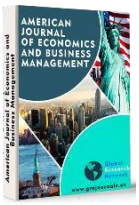

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An Analysis of the Financial Inclusion in Sambalpur District of Odisha

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Abstract:
Finding out if and how much the financial inclusion program affects the underprivileged people in the Sambalpur district is the main goal of this study. We utilize the Randomization Impact Evaluation or Randomization Control Trials approach, building a strong counterfactual and comparison group. We test the importance of age, gender, education, occupation, income and source of income dimensions in inclusive finance in the economic up-liftment of disadvantaged population. The current reading was led in the rural Sambalpur district of Odisha in order to accomplish this goal. Using a multistage sample procedure, 102 rural peasants were selected. To analyze the impact of financial inclusion program on disadvantaged population a model of ordinal logistic regression was employed. The outcomes of the overall study display that the financial inclusion program increased awareness, accessibility, availability, and usability of economic amenities for the elderly people. However, the impact on the usability of financial services for females was not significant compared to males. Schooling shows a part in financial awareness and accessibility, and the program improved financial services for illiterate and less educated populations. The program also increased financial awareness and accessibility for farmers and homemakers, and those with lower incomes. Usability of financial services was increased for those with less income sources after the program.

Keywords: Financial inclusion, Socio-economic characteristics, Ordinal logistic regression, Econometric model, Randomization Impact evaluation or Randomization control trials (RCT).

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1. Introduction:

The idea of “financial inclusion” arisen worldwide in the millenium and is well-defined as the availability and utilization of proper banking and monetary amenities (Adil and Jalil, 2020). It was decided at the 2010 G-20 summit in Seoul that financial inclusion needed to be on the global development agenda (Desalegn & Yemataw, 2017). In order to further the G20's financial inclusion ambitions, a Financial Inclusion Action Plan was formed during the 2010 G20 Seoul Summit, which called for the establishment of the Global Partnership for Financial Inclusion (GPFI) (Wang & Guan, 2017). Prior banking assistances were only acquired by middle and high classes of the people, thus to include the disadvantaged or economically weaker segment of the people, requirement of inclusive finance rises in India (Bala, 2020). The phrase "financial inclusion" was first used in India in April 2005 by Y. Venogopal Reddy, the previous governor of the “Reserve Bank of India”, in the Annual Policy Statement (Kumar, 2021; Bala, 2020). An important step toward promoting financial inclusion at wide segments of the Indian population was the GoI's November 8, 2016, declaration of demonetization (Nandru & Rentala, 2019). According to the World Bank, “financial inclusion” is when “individuals

and businesses have access to useful and affordable financial products and services that meet their needs such as transactions, payments, savings, credit and insurance, delivered in a responsible and sustainable way" (Razzaq, 2020). "Financial inclusion" pertains to the prompt and suitable delivery of suitable financial and banking services at a reasonable cost to marginalized populations, including low-income individuals and marginalized societal groups who lack access to basic banking and financial services (Garg & Agarwal, 2017). Financial inclusion, according to Dr. C. Rangarajan, is "the process of ensuring vulnerable groups, such as weaker sections and low income groups, have affordable access to financial services and timely and adequate credit when needed" (Garg & Agarwal, 2017). The initiative of "Financial Inclusion" has established further impetus recently with the launch of a plan, termed as the 'Pradhan Mantri Jan-Dhan Yojana (PMJDY)' in the year 2014 (Ramakrishna & Trivedi, 2018) (Prasad, 2022) (Bala, 2020). Further, for the achievement of FI, several exclusive other schemes are also introduced like Atal Pension Yojana, Sukanya Samriddhi Yojana etc (Bala, 2020).

"Financial inclusion" denotes to the equitable and practical supply of monetary facilities to address societal demands, provide opportunity for marginalized groups, and foster sustainable economic growth (Nguyen and Le, 2022). In essence, it promotes economic growth since those with means can spend in venture capital, schooling, and entrepreneurship, all of which can lead to the reduction of poverty and the advancement of the economy (Adil & Jalil, 2020; Amari and Anis, 2021; Biswas, 2023; Pal & Pal, 2012). A crucial component of social inclusion, financial inclusion helps underprivileged populations by providing chances for progress that have been previously closed to them. This is especially helpful in the fight against poverty plus earnings inequality (Omar & Inaba, 2020). According to Zulfiqar et al. (2016), inclusive finance makes people more productive and efficient economic agents by increasing their access to economic opportunities and expanding their options, which allows them to take part in the growth process. The availability plus usage of monetary goods plus facilities, such as bank as well as mobile currency accounts, indicate the extent of an economy's overall financial inclusion; the higher the indices in any particular economy, the better it is (Marx et al., 2021).

The current focus of financial inclusion in India is limited to guaranteeing specific actions for agreeing to provide minimal access to a savings bank account without frills (Nandru et al., 2016). However, given additional criteria must be taken into account in order to achieve financial inclusion, owning a bank account alone is not thought to be a reliable predictor of financial inclusion (Nandru et al., 2016). In several states, the impoverished still borrow from unofficial sources including friends, relatives, and neighborhood moneylenders despite the bank branches' quick expansion throughout India (Prasad, 2022). In order to improve their well-being, impoverished people use financial services primarily for two purposes: (a) enhancing their ability to withstand economic shocks; and (b) seizing chances (Barik & Lenka, 2022). Because actual use of these services does not often follow access to them, providing financial services alone may not have the desired benefits (Prasad, 2022).

According to Ramakrishna and Trivedi (2018), financial inclusion encourages a culture of saving, which in turn leads to economic progress. "Financial inclusion" and the expansion of basic monetary services will directly help people achieve good health, education, and a respectable level of living, all of which will enhance human potential and development (Barik & Lenka, 2022). According to research, financial inclusion considerably improves poverty and income inequality (Park & Mercado, 2015). Every person has the right to financial inclusion, same as they do to other essentials like food, clothing, and housing (Kumar, 2021). The goal of financial inclusion should be to impact all segment of society, but its sustainability should be the main priority (Kumar, 2021).

