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Future of India in Digital Payment: A Cashless Economy

SAUMITA PAUL[1], ANTARA BHATTACHARYYA[2] AND CHAITALI PAL[3]

ABSTRACT

Entire India had witnessed a cash crunch on November 8, 2016 for the ban of 500 and 1000 rupees denomination notes. However, this crisis left open the future opportunities of digital payment. The glimpse of cashless economy during that short period of time where entire country was facing tough time to make easy payments by using conventional cash pay methods; some schemes like NEFT, RTGS, mobile banking, PPI, CTS, IMPS, NACH, UPI, USSD, debit and credit card had been used more frequently than the cash. However, all these schemes are not used evenly during that time. Some of the digitised payment methods outperformed others in terms volume and value generation. Some payment methods were used frequently but generate lesser value (in rupees) than others and vice-versa. Therefore, in this study our main objective is to find out the schemes which are more users friendly. This study is an approach to find discrepancy in between high volume and value generating digitised payment methods. To make India cashless economy in the near future, we have to take account some of the facts that over a short period of time digital literacy cannot be increased and hundred percent 4G internet service cannot be achieved. It may require huge social overhead capital. Therefore, to achieve the status of cash less economy, we have to find out the schemes which may help us to create a paperless-economy.

Keywords: *Digital Payment, demonetisation, cashless economy.*

I. INTRODUCTION

A sudden declaration of demonetisation in India on 8th November, 2016 results an almost cash less economy overnight. The high denomination notes of 500 and 1000 got vanished from the economy. This results a huge panic and queuing in front of the banks and ATMs. Several informal sectors affected in a large scale. However, this tension situation leads open the door of digital payment as people are compelled to use less cash in the economy. The digital payment modes are not quite familiar for most of the people of India as it requires a certain amount ofsound digital knowledge. However, this situation had shown a significant amount of improvement in the volume of transaction by the use of those schemes. Some of the schemes

[1] Author is a Research Scholar at Jadavpur University, India.
[2] Author is a Research Scholar at Jadavpur University, India
[3] Author is a Research Scholar at University of Burdwan, India.

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got popular way before the demonetisation and some of the schemes are recognised by the people during that time. It is certainly true that operating some modes of digital payment are easier than others modes of digital payments. However, some schemes are user friendly but might generate less value of transaction and vice- versa. Therefore, to make India a cashless economy in the near future, emphasis has to be given on those schemes which are more users friendly and adaptation of which require lesser digital complication of operating knowledge.

(A) Review of Literature:

There are various challenges have to be faced in case of using secondary data for digitisation (Gaur, 2017). Sometimes it can be found that demonetisation does not have any effect on digitisation (Nithin M. et. al, 2018). However, it is counter-argued that demonetisation may have an impact on the agenda of cash-less economy during that period (Bhatnagar, 2017). Even rapid expansion of digital payment should take into account the socio-cultural-economic transition (Athique, 2019)

(B) Research Gap and Scope of the Study:

Still now most of the study I went through fails to find out directional correlation between different schemes and if different schemes are correlated then whether the variation of different correlated schemes are effecting the variation in a particular schemes or not. This study keeps open the scope to deal with this matter.

(C) Objective of the Study:

In our study, our one of the prime objective is to find out whether there exists any sort of statistically significant correlation between different digitisation schemes or not. If correlation exists, then identify those schemes. This is very important because it may inform us whether the schemes are uni-directional or not. However, correlation fails to capture the causation. Therefore there requires a regression analysis.

The second objective of our paper is to formulate principal component of different schemes. Due to multi-co-linearity problem between different digitisation schemes, we have constructed principal component of those schemes which are significant correlated with the other schemes. After the formulation of principal component index, we have performed several regressions on the particular correlated schemes to find out the explanation of the variation of the different schemes taken together have an impact on a particular schemes or not.

The third and last objective is to observe whether there exists a significant increase or decrease in the usage or volume transaction (in million) of different schemes in between December, 2016

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to March. 2017.

(D) Data and Methodology:

Data has been collected from RBI daily release during that time.

Here we have used mean comparison test, correlation, principal component analysis and regression for this analysis. Mean comparison test is used to capture the difference between the usage of the schemes in the month of December, 2016 and March, 2016. Correlation used to find the directional movement between different schemes and causation between different schemes. Due to multi- co- linearity problem, first we have constructed the principal component index, then perform a regression the capture causal relationship between different schemes.

