# Accessibility of Institutional Credit among the Agricultural Labour Households and its Impact on their Livelihood

Kundu, Amit and DAS, SANGITA

Department of Economics, Jadavpur University, India

2 September 2021

# Accessibility of Institutional Credit among the Agricultural Labour Households and its Impact on their Livelihood

Amit Kundu and Sangita Das
Department of Economics
Jadavpur University,
Kolkata-700032, West Bengal, India

Corresponding author: Prof. Amit Kundu, Department of Economics, Jadavpur University, Kolkata, West Bengal, India, Pin-700032. E-mail: akundu29@gmail.com, akundu1970@gmail.com

# Accessibility of Institutional Credit among the Agricultural labour households and its Impact on their Livelihood.

**Abstract**

Despite the major structural changes in the Indian credit system, landless and near landless agricultural labour households are still facing difficulties while accessing formal credit services. The paper tries to examine the possible factors influencing the accessibility of institutional credit by agricultural labour households and its role in their livelihood. Based on a village-level field investigation in the district of East Medinipur, West Bengal, the study shows that the Possession of operational land, membership of SHG, diversified farm and non-farm income, and higher financial literacy index are the significant determinants to increase the possibility of receiving institutional credit for these households. Using the two-stage least square method, the paper further reveals that the monthly per capita income of the agricultural labour households can increase if they use institutional and non-institutional sources of loans in income-generating activities. The study also suggests that the lower the age of the household head and the less dependency on the informal credits for consumption purposes of the households, the higher the possibility of improving the livelihood of the agricultural labour households.

## 1. Introduction:

Agricultural labourers are those labourers who are engaged on another person's land for wages paid either in cash or in-kind or both. Around 41 percent of the total rural workforce in West Bengal is working as agricultural labourers who are either landless or marginal farmers in nature and more than 56 percent of marginal farmers possess less than 0.40-hectare agricultural land (70th round NSSO data, 2012-13). These labourers are casual, unskilled, and belonging to the backward class in the rural economic hierarchy. Limited accessibility of institutional credit with low saving ability is one of the main reasons that make them vulnerable to numerous covariates (e.g., natural calamity) and (or) idiosyncratic shocks (e.g., illness and marriage) (Tang and Guo, 2017). Mainly, constraints of acceptable collateral restrict their availability of formal credit. During the 1990s, the Govt. of India introduced several economic policies of financial inclusion for empowering the poor. The financial services such as Self-Help Group-Bank linkage programme (1992), Kisan Credit Cards (1998-99), Doubling Agricultural Credit programme (2004), Financial inclusion scheme (2005), Interest Subvention Scheme (2006-07), Swabhiman Scheme (2011), Jan Dhan Yojana (2014), etc. have already been implemented to increase the flow of credit in rural India. Despite the major structural changes in the Indian credit system, agricultural labour households, such as landless labour households, are still deprived of having institutional credits as they do not possess land or any other collateral which has any market value (Kumar, Singh, and Sinha, 2010). The 70th round survey of the National Sample Survey Organization (NSSO) has shown that agricultural loans had decreased from 66.3 percent in 1991 to 64 percent in 2013. The RBI further has shown that the growth rate of agricultural credit was 3.8 percent in 2017-18, against 12.4 percent in 2016-17 (Reserve Bank of India, 2018). Due to poor institutional credit services for the agricultural labour households, the non-institutional credit services still play a key role in the delivery of credit to rural households, (Kumar, Singh and Kumar, 2007). They disburse loans against some collaterals that may have very high personal value for the poor (Bhattacharyya, 2005). The dependency of non-institutional credit has been increased from 36 percent in 1990-91 to 44 percent in 2012-13 (NSSO, 2013). Informal lenders have always better information about the borrowers, and they have applied some contractual mechanisms or interlinkages to confirm that the debtors would not be defaulted (Bardhan and Udry, 1999). Hence, the asymmetric information (such as adverse selection and moral hazard problem) is not observed much in the non-institutional credit market (Tang and Guo, 2017). These informal credit institutions have disbursed around 36 percent of the total outstanding agricultural loan to the farmers (NSSO, All India Debt &

Investment Surveys, 2013). The average rate of interest charged by them has increased from 36 percent per annum in 1991-92 to 42 percent in 2002-03 and further exorbitantly to about 48 percent in 2012-13 (Kumar, et al., 2007, and Debt & Investment Surveys, 2013).

