

Impact of demonetization on adoption of digital banking services in India: a case study in rural and suburban area of West Bengal

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Abstract

Objectives: To examine the awareness and adoption level of people of rural and urban India about Digital Banking Services (DBS) at pre and post demonetization era.

Methods/Statistical Analysis: In this work, we have studied the effects and shifting trends in availing DBS and change in perception on Banking Services of customer, which is supported by a survey based on 500 respondents. One way ANOVA test has been employed to examine the possibility of existence of any statistically significant difference between adoption rate of DBS and different factors such as demonetization knowledge, reliability, transaction efficiency, customer support, service security, ease of use, performance and service content.

Findings: It has been observed that though rural and urban people have a noticeable awareness about the demonetization process but the percentage of users for all categories of DBS (card, internet and mobile) are very high for the urban sector than the rural sector. The rural people are found to be more convenient to use card banking (percentage of only card banking facility users is 63.00%) than the other two categories of DBS (internet and mobile banking). Similarly, demographic profile such as gender, education, occupation, age, income creates an impact for availing DBS. It has also been observed that adoption level of digital banking service is dependent on demonetization knowledge, reliability, customer support, service security, ease of use and performance ($p < 0.05$). But the Statistically insignificant effect has been observed on transaction efficiency ($p = 0.398 > 0.05$) and service content ($p = 0.059 > 0.05$) on adoption of digital banking services.

Application/Improvements: This study indicates that bankers and service designers should organise different campaign and hand-on training that may inspire people for adopting DBS and moving India towards 'Digital India'.

Keywords: Digital Banking Services, Demonetization, Demography, ANOVA test, DBS adoption rate.

1. Introduction

It was 8th Day of November, 2016; India took a big leap towards its vision of 'Digital Economy' with the announcement of historical demonetization by Hon'ble Prime Minister of India. The drive for Cashless India was started on 15th August, 2014 when Prime Minister announced opening of Jan-dhan accounts on affordable cost for poor and unbanked areas taking them under bigger financial umbrella. The demonetization policy just stimulated the entire process. Demonetization is the process of stripping a currency unit of its status as legal tender. Demonetization takes place whenever there is a change of national currency. India has already envisaged the process of demonetization twice before. The first demonetization was reported in January 1946 when ₹1,000, ₹5,000, and ₹10,000 notes were taken out of circulation, which were reintroduced after independence in 1954. Again in January 16, 1978, same currencies were banned which has been marked as second demonetization in India. Initially it has been claimed a master stroke to eradicate black money which includes 10% to 40% of GDP. However many critiques argued that the demonetization is not a proper solution to grasp black money. According to the present Finance Minister, the objective of demonetization was not just to confiscate black money, but the main principal objectives are to create more taxpayers, a bigger tax base, more digitisation, and lesser cash in the system, integration of the formal and informal economy.

This strategic decision taken by Government of India created tremendous impact on all the sectors. The banking sector was one of the major affected sectors. This policy made a compulsion to perform online/cashless financial transactions and to adopt digital banking services. In the last one year, a colossal number of studies have been observed on demonetization and digitisation. A recent study showed that demonetization leads an initial sharp decline in cash on delivery purchases and gradually it forced the people to opt for online shopping through e-payment model [1]. Not only that, demonetization also increased the overall percentage of online shopping in the total individual's purchase. Also in some studies the opportunities and challenges of digital payment of rural India after demonetization have been highlighted [2]. Besides these, many other researchers claimed a significant positive relationship between demonetization and e-commerce or cashless payment for different sectors [3-8]. They also tried to give the scenario of present and future of online business taking into consideration of demonetization in India. Some of other researchers [9-12] have also concluded that demonetization supported cashless society in India. Some of the researchers have examined consumer attitude for adopting digital banking services after demonetization.

In this respect, Singhal [13] has examined the awareness level of people of rural areas in India about e-banking facilities and how much it has increased after demonetization. An ANOVA test was conducted which shows that rural people differ significantly with urban people in their awareness level as well as usage level of e-banking. A model has been proposed for understanding consumer attitude towards online banking regard to demonetization in India [14]. The dependent factor in the proposed model is consumer attitude towards online banking and independent factors are demonetization knowledge, social status and convenience. The concept of digital banking services is not a new phenomenon. At different times, researchers have examined consumer attitude for adopting digital banking services. Several factors, namely consumer's demographic profile [15-17], consumer awareness and perceived risk [18-21], attitude towards adopting new technology [22-25], security and trust [26-30] etc. often influence consumer's attitude towards adopting digital banking services.

