

## Digital Payments In India - Analyzing The Adoption Of UPI Payment Services And Payment Issues Faced By People In Rural India

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### Abstract

Mobile payments are known to add convenience to make payments using smartphones. Different wireless communications are used to make those payments. Mobile payments are made for various purposes like in stores, transportation, and restaurants. Online payments are also made by them. Some of the benefits of mobile payments are security, convenience, and flexibility. Online payments have been very popular in this day and age in India. There are still several challenges which should be addressed for large-scale adoption. From payments through cheques and traditional banks to mobile and internet banking, and introduction of UPI apps, digitalization has come a long way. Rural India has made a drastic impact on the economic growth of India, with emerging changes in internet penetration and impact of demonetization, apart from online initiatives for rural India, there is a need to improve digital payments. Transformation for digital payments is improved even in rural economy. Some of the revolutionary developments in this day and age are Paytm, PhonePe, GooglePay, etc. for smooth digital payments. Hence, this study is aimed to investigate the adoption of UPI services and payment issues faced by rural people in India. To fulfill these objectives, primary data will be collected through online survey using a self-structured questionnaire distributed through Google Form.

**Keywords** – digital payments, UPI apps, UPI services, payment issues, rural India, digitization

### 1. Introduction

Indian economy is among the rapidly growing economies globally. Irrespective of international turbulence of economy, Indian economy has always focused on growth. There have been a lot of dimensions in the recent past in the financial system of India, which has resulted in significant transformations, changes, and trends in the business (Dennehy & Sammon, 2015). Though Indian government has focused on online initiatives over the past couple of years, actual impact has been taking place significantly after demonetization. Indian economy has deep structure of urban and rural financial developments. Most of the economy of India relies on rural areas and digital initiatives could be successful when digital payments have been vital for rural development. Digital payments have achieved momentum both in case of urban and rural segments (Horowitz, 2012).

India has been a cash-based economy and it is culturally the deep trend of cash-based purchases which have been a financial culture. In the wake of initiatives towards transformation for digital economy, a lot of private organizations have emerged in the space of digital solutions like UPIs, e-wallets, and bank licenses provided by RBI. It is vital that market is moving ahead to more compliance-based and transparent systems (Jain, 2016). For implementing digital banking and transactions successfully, some of the important processes are very vital. Rural sector has been very important for financial growth of the nation. A lot of fintech organizations have been emerged in the recent past and focused on rural markets to improve operational base. For example, a lot of ecommerce companies and mobile wallets are based on rural markets and adapting strategies to achieve a significant market share (Manocha et al., 2019).

In addition, some of the developments like impacts of demonetization have resulted in significant transformation in the market. Unlike pre-demonetization where certain consumers and merchants from rural markets were already using digital payments, demonetization has led to a significant growth in number of UPI users. Timely issuance of payment banks, easing mobile wallet norms, increasing penetration to rural India, and government promoting UPI with incentive schemes, reducing service tax on digital transactions, etc. have made a great transformation (PANCHAL, 2016).

## 2. Literature Review

In this day and age, information and communication technology (ICT) plays a vital role in robust banking and banks in India have a solid infrastructure by moving from traditional brick-and-mortar model to online and retail banking. Though banking industry is full of risk, banking industry has moved ahead with digitalization to serve customers on the go. As banking sector in India is competing for advanced technology, rural customers are still facing challenging in using digital payments. Singh & Malik (2019) discussed challenges and opportunities to emerge in the rural banking industry while focusing especially on digitalization and analyzed the value of digital literacy in modern banking scenario. This study has provided insights to digitalization and ways that banks have adopted in rural India and understood the behavior and perception of rural consumers for those services.

India has over 76% of adult population and 17.5% of global population who don't know even the basic concepts. After independence, Indian government has put rapid efforts to have more people and entities under the financial and banking domain. Banking history in India has seen privatization, reforms, and liberalization. Innovation over the years have led to digital adoption to boost slow growth of financial inclusion. Tiwari et al. (2019) discussed the existing state of "digital financial inclusion (DFI)" and causes behind its challenges and poor performance. This study would help remove lacunas in program and implement DFI and achieve financial inclusion at larger level. It is observed that awareness, digital devices, and awareness are some of the major reasons of reduced penetration of internet in India.

Being the most modern mobile payment system, the "Unified Payment Interface (UPI)" could be established in the recent past to have a great value to banks and consumers in India. UPI was made to provide round-the-clock availability all the time, ease of use, efficiency, and transparency. Irrespective of a huge rise of smartphone and internet users and attractive features, there is a lack of number of UPI users. To understand the problem, it is vital to know the factors affecting the adoption of UPI, usage, and intention to recommend. Previous studies have focused mainly on its operations. Shahid (2022) has focused on factors of adopting UPI by consumers of India as per the "Diffusion of Innovation (DOI)" theory to achieve specific outcomes on the recommendation and usage intentions. As per the findings of the study, complexity, relative advantage, and observability are the major factors behind the adoption of UPI and they have a huge positive relation with users' intention.

In the rapidly growing digital world, there is a rapidly growing payment mode like Digital Payments. It is a latest and fastest-growing concept which includes financial transactions among multiple people. No physical interaction is needed in this platform to receive or pay sum of money which can be done through computer or mobile round-the-clock. Singhal & Gupta (2021) conducted a study on the digital payment concept apart from effect of COVID-19 on online payment services at root level in villages and towns in India. This study covered some of the insights and views of other researchers who shared their knowledge in the given concern. It is concluded that there is a rise in use of online payments with different applications in villages and towns which were not that high before COVID-19 pandemic.

Financial inclusion includes the accessibility of financial services and products like insurance, bank accounts, payment services and remittance, financial advisory, etc. to vulnerable groups like low-income group and weaker sections of society at reasonable price. Digital payments play a vital role in growing financial inclusion. After demonetization, online payments have gained a lot of momentum. There has been an inclusion growth based on financial inclusion. These can be achieved with latest banking technology. A lot of banks have arrived with latest technology in new banking scenario like "Digital Finance. Singhania & Tanty (2023) focused on different factors to affect the adoption of online payments on financial inclusion among youth. They collected primary data from several college students in the state of Jharkhand.

### 2.1. Research Gap

Payment ecosystem has been through a transformative stage due to technological innovation in payments sector. Payment ecosystems have been the most economical and modern technologies and they have been through transitional stage globally (Abdullah & Khan, 2021). It goes without saying that digital payments have been effective and rapid, while its adoption is too low in the country. Over 70% of Indian population lives in rural areas and over 90% of rural Indians have not adopted digital payments (Chawla & Joshi, 2019). A lot of people avoided digital payments in urban India too. There are different challenges for people to adopt digital payments. Hence, this study will fill this knowledge gap by investigating those issues and adoption of UPI services in rural India.

### 2.2. Research Objectives

- To investigate the adoption of UPI payment services in rural India
- To discuss the challenges in adoption of digital payments in India

### 2.3. Hypothesis

H1 – There is a significant impact of UPI payments on digitalization of rural India

H0 – There is no impact of UPI payments on digitalization of rural India

### 3. Research Methodology

To fulfil the objectives above, this study is based on primary data collected using online survey with a self-structured questionnaire distributed with Google Form. This study adopts quantitative research approach which is essential to discuss opinions of people regarding challenges they are facing when using UPI apps. The questionnaire is distributed among UPI users in selected rural regions of Madhya Pradesh, India to know their perception and challenges in using UPI apps and adoption of those services. Total 231 responses have been collected through online survey.

When it comes to sampling, simplified random sampling has been used to collect data from anyone who is using UPI apps for payments along with cash in rural areas of India.

For analyzing survey data, SPSS software and Excel spreadsheet have been used for frequency distribution and one sample t-test to analyze the responses and perform hypothesis testing.

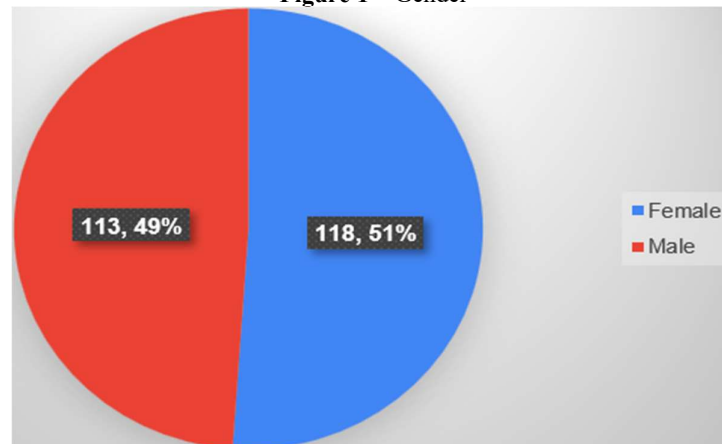
### 4. Data Analysis

In this study, an online survey was conducted and total 231 responses were collected. Out of 231 participants, 118 (51%) participants are female and 113 (49%) participants are male (Table 1) (Figure 1).

