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# A Study on impact of digital India financial inclusion programmes on economic wellbeing in villages

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**ABSTRACT**

India is predominantly a rural country with almost 66% of workforce in rural areas andeconomical share of 46.9% of the total economy. Over the last three decades there has been sharp decline in rural economy. Among many efforts to boost rural economy, financial inclusion is an important step pushed by Indian government as the rural areas lack knowledge and access to various financial instruments. From 2014, government has started launching various financial inclusion programmes to bring majority of Indian rural population into formal financial sector. From year 2014 to 2017 more than 330 million people were brought into formal financial sector with Pradhan Mantri Jan-Dhan Yojana (PMJY) scheme. Financial inclusion push is accelerated through various schemes like Digital India, Direct benefit transfer, Rupay, UPI payments etc. Jan Dhan–Aadhaar–Mobile (JAM) trinity has created a positive impact on the banking sector in the country. But the influence of these schemes on the economic well being of rural citizens is not a widely explored area. This work studies the impact of various financial inclusion schemes on economic wellbeing of rural citizens. The study proposes a new economic satisfaction scale to measure the effectiveness of financial inclusion on the economic well being in rural villages. This scale is validated and reliability analysis of it is conducted through statistical tests. The study is conducted using a structured questionnaire response from 10 rural areas of Karnataka. Through the questionnaire responses, correlation between the various financial inclusion programmes and its economic impact on rural livelihood are analysed.

**Keywords**
Financial inclusion, Digital India, PMJY, JAM, Villages

## Introduction

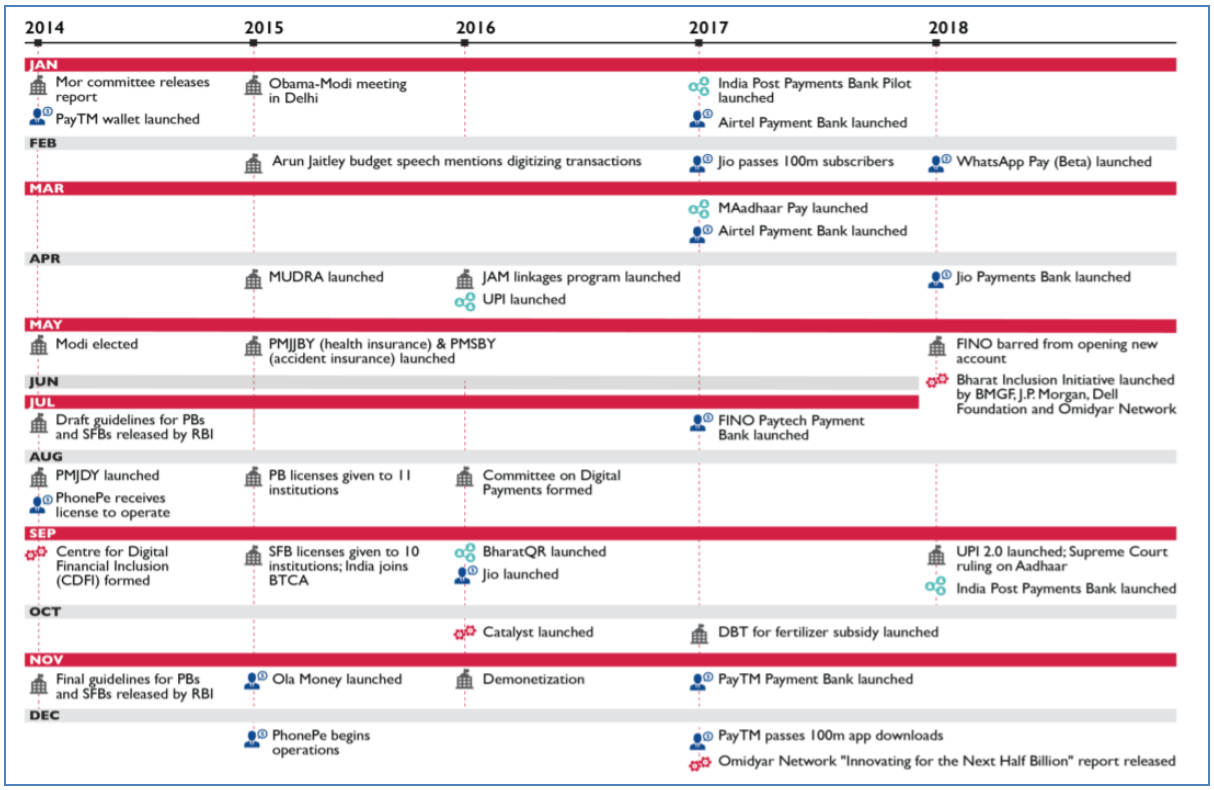
According to World Bank (2019) estimates, 66% of India population live in villages. The percentage of India's urban population increased from 12.18% in 2001 to 31.8% in 2011 (Indian census 2011). An increase of over 50% in urban population is attributed due to rural-urban migration and re-classification of rural settlements into urban (Pradhan 2013). The migration from rural to urban areas in search of better economic opportunities is putting severe pressure on urban amenities and forcing a large number of low wage migrants from rural areas to live in unhygienic and deprived conditions.

