Expansion of Cashless Transaction in Daily Life: A Case Study in Birbhum District of West Bengal

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Abstract:- Cashless transactions refer to the exchange of money through electronic means, rather than using physical currency or traditional paper-based methods. It has become increasingly popular due to technological advancements, convenience, and the widespread use of the internet and mobile devices. Several forms of digital transactions exist, such as online banking, mobile banking, UPI, POS etc. The various types of activities performed by common citizens through cashless transactions in daily life. In rural India, different kinds of challenges exist to the adoption of digital transaction like digital literacy, internet connectivity. With the help of a linear regression analysis, it has been observed that demographic and technological factors play important role in spreading cashless transaction in everyday life.

Keywords:- Cashless Transaction; Digital Knowledge; Technological Information.

I. INTRODUCTION

A cashless transaction implies a financial transaction in which physical currency, such as coins and banknotes, is not exchanged. Instead, these transactions are conducted electronically, typically using various digital payment methods and technologies. Cashless transactions have become increasingly popular due to their convenience, speed, and security. Online banking platforms enable users to pay bills, such as utility bills, loans, and credit card bills, directly from their bank accounts. This involves purchasing goods and services from e-commerce websites. Shoppers can browse products, add them to a virtual cart, and complete the purchase online using various payment methods, including credit/debit cards, digital wallets, and online banking. Online and mobile banking apps allow users to transfer money from their bank accounts to another person or organization's account. Cashless transactions are quick and can be done anywhere with an internet connection. Many cashless payment methods employ encryption and authentication measures to protect sensitive information. Several apps and platforms, such as PhonePe, Google Pay, Amazon Pay, Paytm, BHIM etc. facilitate peer-to-peer money transfers and digital payments. To transform the country into a digitally empowered society and knowledge economy the Government of India initiated the "Digital India" programme. The Digital India initiative has made significant progress in digitizing government processes, expanding internet access, and promoting the use of technology for social and economic development. It has also played a crucial role in advancing India's position as a global IT and digital services hub. However, challenges such as digital literacy, cyber security, and infrastructure development in remote areas continue to be addressed as the program evolves.

The present work examines how far people become habituated and experienced by digital transactions in day-to-day life. The various types of activities performed by common citizens through cashless transactions in daily life are mobile recharge, LPG booking, cable/DTH recharge, electricity bill payment, education fees payment, restaurant bill payment, purchasing in local market, tour and travel booking etc. The number of operative modes for digital transaction like credit/debit card, internet banking facility, UPI facility, mobile wallet etc. has a crucial role in accelerating the performance of cashless transaction in daily life also. This paper finds out the causes and indicators to expand the growth of digital transactions at the grassroots level which lead to an overall digitalized economy.

II. LITERATURE REVIEW

In a study, Joshi (2017) [4], found that people are proactively adopting new modes of digital payments and also hoist the usage of new digital payment modes over old digital payment modes. Demonetization also amplified in digital payment transactions especially in newfangled modes of digital payments like NACH, IMPS, AEPS, BBPS, UPI, BHIM(UPI) and NETC. Singh (2017) [11] studied to find out the customer perception and impact of demographic factors like gender, age, education, profession, income etc. on adoption of digital mode of payment. No significant difference has been observed between male and female, age, profession and annual income. Education level plays an important role in the digital payment mode. U. Shankar (2017) [10] tried to identify the prospects and challenges of Digital Transaction System in India and to find out the steps taken by the RBI and government to discourage the use of cash. It has been observed that India is gradually transitioning from a cash-centric to digital economy and the whole country is undergoing the process of modernization in money transactions, with e-payment services. A large number of businesses, even street vendors, are now accepting electronic

payments, prompting the people to learn to transact the digital way. To examine that the importance of cashless policies in the economy of a country and how it affects to their economic growth Singhraul and Garwal (2018) [13] tried to find out various challenges and opportunity associated with the implementation of the cashless policies in India in comparison of other countries. Their observation was that the India in terms of using digital payment methods is still very poor in comparison to other developed countries in the world. The reasons behind it are the unavailability of proper internet connectivity, lack of awareness and knowledge of financial transaction, charges on card payments and un operational bank accounts etc. Roy & Das (2018) [9] examined the awareness and adoption level of Digital Banking Services (DBS) people at pre and post demonetization period. They find that the rural and urban people have awareness about the demonetization process but the percentage of users for all categories of Digital Banking Services like card, internet and mobile are very high for the urban sector than the rural sector. The rural people are found to be more convenient to use card banking than the other two categories of Digital Banking Services, internet and mobile banking. Gender, education, occupation, age, income creates an impact for availing DBS. The adoption level of digital banking service is dependent on demonetization knowledge, reliability, customer support, service security, ease of use and performance.

