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Socio-metrics of digital payments in demographic dividend: Descriptive analysis of dichotomous preferences

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Innovation in financial services has attracted a lot of attention and becomes the focal point in some jurisdiction further taking a very effective approach for facilitation of the technology enabled innovation. Digital disruptions have affected the all aspect of social mechanism and economic function, with higher density of mobile consumers and internet penetrations as compared to banking and other financial services facilitation. Technical firms have been providing new integrated faster, effective and inclusive innovative solutions; and it accelerates the inclusive digital payment systems. The variant methods of digital payments adopted by urban and semi urban consumers for their usual financial transactions is growing exponentially; however, post demonetization by Government of India, there was urgent need for alternative payment mechanism not only for urban consumers but also support the utilization by rural consumers in demographic dividend. The concept for the study has been to explore strategic advantages of digital payments and diagnosis for the current ecosystem in the support for better adoption of digital payments by the retail consumers in given mixed demography. In the present study, we have approached the Dhanbad district and collected data from different demography for our pilot survey. We have analyzed structured questionnaire based data to understand the various challenged with digital payments in demographic dividend for study area getting dichotomous preferences.

Keywords: Demographic dividend, Digital payments, Logistic regression, Pilot study, Tech innovation, Socio-metrics

1 Introduction

The term 'Digital Payment' has been frequent buzzword in recent time, and provides an expeditious momentum for cashless society across the stakes of states. Enterprises are also promoting the rapid adoption of the various digital payments in different sector of economic activities which co-orderly providing a user friendly ecosystem for quick accessible and rapid transactions. In the current wave of Digital Payment both Government and Private sector are riding neck-to-neck with incentives and motivation for cashless payments. The Digital Payment user can be considered as advanced and up-to-date with technology friendly comparative advantages, as in the process of digital payments; the payer and payee both uses electronic medium to send and receive their payments, completed on digital platforms which provides an instant and convenient way to make financial transactions. Obviously; no paper cash is involved in digital payments, so any need to withdraw cash from a bank account, which saves times for the payer spending on cash counters or in ATM queues and operational cost of banking

services on ATMs and cash counter for the banks. In digital payment the transactions happen from payer to payee in electronic mode, it takes place from account to account immediately with transaction confirmation notifications and provides a very expedient means for payments saving a lot of time and money as well. There are different digital payment systems currently being promoted across the country with new and innovative technologies provided by tech firms.

2 Literature Review

Ever since our study we have gone through how financial service industry is getting interrupted and reshaped by expanding customer expectations for user friendly, personalized and convenient service driven by the standard set by global leading technological firms as GAF¹ which are providing agile innovations with improved customer pathway for financial experience. In the exploration of the challenges and advantages associated with technology and innovations in payment system, the knowledge of driving factors which are influencing the adoption of the system by the users is the most crucial for developing country and emerging market of India with expectations digital payment system can bring up

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millions of excluded citizens within formal financial platform. The innovative means of digital payment systems are technology centric, still there is chance of failure in acceptance by consumers^{2,3} as studied by Danneels, 2003 and Moore, 2002. In the study of Kuisma, 2007 and others, they argue that before the adoption or even rejection of the technology by the consumers they show some type of resistance⁴ while Ram, 1987 in earlier study found that for new innovation resistance and adoption can coexist together⁵. Marton and Singh, 1991; Brown and others in 1995; Castell, 1996; Chen and Wellman, 2004 have studied on comparison between state at variant economic and technical development and confirmed about positive relationship for investment in infrastructure with socio-economic development⁶⁻⁹. In the literature of Norris, 2001 there is explanation for digital divides¹⁰ somewhat like binary divide between have and have nots, in fact empirical observation suggested by Hilbert, 2011 explain another categories combined matrix of multiple definitions¹¹. Forman and others in 2002¹² explains the divergence in socio-economic that affect organization as well as community uptake for digital technologies, these barriers are computer literacy¹³⁻¹⁵ to perceived value for information products¹⁶. A joint study by Boston Consulting Group (BCG) and Google¹⁷ elaborates that the global digital payment space is driven by ongoing digital revolution, not traditional player entry, more demanding expectations of customers and supportive regulations are the four mega drivers to impact future digital payment. World Payment Report published by Capgemini¹⁸ has mentioned mobile wallets will witness 148 percent of CAGR for next five year with an estimation of USD 4.4 billion by 2022. The next generation of payment systems is projected to supersede cash payment by 2022 with new innovative mode of payments like Bharat QR, digital wallets, payment banks to fuel the future in the study of IDC Financial insights report¹⁹ projecting the digital payments in India. The innovative payment services from wallets, to insurance to lending has redefined the genesis of business and increasing adoption of such trends will position Indian market an attractive destination worldwide¹⁹. Reserve Bank of India has been active in enabling development of FinTech and digital payments sector²⁰ monitoring the consumer fortification and providing vigilant loon for financial regulations and law enforcement. The release of Vision-2018 for Payment and Settlement System in