Many researchers have also observed a negative impact of demonetization. On the basis of Twitter tweets sentiment analysis, Jayaram [31] has observed strong evidence that the people of India are having negative sentiment towards the Indian Currency demonetization. As per Global Financial Development Database of the World Bank for November 2016, it was concluded that demonetization could hassle the process towards full digitisation [32]. Apart from these, the difficulties faced by the small retailers after demonetisation [33] as well as question on eradication of black money [34] have been examined by some researchers. The main purpose of this study is to examine the awareness of demonetization and adoption level of Digital Banking Services (DBS) of rural and urban people in the Burdwan district of West Bengal after demonetization. This paper also highlights the adoption level of altered groups of DBS (i.e. card, internet and mobile banking) and the change in perception of banking habits before and after demonetization on the basis of demographic factors. Beside this, our study also gives a light on the perception of respondents for availing DBS on the basis of demonetization knowledge, reliability, transaction efficiency, customer support, and service security, ease of use, performance and service content.

2. Objectives

The main objective of our study is to identify the impact of demonetization on adoption of digital banking services. Beside this, other objectives of our study are -

1. To examine the demonetization knowledge of rural and urban people.
2. To find out the change of adoption level of digital banking services after demonetization.
3. To examine change in perception of banking habits before and after demonetization.
4. To analyse the relationship between different types of DBS adoption rate and demographic factors namely, income level of the customer, gender differences, educational level, ages of customer and place of living.
5. To find the relationship between adoption level of DBS with demonetization knowledge, reliability, transaction efficiency, customer support, service security, ease of use, performance and service content.

3. Hypotheses

The following hypotheses have been adopted for the purpose of the study:

1. Demonetization knowledge affects the adoption of DBS
2. Reliability influences adoption of DBS.
3. Transaction efficiency influences the adoption of digital banking services.
4. Customer support creates a positive impact on adoption of DBS.
5. Service security influences the adoption of DBS
6. Ease of use affects the adoption of digital banking services
7. Performance has significant relationship with adoption of DBS services.
8. Service content has an influence for adopting DBS.

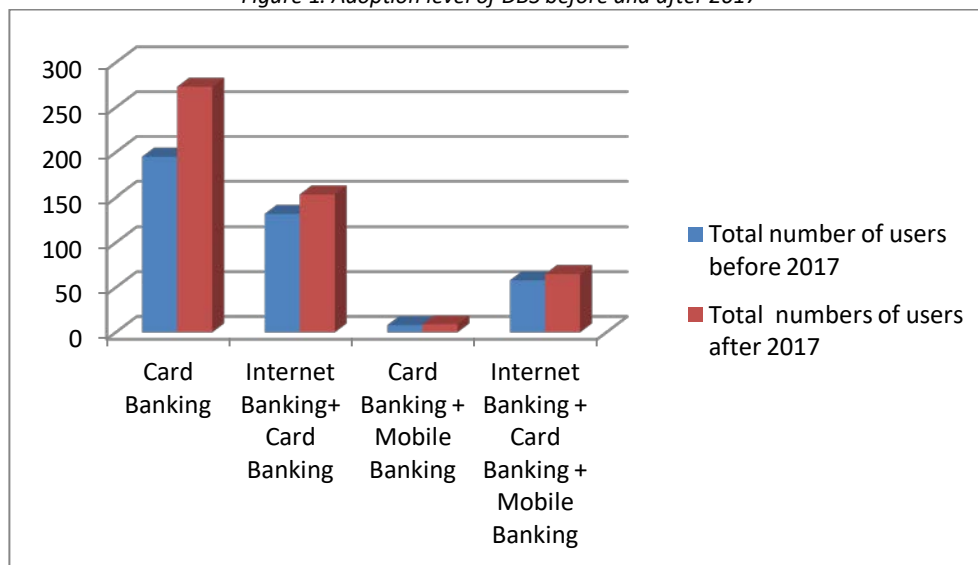
4. Data base

The study has been conducted covering the different areas (rural and urban) of Burdwan District in West Bengal. The study entirely depends on the data collected from the primary sources of information. It has been designed to use the survey method to obtain data from sample consumer and the quota sampling technique has been used in collecting the sample data. The questionnaires were distributed to 500 respondents on a random basis.