Prakash S. et al. (2020) [8] found that the people use online banking before demonetization for money transfer and feel secured about it. The male are more aware about plastic money than female for transaction. The online banking users and sex are independent in rural and urban area. There is no significant effect of area on number of online banking users.

The average number of online banking users of different apps is also different. There is no significant effect of area on number of application type for online banking users. S.P. Tomar et al. (2020) [15] studied for assessing the awareness of the digital transaction schemes and find out the sources in their implementation. They found that the overall awareness regarding digital transaction schemes and methods were maximum among age group 18-29 and a significant association was found between the usage of mobile wallets and the different age groups with the younger age groups having more knowledge than the older age group in this regard. S. Mohd. & R. Pal (2020) [7] analysed the awareness of household regarding cashless transactions in Kangra District. There is less awareness about latest modes of digital payments like USSD, AEPS, UPI, Mobile wallets and internet banking and people have no adequate literacy and acquaintance with information and technology to implement the cashless system.

III. OBJECTIVE

The main objective of this study is to find out the role of different demographic and technological factors influencing and improving the cashless transaction in daily life. These factors are gender, age, monthly income, technological and digital information the person acquire etc. Simultaneously it has also been examined the number of operative modes of digital transaction available to the person how much accelerates the cashless transaction. The study was conducted randomly in different parts of rural and urban area of Birbhum district, West Bengal.

IV. METHODOLOGY

➤ *Let the Standard Form of k-Variable Regression Model is*

Linear model: $Y_i = \alpha + \beta_1 X_{1i} + \beta_2 X_{2i} + \beta_3 X_{3i} + \cdots \ldots \ldots + \beta_k X_{ki} + U_i \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots$ (1)

And cov(u$_i$, X$_{ji}$) = 0

Exponential model: $\ln(Y_i) = \alpha + \beta_1 X_i + U_i \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots$ (2)

Where,

$$Y_i = e^{\alpha + \beta_1 X_i + U_i}$$

In linear model the explanatory variables (X_i) are gender, age, monthly income, average digital information and average technological information. The variables average digital information and technological information are constructed by the average score of some qualitative as well as quantitative parameters and thereafter the Cronbach's Alpha test for the reliability has been tested (0.720 & 0.714 respectively) which become significant. A multicollinearity test also applied to check the interdependence among the explanatory variables. The exponential regression model is used to measure the rate of change of the dependent variable by the explanatory variable.

V. RESULT AND DISCUSSION

The regression model between number of purpose of digital transaction and all covariates is statistically significant at 0.01 level of significance. From table 1 the estimated equation can be written as $\hat{Y}_i = -3.81 + 0.975 X_{1i} + 1.27 X_{2i} - 1.07 X_{3i} + 0.52 X_{4i} - 0.019 X_{5i}$.

Table 1: Linear Regression Result

ndtp	Coef.	Std. Err.	t	P > t	[95% Conf. Interval]	
Number of obs = 94, F(5, 88) = 69.06, Prob > F = 0.0000, R-squared = 0.7969, Adj R-squared = 0.7854, Root MSE = 1.467						
avgtechinfo	.9754097	.4138153	2.36	0.021	.1530388	1.797781
avgdtinfo	1.270968	.1715902	7.41	0.000	.9299689	1.611968
gender	-1.072925	.3407897	-3.15	0.002	-1.750173	-.3956774
lminc	.5279418	.1843239	2.86	0.005	.1616367	.8942469
age	-.0193085	.0170987	-1.13	0.262	-.0532886	.0146716
_cons	-3.810655	1.360034	-2.80	0.006	-6.513438	-1.107873

