

Emerging Trends in Digital Payments – A Prospective Study

Dr. B. Nagarjuna

Associate Professor, Sree Vidyanikethan Institute of Management, Tirupati

Abstract: Innovative approaches in financial transactions is become highly essential as money related activities by various parties like individuals, customers, retailers, merchandises, non-profit organizations, government bodies etc are expecting fast, transparent, secure transactions with less time consumption and at low cost. All these expectations of all the parties would come in realty with the implementation of digital payments. Digital payment is a way of payment which is made through digital modes. In digital payments, payer and payee both use digital modes to send and receive money. All the transactions in digital payments are completed online. It is an instant and convenient way to make payments. The emergence of e-commerce has created new financial needs that in many cases cannot be effectively fulfilled by the traditional payment systems. Recognizing this, virtually all the interested parties are exploring various types of electronic payment system and issues surrounding electronic payment system and digital currency. The digital payment systems generally classified into four categories viz., Online Credit Card Payment System, Online Electronic Cash System, Electronic Cheque System and Smart Cards based Electronic Payment System. Each payment system has its advantages and disadvantages for the customers and merchants. These payment systems have numbers of requirements: e.g. security, acceptability, convenience, cost, anonymity, control, and traceability.

In this present study, the researcher has emphasized on different types of emerging digital payment modes in the financial markets. They are: Unified Payment Interface (UPI) apps (like Paytm, Phonepe, BHIM, Freecharge, etc), AEPS (Aadhaar Enabled Payment Service), WhatsApp, Unstructured Supplementary Service Data (**USSD**), E-wallet or mobile wallet app etc. This paper lays out the various modes digital/electronic payment systems, surveys the state of the art in electronic payment technologies and sketches emerging developments.

Key words: Digital modes, Electronic payments, Financial Transactions, Emerging trends.

Introduction

In the evolution of money it started in the form of barter when goods were exchanged for goods. Barter was felt inconvenient as there was no common medium of exchange. If the one party didn't want to buy what the seller wanted to sell, the transaction would not take place. There after precious metals, coins and paper currency came into existence in middle ages. When banks came into existence in the 15th century cheques and bills of exchange were gradually used in place of cash. As payment is an integral part of any trading or mercantile transactions, now-a-days, electronic payment system is become an integral part of e-commerce. The emergence of e-commerce has created new financial needs that in many cases cannot be effectively fulfilled by traditional payment systems. For instance, new types of purchasing relationships-such as auction between individuals online-have resulted in the need for peer-to-peer payment methods that allows individuals to e-mail payments to the other individual. Recognizing this, virtually all interested parties viz., academicians, government, business community and financial service providers are exploring various types of electronic payment system and issues surrounding electronic payment system and digital currency. Some proposed electronic payment systems are simply electronic version of existing payment systems such as cheques and credit cards, while, others are based on the digital currency technology and have the potential for definitive impact on today's financial and monetary system. Therefore, electronic payment systems and in particular, methods of payment being developed to support electronic commerce cannot be studied in an isolation. A failure to take place these developments into the proper context is likely to result in

undue focus on the various experimental initiatives to develop electronic forms of payment without a proper reflection on the broader implications for the existing payment system.

Conventional or Traditional Payment System

To get into the depth of electronic payment process, it is better to understand the processing of conventional or traditional payment system in trading or commerce. A conventional process of payment and settlement involves a buyer-to-seller transfer of cash or payment information (i.e., cheque and credit cards). The actual settlement of payment takes place in the financial processing network. A cash payment requires a buyer's withdrawals from his/her bank account, a transfer of cash to the seller, and the seller's deposit of payment to his/her account. Non-cash payment mechanisms are settled by adjusting i.e. crediting and debiting the appropriate accounts between banks based on payment information conveyed via cheques or credit cards.

Cash moves from the buyers' bank to sellers' bank through face-to-face exchange in the market. If a buyer uses a noncash method of payment, payment information instead of cash flows from the buyer to the seller and ultimate payments are settled between affected banks, who notational adjust accounts based on payment information. Non-cash payment requires three separate elements. The buyer must have an agreed means of payment authorization and instructing its bank to affect a transfer of funds. The seller's bank and buyer's bank need an agreed method of exchange payment instructions. This is referred to as payment clearing.