5. Methodology

The main objective of the present work is to identify and analyze the factors which affects in adoption of digital banking service in India. In this regard, depending on the respondents' adoption, digital banking sector can be categorised into three parts namely, internet banking, mobile banking and card are banking. As India's economic policy has gone through a drastic change after demonetization, the collected data has been analysed by utilising descriptive statistics of demonetization knowledge and growth rate of change in adoption level of digital banking services after demonetization. Beside this, to examine whether there exists any divergence of the adoption of DBS on the basis of different factors, such as demonetization knowledge, reliability, transaction efficiency, customer support, service security, ease of use, performance and service content, ANOVA test has been conducted for each of the selected factors. Shapiro-Wilks test for normality and Levene's F Test for homogeneity have been conducted to examine the fulfilment of assumption of ANOVA.

Figure 1. Adoption level of DBS before and after 2017



Perceptions of the respondents for availing DBS on the basis of selected factors (demonetization knowledge, reliability, transaction efficiency, customer support, service security, ease of use, performance and service content) have been measured on a seven-point Likert-type scale ranging from 1 'strongly disagree' to 7 'strongly agree.'

6. Data Analysis and Interpretation

In order to identify the factors which affect in adoption of digital banking service in India, different aspects have been considered. The change in adoption levels for different kinds of DBS has been shown in Figure 1. It clearly indicates that the usage of card banking has increased significantly in comparison to the other forms of DBS. The growth rate of different categories of DBS (internet banking, mobile banking and card banking) before and after 2017 has been calculated and the values are given in Table 1. It can be observed that among the different forms, growth of adoption level of only card banking (0.4) (followed by internet and card banking (0.16)) is much higher than all other categories of DBS. It indicates a positive effect of demonetization on availing card banking facilities.

Table 1. Growth rate for usage of different forms of DBS after demonetisation

Types of DBS	Growth rate
Card Banking	0.40
Internet Banking+ Card Banking	0.16
Card Banking + Mobile Banking	0.12
Internet Banking + Card Banking + Mobile Banking	0.12

Source: Survey evidences 2017

Table 2. Change in perception of banking habits before and after demonetization

No. of household have banking account			
	Before 2017	After 2017	Growth Rate
Rural	150	240	0.60
Urban	233	260	0.12
Number of person having smart phone			
Rural	75	82	0.09
Urban	196	232	0.18
Total	271	314	0.16
Number of household having internet banking account			
Rural	39	45	0.15
Urban	102	159	0.55
Total	141	204	0.44
Average number of monthly withdraw of cash through ATM			
Rural	1.67	2.1	0.26
Urban	4	4.5	0.13
Average number of monthly usage of debit or credit card at a point of sale			
Rural	0.23	0.31	0.34
Urban	2.36	3.21	0.36
Average number of monthly usage of mobile banking			
Rural	0.07	0.09	0.28
Urban	0.12	0.14	0.17
Average number of monthly usage of mobile wallet			
Rural	0.012	0.015	0.25
Urban	0.08	0.11	0.38
Average number of monthly transaction through UPI			
Rural	0.000	0.003	
Urban	0.000	0.008	
Approximate percentage of cashless payment in total payment			
Rural	3	5	0.67
Urban	9	17	0.89

Source: Survey evidences, 2017

Table 2 indicates the change in perception of the respondents (rural and urban) on their banking habits before and after demonetization. A tremendous growth rate (0.56) for opening a banking account has been observed for rural respondents. Among 240 respondents of rural peoples only 82 respondents have smart phone, though this figure is quite high for urban people (232 out of 260 respondents). Total increase in growth rate of availing internet banking account facilities is 0.44, whereas growth rate for availing internet banking account of urban respondents (0.55) is higher than the rural respondents (0.15). Growth rate of monthly withdrawal of cash through ATM for rural people (0.26) is higher than the urban respondents (0.13). Average number of monthly usage of debit or credit card at a point of sale after 2017 for the urban sector's respondent is 3.21 whereas for rural respondents it is only 0.31. Similar results have also been observed for average number of monthly usage of mobile banking, average number of monthly usage of mobile wallet and average number of monthly transaction through UPI. A noticeable growth rate on percentage of cashless payment in total payment has been observed for rural sectors (0.89) after demonetization.

