DEMOGRAPHIC INFLUENCE ON ELECTRONIC PAYMENTS –A STUDY OF CONSUMERS IN HYDERABAD

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Abstract

This study is undertaken with to understand the demographic factors which influence the adoption of digital payment mechanism. For the purpose of this study, a questionnaire was sent through social media to 250 potential respondents and the received 117 responses. Logistic regression was used as an analytical tool for the study. The results indicate that Education level, Annual Income, Age, Occupation and Gender have influence on adoption of digital mode of payment.

***Keywords:** Demography, Digital Payments, Logistic Regression.*

1.0 INTRODUCTION

The Digital payment landscape in India is changing fast after the impetus received during the demonetization in late 2016. It has been the policy of the government of India to discourage the usage of physical cash. Towards this end, several measures have been taken like:

- Abolition of MDR for payments upto 2000/-
- Improving IT infrastructure
- Creating UPI and BHIM payment apps.
- Acceptance of funds through digital mode only in respect of certain transactions

The payment system in India is governed by the Payments and Settlements Act 2007. Under this Act, electronic funds transfer (digital payments though not specifically mentioned as such) is defined to mean transfer of funds from one account to another through digital means.

Since 2016, India has been on a journey of a less cash society for various reasons like:

- compliance with tax
- Challenges of preventing counterfeit currency
- Cutting off Funding for unlawful activities
- Reducing Cost of handling currency etc

Part II

2.0 LITERATURE REVIEW

Stavins (2016)[2] had studied the effect of demography on payment behavior. The study was conducted by using pooled data from five annual surveys conducted 2009-2013. The study showed that demographic factors like Age , Education levels , Income of the individual and Race are significant in explaining the payment behavior.

Chawla and Joshi (2018)[3] had studied the demographic character influences on adoption of mobile payments. The demographic factors considered were Age, gender, income, education, experience, marriage status and Occupation. Using Multiple Linear Regression and FisherZ transformation, they showed that variables like age, educational qualification, experience, Occupation, Income and marital status had significant influence in the adoption of mobile payments.

Vinitha and Vasantha (2017)[4], had studied the influence of variables Age and Occupation in E payments. Through statistical tools MANOVA the authors had concluded that Age and Occupation have been influenced by Perceived benefits, Perceived speed and facilitating conditions.

Kittipipatpuri (2019)[5], had studied the influence of demographic factors on payments method in Thailand. The data for the study was sourced from the Thailand Payment Survey. The results of the analysis show that demographic factors Age, Level of Education and Income are significant determinants of payments methods.

Khurana et al(2019)[6], had studied the effect of demographic factors on digital money satisfaction for various modes of digital payments in Punjab. They concluded that marital status, Income, Age, Occupation and Gender had significantly influenced the satisfaction levels of electronic payments.

Part III

3.0 DIGITAL PAYMENTS IN INDIA

Since the forced digitization of payments during the end of 2016, also called demonetization, digital payments in India has been adopted rapidly especially in the retail segment. The retail segment of digital payment consists of Mobile wallets, NEFT, IMPS, UPI etc.,Digital payment has witnessed a CAGRof around 65% in volume terms and about 42% in value terms between 2014-15 to 2018-19 as per RBI report[7].This growth is indicative of the nature of the shift in the people's attitude and behavior.