India reiterates the commitment of RBI encouraging more electronic payments by all sections of society²¹ to achieve the projected aim for less cash dependent society and fulfil the vision of Digital India of inclusive development.

3 Digital Payment Industry in India

Indian economy is primarily a cash based economy, with emphasis on digital development and boost in digital economy digital payment's story in India is new one; still it is showing very interesting growth driven by inclusive and more progressive regulatory policy by Reserve bank of India supported with motivational incentives by Government of India. As a result, next few years will witness a sea change in the way of money is circulate in Indian economy primarily from cash base transactions to digital payments methods? Initially, e-commerce companies promoted the growth for digital payments which further followed by FinTech and digital wallet companies with luring consumer centric applications; the digital wallets provide lucrative offers and cashback for consumers preferring their wallet based payment channels. The direct impact of growth in digital payment wallets supported by increase in smartphone penetration those companies found their ways to be found very abundant in consumer's pocket and playing a very major role in driving the growth for digital payments. Point of Sale (POS) service availability at various shopping malls, hotels, restaurants, super market, grocery stores and fuel stations are expanding the reach for digital payments encouraging the consumers to make digital payments; it is expected POS transactions has become a major contributor for digital payment platform. Other major contributor in this movement are online ticketing web portals, travel and event supporting companies, hospitality service providers and health care service providers they are also facilitating for consumers to transact online. In the Global scenario, understanding the digital payment ecosystem in India; the study of US-based banking technology firm revealed that; India has the most supportive ecosystem for digital payments as compared to other 25 major countries in the study based on the parameters availability of the service, adoption and timely settlement of the payments. In the study of FIS's Faster Payments Innovation Index (FPII) rates of different digital payment systems, India's IMPS service was recognized as level 5 on the rating of 5, leaving

behind countries like UK, Singapore, Denmark, Singapore, Japan, etc., certainly puts India's digital payment success story a very exciting one. India has developed its own indigenous methods of digital payment like BHIM app, USSD, Bharat QR, and Aadhar enabled payment systems (AEPS) to facilitate and promote digital payments for inclusive integration of stakeholders.

3.1 Digital payment: The present scenario

In recent year with increase in internet penetration and availability of feature phones and smart phones, the pace of use for digital payment is increasing exponentially and getting further momentum, and approximately 81 percent of non-cash payers prefer digital payments over other means of cashless payments. For online shopping, payment of utility bills, travel tickets and movies tickets are preferred to be paid digitally by the Indian consumers. Micro transactions are dominating for retail payments, interestingly half of the person-to-merchant bills less than 100 rupee are paid by mobile wallets, digital apps, UPI payments and Bharat QR apps. This observed accelerated growth of digital payment is driven by supportive factor like convenient, increase in mobile penetration, entry of non-banking firms, and progressive regulatory policies by the Government. Aadhar linked payment solutions are increasing Government readiness to utilize the digital platform for direct benefit transfer and payment of wages for MGNREGA workers, more number of Jan dhan yojana accounts. Certainly, the scope and space for digital platform is getting transformed, the growth is witnessing diffusion of innovations with more regulation support and the prospect becomes India most leading country in digital payment ecosystem.

3.2 Study objective and research questions

From our descriptive exploration, we can see the pace of growth for digital payment is very bright and India is getting remarkable growth annually, the proportion of digital payments through various methods of indigenous and globally accepted are getting boost as significant rate with factor favoring the adoption and growth of digital payments like digital revolution associated with Digital India program, which is increasing the reach of mobile network, internet services and electricity to rural and far flanged remote territory of the country. Although, digital payment is fast in time, convenient to use, the government is supporting digital payments by

waiving some amount of taxes, providing cashback incentives and launching prizes to get more people prefer digital payments, still there is gap in adoption of digital payment by different segment of payers in different geographies and variant demographics with reference to age group, Gender based preference, occupational differences and with different geography in residence. Our present research is focused on the study of challenges associated with the digital payment in a given demographic dividend of sample study area under consideration. In this study we would like to find the answer for the difference in the adoption of digital payment by people in different demographic dividend for study area.