All the covariates are significant except age. The coefficient of average technological information and average digital information are 0.975 and 1.27 respectively and both the coefficients are statistically significant. As the average technological information increases the number of purpose of digital transaction increases by 0.975 whereas the increase of average digital information leads to an increase of 1.27 times of number of purpose of cashless transaction. Figure 1 and 2 shows the qfit plot of both the average technological and digital information variables against the number of purposes of digital transaction. The curves are upward rising indicates an increasing relationship. The coefficient of age is negative which implies that aged people are less interested to cashless transaction than younger (figure 3).
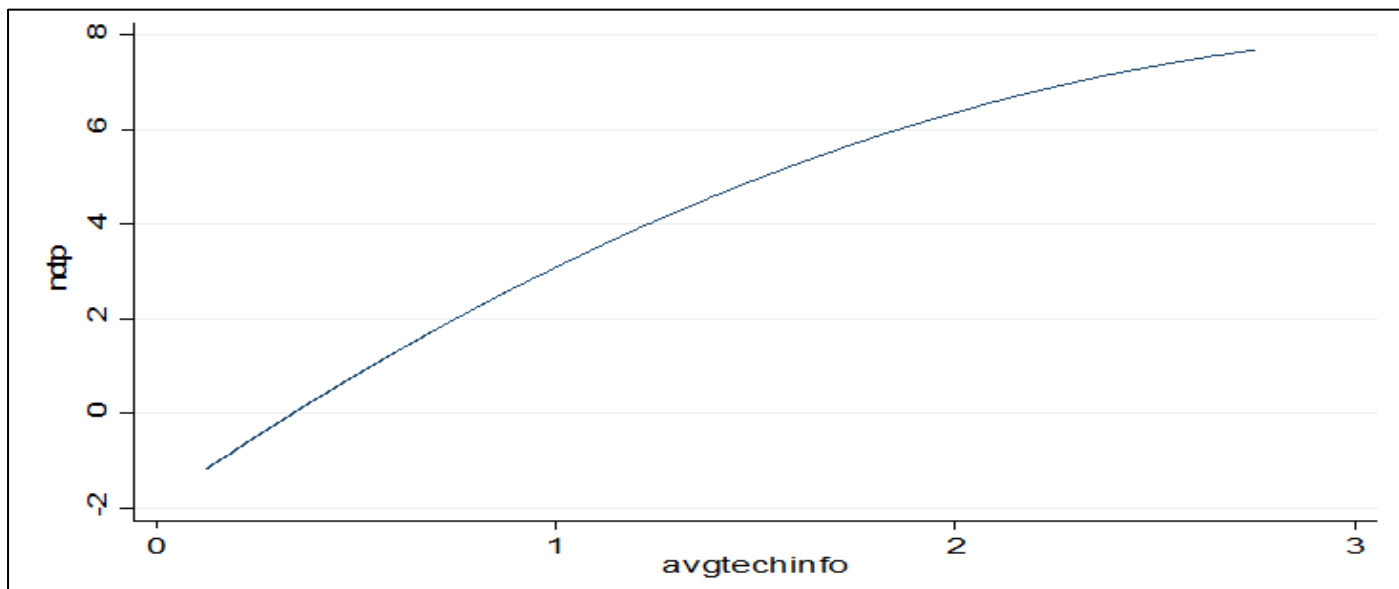