**Table 1 - Gender**

|       |        | Frequency | Percent | Valid Percent | Cumulative Percent |
|-------|--------|-----------|---------|---------------|--------------------|
| Valid | Female | 118       | 51.1    | 51.1          | 51.1               |
|       | Male   | 113       | 48.9    | 48.9          | 100.0              |
|       | Total  | 231       | 100.0   | 100.0         |                    |

**Figure 1 – Gender**

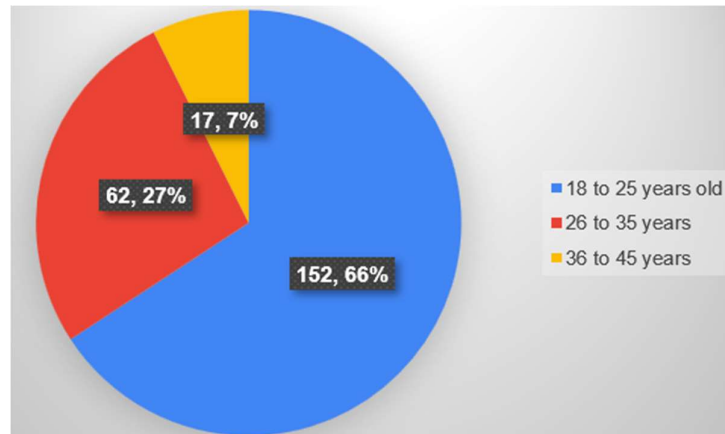


When it comes to age group, 152 (66%) participants are 18 to 25 years old, 62 (27%) participants are 26 to 35 years old, and 17 (7%) participants are 36 to 45 years old (Table 2) (Figure 2).

**Table 2 – Age Group**

|       |                    | Frequency | Percent | Valid Percent | Cumulative Percent |
|-------|--------------------|-----------|---------|---------------|--------------------|
| Valid | 18 to 25 years old | 152       | 65.8    | 65.8          | 65.8               |
|       | 26 to 35 years     | 62        | 26.8    | 26.8          | 92.6               |
|       | 36 to 45 years     | 17        | 7.4     | 7.4           | 100.0              |
|       | Total              | 231       | 100.0   | 100.0         |                    |

**Figure 2 – Age Group**

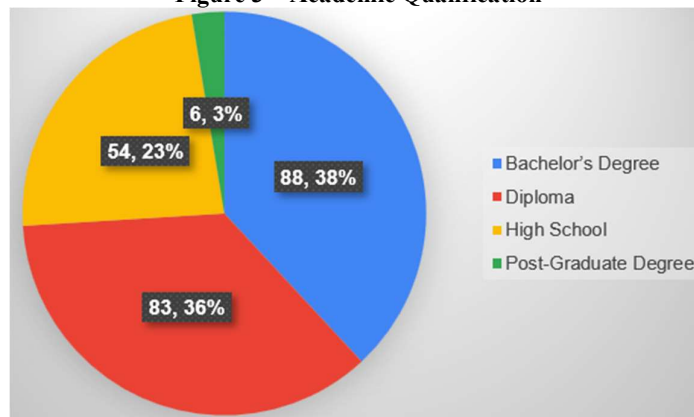


There are 88 (38%) participants who have bachelor's degree, 83 (36%) participants are diploma holders, 54 (23%) participants have completed high school, and 6 (3%) participants have completed post-graduate degree (Table 3) (Figure 3).

**Table 3 - Academic Qualification**

|                         | Frequency | Percent | Valid Percent | Cumulative Percent |
|-------------------------|-----------|---------|---------------|--------------------|
| Valid Bachelor's Degree | 88        | 38.1    | 38.1          | 38.1               |
| Diploma                 | 83        | 35.9    | 35.9          | 74.0               |
| High School             | 54        | 23.4    | 23.4          | 97.4               |
| Post-Graduate Degree    | 6         | 2.6     | 2.6           | 100.0              |
| Total                   | 231       | 100.0   | 100.0         |                    |

**Figure 3 – Academic Qualification**

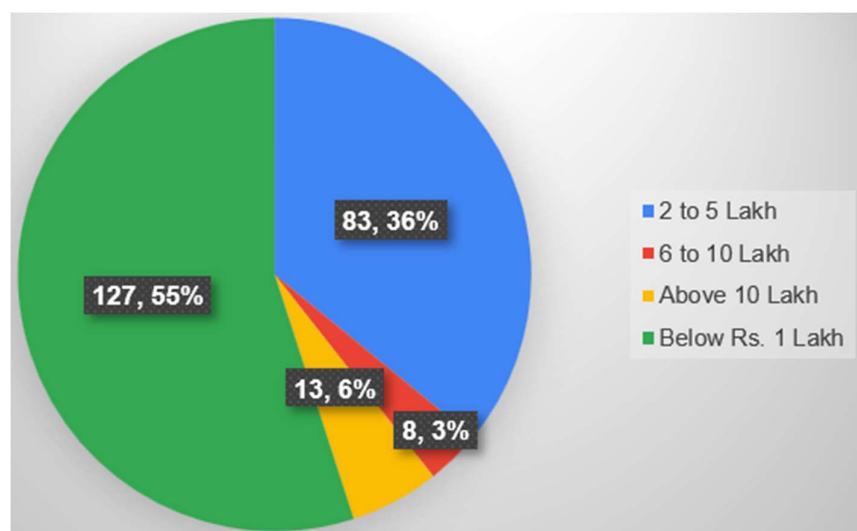


When it comes to annual income, majority of participants earn below Rs. 1 lakh, i.e., 127 (55%) participants. In addition, 83 (36%) participants earn Rs. 2 lakhs to Rs. 5 lakh, 13 (6%) participants earn above Rs. 10 lakh, and 8 (4%) participants earn Rs. 6 lakhs to 10 lakh (Table 4) (Figure 4).

**Table 4 - Annual income**

|                   | Frequency | Percent | Valid Percent | Cumulative Percent |
|-------------------|-----------|---------|---------------|--------------------|
| Valid 2 to 5 Lakh | 83        | 35.9    | 35.9          | 35.9               |
| 6 to 10 Lakh      | 8         | 3.5     | 3.5           | 39.4               |
| Above 10 Lakh     | 13        | 5.6     | 5.6           | 45.0               |
| Below Rs. 1 Lakh  | 127       | 55.0    | 55.0          | 100.0              |
| Total             | 231       | 100.0   | 100.0         |                    |

**Figure 4 – Annual Income**

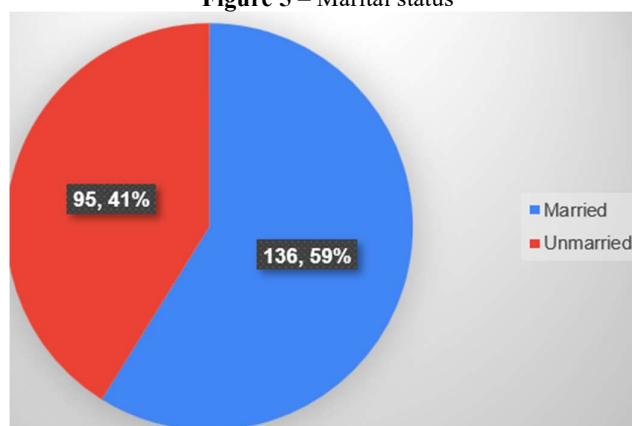


When it comes to marital status, 136 (59%) participants are married and 95 (41%) participants are unmarried (Table 5) (Figure 5).

**Table 5 - Marital status**

|       |           | Frequency | Percent | Valid Percent | Cumulative Percent |
|-------|-----------|-----------|---------|---------------|--------------------|
| Valid | Married   | 136       | 58.9    | 58.9          | 58.9               |
|       | Unmarried | 95        | 41.1    | 41.1          | 100.0              |
|       | Total     | 231       | 100.0   | 100.0         |                    |

**Figure 5 – Marital status**

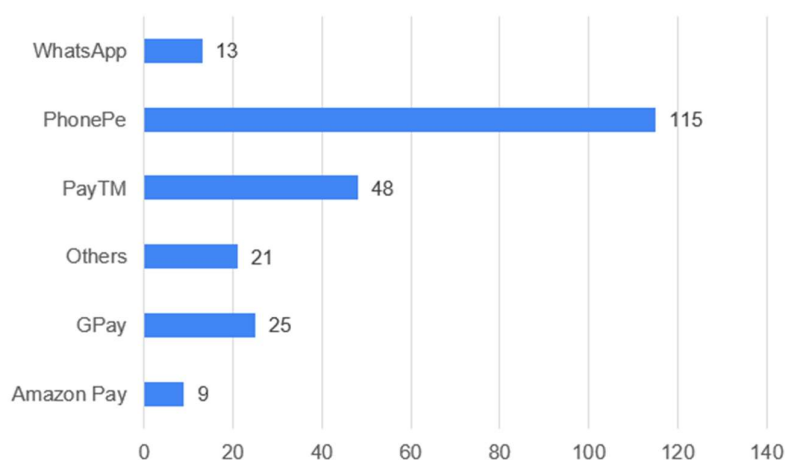


In this study majority of participants use PhonePe app for mobile payments, i.e., 115 (50%) participants. In addition, 48 (21%) participants use PayTM, 25 (11%) participants use GPay, 21 (9%) participants use other apps, 9 (4%) participants use Amazon Pay, and 13 (6%) participants use WhatsApp for online payments (Table 6) (Figure 6).

