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Understanding the Acceptance Pattern of UPI in New Normal: A Study in Rural Districts of West Bengal

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ABSTRACT
The UPI is an entirely new concept which has changed the entire banking systems. It provides on-the-go services regarding funds transfer with added security, which is adopted throughout the country. Recently, COVID-19 pandemic shook the entire world, which rose due to contamination. Therefore, physical payment systems ceased slowly and digital payment systems such as IMPS, NEFT etc. among these payment systems, UPI (unified payment systems) emerged as an entirely revolutionary payment method. However, despite of the added features, previous studies have shown that the UPI adoption is very slow in the rural parts of India. Literatures show that there has been very few research on the acceptance pattern of UPI in the rural districts of West Bengal. Hence, the present study is an attempt to understand the factors which affect the acceptance/non-acceptance of UPI payment systems. The present study is conducted in two stages. In the first stage, the factors are identified, and in the second stage, these factors were tested for biasness in various demographic factors. Findings suggest that rewards, convenience, and technological factors are biased among occupation, education and location demographics respectively.

Keywords: *acceptance pattern, covid-19, inter-bank transactions, sustainable solutions, unified payment interface*

I. INTRODUCTION

In recent times, the notion of online platforms has become ubiquitous across both urban and rural areas; however, this was not always the case in the absence of technology and accessible telecommunication devices. At present day the life style, expectations, situational needs, social status, fast track competition, work life and globalisation have transformed the masses to approach Online platforms. Right from the purchase of daily necessities like groceries, medicines, transport, payment of utility bills, fees of educational institutions, transfer of funds at a distant location, payment to business clients to every need, the online platform for transactions has retained a place successfully as a reliable alternative to cash. There is a huge upsurge in the number of online vendors at length and breadth. Peoples' high propensity of online shopping reflects in their consumption behaviour which is strongly empowered by enormous expansion network-driven shopping applications gradually. Despite these contemporary circumstances there are ample facts which prove non-acceptance of such technological innovations in use. In the context of India as a developing economy, it tries to engrave the option for availing and adopting online transactions in the economy for the attainment of its prime mission "Digital India".
Certainly, NPCI has several weapons which are used to transact digitally like "Unified payment Interface (UPI)", "Immediate Payment Service (IMPS)", "National Automated Clearing House (NACH)", "Aadhar Enabled Payment System (AEPS)", "National Financial Switch (NFS)", "Rupee and Payment (RuPay)", The Bharat Bill Payment System etc. UPI is the flagship initiative out of all which has entirely changed the face of India's remittance structure. Neo means new, modern, updated situation which is unlike the past system used to get followed. Here "Neo" signifies a current situation which is modified and readjusted and accepted to comply the dynamic environment. After the COVID-19 pandemic, many new learning and opportunities people have experienced off just like the online remittance platforms in financial sector. This attempt is made to investigate a comparative analysis on the adoption and perception of the users of UPI remittance between Rural and Urban areas at preferred locations of West Bengal in Neo Normal Situation.

The prime question arises behind this study is to know that why the rural part of the economy is not accepting the UPI as a reliable, user-friendly, and sustainable solution for payment. The COVID-19 lock-down has challenged the country throughout across its length and breadth from rural to urban. The major part of the economy consists of rural locations. Hence the current study tries to attempt and analyse rural locations to see the acceptance pattern of Unified Payment Interface as the flagship platform of India's remittance system which is a key vehicle for making Digital India.

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The present study is further divided as follows – section 2 provides a brief review of literature; section 3 provides research objectives; section 4 explains the research methodology in brief and section 5 provides the data analysis and findings. Finally, section 6 concludes the study.