Payment System in Digital World

With the growing complexities in the e-commerce transactions, different digital or electronic payment systems have appeared in the last few years. At least dozens of electronic payment systems proposed or already in practice are found. The grouping can be made on the basis of what information is being transferred online. Earlier found six types of electronic payment systems: (1) PC-Banking (2) Credit Cards (3) Electronic Cheques (i-cheques) (4) Micro payment (5) Smart Cards and (6) E-Cash. Thus, electronic payment system can be broadly divided into four general types: Online Credit Card Payment System, Electronic Cheques System, Electronic Cash System and Smart Card based Electronic Payment System.

Objectives and Methodology of the Empirical Research Study

The emergence of Technology in Financial Markets has created new financial needs that in many cases cannot be effectively fulfilled by the traditional payment systems. Recognizing this, virtually all interested parties are exploring various types of electronic payment system and issues surrounding electronic payment system and digital currency. The present study has emphasized on the technological specifications of various electronic payment systems and the researcher have distinguished electronic payment systems based on what is being transmitted over the network; and analyze the difference of each electronic payment system by evaluating their requirements, characteristics and assess the applicability of each system.

Objectives of the Study

1. A brief study on digital modes which are used in digital payments
2. To study the execution process of each digital modes for electronic payments
3. To study the progress and challenges of mobile banking & e-wallet payments

Design of the empirical research

The empirical research study is based on the observations on emerging trends taking place in the present business environment with the implementation of technology in financial services, markets and institutions. As the study would highlight on Emerging Trends in Digital Payments, the researcher has been taken into consideration of various

means which are used in digital payments and explained in table forms the working methods of each digital modes of payment. In this regard, the researcher has explained

Data Sources: The data required for the study is information of various digital modes & tools which are applying in mercantile transactions especially for payments. **Secondary Data** is widely used for this empirical study, such as data of various regulatory bodies, banks, institutions those are implementing and intermediating the digital transactions.

Data Analysis & Techniques: As the secondary data is used for this study, the researcher has used some tables, graphs, diagrams and pictograms to make it easy to understand the data collected.

Initiatives of Government in Digital Payments

The Digital India programme is a flagship programme of the Government of India with a vision to transform India into a digitally empowered society and knowledge economy. “Faceless, Paperless, Cashless” is one of professed role of Digital India. Digital payment is a way of payment which is made through digital modes. In digital payments, payer and payee both use digital modes to send and receive money. It is also called electronic payment. No hard cash is involved in the digital payments. All the transactions in digital payments are completed online. It is an instant and convenient way to make payments.

Technology in the Financial Service Industry is a necessity for the survival of businesses as customers seek lower cost alternative to traditional financial services.

Instruments of Digital Modes: The following are briefly mentioned various digital payments modes available in Indian Financial Markets.

- Bank Cards (Debit / Credit / Cash / Travel / Others)
- Unstructured Supplementary Service Data (USSD)
- Aadhaar Enabled Payment System (AEPS)
- Unified Payments Interface (UPI)
- Mobile Wallets
- Banks Pre-Paid Cards
- Point Of Sale (POS)
- Internet Banking
- Mobile Banking
- Micro ATMs

Digitalization in Financial Services

The digital revolution of the past decade has led to the emergence of new financial services and products and new delivery channels not only in mercantile but also domestic requirements for ease financial transactions. These have the potential to contribute enormously to the financial markets & services: the expansion of financial services to serve the vast majority of the population (availability), at low cost (affordability), and in efficient, safe, reliable forms that meet their needs (quality). Ongoing technological innovations have already brought about the emergence and rapid growth of new digital payment market participants and institutions, such as Bank Cards (Debit / Credit / Cash / Travel / Others), Unstructured Supplementary Service Data (USSD), Aadhaar Enabled Payment System (AEPS), Unified Payments Interface (UPI) Mobile Wallets, Banks Pre-Paid Cards, Point Of Sale (POS), Internet Banking, Mobile Banking, Micro ATMs those for mobile money and other forms of e-money. These new technologies can be especially useful for many categories of populations as well as business enterprises in delivering all financial services. Consequently, people not only get

services better suited to their needs but also escape the often crippling costs, especially of traditional payment services.

Conceptual Introduction of Digital Modes

The following is explained a brief introduction of each digital modes which are used in electronic payments.