In India, there are multiple digital payments systems like ECS, NEFT, IMPS, Digital Wallets, Cards etc.,
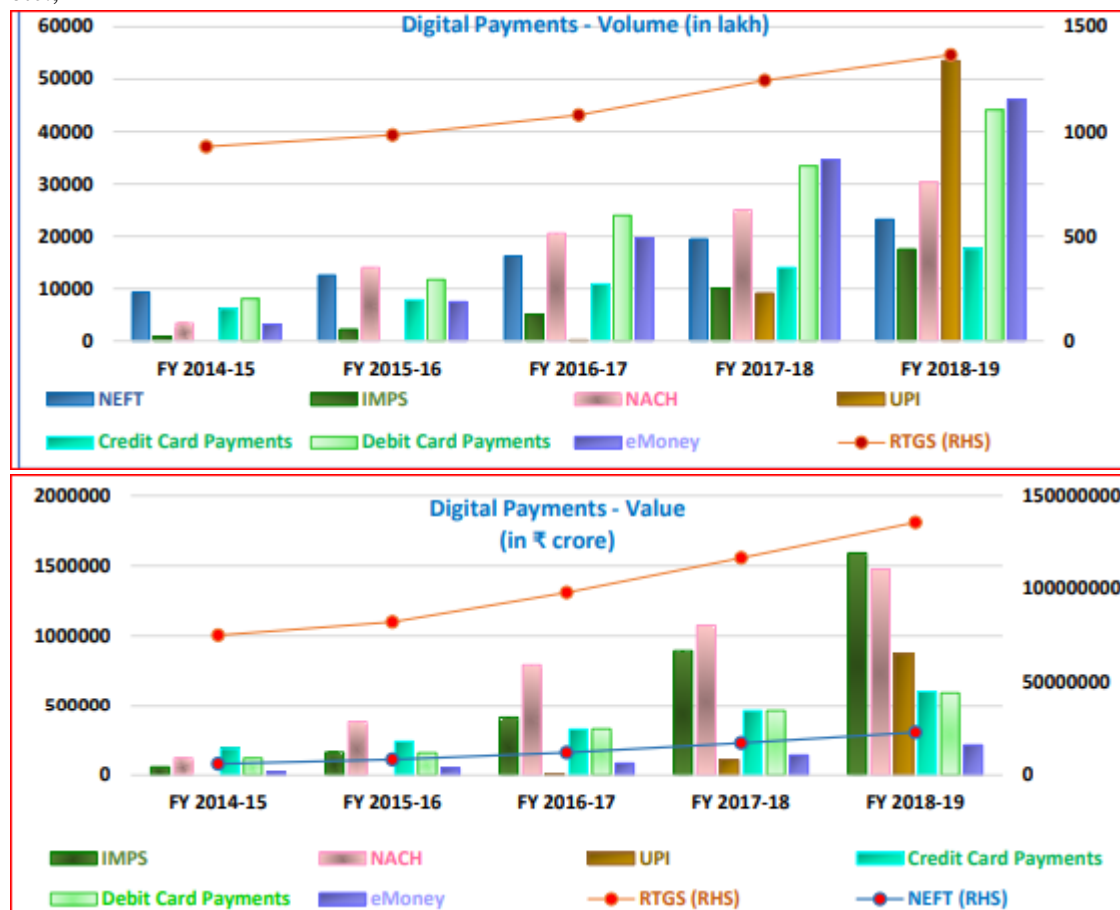
Source: Reserve Bank of India

Part IV

4.0 METHODOLOGY

4.1 Problem Statement

From the previous section, it can be seen that digital transactions with respect to payments in India has been growing. But the question that needs an answer is, which segment of the population is adopting digital money. In other words, which demographic factor has greater influence in making use of digital payment.

4.2 Objectives

The objective of this study is to understand the effect of demographic factors on the use of digital money.

4.3 Data Sources

This research uses primary source of data. After a review of literature on this subject, this study selected demographic variables Age, Gender, Occupation, Educational levels and Annual Income to study their influence on the usage of digital money.A questionnaire was prepared to capture the demographics – Age, Gender, Education Level, Occupation and Annual Income alongwith the question whether the respondent has / had used digital money.A Yes / No response has been provided to the respondents.

Considering the popularity of social networking sites like Facebook and WhatsApp, the interview schedule was sent to potential respondents through emails and social media.

4.4 Sample

A conveniently selected sample of 250 respondents from the researcher's contacts cutting across various demographic profiles was selected and the questionnaire sent to these respondents. The researcher received 117 responses which were the basis for this study. The respondents were all basically from the city of Hyderabad.

4.5 Analytical Tools used

The response to the question "Have you used digital money?" had two options – Yes / No. questionnaire, which is the dependent variable. Digital money was meant to be any of Mobile wallets, UPI, Debit cards, credit cards etc. Statisticians generally consider a Yes / No type of response as Dichotomous.

This study focuses on formulating a statistical model with 5 independent variables and one dependent variable as mentioned above.Under these circumstances, multiple regression would have been an obvious choice because Multiple Linear Regression is a straightforward tool which is used to study the relation between a dependent variable and several independent variables (David)[8]. However Regression model has stringent assumptions regarding data type, data distribution etc Sandra and Sheridan[9], are of the opinion that if the dependent variable is dichotomous (Yes Vs. No), logistic regression is more appropriate. Hence this study has also adopted Logistic Regression for analysis of data.

4.6 Logistic Regression

Logistic regression is a tool to analyze data where the dependent variable is dichotomous and there are multiple independent variables.

Logistic regression is not constrained by many of the assumptions of a linear regression model like linearity, normality and homoscedasticity. Instead the assumptions for Logistic regression are that the dependent variable is dichotomous – Yes / No, True / False etc.

The second assumption is that, the observations should be independenti.e.this model cannot be used where there are repeated measurements.

A third assumption of Logistic regression is that the multicollinearity between independent variable is to be negligible, if any.

A simple Logistic Regression equation, with one independent variable can be written as

$$Y = \exp^{(\alpha+\beta x)} / 1+\exp^{(\alpha+\beta x)} = e^{\alpha+\beta x} / 1+e^{\alpha+\beta x}$$

where X is the independent variable and Y is the probability of the event happening, the dependent variable.