II. LITERATURE REVIEW

There are many studies on the perceptions determining the usage of digital payment systems. Shankar and Kumari (2016) found a total of eight factors (awareness, usefulness, ease of use, compatibility, self-efficacy, security and privacy risk, social influence, and financial cost) which affected m-banking adoption behaviour. they concluded that usefulness has major impact on consumer adoption rate whereas social influence has least impact. Gochhwal (2017), made an empirical study on UPI – a new age payment system introduced in India by NPCI. He showed in his paper the advancement and evolution of payment system in India and analysed the detail technology behind the UPI focusing on its architecture and security system. Chaterji and Thomas (2017) highlighted a study on UPI as a catalyst tool supporting digitalization and concluded with its prospects, utility and issues. Kakade and Veshne (2017) observed in their study that Unified payment interface facilitates the Indian economy towards cashless economy and gaining momentum with growth of smart phone users and penetration of internet and concluded that UPI will definitely change the way we were transacting then and transforming into digital payments where each person's smart phone will be primary device for all payments. Tungare (2019) focused to study the customer perception (service sector) towards the awareness and adoption of UPI systems in Indore region and concluded with aspects of awareness and adoption of UPI through comparison between gender, age and occupational data of customers. Chawla et al. (2019) found that the perception among the individuals regarding the adoption pattern of UPI. It was found in the study that the people were well aware about the UPI payment platforms, but were not comfortable enough due to some trust issues. Studies show that enormous opportunities and challenges exist in the rural banking sector, which requires special emphasis on digitalization (Singh and Malik, 2019).

The opportunities and challenges in the advancement of the banking sector is reflected by the customer's attitude and perception towards digital banking. It is the customer's attitude, which shows the adoption of digital banking systems. The acceptance of the digital payment systems by the general public is an indicator of financial literacy and financial inclusion, which in turn causes economic development (Shaw and Saha, 2020; Rastogi et al. 2021). Rasna and Susila (2021) focused on analysing about the preferences of UPI payment apps and a comparative analysis of the male and female users of UPI in rural and urban areas with reference to Kannur district in Kerala and concluded that there was a developing trend about the preference of UPI and awareness level on the female respondents need to be fostered.

After going through the existing literature, it is observed that there is a lack of study conducted to determine the factors affecting acceptance pattern of UPI remittance in post lock-down periods in rural areas of West Bengal. Considering this as a significant research gap, this research is conducted to fill up this gap. It has huge socio-economic significance countrywide.

III. RESEARCH OBJECTIVE

Based on the literature survey and research questions, the following objectives was decided for the present research –

1) To identify the factors affecting the acceptance of UPI in the rural districts of West Bengal.
2) To check for any significant difference in demographic factors among such factors affecting the acceptance of UPI.

IV. METHODOLOGY

1.1 Data

This research is based on purely primary data sources. This study is based on selected districts of West Bengal, they are Howrah, Hooghly, West Midnapore, Nadia, Murshidabad consisting rural sides respectively. A structured questionnaire has been formulated which have been used mostly in urban areas to collect and record their responses whereas the same questionnaire has been used to collect the response from the rural areas through personal interview. Total 50 respondents have been collected based on convenience sampling covering rural locations.

1.2 Research Methods

Factor analysis using principal components methods was employed to find the factors affecting the acceptance pattern of UPI among the users in rural areas of West Bengal. Initially, The KMO test for sampling adequacy was tested and the Bartlett's test was used for testing a significant correlation among the questions under study. The KMO value ranges from 0 to1. A value of 0.5 to 0.7 is considered to be mediocre, and value of 0.7 to 0.8 is considered good, whereas a value greater than 0.9 is excellent (Field, 2009). Thereafter, the principal components method was used in order to extract the factors. The factors having eigen value more than one were selected as the final factors.

