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ANALYSIS OF ADOPTION OF DIGITAL PAYMENT AND ITS STIMULUS ON FINANCIAL INCLUSION IN INDIA

Management

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ABSTRACT

Globally payments methods has seen dramatic changes in recent years. The payments industry gone through a major disruption in 2016-17 with series of multiple events including demonetization by government of India. Multiple financial technology (FinTech) and firm and methods are start capturing the market over traditional banking system creating paradigm shift in consumer expectations (BCG, 2016). Multiple digital payment platform are delivering disruptive innovations to the market but still rely on traditional financial infrastructure (Tom Villante, 2016).
This research paper present review of different method for digital payment. A set of critical parameters are identified from customer experience and behaviour point of view to adopt digital payment. A survey was conducted and feedback was sought by users in various sections in the society. The data collected from this survey was analysed to confirm the validity of selected parameters. Research also include stimulus of digital payment on financial inclusion.

KEYWORDS

Digital Payment, Financial Inclusion, Payment Methods, Digital penetration, Payment Adoption, Banking penetration, Demonetization

1.Introduction:

India with a huge population of about 1.25 billion has about 67% population in the rural areas (World Bank, 2017). If we consider the digital penetration in India; it amounts to about 36.5% in 2016 (IWS, 2017) and astonishingly there are about 120 million people in the rural areas sharing these stats and these numbers are expected to grow to about 315 million by 2020 (BCG, 2016) These numbers tell us a lot about the behaviour of the people and the society, which depicts the growing online presence of the people. This is also applicable in Banking services.

In India, out of the 1.2 billion, there are about 200 million (BCG, 2016) individuals with bank accounts and with that India has the third largest internet in the world after China and the US. Further it is accounted that 7% of bank account holders use Digital Mediums for banking transactions while branch banking has fallen by a full 15 percentage points (Dr. Geeta Sharma, 2016) .

Because of globalization and the fast-changing world, it becomes a need of the hour to save time, effort and money for all the errands and this is where the Digital Mode of Payments comes into the picture. We have come from the barter system of exchange to the Commodity Money system which eventually evolved into standard paper notes at the exchange parameter. Here is where Digital Payment option comes into handy as it offers a wide array of benefits such as contactless adoption, real time payments and tracking, Mobile point-of-sale(M-PoS) solutions, etc.

Before going further let's define Digital Payments. "***Digital Payments are a way of payment which are made through digital modes such that both the payee and payer use digital modes to send and receive money***" (UPI, 2017) . Another definition is "***Transfers of value which are initiated and/or received using electronic devices and channels to transmit the instructions.***" (UNCF, 2017) .

As the connectivity of the population is getting better and better, it gives a rise in the adoption of Digital Payments for all banking transactions. The working class is wary of the long waiting lines at counters and their distant locations. Hence the incorporation of Digital modes of payments enable them to save a lot of time and energy and also a little bit of money. As far as the rural population is concerned, the lack of connectivity and approachability acts as a catalyst to the emerging modes of Digital Payments and their awareness among people.

Even the Digital Payments have seen dramatic changes over time such as the shifting of consumers more towards mobile internet from traditionally desktop systems, entry of non-traditional players like Paypal, Paytm, M-Rupee, Alipay etc and more demanding customer expectations(BCG, 2016).

The recent Demonetization of the 500 and 1000-rupee currency notes by Mr. Narendra Modi, the Hon'ble Prime-Minister of India gave rise to a boom in the Digital Payments. Various applications like FreeCharge, Paytm added a surge in the Digital Payments by giving lucrative incentives and cash back offers to the people. This all acts in the fulfilment of the dream of a cashless economy by the Government of India and this is the reason of the large number of digital payment options available to the people which we will study about later in the paper.

To study more about the various modes of Digital Payments, an extensive research was conducted and the methodology adopted included designing of a questionnaire and gathering the responses of people and recording their views on the subject. The questionnaire was carefully designed to achieve maximum findings and insights through minimum number of questions.