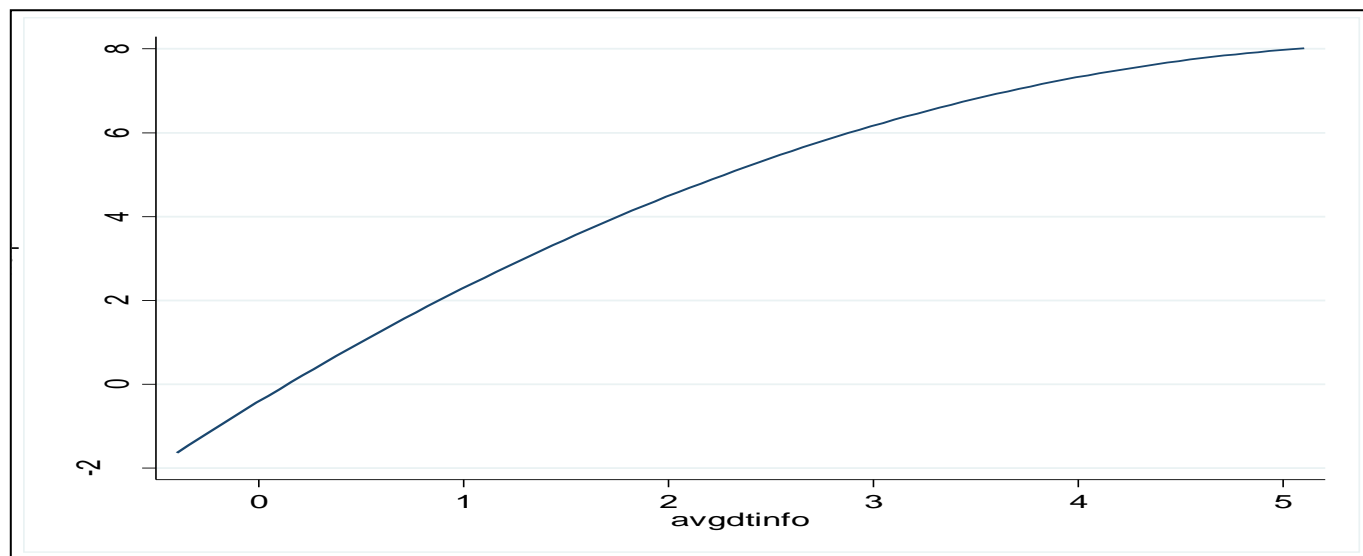Fig 1: Qfit Plot of Average Technological Information
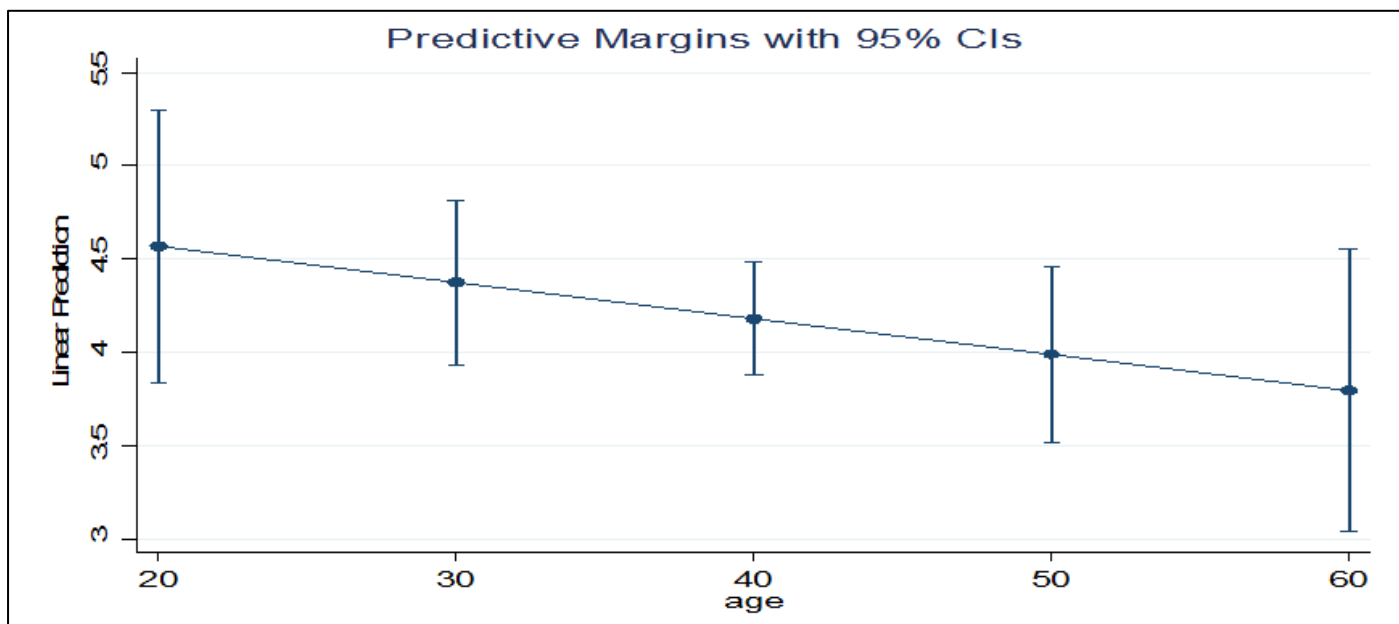