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1.3 Hypotheses for the Study

H_{01}: There is no gender bias in the factors affecting the acceptance pattern of UPI in rural area
H_{02}: There is no age bias in the factors affecting the acceptance pattern of UPI in rural area
H_{03}: There is no occupation bias in the factors affecting the acceptance pattern of UPI in rural area
H_{04}: There is no education level bias in the factors affecting the acceptance pattern of UPI in rural area
H_{05}: There is no income bias in the factors affecting the acceptance pattern of UPI in rural area
H_{06}: There is no district bias in the factors affecting the acceptance pattern of UPI in rural area

V. DATA ANALYSIS AND FINDINGS

In this section the factors are identified based upon the responses of the questions presented in Annexure A. Question 1 is used to identify the opinion level of the respondents whether UPI helps to make transaction easy and fast. Question 2 depicts the opinion level of the respondents whether UPI transactions are low-cost or not. Question 3 is used to identify the opinion level of the respondents whether UPI transactions are convenient for them or not. Question 4 is used to identify the opinion level of the respondents whether UPI transactions are attractive due to prizes and rewards. Question 5 is used to identify the opinion level of the respondents whether UPI transaction are safe and secure. Question 6 is used to measure the opinion level of the respondents whether Poor Network connectivity is only reason behind UPI transaction failure. Question 7 is used to identify the opinion level of the respondents whether Lack of technical knowledge discourages the UPI acceptance.

These questions are grouped into single scores which are classified as factors determining the acceptance pattern of UPI in the rural districts of West Bengal – namely Murshidabad, West Midnapore, Nadia, Howrah, Hooghly. Figure 1 to 5 shows the demographic characteristics of the respondents. Figure 1 shows that about 76% of the respondents are males and remaining 24% are females. Similarly, figure 2 shows the age demographics of the respondents. 20% respondents were in each category of ages as shown in the figure. In figure 3, the location-wise responses are shown. About 32% responses were from the Murshidabad district, 26% of the responses were from West Midnapore, 22% of the responses were from Nadia, 12% of the responses were from Hooghly and 8% were from Howrah. From figure 4, Education level of respondents are presented. Around 64% responses belong to the category of Upto Class 10 level of education, 16% responses belong to the category of Upto Undergraduate level of education, 14% responses belong to the category of Upto Class 12 level of education, 6% responses belong to the category of Post graduate and above level of education. Figure 5 shows the Occupation demographics of the respondents and figure 6 shows the income profile.

5.1 Correlation Among Variables

Table 1 shows the correlations among the responses of the respondents. The correlation analysis reveals that the respondents, who are adapting UPI for ease of use are also satisfied by their cost of usage and convenience along with safety. It also indicates that apart from ease of use, due to lack of technical knowledge, the non-acceptance of UPI in the rural area is higher as shown by a significant positive correlation between usage and non-acceptance. The respondents accept UPI for its economic benefits such as low transaction cost which is furthered backed by convenience, rewards, and cash back along with safety. Respondents are also in opinion that UPI is very convenient platform for remitting of funds, and are also delighted with economical solution and safety. Besides this It has very signification association with lack of technical knowledge and Poor network connectivity are the reasons for non-acceptance of UPI. Respondents have confirmed the non-acceptance of UPI due to the poor network connectivity and it has a sound association with lack of technical knowledge.

5.2 Results of Factor Analysis

In this section, the factors shall be extracted out of the sample responses collected from the rural population of West Bengal. The KMO measure of sampling adequacy was found to be 0.597 which is greater than 0.5. Therefore, the sample was found adequate for conducting factor analysis. The Bartlett's test of sphericity also returned a statistic of 110.79 and a *p*-value of 0, indicating that the null hypothesis of identity covariance matrix (sphericity) is rejected at 1% level of significance. Therefore, the data is well fitted for the factor analysis (table 2).

Table 3 shows the results of the rotated components matrix of the factor loadings, indicating that the variables were categorized into three factors, viz., convenience, technological and reward factors. The convenience factors contain the variables which indicates convenience and ease of use. The Technological factors contains the variables, which indicates the technological barriers and the final factor is related to the rewards and other attractive schemes, which makes UPI payment more attractive to users.

5.3 Findings

In this sub-section, we test the hypotheses 1 to 6. Table 4 tests for the normality of the factor scores using Shapiro Wilk test. The *p*-value for all the factors is less than 0.05. Therefore, the null hypothesis that the data is normally distributed is rejected at 5% level of significance. Therefore, Mann Whitney U-tests and Kruskal Wallis H-test are used for testing equality of factors among various demographic characteristics.