2.Research Methodology:

This Research consist of Qualitative and Quantitative analysis. Survey on sample size 145 people has been conducted from different background and age group. Correlation test and reliability test has been performed on sample data/Survey.

More than 23 research paper, Journals and Articles has been referred for literature review and qualitative analysis.

3.Literature Review:

India is a growing economy and to increase the growth speed of India we need to minimize time and money on other parameters. Therefore we can reduce the time used for developing currency or its withdrawal and focus on direct transaction through their accounts. In order to follow the market trends, India needs to adapt the technology which other big markets have already adopted or in process of adopting to get better business, therefore because of this growing market, the requirement of digital payment has also increased.

As Capgemini discussed in their report (Capgemini, 2016), the visibility of cash is an important parameter for considering digital payment. If the flow of your money is more visible than most probably you get the people's trust because now they know the process and therefore now they can analyse a bit about the payment process.

When people have more gateways for payment then it became easy for them to process. The limited gateways can generate high risk, as people need to rely on them because of limited availability of sources (Bank of England, 2015). Therefore as the mode of payment increases level of comfort also increases and it minimizes the other risk factors.

When people uses digital payment platform as a mode of payment then they may get little incentives which gradually attracting them to invest more and also because of this mode of payment the complete transection will be recorded automatically and therefore now people are forced to pay legal taxes which gradually helps the economy (UPI, 2017) .

A Google-BCG report says digital payments industry in India will grow 10 times to touch $500 billion by 2020 and contribute 15% of GDP (BCG, 2016) . As the primary source of payment in India is cash therefore as of now people are not capable to analyse the purchase that they make through digital platform and that makes them to incur more money and relatively that increases the cash flow is the market which increase GDP and other factors related to money.

As some digital payment requires a data connection and therefore people needs to have that pack to use such services. As per the research people feel insecure when the use public Wi-Fi for making any digital payment through their device (ISACA, 2015).

In India people, mostly hold their cash for emergency and that affects the cash flow in the market. The digital payment system will force the people to hold their cash digitally (through a bank or any other platform) because now they can use it directly through their account and therefore it will increase the cash flow in the market which directly helps the economy of India (VISA, 2016) .

According to the survey conducted on Electronic Payment Systems (Srivalli Arkalgud, 2016), Credit Card Systems are designed to handle complex payment needs like refunds, charges and returns. Therefore a digital payment system makes it easy for the people to get this money back as now they don't require any physical appearance because digital payment will help them to transfer the amount digitally which will also increase the visibility of their transaction.

As per (Dr.R.Srinivasa, 2013) Connectivity is an important parameter for digital adoption as telecom operator are every day coming up with new services, providing methods to make the solution easier to use, implementing techniques to improve security, launch of 3G is providing higher data transfer rate and invention of new phones, more frequently is driving mobile users towards subscribing to mobile banking services.

According to (Dr.R.Srinivasa, 2013) and (Accenture, 2013) an Ease to Use is most important peremeter for digital payment adoption as Their value proposition is based on speed, convenience and robustness.

As per (BCG, 2016) report Transaction benefits is also consider important parameter for digital payment adoption.

As discussed in (Accenture, 2013) report Safety & Security and payment control is one of the major concern for digital payment adoption as Over 45% of respondents said they are not using their smartphone today for mobile payments because of concerns around security.

Technological Advancement is also consider as major concern for digital adoption as payment propositions that build on the contactless card experience have a good chance of success.

4.Methods for Digital Payment:

4.1.Unstructured Supplementary Service Data (USSD):

USSD is an initiative by the joint partnership between the banks and the telecom service providers of India that have a common objective of providing banking services to the citizens that are deprived of smart phones and/or internet connectivity. Currently, this feature is available in 51 leading banks and all telecom service providers (TSPs) and is available in 10 different regional languages along with Hindi and English. It is termed as NUUP (national unified USSD platform) that offers real time connection and two-way exchange of sequence of data to be used for various banking services such as sending money, requesting money, checking balance, viewing/editing profile, viewing pending request, transaction, UPI pin. The current daily transaction limit is 5000 INR set by the Reserve Bank of India (RBI) and 50,000 INR per annum (Taruna Nagi, 2016) . The charges per transaction are charged by TSPs and vary based on the banks such that the maximum limit 1.50 INR per transaction is set by TRAI (Telecom Regulatory Authority of India)(TRAI, 2016) .