Increasing the synergies between technology providers and banking channels, expanding the reach of mobile banking, strengthening agency banking—which comprises microfinance institutions, business facilitators, and business correspondents—and defining interest rate ceilings for NGO/MFIs are some of the goals stated by Ramakrishna and Trivedi (2018). Expanding the system and utilizing technology can be a significant driver of increased financial inclusion, as financial inclusion fosters growth (Amari and Anis 2021). Additionally, it can improve payment security, which will reduce the frequency of related crimes (Amari and Anis 2021).

The scope of financial inclusion programs is expanding, but it is challenging for policymakers to pinpoint the potential clients who want funding to advance their careers (Baba, 2018). Microfinance institutions lessen the obstacles to financial inclusion (Ghosh, 2013; Baba, 2018). The penetration of financial goods is enhanced if we combine microfinance with financial inclusion and policymakers are able to identify the rural residents in need of financing (Baba, 2018).

Unquestionably, a significant percentage of people—not just in India but all over the sphere—do not have access to basic banking and monetary facilities, as several studies and surveys have shown. The phrase "financial exclusion" describes this (Garg & Agarwal, 2017). Financial exclusion, as defined by Garg and Agarwal (2017), is the condition in which an individual does not have access to standard monetary services plus goods, such as bank accounts, credit cards, and insurance policies, particularly home insurance and student loans. And through the practice of inclusive finance we can overcome the condition of the "financial exclusion" (Garg & Agarwal, 2017). Expanding grownup residents' access to proper monetary institutions is essential for investing in productive assets and ensuring the dependent household's subsistence in the event of the income earner's illness or incapacity to work. These services include savings accounts, credit facilities, insurance, and remittances (Hussen, 2015).

This is how the rest of the manuscript is organized. Section 2 continues the literature review that was started in the introduction. The goal of the investigation is outlined in Section 3. The creation of hypotheses is presented in Section 4. The model specification and theoretical framework are presented in Section 5. The research technique and data source are presented in Section 6. The outcomes of the data analysis and discussion are shown in Section 7. The results of the analysis are shown in Section 8. The results of the observational method and interview are presented in Section 9. The conclusions and research implications are presented in Section 10.

2. Review of Literature

A number of variables, including education, financial literacy, gender, age, legal status, place of residence, household size, preference for formal financial services, etc., have an impact on financial inclusion (Umar et al., 2020) (Bui & Luong, 2023) (Desalegn & Yemataw, 2017) (Kumar, 2021) (Kandari et al., 2021) (Park & Mercado, 2015) (Pal & Pal, 2012) (Tambunlertchai, 2016) (Zulfiqar et al., 2016). Compared to other groups, young individuals who are better educated, earn more money, and reside in cities typically have greater rates of financial inclusion (Nguyen & Le, 2022). According to Aziz & Naima, 2021, the younger generation showed higher aptitude and drive to use financial services than the elderly, which was impacted by age disparities. The explanation could be that older people's needs for financial inclusion are occasionally disregarded or undervalued (Bui & Luong, 2023). But, younger participants were discovered to assist those who were less informed and experienced, which aided in the development of broader financial inclusion (Aziz & Naima, 2021). Increased financial inclusion will help to lower poverty and income inequality. More robust rule of law measures, like the enforcement of financial contracts and financial regulatory oversight, as well as provisions for both young and old populations, like retirement pensions, can help achieve this (Park & Mercado, 2015). In

emerging countries, the percentage of internet users, the age dependency ratio, inflation, and income inequality all have a significant impact on the level of financial inclusion (Omar & Inaba, 2020).

Being a woman, having less education, being unemployed, and being poor are all negatively connected with people's financial inclusion (Kandari et al., 2021). But greater level of education, holding a bank account, and being male all increase the likelihood of formal banking (Prasad, 2022). Even after taking into consideration a wide range of individual criteria like age, income, education, and employment status, there is still a persistent gender difference and a strong correlation between gender and the usage of monetary facilities (Demirgüç-Kunt et al., 2013). In rural India, however, the likelihood of a female-headed household using formal financial services is significantly lower than that of a male-headed household, this is in contrast to urban households, where the use of formal financial services is not significantly impacted by the gender of the household head or social group (Pal & Pal, 2012). According to a survey, 61% of males and 43% of women, or an 18% difference, were financially included (Marx et al., 2021). Nonetheless, a different study displays that women are more likely than men to borrow from official monetary institutions as well as to save (Tambunlertchai, 2016). According to Mahalika et al. (2023), low-education Africans living in rural Eastern Cape, Free State, and Limpopo provinces were more likely to be financially excluded, while those from lower FII quintiles were more likely to be poor according to the money metric.

The first aspect of the influence of women's participation in SHG-based financial inclusion programs is poverty alleviation; the second aspect is the empowerment of the impoverished, particularly women (Swamy, 2014). According to Cheronoh (2019), this suggests that as rural women's economic standing, employment, identification ownership, and mobile phone ownership grow, it is likely that their degree of financial inclusion will also rise, leading to greater economic empowerment. Using data from the World Bank's Women, Business and the Law database, it demonstrates that women are less likely than men to own an account, save money, and take out loans in nations where women face legal discrimination for their ability to work, manage a household, choose where to live, inherit property, or be legally obligated to submit to their husbands (Demirgüç-Kunt et al., 2013).