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The analysis revealed that there is no age and gender bias in all the factors i.e., convenience, technology and reward. This leads to the acceptance of hypotheses 1 (table 5), 2 (table 6) and 5 (table 9) fully. Tables 7, 8 and 10 indicate that there is occupation bias, education bias and location bias in rewards factor, convenience factor and technological factor. Therefore, hypotheses 3, 4 and 6 are partially rejected. The findings reveal that the rewards factor may be somehow related with the occupation, convenience factor may be somehow related with education and technological factor may be somehow related with location.

VI. CONCLUSIONS AND FUTURE SCOPE OF RESEARCH

The present study has found that there are three influential factors affecting the acceptance pattern of UPI in post COVID-19 period based on the opinion of the respondents from the rural districts of West Bengal. They are Convenient, Technological and Reward factor. These factors are not significantly different across demographic characteristics. In case of education, district and occupation, significant differences were found in convenience, technological and rewards factor respectively. This indicates that the education level leads to change in perception regarding convenience and understanding ease of use in UPI systems. Populations of different districts also had some technological factors affecting the use of UPI and in case of income levels, the rewarding factor was found more significant. The reason behind this may be perhaps due to people with higher income group tend to be less bothered with the rewards factor.

This research is purely based on conceptual study of the available data, primary in nature. This study is mainly judging perception of the users through factor analysis from the available data collected from selected areas. Further research can be done focusing on comparison of factors among two or several districts and diving deep into the reasons for the significant difference among factors using a larger sample.

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ANNEXURE A – Tables

Table 1: Pearson Correlation among the variables

	Does UPI help to make transactions easy and fast?	*Is UPI Transaction Low-cost?*	*Is UPI Transaction convenient?*	*Is UPI Transaction attractive due to Prizes and Rewards point?*	*Is UPI Transaction safe and secure?*	*Does UPI Transaction fail due to Poor Network Connectivity only?*	*Is Lack of Technical knowledge only reason of non-acceptance of UPI?*
Does UPI help to make transactions easy and fast?	**1.000**						
Is UPI Transaction Low-cost?	0.592**	**1.000**					
Is UPI Transaction convenient?	0.659**	0.462**	**1.000**				
Is UPI Transaction attractive due to Prizes and Rewards point?	0.207	0.436**	0.097	**1.000**			
Is UPI Transaction safe and secure?	0.310*	0.552**	0.465**	0.242	**1.000**		
Does UPI Transaction fail due to Poor Network Connectivity only?	0.261	0.227	0.415**	0.244	-0.075	**1.000**	
Is Lack of Technical knowledge only reason of non-acceptance of UPI?	0.288*	0.114	0.369**	-0.079	0.029	0.302*	**1.000**

** Correlation is significant at the 0.01 level (2-tailed).

* Correlation is significant at the 0.05 level (2-tailed).

Source: computed by researcher

Table 2: KMO and Bartlett's Test for Sphericity

KMO and Bartlett's Test		
Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		0.597
Bartlett's Test of Sphericity	Approx. Chi-Square	110.791
	d.f.	21
	Sig.	0.000

Source: computed by researcher

Table 3: Rotated Component Matrix

FACTORS	**Component**		
	Convenience	**Technological**	**Reward**
Is UPI Transaction safe and secure?	0.866		
Is UPI Transaction Low-cost?	0.754		
Does UPI help to make transactions easy and fast?	0.653		
Is UPI Transaction convenient?	0.647		
Is Lack of Technical knowledge only reason of non-acceptance of UPI?		0.771	
Does UPI Transaction fail due to Poor Network Connectivity only?		0.733	
Is UPI Transaction attractive due to Prizes and Rewards point?			0.883
Extraction Method: Principal Component Analysis.			
Eigen Values	**2.232**	**1.774**	**1.296**
%variance Explained	**31.89**	**25.35**	**18.51**
Cumulative % Variance	**31.89**	**57.24**	**75.75**
Rotation Method: Varimax with Kaiser Normalization			