Thus, to check unplanned migration from rural to urban areas and to improve socio economic conditions of vast majority of population in the country, there is a need to make rural economy stronger and create employment opportunities in rural economic activities.

Financial inclusion is the sustainable provision of affordable financial services that bring the poor into the formal economy (United Nations 2016). With greater financial inclusion, individuals who were previously financially excluded will be able to invest in education, save and launch businesses, and this contributes to poverty reduction and economic growth (Beck et al., 2007; Bruhn & Love, 2014). Financial inclusion also enables rural households to handle income shocks over unforeseen emergencies such as illness or loss of employment (Collins, Morduch, Rutherford, & Ruthven, 2009).

Recognizing access to financial services as an important aspect of rural development and overcome the rural economic decline, Indian government has embarked on most ambitious financial inclusion initiatives under the flagship scheme named Digital India. Various initiatives under Digital India, like easy banking facilities for all, simplification of procedures relating to financial instruments like Permanent Account Number (PAN), unique identification process of Aadhaar, simplification of tax procedures through the goods and services tax (GST), etc, have contributed significantly to the efforts of financial

inclusion in the country. The Pradhan Mantri Jan-Dhan Yojana (shortened to PMJDY), a drive to provide all Indians with a bank account, was the cornerstone of this policy agenda. At the same time, the financial inclusion push intersected with two other major policies of the Indian government: Digital India (driven by the rapid expansion in mobile phone and internet coverage) and Aadhaar (the provision of a unique digital ID for every citizen). The troika of PMJDY, Aadhaar and Mobile, summarizing the drive to digitally-led financial inclusion, was called the J-A-M trinity. The key events in the financial inclusion activities by Government of India are summarized in Figure 1.




Jan Dhan–Aadhaar–Mobile (JAM) trinity has a positive impact on the banking sector and financial inclusion in the country. Jan Dhan accounts are linked to Aadhaar numbers of the individuals, which in turn is linked to the Direct Benefit Transfer (DBT) scheme. With the launch of JAM services, there has been a significant improvement in terms of targeted and accurate payments. The launch of Digital India has brought about a change in terms of payment facilities available to the stakeholders, especially from the underprivileged sections. KCC, general credit cards (GCC), and mobile banking facilities have been encouraging the poor to participate in the digital ecosystem. With the strengthening of the Unified Payment Interface (UPI) by RBI, digital payments have been made secure, compared to the past.

Now after more than 7 years of operation of various JAM schemes, a study is needed on how these schemes have transformed into rural economic growth. Correlation between the financial inclusion schemes and the rural economic growth are not yet explored. The challenges in the current Digital India financial inclusion policies must be identified and measures to overcome these challenges must be proposed. This work addresses this problem of analysing the impact of financial inclusion mainly the JAM trinity services on the rural economy. Following are the objectives of this work

- To identify a new economic satisfaction scale measuring the effectiveness of JAM trinity services
- To test the reliability and validity of the scale on different rural population in India

- To study the impact of various JAM schemes on rural economic livelihood.

## 2. Survey

A survey is conducted on existing works mainly to study the methods used in it for measuring the effectiveness of financial inclusion programmes.

Prasad et al(2018) made a study on digital financial literacy among the households of Udaipur city on various JAM schemes. The awareness about various digital platforms and their frequency of use is taken as digital financial literacy. The study further aims to diagnose the impact of personal characteristics on digital financial literacy. The sample of the study is taken from Udaipur city of Rajasthan state of India. A sample of 268 households was selected randomly. A well-structured questionnaire was used to survey and generate digital financial literacy data. The study identified the lack of digital literary and the need for wave of awareness campaign on JAM schemes. The frequency of use method is very limited considering the various schemes in JAM.

Singhania et al(2018) explored the adoption and perceptions of the urban Indian consumers, in the context of digitized financial services. The study measured the impact of various JAM digital schemes in terms of acceptability, usage, beliefs, deterrents and incentive patterns among the Indians. The study is conducted in urban context and cannot be directly applied to rural areas considering the technological constraints in rural areas.

