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An Empirical Study of Jan Dhan - Aadhaar - Mobile Trinity and Financial Inclusion

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Abstract

In a recent initiative, a new scheme combining Jan Dhan account, Aadhaar Card and mobile banking have been introduced by the government. The philosophy was that Jan Dhan accounts would be opened especially for neglected sections of society. The issue of unique identity proof of all citizens would be taken care of by Aadhaar Card. Mobile Banking would develop infrastructure for payments and withdrawals thereby resolving the problem of last-mile delivery of services (Economic Survey 2015; Srinivas & Kapur, 2018). We undertook a questionnaire-based study to seek perception about the level of inclusion and effectiveness of JAM scheme from 150 respondents in Delhi during July - September 2018. The study indicated that the level of financial inclusion varies widely among these households. Although banking services are available in the vicinity they barely use facilities like passbook, cheque book, debit card, mobile banking etc. With regard to JAM trinity, they are happy about the overall scheme but certain concerns persist. Demographics play a major role since the older generation, educated, working-class and high-income cadre have more positive perception among the entire group. Also, the perceived level of inclusion, the effectiveness of Jan Dhan Yojana, Aadhaar Card and mobile banking are found to be strongly correlated.

Keywords: Aadhaar, Financial Inclusion, JAM, Jan Dhan, Mobile Banking

Introduction

Recently the government introduced a new scheme called JAM trinity which is a cumulative of Jan Dhan account, Aadhaar Card and Mobile banking. The philosophy was that Jan Dhan accounts would be opened especially for neglected sections of society. The issue of unique identity proof of all citizens would be taken care of by Aadhaar Card. Mobile Banking would develop infrastructure for payments and withdrawals thereby resolving the problem of last-mile delivery of services (Economic Survey, 2015; Srinivas & Kapur, 2018; UIDAI, 2010). It was a part of "Minimum Government, Maximum Governance" approach adopted by the Modi government with an intent to ensure greater empowerment. The two pillars were the active role of market participants and the provision of public services to the intended beneficiaries in an effective manner (Nair, 2017). The origin of JAM trinity could be attributed to two major factors i.e. fintech companies and direct benefit transfer scheme. India is experiencing an era of evolution for fintech companies who are presently in the embryonic stage but they have a humungous scope as well as the impact on different aspects of the economy. Studies suggested that there are few fintech companies working in our ecosystem with an investment amount of three billion dollars. They could very well take care of access to basic financial services namely savings, lending, borrowing, payments and remittances to excluded population. JAM trinity would act as an enabler to unfold the potential of fintech companies thereby reaching the goal of financial inclusion in India. JAM was one of the main ingredients of collective application program interfaces (API) called Indiastack which provides a conductive environment for the working of fintech companies in India. The most peculiar thing was that seamless infrastructure for identification and authentication is provided by Aadhaar Card. It has become such a powerful tool than Facebook or Google Id that it motivates merchants to undertake greater number of transactions using Indiastack platform (Ranade, 2017). Secondly, Direct Benefit Transfer was a scheme which intended to provide benefits namely wage

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payments, subsidies etc directly in the bank account via electronic means to the concerned person. The purpose was to minimise delays in payment, identify actual beneficiaries, avoid duplication and fake beneficiaries (Economic Survey, 2016; Srinivas & Kapur, 2018). Electronic means of transfers were encouraged in order to tackle the problems of corruption and leakages in the distribution of wealth to the poor (Kar, 2017). The scheme was implemented in an organised manner starting with 24 centrally sponsored schemes and 43 districts during January 2013 - November 2014 in Phase I. The expansion took place with a coverage of 78 additional districts during Phase II. Moreover popular government payments like MGNREGS wages, LPG subsidy were brought under the sphere of DBT. In total, there are 1182 schemes supervised by 75 ministries and government departments out of which it is applicable to 536 schemes under 65 ministries and government departments. Till December 2016, the government remained successful in bringing 84 schemes across 17 departments and ministries under the system. This involved a massive amount to the tune of Rs 1.57 lakh crores. An interesting fact is that MGNREGS, LPG subsidy and pensions take away a major chunk with 99 percent of the total beneficiaries and 90 percent of the total amount involved in DBT (Economic Survey, 2016; Srinivas and Kapur, 2018). JAM trinity was projected as a game-changer in the implementation of DBT. It provided the groundwork to move towards the provision of cash transfers instead of in-kind transfers (Sinha & Azad, 2018).

In the light of the above information, we undertook a primary study to gauge the perception about level of financial inclusion as well as three components of JAM trinity. The rest of the paper is organized in the following manner: Section II presents the recent literature, Section III discusses the research methodology namely objectives, hypothesis, data and research methods followed in the study. The findings and interpretation are explained in Section IV. Section V concludes the study.

Review of Literature

First of all, the performance of Jan Dhan Yojana was analysed on the basis of several criteria i.e. a number of account opening, proportion of Aadhaar Card linked, the number of zero balance accounts etc. Various studies indicated that there was a sharp rise in the number of accounts opened during the initial phases. The experience showed that the number of zero balance accounts have decelerated over time. It has been successful in meeting the untapped financial needs of the rural population and ensuring the active participation from different segments (Lal et al., 2017; Dutta & Das, 2017; Samant, Singh & Dwivedi, 2017; Meera, Kaleeswaran & Gurunandhini, 2017; Gill & Arora, 2017; Singh, 2017; Ghosh, 2017). A look at the usage pattern of accounts revealed that the banking system and its nuances were greatly accepted by people with the passage of time. The average deposits per day had initially improved in these accounts after which it experienced fluctuations in a range-bound manner (Samant, Singh & Dwivedi, 2017; Roopkumar & Sharma, 2018). A contrary viewpoint was that the balance has fallen dramatically and represented a meagre slice of total deposits during the period of two years i.e. September 2014 - October 2016 (Ghosh, 2017; Srinivas & Kapur, 2018). Various newspaper reports and RTI responses indicated that penny transfers of less than Rs 10 were made by bank officials to avoid the label of "inactive accounts" to them (Yadav & Mazoomdar, 2016; Meera, Kaleeswaran & Gurunandhini, 2017; Samant, Singh & Dwivedi, 2017). Several studies identified the factors affecting ownership and usage of accounts. These include gender, education, lack of awareness, zero balance facility and documentation requirements (Ghosh, 2017; Pillai, 2016; Kunt et al., 2017). A lot of additional benefits was on a platter with the account but the proportion of customers availing the same was what mattered. The insurance and pension plan namely Pradhan Mantri Suraksha Bima Yojana (PMSBY), Pradhan Mantri Jeevan Jyoti Bima Yojana (PMJJBY) and Atal Pension Yojana (APY) remained highly unsuccessful (Gill & Arora, 2017). About 4500 beneficiaries had received payment on account of an insurance claim from banks (Sinha & Azad, 2018). In terms of contribution of different banks, four-fifth of total number of accounts and amount of deposits were held by public sector banks (Lal et al., 2017; Singh, 2017; Meera, Kaleeswaran and Gurunandhini, 2017; Dutta & Das, 2017; Samant, Singh & Dwivedi, 2017; Roopkumar & Sharma, 2018; Sinha & Azad, 2018).

