Customer Purview of Cashless Payment System in the Digital Economy of India

G. Ilankumaran, V. Darling Selvi

Abstract: Indian payments industry is largely dominated by cash-based transactions. In digital payments, payer and payee both use digital modes to send and receive money. It is also called electronic payment. The reduced transaction charges and the degree of ease of cash transfers associated with the electronic fund transfers and mobile banking will further drive the growth of digital payment systems in India. This paper highlights the growth of digital payment infrastructure in India and the problems faced by the sample respondents in connection with the operation of digital payment services. The researcher has collected data on Worldwide Mobile and Broadband Subscriptions and Government e-Payments Rankings along with the growth percentages as secondary source of data and primary data were collected from a sample of 100 respondents from Tirunelveli town of Tamilnadu. The survey results were interpreted with the help of Reliability Analysis, percentage analysis, Reliability analysis, Factor analysis and structural Equation Modelling through SPSS and AMOS software. The study reveals that though the sample respondents use digital payment services in various forms and various purposes, they too come across with the problems of infrastructure, awareness and operation. The structural equation model fits the purpose. If the penetration of digital payment services is entered into every nook and corner of the villages by the extension of internet facilities, it will become a user friendly source of operation to everyone across India irrespective of the rural and urban villages. The ultimate focus should be to keep the momentum going with more support from the government and innovations, safety and convenience from the players.

***Index Terms*: Awareness, Digital, e-Payments, Infrastructure, Payment System**

I. INTRODUCTION

Indian payments industry is largely dominated by cash-based transactions. The banking industry in the country was majorly branch-based till 2014. Later, there was a considerable growth in the branch-less channels of banking, which has further explored into digital payments in both rural and urban regions. Indian digital payments industry is expected to reach $700 billion by 2022 in terms of value of transactions. Digital payment is a way of payment which is made through digital modes. In digital payments, payer and

  Dr. G. Ilankumaran[1], Dr. V. Darling Selvi[2]
Associate Professor, Alagappa Institute of Management, Alagappa University, Karaikudi, Tamilnadu. Assistant Professor of Commerce, Rani Anna Government College for Women, Tirunelveli -8, Tamilnadu.

payee both use digital modes to send and receive money. It is also called electronic payment. No hard cash is involved in digital payments. All the transactions in digital payments are completed online. It is an instant and convenient way to make payments. It is expected that more than 80% of the urban population in India will adopt digital payments as a part of their routine by 2022, and 70% of the retail chains will adopt the same. The reduced transaction charges and the degree of ease of cash transfers associated with the electronic fund transfers and mobile banking will further drive the growth of digital payment systems in India. Also, the Indian Government is bringing positive policy framework such as Goods and Services Tax (GST), financial inclusion, improving digital infrastructure, launching payment systems such as aadhar enabled payments, UPI, and others which are supporting the digital payments industry. In 2016, Indian Government made a significant move, i.e. demonetization, to curb black money circulation within the country and to increase digital payment penetration. It is a phenomenal step made by India towards improving cashless economy, resulting in sharp increase of several digital payment channels in the country.

An individual's account is required to be linked to the digital wallet to load money in it. The definition of an electronic payment system is a way of paying for a goods or services electronically, instead of using cash or a check, in person or by mail. An example of an electronic payment system is Pay Pal. There are various types and modes of digital payments. Some of these include the use of debit/credit cards, internet banking, mobile wallets, digital payment apps, Unified Payments Interface (UPI) service, Unstructured Supplementary Service Data (USSD), Bank prepaid cards, mobile banking and so on. This paper describes the digital payment infrastructure in India and the opinion of the people regarding the digital payment.

II. GLOBAL DIGITAL INFRASTRUCTURE

Mobile and Broadband Subscriptions

    Access to and uptake of new technology and innovation and the quality of infrastructure are important for ensuring safe and quick payments which help in building confidence in the

payment systems. The recent developments in Information and Communication Technology (ICT) in general and mobile technology in particular have provided a solid platform for building a new generation of payment technology. While India's performance has been good in terms of mobile infrastructure, the same cannot be said about broadband. However, since internet for financial transactions is majorly accessed through mobiles, India's rating is considered as strong. There is nothing to stop the country from becoming a "leader" in this area in case the connectivity improves and is available all over the country.