Niranjan et al (2017) analyzed the barriers to digital financial inclusion. The study was conducted across auto rickshaw drivers in Viman nage,pune. The study identified the different hurdles in digital financial inclusion and viability of digital cash transactions. The study was conducted by comparing the digital and cash transaction volume, which is not suitable for measuring effectiveness of JAM schemes in villages.

Wang et al (2020) studied the effects on digital financial inclusion on farmer's vulnerability to poverty in China. Authors proposed a Asset-Based Vulnerability model to measure the vulnerability. The study found that use of digital financial services has positive effects on reduction in their vulnerability. The authors developed a vulnerability model considering various macro and micro economic indicator, but this model cannot be used for Indian rural areas, as most of parameters are not available for Indian rural areas.

Hove et al (2019) used a novel, three-step probit analysis to measure the impact of financial inclusion provided by mobile financial service – M-PESA. The study found that M-MESA has increased the money circulation in Kenya. This study is based on measurement of digital transaction volumes, which is limited for the analysing JAM services.

Fu et al (2018) proposed a model with instrumental variables to study the heterogeneity of digital finance on different types of rural formal financial needs. The study found that development of digital finance reduces the level of productive rural formal credit demand. The demand for rural consumptive formal credit has increased with development of digital finance, especially for groups with higher education levels and online shopping habits, reflecting the multidimensional effects of digital finance such as improving transaction efficiency, and boosting consumption. In India rural area, credit system is on multiple channels and integrating all channel results and using it for studying the effectiveness of JAM is difficult.

Omar et al (2020) studied the impact of financial inclusion on reducing poverty and income inequality, and the determinants and conditional effects thereof in 116 developing countries. Authors constructed a novel index of financial inclusion using a broad set of financial sector outreach indicators, finding that per capita income, ratio of internet users, age dependency ratio, inflation, and income inequality significantly influence the level of financial inclusion in developing countries. The study inferred that financial inclusion significantly reduces poverty rates and income inequality in developing countries. The study is based on macroeconomic indicators and not suitable for Indian rural conditions.

Sarma et al (2008) identified the factors to measure the impact of financial inclusion. Levels of human development and financial inclusion in a country move closely with each other, although a few exceptions exist. Among socio-economic factors, as expected, income is positively associated with the level of financial inclusion. Going beyond income, inequality, literacy and urbanisation are other important factors. Further, physical infrastructure for connectivity and information are also significantly associated with financial inclusion. Among the banking sector variables, NPA and CAR are negatively associated with financial inclusion. Government ownership of banks is not significantly associated with financial inclusion while foreign ownership is found to be negatively associated. Interest rate does not seem to be significantly associated with financial inclusion. This work measures the financial inclusion impact in terms of macroeconomic indicators.

Sarma et al (2012) proposed an index of financial inclusion (IFI). The proposed IFI captures information on various dimensions of financial inclusion in a single number lying between 0 and 1, where 0 denotes complete financial exclusion and 1 indicates complete financial inclusion in an economy. The proposed index is easy to compute and is comparable across countries and over time. It also satisfies some important mathematical properties. Many financial dimensions discussed in this work, cannot be collected in Indian rural scenario.

Park et al (2018) proposed a new index of financial inclusion for 151 economies using principal component analysis to compute weights for aggregating nine indicators of access, availability, and usage. It then assesses the impact of financial inclusion on poverty and income inequality. The results indicate that high- and middle-high-income economies with high financial inclusion have significantly lower poverty, while no such relation exists for middle-low and low-income economies. This method cannot be used for smaller sample population.

From the survey, most of the financial inclusion indicator are based on macroeconomic indicators and they don't account for personal satisfaction level measurement. Also these schemes cannot be applied in India rural conditions as not enough measurements about income levels etc are collected and the census is done once in 10 years making the measurement results obsolete.

## Materials and methods/Methodology

### 2.1. Participants

The study is conducted across 2 districts with 5 villages in each district. A total of 400 respondents with 40 in each village participated in the study. The districts and villages (Table 1) used for study are in Karnataka state.

Table 1 Districts and villages studied

| Districts | Villages | Number of Samples |
|---|---|---|
| Raichur | Raichur, Sindhanur, Manvi, Maski, Sirwar | 200 |
| Davangere | Davanagere, Harihar, Honnali, Channagiri and Jagaluru | 200 |

The villagers in different age categories were distributed with questionnaire and their responses are collected. The survey provided complete privacy to the subjects and did not collect any identity related information from them. The study was conducted with following population characteristics.

Table 2 Population characteristics

| Age of samples | 16 to 60 years | |
|---|---|---|
| Age Distribution of Samples | 16 to 25 young | 40 % (160) |
| | 26 to 40 middle | 40 % (160) |
| | 41 to 60 old | 20% (80) |
| Education level | Primary | 50 % (200) |
| | Secondary | 30 % (120) |
| | Degree | 20 % (80) |

### 2.2. Measures

The research scholar visited the villages and provided a self reported questionnaire to the participants to collect their response.