In terms of Aadhaar Card, the foremost reason for launching the project was to ensure the presence of a valid identity especially among neglected sections of society.

This would work as a means to identify the intended beneficiaries (Dass, 2011; Jacobsen, 2012; Bhatia & Bhabha, 2017). The purpose of issuing such identity proofs ranged from lowering the chances of identity theft to ensuring protection at the international borders. Sometimes they were meaningful in events having the involvement of courts and enforcement of legal rights of different parties in a transaction (Gelb & Clark, 2013). In other words, the entire scheme touched four areas of inclusion with the aim of improvising the present structure of social protection. First being personal inclusion. Every resident of India was given a right to obtain a new proof of identity i.e. Aadhaar Card without bearing any cost or the pre-requisite of documentation. The second type is civic inclusion which meant a deed should empower people to take an active part in different programmes run by the government. The third being functional inclusion which implied that Aadhaar infrastructure would act as a platform to fulfil identity requirements of various public and private institutions. In other words, it would only attest the identity of applicants for a variety of uses like education, healthcare, banking, obtaining subsidized food and other social purposes. The last one was entrepreneurial inclusion. It referred to the upliftment of the marginalised sections of society by bringing them under the shades of banking and improvement in literacy rates by admitting greater proportion of children of daily wage earners (Bhatia & Bhabha, 2017). The assessment of the project revealed that it is facing four types of risks. First being technical risk. The biometric information of residents would alter with the passage of time or due to the fact that huge chunk of India's population is indulged in manual labour (Biometric Technology Today 2010). Second was an external risk which can be further segregated into privacy risk and political risk. There were three kinds of information i.e. biometric, identity and personal collection in the making of Aadhaar Card which might be shared with third parties or other agencies without consent (Forbes India, 2013; Economic Times, 2011). To ensure privacy, private parties are no longer allowed to demand Aadhaar number for availing services since Section 57 of the Aadhaar Act has been declared invalid in a recent judgement (The Hindu, 2017, 24 August; NDTV, 2018, 26 September). Another sub-component was a political risk. Since the enrolment and maintenance tasks had been outsourced to different private players, there would be a transfer of information between private contractors and government database in the making of Aadhaar Cards (Dass, 2011, Khera, 2011). The third was project management risk wherein the large geographical coverage and involvement of diverse stakeholders enhance the complexity for such a mission at the ground level. The last was an organisational risk which arises due to deficiency of skilled manpower to process applications of such a massive population (Brindaalakshmi, 2013).

Thirdly, mobile banking is seen as an emerging technology that offers freedom in terms of location and timings for the use which leads to large convenience for masses in India (Laukkanen & Lauronen, 2005). Several research studies documented that the ease with which technology could be used had a positive impact on its adoption. Moreover, people's perception of the utility of new technology had immediate as well as indirect impact on the extent of usage. This was so because perceived usefulness affected their attitude towards use which in turn formed their intention to adopt it. The convenience offered by mobile phones had become a selling point for greater adoption as well as regular use of mobile banking (Riquelme & Rios, 2010; Chawla & Joshi, 2017a). Easy availability of services does not imply their greater usage. In the case of mobile banking, it had been stated that a transaction could been done via mobile phone by providing the details of bank account and IFSC code. Most of the times customers remain unaware about the existence of IFSC or feel uncomfortable in sharing the information to avoid potential misuse (Gupta et al., 2017). According to Financial Services Use and Emerging Digital Pathways report, only a quarter of bank customers maintained their online bank or mobile money account. It was quite painful that less than one percent of them used their accounts at regular intervals and less than 0.5 percent of them kept an active mobile money account (Financial Inclusion Insights 2014). From the viewpoint of inclusive growth, the traditional modes of having a bank branch were found to be expensive and difficult to sustain especially in rural locations. This meant a wider reach of different banking services is possible only if they are provided through advanced means of technology which are quite pocket-friendly. Mobile banking was projected as one of the panaceas for enhancing the levels of inclusion. It could resolve the issue provided customers are willing to use it for variety of purposes ranging from

day-to-day transactions, fund transfer, request for loans to receipt of social welfare benefits (Gupta et al., 2017). Trust and security have assumed a centre stage and act as key drivers affecting the degree of satisfaction related to e-banking (Agarwal et al., 2009). Trust factor remained a bone of contention in mobile banking adoption across different kind of users i.e. technology adoption (TA) leaders, followers and laggards (Chawla & Joshi, 2017b) as well as young students in India (Kumar, Lal & Mane, 2017). This resulted in low usage, reflected through limited m-banking user base i.e. 12 million in India while the same figures stood at 300 million for China (Reserve Bank of India). Lack of security was quoted as the biggest reason for not availing online banking services by more than half of the respondents in Asia (Pasa & Sherman, 2001).

Research Methodology

Objectives

The objectives of the study is to gauge the perception of respondents about the extent of financial inclusion, the effectiveness of Jan Dhan Yojana, Aadhaar Card and mobile banking in the selected households of Rana Pratap Bagh, Delhi. It seeks to identify the demographic characteristics that affect the perception about the level of inclusion, Jan Dhan Yojana, Aadhaar Card, mobile banking and JAM score. It also computes the degree of association between perception about level of inclusion, Jan Dhan Yojana, Aadhaar Card, mobile banking and JAM score.

Hypothesis

The alternate hypothesis are:

HF_{11} - HF_{16}: People are not indifferent about various constructs of financial inclusion.

HJ_{11} - HJ_{17}: People are not indifferent about various constructs of Jan Dhan Yojana.