4 Study Focus Area: Dhanbad District

For our descriptive research study about demographic dependence of digital payments, we have focused on Dhanbad district in Jharkhand which is near about hundred kilometer from Durgapur; the location of academic institute where this research is performed. Historically, Dhanbad was a part of Manbhum district as subdivision which was raised to the status of sub district which was finally created as district under government notification no. A 9911, dated 24th October 1956 and come into existence from 1st November 1956 and presently a district in the state of Jharkhand, India. The diversity in geography, geology, economic activities and social pattern make this district more attractive to explore or various social, economic and cultural research. In the 19th century, Dhanbad has become one of the most industrialized districts in India and for its richest coal fields is known over the world considered as coal-capital of the country. At the same time the mining activities, railways and road connectivity with other part of the country has enormously developed industries, trade and commerce which is growing ahead further rapidly. Many educational and technical institutions have been established which the extension of town has multiplied to become a cosmopolitan town with regional and cultural diversity. On moving little away from the district headquarter, the Adivasis and other indigenous population presents a very unique, rich cultural and complex socio-economic demography to offer a very interesting field for investigation for research study.

4.1 Materials and methods

The approach for present study is to measure the demographic dependence for the choice of digital

payments, to make reliable and robust for our study is focused on group of mixed and variant demography in terms of gender, age bracket, and place of residence, income, marital status, education qualification, and source of livelihood. In order to get deep insight of our research, we have framed a very structured questionnaire both in English and Hindi languages for primary data collection in the mixed population of Dhanbad district. The questionnaire are framed based on literature review of the related topics on Internet banking, Digital Platforms, Mobile Payments, FinTech and Innovation in Financial services, RBI Policy documents and reports of world leading technology firms providing financial products has been intensively examined. The demographic information collected on the paper is entered properly in MS Excel Sheet with the key Demographic variable and corresponding responses which is further process in SPSS research software tool for descriptive analysis and elaborated based on the findings in the analysis and inferences of the study.

4.2 Pilot survey and data collection

Since the purpose of our data collection is to study the link between demographic variable and acceptance user for digital payment the challenges with digital payments. We visited the common public places in Dhanbad and approached the respondents who were convenient with us to take interest in our study and spare some time for us. The study is based on Pilot Survey first to check the reliability of questionnaire we have taken 42 responses.

5 Descriptive Analytics

As described in the previous section, since the purpose of our study is find the dependence of digital payment on demographic variables, to map this dependence we have framed a questionnaire consisting of twelve items in the set of survey questionnaire, where fist six variable are focused to gather demographic information as Gender, Place of residence, Marital status, Age group, Education Qualification and Source of livelihood; the seventh variables is about taking their preference for digital payments either they use or not, the eight variable is chosen to know either they have Aadhar card, Bank Account, Mobile phone with internet connection, the ninth variable is to measure digital and financial literacy of the respondent, and the tenth variable is an open ended question to elaborate their challenges for availability of basic infrastructure to perform digital

payments if they live in rural area where electricity and mobile network is not available. The collected data is put in MS Excel file and processed for various descriptive analyses. In our survey we get responses from mixed aged group to avoid any biased data with maximum from above 50 years age (Fig. 1).

In this mixed age group respondents, we found 88.1% of them have Aadhar Card, 66.7 % of them have Bank account and 64.3 % have Mobile Phone with internet. This represents a rich picture for Digital payment supported by biometric authentication for secure platform of AEPS micro ATMs, supported by 66.7 % have bank account which is the need for Aadhar linked direct benefit transfer (DBT) of government schemes. Initiative like JAM trinity can take root with significant proportion of available trio of Aadhar, Bank account and Mobile (Fig. 2).

In our study, we are attempting to figure out whether education qualification has any preference for digital payments? We have approx. 36% of respondent with university degree and 21% with professional background (Fig. 3).