Since there are no existing well defined scales to measure the economic satisfaction level on digital financial inclusion schemes, this work defines three scales of financial literacy,access and economic impact.

Deviating from other works, which measure the efficiency of schemes only in terms of gross monetary benefits, this work defines three points metric to measure the effectiveness of the JAM schemes called as scheme satisfaction scale. The scale gives importance to three measure of financial literacy about the scheme, financial access to the scheme and financial impact of the scheme on the beneficiary.

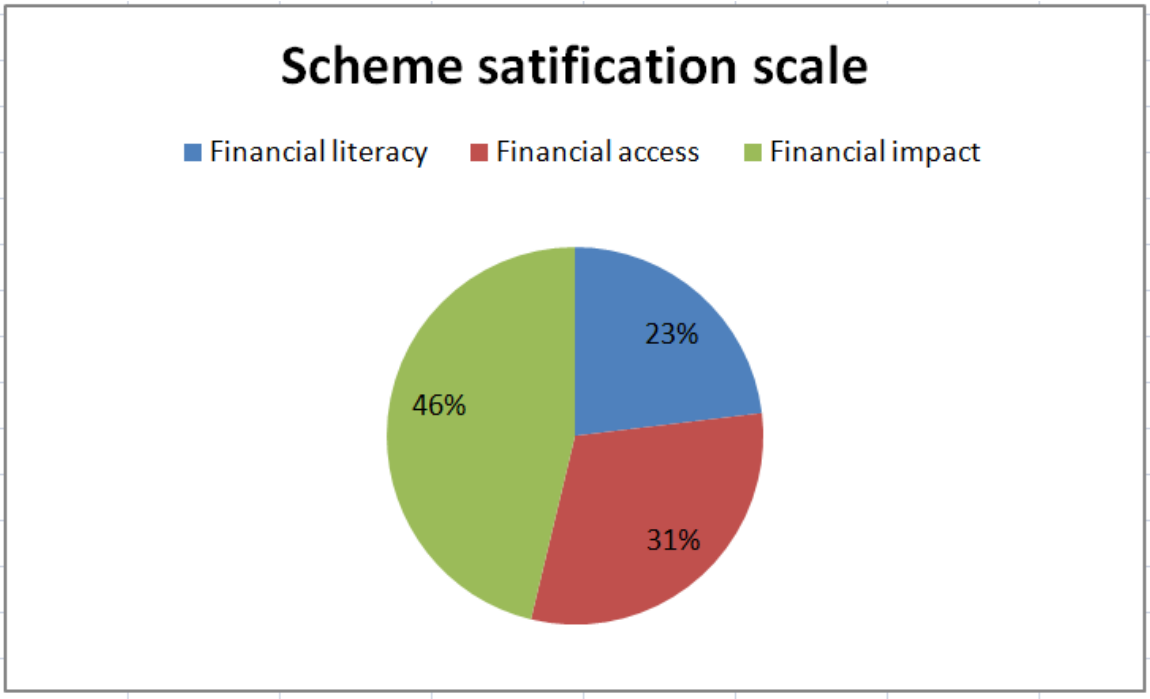



Figure 1 Scheme satisfaction scale

The questionsfalling in these three scales and their mean score of responses on a five point Likert scale is shown below

**Table 3 Mean Score for Scales**

| Scales | Questions | Mean (1- 5) |
|---|---|---|
| Financial literacy | Q3-Q5 | 2.5 |
| Financial Access | Q6-Q9 | 3.2 |
| Financial impact | Q10-Q15 | 3.5 |

Lower mean scores for financial literacy indicate most people agree, there is not much knowledge among the people about financial inclusion programmes of JAM and higher score indicate that most people are aware of the financial inclusion programmes of JAM.Lower mean scores for financial access indicate most people don't use much of JAM schemes and higher scores indicate that most people use the JAM schemes. Lower mean scores for financial impact indicate that people could not realize any economic benefit due to JAM schemes and the higher score means thatJAM schemes have positive outlook on economic livelihood of the people.

### 2.3. Procedure

Questionnaire were distributed to the respondents and asked to respond to the questions in front of research assistant. Since the data collection did not involve any vulnerable participants or funding source, the research study did not need any approval from any ethical review board. All the participants were well informed about the purpose of the study. Participants were not given any compensation for taking part in the study and there are no known risks in survey participation. Anonymity of participants is kept and no identifying information is collected from the participants. The questionnaires were

administered in Kannada. The questionnaire responses were statistically analyzed to prove following three hypothesis.