HA_{11} - HA_{17}: People are not indifferent about various constructs of Aadhaar Card.

HM_{11} - HM_{17}: People are not indifferent about various constructs of mobile banking.

HT_{11} - HT_{16}: People are not indifferent about various constructs of Jan Dhan-Aadhaar–Mobile trinity.

HD_{11} – HD_{135}: There is a difference in the perception about the level of financial inclusion, effectiveness of Jan Dhan Yojana, effectiveness of Aadhar Card, effectiveness of Mobile Banking, effectiveness of JAM trinity across categories of age, income, education etc.

HR_{11}-HR_{110}: There is a relationship between perceived level of financial inclusion, effectiveness of Jan Dhan Yojana, effectiveness of Aadhaar Card, effectiveness of mobile banking and effectiveness of JAM trinity.

Data

A questionnaire has been prepared after studying policy documents on Pradhan Mantri Jan Dhan Yojana, Aadhaar Cards, Mobile banking and JAM scheme so as to collect primary data. It includes three sections. Section I enquires about respondents' profile. Section II focuses on perceived usage of financial products/services and factors impacting demand for inclusion. Section III deals with the effectiveness of Jan Dhan Yojana, Aadhaar Card, mobile banking and overall JAM trinity. The questionnaires were filled physically by going to each and every household. Data collection was bifurcated into two categories which include 75 responses from people belonging to the low class and 75 responses from people belonging to the middle class in the area. In total, the entire sample comprises of 150 households during July - September 2018.

The segregation was not based on monthly family income. The reason being education, occupation and overall standard of living along with income help to form the perception about contemporary issues like financial inclusion and affect the attitude of people. So the categorisation of people into low class and the middle class has been done using several criteria i.e. level of education of respondents/parents, condition of houses, access to basic facilities (like washrooms, cooking gas), state of public infrastructure/amenities. Low class is defined as people who themselves or their parents are almost illiterate or studied from government schools. They have at least four family members living in dilapidated conditions i.e. one-room flat having no electronic item or furniture, common washroom on the entire floor, open sewage system, ill-maintained roads. They have started

using a basic facility like cooking gas and LPG cylinders since the last few years. Conversely, the middle class is defined as people who are well educated and studied in reputed schools. They usually have a family of 4-5 members residing in apartments having at least three rooms, two washrooms, balcony, store, parking space for cars and bikes.

Research Methods

The present study uses statistical methods to study the behaviour of respondents. Let us understand each method in a detailed manner.

Summated Score

First of all, summated scores were calculated to know the perceived level of financial inclusion, the effectiveness of Jan Dhan Yojana, Aadhaar Card, mobile banking and overall JAM scheme. The value of different components has been taken from the questionnaire.

Level of financial inclusion = BankAcc_Regular + Bank branch + ATM + Information + Passbook_Chequebook + Debit card + Mobile_Internet banking + Deposits + Insurance_Mutual fund+ Loans + Awareness_finproducts + Suitability + Min balance + Bank charges + Processing time + Documentation

Jan Dhan Yojana = JDY_features + JDYinsurance_aware + JDYinsurnce_satisfaction + Savings_bankingsector + JDY_Awareness

Aadhaar Card = Aadhaar_easy + Aadhaar_free + Aadhaar_Idproof + Aadhaar_govtscheme + Aadhaar_inclusion

Mobile Banking = MB_regular + MB_agents + MB_investments + MB_inclusion + govtbenefits_updates

JAM scheme = JAM_economiclife + JAM_budgeting + JAM_corruption

Pie Chart

Pie charts are prepared to understand the basic demographic features of respondents namely age, gender, marital status, monthly family income, educational qualifications, occupation, status of vehicle and category of population.

Sign Test

The two-tailed sign test is applied to see whether people's perception about the extent of financial inclusion, effectiveness of Jan Dhan Yojana, effectiveness of Aadhaar Card, the efficiency of mobile banking and Jan Dhan- Aadhaar- Mobile trinity is different from the test value of 3 (means neither agree nor disagree).

Mann Whitney U test and Kruskal Wallis test

"Mann Whitney U test is applied to examine whether there are significant differences in mean between two samples. The same is tested among more than two samples using the Kruskal Wallis test" (Levin & Rubin, 2011). The present study tests whether there are significant differences in the level of financial inclusion, Jan Dhan Yojana, Aadhaar Card, mobile banking and overall JAM across various categories of age, income etc. Moreover, pairwise comparisons are undertaken to identify the samples among which the differences exist.

Correlation

Spearman's rho is computed between the perceived level of financial inclusion, Jan Dhan Yojana, Aadhaar Card, mobile banking and overall JAM.

Findings and Interpretation

The entire study consists of 43 statements and their reliability is tested through Cronbach's alpha which is approximately 0.70 i.e. 0.656. The findings and interpretation are as follows:

Demographic Characteristics of Respondents

The pie charts and frequency tables indicate that almost half of the respondents are middle-aged population i.e. belong to the age group of 30-50 years. About 30% of the respondents are young while one-fourth of them are old and senior citizens. The number of males is approximately equal to the number of females. More than three-fourth of them are married. Further, a greater proportion i.e. around 43% of people have a monthly family income of Rs 50000 and above. Another 30% of them live with low earnings

of upto Rs 25000 and 28% belongs to mediocre range of Rs 25000-50000 per month. The level of education is high with more than half of the people being graduate or postgraduate. This is followed by 35% of people who has studied upto senior secondary and 13% of them is illiterate or has received primary education. Accordingly, most of them were found to be daily workers, doing job or are self-employed. A major chunk of people belong to the category of housewife, retired or unemployed. Around 15% of them are students. The number of family members varies widely with 2-3 members in 11% cases, 4-6 members in 72% of them and more than 6 members in the balance. The number of earning members is not proportionate to the family size. In other words, the average number of dependents are more in any family. There are 2% households without any earning member, 42% households with single earning member, 33% with two earning members, 16% with three earning members and merely 7% with four or more members. It is surprising that more than 50% of them own a car and another 30% of them use scooter/bike for commuting.