**Table 6 - UPI Apps used**

|       |            | Frequency | Percent | Valid Percent | Cumulative Percent |
|-------|------------|-----------|---------|---------------|--------------------|
| Valid | Amazon Pay | 9         | 3.9     | 3.9           | 3.9                |
|       | GPay       | 25        | 10.8    | 10.8          | 14.7               |
|       | Others     | 21        | 9.1     | 9.1           | 23.8               |
|       | PayTM      | 48        | 20.8    | 20.8          | 44.6               |
|       | PhonePe    | 115       | 49.8    | 49.8          | 94.4               |
|       | WhatsApp   | 13        | 5.6     | 5.6           | 100.0              |
|       | Total      | 231       | 100.0   | 100.0         |                    |

**Figure 6 – UPI apps used**

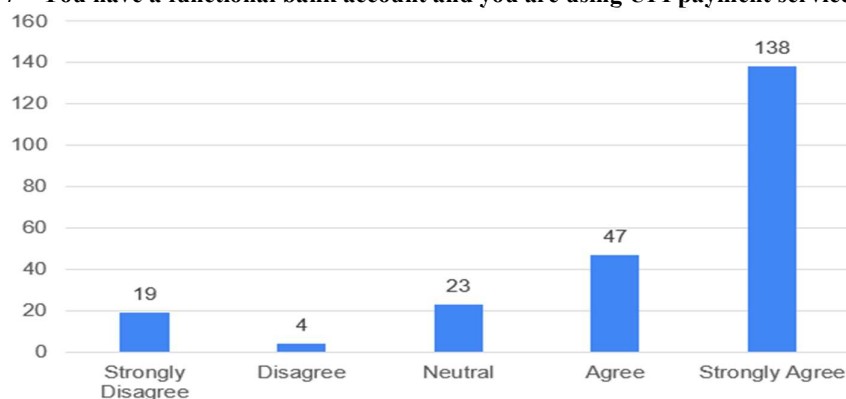


#### 4.1. Adoption of UPI Payments in Rural India

There are 138 (60%) participants who strongly agree and 47 (20%) participants agree that they have a functional bank account and they are using UPI payment services with it, 23 (10%) participants neither agree nor disagree, 4 (2%) participants disagree, and 19 (8%) participants strongly disagree (Table 7) (Figure 7).

|       |                   | Frequency | Percent | Valid Percent | Cumulative Percent |
|-------|-------------------|-----------|---------|---------------|--------------------|
| Valid | Strongly Disagree | 19        | 8.2     | 8.2           | 8.2                |
|       | Disagree          | 4         | 1.7     | 1.7           | 10.0               |
|       | Neutral           | 23        | 10.0    | 10.0          | 19.9               |
|       | Agree             | 47        | 20.3    | 20.3          | 40.3               |
|       | Strongly Agree    | 138       | 59.7    | 59.7          | 100.0              |
|       | Total             | 231       | 100.0   | 100.0         |                    |

Figure 7 – You have a functional bank account and you are using UPI payment services with it

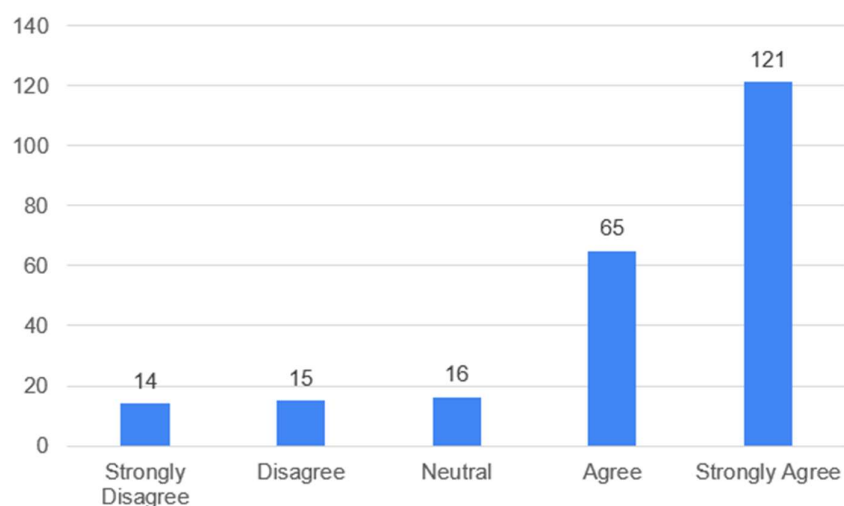


There are 121 (52%) participants who strongly agree and 65 (28%) participants agree that they are using UPI apps more than cash to make payments, 16 (7%) participants neither agree nor disagree, 15 (7%) participants disagree, and 14 (6%) participants strongly disagree (Table 8) (Figure 8).

Table 8 - You are using UPI apps more than cash to make payments

|       |                   | Frequency | Percent | Valid Percent | Cumulative Percent |
|-------|-------------------|-----------|---------|---------------|--------------------|
| Valid | Strongly Disagree | 14        | 6.1     | 6.1           | 6.1                |
|       | Disagree          | 15        | 6.5     | 6.5           | 12.6               |
|       | Neutral           | 16        | 6.9     | 6.9           | 19.5               |
|       | Agree             | 65        | 28.1    | 28.1          | 47.6               |
|       | Strongly Agree    | 121       | 52.0    | 52.0          | 100.0              |

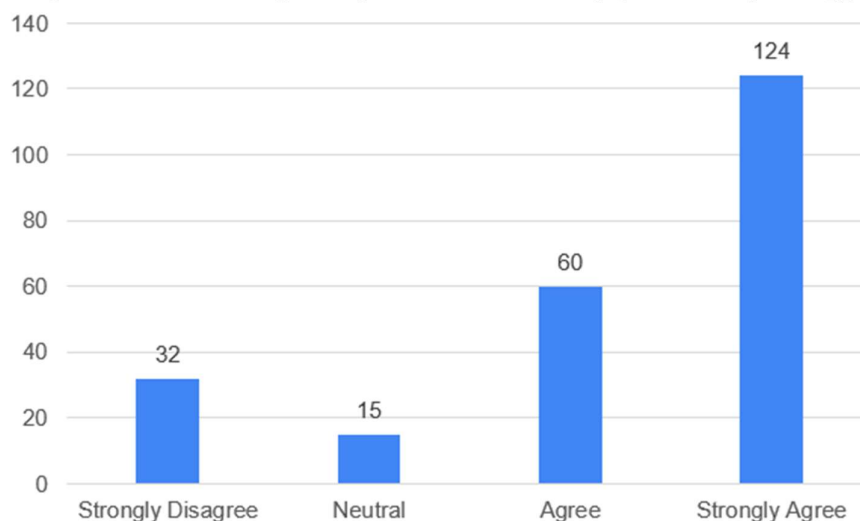
|                |     |       |       |       |
|----------------|-----|-------|-------|-------|
| Strongly Agree | 121 | 52.4  | 52.4  | 100.0 |
| Total          | 231 | 100.0 | 100.0 |       |

**Figure 8 – You are using UPI apps more than cash to make payments**

There are 124 (54%) participants who strongly agree and 60 (26%) participants agree that they are using smartphone to make online payments using UPI apps, while 15 (7%) participants neither agree nor disagree, and 32 (14%) participants strongly disagree (Table 9) (Figure 9).

**Table 9 - You are using smartphone to make online payments using UPI apps**

|       |                   | Frequency | Percent | Valid Percent | Cumulative Percent |
|-------|-------------------|-----------|---------|---------------|--------------------|
| Valid | Strongly Disagree | 32        | 13.9    | 13.9          | 13.9               |
|       | Neutral           | 15        | 6.5     | 6.5           | 20.3               |
|       | Agree             | 60        | 26.0    | 26.0          | 46.3               |
|       | Strongly Agree    | 124       | 53.7    | 53.7          | 100.0              |
|       | Total             | 231       | 100.0   | 100.0         |                    |

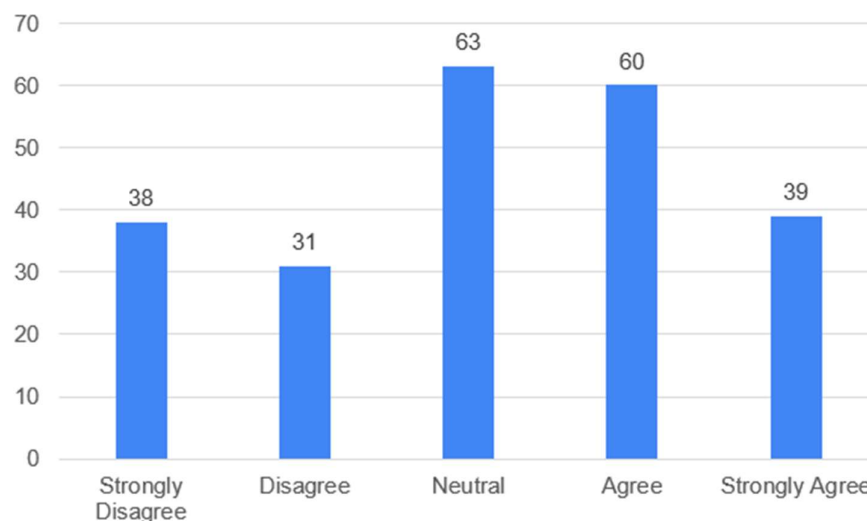
**Figure 9 – You are using smartphone to make online payments using UPI apps**

There are 60 (26%) participants who agree and 39 (17%) participants who strongly agree that they have linked their bank account with their mobile number for their UPI account, while 63 (27%) participants neither agree nor disagree, 31 (13%) participants disagree, and 38 (17%) participants strongly disagree (Table 10) (Figure 10).