Literature illustrates, living strategy is a function of the capitals gained and serves as the buffering mechanism when innovative wave of transformation arises. Getting an insight that connects between livelihood and adaptability of new disruption is

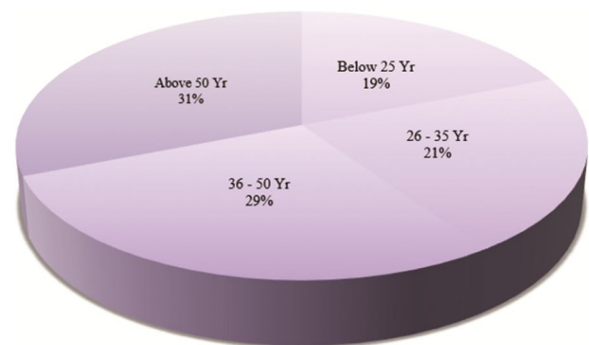


Fig. 1 – Proportion of different age group in the study.

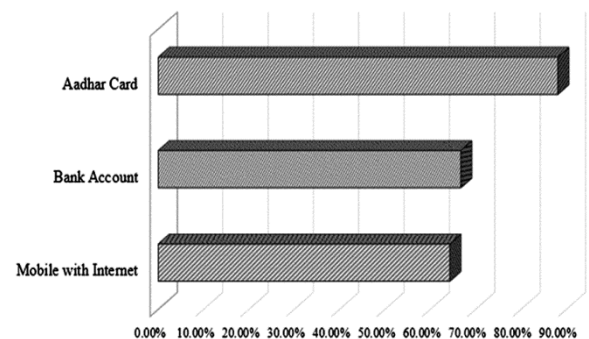


Fig. 2 – Readiness proportion for JAM Trinity and DBT.

guided and recognized by the capital gains in the economic activity. The evaluation index can be developed investing how the livelihood capitals affects preferential selection using regression model with digital payments. In the study area, the population is mixed with various economic activities in formal sectors, informal sectors and other secondary activities. We have classified our data in four categories of livelihood with maximum number are in the informal kind of economic activities while there is also a good proportion from business and agriculture (Fig. 4).

In a nutshell, out of the total respondents 59.5% are Male rest 40.5% are female, 45.2% lives in urban area while 54.8% are from rural area, 73.8% are married, 26.2% are unmarried, and at last but not least only 40.5 % feel easy to use Digital Payments while rest of 59.5% don't feel easy to use Digital Payments and reflects the research problem of study challenges with demographic dividend.

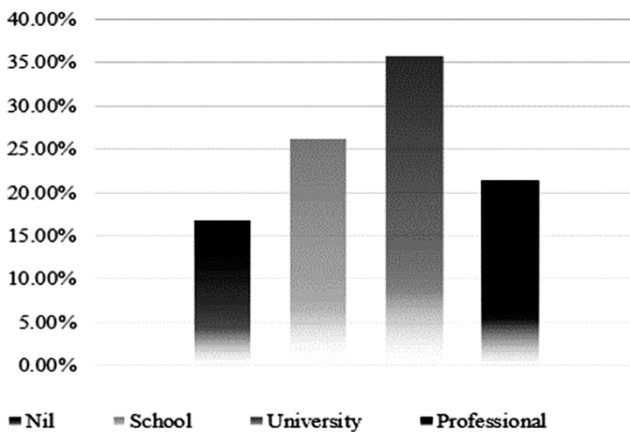


Fig. 3 – Education qualification of respondents in Study.

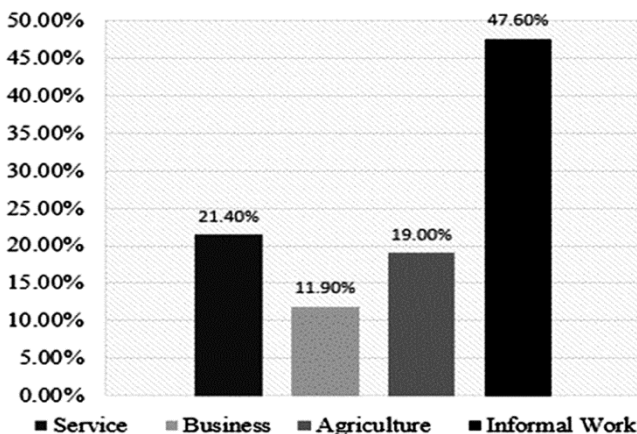


Fig. 4 – Demographic percentage of Livelihood activities.