According to (Adil & Jalil, 2020), the contribution to financial inclusion is inversely correlated with bank size, geographic reach, and demographic reach. The main barriers include faith in financial institutions, distance to banks, a lack of documentation, and the cost of services, although depending on the type of financial service (savings or credit), these barriers have varying effects on the likelihood of utilizing formal financial services (Amari and Anis 2021). Further, Nandru et al., 2016 and Yangdol, 2019, discovered that factors such as income and education significantly affect financial inclusion as indicated by bank account ownership. Financial inclusion is facilitated through increased access to finance plus monetary facilities, especially for the underprivileged (Pal & Pal, 2012). A person's likelihood of holding a bank account, using mobile banking, and using credit facilities rises as their level of financial literacy rises (Kandari et al., 2021). Increasing adult population access to formal financial institutions for financial services such as funds, credit facilities, insurance, allowances, etc. is the most important way to reduce poverty in emerging countries. In the event that the income earner became ill or was unable to work, these services enable the investment in productive assets and supply income for the dependent household (Hussen, 2015). In most jurisdictions, non-poor people are more expected to save with a bank than are poor people, as poor people tend to adopt riskier saving methods such chit funds and holding money at home (Prasad, 2022). For this underprivileged segment of society, awareness campaigns should be organized to highlight the value of independence (Bala, 2020). Due to a number of reasons, such as complicated product procedures, high banking service costs, poor deposit interest rates, and geographic distance from transaction sites, a sizeable section of the population does

not use formal financial services (Nguyen & Le, 2022).

Nowadays, ICT is playing a significant role in usage of banking services (Nandru et al., 2016). Digital financial access benefited from the upheavals in the Indian telecommunications sector brought about by Reliance Industries' September 5, 2016, introduction of "Jio," a brand for internet and mobile service provider (Nandru & Rentala, 2019). The long-term goal of the demonetization policy was to promote digital access to inclusive finance for the most vulnerable segments of Indian society, even if it also aimed to reduce the amount of black money in the country's economy (Nandru & Rentala, 2019). According to Ozili et al. (2023), there is a positive correlation between the expansion of bank branches and greater internet usage in secular nations and a negative correlation between the expansion of ATM supplies and increased internet usage in secular countries. Since almost everyone owns a smartphone, using mobile apps will be crucial to achieving financial inclusion (Bala, 2020). While there is no significant correlation between gender and income and digital inclusion, individuals who utilize digital financial services tend to be younger, have higher levels of education, work longer hours, and utilize a range of banking services, including credit and debit cards, savings accounts, and loans, more often than those who do not (Ljumović et al., 2021). The underprivileged groups have limited access to cutting-edge technological products, and as banks use technology more and more, they further marginalize these groups (Ramakrishna & Trivedi, 2018). People are choosing to become financially connected more frequently as they become aware of the numerous benefits that come with having a bank account (Ramakrishna & Trivedi, 2018). The financial product should be centered on their line of work, decrease compliance, make it simple to adopt various payment systems, allow for interbank movement, and protect them from atypical loss (Baba, 2018). It has been demonstrated that mobile phones and mobile money improve FI scores (Bui & Luong, 2023). Even while financial depth and banking health status are the primary determinants of financial inclusion, an individual's income, education, and use of communications devices are significant elements that define the level of financial inclusion (Wang & Guan, 2017). Males who are more well-off and educated tend to be more tangled in the usage of digital monetary facilities, and mobile money adoption is higher among those who conduct online transactions (Umar et al., 2020). The primary obstacles to financial inclusion are limited internet connection and mobile phone use, according to drivers of mobile finance between the aged with Thai ICT statistics (Bui & Luong, 2023).

Microfinance institutions lessen the obstacles to financial inclusion (Ghosh, 2013). (Baba, 2018). To fulfill the objectives of financial inclusion, the microfinance products must be re-engineered in accordance with the demands of the region (Baba, 2018). The progress of financial inclusion is strengthened by an enhancement in soft user loans and a rise in small-sized early payment (Adil & Jalil, 2020). No-frill or zero balance account advances contributes to financial inclusion (Adil & Jalil, 2020) (Bala, 2020). Financial inclusion will increase if banks take additional steps to promote financial literacy (Ramakrishna & Trivedi, 2018). To lessen financial exclusion, banks must streamline processes and documentation requirements (Ramakrishna & Trivedi, 2018). Of all the main factors of financial inclusion, educational attainment had the highest degree of certainty, suggesting that increasing one's level of education is the most surefire method to increase one's financial inclusion (Marx et al., 2021). The findings imply that major obstacles to obtaining financial services include a lack of funds and necessary paperwork (Zulfiqar et al., 2016).

3. Objective of the study

The drive of this reading is to ascertain whether and how much the monetary inclusion program affects the district's underprivileged citizens in Sambalpur. We inspect the query: “In the context of age, gender, education, occupation, income and source of income dimensions what is the evidence of the impact of the financial inclusion programs on

disadvantaged population?" We utilize the Randomization Impact Evaluation or Randomization Control Trials approach, building a strong counterfactual and comparison group. We study the importance of age, gender, education, occupation, income and source of income dimensions in financial inclusion in the economic up-liftment of disadvantaged population.

4. Theoretical Framework and model specification:

Our study uses four indicators of "financial inclusion: Financial awareness, financial accessibility, financial availability and financial usability". Financial awareness indicates the sources of financial information, level of awareness about various schemes under financial inclusion and level of awareness about the financial services under financial inclusion. Financial accessibility refers to the ease of accessibility and years of accessing the formal, semi-formal and informal sources, type of bank account, purpose of opening account, time taken to preform your financial activity, distance from nearest bank, post office, ATM, other financial institution. The third indicator, financial availability, refers to the loans availability easily and timely, attractive schemes, overdraft facility, insurance services, debit card facility, locker facility, hidden charges, No frill account, new check and passbook, information of new interest rates, help desk availability, quick problem solving, and good infrastructure. And the fourth indicator, financial usability indicates using agricultural financial support services, investment of surplus income in formal investment avenues, scope of financial services has increased, service management system is up to the mark, comfortable with security instruments/collateral required for loan and cheques for payments, electronic payment system is user friendly, deposit services, credit services, less documentation and negligible balance is required, time taken by bank to process the loan application, minimum amount for loan is affordable, cost of transfer in reasonable, and payment become easy. These four indicators are five-point likert scale questions.