**Table 10 - You have linked your bank account with your mobile number for your UPI account**

|                         | Frequency | Percent | Valid Percent | Cumulative Percent |
|-------------------------|-----------|---------|---------------|--------------------|
| Valid Strongly Disagree | 38        | 16.5    | 16.5          | 16.5               |
| Disagree                | 31        | 13.4    | 13.4          | 29.9               |
| Neutral                 | 63        | 27.3    | 27.3          | 57.1               |
| Agree                   | 60        | 26.0    | 26.0          | 83.1               |
| Strongly Agree          | 39        | 16.9    | 16.9          | 100.0              |
| Total                   | 231       | 100.0   | 100.0         |                    |

**Figure 10 – You have linked your bank account with your mobile number for your UPI account**



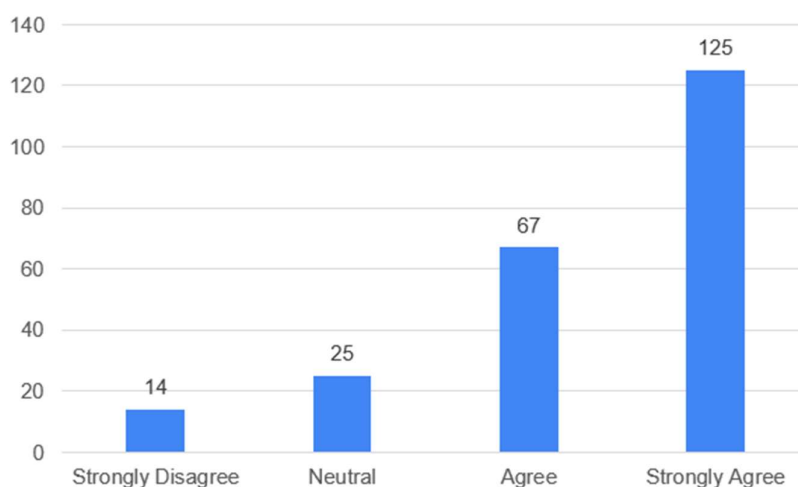
There are 67 (29%) participants who agree and 125 (54%) participants who strongly agree that they are familiar with the benefits of using UPI apps along with digital payments, while 25 (11%) participants neither agree nor disagree, and 14 (6%) participants strongly disagree (Table 11) (Figure 11).

**Table 11 - You are familiar with the benefits of using UPI apps along with digital payments**

|                         | Frequency | Percent | Valid Percent | Cumulative Percent |
|-------------------------|-----------|---------|---------------|--------------------|
| Valid Strongly Disagree | 14        | 6.1     | 6.1           | 6.1                |
| Neutral                 | 25        | 10.8    | 10.8          | 16.9               |
| Agree                   | 67        | 29.0    | 29.0          | 45.9               |
| Strongly Agree          | 125       | 54.1    | 54.1          | 100.0              |
| Total                   | 231       | 100.0   | 100.0         |                    |

**Figure 11 – You are familiar with the benefits of using UPI apps along with digital payments**





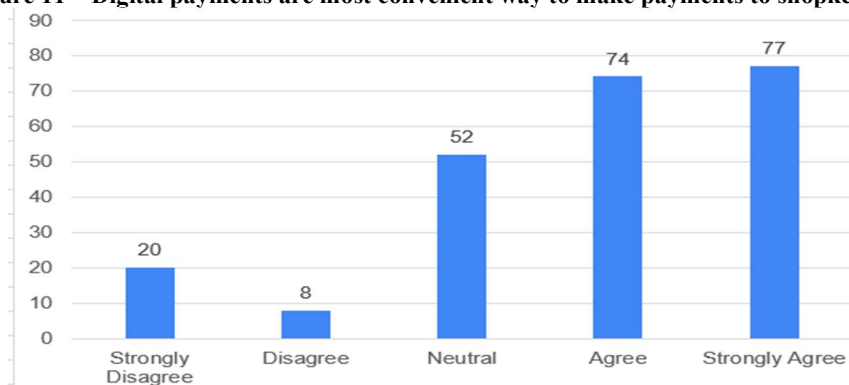
#### 4.2. Digitalization of Rural India

There are 77 (33%) participants strongly agree and 74 (32%) participants agree that digital payments are most convenient way to make payments to shopkeepers, while 52 (23%) participants neither agree nor disagree, 8 (3%) participants disagree and 20 (9%) participants strongly disagree (Table 11) (Figure 11).

**Table 11 - Digital payments are most convenient way to make payments to shopkeepers**

|                         | Frequency | Percent | Valid Percent | Cumulative Percent |
|-------------------------|-----------|---------|---------------|--------------------|
| Valid Strongly Disagree | 20        | 8.7     | 8.7           | 8.7                |
| Disagree                | 8         | 3.5     | 3.5           | 12.1               |
| Neutral                 | 52        | 22.5    | 22.5          | 34.6               |
| Agree                   | 74        | 32.0    | 32.0          | 66.7               |
| Strongly Agree          | 77        | 33.3    | 33.3          | 100.0              |
| Total                   | 231       | 100.0   | 100.0         |                    |

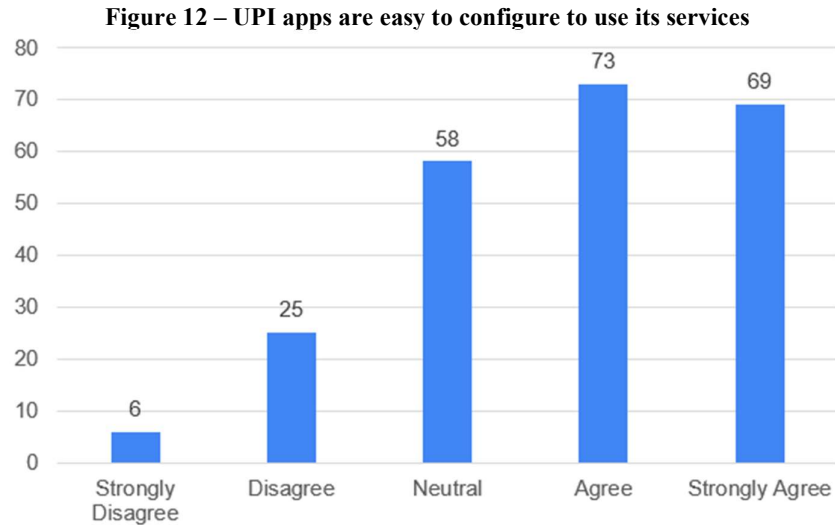
**Figure 11 – Digital payments are most convenient way to make payments to shopkeepers**



There are 69 (30%) participants strongly agree and 73 (32%) participants agree that UPI apps are easy to configure to use its services, while 58 (25%) participants neither agree nor disagree, 25 (11%) participants disagree and 6 (3%) participants strongly disagree (Table 12) (Figure 12).