PROS:

- GPRS is not required as it works on voice connectivity
- Works on all GSM mobiles
- More secure than SMS
- No additional application installation is required
- Service is available 24*7
- No additional charges on roaming
- No activation time
- Only the sender has to be registered

CONS:

- It is a tedious process such that in case of any failure during the transaction, the user has to start from the beginning
- The user has to reply within 10 secs or else the connection gets timed out
- The USSD transaction cannot be cancelled as NUUP uses IMPS platform for fund transfer and the fees is charged even if the transaction doesn't take place.

4.2.Internet banking/ virtual payment:

It is a digital payment which is responsible for conducting banking activities and online transactions through financial institute websites.

It enables customers to perform all routine transactions, such as balance inquiries, account transfers, bill payment and stop -payment requests and some banks also offers online loan and credit card applications.

PROS:

- Once information has been entered, it doesn't need to be re-entered for similar subsequent checks and future payments can be scheduled to occur automatically.
- Financial transactions are conducted over the internet through a bank's secure website therefore they are considered as more secure digital payment system.
- Viewing account balances at any time of day
- It keeps proof of transaction

CONS:

- Some banks only offer online banking in a limited area.
- As the information used during this transaction is very private therefore people are advised to use their personal device to avoid any type of fraud
- It may take more time for processing as compared to other digital transaction

4.3.Mobile wallets:

Mobile wallet is a type of virtual wallet that helps you in money payment or transfer. These wallets don't act as a bank, they are just a medium between the people and the bank '(Ritesh Bendre, 2016). People can't directly add money to this wallet, they can only add by transferring money from their bank account to their mobile wallet and after that transfer they can use that money as a digital mode of payment (Nielsen, 2016). So, the bank account money will act as a source for mobile wallet. Limitations on these banks are set by RBI (Reserve Bank of India) according to which the monthly limit for loading digital wallets is 20,000 INR for users and 50,000 INR for merchant bank transfers.

PROS:

- Easy to use as customer don't need to fill in card numbers and passwords every time.
- Fast processing.
- The payee or receiver will have proof of their payment
- 24*7 availability
- Customer can directly transfer to their bank account
- provide excited offers to attract their customer

CONS:

- Most of the old and low-end smartphones have some compatibility issues. There is a need of NFC reader (near field communication) which is lack in old devices.
- Requires internet connection.
- Customer will not get any interest to keep their money in this wallet.
- Dependent on mobile therefore if battery drain then they need to wait until its recharged.

4.4.Card payment:

It is a process that enables user to pay through electronic device by using their card which directly connected to their bank account therefore after making the payment money will directly get deducted from their account. The common types of payment cards are credit cards and debit cards. These cards can only be used for domestic payment by default and if the owner uses these cards for international use, they will have to specially apply for international transection.

PROS:

- Excited offers by bank for using card payment.
- Keeps record of your expenses, helping you to monitor your financial activities.
- Easy to use as owner don't need to fill any detail, they just need to swipe their card and enter the pin.

CONS:

- Every time owner need to carry the card when they want to make the payment.
- Some customer feel compelled to spend more money than they have when they are using credit card.
- It may affect the physical age of your card.

4.5.Aadhaar Enabled Payment System (AEPS):

AEPS is a bank driven model which permits online interoperable monetary exchanges at POS (Point of Sale/Micro ATM) through the Banking Correspodent (BC)/ 'Bank Mitra' of any bank utilizing the Aadhaar confirmation. It performs five services to the customers which are (a) Balance enquiry, (b) (c)Cash deposit, (d) Cash withdrawal, (e)Aadhar to Aadhar fund transfer and (f) Gateway authentication services, out of which the Aadhar to Aadhar fund transfer requires the own banking correspondent (BC) of the customer for the transaction to take place. Currently it is available through 118 Banks and no limit is set by the RBI for the transactions as the respective banks are free to define the limits.