Grounded on the argument directly above, a simple purposeful association between financial inclusion and its variables with the socio-economic charactersitics can be summarised as follows:

$FIN\_AWAR_i = f(SOC\text{-}ECO_i)$

$FIN\_AVAIL_i = f(SOC\text{-}ECO_i)$

$FIN\_ACCES_i = f(SOC\text{-}ECO_i)$

$FIN\_USAB_i = f(SOC\text{-}ECO_i)$

$FI_i = f(SOC\text{-}ECO_i)$

According to economics literature, having an account with one or more monetary organizations and being able to conveniently use credit facilities and financial institutions (banks) are two indicators of financial inclusion. Access to mobile phone and internet services, as well as credit services from unofficial bases (such thrift, adashi, esusu, and ajo), have been given significant importance recently (Abu et al., 2022).

Evidence has demonstrated that, in addition to financial inclusion, a number of other characteristics, including income level, educational attainment, employment, literacy rate, and social security or transfers, can have an impact on poverty levels.

In light of these concerns, the functional relationship in Equation is recast as follows:

$FIN\_AWAR_i = f(AGE_i, GENDER_i, EDU_i, OCCUP_i, INCOME_i, SOUR\_OF\_INCOME_i)$

$FIN\_AVAIL_i = f(AGE_i, GENDER_i, EDU_i, OCCUP_i, INCOME_i, SOUR\_OF\_INCOME_i)$

$FIN\_ACCES_i = f(AGE_i, GENDER_i, EDU_i, OCCUP_i, INCOME_i, SOUR\_OF\_INCOME_i)$

$FIN\_USAB_i = f(AGE_i, GENDER_i, EDU_i, OCCUP_i, INCOME_i, SOUR\_OF\_INCOME_i)$

$FI_i = f(AGE_i, GENDER_i, EDU_i, OCCUP_i, INCOME_i, SOUR\_OF\_INCOME_i)$

Where, FIN_AWAR_i stands for financial awareness, FIN_AVAIL_i denotes availability of financial products and services, FIN_ACCES_i is ease of access to financial products and services, FIN_USAB_i denotes usability of financial products and services, AGE_i represents age of the respondents, $GENDER_i$ indicates gender of ith individual, EDU_i denotes education the respondents, $OCCUP_i$ represents occupation of the respondents, $INCOME_i$ is income of the respondents, and $SOUR\_OF\_INCOME_i$ stands for how many source of income of ith individual.

If Equation is re-written in an explicit form, the model is specified as:

$$FIN\_AWAR_i = \beta_0 + \beta_1 AGE_i + \beta_2 GENDER_i + \beta_3 EDU_i + \beta_4 OCCUP_i + \beta_5 INCOME_i + \beta_6 SOUR\_OF\_INCOME_i + \mu_i$$

$$FIN\_AVAIL_i = \beta_0 + \beta_1 AGE_i + \beta_2 GENDER_i + \beta_3 EDU_i + \beta_4 OCCUP_i + \beta_5 INCOME_i + \beta_6 SOUR\_OF\_INCOME_i + \mu_i$$

$$FIN\_ACCES_i = \beta_0 + \beta_1 AGE_i + \beta_2 GENDER_i + \beta_3 EDU_i + \beta_4 OCCUP_i + \beta_5 INCOME_i + \beta_6 SOUR\_OF\_INCOME_i + \mu_i$$

$$FIN\_USAB_i = \beta_0 + \beta_1 AGE_i + \beta_2 GENDER_i + \beta_3 EDU_i + \beta_4 OCCUP_i + \beta_5 INCOME_i + \beta_6 SOUR\_OF\_INCOME_i + \mu_i$$

$$FI_i = \beta_0 + \beta_1 AGE_i + \beta_2 GENDER_i + \beta_3 EDU_i + \beta_4 OCCUP_i + \beta_5 INCOME_i + \beta_6 SOUR\_OF\_INCOME_i + \mu_i$$

Where the intercept is represented by β0, the repressors' coefficients are represented by β1 through β6, and the stochastic disturbance factor with zero mean and constant variance is indicated by μi.

We use the ordinal logistic regression method (also known as the Logit model) to examine the association between financial inclusion and its variables and the socio-economic factors. Several factors influence the technique selection. Because the response variable is ranked or ordered, the procedure is applied first. The ordinal nature of the dependent variable in this instance is ignored by MLM models, despite the fact that they can be used to estimate ordinal-scale categories (Gujarati, 2004).

The Logit model can be written as:

$$Log\left(\frac{p(FIN\_AWAR \le J)}{1-p(FIN\_AWAR \le J)}\right) = \beta_0 + \beta_1 AGE_i + \beta_2 GENDER_i + \beta_3 EDU_i + \beta_4 OCCUP_i + \beta_5 INCOME_i + \beta_6 SOUR\_OF\_INCOME_i + \mu_i$$

$$Log\left(\frac{p(FIN\_AVAIL \le J)}{1-p(FIN\_AVAIL \le J)}\right) = \beta_0 + \beta_1 AGE_i + \beta_2 GENDER_i + \beta_3 EDU_i + \beta_4 OCCUP_i + \beta_5 INCOME_i + \beta_6 SOUR\_OF\_INCOME_i + \mu_i$$