In this context, the paper will try to analyze the accessibility of credit among the agricultural labourers of West Bengal. During the 1970s the state had gone through a massive land reform movement such as operation Barga, the imposition of a ceiling on landholdings and redistribution of surplus land among the sharecroppers and landless; and the implementation of the minimum legislative wage rate for the landless labourers (Bhattacharyya, 2005). Operation Barga[1] has facilitated the rights of land ownership to state bargadars (sharecroppers) who, later, got the status of agricultural households. But, they were not in a state to generate sufficient saving for creating investment and working capital financing for enhancing agricultural productivity (Rajeev & Deb, 1998). These households do not even access adequate loans from scheduled commercial banks to meet their input requirements. The crop loan to input requirements ratio[2] in West Bengal is only 0.02 whereas, all-India average was 1.3 (RBI, 2019). Nearly 52% of agricultural households in West Bengal are suffering from indebtedness in either to institutional or non-institutional sources of credit (70th Round NSS Report, 2013). A well-developed financial system is, therefore, required to bring the poor labourers into the purview of the formal financial system (Ramji, 2009). Concisely, accessibility of institutional loans is a prerequisite of these labour households for short-term requirements of working capital and long-term investment in agriculture and other income-generating activities (Ramachandran and Swaminathan, 2002). In this paper, we have tried to investigate the possible factor(s) which can help the poor agricultural labour households to avail required size of credit from the formal sources. We shall further focus on investigating whether the institutional credit using income generating activities can help the beneficiary sample households to enhance their livelihood.

---

[1] Operation Barga had successfully registered more than 65 percent of an estimated 2.3-2.5 million sharecroppers by 1993 and aimed to educate their rights of cultivation (Banerjee, Gertler & Ghatak, 2002).

[2] The ratio is calculated by the Reserve Bank of India (RBI) based on the average of three years data 2014, 2015 and 216 for loans for input requirements, Gross Value of Output (GVO), and Gross Value Added (GVA). Here, Input requirement = Input Cost – (GVA – GVO). Input includes seed, organic manure, fertilizers, maintenance, irrigation changes, electricity, pesticides, and insecticides.

## 2. Review of literature:

An inadequacy of institutional credit service among the low-income group is one of the challenging issues in India. More than 50 percent of borrowers of the total borrowers of West Bengal depend on non-institutional credit (59th Round of NSSO and All-India Debt & Investment Survey, 2003). Weaker section categories such as SCs, STs, and OBCs and smallholders are much dependent on non-institutional loans with a high rate of interest that may fall them into chronic poverty (Rajeev and Deb, 1998, and Kumar, et al., 2010). Although people at the higher level of the income distribution can access a wide range of financial services, those who are at the lower level of the income distribution hardly access the basic financial services. In between, people are only using a banking account for deposits and withdrawals of money (Leeladhar, 2006). Applying the ordered logit model, Bhattacharjee, et al. (2009) had shown that developed districts of West Bengal face low accessibility of institutional credit of the total number of outstanding loans and availability of informal credit facility is higher. Tulasi, et al. (2017) studied the demand-side constraints of the usage of formal financial services in Delhi slums. The indicators such as employment opportunities, education, and financial literacy have increased the probability of demand for financial services such as ownership of a bank account, formal savings, formal borrowings, formal remittances, and insurance among the poor. Using the Probit regression analysis, Laha, et al. (2011) observed that a higher degree of economic status, level of education, possession of landholdings, non-farm employment, and social security schemes significantly influence the accessibility of financial services among the farm households.

Financial inclusion provides an easy, safe, and affordable credit service to the poor that boosts women's economic empowerment and reduces income inequality (Swamy, 2014, and Sharma, 2016). Using Multidimensional financial index (IFI) across countries, Sarma and Pais (2011) examined the macro-level factors to establish the relationship between financial inclusion and economic development. The result suggested that income, physical infrastructure for connectivity, and information augment the credit accessibility through financial inclusion whereas, banking sector variables, such as Non-performing assets (NPA) and Capital Asset Ratio, are negatively associated with the institutional credit to the poor. Without financial literacy or its training, financial inclusion may create additional costs for the bank. Despite the vast expansion of the financial inclusion programme, NSSO (2004-05) had shown that 20 percent of marginal farmers and 27 percent of total agricultural households in India access

institutional credit. Financial inclusion through Mahatma Gandhi Employment Guarantee Programme (MGNREGP, 2005) increases the accessibility of banking accounts but that does not imply that banking usage is enough among the rural poor (Ramji, 2009). Dev (2006) argued that the institutional banks are usually reluctant to provide credit to the poor labourers due to a lack of collateral. Opening a bank account for getting remittances or wage payments is not enough for financial inclusion among the marginal farmers and landless labour households. Supply-side solutions of the formal banking sector hardly work to the poorer section without creating enough demand for financial services (Rangarajan Committee, 2008).