**Table 12 - UPI apps are easy to configure to use its services**

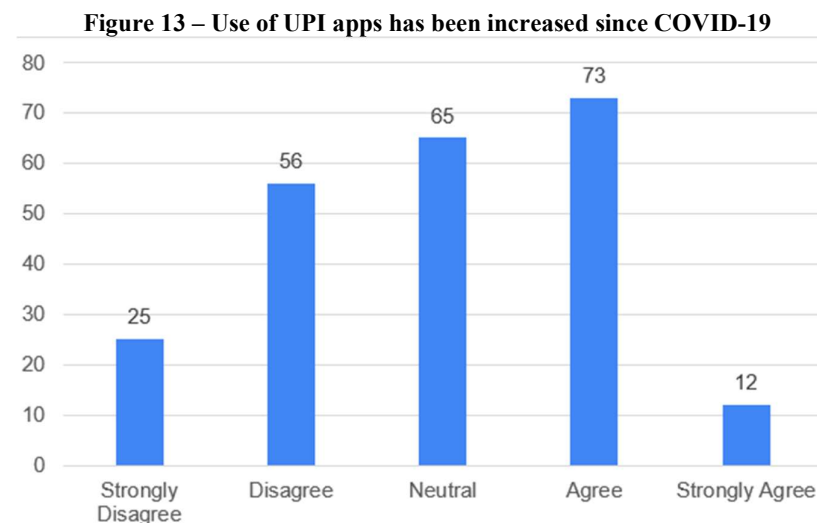
|                         | Frequency | Percent | Valid Percent | Cumulative Percent |
|-------------------------|-----------|---------|---------------|--------------------|
| Valid Strongly Disagree | 6         | 2.6     | 2.6           | 2.6                |
| Disagree                | 25        | 10.8    | 10.8          | 13.4               |
| Neutral                 | 58        | 25.1    | 25.1          | 38.5               |
| Agree                   | 73        | 31.6    | 31.6          | 70.1               |
| Strongly Agree          | 69        | 29.9    | 29.9          | 100.0              |
| Total                   | 231       | 100.0   | 100.0         |                    |



There are 12 (5%) participants strongly agree and 73 (32%) participants agree that use of UPI apps has been increased since COVID-19, while 65 (28%) participants neither agree nor disagree, 56 (24%) participants disagree and 25 (11%) participants strongly disagree (Table 13) (Figure 13).

**Table 13 - Use of UPI apps has been increased since COVID-19**

|       |                   | Frequency | Percent | Valid Percent | Cumulative Percent |
|-------|-------------------|-----------|---------|---------------|--------------------|
| Valid | Strongly Disagree | 25        | 10.8    | 10.8          | 10.8               |
|       | Disagree          | 56        | 24.2    | 24.2          | 35.1               |
|       | Neutral           | 65        | 28.1    | 28.1          | 63.2               |
|       | Agree             | 73        | 31.6    | 31.6          | 94.8               |
|       | Strongly Agree    | 12        | 5.2     | 5.2           | 100.0              |
| Total |                   | 231       | 100.0   | 100.0         |                    |



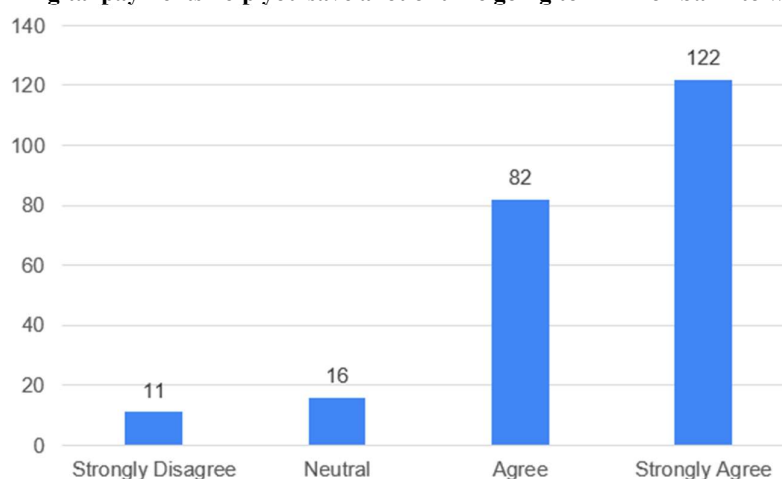
There are 122 (53%) participants who strongly agree and 82 (36%) participants agree that digital payments help them save a lot of time going to ATM or bank to withdraw cash, while 16 (7%) participants neither agree nor disagree, and 11 (5%) participants strongly disagree (Table 14) (Figure 14).

**Table 14 - Digital payments help you save a lot of time going to ATM or bank to withdraw cash**

|  | Frequency | Percent | Valid Percent | Cumulative Percent |
|--|-----------|---------|---------------|--------------------|
|--|-----------|---------|---------------|--------------------|

|       |                   |     |       |       |       |
|-------|-------------------|-----|-------|-------|-------|
| Valid | Strongly Disagree | 11  | 4.8   | 4.8   | 4.8   |
|       | Neutral           | 16  | 6.9   | 6.9   | 11.7  |
|       | Agree             | 82  | 35.5  | 35.5  | 47.2  |
|       | Strongly Agree    | 122 | 52.8  | 52.8  | 100.0 |
|       | Total             | 231 | 100.0 | 100.0 |       |

**Figure 14 – Digital payments help you save a lot of time going to ATM or bank to withdraw cash**

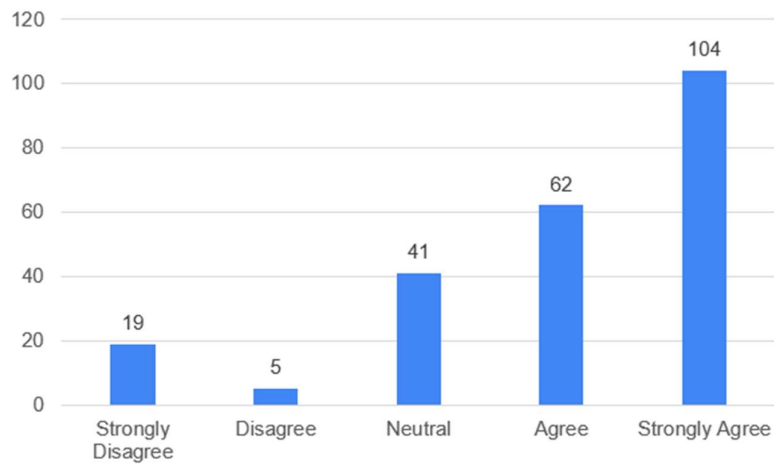


There are 104 (45%) participants strongly agree and 62 (27%) participants agree that they prefer businesses and shops that accept UPI payments, while 41 (18%) participants neither agree nor disagree, 5 (2%) participants disagree and 19 (8%) participants strongly disagree (Table 15) (Figure 15).

**Table 15 - You prefer businesses and shops that accept UPI payments**

|       |                   | Frequency | Percent | Valid Percent | Cumulative Percent |
|-------|-------------------|-----------|---------|---------------|--------------------|
| Valid | Strongly Disagree | 19        | 8.2     | 8.2           | 8.2                |
|       | Disagree          | 5         | 2.2     | 2.2           | 10.4               |
|       | Neutral           | 41        | 17.7    | 17.7          | 28.1               |
|       | Agree             | 62        | 26.8    | 26.8          | 55.0               |
|       | Strongly Agree    | 104       | 45.0    | 45.0          | 100.0              |
|       | Total             | 231       | 100.0   | 100.0         |                    |

**Figure 15 – You prefer businesses and shops that accept UPI payments**



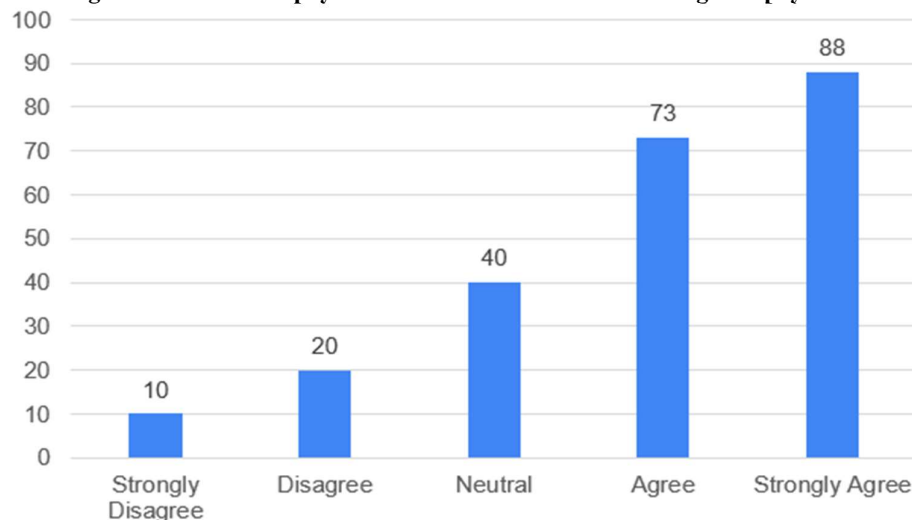
#### 4.3. Challenges of using UPI payment services in rural India

There are 88 (38%) participants strongly agree and 73 (32%) participants agree that they face payment failure most often when using UPI payments, while 40 (17%) participants neither agree nor disagree, 20 (9%) participants disagree and 10 (4%) participants strongly disagree (Table 16) (Figure 16).