Sign Test

The results show that people have got bank accounts which are used at frequent intervals on an average. They strongly agree that branches of different public or private sector banks and ATM facility are in close proximity with their homes or workplace. Further bank staff are well behaved and provide necessary information about products/ services when asked by the customer. However, they barely use different facilities like passbook, chequebook, debit card, mobile banking and internet banking available at a bank and rarely make investments in bank deposits, mutual fund, pensions, insurance schemes offered by the formal financial sector. Like the test statistic for investing in insurance or mutual fund is -11.269 and p is less than 0.05. Moreover, they have hardly borrowed money from the formal institutions in the past as shown by the value of -11.958 with $p < 0.05$. However, people believe that all the specified factors make a significant contribution to the demand for financial inclusion. Minimum balance requirement is the most important factor among them. Others include bank charges, level of awareness about financial products and services, suitability, processing time and documentation asked by banks. One can infer that focus should be placed not only on the supply side of financial inclusion but also on creating demand for the same (Table 1).

The analysis was also done to identify whether significant differences exist in the people's opinion about JAM trinity and the first component is Jan Dhan Yojana. We found that people are satisfied with the scheme that offers nil balance requirement, overdraft facility and Rupay Card to the account holders. It is believed that the scheme has created awareness among the masses and led to greater channelization of resources to the banking sector. But a low level of education and poor services by banks hinder the progress made during the past few years. They are indifferent about accidental and health insurance floated hand-in-hand with the scheme.

The second component is the Aadhaar Card. People have no qualms about the making of Aadhaar Card easily and without any cost. They strongly feel that it has provided a valid identity proof to the residents of India, acted as a better channel for distribution of benefits under various social security schemes and reduced the problem of last-mile delivery of financial services. But the information given for the making of Aadhaar Card is unsafe and there are privacy issues.

The last component being mobile banking. There is a strong belief that mobile banking has acted as a catalyst in attracting people and enhancing the inclusiveness of financial system, especially the banking sector. It is sad to know that mobile banking is used at short intervals by very few people. This is happening even in the presence of good mobile networks and easy availability of service posts to handle any sort of network issues. They are indifferent about receiving social security benefits from the government or its update on phones. However people find lack of safety or lack of awareness as an impediment to the usage of mobile banking. Also they believe that greater convenience through e-banking has perpetuated the impulse buying behaviour of individuals and led to higher spending vis-à-vis cash economy. It has reduced the tendency to save and invest money for future.

In totality, JAM trinity has worked fairly well. We found that people no longer need to run to government departments and banks pleading for their basic rights/ demands. It has brought greater convenience in financial matters, encouraged financial planning and improved the lives of large segment of population. However they

strongly feel that less education or trust on government become a pain point in the implementation of JAM. Also corruption is deep-rooted in India and can't be reduced through any government policy like JAM.

Mann Whitney U Test and Kruskal Wallis Test

The results reveal that there was a significant effect of age on the people's opinion about Jan Dhan Yojana. Older generation aged 50 years or more have a significant favourable opinion about the scheme as compared to young generation aged below 30 years. Similarly, perception about the effectiveness of JAM trinity in Indian scenario varies according to age. There is a strong positive opinion about JAM as a whole among those aged 50 and above as compared to middle-aged people i.e. in the age group of 30-50 years (Table 2(a) and 2(b)). However two characteristics i.e. gender and marital status does not have any effect on the perception about the level of financial inclusion, effectiveness of Jan Dhan Yojana, effectiveness of Aadhaar Card, effectiveness of mobile banking and perception about JAM trinity (Table 3 and 4).

An interesting point is that monthly family income has a robust effect on the perception about extent of financial inclusion and effectiveness of Jan Dhan Yojana. The perceived level of inclusion, as well as optimism about Jan Dhan Yojana, is significantly greater among high-income population i.e. Rs 50000 and above in comparison to those belonging to low-income cadre i.e. upto Rs 25000 (Table 5(a) and 5(b)).

The role of education is noteworthy as it plays a very significant role on the level of inclusiveness, usefulness of Jan Dhan Yojana and JAM as a whole. The level of inclusion increases proportionately with the level of educational qualification. People who have undergone higher education i.e. graduate and above are highly inclusive as compared to those who studied upto primary level or upto senior secondary level. Such people have more favourable opinion about the facilities offered under Jan Dhan Yojana and JAM scheme along with their impact on the economy when compared to less educated people (Table 6(a) and 6(b)).

Further there is strong effect of kind of occupation on the usefulness of Jan Dhan Yojana. There is strong and positive response among those engaged in some business, doing job or are daily workers i.e. working class over young students (Table 7(a) and 7(b)). Even the status of vehicle affects the level of inclusion and experience with Jan Dhan Yojana in a significant manner. As expected those who own four wheeler have better scores in terms of inclusiveness and perception about the aforesaid scheme w.r.t those who do not have any vehicle (Table 8(a) and 8(b)).

Correlation

The Spearman's rho correlation matrix highlights that the level of financial inclusion is positively related with the perceived effectiveness of Jan Dhan Yojana, $r = 0.232$; and mobile banking, $r = 0.237$ (all $ps < .01$). Further Jan Dhan Yojana is significantly correlated with Aadhaar Card, mobile banking and the perception about the entire JAM trinity. The respective coefficients are 0.194, 0.341 and 0.291 (all $ps < .05$). There is robust positive correlation between Aadhaar Card and mobile banking ($r = 0.262$) as well as between Aadhaar Card and JAM trinity ($r = 0.295$). Also there is significant direct relationship between mobile banking and JAM trinity ($r = 0.292$) (Table 9).

Conclusion

A primary study was also done to gather information on perception about the extent of inclusion along with the working of JAM scheme from the residents of Delhi. The data was collected through personal visit from 75 responses each from people belonging to low class and middle class in the area of Rana Pratap Bagh, Delhi. The analysis revealed that respondents use a bank account on frequent basis or are strongly satisfied with the kind of information given by bank staff. No doubt, bank branch and ATM facilities are available in the vicinity but they barely use facilities like passbook, debit card, mobile banking etc. Minimum balance requirements and bank charges are the most important factors that affect the demand for financial inclusion. Accordingly, the level of financial inclusion varies widely among these households. With regards to Jan Dhan Yojana, they are happy about the facilities offered under the scheme and its contribution in raising the extent of inclusion. But there was no awareness and satisfaction about subsidized accidental

and health insurance schemes. They feel that Aadhaar Card can be made easily and is useful as a proof of identity but concerns regarding the violation of right to privacy or transfer of confidential information to third parties remained. As far as mobile banking is concerned, the extent of usage is found to below. Very few people receive any welfare benefits and updates for the same. It does not play any role in enhancing the level of investments and ensuring better risk management. Overall JAM trinity has created a positive impact but lack of education or trust on government became a pain point in its implementation. It remained ineffective in reducing the extent of corruption prevalent in the distribution of social benefits. A look at demographics shows that older generations have a significant favourable opinion about Jan Dhan Yojana and JAM trinity. Similarly educated, working-class and high-income cadre have a positive perception of JAM and its components. There is strong correlation between perceived level of inclusion, effectiveness of Jan Dhan Yojana, Aadhaar Card and mobile banking in most of the cases.