Using a randomized field experiment among unbanked households in Indonesia and India, Cole, et al. (2009) investigated the relationship between financial literacy and demand for financial services. A financially literate person makes a better decision regarding financial services that can improve household well-being and reduce misallocation of capital and economic volatility. Financial knowledge always enhances an individual's financial well-being (Agarwalla, et al., 2015 & Mitchell and Lusardi, 2015). The banking networking system with the linkage of SHG boosts financial literacy, female empowerment, and social capital of the poor through their credit absorptive capacity (Thorat, 2006). Dev (2006) stated that low financial literacy and low productivity are the demand-side constraints of essential banking services. Basic level of financial literacy in the country, and the world, is not so high. The uneducated and ill-informed citizens produce simplistic policy solutions, and those solutions are generally suboptimal in any country's economy (Mishkin, 2008).

Khandker & Faruqee, (1999) evaluated the role of formal credit of the Agricultural Development Bank of Pakistan (ADBP) on rural welfare. The two-stage least square (2SLS) method had shown that 10 percent borrowing increases household consumption by 0.04% of total institutional credit. Households' usage of institutional loans significantly impacts farm income as well as their consumption pattern (Chowhan & Pande, 2014, Kumar, et al., 2017, and Bharti, 2018). Yorulmaz (2013) examined the role of financial services on the poor and observed that economic development and human development are positively related. Institutional credit services can improve living standards by generating job opportunities among the poor. Ramachandran and Swaminathan (2002), Chavan & Ramakumar (2002) and Bhatia & Chatterjee (2010) suggested that the high accessibility of institutional credit always helps in economic growth and development by bringing financial stability among the low-income groups. Although many economists have tried to highlight some facts of the rural credit market, they hardly focused on constraints of the accessibility of institutional loans among the

agricultural labour households. There is no significant study regarding the role of accessibility of formal credit utilizing income-generating activities on their livelihood. Based on a village-level field investigation of West Bengal, in this paper we shall try to investigate the possible factors responsible for having institutional credit services and the influence of such formal credit utilizing for income-generating activities on the livelihood of the agricultural labour households in West Bengal.

## 3. Research Objectives:

Based on the existing literature of the credit market scenario of India, a study is required to investigate the possible determinants which may help the agricultural labour households to access the institutional credit. Our paper aims to shed some light by examining the following objectives are as-

(a) To identify the possible factors which can enhance the probability of accessing the formal credit among the agricultural labour households.

(b) To examine the impact of institutional loans using income-generating activities on the livelihood (or monthly per capita income) of the agricultural labour households.

For this investigation we have chosen Purba (East) Medinipur district of West Bengal.

## 4. Data and Variables

4.1 Sample design and field investigation:

Our sample is drawn from the East Midnapur district of West Bengal. Out of 25 blocks of the district, we have chosen the largest block, Bhagwanpur-1 as it is one of the economically backward blocks. Based on the Modified Human Development Index (2011) scale, the poverty of this block is 27.81%. To provide institutional banking[3] and financial services, among the 164 villages of the block, thirty-five villages (21.34%) have post offices, 38 villages (23.17%) have agricultural credit societies, and six-villages (3.66%) have banks (Census of India, 2011). Among the 25 blocks in the district, Bhagwanpur Block-1 has developed the highest number of SHGs (6,567), and 2553 female members have already been involved in these SHGs

---

[3]Punjab National Bank (PNB), State Bank of India (SBI) of Bhagwanpur Branch, MugbariaGramin Bank, Central Bank of India (CBI) of Kajlagarh Branch, BhagwanpurGramin Bank, Contai co-operative bank, SBI Bajkul branch, UBI Bajkul branch, sub-post offices at Bhagwanpur-I and Kajlagarh.

(District statistical Handbook, Purba Medinipur, 2014). The identified surveyed areas are very much suitable to address our research objectives.

A well-structured questionnaire has been designed based on the pilot survey in the two villages of Mahammadpur GP-1. We have purposively chosen two large Gram Panchayats: Mahammadpur-I and Mahammadpur-II out of the ten Gram Panchayats. Out of 22 villages of these two GPs, nine villages[4] were chosen randomly. The primary objective of our field investigation was to capture financial behavior, financial literacy, and financial inclusion among the agricultural labour households[5].

In our empirical study, 55 households dropped out of total 460 sample households after data cleaning. Hence the total sample for our investigation is 405[6] agricultural labour households, and they are divided into two categories-

(i)     120 landless labourers and

(ii)    285 marginal farmers who possessed only their farming land within 0.01-1.00 Bigha.

The field survey was conducted between April and May 2019. Therefore, our reference period for this field study was from April 2018 to March 2019.

