

E-Payments – Enabling India towards Becoming Less Cash Economy



Rahul Dhaigude, Vaishali Jain

Abstract An efficient payment system enables to increase the liquidity in the system or economy. An efficient system of payment not only ensure the appropriate utilization of resources but also enables to reduce the threat of systemic risk. There is significant pace of shift towards the electronic payment or digital payments. India's strong cash based economy has started moving towards becoming cashless economy. Through RBI and Government of India initiatives, it is expected that the digital footprints grow to 500 million users by 2020. This paper focuses on different electronic or digital payment options available to Indian users and their usage in day to day life. By using factor analysis and applying KMO Barlett test, the data collected from 100 respondents was analysed. This study revealed that the two significant factors, incentives and risk free transactions, influences the Indian people to transact digitally. This research provides a theoretical foundation for academics and guidelines for service providers and Government in dealing with e-payment systems.

Keywords : Digital India, e-governance, e-payment, less cash economy

I. INTRODUCTION

Payment system along with settlement system is one the most important aspect of any country's economic as well as financial structure. So basically it means that a system enabling the payment between two or more entities. A payment system which is efficient can enable to increase the liquidity in the system or economy. An efficient system of payment not only ensure the appropriate utilization of resources but also enable to reduce the threat of systemic risk. Nowadays there is significant pace of shift towards the electronic payment or digital payment. There are several factors without them this shift would not have been possible. These factors forced the Indian payment system to undergo massive transformation. Indian customers have started showing more and more interest in digital technologies. India has one of the highest youth population and generally youth of any country keen interest in technology. Number of

tech-savvy people is increasing. This is evident from surge in smart phones, digital wallets etc.

Smartphone penetration has been rising in urban and rural areas. Telecom service providers are also providing internet connectivity at competitive pricing because of cut throat competition. They have also come up with feature phones with 3G and 4G enabled connectivity which are available at cheap prices. This has also given the boost for penetration of technology in rural areas.

Government's initiative like 'Digital India' has helped change the perspective of many people towards the digitization of ecosystem. Another initiative by government by launching UPI payment application BHIM which transformed the payment system in India. Customers now have plethora of choices to make payment digitally. To spread awareness about digital payment government has also started 'DigiShala' channel.

However, sudden surge in digital transactions happened after government's crack-down on black money which is commonly referred as 'demonetisation' has put significant challenges towards digital ecosystem. In this project, we have made an effort to identify the factors which enable people to switch to electronic or digital payment, various challenges faced by digital ecosystem and what are government initiatives which can help India to shift from cash based economy to less cash based economy.

II. RELATED WORK

According to Fiallos Federico, Wu Liying, the arrival of the internet has taken electronic payments and transaction to an exponential growth level [1]. Digital money has significant benefits for financial institutions, banks and e-merchants. Lee, D.G., Oh, H.G., & Lee, I.Y. illustrated that a secure electronic cash system can guarantee anonymity of legitimate users but, also provide traceability about illegally issued cash or laundered money [2]. Worku, G pointed out that e-payment application represents a security challenge as they highly depend on critical ICT system that create vulnerabilities in financial institutions, businesses and potentially harm customers [3]. It is imperative, for organizations to understand, and address security concerns in order to leverage the potential of ICTs in delivering epayment application. For e-payment system to be successfully implemented there must be the needed infrastructure on ground. Tadesse W & Kidan T emphasized the need for adequate infrastructure and also pointed out the enormous infrastructure challenges faced by most organization during implementation. For electronic payment to be successful there must be a reliable and cost effective infrastructure that can be accessed by majority of the population [4].

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The objectives of the study were to identify and analyse different factors enabling the people to shift towards e-payment or digital payment.

III. RESEARCH METHODOLOGY

Data Collection and Sampling

The Primary data was collected through a questionnaire administered to over 500 working professionals through convenience sampling; out of which 357 responded to the questionnaire. Out of the total 357 responses, 17 respondents had not completed the questionnaire in satisfactory manner. They were reapproached for filling up the remaining questions but the researchers did not get the affirmative response from them so these 17 responses were excluded for incomplete response. That made 340 completed questionnaires which were then analysed using SPSS version 20.