**Table 4 Hypothesis**

| | |
|---|---|
| 1 | Null hypothesis :There is no change in financial literacy due to JAM<br>Alternate hypothesis : There is a change in financial literacy due to JAM |
| 2 | Null hypothesis : JAM has not influenced financial transactionsin rural areas<br>Alternate :hypothesis: JAM has influenced financial transactions |
| 3 | Null hypothesis: Advantages of financial inclusion is homogenous across ages.<br>Alternate hypothesis: Advantages of financial inclusion is not homogenous across ages. |

## 3. Results

Following test were done to check for reliability of the questionnaire

1. Internal consistency
2. Test –Retest analysis

Internal consistency is checked by checking the homogeneity of 13 items in the questionnaire apart from age and education level. The homogeneity is evaluated using Cronbach's alpha coefficient. For deciding the internal consistency, cronbach's coefficient of .7 or higher is decided as the threshold. Factor based validity is verified by calculating the proportion of variance for all the scales and checking number of items above the average. Test-Retest analysis was done by calculating the Pearson's correlation coefficient and intra class coefficient for the responses from all the participants.

Test-Retest was done for all the response items for 13 questions in the questionnaire (Question 3 to 15). The result of Pearson correlation coefficient and Cronbach's alpha coefficient is given below

**Table 5 Reliability Analysis Result**

| Questions | Items Cronbach's alpha coefficient | Item's Pearson correlation coefficient |
|---|---|---|
| 3 | 0.79 | 0.99 |
| 4 | 0.82 | 0.97 |
| 5 | 0.77 | 0.97 |
| 6 | 0.81 | 0.99 |
| 7 | 0.79 | 0.96 |
| 8 | 0.83 | 0.95 |
| 9 | 0.80 | 0.94 |
| 10 | 0.83 | 0.99 |
| 11 | 0.81 | 0.96 |
| 12 | 0.82 | 0.96 |
| 13 | 0.81 | 0.97 |
| 14 | 0.83 | 0.96 |
| 15 | 0.97 | 0,94 |

The cronbach's alpha coefficient is greater than threshold value of 0.7 and Test-retest reliability score is greater than 0.5. These two results indicate high internal consistency reliability of the questionnaire items.

To test influence of age on the financial literacy scale, one way ANOVA test was conducted separately for influence of age and education level.

Table 6 One way ANOVA Result for Age

| Age group | Difference of means | SE of the difference | 95% CI | T-Value | Adjusted P-Value |
|---|---|---|---|---|---|
| 16-25 | -6.168 | 2.271 | (-12.553,0.219) | -2.71 | 0.0616 |
| 26-40 | -1.751 | 2.282 | (-8.136,4.636) | -0.78 | 0.8672 |
| 41-60 | 3.323 | 2.284 | (-3.053,9.719) | 1.47 | 0.4789 |

The results indicate that there is wide difference of opinion on financial literacy between different age groups.

**Table 7 One way ANOVA Result for Education level**

| Education level | Difference of means | SE of the difference | 95% CI | T-Value | Adjusted P-Value |
|---|---|---|---|---|---|
| Primary | -6.268 | 2.372 | (-12.153,0.229) | -2.73 | 0.0626 |
| Secondary | -1.351 | 2.212 | (-8.146,4.626) | -0.74 | 0.8371 |
| Degree | 3.421 | 2.261 | (-3.153,9.419) | 1.38 | 0.4827 |

The results indicate that there is wide difference of opinion on financial literacy between different education levels.

### 3.1. Financial literacy

The responses for the question Q3 to Q5 is as below.

Table 8Financial literacy scale Response

| Responses | Q3 | Q4 | Q5 | Total |
|---|---|---|---|---|
| Strongly agree | 100 | 20 | 50 | 170 |
| Agree | 100 | 80 | 150 | 330 |
| Neutral | 100 | 0 | 100 | 200 |
| Disagree | 80 | 150 | 50 | 280 |
| Strongly Disagree | 20 | 150 | 50 | 220 |
| **Total** | 400 | 400 | 400 | 1200 |

The distribution of financial literacy responses over different age is as below

Table 9 Financial literacy response over age

| Responses | 16-25 | 26-40 | 41-60 | Total |
|---|---|---|---|---|
| Strongly agree | 192 | 144 | 10 | 346 |
| Agree | 144 | 140 | 10 | 294 |
| Neutral | 0 | 0 | 40 | 40 |
| Disagree | 96 | 150 | 100 | 346 |
| Strongly Disagree | 48 | 46 | 80 | 174 |
| **Total** | 480 | 480 | 240 | 1200 |