4.2 Data Analysis:

Some characteristics of the financial behavior among the sample agricultural labour households towards institutional banking are described in the following tables-

**Table-1: Banking details of the agricultural labour households (in percentage)**

| Bank Accounts /membership | Purpose of Bank Accounts | Marginal farmer HHs (%) | Landless labour HHs (%) | All (%) |
|---|---|---|---|---|
| SHG | Loans/Savings | 92.63 | 81.66 | 89.4 |

---

[4]Five villages of Gram Panchayat of Mahammadpur-1 are Mahammadpur-1, Benauda, Sekbar, Tiraipur and Mobarakpur and four villages of Gram Panchayat of Mahammadpur-II are Madammadpur-II, Uttarbar, Paschimbar and Nimakbar.

[5]Agricultural labour households in our sample households are those (i) whose at least one family member works as a hired labourer in the farming sector for last five years and (ii) who able to find work at least 30 person-days as the hired labourers in agriculture or its allied activities during a year (iii) whose size of operational holdings by own land or leased-in land or both is less than 0.5 hectare only. Targeted households were initially identified with the help of Gram Panchayat and ultimately selected them randomly.

[6]Based on the calculation of Cochran's Two-step method, 352 households are the ideal sample size of the population size of 4,027 agricultural labour households in our study area. In the paper, we have considered 405 sample households which are more than sufficient.

| Co-operative Bank | Loans/Savings | 53.33 | 5 | 39.012 |
|---|---|---|---|---|
| Commercial banks (e.g., SBI & Allahabad Bank & PNB) | Loans/Savings | 2.45 | 1.66 | 2.22 |
| | Jan Dhan Yojana (JDY) | 12.98 | 19.16 | 14.81 |
| | Mahatma Gandhi National Rural Employment Guarantee Programme (MGNREGP) | 97.54 | 95 | 96.79 |
| | Kanyashree | 29.47 | 10.83 | 23.95 |
| | Ujwala Gas Yojana | 17.19 | 31.66 | 21.48 |
| | Pension/Remittances | 10.87 | 5.83 | 9.38 |

Source: Calculated by authors from field investigation

Table-1[7] reveals that 89.4 percent of agricultural labour households have SHG membership. Our sample households have also their accounts[8] in commercial banks for MGNREGP wage payment[9] (97.54 percent), Kanyashree (24 percent), Ujwala Gas Yojana (21.48 percent), and Jan Dhan Yojana account (15 percent). Table-2 shows the institutional and non-institutional credit accessibility by our sample households.

---

[7]Table-1 shows the existence of more than 100 percent bank accounts among the agricultural labour households, as they open bank accounts simultaneously in several financial institutions (maybe overlapped) to perform several transactions during the reference year.

[8] The survey reports that 98 percent of agricultural labour households have two bank accounts for several financial transactions such as MGNREGP wage payments, Kanyashree, Ujwala Gas Yojana, savings accounts, remittances and pension etc.

[9]Around 51 percent of agricultural labour households have reported that they visit the bank for withdrawing the wage of MGNREGP only. Without this reason, their bank account is useless as they do not have enough money to meet the minimum standard of living.

**Table-2: Percentage distribution of the agricultural labour households who accessed institutional and non-institutional credits.**

| Types of loans | Sources of Loans | Marginal farmer HHs (%) | Landless labour HHs (%) | All (%) |
|---|---|---|---|---|
| Formal loans | Co-operative bank | 22.36 | 3.2 | 12.78 |
| | SHG | 18.41 | 27.97 | 23.19 |
| | Co-operative bank & SHG | 12.64 | 1.5 | 7.07 |
| Informal loans | Money Lender | 4.72 | 9.17 | 6.94 |
| | Non-Institutional Credit Society | 19.51 | 35.57 | 27.54 |
| | Friend/Relatives | 6.77 | 10.63 | 8.8 |
| Formal and Informal Loans | Any financial institutions | 11.89 | 6.76 | 9.32 |
| Not accessing any loan | | 3.7 | 5.2 | 4.45 |
| Total | | 100 | 100 | 100 |

Source: Calculated by authors from field investigation

In Table-2, we observe that around 13 percent and 23 percent of the households access their loans from co-operative banks and SHG, respectively. Further, 7 percent of households access loans from these two institutions simultaneously. It is also reported that 9.32 percent of the families access formal and informal loans simultaneously. Although these households are less interested in receiving loans from a moneylender at exorbitant rates, the dominance of other non-institutional sources such as non-institutional credit society is relatively high (around 28 percent) in our study region.