Descriptive Statistics were studied using MS Excel and then using SPSS version20 for Factor analysis. Further the Correlation Matrix was used to find out the correlation among the factors. The KMO Bartlett test was performed to check the identity matrix. Finally, the Scree Plot was drawn to identify the factors affecting digital payments and confirmed using the Rotated Component Matrix.

IV. DATA ANALYSIS AND DISCUSSION

The respondents were asked to rate the digital payment option depending on their level of awareness as well as usage of each option exercised by them. There were eight different e-payments options available which were rated as shown in the given figures.

E-payment options

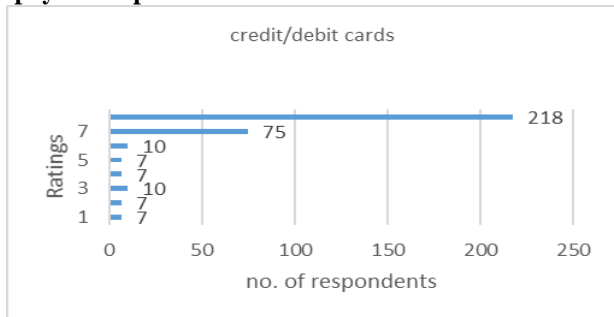


Fig. 1: Credit/Debit cards

Total of 8 e-payment options were given in the questionnaire. Figure 1 shows ratings given by respondents for usage of credit card and debit card. 64% respondents have given highest rating to credit card and debit card. This means maximum number of people prefer to use credit and/or debit card for payment.

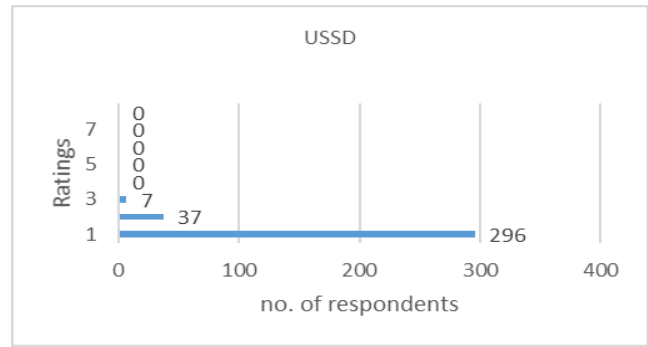


Fig. 2: USSD

Figure 2 shows ratings for USSD (Unstructured Supplementary Service Data). 87 % respondents have given the lowest rating to the USSD usage. It is evident that not many people prefer use USSD as mode of payment.

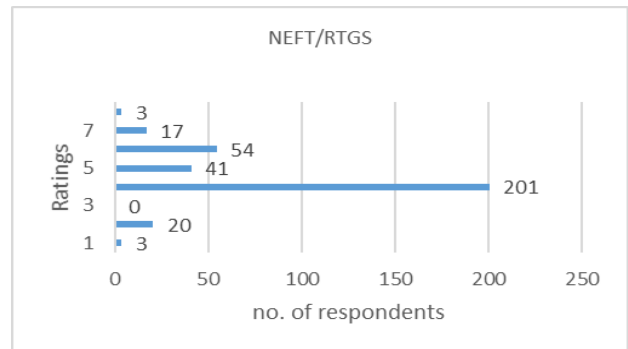


Fig. 3: NEFT/RTGS

Maximum number of respondents have given rating 4 to the NEFT/RTGS. For large amount transaction RTGS is preferred but not for small amount. Only 41% respondents show interest in using this mode for the payments.

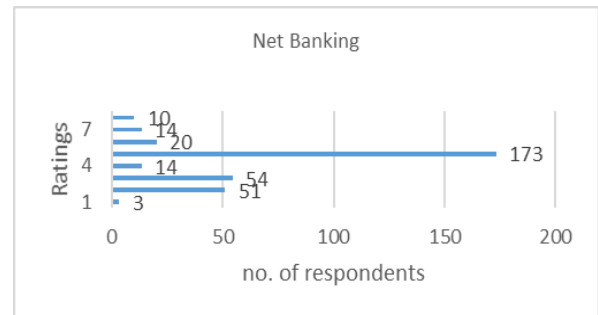


Fig. 4: Net Banking

The above figure shows that the respondents use this method more frequently than NEFT/RTGS but less than credit or debit card. Maximum number of respondents (173) have given rating 5. Many people use net banking for transfer of money to other accounts.

