Advantages of Purchase

Travelers have much more information at their fingertips thanks to online ticket purchasing. Compare costs and examine various routes and flight times through online portals that collect information from multiple airlines at once. E-tickets are sent to your inbox, where you can store them until you head to the airport. You also can send your flight information to friends and family so they can track your trip's progress; this is especially convenient if someone is picking you up from the airport.

Disadvantages of Purchase

The disadvantages of e-tickets are relatively few; however, if you are less technologically savvy or don't use computers and email, you may find the online ticket purchasing system confusing. You may accidentally delete the email containing your e-ticket or it may get lost among the many messages flooding your inbox. E-tickets also take away some of the personalization of gifting a plane ticket to a friend or loved one.

Airport Pros

E-ticketing has streamlined some of the airport check-in process. Some airlines allow you to use a self-check-in kiosk, skipping the long line at the airline ticket desk. In some cases, you may be able to check in at home with your e-ticket information and receive a digital boarding pass on your smart-phone, allowing you to save time at the airport.

Airport Cons

Sometimes technology can create additional headaches in cases of power outages and security breaches. The digitization of every step of the process has raised some concerns over the safety and security of storing so much information online, although airlines have taken every step to ensure personal information is safe. You also are at a disadvantage if you're unfamiliar with smart-phone and e-ticket technology, although airport staff are helpful in these situations.

CONCLUSION

A mobile payment is a money payment made for a product or service through a portable electronic device such as a tablet or cell phone. Mobile payment technology can also be used to send money to friends or family members. Mobile payments have revolutionised the way businesses get paid. With the use of mobile devices by consumers on the rise, every merchant needs to ensure that their business provides an enjoyable experience, where the customer can easily checkout and pay for their purchase. Online businesses should ensure that their website is mobile-friendly. The payment page should follow this hassle-free concept and handle sensitive data appropriately while providing frictionless and seamless payments.