**Table-3: Percentage distribution of the agricultural labour households who accessed institutional and non-institutional credit for Income Generating Activities (IGA) or (and) Non-Income Generating Activities (NIGA).**

| Sources of credit | | Marginal Farmer HHs (%) | | Landless labour HHs (%) | | All (%) | |
|---|---|---|---|---|---|---|---|
| | | IGA | NIGA | IGA | NIGA | IGA | NIGA |
| Institutional sources | Co-operative Bank | 28.3 | 5.7 | 3.2 | 1.5 | 15.75 | 3.6 |
| | SHG | 23.12 | 15.33 | 16.55 | 18.92 | 19.83 | 17.12 |
| Non-institutional sources | Money lender | 1.17 | 3.55 | 2.05 | 7.12 | 1.61 | 5.33 |
| | Credit Society | 14.78 | 8.12 | 19.49 | 13.44 | 17.13 | 10.78 |
| | Friends/Relatives | 2.52 | 4.25 | 4.13 | 6.5 | 3.325 | 5.375 |

Source: Calculated by authors from field investigation

Table-3 is showing that the marginal farmers (28.3 percent) generally access credit from co-operative banks for income-generating activities[10], whereas most of the landless labour[11] households (19 percent) utilize loans from SHG for using non-income generating activities[12]. On the contrary, the informal credit sources such as non-institutional credit society plays an important role[13] in income generating activities especially for the landless labour households (19.49 percent). Table-4 shows that the indicators of financial literacy of the sample households.

---

[10]Income-generating activities are agriculture and its allied activities such as betel leaves and fisheries, and non-farm activities such as self-employed business and hair processing etc.

[11] Among the 120 landless labourers, around 40 percent of labourers can access institutional loans where 35.47 percent of the labourers have taken loans from SHG, and 4.7 percent of them access loans from the co-operative bank by using collateral (such as pond or house).

[12] Non-income generating activities such as consumption, marriage ceremony and illness, housing construction etc.

[13] In our study area, the agricultural labour households are highly involved in allied activities of agriculture such as betel cultivation and fisheries. Here, the wholesalers act as an intermediate between the informal credit society and the farmers (agricultural labour). There is an agreement that farmers must sell all their produce to the wholesalers in the presence of informal credit societies. After measuring total produce in terms of money at the market prices, wholesalers purchase products from the farmers. Farmers then repay their loans to the informal credit society with the rate of interest and earn some money from these cultivations. Farmers get loans from this credit society when they require credit at zero-transaction cost, and they cultivate and sell products to the wholesalers at zero transportation cost.

**Table-4: Indicators of Financial Literacy-gender-wise (in percentage)**

| Indicators | Marginal farmer HHs (%) | | Landless labour HHs (%) | | All (%) | |
|---|---|---|---|---|---|---|
| | Male | Female | Male | Female | Male | Female |
| Know KYC | 18.25 | 9.53 | 5.0 | 5.5 | 11.62 | 7.51 |
| Able to update passbook | 62.11 | 13.33 | 40.0 | 10 | 51.05 | 11.66 |
| Able to issue cheque book | 41.40 | 6.32 | 23.3 | 7.5 | 32.35 | 6.91 |
| Able to use ATM | 24.91 | 2.46 | 14.2 | 0.83 | 19.55 | 1.64 |
| Able to use mobile banking | 4.21 | 0.00 | 3.3 | 0 | 3.75 | 0.00 |
| Able to calculate arithmetic (+), (-), (*), (÷) | 89.12 | 25.26 | 77.5 | 34.16 | 83.31 | 29.71 |
| Knowledge of simple interest | 62.81 | 16.14 | 44.2 | 15.83 | 53.50 | 15.98 |
| Knowledge of compound interest | 10.54 | 1.21 | 6.1 | 0.33 | 8.32 | 0.77 |
| Concept of inflation | 23.51 | 7.37 | 15.0 | 4.16 | 19.25 | 5.76 |

Source: Calculated by authors from field investigation

Table-4 reveals that almost 90 percent of the respondents are not aware of KYC norms. Around 51 percent of male respondents and 11.66 percent of female respondents can update their passbooks. Most of the male respondents (83.31 percent) had reported that they can calculate simple arithmetic. Hardly any female member of the sample households knows the usage of mobile banking or can calculate compound interest. Besides, our survey results clearly reflect the prominence of gender inequality on financial literacy among the agricultural labour households.

## 5. Empirical Analysis and Discussion of Results

We first investigate the possible factors which can help the agricultural labour households during the time of receiving institutional credit. We know that agricultural labour households belong to the economically weaker section of rural economy. Still from the previous tables, it is observed that accessibility of institutional credit is not impossible for them. But obviously during the time of getting credit they are facing some uncertainties. So, we should investigate the possible factors which can enhance their possibility of getting institutional credit.