$$Log\left(\frac{p(FIN\_ACCES \le J)}{1-p(FIN\_ACCES \le J)}\right) = \beta_0 + \beta_1 AGE_i + \beta_2 GENDER_i + \beta_3 EDU_i + \beta_4 OCCUP_i + \beta_5 INCOME_i + \beta_6 SOUR\_OF\_INCOME_i + \mu_i$$

$$Log\left(\frac{p(FIN\_USAB \le J)}{1-p(FIN\_USAB \le J)}\right) = \beta_0 + \beta_1 AGE_i + \beta_2 GENDER_i + \beta_3 EDU_i + \beta_4 OCCUP_i + \beta_5 INCOME_i + \beta_6 SOUR\_OF\_INCOME_i + \mu_i$$

$$Log\left(\frac{p(FI \le J)}{1-p(FI \le J)}\right) = \beta_0 + \beta_1 AGE_i + \beta_2 GENDER_i + \beta_3 EDU_i + \beta_4 OCCUP_i + \beta_5 INCOME_i + \beta_6 SOUR\_OF\_INCOME_i + \mu_i$$

Where:

- $p(FIN\_AWAR \le j)$, $p(FIN\_AVAIL \le j)$, $p(FIN\_ACCES \le j)$, $p(FIN\_USAB \le j)$, $p(FI \le j)$ are the cumulative probability of being in category j or lower of the ordinal dependent variable.

- β_0 is the intercept.
- β_1, β_2, β_3, β_4, β_5, β_6 are the coefficients associated with each independent variable (age, gender, education, occupation, income, source of income) respectively.
- For j = 1,2,..k – 1, where k is the number of ordinal categories.

In addition, the measures of financial inclusion (FIN_AWAR, FIN_AVAIL, FIN_ACCES, and FIN_USAB) are based on the responses of individuals to close-ended questions.

5. Research methodology

5.1. Generation of scale measurement items:

A thorough assessment of the literature led to the conclusion that the demand side analysis lacked a well-built scale for computing "financial inclusion". Thus, developing assessment items concerning to numerous facets of financial inclusion, social standing, and economic standing is the aim of the current study. An overall of 67 items pertaining to the financial inclusion dimension have been produced by the researchers. A five-point Likert scale was used in a structured questionnaire to score the issues (1 being strongly disagreed and 5 being strongly agreed).

5.2. Study design

This reading is a parallel cluster randomized controlled trial of 2 villages (Kim et al., 2023), randomly assigned to the treatment and control group. The intervention tested randomization to the financial inclusion program. As we know financial inclusion is already implemented and established properly after the PMJDY 2014, so, if we go for pre-post data collection it will take more 10-15 years to complete the research. So, to reduce the time we have classified the pre-post financial inclusion program as infrastructure/no infrastructure category.

5.3. Sampling procedures

The present study utilized a multistage sampling technique. The villages in the chosen districts were chosen using a stratified random sample technique, and the villages were again chosen at random. Of the responders, 102 were selected from the district of Sambalpur. This research uses randomization effect evaluation to accomplish its goal. Each eligible unit in a randomization impact evaluation or randomised assignment has an equal chance of being chosen for treatment, guaranteeing parity in both observable and unobserved features between the treatment and comparison groups (Gertler et al., 2016). Two blocks—Jamankira and Dhankauda—from the Sambalpur district are chosen to participate in the Randomization Impact evaluation based on whether or not they have infrastructure. Kulundi is the chosen village from the Jamankira block. Additionally, Jamadarpali, one hamlet, is chosen from the Dhankauda block.On the basis of interview and observation method, Jamadarpali (comparison group) village is taken as before the treatment group and Kulundi (treatment group) village is taken as after the treatment group, because, In Kulundi, financial and banking services are easily available. In the village they have Bank, post office, and ATM. BUT, In Jamadarpali, banking and financial services are not easily available. For the basic transactions only they have to travel for 6 to 7 km, there is no ATM available, post-office is also far away, ATM van is also not visiting there. Because randomization can provide a strong indication of program impact when used appropriately, its popularity has been increasing (Swamy, 2014). The decision regarding, who will enter the program & who will not is done on the basis of; "first come first served basis", observed characteristics (serving the poorest areas first), unobserved characteristics (own motivation & knowledge), and lottery (Randomized assignment method). If there is large number of units than for the evaluation we must take treatment & comparison group. But if there are small number of units than we have to combine randomized assignment with difference-in-difference (Gertler et al., 2016).

5.4. Data collection

Primary data collection garnered most of the emphasis for the study, while secondary data collection was also conducted. In order to collect primary data, a thorough list of questions (called the Schedule) was developed and supported by interview and observation procedures. The only base upon which the study is built is the basic data that was acquired through the survey. Financial usability, accessibility, availability, and awareness are a few of the major variables affecting financial inclusion. They were all examined in order to ascertain whether and to what degree the financial inclusion initiative affects the underprivileged citizens of the Sambalpur district.

5.5. Data analysis tools

The influence of a "financial inclusion" program on the underprivileged population was assessed using an ordinal logistic regression model. Socioeconomic and demographic factors were regarded as independent variables, whereas financial awareness, accessibility, availability, and usability were regarded as dependent variables (Biswas, 2023) (Nandru & Rentala, 2019). The perception was assessed using a five-point Likert scale, where the scores for every proclamation went from 1 (strongly agree) to 5 (strongly disagree). SPSS-23 software has been used for data analysis.