6 Findings and Conclusions

There are many research related problems for which the dependent variable can take limited values and Binary logistic regression is also a type of regression analysis for which the dependent variable as digital payments can be coded as 1 if a person is using digital payment and 0 if not using digital payments. In this demographic dependent study of digital payments we have chosen the dependent variable Digital Payment as the function of Gender, Age group, Education Qualification, Source of Livelihood with regression model defined in the function:

$$Y(1|0) = \frac{e^{(\alpha + \beta X_1 + \gamma X_2 + \delta X_3 + \lambda X_4)}}{1 + e^{(\alpha + \beta X_1 + \gamma X_2 + \delta X_3 + \lambda X_4)}} \dots(1)$$

where ‘e’ explains the error term in the chosen model. We have used IBM SPSS Version 22 for the analysis of this Binary Logistics regression model by Enter method. The output of the SPSS is presented in the following table (Table 1)

We conclude from the Table 1, only Education qualification has significance for the choice of digital payment other demographic variables are less significant (Fig. 5).

We analyses the depended relationship of digital payment preference on binary variable Gender while Digital and Financial literacy of the user has direct moderation effect.

	S.E.	Wald	Sig.
Gender	1.166	.033	.857
Age group	.449	1.536	.215
Education Qualification	.636	6.366	.012
Source of Livelihood	.522	.776	.378
Constant	3.175	.465	.495

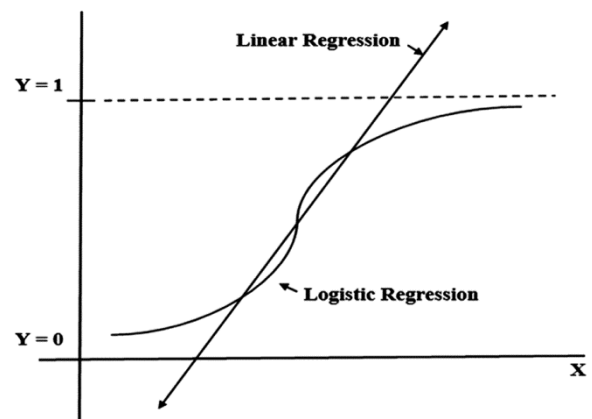


Fig. 5 – Logistic regression of dichotomous variable data.

7 Discussion

There are many advantages associated with making digital payments, it provide very easy and convenient method for cashless transactions keeps free from carrying the burden of cash, all the payer need to have mobile phone or Aadhar number or a plastic card to pay. With the application of digital payment methods, the payee can pay from anywhere to the payer at any time and no specific payment window is required. Government has also announced incentive to encourage like; for digital payment up to rupee 2000 will be exempted from service tax, fuel stations and government insurers are giving discount for digital payments. If we use wisely, digital payments are less risky because no one can use without user's digital security authentication; in practice we often ignore to note down cash spending, while in digital payment transactions are recorded automatically in the payment application and help to maintain the payment record, track past spending and also provide spend analyzer along with available balance for budget planning. Although, there are many advantages of digital payments still there are many challenges and drawback associated with adoption of digital payments. In physical wallet there are limited cash available which restrict for limited expanses, but in digital payment mode available balance is always there in the wallet and sometimes results in overspending. The risk of data theft is also associated with digital payment by hacking the server of the payment service provider to steal personal information of the digital payment customer details for making money theft from the account. The other critical challenge is that; most of the digital payments services are either internet or mobile based which are somewhat difficult for less educated, non-technical and old are age persons and so it is demographic dependent solution.

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Annexure:**Research Questionnaire for Study on Demographic dividend and Digital Payments****I. Optional part:**

Name.....

Annual Income.....

II. Demographic Information

1. Gender: Male Female
2. Residence: Urban Rural
3. Marital Status: Married Unmarried
4. Education: Nil School Graduate Professional
5. Age group: Below 25 Yr 26-35 Yr 36-50 Yr Above 50 Yr
6. Source of livelihood: Service Business Agriculture Informal

III. Kindly tick the appropriate boxes

1. I feel easy to use digital payment Yes No
2. I have: Aadhar Card Bank account Mobile with internet connection
3. I have digital and financial literacy: Basics Moderate Proficient
4. I live in rural area and there is not electricity and mobile network