### 5.1 The possible factors for accessing institutional credit of the agricultural labour households

Initially the possible factors which can influence the possibility of having institutional credit will be narrated with theoretical justifications.

(i) Caste of the household ($caste_i$): In India, the scheduled castes (SC), scheduled tribes (ST), and other backward classes (OBC) are considered socially backward classes. It is observed that they are weak in terms of human capital and less aware of financial terms and conditions. Karthick and Madheswaran (2018) observed that the agricultural labour households who belong to socially marginalized castes (SC and ST) are highly deprived of the accessibility of institutional credit. Therefore, it is required to examine whether caste matters in the accessibility of institutional credit of the agricultural labour households.

(ii) Age of the household head ($age_i$): The younger head of the family is expected to be more dynamic and aware of the financial terms and conditions of borrowing that influence their decision to access more formal loans for productive purposes (Kumar, et al., 2010). This contradicts the observation of Karthick and Madheswaran (2018) who found that the age of the household head influences the accessibility of institutional credit positively as aged household's head might be more experienced which may increase more chances of accessibility of formal credit. Hence, it is needed to examine whether the age of the household head plays an important determinant during the time of accessibility of institutional credit.

(iii) Number of dependent persons of the $i^{th}$ household head (or dependency ratio)[14] in the family ($depratio_i$): It is expected that the accessibility of institutional credit of the household would be negatively related to the dependency ratio, as a higher 'depratio' increases the extra

---

[14]Dependency ratio (depratio) = $\frac{\text{(The number of dependents persons aged 0 to 18 years and over the age of 65 years)}}{\text{(The total population aged 18 to 64 years)}} \times 100$

financial burden of the respondent to meet the subsistence needs of other family members and it will be difficult for that household to repay credit within the stipulated time period.

(iv) Education of the household head ($edu_i$): Education not only influences productivity and income in the labour market but also improves an individual's ability to perform financial activities (Vasilevska, 2015). A higher level of education of the household head is, therefore, expected to lead to a higher probability of accessibility of the institutional credit as education helps to empower him with better information of various loan schemes implemented by the Govt. The total number of schooling years is used here to measure the educational attainment of the household head in the study.

(v) Education of the female head or spouse of household's head in the family ($femaleedu_i$): The education of the female head (or the spouse of household' head) is captured by the total number of schooling years in the study. It is observed that educated women join in various skilled and unskilled employment and strengthen their economic security. Besides, education helps to raise their awareness of financial services, and they can take part within the family as the decision-maker of the choice of institutional borrowing (Kumar, et al., 2007). It can be used as a proxy of woman empowerment.

(vi) Possession of operational landholdings of the $i^{th}$ households ($land_i$): Here, operational landholding is considered as the ownership of land as well as leased-in land for cultivation of the agricultural households (59th Round NSS, 2003). It is assumed that the households with possession of their own land (in Bigha) are likely to access more institutional credit since the ownership of land is treated as a collateral and can enhance the capacity of repayment of credit. Due to the possibility of less default rate, formal institutions are willing to disburse more credit to the landholders than the landless households. On the other hand, in our study area, it is observed that landless agricultural labourers have taken land on lease for one year and cultivated that. This land is also considered here which means '$land_i$' is applicable not only among the marginal farmer households who are also working as agricultural labourer, but also among the landless agricultural labour households.

(vii) Income from allied activities in agriculture ($alliedincomeagri_i$)[15]: Apart from Kharif and Rabi paddy production, our sample households are involved in several allied agricultural activities such as horticulture (especially vegetable and Betel leaf), fisheries, and livestock. The

---

[15] In the study, 'alliedincomeagri' includes only income from allied activities of agriculture. In the equation we have taken another variable 'land' which is used for agriculture purpose as land (own land and/or leased-in land) is the main source of agricultural income. To avoid taking repetition of agricultural income in the model, 'alliedincomeagri' only includes income from allied activities of the sample households.

agricultural labourers who are productive in allied activities of agriculture are likely to have access to more institutional credit (Baffoe and Matsuda, 2015) because their possibility of default is less.

(viii) Non-farm income of the family (nonfarmincome$_i$): The households with non-farm income are more likely to access institutional credit as they can diversify risk through the several non-farm income-generating activities (Baffoe and Matsuda, 2015).

(ix) Membership of SHG (shgmem$_i$): Self-help group membership of any female member of the sample household is expected to increase its probability of receiving formal credit. Here credit disbursed through Self-Help Group is treated as institutional credit[16]. Here credit disbursed through SHG is treated as institutional credit.