Table 1 Worldwide Mobile and Broadband Subscriptions

Country	Mobile Cellular Subscriptions (per 100 people)			Fixed Broadband subscriptions (per 100 people)		
	2012	2017	Growth (%)	2012	2017	Growth (%)
Indonesia	113.29	173.84	53.45	1.2	2.29	91.04
China	80.87	104.58	29.32	12.74	26.86	110.82
India	68.46	87.28	27.49	1.19	1.33	12.41
South Africa	129.05	161.99	25.53	2.09	2.99	43.33
United States	97.29	122.01	25.41	29.53	33.85	14.66
Japan	109.89	133.45	21.44	28.13	31.68	12.61
South Korea	107.35	124.86	16.31	36.54	41.58	13.78
Germany	113.98	129.09	13.25	34.49	40.45	17.3
Russia	145.07	157.89	8.83	14.59	21.44	46.97
France	97.83	106.21	8.57	37.68	43.75	16.11
Canada	79.43	85.9	8.15	33.49	38.01	13.49
Hong Kong SAR	230.6	249.02	7.99	31.73	35.92	13.21
Mexico	83.36	88.51	6.18	10.82	13.26	22.55
Turkey	90.76	96.35	6.16	10.55	14.77	39.95
Australia	106.64	112.69	5.67	25.13	32.4	28.95
Sweden	124.19	125.48	1.04	32.21	37.7	17.03
United Kingdom	121.91	119.63	-1.87	33.75	39.31	16.47
Singapore	153.06	148.24	-3.15	27.18	25.76	-5.25
Brazil	123.81	113	-8.74	9.53	13.7	43.7
Italy	162.7	141.29	-13.16	23.04	27.94	21.27
Saudi Arabia	182.22	122.08	-33	8.73	7.59	-13.14

Source: World Bank - World Development Indicators

The growth of infrastructure in India has been phenomenal over the past six years, especially with reference to availability of Mobile Cellular Subscriptions. Only China in terms of connections per million inhabitants has evidenced faster growth. With increased penetration of 3G and 4G even in remote areas, the internet network is rapidly expanding in India and provides a threshold of "Digital Revolution." There are, however, connectivity issues which need to be addressed. India's position in mobile subscription is third out of 21 countries and in case of Fixed Broadband subscriptions, India's rank is 19 out of 21 countries in the growth rate from 2012 to 2017. The countries Indonesia and China top in the subscriptions.

Government e-Payments

Government of India (GoI) perceived that if e-Governance was to be speeded up across the various arms of government at the national, state and local government level, a programme-approach would need to be adopted, which must be guided by a common vision, strategy and approach to objectives. With a view to make all Government services accessible to the common man in his locality, through common service delivery outlets and ensure efficiency, transparency & reliability of such services at affordable costs to realize the basic needs of the common man, the National e-Governance Plan (NeGP) was formulated by the GoI, for implementation across the country. NeGP envisages web-enabled anytime, anywhere access to information and services across the country, especially in rural and remote parts of India. Department of Electronics and Information Technology (DeitY) has envisaged common e-Governance infrastructure that will offer end-to-end transactional experience for a citizen which includes accessing various services through internet with payment gateway

interface for online payments.

Table 2 Government e-Payments Rankings

Country	Overall	Citizen to Government	Government to Citizen	Business to Government	Government to Business
Australia	5	8	8	1	18
Brazil	17	15	1	1	1
Canada	4	5	8	1	11
China	48	48	43	1	59
France	2	1	1	1	1
Germany	14	15	16	1	21
Hong Kong SAR	23	8	43	33	17
India	28	3	25	1	1
Indonesia	60	39	43	49	64
Italy	21	8	16	49	11
Japan	22	23	43	1	10
Korea	7	8	16	1	6
Mexico	32	39	25	1	27
Russia	29	3	16	49	19
Saudi Arabia	35	23	32	49	40
Singapore	8	8	8	1	6
South Africa	42	31	32	45	18
Sweden	10	15	1	1	18
Turkey	45	48	57	1	51
United Kingdom	6	8	8	1	11
United States	12	23	1	1	15

Source: World Bank - World Development Indicators

As per the Government E-Payment Adoption Ranking report, despite the fact that India has less than adequate infrastructure as well as less sophisticated social, economic context, it performs well on all other four e-payment pillars pushing it to a high rank of 28. India along with Brazil (ranked 17th) and South Africa (ranked 42nd) have implemented more concerted initiatives to facilitate e-payments to and from the State. China (ranked 48th) has witnessed a boom in commercial e-payments; but C2G and G2C electronic transaction services are lower. India's Position in the ranking reveals that it ranks Overall: 14/21, Citizen-to-Government (C2G): 2/21, Government-to-Citizen (G2C): 12/21, Business-to-Government (B2G): 1/21; and Government-to-Business (G2B): 1/21