II. ANALYSIS

Here in the following table (TABLE- 1)the volume of transaction of RTGS is having a significantly positive association with NEFT, CTS, IMPS, UPI, USSD, PPI and MB volume of transactions. Similarly, NEFT other than RTGS positively and significantly correlated with CTS, IMPS, NACH, PPI and MB. CTS positively related RTGS, NEFT, IMPS, DC and MB. IMPS have positive and significant relationship with RTGS, NEFT, CTS, UPI, USSD, PPI and MB and negative significant relationship with NACH. NACH is significant positively correlated with NEFT and negatively correlated with IMPS, UPI and USSD. UPI has significantly positive relation with RTGS, IMPS, USSD and PPI and significantly negative NACH and DC. USSD has a positive significant relation with RTGS, IMPS, UPI and PPI and negative significant relation with NACH and DC. Similarly DC is positively and significantly correlated with CTS and MB and negative significant relationship with UPI and USSD. PPI has a significantly positive correlation with RTGS, NEFT, IMPS, UPI, USSD and MB. MB has significantly positive relation with RTGS, NEFT, CTS, IMPS, DC and PPI.

Now we have constructed the principal component indices (due to multi-co-linearity problem between the different digitisation schemes) for all the correlating variables taken together for a particular digitised scheme. For example, principal component for RTGS is named as RTGS1 comprised of NEFT, CTS, IMPS, UPI, USSD and MB taken together. Similarly, we have principal component indices NEFT1, CTS1, IMPS1, NACH1, UPI1, USSD1, DC1, PPI1 and MB1 for NEFT, CTS, IMPS, NACH, UPI, USSD, DC, PPI and MB respectively. After the predicting the principal component indices, we are interested to run a regression to capture the impact of combined and correlated digitised schemes on a particular scheme.

In Tables-2 it can be seen that there exist a positive impact of their respective principal

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component indices on a particular schemes. For example, the variation in the RTGS positively explained by RTGS1 means that the variation in others schemes (significantly correlated) taken together has an impact (positive) on the variation in RTGS. This holds true for NEFT, CTS, IMPS, UPI, USSD, PPI and MB. However, in case of NACH and DC (in Table 6 and 9 respectively), their principal component NACH1 and DC1 has a negative impact on those two schemes.

Tables 3 to 11 have shown that whether there is a significant improvement or decrease in the volume transaction generated during that time. It can be found that RTGS, IMPS, UPI, USSD and PPI have a significant increased volume of transaction during that period. However, DC and CTS decreased significantly. In this case NEFT, Mobile Banking and NACH are showing insignificant changes.

(A) Pair-wise Correlation:

Table: 1

	RTGS	***NEFT***	***C T S***	***IMPS***	***NACH***	***U P I***	***USSD***	***D C***	***P P I***	***M B***
RTGS	1									
NEFT	0.3906*	1								
C T S	0.5579*	0.4449*	1							
IMPS	0.6059*	0.2811*	0.2810*	1						
NACH	-0.1439	0.3487*	0.0453	-0.208*	1					
U P I	0.4092*	-0.0025	-0.1136	0.5815*	-0.272*	1				
USSD	0.2210*	0.0330	0.0729	0.4292*	-0.232*	0.4884*	1			
D C	-0.1255	0.0877	0.2857*	-0.1650	0.1443	-0.511*	-0.336*	1		
P P I	0.4845*	0.2515*	0.1099	0.4758*	-0.1500	0.4005*	0.1946*	0.0383	1	
M B	0.2010*	0.4343*	0.2158*	0.5989*	0.0086	0.0228	0.0382	0.3674*	0.4270*	1

Source: Author's estimation. * represents 5% level of significance

(B) Regression Analysis:

Table: 2

DEP / INDEP	RTGS1	NEFT1	CTS1	IMPS1	NACH1	UPI1	USSD1	DC1	PPI1	MB1
RTGS	.043*									
NEFT		.46*								
CTS			.32*							
IMPS				.21*						
NACH					-.46*					
UPI						.029*				
USSD							.001*			
DC								-.51*		
PPI									.071*	
MB										.14*
CONS	.3926*	7.01*	4.83*	2 *	7.72*	.142*	.007*	8.38*	2.84*	2.07*
OBS.	121	121	121	121	121	121	121	121	121	121
F(1,119)	63.48	12.53	10.53	53.2	4.65	77.71	31.73	39.25	28.72	49.34
P > F	0.0000	0.0006	0.001	0.00	0.03	0.00	0.00	0.00	0.00	0.00
R-sq	0.4220	0.1980	0.24	0.51	0.05	0.47	0.23	0.22	0.33	0.26
R-MSE	.08514	1.5153	.85	0.33	2.7	.047	.003	1.18	.16	.38