References

Agarwal, R., Rastogi, S., & Mehrotra, A. (2009). Customers' perspectives regarding e-banking in an emerging economy. *Journal of Retailing and Consumer Services*, *16*(5), 340-351.

Bhatia, A., & Bhabha, J. (2017). India's Aadhaar scheme and the promise of inclusive social protection. *Oxford Development Studies*, *45*(1), 64-79.

Biometric Technology Today. (2010). India puts finger prints at core of ID number scheme. *Biometric Technology Today*, *2010*(1), 2-3.

Brindaalakshmi, K. (2013, May 10). Indian Govt. approves` 3436.16 Cr. funds for Aadhaar Project Phase IV. India.

Chawla, D., & Joshi, H. (2017a). High versus low consumer attitude and intention towards adoption of mobile banking in India: An empirical study. *Vision*, *21*(4), 410-424.

Chawla, D., & Joshi, H. (2017b). Consumer perspectives about mobile banking adoption in India – A cluster analysis. *International Journal of Bank Marketing*, *35*(4), 616-636.

Dass, R. (2011, January-March). Unique identification for Indians: A divine dream or a miscalculated heroism? *Vikalpa*, *36*(1), 1-14.

Dutta, T., & Das, A. (2017). *Analyzing data of Pradhan Mantri Jan Dhan Yojana.* Mumbai: Indian Institute of Technology Bombay.

Economic Survey. (2016-17). *Spreading JAM across India's economy*. New Delhi: Ministry of Finance.

Economic Survey. (2015-16). *Wiping every tear from every eye': The JAM Number Trinity Solution*. New Delhi: Ministry of Finance.

Economic Times. (2011, December 10). Standing committee points out multiple faults in UID 'Aadhaar', asks government for fresh legislation. *The Economic Times.*

Economic Times. (2015, January 21). Jan Dhan Yojna makes it to Guinness World Records, 11.5 cr Jan Dhan accounts opened. *The Economic Times.*

Financial Inclusion Insights. (2014). *India: Financial Services Use and Emerging Digital Pathways*. India: Developed with support from Inter Media and the Bill and Melinda Gates Foundation.

Forbes India. (2013, October 5). How Nandan Nilekani took Aadhaar past the tipping point. Forbes India.

Gelb, A., & Clark, J. (2013). Identification for development: The biometrics revolution. Center for Global Development, Working Paper 315.

Ghosh, S. (2017). Financial inclusion, biometric identification and mobile: Unlocking the JAM trinity. *International Journal of Development Issues, 16*(2), 190-213.

Gill, H. S., & Arora, S. (2017). An empirical analysis of bank customers regarding their preferences towards latest government schemes under NDA government. *IPE Journal of Management*, *7*(1), 52-64.

Gupta, S., Yun, H., Xu, H., & Kim, H.-W. (2017). An exploratory study on mobile banking adoption in Indian metropolitan and urban areas: A scenario-based experiment. *Information Technology for Development, 23*(1), 127-152.

Jacobsen, E. K. (2012). Unique identification: Inclusion and surveillance in the Indian biometric assemblage. *Security Dialogue*, *43*(5), 457-474.

Kar, S. (2017, October). Austerity welfare: Social security in the era of finance. *Anthropology Today*, *33*(5), 12-15.

Khera, R. (2011). The UID project and welfare schemes. *Economic and Political Weekly*, *46*(9), 38-43.

Kumar, V. V., Lall, A., & Mane, T. (2017). Extending the TAM model: Intention of management students to

use mobile banking: Evidence from India. *Global Business Review*, *18*(1), 238-249.

Asli, D.-K., Klapper, L., Ansar, S., & Jagati, A. (2017). *Making it easier to apply for a bank account: A study of the Indian market.* World Bank Group.

Lal, K. (2017). Role of Pradhan Mantri Jan Dhan Yojana towards financial inclusion. *Pezzottaite Journals*, *6*(1), 2579-2584.

Laukkanen, T., & Lauronen, J. (2005). Consumer value creation in mobile banking services. *International Journal of Mobile Communications*, *3*(4), 325-328.

Levin, R. I., & Rubin, D. S. (2011). *Statistics for management* (7th ed.). India: Pearson Prentice Hall.

Meera, M. R., Kaleeswaran, P., & Gurunandhini, R. (2017). Financial Inclusion through Pradhan Mantri Jan-Dhan Yojana. *Asian Journal of Managerial Science*, *6*(1), 10-14.

Nair, M. (2017, February). Can Modi make the elephant dance? Asia Policy Brief.

NDTV. (2018, September 26). Highlights: Aadhaar Saved Centre Rs. 90,000 Crore, Says Arun Jaitley. NDTV.

Pasa, M., & Sherman, M. (2001). Selling internet banking to Asians. *McKinsey Quarterly, 2*, 9-11.

Pillai, T. J. (2016). Financial inclusion and Pradhan Mantri Jan Dhan Yojana: An empirical study conducted in the villages of Mulshi Taluka in Pune District. *Indian Journal of Science and Technology*, *9*(45), 1-6.

Ranade, A. (2017, March 25). Role of 'Fintech' in financial inclusion and new business models. *Economic & Political Weekly, 12,* 125-128.

Riquelme, H., & Rios, R. (2010). The moderating effect of gender in the adoption of mobile banking. *International Journal of Bank Marketing*, *28*(5), 328-341.

RoopKumar, N. K., & Sharma, A. S. (2018). Empirical study of Jan Dhan Yojana and Jan Suraksha schemes. *Bimaquest.*

Samant, P., Singh, A. B., & Dwivedi, R. (2017). Jam trinity: Transforming rural landscape through financial inclusion. *Journal of Arts, Science & Commerce*, *8*(4(4)), 42-52.