6. Results and discussion

6.1. Financial Awareness

Impact evaluation	Before (0.774)			After (1.000)		
Socio-economic characteristics	Estimate	Odds Ratio	Parameter Estimates (Sig.)	Estimate	Odds Ratio	Parameter Estimates (Sig.)
Age	-.042	0.958869781	.139	.006	1.006018036	.834
[Gender=1.00]	-.212	0.808964698	.808	.426	1.531120775	.725
[Gender=2.00]	0		.	0		.
[Education=1.00]	-1.158	0.314113781	.590	1.758	5.800824137	.192
[Education=2.00]	-1.255	0.285075848	.539	1.951	7.035719784	.038
[Education=3.00]	0		.	0		.
[Occupation=1.00]	-2.441	0.087073734	.293	-23.444	6.58264	.
[Occupation=2.00]	-1.968	0.139736049	.325	-1.143	0.318861002	.455
[Occupation=3.00]	-4.182	0.015267941	.157	-.085	0.918512284	.953
[Occupation=4.00]	-1.346	0.260279298	.626	-	-	-
[Occupation=5.00]	16.920	22297831.73	.000	-4.769	0.008488865	.014
[Occupation=6.00]	16.204	10897020.92	.000	-5.105	0.006066339	.009
[Occupation=7.00]	0		.	0		.
[Income=1.00]	18.023	67187649.41	.000	-2.536	0.079182497	.295
[Income=2.00]	20.528	822615947.3	.	-1.259	0.283937822	.578
[Income=3.00]	0		.	.069	1.071436209	.975
[Income=4.00]	-	-	-	-.496	0.608961641	.828
[Income=5.00]	-	-	-	0		.
[Sourceofincome=1.00]	0		.	-6.119	0.002200656	.010
[Sourceofincome=2.00]	-1.567	0.208670255	.401	-3.772	0.023006005	.011
[Sourceofincome=3.00]	0		.	0		.
[Sourceofincome=4.00]	-.641	0.526765395	.747	-	-	-
[Sourceofincome=5.00]	0		.	-	-	-
[Sourceofincome=7.00]	0		.	0		.

Source: Author's calculation from primary survey data

Awareness of financial services is one of the important variables of financial inclusion. In this instance, the ordinal logistic regression method is used to evaluate the relationship between financial awareness and other socioeconomic indicators. First, the goodness-of-fit test by Hosmer and Lemeshow (1989) measures how well the observed data match the fitted (assumed) model. It is used to measure the accuracy of the model. The p-value of the test before impact evaluation is 0.774 and after is 1.000, which is greater than 0.05 and, thus, the model adequately fits the data.

Before the treatment (-.42) older population was not very financially aware but after the treatment (0.006) older population was also financially aware. Before the treatment, (-.212) only the male population was financially aware but after the treatment, (.426) the female population was also became financially aware. Before the treatment, (-1.158, -1.255) education did not have any impact on financial awareness but after the treatment, (1.758, 1.951) people who are more educated tend to be more financially aware. Before the treatment the people who are working in govt. sector or having high income (16.920, 16.204) were only financially aware but after the treatment people who are farmers are also became financially aware but in the case of students and homemakers, there is no difference in financial awareness before and after. In the case of income, before the treatment (18.023, 20.528) only population who are having high income are financially aware but after the treatment (-2.536, -1.259) people whose income are less also became financially aware.

6.2. Financial accessibility

Impact evaluation	**Before (0.261)**			**After (0.741)**		
Socio-economic characteristics	**Estimate**	**Odds Ratio**	**Parameter Estimates (Sig.)**	**Estimate**	**Odds Ratio**	**Parameter Estimates (Sig.)**
Age	-.047	0.954087398	.102	-.022	0.978240235	.550
[Gender=1.00]	.228	1.256085325	.797	19.004	179197659.9	.997
[Gender=2.00]	0		.	0		.
[Education=1.00]	-.292	0.746768536	.893	2.095	8.12544097	.186
[Education=2.00]	.037	1.037693021	.986	1.523	4.585962466	.173
[Education=3.00]	0		.	0		.
[Occupation=1.00]	-2.213	0.10937204	.348	-41.377	1.07201E-18	.
[Occupation=2.00]	-1.075	0.341297755	.595	-1.363	0.255891948	.411
[Occupation=3.00]	-2.512	0.081105865	.399	18.678	129345800.5	.997
[Occupation=4.00]	.692	1.997706954	.807	-	-	-
[Occupation=5.00]	-1.807	0.164145836	.532	-2.272	0.103105762	.316
[Occupation=6.00]	-.175	0.839457021	.963	-4.539	0.010684085	.029
[Occupation=7.00]	0		.	0		.
[Income=1.00]	.349	1.41764919	.901	-2.646	0.070934384	1.000
[Income=2.00]	2.784	16.18362616	.303	-2.305	0.099758801	1.000
[Income=3.00]	0		.	-20.924	8.1813	.000
[Income=4.00]	-	-	-	-19.368	3.87779	.
[Income=5.00]	-	-	-	0		.
[Sourceofincome=1.00]	0		.	-40.716	2.07618	.
[Sourceofincome=2.00]	-.337	0.71390884	.859	-2.207	0.110030245	.145
[Sourceofincome=3.00]	0		.	0		.
[Sourceofincome=4.00]	-1.683	0.185815692	.414	-	-	-
[Sourceofincome=5.00]	0		.	-	-	-
[Sourceofincome=7.00]	0		.	0		.

Source: Author's calculation from primary survey data

Financial accessibility is another factor of financial inclusion. This variable was examined using the ordinal logistic regression method in the context of the current study to ascertain its association with socioeconomic characteristics. The p-value of the test before impact evaluation is 0.261 and after is 0.741, which is greater than 0.05 and, thus, the model adequately fits the data.