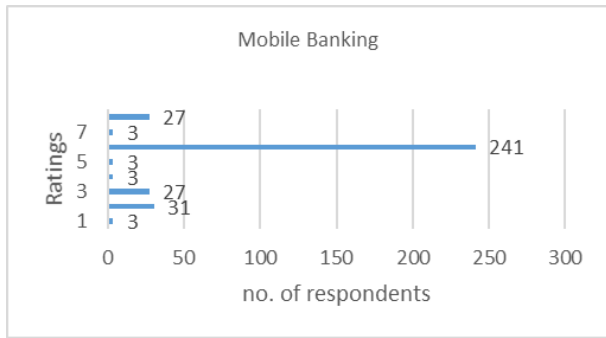


Fig. 5: Mobile Banking

71% of respondents use this mode of payment for transfer of money; more frequently than net banking. Now almost every bank has come up with their own mobile app making it easy for the user to do the transactions from their handheld device. Most of the people use smartphone and hence prefer to use mobile app rather than going onto bank’s website.

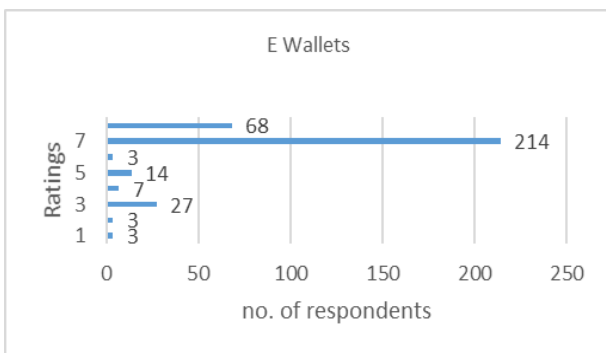


Fig. 6: E-Wallets

After credit card and debit card respondent prefer to use digital wallet. After demonetisation, many people started using E-wallets. Now almost every bank has its own E-wallet. Besides that, many taxi aggregators and other service providers have also come up with their own E-wallets. Number of transactions have been on increase through this mode of payment.

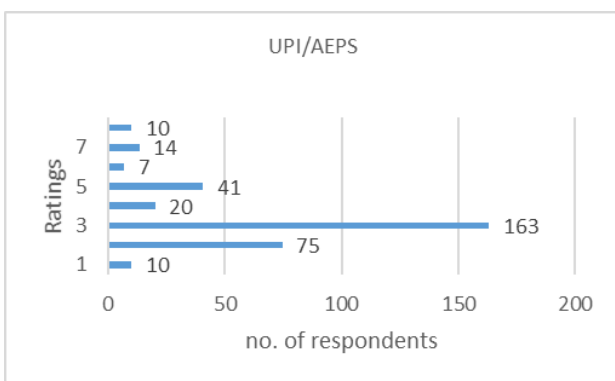


Fig. 7: UPI/AEPS

Figure 7 is ratings for UPI (Unified Payment Interface)/AEPS (Aadhaar Enabled Payment System). People can transfer money directly to other person’s bank account by using UPI/AEPS. Since it is mandatory to link aadhaar with bank account, one can transfer the money by using aadhaar number. It is still not much popular and 48% of respondents have given rating 3.

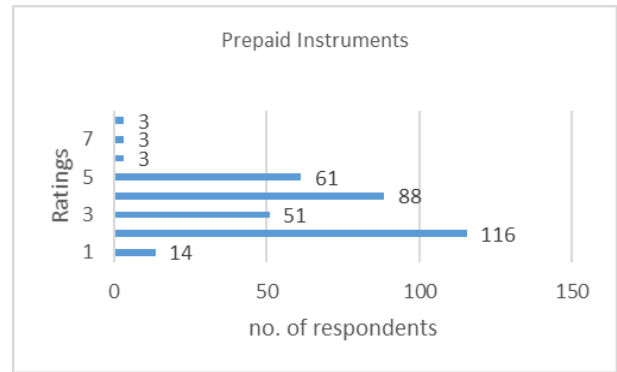


Fig. 8: Prepaid Instruments

Prepaid instruments include smart card which can be used for purchasing metro or local train tickets or other products. The response is mix not showing any clear indication of usage or preference but maximum respondents (34%) have given low rating of 2.

Descriptive Statistics

The different variables influencing the usage of digital payments system or e-payments system were explored and their ratings were considered for the further analysis.