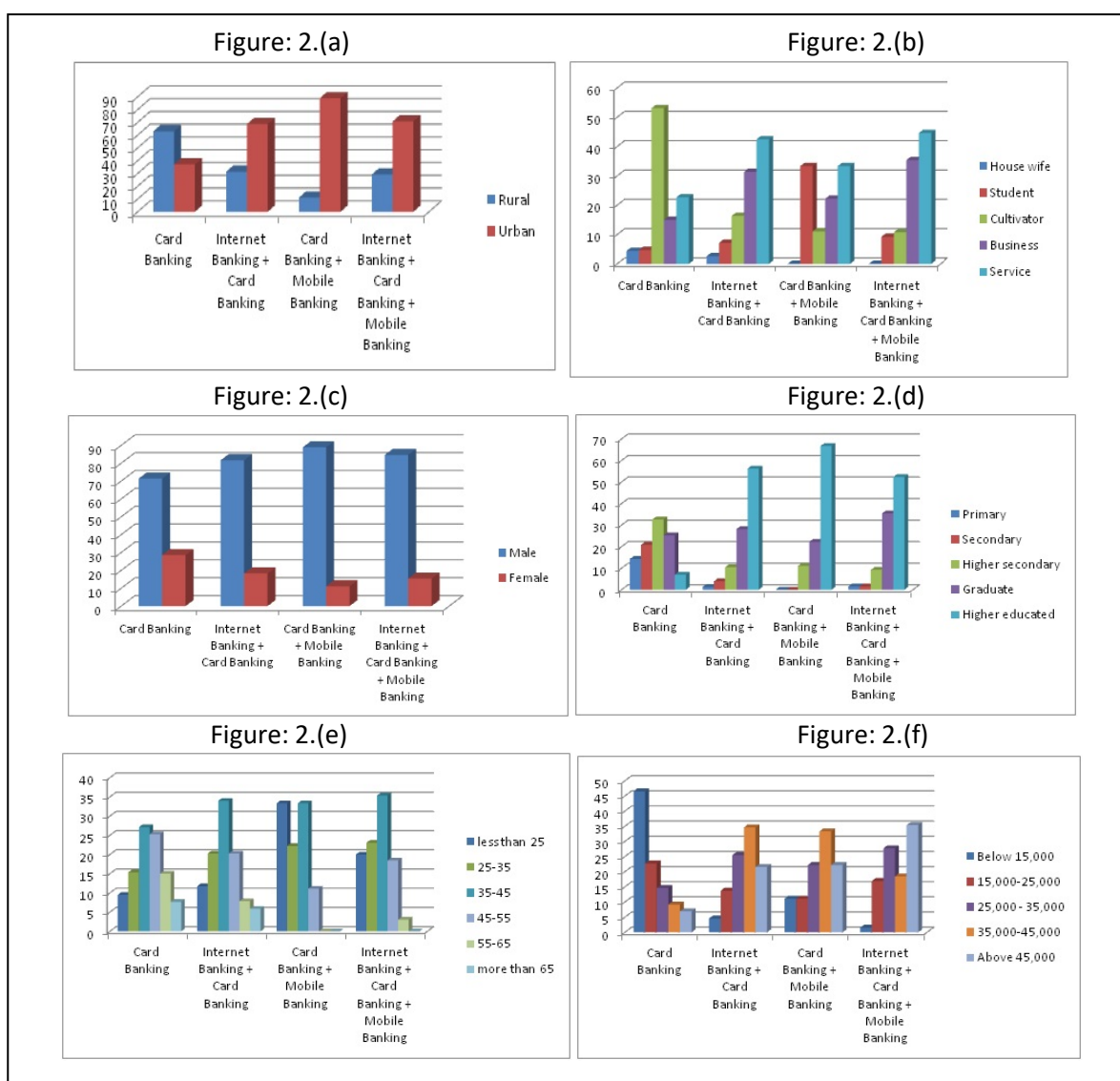
Table 3. Descriptive statistics of demonetization knowledge and percentage of users of different DBS categories on the basis of demographic profile