Fig 2: Qfit Plot of Average Digital Information

Fig 3: Margin Plot (Age)

The coefficient of gender is negative and statistically significant. The negative value of the coefficient (-1.07) indicates an interesting result that females are significantly higher contribution than male in cashless transaction performed daily. Table 2 and Figure 4 show the marginal effect and margin plot of male and female. Table 3 and figure 5 deal with an interaction between gender and age. The aged people are comparatively less interested to perform cashless transaction for both male and female.

Table 2: Marginal Effect (Gender)

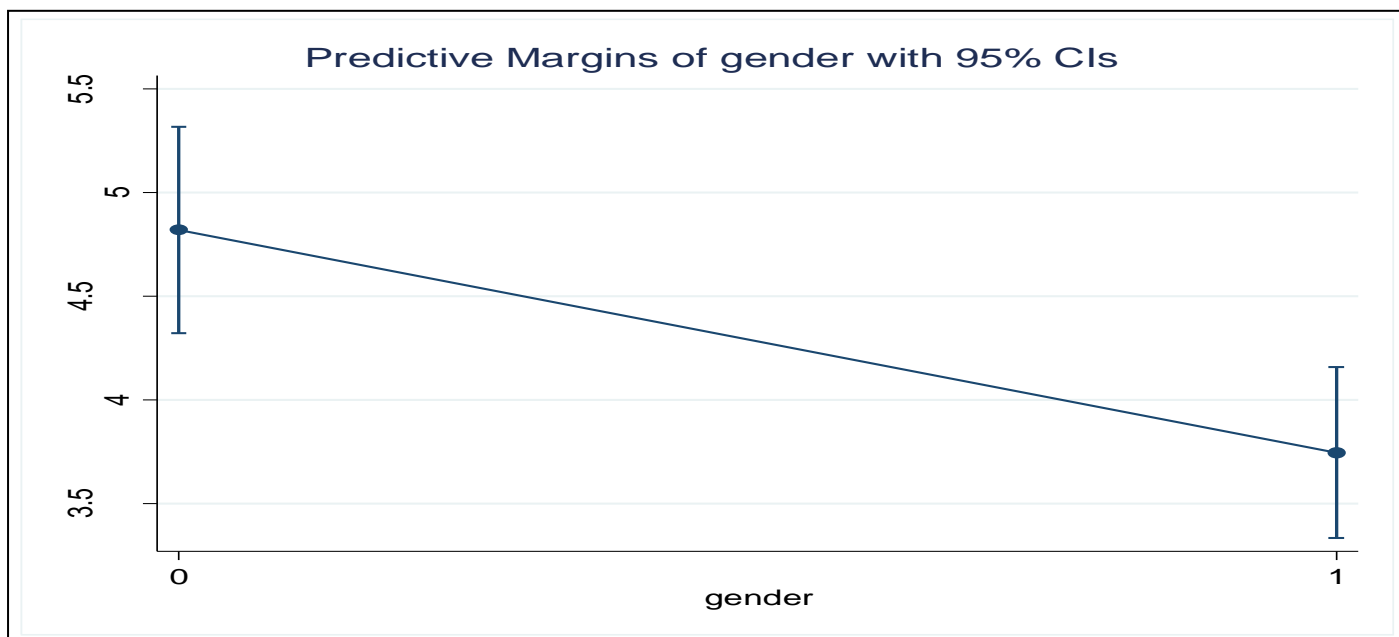| Predictive margins Linear prediction, predict()		Model VCE : OLS Number of obs = 94				
	Margin	Delta-method Std. Err.	t	P>t	[95% Conf. Interval]	
gender						
Female	4.819265	.2503087	19.25	0.000	4.321829	5.316701
male	3.74634	.2070901	18.09	0.000	3.334791	4.157888