PROS:

- Financial and non-financial transactions can be performed through banking correspondent
- Banking correspondent of any bank can do the specified transaction of any bank
- No need of signatures or debit card/s
- Fast and secure mode of payment as no one can easily forge one's finger prints
- The banking correspondent can reach to the distant rural and remote areas with the micro POS and thus the services could be provided at the customers' door.

CONS:

- The charges can go as high as 15 INR for one transaction.
- UIDAI charges a nominal fee for authentication.
- NPCI charges 10 paisa for authentication and 25 paisa for settlement.
- Banks can charge 1% of the transaction value if the transaction is related to another bank. The minimum fees for any other bank transaction would be 5 INR and maximum fees would be 15 INR.
- The service is available to 23:00 hours each day has the cutover of AEPS transaction.

4.6.Unified Payment Services:

Unified Payments Interface is an initiative of the Reserve Bank of India and was launched by "**National Payments Corporation of India**" on 11th April, 2016 by the hands of Dr. Raghuram G Rajan, Governor, RBI at Mumbai(NPCI, 2017). It is a digital payment system built on **Immediate Payment Service (IMPS)** and links all the bank accounts of a person into a unified platform such that it becomes interoperable. Currently there are **28 banks** which act as *providers and issuers* and **8 banks** that act as *issuers (NPCI, 2017).* Each one of the stated banks has its own UPI app but the user can enjoy the services by using any bank's application. The user has to register for mobile banking services on their bank accounts and then can download any bank's app from the store. Currently the service is restricted to **only Android** smartphone users. The user after installing the application has to create his/her profile by entering all the details and then can merge all the bank accounts preceding of creating a MPIN (numeric password) and is finally able to use the services.

UPI can be used for various transactions like fund transfers from P2P (peer to peer), merchant payments, remittances, bill payments etc. in real time(Gopal Sathe, 2016)(NPCI, 2017) . The current limit is **1 lakh INR per transaction** with a fee of Rs. 5 plus service tax (Livemint, 2016) (Gopal Sathe, 2016). Moreover, the platform also allows to transfer funds using only Aadhaar number as the identifier, which really equips the rural demographic.

PROS:

- The user can use a single application for all his transactions and all the bank accounts can be integrated with ease.
- The UPI system is a safe and secured medium as it employs the same level of security as IMPS used by banks.
- The user creates a virtual ID for himself; less information is needed to use UPI.
- The transactions are done seamlessly and the time taken to process is very low.
- This feature allows the user to pay his bills on a future date automatically(NPCI, 2017).

CONS:

- UPI fails to solve the issues of refund and money back.
- If a transaction results in a failure due to any reason, UPI currently is unable to process handling of the funds back to the sender itself..
- Less than 30 banks out of 150 banks that were qualified, agreed to accept it when the UPI propelled in April, and some major banks were prominent by their nonattendance. Some of them began releasing their UPI applications in August, yet they didn't make a special effort to proselytize its selection by clients '(Sumit Chakraberty, 2016). Hence mass adoption is a major challenge that UPI has to currently face.
- If a transaction fails and funds do not return to sender account then there is no other option but to approach the bank in person to resolve the problem.

5.Analysis and Interpretation:

We have taken the parameters as Network Connectivity which plays a vital role when Digital Payments are considered. Secondly Ease to Use is also an important factor which determines the adoption because if the payment mode is complicated, people are less likely to adopt it. In India, people lay emphasis on the benefits associated with the Digital mode of payment as compared to cash transactions, hence we have taken that also into account. Safety and Security plays a very important role in determining the adoption. Similarly, the Technology on which the Digital Payment works and its Accessibility also plays a vital role. As in India, Demonetization of 500 and 1000-rupee notes took place, which also contributed to the rise in Digital mode of Payment, hence we have taken that also into account.