Source: Author's estimation. * represents 5% level of significance

(C) Mean Comparison Test

Table 3:

Variable	Obs	Mean	Std. Dev.	[95% Conf. Interval]	
rtgsvol Dec	31	0.3516129	0.0625618	0.3286651	0.3745608

rtgsvol Mar	31	0.4488387	0.1638062	0.3887541	0.5089233
diff	31	-0.0972258*	0.1729236	-0.1606547	-0.0337969

Source: Author's estimation. * represents 5% level of significance

Table 4:

	Obs	Mean	Std. Dev.	[95% Conf. Interval]	
neftvol Dec	31	7.054839	1.39734	6.54229	7.567387
neftvol Mar	31	6.948387	2.210712	6.137491	7.759283
diff	31	0.1064516	2.348891	-0.7551287	0.9680319

Source: Author's estimation. * represents 5% level of significance

Table 5:

	Obs	Mean	Std. Dev.	[95% Conf. Interval]	
neftvol Dec	31	7.054839	1.39734	6.54229	7.567387
neftvol Mar	31	6.948387	2.210712	6.137491	7.759283
diff	31	0.1064516	2.348891	-0.7551287	0.9680319

Source: Author's estimation. * represents 5% level of significance

Table 6:

Variable	Obs	Mean	Std. Dev.	[95% Conf. Interval]	
impsvol Dec	31	1.693548	0.2920451	1.586425	1.800671
impsvol Mar	31	2.167742	0.4700263	1.995335	2.340149
diff	31	-0.4741935*	0.5266041	-0.6673535	-0.2810336

Source: Author's estimation. * represents 5% level of significance

Table 7:

Variable	Obs	Mean	Std. Dev.	[95% Conf. Interval]	
upivol Dec	31	0.0709677	0.0461414	0.0540429	0.0878926
upivol Mar	31	0.2032258	0.0314523	0.191689	0.2147626
diff	31	-0.1322581 *	0.0540808	-0.1520951	-0.1124211

Source: Author's estimation. * represents 5% level of significance

Table 8:

Variable	Obs	Mean	Std. Dev.	[95% Conf. Interval]	
ussdvol Dec	31	3.3	2.538635	2.368821	4.231179
ussdvol Mar	31	6.822581	1.189316	6.386336	7.258825
diff	31	-3.522581 *	3.16398	-4.684627	-2.360534

Source: Author's estimation. * represents 5% level of significance

Table 9:

Variable	Obs	Mean	Std. Dev.	[95% Conf. Interval]	
dcvol Dec	31	10.03548	0.6765344	9.787329	10.28364
dcvol Mar	31	7.277419	0.7796194	6.991453	7.563386
diff	31	2.758065*	1.166412	2.330221	3.185908

Source: Author's estimation. * represents 5% level of significance

Table 10:

Variable	Obs	Mean	Std. Dev.	[95% Conf. Interval]	
dcvol Dec	31	10.03548	0.6765344	9.787329	10.28364

dcvol Mar	31	7.277419	0.7796194	6.991453	7.563386
diff	31	2.758065*	1.166412	2.330221	3.185908

Source: Author's estimation. * represents 5% level of significance

Table 11:

Variable	Obs	Mean	Std.Dev.	[95%Conf.Interval]	
mbvol Dec	31	2.258064	0.3384023	2.133938	2.382191
mbvol Mar	31	1.925806	0.458961	1.757458	2.094155
diff	31	0.3322581	0.3496542	0.2040038	0.4605123

Source: Author's estimation. * represents 5% level of significance

III. Conclusion

Most of the schemes (other than NACH and DC) have a positive impact on each other. Using of one scheme results in more use of other schemes as well in terms of volume of transaction. Using centralised web based payment solution or debit and credit card results in less use of other schemes. Therefore in the near future if it will be possible to make India sound in digital literacy by increasing the accessibility of internet and mobile phones, then we may expect to reap the gain of digital payment and cashless economy entirely. Even in case of debit and credit card, people are still now more comfortable than using the other schemes lead to the requirement of more infrastructural development for the ATMs and banks.

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