Source: computed by researcher

Table 4: Test of Normality for Factor Scores

	Shapiro-Wilk		
	Statistic	d.f.	Sig.
Convenience Factor	0.946	50	0.024
Technological Factor	0.930	50	0.006
Rewards Factor	0.939	50	0.012

Source: computed by researcher

Table 5: Results for test of H1

	Convenience Factor	*Technological Factor*	*Rewards Factor*
Mann-Whitney U	214.500	157.500	174.500
Asymptotic Sig. (2-tailed)	0.759	0.109	0.224
Grouping Variable: Gender			

Source: computed by researcher

Table 6: Results for test of H2

	Convenience Factor	*Technological Factor*	*Rewards Factor*
Kruskal-Wallis H	6.714	1.986	7.640
d.f.	4	4	4
Asymptotic Sig.	0.152	0.738	0.106
Kruskal Wallis Test			
Grouping Variable: Age			

Source: computed by researcher

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Table 7: Results for test of H3

	Convenience Factor	*Technological Factor*	*Rewards Factor*
Kruskal-Wallis H	1.631	4.012	11.261
d.f.	3	3	3
Asymptotic Sig.	0.652	0.260	**0.010**
Kruskal Wallis Test			
Grouping Variable: Occupation			

Source: computed by researcher

Table 8: Results for test of H4

	Convenience Factor	*Technological Factor*	*Rewards Factor*
Kruskal-Wallis H	9.609	0.279	3.803
d.f.	3	3	3
Asymptotic Sig.	**0.022**	0.964	0.284
Kruskal Wallis Test			
Grouping Variable: Highest Education			

Source: computed by researcher

Table 9: Results for test of H5

	Convenience Factor	*Technological Factor*	*Rewards Factor*
Kruskal-Wallis H	5.157	5.809	6.940
d.f.	3	3	3
Asymptotic Sig.	0.161	0.121	0.074
Kruskal Wallis Test			
Grouping Variable: Monthly Income (in Rupees)			

Source: computed by researcher

Table 10: Results for test of H6

	Convenience Factor	*Technological Factor*	*Reward Factor*
Kruskal-Wallis H	3.475	14.369	6.921
d.f.	4	4	4
Asymptotic Sig.	0.482	**0.006**	0.140
Kruskal Wallis Test			
Grouping Variable: District			

Source: computed by researcher

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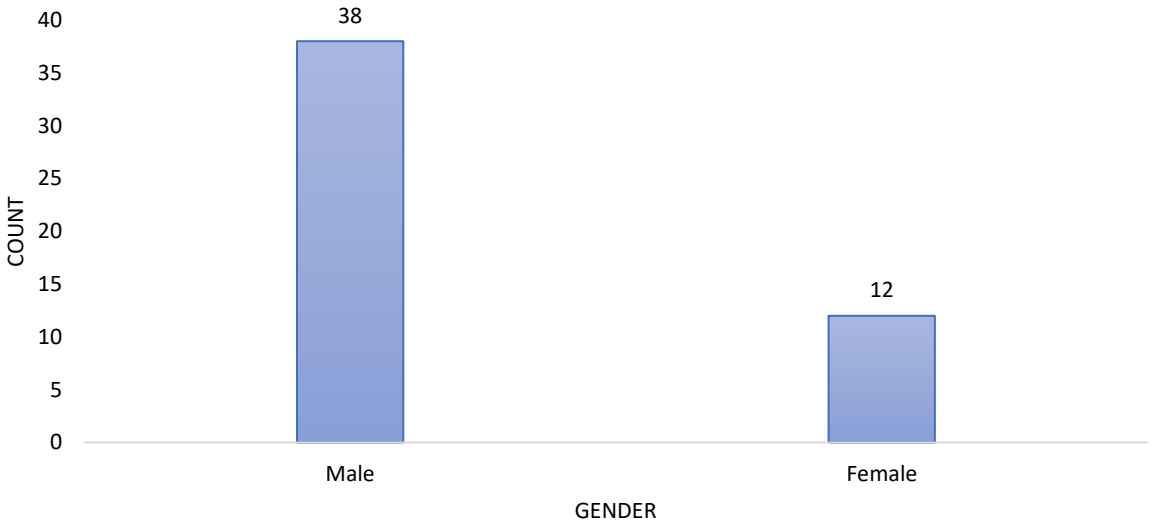
ANNEXURE B – Figures