Singh, P. (2017). Positive step towards inclusive growth and financial inclusion: Pradhan Mantri Jan Dhan Yojna (PMJDY). *International Journal of Applied Research, 3*(1), 668-671.

Sinha, D., & Azad, R. (2018, March 31). Can Jan Dhan Yojana achieve financial inclusion? *Economic & Political Weekly*, *13,* 165-172.

Srinivas, V., & Kapur, A. (2018). Direct Benefit Transfer (DBT), Jan Dhan, Aadhaar and Mobile (JAM) GOI, 2017-18. *Accountability Initiative, Centre for Policy Research, 9*(6), 1-8.

The Hindu. (2017, August 24). Aadhaar and the right to privacy. *The Hindu.*

UIDAI. (2010). *Envisioning a Role for Aadhaar in the Public Distribution System*. Unique Identification Authority of India, Planning Commission, Government of India.

Yadav, S., & Mazoomdar, J. (2016, September 13). The one rupee trick: How banks cut their zero balance Jan Dhan accounts. *Indian Express.*

Appendix

A.1 Sign Test

Table 1: Sign Test – Hypothesis Test Summary

Null Hypothesis	*Z Value*	*Sig.*
Perception About the Level of Financial Inclusion		
H_{F01}: People are indifferent about having a bank account and their use on regular basis.	9.156689**	.000
H_{F02}: People are indifferent about the presence of bank branch nearby the place of residence or work.	12.0025**	.000
H_{F03}: People are indifferent about the presence of ATM facility available nearby the place of residence or work.	11.63309**	.000
H_{F04}: People are indifferent about information on financial products like mobile banking, insurance, pension plan etc. provided by banks.	8.193114**	.000
H_{F05}: People are indifferent about use of passbook or cheque book offered by banks.	-3.466163**	.001
H_{F06}: People are indifferent about use of debit card or credit card offered by banks.	-2.282177*	.022
H_{F07}: People are indifferent about use of mobile banking or internet banking offered by banks.	-5.713173**	.000
H_{F08}: People are indifferent about investment in deposit schemes like fixed deposit, recurring deposit etc. offered by banks.	-11.45327**	.000
H_{F09}: People are indifferent about investment in insurance schemes, mutual fund or pension plans offered by banks.	-11.26977**	.000
H_{F010}: People are indifferent about borrowing money in the form of loans or overdraft from the banks.	- 11.9585**	.000
H_{F011}: People are indifferent about effect of awareness about financial products/services on the demand for financial inclusion.	9.084882**	.000
H_{F012}: People are indifferent about effect of suitability of financial products/services on the demand for financial inclusion.	9.325048**	.000
H_{F013}: People are indifferent about effect of minimum balance requirement on the demand for financial inclusion.	9.751364**	.000
H_{F014}: People are indifferent about effect of bank charges on the demand for financial inclusion.	9.459161**	.000
H_{F015}: People are indifferent about effect of time taken by banks to process an application on the demand for financial inclusion.	8.724091*	.000
H_{F016}: People are indifferent about effect of documentation required by banks on the demand for financial inclusion.	6.985007*	.000
Jan Dhan Yojana		
H_{J01}: People are indifferent about nil balance requirement, Rupay card and overdraft upto Rs 5000 offered to Jan Dhan accounts.	5.617574*	.000
H_{J02}: People are indifferent about awareness of subsidized accidental and health insurance offered to Jan Dhan accounts.	0.201008	.841
H_{J03}: People are indifferent about the satisfaction with the subsidized accidental and health insurance scheme.	-1.5	.134
H_{J04}: People are indifferent about channelization of savings to banking sector due to Jan Dhan Yojana.	8.531052**	.000
H_{J05}: People are indifferent about greater awareness about financial products/ services due to Jan Dhan Yojana.	5.778521**	.000
H_{J06}: People are indifferent about the lack of education as a problem in the implementation of Jan Dhan Yojana.	-10.15582**#	.000
H_{J07}: People are indifferent about poor bank service as a problem in the implementation of Jan Dhan Yojana.	-8.351647**#	.000

Null Hypothesis	Z Value	Sig.
Aadhaar Card		
H_{A01}: People are indifferent about easy process of making Aadhaar Card.	12.0025**	.000
H_{A02}: People are indifferent about cost-free process of making Aadhaar Card.	11.96079**	.000
H_{A03}: People are indifferent about use of Aadhaar Card as a proof of identity.	11.75453**	.000
H_{A04}: People are indifferent about effective implementation of various government schemes due to Aadhaar Card.	5.008792**	.000
H_{A05}: People are indifferent about greater inclusion of the people in the financial system due to Aadhaar Card.	7.333588**	.000
H_{A06}: People are indifferent about violation of the right to privacy/life due to Aadhaar Card.	-5.545449**#	.000
H_{A07}: People are indifferent about transfer of personal information given for Aadhaar Card to other government departments and private players.	-5.309369**#	.000
Mobile Banking		
H_{M01}: People are indifferent about use of mobile banking for financial transactions on regular basis.	-3.377622**	.001
H_{M02}: People are indifferent about presence of agents/service posts in the nearby location to handle mobile phone users.	7.673443**	.000
H_{M03}: People are indifferent about better investments and risk management due to mobile banking.	-2.5*	.012
H_{M04}: People are indifferent about greater inclusion of the people in the financial system due to mobile banking.	5.707742**	.000
H_{M05}: People are indifferent about safety of mobile banking.	-5.000961**#	.000
H_{M06}: People are indifferent about lack of awareness as a constraint in the use of mobile banking.	-8.983645**#	.000
H_{M07}: People are indifferent about receiving government's social security scheme benefits in the bank account.	0	1.000
H_{M08}: People are indifferent about receiving updates for receipt of subsidies and fund transfer on mobile phone.	-0.505291	.613
Jan Dhan - Aadhaar Card - Mobile Trinity		
H_{T01}: People are indifferent about ease of doing business and improved economic lives due to JAM trinity.	5.272727**	.000
H_{T02}: People are indifferent about better financial planning/budgeting due to JAM trinity.	7.646539**	.000
H_{T03}: People are indifferent about lower corruption in the distribution of social security benefits due to JAM trinity.	-4.476023**	.000
H_{T04}: People are indifferent about lack of education as a barrier in successful implementation of JAM policy.	-9.405979**#	.000
H_{T05}: People are indifferent about lack of trust on government as a barrier in successful implementation of JAM policy.	- 3.43536**#	.001