**Table 16 - You face payment failure most often when using UPI payments**

|                         | Frequency | Percent | Valid Percent | Cumulative Percent |
|-------------------------|-----------|---------|---------------|--------------------|
| Valid Strongly Disagree | 10        | 4.3     | 4.3           | 4.3                |
| Disagree                | 20        | 8.7     | 8.7           | 13.0               |
| Neutral                 | 40        | 17.3    | 17.3          | 30.3               |
| Agree                   | 73        | 31.6    | 31.6          | 61.9               |
| Strongly Agree          | 88        | 38.1    | 38.1          | 100.0              |
| Total                   | 231       | 100.0   | 100.0         |                    |

**Figure 16 – You face payment failure most often when using UPI payments**



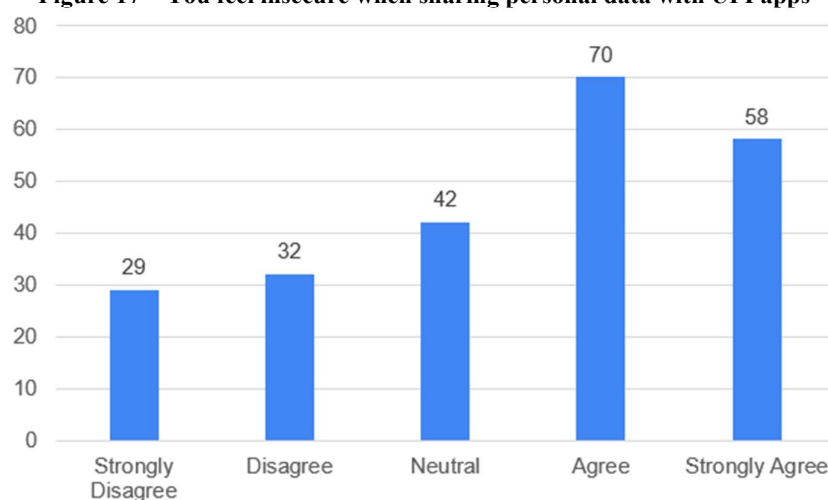
There are 58 (25%) participants strongly agree and 70 (30%) participants agree that they feel insecure when sharing personal data with UPI apps, while 42 (18%) participants neither agree nor disagree, 32 (14%) participants disagree and 29 (13%) participants strongly disagree (Figure 17) (Table 17).

**Table 17 - You feel insecure when sharing personal data with UPI apps**

|  | Frequency | Percent | Valid Percent | Cumulative Percent |
|--|-----------|---------|---------------|--------------------|
|--|-----------|---------|---------------|--------------------|

|       |                   |     |       |       |       |
|-------|-------------------|-----|-------|-------|-------|
| Valid | Strongly Disagree | 29  | 12.6  | 12.6  | 12.6  |
|       | Disagree          | 32  | 13.9  | 13.9  | 26.4  |
|       | Neutral           | 42  | 18.2  | 18.2  | 44.6  |
|       | Agree             | 70  | 30.3  | 30.3  | 74.9  |
|       | Strongly Agree    | 58  | 25.1  | 25.1  | 100.0 |
|       | Total             | 231 | 100.0 | 100.0 |       |

Figure 17 – You feel insecure when sharing personal data with UPI apps

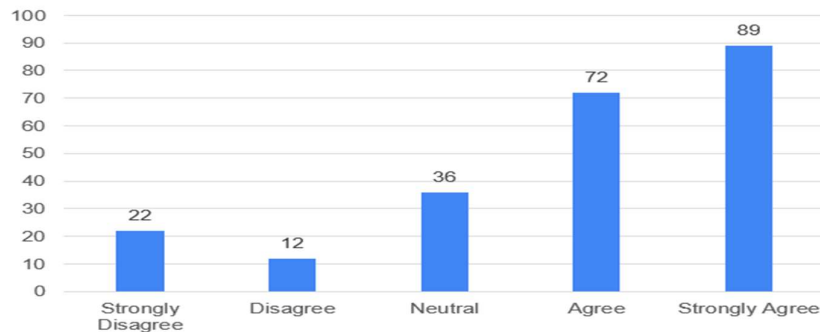


There are 89 (39%) participants strongly agree and 72 (31%) participants agree that they faced issues related to online scams at least once in a while, while 36 (16%) participants neither agree nor disagree, 12 (5%) participants disagree and 22 (9%) participants strongly disagree (Table 18) (Figure 18).

Table 18 - You faced issues related to online scams at least once in a while

|                         | Frequency | Percent | Valid Percent | Cumulative Percent |
|-------------------------|-----------|---------|---------------|--------------------|
| Valid Strongly Disagree | 22        | 9.5     | 9.5           | 9.5                |
| Disagree                | 12        | 5.2     | 5.2           | 14.7               |
| Neutral                 | 36        | 15.6    | 15.6          | 30.3               |
| Agree                   | 72        | 31.2    | 31.2          | 61.5               |
| Strongly Agree          | 89        | 38.5    | 38.5          | 100.0              |
| Total                   | 231       | 100.0   | 100.0         |                    |

Figure 18 – You faced issues related to online scams at least once in a while

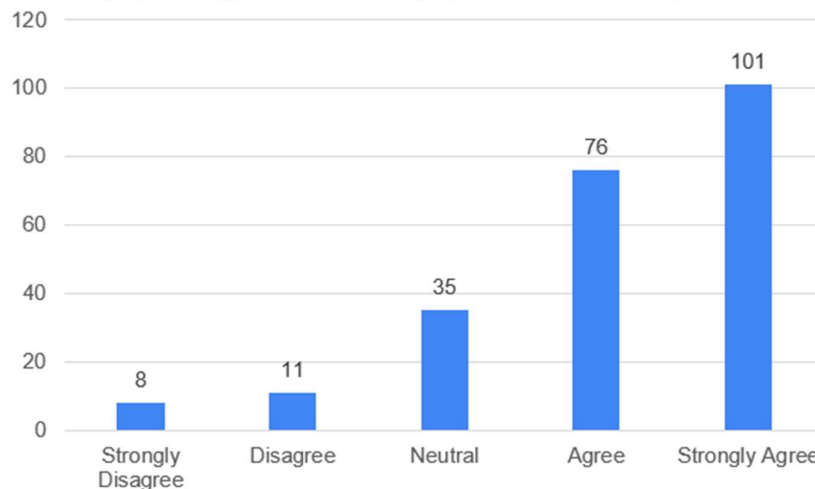


There are 101 (44%) participants strongly agree and 76 (33%) participants agree that setting up UPI apps is a bit challenging for first-time smartphone users and elderly, while 35 (15%) participants neither agree nor disagree, 11 (5%) participants disagree and 8 (3%) participants strongly disagree (Table 19) (Figure 19).

**Table 19 - Setting up UPI apps is a bit challenging for first-time smartphone users and elderly**

|       |                   | Frequency | Percent | Valid Percent | Cumulative Percent |
|-------|-------------------|-----------|---------|---------------|--------------------|
| Valid | Strongly Disagree | 8         | 3.5     | 3.5           | 3.5                |
|       | Disagree          | 11        | 4.8     | 4.8           | 8.2                |
|       | Neutral           | 35        | 15.2    | 15.2          | 23.4               |
|       | Agree             | 76        | 32.9    | 32.9          | 56.3               |
|       | Strongly Agree    | 101       | 43.7    | 43.7          | 100.0              |
|       | Total             | 231       | 100.0   | 100.0         |                    |

**Figure 19 – Setting up UPI apps is a bit challenging for first-time smartphone users and elderly**

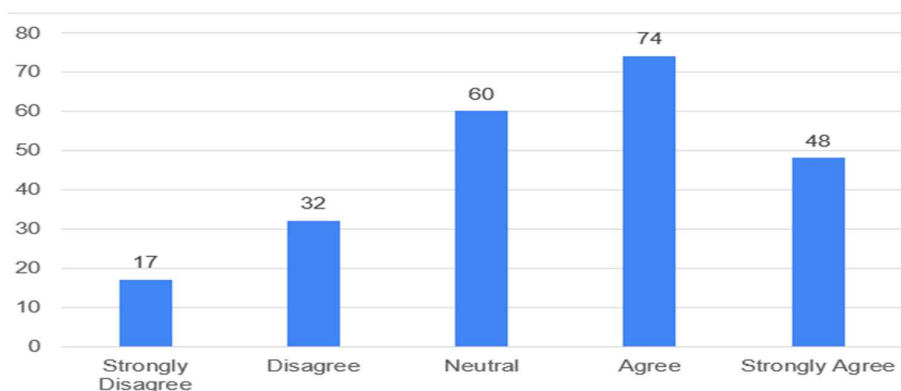


There are 74 (32%) participants who agree and 48 (21%) participants who strongly agree that poor internet connection is the major hurdle for using UPI apps, while 60 (26%) participants neither agree nor disagree, 32 (14%) participants who disagree, and 17 (7%) participants strongly disagree (Table 20) (Figure 20).