(x) Financial Literacy index (FLI$_i$): The information of nine sub-indicators has been considered to measure the financial literacy index of the household, described as – (a) knowledge of ‘ Know Your Customer (KYC)’ (b) ability to calculate basic arithmetic (c) knowledge of inflation (d) knowledge of simple interest (e) knowledge of compound interest (f) able to update passbook (g) able to issue cheque (h) able to use mobile banking (i) able to use ATM. All these indicators are binary in nature (=1 if the respondent has required knowledge, 0 otherwise). According to the methodology prescribed in the OECD on measuring financial literacy (OECD 2012), we have captured the financial literacy score by counting number of ‘yes’ responses of these nine sub-indicators of male and female member of the sample household separately. Using the simple adding method, we have then calculated the value of index of each household member separately and then have taken simple average score of both which represents the financial literacy index of a sample agricultural labour household. It is expected that a higher value of a financial literacy index of a household means more information on financial services and more awareness of terms & conditions of banking transactions which can enhance the possibility of getting institutional credit.

Before explaining the model, it is important to know that our econometric model will exist if and only if the sample households are not suffering any credit rationing problem during the time of receiving institutional credit[17]. The survey report informs that most of the marginal farmers receive their loans from co-operative banks against land collateral. Besides, the

---

[16] As NABARD facilitates sustained accessibility of financial products and financial services to the rural women through the Self-Help Group-Bank Linkage Programme (SHG-BLP) in a cost effective and sustainable ways.

[17] Our sample households generally access loans from co-operative banks and SHG.

households are drawing credit through Self-Help Group under a joint liability loans contract among all the members of the groups. Here each group member has the responsibility to repay the loans within the stipulated time to receive the next loans (Zeller, 1994). Interestingly they were able to get the amount of loan that they demanded which means, there is no possibility of a credit rationing among the sample households during the time of accessibility of loans from these formal lending institutions.

To address the research problem, the Probit model is applied in the study, as our dependent variable 'formalloan$_i$' is binary in nature. It takes the value 1 if the sample agricultural labour household has taken loan from formal sources at least once in the entire reference period, otherwise 0.

We have used here the Probit model in our study. Among the three different model fit criterion such as Akaike information criterion (AIC), Bayesian information criterion (BIC), and chi-square, the Probit model shows the marginally better result as compared to the logit model (Tulasi, el al., 2017). The Probit regression equation can be expressed as-

$$\text{formalloan}_i = \alpha_0 + \alpha_1(\text{caste}_i) + \alpha_2(\text{age}_i) + \alpha_3(\text{depratio}_i) + \alpha_4(\text{edu}_i)) + \alpha_5(\text{femaleedu}_i)$$
$$+ \alpha_6(\text{land}_i) + \alpha_7(\text{alliedincomeagri}_i) + \alpha_8(\text{nonfarmincome}_i)$$
$$+ \alpha_9(\text{shgmem}_i) + \alpha_{10}(\text{FLI}_i) + u_i \dots \dots \dots \dots \dots \dots \dots \dots (i)$$

Now, the descriptive statistics of all quantitative and qualitative variables used in equation (i) are described as in the Table-5.

**Table-5: Descriptive Statistics of the regressors including outcome variable.**

| Variables | Variable descriptions | Mean | Std. Dev | Max | Min |
|---|---|---|---|---|---|
| formalloan | =1 if any household access the formal loan (Co-operative bank and SHG); otherwise=0. | 0.629 | 0.483 | 1 | 0 |
| caste | =1 if any households belong to SC/ST/OBC; otherwise = 0 | 0.581 | 0.253 | 1 | 0 |
| age | Age of the household head (in years) | 48.088 | 8.824 | 70 | 26 |
| depratio | dependency ratio in the family | 0.454 | 0.329 | 0 | 1.5 |
| edu | Number of schooling years of household head | 8.237 | 3.33 | 17 | 0 |
| femaleedu | Number of schooling year of the female head (or spouse of household head) of the family | 6.649 | 3.79 | 13 | 0 |
| land | Size of own land and/or leased-in land for cultivation in terms of Bigha | 0.478 | 0.3712 | 1.051 | 0 |
| alliedincomeagri | Annual income (Rs) from agricultural allied activities of the family | 44818 | 33682 | 266774 | 0 |
| nonfarmincome | Annual income (Rs) from non-farm activities of the family | 56953 | 28825 | 167600 | 0 |

| shgmem | =1 if any female member of the family has the membership of SHG, otherwise=0 | 0.465 | 0.316 | 1 | 0 |
|--------|------------------------------------------------------------------------------|-------|-------|---|---|
| FLI | Financial Literacy Index | 1.969 | 1.115 | 5.5 | 0 |