Descriptive statistics about demonetization knowledge				Percentage of users				
	Mean	Std	Total	Card Banking	Internet Banking + Card Banking	Card Banking + Mobile Banking	Internet Banking + Card Banking + Mobile Banking	Total
Place of living								
Rural	4.67	0.064	240	63.00	31.37	11.11	29.23	48.00
Urban	5.57	0.058	260	37.00	68.63	88.89	70.77	52.00
Occupation								
House wife	4.875	0.301	16	4.40	2.61	0.00	0.00	3.20
Student	4.394	0.162	33	4.76	7.19	33.33	9.23	6.60
Cultivator	4.787	0.072		53.11	16.34	11.11	10.77	
			178					35.60
Business	5.702	0.099	114	15.02	31.37	22.22	35.38	22.80
Service	5.428	0.069	159	22.71	42.48	33.33	44.62	31.80
Gender								
Male	5.342	0.051	383	71.43	81.70	88.89	84.62	76.60
Female	4.646	0.095	117	28.57	18.30	11.11	15.38	23.40
Education								
Primary	3.976	0.072	42	14.29	1.31	0.00	1.54	8.40
Secondary	4.406	0.094	64	20.88	3.92	0.00	1.54	12.80
Higher secondary	5.089	0.086	112	32.60	10.46	11.11	9.23	22.40
Graduate	5.372	0.080	137	25.27	28.10	22.22	35.38	27.40
Higher educated	5.772	0.075	145	6.96	56.21	66.67	52.31	29.00
Age								
less than 25	4.917	0.147	60	9.52	11.76	33.33	20.00	12.00
25-35	5.644	0.097	90	15.38	20.26	22.22	23.08	18.00
35-45	5.099	0.074	152	27.11	33.99	33.33	35.38	30.40
45-55	5.301	0.100	113	25.27	20.26	11.11	18.46	22.60
55-65	4.873	0.149	55	15.02	7.84	0.00	3.08	11.00
more than 65	4.633	0.217	30	7.69	5.88	0.00	0.00	6.00
Income (monthly)								
Below 15,000	4.706	0.080	136	46.52	4.58	11.11	1.54	27.20
15,000-25,000	4.809	0.110	95	22.71	13.73	11.11	16.92	19.00
25,000 - 35,000	5.364	0.098	99	14.65	25.49	22.22	27.69	19.80
35,000-45,000	5.570	0.095	93	9.16	34.64	33.33	18.46	18.60
Above 45,000	5.727	0.109	77	6.96	21.57	22.22	35.38	15.40

Source: Survey evidences, 2017

Table 3 represents the respondent perception about their average awareness or knowledge of demonetization [No knowledge=0, 2= poor knowledge, 3= some knowledge, 4= average knowledge, 5= partial knowledge, 6= complete knowledge, 7= advanced knowledge] and adoption rate of four categories of digital banking services on the basis of their demographic profile. It has been observed that though rural and urban people have a noticeable average awareness (4.67 and 5.57 respectively) about the demonetization process but the percentage of users for all categories of DBS (card, internet and mobile) are very high for the urban sector than rural sector. It has also been observed that rural people are more convenient (percentage of users only card banking facilities 63.00%) to use card banking than the other two categories of DBS. A similar result has also been observed for the house wives. Though they have a noticeable awareness about demonetization process, but they are more habitual to only card banking or card and internet banking. The highest awareness of demonetization on the basis of occupation has been observed for business section (5.702) but use of all types of DBS is highest (44.62) for the service sector's respondent. Though a significant awareness level has been observed for female respondents, but uses of DBS is not that much of encouraging. Adoption rate of DBS and awareness level of demonetization is highest for educated respondents, which is followed by graduate respondents. Though a highest awareness (5.644) has been observed for the age group 25-35 years, but adoption rate of all categories of DBS is highest (30.40) for the age group 35-45 years.

Figure 2. Percentage of DBS users on the basis of (a): Place of living; (b): Occupation; (c): Gender; (d): Education; (e): Age and (f): Income



The income group lying below 15000 indicated highest percentage of users of card banking services than the other categories of DBS, though the highest percentage of users (33.33) of card and mobile banking has been observed for the income group 35000-45000. Figures 2 (a) to (f) clearly depicts the percentage of demographical adoption level of DBS depending upon place of living, occupation, gender, education, age and income level of the respondents.

To test our hypothesis that there exist any statistically significant difference between adoption rate of DBS and different factors such as demonetization knowledge, reliability, transaction efficiency, customer support, service security, ease of use, performance and service content, one way ANOVA test has been considered. In our present work, Shapiro-Wilks test for normality, Levene's F Test for homogeneity indicates a significant result for each of the group variables (not reported). Table 4 represents that adoption level of digital banking service has been dependent on demonetization knowledge ($p=0.000 < 0.05$), Reliability ($p=0.022 < 0.05$), customer support ($p= 0.022 < 0.05$), service security ($p= 0.005 < 0.05$), ease of use ($p=0.000 < 0.05$) and performance ($p =0.021 < 0.05$). But the adoption level is independent on transaction efficiency ($p= 0.398 > 0.05$) and service content ($p =0.059 > 0.05$), which indicates no statistically significant difference has been between adoption level and transaction efficiency as well as adoption level and service content.