Table- I : Descriptive Statistics

	Mean	Std. Deviation	Analysis N
Cashback	5.4800	2.46380	340
Risk Of Counterfeit	4.7200	.96484	340
Currency			
Loyalty Points	5.4800	2.12954	340
No Risk Of Theft Of Cash	4.8000	.89893	340
Coupons	5.4000	1.90693	340
Management Of Receipts	4.6400	.79798	340
Credit Period	4.0000	2.82843	340

Table 1 points out mean rating and standard deviation received by each factor considered by the respondents for using the e-payments system.

Table -II: Correlation matrix 1

	Cashback	Risk of Counterfeit Currency	Loyalty Points
Correlation Cashback	1.000	-.113	.872
Risk Of Counterfeit Currency	-.113	1.000	-.013
Loyalty Points	.872	-.013	1.000
No Risk Of Theft Of Cash	-.011	.447	-.076
Coupons	.930	-.092	.838
Management Of Receipts	.068	.655	.126
Credit Period	-.847	.133	-.845

Sig. (1-tailed)	Cashback		.132	.000
	Risk Of Counterfeit Currency	.132		.451
	Loyalty Points	.000	.451	
	No Risk Of Theft Of Cash	.457	.000	.226
	Coupons	.000	.181	.000
	Management Of Receipts	.250	.000	.105
	Credit Period	.000	.093	.000

No Risk Of Theft Of Cash	.377
Coupons	.000
Management Of Receipts	.037
Credit Period	

Table 2, 3 and 4 shows correlation matrices. Reason to consider this matrix was to see whether these factors are correlated with each other or not. From these tables we can conclude that these factors are not dependent on each other. These are independent factors.

Table-III: Correlation matrix 2

	No Risk Of Theft Of Cash	Coupons	Management Of Receipts
Correlation			
Cashback	-.011	.930	.068
Risk Of Counterfeit Currency	.447	-.092	.655
Loyalty Points	-.076	.838	.126
No Risk Of Theft Of Cash	1.000	.000	.687
Coupons	.000	1.000	.069
Management Of Receipts	.687	.069	1.000
Credit Period	-.032	-.802	-.179
Sig. (1-tailed)			
Cashback	.457	.000	.250
Risk Of Counterfeit Currency	.000	.181	.000
Loyalty Points	.226	.000	.105
No Risk Of Theft Of Cash		.500	.000
Coupons	.500		.247
Management Of Receipts	.000	.247	
Credit Period	.377	.000	.037

Table-V: KMO and Bartlett's test

KMO and Bartlett's Test		
Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.741
Bartlett's Test of Sphericity	Approx. Chi-Square	623.723
	df	21
	Sig.	.000

KMO shows the proportion of variance, for variables included in the study is the common variance. In other words, this is the common variance, attributed to the underlying factors. A high value of the statistics (from 0.5-1) indicates the appropriateness of the factor analysis for the data in hand, whereas a low value of statistics (below 0.5) indicates inappropriateness of the factor analysis.

Bartlett tests the hypothesis whether the population correlation matrix is an identity matrix. This is important to note that with an identity matrix, the factor analysis is meaningless. Using significance level, the degree of relationship among the variables can be identified. A value less than 0.05 indicates that the data in hand do not produce an identity matrix. This means that there exists a significant relationship among the variables taken for factor analysis. Here value is 0.741. Hence analysis is appropriate.

Table-IV: Correlation matrix 3

	Credit Period
Correlation	
Cashback	-.847
Risk Of Counterfeit Currency	.133
Loyalty Points	-.845
No Risk Of Theft Of Cash	-.032
Coupons	-.802
Management Of Receipts	-.179
Credit Period	1.000
Sig. (1-tailed)	
Cashback	.000
Risk Of Counterfeit Currency	.093
Loyalty Points	.000

Table-VI: Total Variance Explained

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings	
	Total	% of Variance	Cumulative %	Total	% of Variance
1	3.592	51.318	51.318	3.592	51.318
2	2.200	31.433	82.751	2.200	31.433
3	.582	8.317	91.069		
4	.295	4.212	95.281		
5	.154	2.204	97.485		
6	.113	1.616	99.100		
7	.063	.900	100.000		

Table 6 indicates the percentage of variance. It gives the percentage of variance that can be attributed to each specific factor relative to the total variance in all the factors. This indicates there will be 2 main factors. Maximum variance is attributed by factor 1 which is 51.38% and 2nd factor constitutes 31.43%.