When there are multiple independent variables, then the same logistic regression can be written as

$$Y = e^{\alpha+\sum_{ni=1}\beta ixi} / 1+e^{\alpha+\sum_{ni=1}\beta ixi}$$

where X_1, X_2, …, X_i are the independent variables and Y is the probability of the event happening, the dependent variable.

Logistic regression Model:

In this study, the independent variables used wereAge, Gender , Education Level, Occupation and Annual Income and the dependent variable was whether the respondent has / had used digital money (Yes / No).

$$Y = \alpha+\beta_1 Gender+\beta_2 Age\_group+\beta_3 Occupation+\beta_4 Education+\beta_5 Ann\_Income$$

Where Y is the usage of digital money

4.7 Scope and Limitation

The study has been confined to the respondents from the city of Hyderabad. Further, the study was confined to people using WhatsApp and Facebook since the questionnaire link was sent through these media.

Part V

5.0 RESULTS AND DISCUSSION

The Demographic Profile of the respondents are given below.

Table 1(a) Gender

Gender	Number	Percentage
Male	61	52%
Female	56	48%
Total	117	100%

Table 1(b) Age

Gender	Age Group	Number	Percentage (of total)
Male	<25 years	12	
Male	26-35 years	14	
Male	36-45 years	18	
Male	46-55 years	9	
Male	Above 55 years	8	
Female	<25 years	17	
Female	26-35 years	19	
Female	36-45 years	8	
Female	46-55 years	8	
Female	Above 55 years	4	

The SPSS output, based on the data obtained, is given in the tables below

Table 2

Omnibus Tests of Model Coefficients

		Chi-square	df	Sig.
Step 1	Step	37.347	5	.000
	Block	37.347	5	.000
	Model	37.347	5	.000

Table 2 indicates the model coefficients. A value of <0.05 in the model row under Sig Column indicates that the model formulated is significant and deserves further analysis. In the model constructed, the value is 0 which implies that the independent variables considered significantly influence the digital payments usage.

Table 3

Variables in the Equation

		B	S.E.	Wald	df	Sig.	Exp(B)
Step 1[a]	Gender	1.021	.805	1.610	1	.204	2.777
	Age_Group	-.605	.483	1.567	1	.211	.546
	Occupation	-.152	.358	.180	1	.672	.859
	Education	1.644	.581	8.001	1	.005	5.175
	Ann_Inc	.961	.533	3.247	1	.072	2.615
	Constant	-2.184	1.872	1.362	1	.243	.113

The column under B provides an indication regarding the factor loadings. In Table 3 above, the B value for all the factors are not Zero and has some value whether positive or negative, indicating that the factors considered are relevant. Education is significant with its value under "sig" column at 0.005 and the value of Annual Income is 0.07 which is fairly significant. A value of <0.05 is considered significant.

Table 4

Correlation Matrix

		Constant	Gender	Age_Group	Occupation	Education	Ann_Inc
Step 1	Constant	1.000	-.779	.015	-.089	-.435	-.458
	Gender	-.779	1.000	-.052	-.055	.133	.359
	Age_Group	.015	-.052	1.000	-.846	.014	-.343
	Occupation	-.089	-.055	-.846	1.000	-.089	.248
	Education	-.435	.133	.014	-.089	1.000	-.246
	Ann_Inc	-.458	.359	-.343	.248	-.246	1.000

Table 4 gives the correlation matrix between the independent variables. It shows that there is significant association between age group and occupation. A more detailed study on this aspect is required to ascertain the influence.

Table 5

Classification Table[a]

Observed	Predicted		
	Usage		Percentage Correct
	.00	1.00	

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Step 1	Usage	.00	9	7	56.3
		1.00	2	90	97.8
	Overall Percentage				91.7

Table 5 gives the predictive power of the model. It shows that the predictive power of usage i.e True positive is 97.8% accurate and that non usage i.e. false positive is about 56.3%. Overall predictive power is 91.7%.

Therefore the following model suggested is:

$Y = -2.18+1.021*Gender-0.605*Age\_group-0.152*Occupation+1.644*Education+0.961*Annual Income$

Where Y is the digital payments usage.

6.0 CONCLUSION

This study attempted to study the relationship between digital payments usage and demographic factors. The analysis of the data was carried out using Logistic regression. The end result of the analysis indicate that demographic variables Age, Gender, Income, Education and Occupation are related to the usage of digital payments. Juxtaposing the B values in Table3 and the predictive values in Table5, it can be concluded that this model is very good in predicting users who use digital payments but falls short in identifying the non users of digital payments system.

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