 # The codes have been reversed. Negative value represents agreement while positive value shows disagreement.

***, * means significant at 1% and 5% respectively*

Mann Whitney U Test and Kruskal Wallis Test

Table 2(A): Hypothesis Testing Across Categories of Age

	Null Hypothesis	Test	Sig.	Decision
1	The distribution of FI is the same across categories of Age .	Independent-Samples Kruskal-Wallis Test	.722	Retain the null hypothesis.
2	The distribution of JDY is the same across categories of Age .	Independent-Samples Kruskal-Wallis Test	.023	Reject the null hypothesis.
3	The distribution of Aadhar is the same across categories of Age .	Independent-Samples Kruskal-Wallis Test	.061	Retain the null hypothesis.
4	The distribution of Mobile is the same across categories of Age .	Independent-Samples Kruskal-Wallis Test	.109	Retain the null hypothesis.
5	The distribution of JAMscore is the same across categories of Age .	Independent-Samples Kruskal-Wallis Test	.008	Reject the null hypothesis.

Asymptotic significances are displayed. The significance level is .05.

Table 2(B): Pairwais Comparison Across Categories of Age - JDY and JAM Score

Sample1-Sample2	Test Statistic	Std. Error	Std. Test Statistic	Sig.	Adj.Sig.
30-50Years-Below30Years	15.293	8.225	1.859	.063	.189
30-50Years-50andaboveyears	-26.194	8.720	-3.004	.003	.008
Below30Years-50andaboveyears	-10.901	9.387	-1.161	.246	.737

Sample1-Sample2	Test Statistic	Std. Error	Std. Test Statistic	Sig.	Adj.Sig.
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30-50Years-50andaboveyears	-26.194	8.720	-3.004	.003	.008
Below30Years-50andaboveyears	-10.901	9.387	-1.161	.246	.737

Each row tests the null hypothesis that the Sample 1 and Sample 2 distributions are the same.
Asymptotic significances (2-sided tests) are displayed. The significance level is .05.

Table 3: HYpothesis Testing Across Categories of Gender

	Null Hypothesis	Test	Sig.	Decision
1	The distribution of FI is the same across categories of Gender.	Independent-Samples Mann-Whitney U Test	.354	Retain the null hypothesis.
2	The distribution of JDY is the same across categories of Gender.	Independent-Samples Mann-Whitney U Test	.099	Retain the null hypothesis.
3	The distribution of Aadhar is the same across categories of Gender.	Independent-Samples Mann-Whitney U Test	.464	Retain the null hypothesis.
4	The distribution of Mobile is the same across categories of Gender.	Independent-Samples Mann-Whitney U Test	.079	Retain the null hypothesis.
5	The distribution of JAMscore is the same across categories of Gender.	Independent-Samples Mann-Whitney U Test	.781	Retain the null hypothesis.

Asymptotic significances are displayed. The significance level is .05.

Table 4: Hypothesis Testing Acoss Categories of Marital Status

	Null Hypothesis	Test	Sig.	Decision
1	The distribution of FI is the same across categories of Marital Status.	Independent-Samples Mann-Whitney U Test	.677	Retain the null hypothesis.
2	The distribution of JDY is the same across categories of Marital Status.	Independent-Samples Mann-Whitney U Test	.092	Retain the null hypothesis.
3	The distribution of Aadhar is the same across categories of Marital Status.	Independent-Samples Mann-Whitney U Test	.220	Retain the null hypothesis.
4	The distribution of Mobile is the same across categories of Marital Status.	Independent-Samples Mann-Whitney U Test	.257	Retain the null hypothesis.
5	The distribution of JAMscore is the same across categories of Marital Status.	Independent-Samples Mann-Whitney U Test	.565	Retain the null hypothesis.

Asymptotic significances are displayed. The significance level is .05.

Table 5(A): Hypothesis Testing Across Categories of Income

	Null Hypothesis	Test	Sig.	Decision
1	The distribution of FI is the same across categories of Income.	Independent-Samples Kruskal-Wallis Test	.034	Reject the null hypothesis.
2	The distribution of JDY is the same across categories of Income.	Independent-Samples Kruskal-Wallis Test	.001	Reject the null hypothesis.
3	The distribution of Aadhar is the same across categories of Income.	Independent-Samples Kruskal-Wallis Test	.205	Retain the null hypothesis.
4	The distribution of Mobile is the same across categories of Income.	Independent-Samples Kruskal-Wallis Test	.188	Retain the null hypothesis.
5	The distribution of JAMscore is the same across categories of Income.	Independent-Samples Kruskal-Wallis Test	.146	Retain the null hypothesis.

Table 5(B): Pairwise Comparisons Across Categories of Income - FI and JDY

Sample1-Sample2	Test Statistic	Std. Error	Std. Test Statistic	Sig.	Adj.Sig.
UptoRs25000-Rs25001-50000	-13.409	9.350	-1.434	.152	.455
UptoRs25000-Rs50000andabove	-22.042	8.488	-2.597	.009	.028
Rs25001-50000-Rs50000andabove	-8.633	8.607	-1.003	.316	.948

Sample1-Sample2	Test Statistic	Std. Error	Std. Test Statistic	Sig.	Adj.Sig.
UptoRs25000-Rs25001-50000	-17.885	9.310	-1.921	.055	.164
UptoRs25000-Rs50000andabove	-32.022	8.452	-3.789	.000	.000
Rs25001-50000-Rs50000andabove	-14.137	8.570	-1.650	.099	.297

Each row tests the null hypothesis that the Sample 1 and Sample 2 distributions are the same.
Asymptotic significances (2-sided tests) are displayed. The significance level is .05.

Table 6(a): Hypothesis Testing Across Categories of Education

	Null Hypothesis	Test	Sig.	Decision
1	The distribution of FI is the same across categories of Education .	Independent-Samples Kruskal-Wallis Test	.003	Reject the null hypothesis.
2	The distribution of JDY is the same across categories of Education .	Independent-Samples Kruskal-Wallis Test	.009	Reject the null hypothesis.
3	The distribution of Aadhar is the same across categories of Education .	Independent-Samples Kruskal-Wallis Test	.318	Retain the null hypothesis.
4	The distribution of Mobile is the same across categories of Education .	Independent-Samples Kruskal-Wallis Test	.117	Retain the null hypothesis.
5	The distribution of JAMscore is the same across categories of Education .	Independent-Samples Kruskal-Wallis Test	.020	Reject the null hypothesis.