Fig 4: Margin Plot (Gender)

Table 3: Marginal Effect (Age)

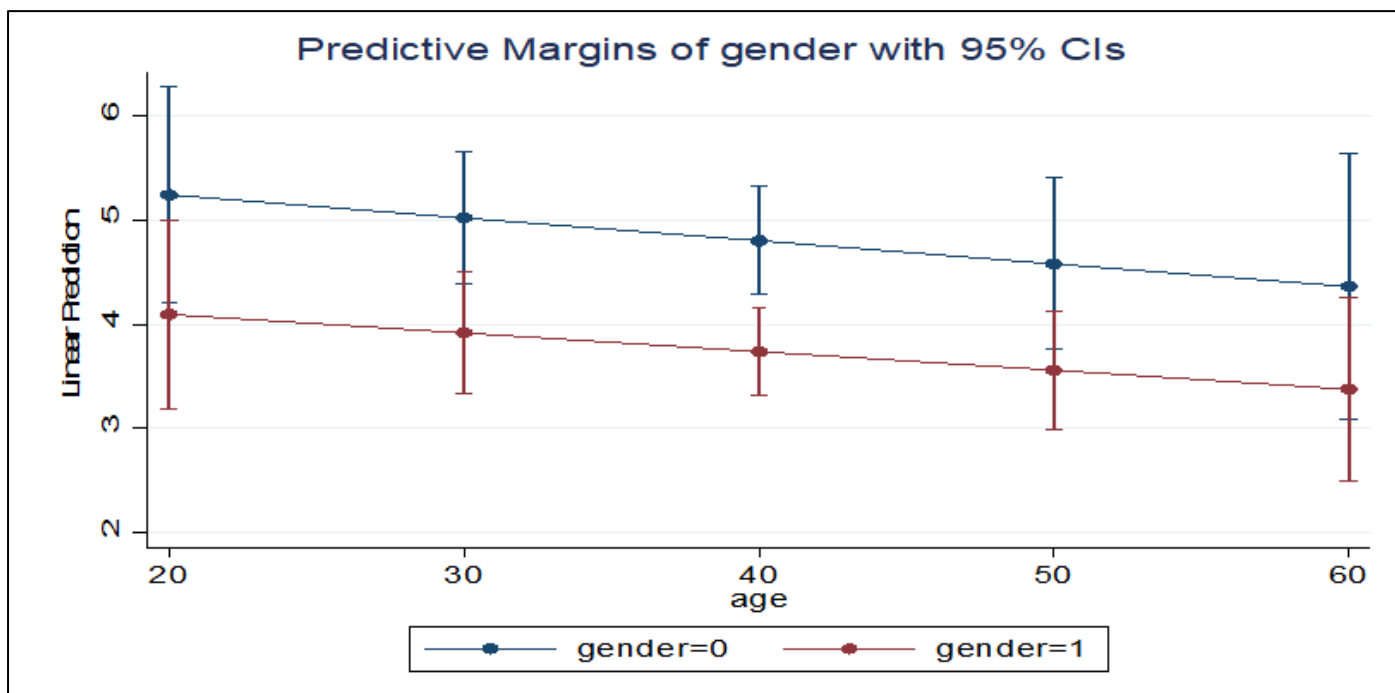| Predictive margins Linear prediction, predict()			Number of obs = 94 Model VCE : OLS			
age_at	Margin	Delta-method Std. Err.	t	P>t	[95% Conf. Interval]	
20	4.567595	.3658205	12.49	0.000	3.840603	5.294586
30	4.374509	.2217268	19.73	0.000	3.933874	4.815145
40	4.181424	.1515725	27.59	0.000	3.880206	4.482643
50	3.988339	.2350722	16.97	0.000	3.521182	4.455496
60	3.795254	.3821216	9.93	0.000	3.035867	4.55464

Fig 5: Interactive Margin Plot (Age & Gender)

The coefficient of monthly income is positive (0.527) and statistically significant. In this regression the monthly income variable has been considered in logarithmic term which shows the relationship between dependent variable is positive but diminishing marginal return. Table 4 shows the multi collinearity test value and the mean VIF is 2.29 which indicates that there are no significant correlation among the explanatory variables.