The distribution of financial literacy response over education level is as below

Table 10Financial literacy response over profession

| Responses | Primary | Secondary | Degree | Total |
|---|---|---|---|---|
| Strongly agree | 0 | 60 | 100 | 160 |
| Agree | 0 | 50 | 120 | 170 |
| Neutral | 100 | 0 | 20 | 120 |
| Disagree | 300 | 50 | 0 | 350 |
| Strongly Disagree | 200 | 100 | 0 | 300 |
| **Total** | 600 | 360 | 240 | 1200 |

From the 5 point Likert response, Strongly agree and Agree are merged to a single category of Agree. Disagree and Strongly Disagree are merged to a single category of Disagree. The chi-square test result is very much less than significant value ($p<0.05$), thereby rejecting the null hypothesis and accepting the alternate hypothesis that "There is a change in financial literacy due to PMJY"

| Responses | Frequency | | | |
|---|---|---|---|---|
| Strongly agree | 160 | | | |
| Agree | 170 | | Actual | Expected |
| Neutral | 120 | Agree | 330 | 540 |
| Disagree | 350 | Disagree | 650 | 540 |
| Strongly disagree | 300 | | | |
| Total Responses | 1200 | Chi-Square | 1.94892E-24 | |

Figure 2 Hypothesis 1 Result

### *3.2. Financial Access*

The responses for the question Q6 to Q9 is as below.

Table 11Financial Access scale response

| Responses | Q6 | Q7 | Q8 | Q9 | Total |
|---|---|---|---|---|---|
| Strongly agree | 20 | 50 | 50 | 70 | 190 |
| Agree | 80 | 100 | 50 | 80 | 310 |
| Neutral | 0 | 0 | 0 | 50 | 50 |
| Disagree | 150 | 150 | 200 | 100 | 600 |
| Strongly Disagree | 150 | 100 | 100 | 100 | 450 |

| **Total** | 400 | 400 | 400 | 400 | 1600 |
|---|---|---|---|---|---|

The distribution of financial access response over age is as below

| **Responses** | **16-25** | **26-40** | **41-60** | **Total** |
|---|---|---|---|---|
| Strongly agree | 200 | 300 | 50 | 550 |
| Agree | 250 | 100 | 70 | 420 |
| Neutral | 90 | 40 | 0 | 130 |
| Disagree | 70 | 120 | 100 | 290 |
| Strongly Disagree | 30 | 80 | 100 | 210 |
| **Total** | 640 | 640 | 320 | 1600 |

The distribution of social persuasion response over profession is as below

| **Responses** | **Primary** | **Secondary** | **Degree** | **Total** |
|---|---|---|---|---|
| Strongly agree | 200 | 200 | 100 | 500 |
| Agree | 100 | 80 | 100 | 280 |
| Neutral | 100 | 40 | 10 | 150 |
| Disagree | 200 | 60 | 60 | 320 |
| Strongly Disagree | 200 | 100 | 50 | 350 |
| **Total** | 800 | 480 | 320 | 1600 |

From the 5 point Likert response, Strongly agree and Agree are merged to a single category of Agree. Disagree and Strongly Disagree are merged to a single category of Disagree. The chi-square test result is very much less than significant value ($p<0.05$), thereby rejecting the null hypothesis and accepting the alternate hypothesis that "PMJY has influenced financial transactions"

| Responses | Frequency | | | | |
|---|---|---|---|---|---|
| Strongly agree | 500 | | | | |
| Agree | 280 | | | Actual | Expected |
| Neutral | 150 | | Agree | 780 | 725 |
| Disagree | 320 | | Disagree | 670 | 725 |
| Strongly disagree | 350 | | | | |
| Total Responses | 1600 | | Chi-Square | 0.003867869 | |

Figure 3 Hypothesis 2 Result

### 3.3. Financial Impact

The responses for the questions Q10 to Q15 is as below.

Table 12Financial Impact scale response

| **Responses** | **Q10** | **Q11** | **Q12** | **Q13** | **Q14** | **Q15** | **Total** |
|---|---|---|---|---|---|---|---|
| Strongly agree | | | | | | | |
| Agree | 150 | 100 | 50 | 100 | 100 | 100 | 600 |
| Neutral | 50 | 0 | 0 | 50 | 50 | 50 | 200 |
| Disagree | 80 | 150 | 150 | 50 | 100 | 30 | 560 |
| Strongly Disagree | 20 | 50 | 100 | 100 | 0 | 20 | 290 |
| **Total** | 400 | 400 | 400 | 400 | 400 | 400 | 2000 |

The distribution of perception on ban response over age is as below

Table 13Financial impact response over age

| **Responses** | **16-25** | **26-40** | **41-60** | **Total** |
|---|---|---|---|---|
| Strongly agree | 200 | 300 | 100 | 600 |
| Agree | 300 | 300 | 100 | 700 |
| Neutral | 100 | 100 | 10 | 210 |
| Disagree | 100 | 80 | 140 | 320 |
| Strongly Disagree | 100 | 20 | 50 | 170 |
| **Total** | 800 | 800 | 400 | 2000 |