**Table 20 - Poor internet connection is the major hurdle for using UPI apps**

|       |                   | Frequency | Percent | Valid Percent | Cumulative Percent |
|-------|-------------------|-----------|---------|---------------|--------------------|
| Valid | Strongly Disagree | 17        | 7.4     | 7.4           | 7.4                |
|       | Disagree          | 32        | 13.9    | 13.9          | 21.2               |
|       | Neutral           | 60        | 26.0    | 26.0          | 47.2               |
|       | Agree             | 74        | 32.0    | 32.0          | 79.2               |
|       | Strongly Agree    | 48        | 20.8    | 20.8          | 100.0              |
|       | Total             | 231       | 100.0   | 100.0         |                    |

**Figure 20 – Poor internet connection is the major hurdle for using UPI apps**



#### 4.4. Impact of UPI payments on digitalization of rural India

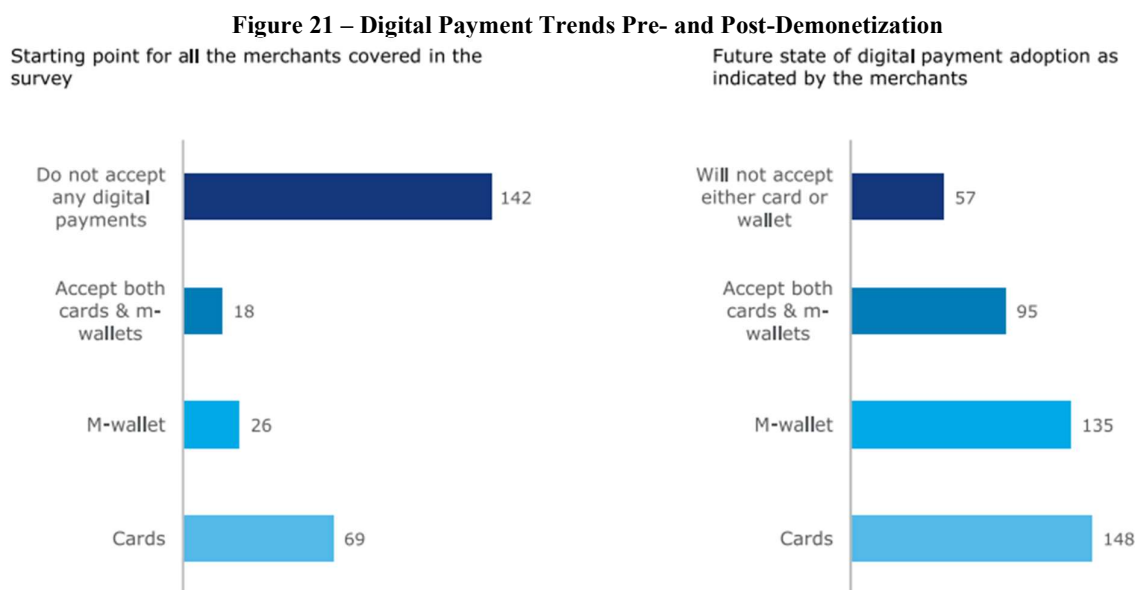
In order to test H1, one sample t-test has been conducted using SPSS software. It is observed that the value of significance (p-value) is below 0.005 for all the items in the questionnaire. Hence, H1 is approved, i.e., there is a significant impact of UPI payments on digitalization of rural India (Table 21).

**Table 21 - One-Sample Test**

|  | Test Value = 0 |     |                 |                 |   |       |
|--|----------------|-----|-----------------|-----------------|---|-------|
|  | t              | df  | Sig. (2-tailed) | Mean Difference | 95% Confidence Interval of the Difference |       |
|  |                |     |                 |                 | Lower                                     | Upper |
| You have a functional bank account and you are using UPI payment services with it    | 52.928         | 230 | .000            | 4.216           | 4.06                                      | 4.37  |
| You are using UPI apps more than cash to make payments                               | 53.526         | 230 | .000            | 4.143           | 3.99                                      | 4.30  |
| You are using smartphone to make online payments using UPI apps                      | 45.285         | 230 | .000            | 4.056           | 3.88                                      | 4.23  |
| You have linked your bank account with your mobile number for your UPI account       | 36.357         | 230 | .000            | 3.134           | 2.96                                      | 3.30  |
| You are familiar with the benefits of using UPI apps along with digital payments     | 60.602         | 230 | .000            | 4.251           | 4.11                                      | 4.39  |
| Digital payments are most convenient way to make payments to shopkeepers             | 47.972         | 230 | .000            | 3.779           | 3.62                                      | 3.93  |
| UPI apps are easy to configure to use its services                                   | 52.951         | 230 | .000            | 3.753           | 3.61                                      | 3.89  |
| Use of UPI apps has been increased since COVID-19                                    | 41.035         | 230 | .000            | 2.961           | 2.82                                      | 3.10  |
| Digital payments help you save a lot of time going to ATM or bank to withdraw cash   | 68.017         | 230 | .000            | 4.316           | 4.19                                      | 4.44  |
| You prefer businesses and shops that accept UPI payments                             | 50.087         | 230 | .000            | 3.983           | 3.83                                      | 4.14  |
| You face payment failure most often when using UPI payments                          | 52.323         | 230 | .000            | 3.905           | 3.76                                      | 4.05  |
| You feel insecure when sharing personal data with UPI apps                           | 38.877         | 230 | .000            | 3.416           | 3.24                                      | 3.59  |
| You faced issues related to online scams at least once in a while                    | 46.322         | 230 | .000            | 3.840           | 3.68                                      | 4.00  |
| Setting up UPI apps is a bit challenging for first-time smartphone users and elderly | 59.542         | 230 | .000            | 4.087           | 3.95                                      | 4.22  |
| Poor internet connection is the major hurdle for using UPI apps                      | 44.514         | 230 | .000            | 3.450           | 3.30                                      | 3.60  |

Rural India is very important for economic growth and a lot of fintech companies have focused on rural markets over the years to improve their operations. For example, a lot of ecommerce companies and m-wallets have focused on rural India and adapting strategy to achieve a decent market share (Dennehy & Sammon, 2015). In addition, demonetization and its impacts have resulted in significant transformation in the market. Only a few consumers and merchants from rural India used digital payments in pre-demonetization period. There has been a significant growth in post-demonetization period in number of users with digital payments and POS.

Simple policies for mobile wallets, timely issuance of payment banks, government promoting incentive and public schemes for using UPI, and increasing internet penetration to rural India signify that there is a lot of transformation in online payments. For example, Figure 21 depicts the development in online transactions. The factors impacting has resulted in this transformation and compliance needs are increased, initiatives and incentives from government, and impact of demonetization have encouraged online transactions.



Source – Deloitte (2017)

Fueling this level of growth of online payment relies on different factors. There are a lot of challenges and opportunities related to key stakeholders in digital payments. Digital payments are at the beginning and there is a push from several quarters for adoption of digital payment platform (Horowitz, 2012).

There is also a limited scope for cash payments because (Jain, 2014) –

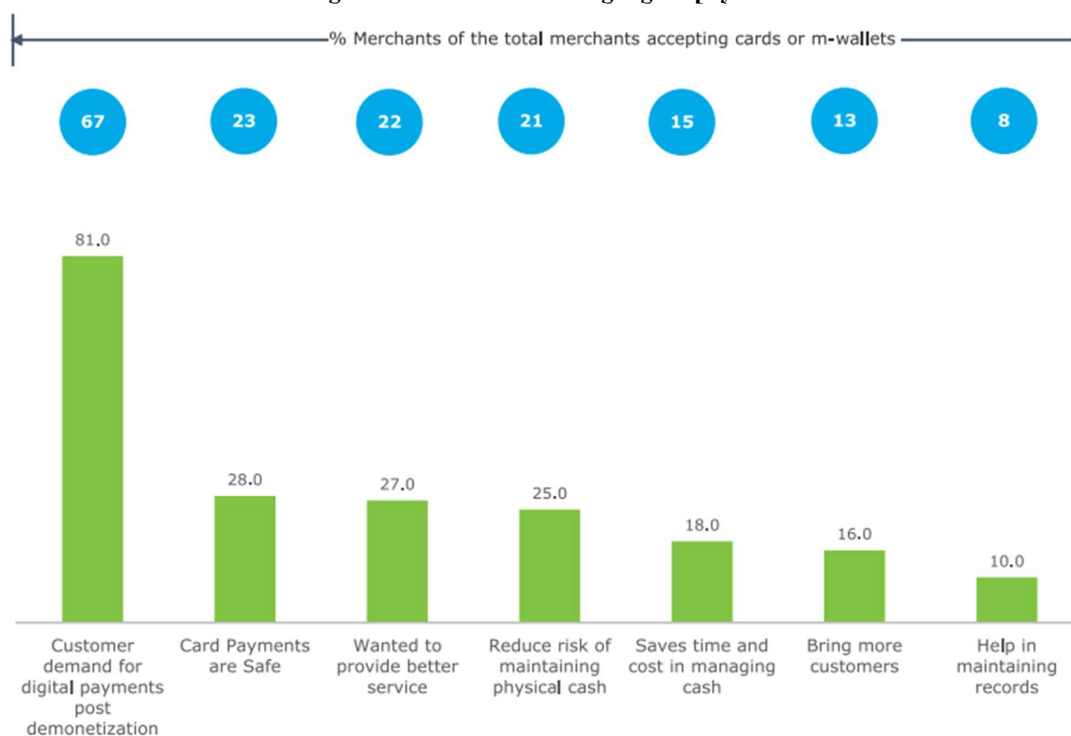
- Cash payments have been regulated by the RBI in a phased manner. For instance, tax and restrictions have been imposed on cash payments for buying jewelry.
- Transaction charges are imposed for cash payments to suppliers, services, and vendors
- Higher transaction charges are imposed for cash withdrawals, deposits, etc.