Figure 1: Gender Demography



Source: Computed by author

Figure 2: Age Demography

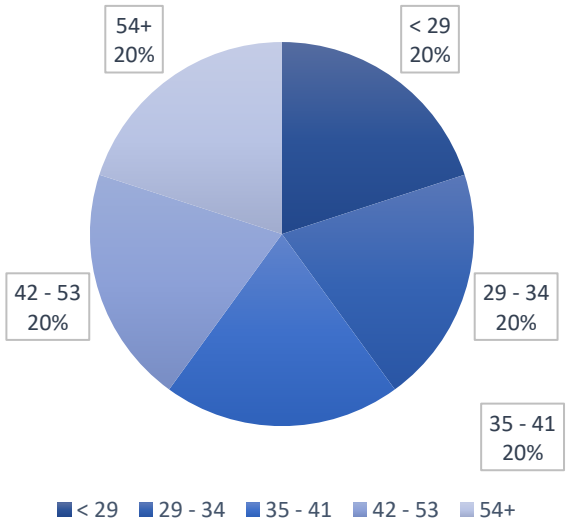


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Figure 3: Location Demography

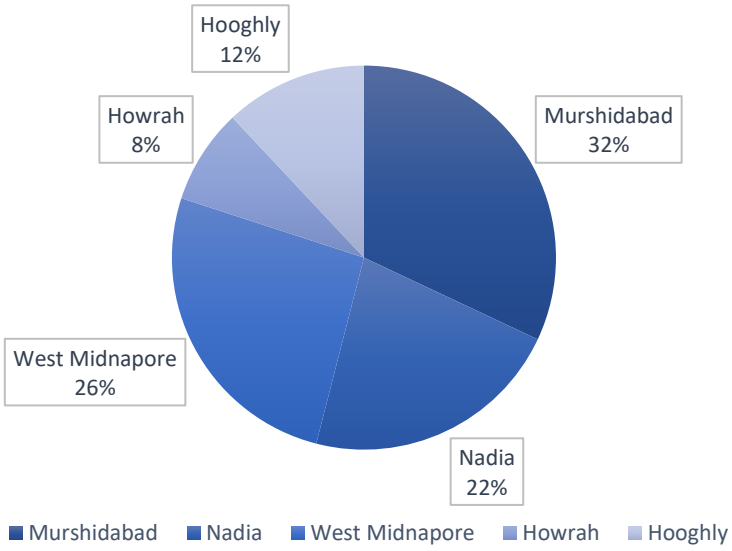

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Figure 4: Education