The distribution of perception on ban response over profession is as below

Table 14 Financial impact response Profession

| **Responses** | **Primary** | **Secondary** | **Degree** | **Total** |
|---|---|---|---|---|
| Strongly agree | 80 | 200 | 200 | 480 |
| Agree | 20 | 200 | 100 | 320 |
| Neutral | 100 | 100 | 50 | 250 |
| Disagree | 400 | 80 | 30 | 510 |
| Strongly Disagree | 400 | 20 | 20 | 440 |
| **Total** | 1000 | 600 | 400 | 2000 |

From the 5 point Likert response, Strongly agree and Agree are merged to a single category of Agree. Disagree and Strongly Disagree are merged to a single category of Disagree. The chi-square test result is very much less than significant value ($p<0.05$), thereby rejecting the null hypothesis and accepting the alternate hypothesis that "Advantages of financial inclusion is not homogenous across ages".

| Responses | Frequency | | | | |
|---|---|---|---|---|---|
| Strongly agree | 600 | | | | |
| Agree | 700 | | | Actual | Expected |
| Neutral | 210 | | Agree | 1300 | 895 |
| Disagree | 320 | | Disagree | 490 | 895 |
| Strongly disagree | 170 | | | | |
| Total Responses | 2000 | | Chi-Square | 1.06257E-81 | |

Figure 4 Hypothesis 3 Result

## Discussion

On financial literacy scale, only 41.66% agree that are aware of the JAM schemes. Thus there is a strong need for campaigns on JAM schemes in villages to create enough financial literacy over JAM schemes. The financial literacy in different age group is distributed as below

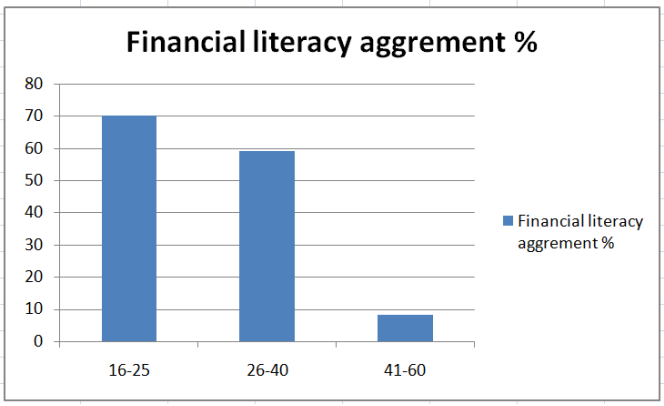
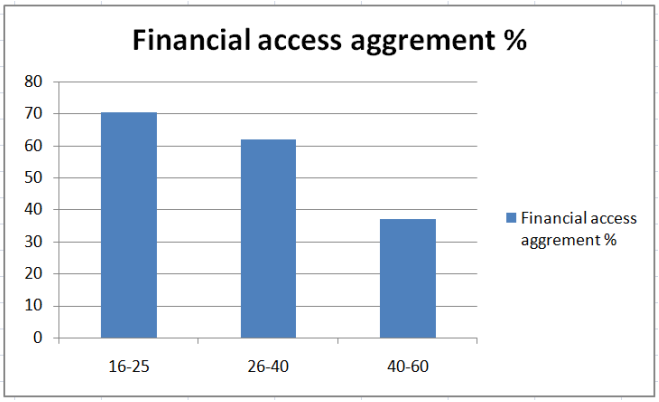
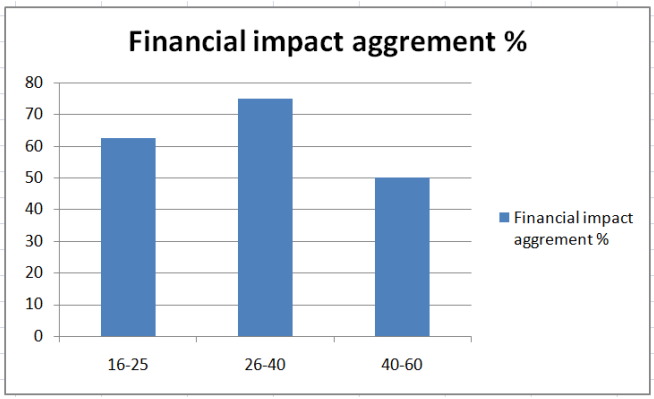



Figure 5 Financial literacy agreement over age

The financial literacy about JAM schemes are higher in age groups of 16-25 at 70% due to exposure to various mobile related services and access to mobile technologies in India. The agreement in age group of 26-40% is at acceptable value of 59.16%. But over 40, the agreement percentage is at 8.33%. Thus financial literacy campaign should focus more on age groups of 41-60. This can be done through mass media like TV and print. The financial literacy agreement over education level of primary, secondary and higher is distributed as 0%,30.5% and 91.6% respectively. Villagers with only primary level of education are hesitant in using JAM schemes like mobile enabled payments. Increasing financial literacy to villagers with primary and secondary education is only way to leverage more economical benefits to them.