India is eventually transitioning towards digital economy. RBI has issued bank payment licenses to a lot of fintech companies like Paytm and other mobile payment services from current banking and finance companies which have increased various digital payment options provided for stakeholders like consumers and merchants (Horowitz, 2012).” Strategic launch of UPI payments and services like BHIM enabled smooth digital transactions which secured platforms for consumers. Aadhar-based payments are also emerging in Indian market which shows possible scope to perform digital payments in feature phones (Adalarusu, 2014).

In a recent report by Deloitte and CII, there is a drastic growth in consumer demand for digital payments. A lot of merchants are keen to use digital payments to retain customers. There is a rise in customer demand for digital payments from the given Figure 22. There is a significant development even before demonetization.



Figure 22 – Factors affecting digital payments



Source – Deloitte (2017)

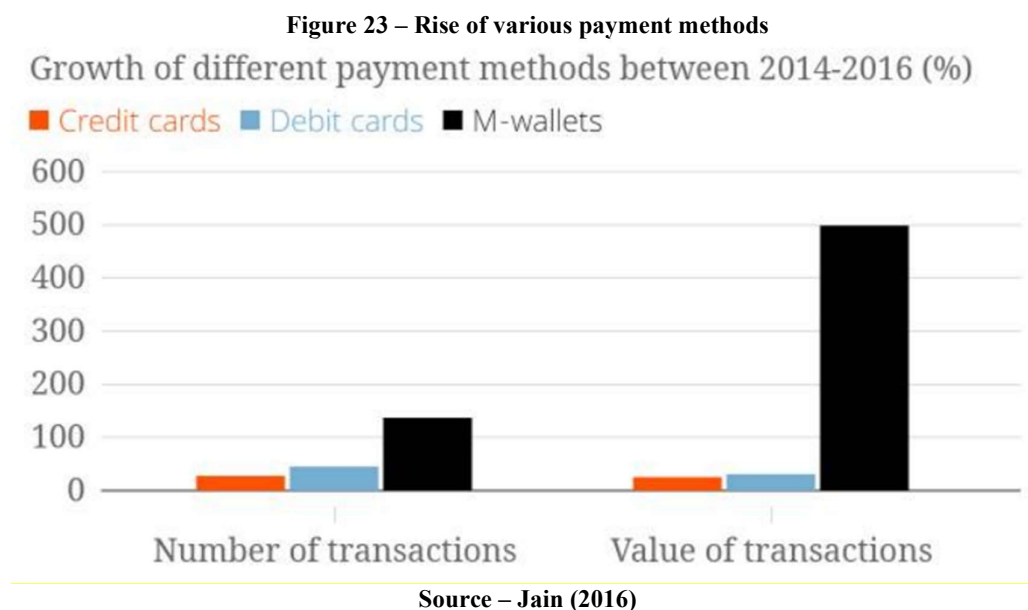
A lot of private digital wallet providers have provided value-added services to consumers. They provided value to the customers in terms of cashback offers, ease of use, discounts using mobile wallets, etc. Government has also announced several incentive and reward programs to attract to digital payments (Horowitz, 2012). RBI has terminated or reduced cross transaction for UPI solutions and bankers to reduce transaction cost to end users. A lot of POS solutions are being used and provided to merchants to improve digital payments (PANCHAL, 2016). However, awareness programs are needed to encourage digital payments like online transfers based on feature phones with Aadhar card, which has resulted in a way more establishments and shops are considering digital payments in rural India. Government may announce more incentives like discounts for fuel purchase with credit/debit cards in outlets to ease the strategy to promote online transactions (PANCHAL, 2016).

There is a huge growth in digital payments. Here are some of the key impacting factors and market drivers for online transactions –

- In comparison to previous trends, the process of IMPS solutions, mobile banking, and other developments have been simplified in the modern scenario.
- Rising number of ecommerce organizations have provided services in rural India and there are several elements driving online transactions.
- Direct and indirect government initiatives for improving ease of banking, compliance, and other factors play a vital role in progress (Jain, 2016).

- Some of the incentives like “RuPay” cards linked with “0 balance or Jan Dhan” accounts were opened in large scale, POS solutions were enabled to rural markets, and Kisan credit cards were issued to gain momentum of online payments (Adalarusu, 2014).

Figure 23 illustrates the rise of online transactions in recent past and emerging trends for potential growth.



As per Figure 23, the value of transactions signify significant growth with M-wallets. However, given that figures show the size of transaction in both urban and rural areas, it is still worth noting that there is a significant growth in the market and digital payments can penetrate to higher levels with right dynamics. Rural India is now online and all transactions are performed digitally. Irrespective of some challenges in the process, issues are still effective. Classification of mobile wallet expenses could be related significantly to certain segments. There are several developments when it comes to improve digital transactions in rural India. The crux is addressing several challenges in the process and effective developments can be envisioned (PTI, 2016).

## 5. Results

In this study, majority (50%) of participants use PhonePe for making mobile payments, while others use GPay, Paytm, Amazon Pay and others. When it comes to adoption of mobile payments in India, 80% participants in this study have a functional bank account and they are using UPI payment services with it, 80% users are using UPI apps more than cash to make payments, 80% of participants are using smartphone to make online payments using UPI apps, while 43% have linked their bank account with their mobile number for their UPI account. When it comes to awareness, 83% participants are familiar with the benefits of using UPI apps along with digital payments.

In terms of digitization of rural India, 65% participants believe that digital payments are most convenient way to make payments to shopkeepers, 62% users have observed that UPI apps are easy to configure to use its services, only 37% participants feel that use of UPI apps has been increased since COVID-19, whopping 89% participants agree that digital payments help them save a lot of time going to ATM or bank to withdraw cash, and 72% users prefer businesses and shops that accept UPI payments.

There are also various challenges observed in using UPI payments in rural India. There are 70% participants who face payment failure most often when using UPI payments, 55% participants feel insecure when sharing personal data with UPI apps, 70% participants faced issues related to online scams at least once in a while, setting up UPI apps is a bit challenging for first-time smartphone users and elderly according to 77% participants, and poor internet connection is the major hurdle for using UPI apps according to around half of participants (53%). There is also a strong impact of UPI

payments on digitalization of rural India, as per one-sample t-test conducted using SPSS software on related items in the questionnaire.

Trust is one of the significant factors posing significant challenge for the expansion of online payments in rural India. Irrespective of whether it is related to growing challenges related to data security or lack of consumer awareness, gaining customers' confidence is still one of the important challenges for mobile wallets and fintech service providers (Pahwa, 2016). In addition, transaction cost is another major concern. For instance, customers have to bear transaction cost for every debit card transaction. There is a need to remove those charges to ensure prevalent use of credit and debit cards (Pahwa, 2016).

Mobile wallet providers have definitely made the process of transaction easier for customers. Cost for switching money to bank accounts from wallets are another concern. As mobile wallets are charging up to 4% for bank accounts, customers understand the use of mobile wallets for online transactions (Acharyya, 2016). Modality of online payments is at the beginning stage in India and there is a huge need for more effective guidelines, laws, and compliance trends which can improve the process. Supplying POS solutions, leveraging technology, and ease of compliance is also important to encourage more merchants, retailers, and professionals to embrace solutions well (Pahwa, 2016).

Settlement of transactions take a lot of time from the banks for merchants. It is another major hurdle which affects the acceptance of online payments for merchants. Transactional problems like accepting online payments from consumers and suppliers and vendors not accepting online payments from those merchants is another challenge. These are some of the challenges affecting the growth of online payments in rural India (Singh, 2016). By addressing those issues effectively, the outcome can definitely be helpful to improve effectiveness of online payments in rural India and achieving the goal of cashless and digital economy (Acharyya, 2016).

## **6. Conclusion**

India is one of the rapidly growing, strongest, and biggest economies. For sustainable growth and development with strong economy, some important factors like corporate governance, improved transparency, and limiting the cash-based economy. Those developments could be ideal with rural India and embraced online transactions and payments. Given the importance of opportunities for digital payments and market dynamics, this study has also discussed challenges and improved solutions when it comes to mobile wallets, UPIs, and digital transactions with secured features, reduced cost of handling online payments, and ease of transactions which could result in improved conditions and potential developments of online payments.

When it comes to make the most of those opportunities, it is important to have more robust solutions and key policies should be followed for implementing online payments in rural India –

- Payment settlement for merchants should be easier as small merchants and retailers need cash flow with instant turnaround time for their operations
- Digital divide should be reduced and awareness should be improved among common public
- Transaction charges should be reduced over online payments
- Digital infrastructure is very important for adapting online payments successfully and it is very important to provide and improve needed infrastructure for online payments
- There is an emphasis on integrated digital payment systems which can support quality outcome and reduce current challenges. For example, it is important to ensure strict laws for IT Act, security breaches, and online payments.

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