In the case of age there is little difference is found between before the treatment (-.047) and after the treatment (-.022) as after the treatment accessibility of financial services increased for older population. Before the treatment, (.228) accessibility of financial services was less by female population as comparison to male population, but after the treatment, (19.004) accessibility of the financial services in case of female population increased. Before the treatment, (-.292, .037) accessibility of financial services was less by illiterate and less educated population as comparison to highly educated but after the treatment, (2.095, 1.523) accessibility of financial services increased for illiterate and less educated population also. Before the treatment (-2.512) farmers were not able to access financial services but after the treatment (18.678) farmers are easily accessing financial services but in the case of students, homemakers and daily wage workers, there is no difference in financial accessibility before and after. In the case of income, before the treatment (.349, 2.784) only population who are having high income are accessing the financial services but after the treatment (-2.646, -2.305) people whose income are less financial services are easily accessible to them.

6.3. Financial Availability

Impact evaluation	Before (0.295)			After (0.936)		
Socio-economic characteristics	Estimate	Odds Ratio	Parameter Estimates (Sig.)	Estimate	Odds Ratio	Parameter Estimates (Sig.)
Age	-.033	0.96753856	.246	-.029	0.971416464	.290
[Gender=1.00]	.543	1.721162613	.537	.927	2.526917044	.442
[Gender=2.00]	0		.	0		.
[Education=1.00]	.777	2.174937656	.720	2.116	8.297879498	.110
[Education=2.00]	.520	1.68202765	.801	1.390	4.014850053	.125
[Education=3.00]	0		.	0		.
[Occupation=1.00]	-.938	0.391409873	.688	-24.006	3.75255E-11	.
[Occupation=2.00]	.221	1.247323431	.912	-1.997	0.135741899	.198
[Occupation=3.00]	-.227	0.796920782	.939	.289	1.335091729	.840
[Occupation=4.00]	-.281	0.755028335	.920			
[Occupation=5.00]	.634	1.885136063	.824	-.784	0.45657605	.668
[Occupation=6.00]	1.317	3.732207942	.723	-2.171	0.114063496	.246
[Occupation=7.00]	0		.	0		.
[Income=1.00]	2.027	7.591278329	.466	-.301	0.740077773	.899
[Income=2.00]	3.673	39.36983839	.171	.044	1.044982355	.984
[Income=3.00]	0		.	-.887	0.41188957	.681
[Income=4.00]				-1.733	0.176753354	.447
[Income=5.00]				0		.
[Sourceofincome=1.00]	0		.	-4.586	0.010193551	.046
[Sourceofincome=2.00]	.679	1.971904841	.719	-1.589	0.204129639	.260
[Sourceofincome=3.00]	0		.	0		.
[Sourceofincome=4.00]	1.439	4.216477231	.473			
[Sourceofincome=5.00]	0		.			
[Sourceofincome=7.00]	0		.	0		.

Source: Author's calculation from primary survey data

Availability of financial and banking services is another factor of financial inclusion. This variable was examined using the ordinal logistic regression method in the context of the current study to ascertain its association with socioeconomic characteristics. The p-value of the test before impact evaluation is 0.295 and after is 0.936, which is greater than 0.05 and, thus, the model adequately fits the data.

In the case of age there is little difference is found between before the treatment (-.033) and after the treatment (-.029) as after the treatment availability of financial services increased for older population. Before the treatment, (.543) availability of financial services was less for female population as comparison to male population, but after the treatment, (.927) availability of the financial services in case of female population increased. Financial services are available to the illiterate and less educated people as well before the treatment, (.777, .520), but after the treatment, (2.116, 1.390) availability of financial services increased for them. Before the treatment, financial services are available to population who are working in govt. sector or having high income (.634, 1.317) but after the treatment financial services are available to population also who are farmers (.289). In the case of income, before the treatment (2.027, 3.673) financial services are available the only population who are having high income but after the treatment (-.301, .044) financial services are also available to those population whose income are less. Before the treatment (.679, 1.439), financial services are available the only population whose source of income was more, as they can make more money, but after the treatment (-4.586, -1.589) financial services are available to those population also whose source of income was less.

6.4. Financial Usability

Impact evaluation	Before (0.547)			After (1.000)		
Socio-economic characteristics	**Estimate**	**Odds Ratio**	**Parameter Estimates**	**Estimate**	**Odds Ratio**	**Parameter Estimates**
Age	-.024	0.97628571	.386	-.007	0.993024443	.800
[Gender=1.00]	1.411	4.100053408	.113	-1.606	0.200688766	.199
[Gender=2.00]	0		.	0		.
[Education=1.00]	.188	1.206833515	.930	1.279	3.593044884	.339
[Education=2.00]	1.024	2.784309758	.615	.876	2.401275369	.342
[Education=3.00]	0		.	0		.
[Occupation=1.00]	-2.091	0.123563511	.367	-19.735	2.68657	.
[Occupation=2.00]	-1.370	0.25410696	.491	-.506	0.602902372	.747
[Occupation=3.00]	-3.919	0.019860946	.185	.609	1.838591887	.678
[Occupation=4.00]	-1.567	0.208670255	.571			
[Occupation=5.00]	-3.540	0.029013327	.213	2.677	14.54140358	.160
[Occupation=6.00]	-.675	0.509156421	.854	-1.958	0.14114042	.310
[Occupation=7.00]	0		.	0		.
[Income=1.00]	-.473	0.623130071	.863	-4.642	0.009638402	.066
[Income=2.00]	1.771	5.876727151	.499	-2.765	0.062976099	.236
[Income=3.00]	0		.	-3.135	0.043499754	.164
[Income=4.00]				-3.940	0.019448215	.100
[Income=5.00]				0		.
[Sourceofincome=1.00]	0		.	-1.046	0.351340303	.646
[Sourceofincome=2.00]	-.644	0.525187467	.729	.673	1.960108835	.641
[Sourceofincome=3.00]	0		.	0		.
[Sourceofincome=4.00]	-.384	0.681131427	.847			
[Sourceofincome=5.00]	0		.			
[Sourceofincome=7.00]	0		.	0		.