On the financial access scale, there is an agreement percentage of 31.25% towards JAM services. The access is higher in age group of 16-25 at 70.35% and 26-40 at 62%. At age group of 16-25% the access is higher due to use of financial services for education and at 26-40 age groups; it is due to money transfer for friends and families. This is encouraging but still there is a long way for increasing the JAM scheme adoption rate in villages.




On the financial impact scale, there is agreement of 67.5% indicating that JAM schemes have given benefits to majority population in the villages. Over all age groups, government's direct benefit transfer (DBT) has created a positive financial impact. Distribution of scholarships, gas subsidies and pension through PMJY accounts has increased the financial transaction in the villages. Thus government can bring all the subsidies and benefit schemes under DBT, to create a positive economic outlook in the villages.

## 4. Conclusion

This work proposed a new multi point satisfaction scale to measure the effectiveness of JAM schemes. The scale measures the scheme on three levels of financial literacy over the schemes, access to the schemes and the financial impact of the scheme on the beneficiary. Using the satisfaction scale, the impact of JAM schemes over villages is studied through questionnaire feedback analysis. The study found that JAM schemes have increased the financial transactions and contributed positively to the economic benefit. Financial literacy is found to be a limiting factor in faster acceptance of JAM schemes and thus government need to focus on campaigns to increase the financial literacy. The campaigns must specifically target villagers in age groups of 40 to 60 and people who have not crossed secondary education.

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## Conflict of Interest

There is no conflict of interest among the authors

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## Ethical approval

Not applicable

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Appendix A: Questionnaire

| | |
|---|---|
| 1.Age | A. 16-25<br>B. 25-40<br>C. Above 40 |
| 2. Education Level | A. Primary<br>B. Secondary<br>C. Degree |
| 3. Do u have information about bank's lending and saving schemes under JAM | A. Strongly Agree<br>B. Agree<br>C. Neutral<br>D. Disagree<br>E. Strongly Disagree |
| 4. Do u have information about insurance schemes under JAM | A. Strongly Agree<br>B. Agree<br>C. Neutral<br>D. Disagree<br>E. Strongly Disagree |
| 5.Do you know how to do phone payments of JAM | A. Strongly Agree<br>B. Agree<br>C. Neutral<br>D. Disagree<br>E. Strongly Disagree |
| 6. Do you prefer digital payment compared to visiting bank? | A. Strongly Agree<br>B. Agree<br>C. Neutral<br>D. Disagree<br>E. Strongly Disagree |
| 7. Have you shifted from postal money order to digital payment? | A. Strongly Agree<br>B. Agree<br>C. Neutral<br>D. Disagree<br>E. Strongly Disagree |
| 8. Is your digital payments higher than bank visits? | A. Strongly Agree<br>B. Agree<br>C. Neutral<br>D. Disagree<br>E. Strongly Disagree |
| 9. Do you use digital payments for trade? | A. Strongly Agree<br>B. Agree<br>C. Neutral<br>D. Disagree<br>E. Strongly Disagree |
| 10. Have your spending reduced due to keeping money in banks? | A. Strongly Agree<br>B. Agree<br>C. Neutral<br>D. Disagree<br>E. Strongly Disagree |
| 11. Have you benefited from loan schemes of JAM | A. Strongly Agree<br>B. Agree<br>C. Neutral<br>D. Disagree<br>E. Strongly Disagree |
| 12. Have you started using your JAM account for saving? | A. Strongly Agree<br>B. Agree<br>C. Neutral<br>D. Disagree<br>E. Strongly Disagree |
| 13.Is your dependence on local money lenders reduced due to bank loans? | A. Strongly Agree<br>B. Agree<br>C. Neutral<br>D. Disagree<br>E. Strongly Disagree |
| 14. Does financial inclusion allows to connect to friends and families in cities easily ? | A. Strongly Agree<br>B. Agree<br>C. Neutral<br>D. Disagree<br>E. Strongly Disagree |
| 15. Does financial inclusion helps to receive loans from remote friends and families in urgency? | A. Strongly Agree<br>B. Agree<br>C. Neutral<br>D. Disagree<br>E. Strongly Disagree |