Asymptotic significances are displayed. The significance level is .05.

Table 6(B): Pairwise Comparison Across Categories of Education - FI, JDY and JAM Score

Sample1-Sample2	Test Statistic	Std. Error	Std. Test Statistic	Sig.	Adj.Sig.
UptoPrimary-UptoSeniorSecondary	-13.537	11.619	-1.165	.244	.732
UptoPrimary-Graduationandabove	-32.312	11.075	-2.918	.004	.011
UptoSeniorSecondary-Graduationandabove	-18.774	7.740	-2.426	.015	.046

Sample1-Sample2	Test Statistic	Std. Error	Std. Test Statistic	Sig.	Adj.Sig.
UptoPrimary-UptoSeniorSecondary	-17.872	11.569	-1.545	.122	.367
UptoPrimary-Graduationandabove	-31.957	11.027	-2.898	.004	.011
UptoSeniorSecondary-Graduationandabove	-14.084	7.707	-1.828	.068	.203

Table 6(B): Pairwise Comparison Across Categories of Education - FI, JDY and JAM Score (Cont...)

Sample1-Sample2	Test Statistic	Std. Error	Std. Test Statistic	Sig.	Adj.Sig.
UptoPrimary-UptoSeniorSecondary	-26.475	11.480	-2.306	.021	.063
UptoPrimary-Graduationandabove	-30.542	10.942	-2.791	.005	.016
UptoSeniorSecondary-Graduationandabove	-4.067	7.647	-.532	.595	1.000

Each row tests the null hypothesis that the Sample 1 and Sample 2 distributions are the same.
Asymptotic significances (2-sided tests) are displayed. The significance level is .05.

Table 7(A): Hypothesis Testing Across Categories of Occupation

	Null Hypothesis	Test	Sig.	Decision
1	The distribution of FI is the same across categories of Occupation.	Independent-Samples Kruskal-Wallis Test	.285	Retain the null hypothesis.
2	The distribution of JDY is the same across categories of Occupation.	Independent-Samples Kruskal-Wallis Test	.035	Reject the null hypothesis.
3	The distribution of Aadhar is the same across categories of Occupation.	Independent-Samples Kruskal-Wallis Test	.852	Retain the null hypothesis.
4	The distribution of Mobile is the same across categories of Occupation.	Independent-Samples Kruskal-Wallis Test	.764	Retain the null hypothesis.
5	The distribution of JAMscore is the same across categories of Occupation.	Independent-Samples Kruskal-Wallis Test	.885	Retain the null hypothesis.

Asymptotic significances are displayed. The significance level is .05.

Table 7(B): Pairwise Comparison Across Categories of Occupation - JDY

Sample1-Sample2	Test Statistic	Std. Error	Std. Test Statistic	Sig.	Adj.Sig.
Student-Housewife/Retired/Unemployed	-23.299	10.717	-2.174	.030	.089
Student-Job/Dailyworker/Selfemployed	-26.405	10.337	-2.554	.011	.032
Housewife/Retired/Unemployed-Job/Dailyworker/Selfemployed	3.106	7.729	.402	.688	1.000

Each row tests the null hypothesis that the Sample 1 and Sample 2 distributions are the same.
Asymptotic significances (2-sided tests) are displayed. The significance level is .05.

Table 8(a): Hypothesis Testing Across Categories of Vehicle

	Null Hypothesis	Test	Sig.	Decision
1	The distribution of FI is the same across categories of Vehicle .	Independent-Samples Kruskal-Wallis Test	.008	Reject the null hypothesis.
2	The distribution of JDY is the same across categories of Vehicle .	Independent-Samples Kruskal-Wallis Test	.023	Reject the null hypothesis.
3	The distribution of Aadhar is the same across categories of Vehicle	Independent-Samples Kruskal-Wallis Test	.608	Retain the null hypothesis.
4	The distribution of Mobile is the same across categories of Vehicle	Independent-Samples Kruskal-Wallis Test	.574	Retain the null hypothesis.
5	The distribution of JAMscore is the same across categories of Vehicle	Independent-Samples Kruskal-Wallis Test	.344	Retain the null hypothesis.

Asymptotic significances are displayed. The significance level is .05.

Table 8(b): Pairwise Comparison across categories of Vehicle - FI and JDY

Sample1-Sample2	Test Statistic	Std. Error	Std. Test Statistic	Sig.	Adj.Sig.
None-Twowheeler	-15.579	10.596	-1.470	.141	.424
None-Fourwheeler	-29.016	9.662	-3.003	.003	.008
Twowheeler-Fourwheeler	-13.437	8.153	-1.648	.099	.298

Sample1-Sample2	Test Statistic	Std. Error	Std. Test Statistic	Sig.	Adj.Sig.
None-Twowheeler	-4.197	10.551	-.398	.691	1.000
None-Fourwheeler	-21.748	9.621	-2.261	.024	.071
Twowheeler-Fourwheeler	-17.552	8.118	-2.162	.031	.092

Each row tests the null hypothesis that the Sample 1 and Sample 2 distributions are the same.
Asymptotic significances (2-sided tests) are displayed. The significance level is .05.

Correlation

Table 9: Correlation Analysis

Particulars			*FI*	*JDY*	*Aadhaar*	*Mobile Banking*	*JAM Score*
Spearman's rho	FI	Correlation Coefficient	1.000				
		Sig. (2-tailed)	.				
		N	150				
	JDY	Correlation Coefficient	.232**	1.000			
		Sig. (2-tailed)	.004	.			
		N	150	150			
	Aadhaar	Correlation Coefficient	-.015	.194*	1.000		
		Sig. (2-tailed)	.853	.018	.		
		N	150	150	150		
	Mobile Banking	Correlation Coefficient	.237**	.341**	.262**	1.000	
		Sig. (2-tailed)	.003	.000	.001	.	
		N	150	150	150	150	
	JAM Score	Correlation Coefficient	.021	.291**	.295**	.292**	1.000
		Sig. (2-tailed)	.798	.000	.000	.000	.
		N	150	150	150	150	150

***, * means significant at 1% and 5% respectively*