Source: Author's calculation from primary survey data

The use of financial services is another aspect in financial inclusion and is crucial in determining financial inclusion in the community, especially in places where it is difficult to access physical financial services like banks and other institutions. This variable was examined using the ordinal logistic regression method in the context of the current study to ascertain its association with socioeconomic characteristics. The p-value of the test before impact evaluation is 0.547 and after is 1.000, which is greater than 0.05 and, thus, the model adequately fits the data.

In the case of age there is little difference found between before the treatment (-.024) and after the treatment (-.007) as after the treatment usability of financial services increased for older population. There is no much impact is found for usability of financial services for female population as comparison to male population, after the treatment (-1.606) as usability of the financial services in case of female population not increased. Financial services are used by the illiterate and less educated people as well before the treatment, (.188, 1.024), but after the treatment, (1.279, .876) usability of financial services is increased. Before the treatment, financial services are used by very less population despite of their occupation (-2.091, -1.370, -3.919, -1.567, -3.540, -.675) but after the treatment usability of financial services are increased (-.506, .609, 2.677) for homemakers, farmers and population who are working in private sector. In the case of income, before the treatment (-.473, 1.771) financial services are used by the only populations who are having high income but after the treatment (-4.642, -2.765) financial services are also used by those population whose income are less. In case of source of income, before the treatment (-.644, -.384) despite the more source of income usability of financial services was less, but after the treatment (.673) usability of financial services is increased.

7. Findings from the analysis

The study demonstrated the significant impact of financial inclusion program on disadvantaged population of Sambalpur district. The outcomes of the overall study display that after the "financial inclusion" program, older population became financially aware, accessibility, availability, and usability of financial services increased for older population; after the financial program the female population was also became financially aware, accessibility and availability of the financial services increased, but there is no much impact is found for usability of financial services for female population as comparison to male population; Before the treatment, education did not had any impact on financial awareness, but after the financial inclusion program people who are more educated tend to be more financially aware, accessibility and availability of financial services increased for illiterate and less educated population, Financial services are used by the illiterate and less educated people as well before the treatment, but after the treatment, usability of financial services is increased; Before the treatment the people who are working in government sector or having high income were only financially aware but after the financial inclusion program, people who are farmers are also became financially aware, accessibility and availability of financial services became easy, but in the case of students, homemakers and daily wage workers, there is no difference in financial awareness and accessibility before and after, and before the treatment, financial services are used by very less population despite of their occupation but after the treatment usability of financial services are increased for homemakers, farmers and population who are working in private sector; After the treatment the people whose income are less also became financially aware, financial services are easily accessible, available, and are also used by them; In case of source of income, before the treatment despite the more source of income usability of financial services was less but after the treatment financial services are available to those population also whose source of income was less and also usability of financial services is increased.

8. Findings from the interview and observation technique

There has been conducted an interview of the respondents during data collection, and from the interview and observation method it has been found that large number of population open their bank account just to receive government subsidies/benefits, retirement pension, salary and for receiving amount from Self Help Group (SHG) and microfinance institutions. As Self Help Group has come to empower women, the SHG money has being wrongly used.

When respondents from Jamadarpali are asked, how they are using SHG money? The answer came from them is, they didn't had a home to live, in group they somehow got the SHG money and constructed a home for themselves, and then again back to their old work (Biddi making).

- *Respondents from the Jamadarpali*

Again the same question has been asked to the respondents from Kulundi. The answer came from them is, they bought saree or some useless thing from the SHG money, and when the times come to return the amount, they take it from their husband and return the money.

- *Respondents from the Kulundi*

From the interview method, it has been found that, there is need of financial awareness as well as keeping track on how the women population is using the SHG money. From SHG money buying saree or doing unnecessary things is bad, but using SHG money to build a home and not doing any business is also not the appropriate way to use SHG money. If this things will not improve then it is hard to fulfill the objective of financial inclusion.

9. Conclusion and Discussion

The study showed how the financial inclusion program significantly improved the lives of the district's underprivileged residents in Sambalpur. The current study offers an alternative viewpoint by employing a demand-side methodology and data gathered from the replies of a population that is disadvantaged. The study's conclusions can provide policymakers and lenders with crucial guidance. The results show that the financial inclusion program benefits the less fortunate residents of Odisha's Sambalpur District. The overall analysis's findings demonstrate that the financial inclusion program improved the senior population's knowledge of, access to, availability of, and ability to use financial services. However, the impact on the usability of financial services for females was not significant compared to males. Schooling shows a part in financial awareness and accessibility, and the program improved financial services for illiterate and less educated populations. The program also increased financial awareness and accessibility for farmers and homemakers, and those with lower incomes. Usability of financial services was increased for those with less income sources after the program. From the interview and observation method, it has been found that there is still a lack of awareness about financial services in the population of Sambalpur District. As, they know about programs/plans under the financial inclusion program, there is a need to educate them about how to use them. As we saw, in Jamadarpali, the lady invested all her money to make a home, but if she had been educated, as, if she could have opened any shop or anything with that money, she would have worked for a living, from that living she could have made a home for her plus she could have easily returned the money. And from Kulundi, the money given to her she bought a saree, but she could have done some small business or something, it would have helped her to become an independent woman.

The study suggests that the government and banking industry should increase awareness of monetary facilities for disadvantaged populations to improve their "financial inclusion" position. This could lead to socio-economic development, especially for the elderly

population. Financial institutions can simplify procedures, offer suitable products, run awareness campaigns, and waive the collateral requirement for small loans. Socio-economic characteristics play an important part in defining financial behavior, and understanding these factors can help banks reach low-income households in rural areas. Because there is a sizable unbanked population in these locations, financial policy makers should create financial policies that support financial inclusion among these people in order to give banks an opportunity to enter new markets.

10. Disclosure Statement

No potential conflict of interest was reported by the author(s).

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