Bank Card: It is typically a plastic card issued by a bank to its customers that performs one or more of a number of services that relate to giving access to funds, either from the customer's own bank account, or through a credit account. It can also be a smart card. Physically, a bank card will usually have the client's name, the issuer's name, and a unique card number printed on the cards.

Unstructured Supplementary Service Data (USSD): USSD (Unstructured Supplementary Service Data) is a Global System for Mobile (GSM) communication technology that is used to send text between a mobile phone and an application program in the network. Applications now a days may include digital payments and transactions. It can be used for WAP browsing, prepaid callback service, mobile-money services, location-based content services, menu-based information services, and as part of configuring the phone on the network.

Aadhaar Enabled Payment System (AEPS) is a bank led model which allows online interoperable financial transaction at PoS (Point of Sale / Micro ATM) through the Business Correspondent (BC)/Bank Mitra of any bank using the Aadhaar authentication. How to get it: Provide KYC (Know Your Customer) information to open a new account.

Unified Payments Interface (UPI): is a system that powers multiple bank accounts into a single mobile application (of any participating bank), merging several banking features, seamless fund routing & merchant payments into one hood. It also caters to the “Peer to Peer” collect request which can be scheduled and paid as per requirement and convenience. Each Bank provides its own UPI App for Android, Windows and iOS mobile platform(s).

e-Wallets: An e-wallet, sometimes called a digital wallet, is a secure place that contains one or more currency purses. One can fund in e-Wallet in several different ways. Once it is funded the one can use it online to buy goods or services. e-Wallet allows us to store multiple credit card and bank account numbers in a secure environment, and eliminate the need to enter in account information when making payment.

Point of Sale (POS): **point of sale** generally means any location where a sale or transaction may take place. In other words, a **POS** can easily **mean** a mall, a market or a city because these are locations where something likely is going to get bought or sold. A **point of sale terminal (POS terminal)** is an electronic device used to process card payments at retail locations.

Table 1: Brief Summary of Digital Payment System Modes

| Digital Mode | Name of the Instruments | Means of Services | Delivering of Financial Services or Advantages |
|--|--|--|---|
| Bank Cards | Debit / Credit / Cash / Travel / Others | Prepaid cards (Pre-loaded from bank account) Debit Cards (Linked to bank account) Credit Cards | *Safe to use, limited amount of transaction & mobile recharges. *Used to pay at shops, ATMs, wallets, micro ATMs, online shopping. *Use Card to Shop Anywhere at any Point of Sale (POS), at ATMs, Online shoppings. Pre-loaded card Equivalent to cash |
| Unstructured Supplementary Service Data (USSD) based Mobile Banking | Basic Feature Mobile Phone & Account in Bank <i>(*99# - National Unified USSD Platform (NUUP))</i> | Mobile Money Identifier (MMID) and Mobile PIN (MPIN) | *Can be used for payments upto Rs 5000 per day per customer *Balance enquiry *Mini statement *Fund transfer |
| Aadhar enabled payment system (AEPS) | Aadhar linked bank account Micro ATMs AEPS points | Bank-to-bank transaction At PoS ATMs | Account balance Aadhar to Aadhar fund transfer Cash withdrawal Cash deposit Purchase at Fair Price Shops with AEPS |
| Unified Payments Interface (UPI) | Smartphone with internet facility Bank Account details (only for registration) | UPI app, (28 BANK APPS) Smart Phone Virtual Payment Address | Sending Money through VPA Collecting Money through VPA |
| e-Wallets | Electronic pre-paid payment system mobile-first | Bank Account, Smartphone, 2G/3G Connection | On-line Purchasing through computer or a smart phone |
| Point of Sale (POS) | Physical Card Swiping – PTSN with landline / GPRS enabled Phone connected with external POS device through jack / Bluetooth | Virtual E- payment Gateway *SWIPE A Debit/Credit Card on the POS Machine * QR code for merchant's bank account | All trading financial transactions to be executed through POS. |