Customer perception on Digital Payment System

Digital payments started to pick up pace with the growth of e-commerce companies followed by emergence of digital wallet companies. To lure the consumers, the digital wallets doled out lucrative offers and cash backs to get consumers on board using the payment channel. Thanks to the ease of use, attractive offers and increased Smartphone penetration, the digital wallet companies did find their way to the consumer's phone as well as the pocket. To expand their reach, the digital wallets started encouraging customers to use them for offline point of sale (POS) transactions too like at shopping malls, supermarkets, grocery stores, restaurants and gas/petrol stations. These POS transactions are expected to become a majority contributor to the digital payments platform in the coming years. Clearly, digital wallets are playing a unique role in driving the growth of digital payments sector. The other important pillar of the digital payment story are the online ticketing, travel and events companies like IRCTC (Railways), Makemytrip, Yatra, Ibibo, Cleartrip (Airlines and hotels), Trivago (hotels), redBus (buses), and Bookmyshow (movie and event ticketing). They have got consumers to transact online. A study has been conducted among 100 sample respondents in Triunelveli town reveals the following.

Table 3 Descriptive Statistics, Correlations and Reliability Analysis for Personal Profile

Variables	Mean	Std. Deviation	α	Gender	Age	Marital status	Education	Residential status	Occupation	Family size	Family income	Individual income
Gender	1.55	.50	.63	1								
Age	2.63	1.13	.85	-.083	1							
Marital status	1.21	.41	.50	.022	-.751**	1						
Education	2.38	1.14	.84	-.016	-.313**	.022	1					
Residential status	2.16	.84	.77	-.140	.224*	-.187	.337**	1				
Occupation	3.12	1.13	.91	.275**	.115	-.448**	.027	-.148	1			
Family size	2.48	1.03	.88	.031	.713**	-.529**	.007	.144	-.171	1		
Family income	2.67	.90	.88	-.378**	.347**	.190	-.623**	-.372**	-.477**	.325**	1	
Individual income	1.96	.86	.79	.239*	.265**	-.233*	-.496**	-.522**	-.130	.215*	.373**	1

Source: Primary Survey

The correlation is statistically significant for Gender and Occupation (.275**), Family income and Gender (-.378**), Age and Marital status (-.751**), Education and Age (-.313**), Age and Family size (.713**), Age and Family income (.347**), Marital status and Occupation (-.448**), Family size (-.529**) and Individual income (-.239**), Education is statistically significant with Residential status (.337**), Family income (-.623**) and Individual income (-.496**), Residential status is statistically significant with Family income (-.372**) and Individual income (-.522**), Occupation is statistically significant with Family income (-.477**), Family size is statistically significant with Family income (.325**) and Individual income (.215*) and Family income is statistically significant with Individual income (.373**). The reliability test is done with the help of the test of normality and the result of the Shapiro-Wilk Statistic test shows that all the individual variables are significant and reliable.

Table 4 Banking Practices among Sample Respondents

Category	Frequency	Percent	Cumulative %
Type of Bank			
Public Sector	42	42	42
Private Sector	58	58	100
Total	100	100	
Nature of Accounts			
Savings	28	28	28
Current	33	33	61
Fixed	39	39	100
Total	100	100	
Number of Accounts			
One	30	30	30
Two	51	51	81
More than two	19	19	100
Total	100	100	
Level of Knowledge on Computer			
Little Knowledge	24	24	24
Beginner	22	22	46
Average Knowledge	16	16	62
Advanced Knowledge	21	21	83
Expert	17	17	100
Total	100	100	
Devices used			
Mobile	45	19	19
Laptop	10	10	29
Personal Computer	26	26	55
Browsing Centre	19	45	100
Total	100	100	
Frequency of usage			
Weekly	19	19	19
Fortnightly	18	18	37
Monthly	12	12	49
Often	51	51	100
Total	100	100	
Amount spend on digital payment (Rs)			
Below 2000	41	41	41