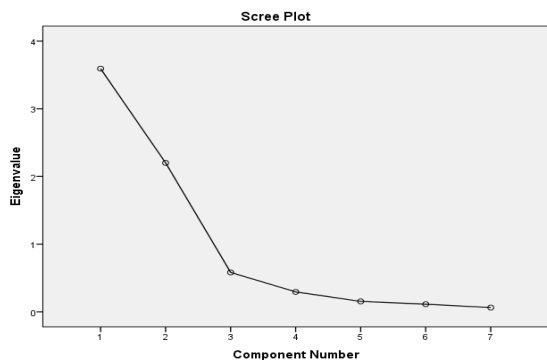


Fig. 9: Scree Plot

Fig 9 is the plot of Eigen values and component (factors) number according to the order of extraction. This plot is used to determine the optimal number of factors to be retained in the final solution. In the above graph the line has changed after unit 2. This indicates that there will be only 2 main factors that will be considered by the customer to shift to E-payment system.

Table-VII: Rotated Component Matrix

	Component	
	1	2
Cashback	.966	-.030
Risk Of Counterfeit Currency	-.103	.813
Loyalty Points	.939	.011
No Risk Of Theft Of Cash	-.010	.830
Coupons	.944	-.018
Management Of Receipts	.126	.120
Credit Period	.927	-.031

Rotated component matrix is the most decisive matrix to take decision. The analysis has confirmed that there will be 2 main factors which are shown in the above table. For both the factors, cut off value has been taken as 0.8. For factor 1, there are 4 values which are above 0.8 and for factor 2, there are 2 values which are above 0.8

V. FINDINGS

Factor 1 comprises Cash back, Loyalty points, Coupons and Credit period. If people get cash back after making E-payment; receive some loyalty points which can be redeemed for shopping purposes; get coupons for shopping, movie or food etc. get credit period where one does not have to pay immediately which is also a kind of incentive, then customer would prefer to go for E-payment instead of paying by cash. All these factors are clubbed into a single factor named as ‘Incentives’. This is the highest contributing factor for people choosing to E-payment.

Factor 2 comprises of Risk of counterfeit currency and Risk of theft of cash. There is a risk of carrying cash as it could be stolen, it could get damaged while handling (wear and tear), one has to be very cautious while carrying large sums, there could be counterfeit currency leading to financial losses. E-payment system eliminates all these issues. One can carry large amount in his/her card or mobile wallet and need not worry. These two factors have been clubbed into one single factor named as ‘Risk free transaction. This is the second largest contributing factor for people choosing E-payment.

VI. CONCLUSION

Government of India has taken various initiatives towards making India a digital ecosystem. It started with financial inclusion and provided basic banking financial facility to people who did not have this facility earlier. Creating financial literacy is the first step towards becoming less cash economy. After that government has started full-fledged ‘Digital India’ program to transform India’s payment system, National Payment Council of India has come up with UPI payment app, Rupay cards and AEPS. Through these initiatives the RBI expects to grow the digital footprints to 500 million users by 2020. Although government is pushing for digital India initiative, there should be proper infrastructure catering to needs of everybody.

- IT System should not collapse because of surge in transaction or overload.
- Significant portion of urban area is digitally literate. It should spread in rural areas as well.
- IT Security in this case is paramount. Adequate measures should be taken to mitigate the risk of frauds and privacy issues.

In this paper, the researchers have analysed factors influencing for shift from cash to E-payment system. It was found there are two major factors which influence people to transact digitally. First factor is incentives and second is risk free transaction.

India is a very cost sensitive country and Government should incentivise people to encourage to transact more through E-payment system. Government should build robust infrastructure so that there is absolutely no risk for any wrongdoing. In order to encourage more and more people to use E-payment system, incentives and risk free transaction become the two most important factors.

Many people started using E-payment system after demonetisation. Although the number of transactions have increased drastically in the months of November to January after demonetisation, the trend has been on decline. Still the number of transactions and value of transactions have been much higher than that of pre demonetisation period.

We can conclude that it is difficult to go completely cashless but India is surely moving towards less cash economy and in near future we expect it to become less cash economy.

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