Growth in Digital Transformation

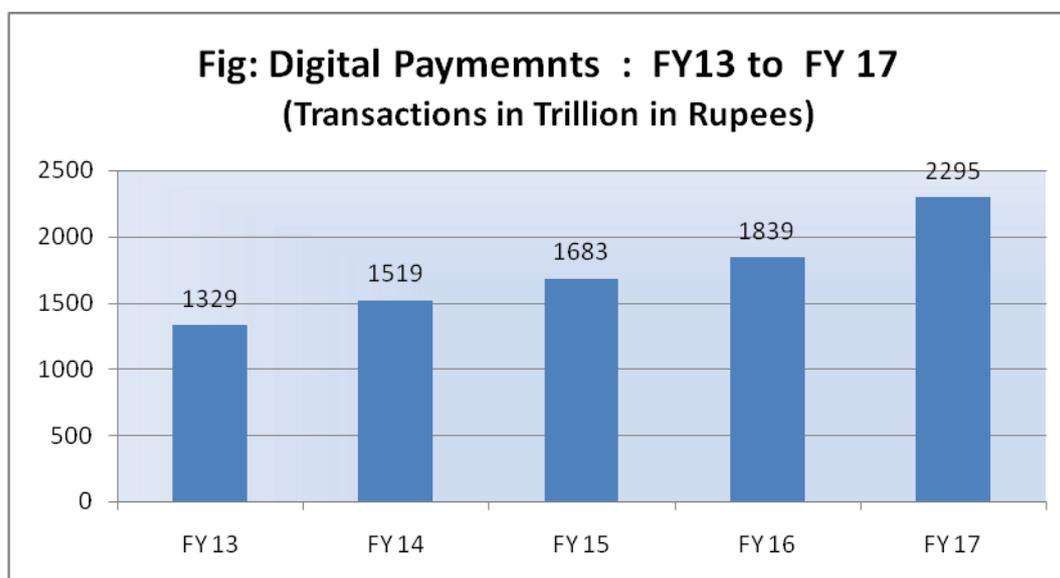
The increasing usage of digital transactions have enabled individuals and business houses to use various applications which have access of androids. In general public, more and more individuals have started using digital modes for various payments like, smart phone, bank cards, e-wallets, POS, mobile applications for all transactions of payments as compared to the traditional desktop/Webbased banking applications. Digital banking refers to the use of a Smartphone or other cellular device to perform online banking tasks while away from your home computer for various uses such as monitoring account balances, viewing mini statement, account statement, transferring funds between accounts, bill payment etc. In this respect, there is a need to understand of threats in usage of such digital mode payments from many aspects. The following are some of the fraudulent activities explained in below table.

Table: Threats to digital banking system

| Category of Threats | Approaches | Preventions |
|--|---|--|
| Malwares in Digital Banking | <ul style="list-style-type: none"> *Sophisticated virus infecting banks mobile apps users to steal password details and even thwart two factor authentication. *By presenting victims with a fake version of the login screen when they access their legitimate banking application | <ul style="list-style-type: none"> *Download & use Anti-malware protection. *Keep the Banking App software up to date *Using the latest version of software *Use security software: for detecting and removing firewalls, virus and malware detection and intrusion detection systems. |
| Phishing / Smishing / Vishing Attack | <ul style="list-style-type: none"> *An attacker attempts phishing on to mobile phone through, text message, telephone call, fax, voicemail etc . to get customers personal information. | <ul style="list-style-type: none"> *Emails or text messages to confirm or providing information of Debit/Credit/ATM pin, CVV, expiry date, passwords, etc. *SSL (Secure Sockets Layer) and TLS (Transport Layer Security) should be adequately implemented in mobile banking app |
| Jailbroken or Rooted Devices | <ul style="list-style-type: none"> *This practiced to gain unrestricted or administrative access to the devices entire file system, *Malware and rogue apps to infect the device and control critical functions such as SMS. | <ul style="list-style-type: none"> *Mobile banking app security is exposed to extreme risk on a jailbroken device. |
| Outdated OSs and Non secure Network Connections | <ul style="list-style-type: none"> *Risk factors such as outdated operating system versions, use of non secure WiFi network, *Steal funds and credentials. | <ul style="list-style-type: none"> *Use Secure Network Connections be connected only to the trusted network *Avoid the use of public WiFi networks |