2001-4000	21	21	62
4001-6000	27	27	89
Above 6000	11	11	100
Total	**100**	**100**	

Source: Primary Survey

Out of the sample respondents, 42 percent have accounts in Public Sector banks while 58 percent have the same in Private Sector, 28 percent have Savings account, 33 percent have Current account and 28 percent have fixed account apart from other type of accounts, 30 percent have opened only one account, 51 percent have opened two accounts and 19 percent have opened more than two

accounts. As far as the levels of knowledge on computers are concerned, 24 percent have Little Knowledge, Beginners (22%), Average Knowledge (16%), Advanced Knowledge (21%) and Experts (17%). From among the sample group, 45 percent use Mobiles for their digital payment transactions, Laptop (10%), Personal Computer (26%) and Browsing Centre (19%), 19 percent have the practice of using the digital payment services Weekly, Fortnightly (18%), Monthly (12%) and Often (15%), regarding the amount of transactions, 41 percent use it for below Rs. 2000, Rs. 2001-4000 (21%), Rs. 4001-6000 (27%) and above Rs. 6000 (11%).

Table 5 Test of Reliability

KMO and Bartlett's Test		
Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.642
Bartlett's Test of Sphericity	Approx. Chi-Square	1344.774
	df	45
	Sig.	.000

Source: Derived

As per the test of reliability, it is understood that the value of chi square is 1344.774 for the degrees of freedom 45, the statements are significant as the p value is 0.000 and the value of Kaiser-Meyer-Olkin Measure of Sampling Adequacy is 0.652 which is adequate for further analysis.

Table 6 Factor Analysis for the problems of Digital Payment

Rotated Component Matrix				
Statements	**Problems**			**Eigen values**
	Infrastructure	**Awareness**	**Operation**	**% of Variance**
Confirmation of payment	**.883**	.099	.177	52.872
Availability of Information	**.833**	.205	.291	17.332
Slow internet speed	**.786**	-.209	.360	12.776
Service quality	**.726**	.618	.142	11.342
Lack of security	**.689**	.613	-.083	2.586
Hacking personal information	-.052	**.866**	.214	1.309
Lack of awareness	.225	**.828**	.207	.941
System hangover	.241	.100	**.938**	.465
Registration	.360	.299	**.759**	.205
Refund of money	.060	.590	**.637**	.172
% of Variance	**33.39**	**27.37**	**22.22**	
Cumulative %	**33.39**	**60.76**	**82.98**	
% to total	**40**	**33**	**27**	
Extraction Method: Principal Component Analysis.				
Rotation Method: Varimax with Kaiser Normalization.				
a. Rotation converged in 8 iterations.				

Source: Primary Survey

Problems with Infrastructure: This factor consist of five statements namely Confirmation of payment (0.883), Availability of Information (0.833), slow internet speed (0.786), Service quality (0.726) and Lack of security (0.689). This factor has a

variance of 33.39 percent and form 40 percent out of total.

Problems with Awareness: Awareness of various techniques and technologies is the basic criteria in case of digital payment system. It is observed that this factor includes two statements namely Hacking personal information (0.866) and Lack of awareness (0.689). This factor has a variance of 27.37 percent and form 33 percent out of total.