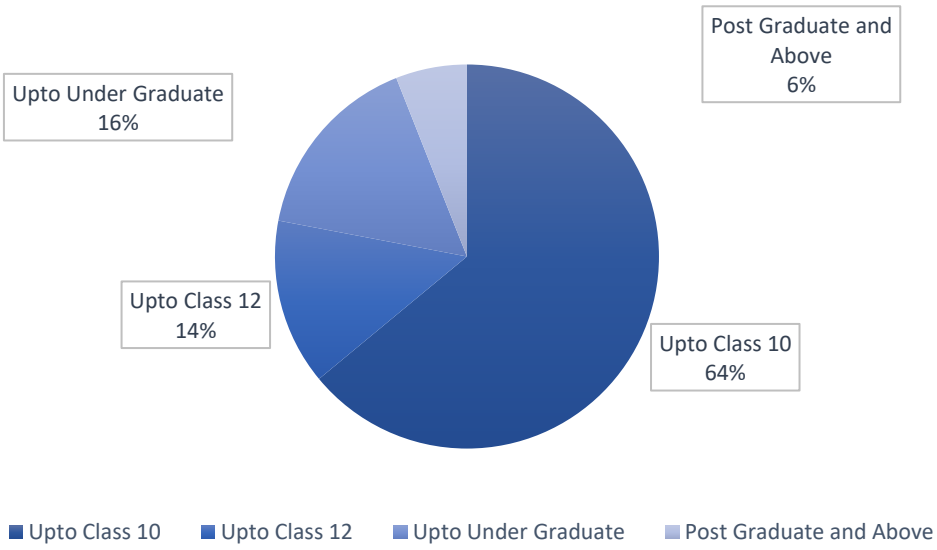

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Figure 5: Occupation

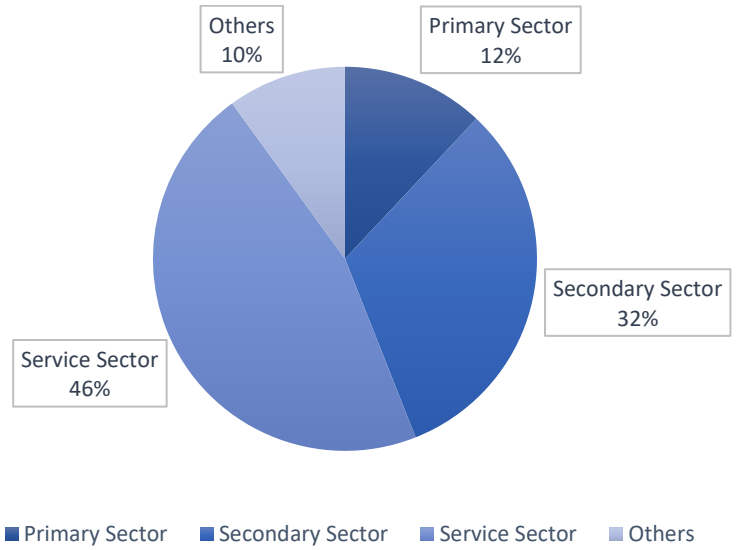

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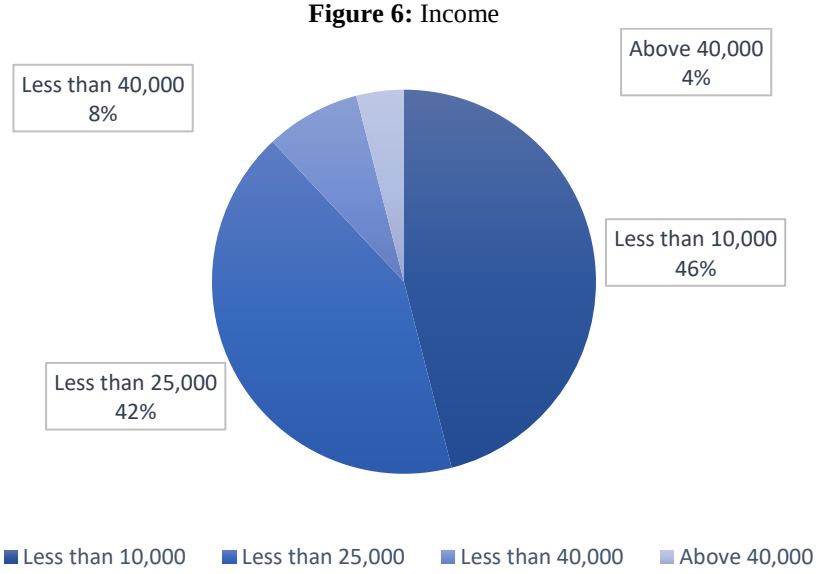
Figure 6: Income



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