Overview of the Progress of Digital Payments Industry in India

In India, physical cash has traditionally been dominated up to 2013 in all mercantile and domestic life. However, the payment mode has been rapidly changing from 2013 financial year and the increased adoption of smart phones together with a favorable regulatory environment are pushing the economy to a less cash-dependent state, and promoting the usage of digital payments. With respect to demonetization of INR 500 and INR 1,000 currency notes since November 8th, 2016 which accounted for over 80% of the bills in circulation, and the subsequent policy measures taken by the Government of India (GOI) and the Reserve Bank of India (RBI) have provided further impetus to digital payments. Some key actions including expansion of the digital payments infrastructure at merchant establishments, expansion into rural areas, relaxation in the PPI norms, incentivization of digital payments at fuel pumps, toll plazas, insurance portals etc. Since FY13, the volume of digital payments transactions has grown at 19% annually while the value has increased at an annual rate of 12% in the same time period. The digital payments market is dominated by card transactions (debit and credit) both in terms of value and volume. As seen in the figure graph below, in FY17, card transactions accounted for c. 60% of the total digital transactions volume. While this proportion has declined since FY13, due to the increase in share of other payment modes, the overall number of cards (debit and credit) in circulation has actually increased.



Source: Reserve Bank of India data: Deloitte Analysis

Perspectives and key Challenges in Digital Payments

The electronic payments industry is expected to maintain the pace of its current expansion. Value of the transactions is expected to rise at a rate of 126% to reach INR 32 trillion by the fiscal year 2021. As the penetration of mobile internet and smart phones aggregate, mobile wallets with their ease of use & convenience are expected to continue growing in popularity.

Post Demonetization Scenario' Report published by ASSOCHAM India Along the road however, there are a number of challenges that the industry faces and needs to overcome.

These include the following:

❖ **Inertia in adoption:** Cash transactions have been the dominant payment mode for Indians for a very long time. Even though the penetration of digital payments has been rapidly increasing, concerns regarding security, privacy and transparency of charges are still prevalent among consumers. Industry players will need to invest significant effort to

overcome this barrier, not only through marketing campaigns, but also through actual continuous product improvement

❖ **Risk of security breaches and fraud:** The risks of breach leading to financial loss is a vital decision element for adoption of digital payment modes. Ensuring the security of the technological system is key, since singular events of breaches can lead to large reputational and financial losses for companies. Maintaining privacy of the consumers is also an important challenge, as an increased amount of data is collected and stored.

❖ **Issues with compatibility:** Many digital modes currently on the market are only compatible with one or two operating systems (most commonly iOS and Android). Consumers are looking for options that make transactions the most convenient, and issues with compatibility can hamper that experience.

❖ **Consolidation in the industry:** Despite the surge in the user base and popularity, mobile payment companies are increasingly moving towards consolidation in the e-wallet space. Lack of funding and growth in transactions between merchants and existing customers of wallet companies has forced consolidation in this space. Investors are looking at minimizing costs and changing the business model, issues the firms will need to address in the future.

❖ **Impact of UPI:** Introduction of UPI has created greater competition for mobile wallets but in the short-term, mobile wallets are not expected to face a great impact. UPI powered apps will need to deliver on a number of fronts including transaction costs and ease of use that rivals that of mobile wallets. However, there is scope for some future cannibalization, and is a challenge the industry must face in the long-run.

❖ **Moving beyond core services:** Players in the mobile wallet space have begun moving beyond their core service and delivering collateral services. For example, PayTM provides a broad range of m-commerce services. Offline connect has become one of the significant domains adopted by mobile wallet players to democratize their platform.

Concluding Remarks:

There are a number of tailwinds pushing the financial service industry along its growth trajectory, which include increased financial technology adoption, overall growth of the e-commerce industry and rising need for convenience among consumers. The Indian financial services industry in general, e-Commerce industry in particular has seen remarkable growth to have reached USD 38 billion by 2016. With the preference to shop online, adoption of mobile wallets, which provide an alternative for cash, and card transactions has also increased. A number of online merchants have also been providing incentives to consumers for using mobile wallets as their payment mode. Mobile phone subscriptions in India have crossed the 1 billion mark in 2016. Of these, an estimated 371 million users subscribe to mobile internet. As the number of affordable smart phones entering the market increased and tariffs on data plans continued to decrease, the user base for mobile wallets also expanded drastically in the last five years. Individual customers need for convenience can be seen across a number of industries, including food, health, FMCG, banking, insurance and the mobile wallet industry is benefiting from that trend. Ease of usage, especially with money transfer and bill payment services are a big draw for the younger user base.

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