Table 5 shows the exponential regression result between number of purpose of digital transaction in logarithmic form and number of available modes of cashless transaction. The coefficient of explanatory variable is 0.038 and it is statistically significant. The result implies that explanatory variable has an increasing marginal effect on dependent

variable (figure 6). If the number of operative modes of cashless transaction like credit/debit/ATM card, UPI, internet banking etc. increases the chance of accepting digital transaction in any daily transaction increases.

Table 4: Multicollinearity Test

Variable VIF	1/VIF	
avgtechinfo	3.51	0.284689
avgdtinfo	2.56	0.390213
lminc	2.52	0.397585
age	1.60	0.623314
gender	1.23	0.812067
Mean VIF	2.29	

Table 5: Exponential Regression Model

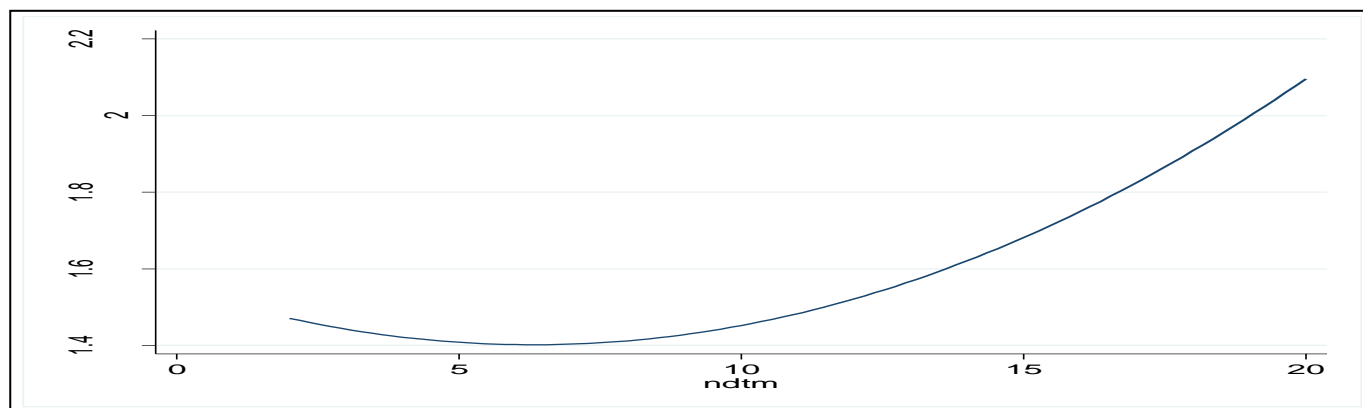| Number of obs = 94, F(5, 88) = 69.06, Prob > F = 0.0026, R-squared = 0.1295, Adj R-squared = 0.1163, Root MSE = .50979						
lndtp	Coef.	Std. Err.		P >t	[95% Conf. Interval]	
ndtm	.0384116	.0122609	3.13	0.003	.0139319	.0628912
_cons	1.159607	.1681061	6.90	0.000	.8239722	1.495242

Fig 6: Qfit Plot (Exponential)

VI.   CONCLUSION

Digital transactions in India have been on the rise in recent years, through the Digital India initiative. It increased internet penetration, growth of digital payment infrastructure. Few challenges such as limited digital literacy and connectivity issues, and some demographic factors make obstacle to the adoption of online transactions in rural areas (Mandal, 2023[6]). Many rural residents are neither familiar with digital technology nor have proper internet access. Poor internet connectivity in remote rural areas can hinder the adoption of online transactions. Safety and security in digital financial services and ensuring the riskless online transactions remain important concerns. While the challenges endure, the adoption of online transactions in rural India is increasing and contributing to financial inclusion and expand the access to essential services for rural communities. The efforts to overcome these challenges and spread out digital infrastructure will further constain the growth of digital transactions in India.

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