Problems with Operation: This factor consist of three statements namely System hangover (0.938), Registration (0.759), and Refund of money when error occurred (0.637). This factor has a variance of 22.22 percent and form 27 percent out of total.
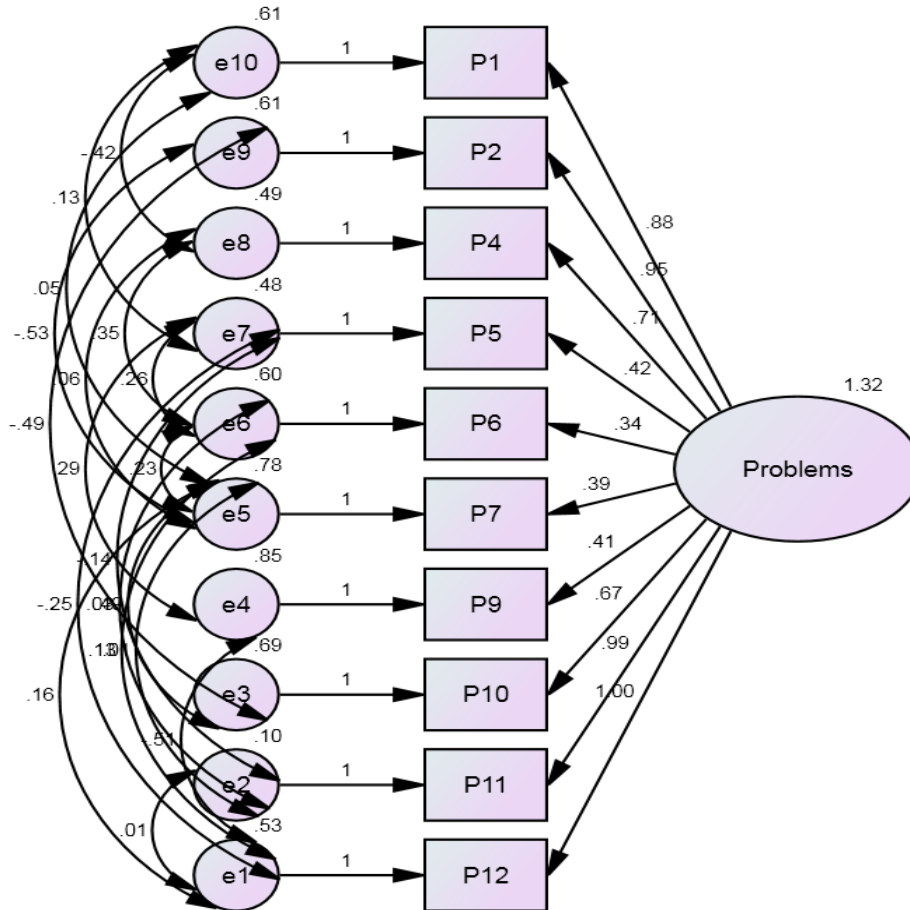

Figure 1. A Structural Equation Modeling

Table 7 Results of Goodness of Fit Test for Confirmatory Factor Analysis

Model	Normed Chi-squre (x^2/df)	P-Value	GFI	AGFI	CFI	NFI	RMESA
Study model	9.972	0.00	0.865	0.535	0.894	0.886	0.301
Recommended value	< 3	>0.05	0.8-0.9	0.8-0.9	0.8-0.9	0.8-0.9	< 0.080

The above table highlights the CFA or measurement model results. It can be inferred from the above table that the values of various indices of goodness of fit are well within the desired limits. The normed chi-square is 9.972 which is above the desired limit, GFI is 0.87, AGFI is 0.54, NFI is 0.886, RMSEA is 0.301 and CFI is 0.894. Furthermore, the factor loadings in respect of all the items included in the model exceed 0.5 and are highly significant at five percent

level of significance as the p value is 0.00. Hence, this is considered to be the good model.

Table 8 Regression Weights for the Model

			Estimate	S.E.	C.R.	P

			Estimate	S.E.	C.R.	P
P12	<---	Problems	1.000			
P11	<---	Problems	.988	.068	14.504	***
P10	<---	Problems	.667	.084	7.972	***
P9	<---	Problems	.414	.102	4.079	***
P7	<---	Problems	.395	.096	4.134	***
P6	<---	Problems	.343	.068	5.033	***
P5	<---	Problems	.421	.079	5.346	***
P4	<---	Problems	.711	.077	9.272	***
P2	<---	Problems	.953	.091	10.434	***
P1	<---	Problems	.879	.089	9.825	***

As all the p values are highly statistically significant and the Critical Ratios are positive and good, as per the standardized regression analysis, it is stated that the model is good as far as the problems encountered by the sample respondents while dealing with the digital payment services.

III. CONCLUSION

Digital payments are more convenient than cash payments. The digital payment space is being transformed and the sector has witnessed tremendous growth, innovations and regulatory support over the last two years. Such has been the changes that India has become the most evolved country when it comes to the digital payment ecosystem. To achieve expeditious movement into the cashless, digital payments economy across all states and sectors and to promote rapid adoption of digital payment systems, various digital payment systems appropriate to different sectors of the economy and are coordinating efforts to make them accessible and user- friendly. Though there are many digital payment systems are currently being promoted across the country, people still suffer with the easy operation of the services due to various reasons. India has good infrastructure for digital payment systems and has good globally ranking too. The study which has been conducted among 100 sample respondents who live in Tirunelveli town reveals that though the sample respondents use digital payment services in various forms and various purposes, they too come across with the problems of infrastructure, awareness and operation. The structural equation model fits the purpose. If the penetration of digital payment services is entered into every nook and corner of the villages by the extension of internet facilities, it will become a user friendly source of operation to everyone across India irrespective of the rural and urban villages. The ultimate focus should be to keep the momentum going with more support from the government and innovations, safety and convenience from the players.

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