Table 4. Results of ANOVA test

ANOVA							
Demonetization knowledge		Sum of Squares	df	Mean Square	F	Sig.	Decision
Demonetization knowledge	Between Groups	65.206	6	10.868	12.152	0.000	Accept null hypothesis i.e. there is a significant effect of demonetization on adoption level of DBS
	Within Groups	440.882	493	.894			
	Total	506.088	499				
Reliability	Between Groups	11.587	4	2.897	2.900	0.022	Accept null hypothesis i.e. there is a significant effect of reliability on adoption level of DBS
	Within Groups	494.501	495	.999			
	Total	506.088	499				
Transaction Efficiency	Between Groups	4.123	4	1.031	1.016	0.398	Reject null hypothesis i.e. there is a no significant effect of transaction efficiency on adoption level of DBS
	Within Groups	501.965	495	1.014			
	Total	506.088	499				
Customer support	Between Groups	14.864	6	2.477	2.486	0.022	Accept null hypothesis i.e. there is a significant effect of customer support on adoption level of DBS
	Within Groups	491.224	493	0.996			
	Total	506.088	499				
Service security	Between Groups	16.792	5	3.358	3.391	0.005	Accept null hypothesis i.e. there is a significant effect of service security on adoption level of DBS
	Within Groups	489.296	494	0.990			
	Total	506.088	499				
Ease of use	Between Groups	26.805	4	6.701	6.921	0.000	Accept null hypothesis i.e. there is a significant effect of ease of use on adoption level of DBS
	Within Groups	479.283	495	.968			
	Total	506.088	499				
Performance	Between Groups	14.979	5	2.996	2.561	0.021	Accept null hypothesis i.e. there is a significant effect of performance on adoption level of DBS
	Within Groups	491.029	494	0.995			
	Total	506.088	499				
Service content	Between Groups	10.746	5	2.149	2.143	0.059	Reject null hypothesis i.e. there is a no significant effect of service content on adoption level of DBS
	Within Groups	495.342	494	1.003			
	Total	506.088	499				

7. Conclusion

The present study reflects that though people have a noticeable awareness about the demonetization process but the level of using of DBS and growth rate of adoption level of DBS is very low among the respondents. Though after demonetization a noticeable increase of availing card banking has been observed for rural respondent but they are not habituated to use other forms of DBS. A similar result has also been observed for the female as well as for house wives. As per our study males are more accustomed with the digital banking services than females. The urban respondents are much more familiar with all categories of DBS than rural respondents for adopting new generation banking services.

Demonetization and adoption of DBS are also not appreciable for the old aged persons. In our field survey a negative impact of demonetization has been observed from their part. It can be concluded from the present work that young generation can easily shift from traditional banking services towards DBS, but old aged persons face many difficulties to adopt internet and mobile banking services. Education level also creates an impact for availing DBS. Though our present work represents that growth rate for availing DBS after demonetization is not a noticeable amount, but the perception of respondents for adoption of DBS indicates that it depends on demonetization knowledge, reliability, customer support, service security, ease of use and performance. Therefore, from our study, it can be recommended that making India as a 'Digital India', bankers and service designers should give more concern not only on the demographic profile of customer, but should also give importance on demonetization knowledge, reliability, customer support, service security, ease of use and performance to introduce new service and to develop their service and service features. Increasing demonetization knowledge by organising campaign in the rural areas may inspire people for adopting DBS. Not only that hand-on training for using DBS, can also create a great impact for availing DBS and moving India towards 'Digital India'.

8. Acknowledgement

One of the authors Dr. Mahasweta Roy (Dutta) thankfully acknowledges the financial support from Indian Council for Social Science Research (ICSSR), New Delhi to carry out this work through ICSSR-Post-Doctoral Fellowship (Grant no: 3-29/2016-17/PDF).

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Cite this article as:

Mahasweta Roy (Dutta), Arindam Das. Impact of demonetization on adoption of digital banking services in India: a case study in rural and suburban area of West Bengal. *Indian Journal of Economics and Development*. Vol 6 (10), October 2018.