5.1.Reliability Test:

For any quantitative analysis, we have to first determine whether our data id reliable enough to work upon or not. Hence, we conduct the reliability test. Reliability is the measure of testing the sample data set under similar and consistent constraints so as to produce the same results over time. Thus, when testing procedure is repeated with a group of test takers and essentially the same results are obtained, then it could be said to have high reliability. Research shows that Cronbach Alpha value which is greater than 0.7 shows a high measure of reliability. For the data as a whole, Cronbach Alpha was 0.842 which showed strong reliability.

Case Processing Summary

		N	%
Cases	Valid	131	96.3
	Excluded[a]	5	3.7
	Total	136	100.0

a. Listwise deletion based on all variables in the procedure.

Reliability Statistics

Cronbach's Alpha	N of Items
.842	8

5.2.Correlation Test:

	Network Connectivity	*Ease to Use*	*Transaction benefits*	*Safety and Security*	*Regulatory Control*	*Technology*	*Accessibility*	*Demonetization*
Network Connectivity	1.00000							
Ease to Use	0.49752	1.00000						
Transaction benefits	0.40234	0.36753	1.00000					
Safety and Security	0.49400	0.43775	0.30450	1.00000				
Regulatory Control	0.33153	0.33185	0.40685	0.53044	1.00000			
Technology	0.37090	0.46793	0.33551	0.45039	0.47171	1.00000		
Accessibility	0.50289	0.58838	0.39822	0.48934	0.41435	0.66747	1.00000	
Demonetization	0.17001	0.29808	0.33026	0.25223	0.26663	0.34745	0.44064	1.00000

Correlation has to be found out to determine the interdependence of one variable with another and finding how, much they are in close conjunction with another parameter.

A correlation component matrix was analysed and it was seen that there was a significant amount of correlation between the variables as shown in the below diagram. Rather, network connectivity, ease to use, technology had a moderate to high degree of correlation with accessibility. Also ease to use has strong correlation to network connectivity.

6.Conclusion:

The research on Adoption of Digital Payment shows that Network Connectivity which plays a vital role when Digital Payments are considered. Secondly Ease of Use is also an important factor which determines the adoption because if the payment mode is complicated, people are less likely to adopt it. Therefore the company should focus on these parameters and try to make the digital payment mode more comfortable and easily accessible to the people, so, that they can comfortably switch to the digital payment mode. Safety and security is the most important parameter as people pay more attention to the activities where money is involved and avoid taking risks when the success rate is not 100%. Therefore, companies should maintain the safety level and keep improving, according to the requirement to maintain the trust. Similarly "Technology" plays a vital role as the people always like to move the trend, therefore, providing the higher level of technology will attract the people. So, companies should focus towards introducing the updated technology with the higher level of security and safety and more users friendly to make the digital payment mode more suitable and comfortable for the people.

7.References:

1. Accenture. (2013). Digital payments Transformation. Retrieved from https://www.accenture.com/t20150707T195226__w__/us-en/_acnmedia/Accenture/Conversion-Assets/DotCom/Documents/Global/PDF/ Industries_5/Accenture-Digital-Payments-Transformation-From-Transaction-Interaction.pdf.
2. Bank of England. (2015). Payment Systems Oversight Report 2004. Retrieved from http://www.bankofengland.co.uk/publications/Documents/psor/psor2004.pdf.
3. BCG. (2016). Digital Payments 2020: THE MAKING OF A $500 BILLION ECOSYSTEM IN INDIA. The Boston Consulting Group. Retrieved from http://image-src.bcg.com/BCG_COM/BCG-Google%20Digital%20Payments%202020-July%202016_tcm21-39245.pdf.
4. Capgemini. (2016). Global Digital Payment Transactions Set to Reach 10 Percent Growth for First Time Finds World Payments Report 2016. Retrieved from https://www.capgemini.com/news/global-digital-payment-transactions-set-to-reach-10-percent-growth-for-first-time-finds-world.
5. Dr. Geeta Sharma. (2016). Study of Internet Banking Scenario in India by. International Journal of Emerging Research in Management &Technology. Retrieved from https://www.ermt.net/docs/papers/Volume_5/5_May2016/V5N5-138.pdf.
6. Dr.R.Srinivasa. (2013). TRENDS, CHALLENGES AND FUTURE FUNCTIONALITIES IN MOBILE BANKING. International Journal of Research in Advent Tech Nology. Retrieved from http://citeseerx.ist.psu.edu/viewdoc/download;jsessionid=E7CCE259C64A7DB84C9F76FF1B577517?doi=10.1.1.403.7499&rep=rep1&type=pdf.
7. Gopal Sathe,. (2016). How UPI Works - the Apps, Charges, and Everything Else You Should Know. Retrieved from http://gadgets.ndtv.com/apps/features/what-is-upi-the-apps-charges-and-everything-else-you-should-know-1452664.
8. ISACA. (2015). 2015 Mobile Payment Security Study Global Results. Retrieved from http://www.isaca.org/SiteCollectionDocuments/2015-Mobile-Payment-Security-Study-Global-Data-Sheet_mis_Eng_0915.pdf.
9. IWS. (2017). India Internet Usage Stats and Telecommunications Market Report. Retrieved from http://www.internetworldstats.com/asia/in.htm.
10. Livemint. (2016). How UPI works. Retrieved from http://www.livemint.com/Industry/bTGwxmykXhSKX5Vf8050NI/How-UPI-works.html
11. Nielsen. (2016). Mobile Money. Retrieved from http://www.nielsen.com/in/en/insights/reports/2016/mobile-money.html.
12. NPCI. (2017). Unified Payments Interface (UPI). Retrieved from http:// www.npci .org .in/UPI _Background.aspx.
13. Ritesh Bendre. (2016). How to use USSD-based mobile banking, here's everything you should know. Retrieved from http://www.bgr.in/news/how-to-use-ussd-based-mobile-banking-heres-everything-you-should-know/
14. Srivalli Arkalgud. (2016). ELECTRONIC PAYMENT SYSTEMS. Retrieved from http://www.engr.sjsu.edu/gaojerry/course/cmpe296u/archive/reports/arkalgud.pdf.
15. Sumit Chakraberty. (2016). Light at the end of the tunnel: here's the multiplier effect of going cashless. Retrieved from https://www.techinasia.com/mobile-payments-enabler-lukewarm-response-months-race-adopt.
16. Taruna Nagi. (2016). Demonetisation: USSD technology shows you how to pay digitally without internet. Economic Times. Retrieved from http://economictimes.indiatimes.com/wealth/spend/demonetisation-ussd-technology-to-pay-digitally-without-internet/articleshow/55574701.cms.
17. Tom Villante. (2016). Fintech and Traditional Banks: The Beginning of a Beautiful Friendship. LTP. Retrieved from https://letstalkpayments.com/fintech-and-traditional-banks-a-beginning-of-a-beautiful-friendship/?platform=hootsuite
18. TRAI. (2016). Consultation Paper on USSD-based Mobile Banking Services for Financial Inclusion. Retrieved from http://www.trai.gov.in/consultation-paper-%E2%80%98ussd-based-mobile-banking-services-financial-inclusion%E2%80%99
19. UNCF. (2017). How to define digital payments? Governments International Organizations Companies Resource Partners. Retrieved from https://www.betterthancash.org/tools-research/toolkits/payments-measurement/focusing-your-measurement/introduction.
20. UPI. (2017). Digital Payments in India 2016-2017: Definition, Types, comparison and Apps. Retrieved from https://upipayments.co.in/digital-payment/
21. VISA. (2016). Digital_Payments_India. Retrieved from http://www.visa.co.in/aboutvisa/research/include/Digital_Payments_India.pdf
22. World Bank. (2017). Rural population (% of total population). Retrieved from http://data.worldbank.org/indicator/SP.RUR.TOTL.ZS