Before going to the result, we have examined the likelihood ratio test for heteroskedasticity to check whether the variance of errors is the function of explanatory variables. It is observed that the variance (or spread) of consumption at low levels of income is much less compared to the variance of consumption at higher levels of income. The low-income group households are less flexible in spending their income as they spend a large proportion of income on necessities and there is hardly any scope in leisure spending (Frost, 2019). Our likelihood ratio test for heteroskedasticity also confirms that there is no existence of heteroscedasticity in the model as Prob > chi2 = 0.2183 (as the value is greater than 0.05, i.e., we have accepted the null hypothesis of homoskedasticity). Besides the heteroskedasticity test, the Variance Inflation Factor [VIF= $\frac{1}{(1-R^2)}$] is also examined to detect the inter-correlation among the explanatory variables. The test shows that there is no multicollinearity problem among the given regressors as their VIF values are less than 4. Table-6 provides the results of Probit regression analysis.

**Table-6: Dependent variable: Accessibility of formal loan of the agricultural labour households**

| Total number of observations= 405 | | |
|---|---|---|
| Variables | Value of coefficients | Average Marginal Effects $\left(\frac{\partial p_i}{\partial x_i}\right)$ |
| age | 0.02083** (0.0102) | 0.0056** |
| caste | -0.4837*** (0.1802) | -0.1291*** |
| depratio | -0.3216 (0.0923) | -0.0858 |
| edu | 0.0256 (0.0285) | 0.0068 |
| femaleedu | 0.0017 (0.0253) | 0.0005 |
| land | 0.0306*** (0.0044) | 0.0082*** |
| alliedincomeagri | 0.000017*** (2.81e$^{-06}$) | 4.42e$^{-06}$*** |
| nonfarmincome | 0.000021*** (3.20e$^{-06}$) | 5.70e$^{-06}$*** |
| shgmem | 0.5106** (0.1908) | 0.10282** |
| FLI | 0.08838* (0.0386) | 0.04359* |
| Constant | -2.14022*** | |
| Pseudo R$^2$ | 0.2802 | |
| Chi-square (10) | 149.59 | |

**Note**: *** indicates 1% level of significance, ** indicates 5% level of significance and * indicates 10% level of significance. Standard errors of the coefficients are written in parenthesis.

*Discussion:*

The result shows that higher age of the household head enhances the possibility of the household during the time of getting institutional credit. Our study confirms that the agricultural labour households belonging to backward classes (SC, ST, and OBC) have less possibility of receiving institutional credit than the general caste agricultural labour households. Land ownership enhances the possibility of getting institutional credit among the

agricultural labour households. Allied activities in the farming sector such as fisheries and betel leaves cultivation are performed extensively in our study area and occupy a high proportion of income of the total income of these households, and this enhances the accessibility of their institutional borrowing. Diversified non-farm activities among the households encourage them more credit transactions in the formal sector banks. The households with any female membership of SHG show a higher probability of getting institutional loans. The higher value of FLI boosts the cognitive ability of the agricultural labour households that helps them to understand the utility of formal financial services. Educational attainment and dependency ratio of the family have no significant impact on the probability of receiving institutional credit in our study area.

5.3. Examining the role of institutional credit on livelihood of the agricultural labour households.

To investigate the impact of credit using for income-generating activities on the livelihood of agricultural labour households, Average Monthly Per Capita Income (MPCI) of the sample household in adult equivalent term is considered as the proxy variable of its livelihood. It is calculated in the following way.

**Average Monthly Per capita income of the household (MPCI$_i$):** Initially the annual income of the household has been calculated by considering the income of each working member of the family from diverse occupations of the farm sector, non-farm sector, and leased in the land during our reference period (April 2018 to March 2019). We have also recorded the information about the annual savings (in formal and informal banks) and the amount of money required to repay the yearly credit with the rate of interest. We obtain the Net Annual Income (NAI) of the sample households after subtracting the annual savings and borrowings from the household's annual income. Dividing NAI by 12, we get a monthly income in the family that is converted into average Monthly Per Capita Income (MPCI) by dividing the adult equivalent scale[18] in the family.

---

[18] For simplicity, we have considered different weights for different age groups belonging to each family member of a household irrespective of their gender, physical stature and functionality. In the paper, we have constructed AES by assuming the following weights as- (i) Adult male and female members who aged above 18 years and below 60 years is used weight 1 (ii) Adults lying between 60-70 years is assigned weight 0.75 (iii) Adults whose aged in above 70 years is treated weight 0.5 (iii) Adolescents whose age in between 14 to 18 years is given weight 0.75 (iv) School-aged children who are in age group 6-14 years is used weight 0.5, and (v) Children whose age is below 6 years are given weight 0.25. For detail calculation of per capita adult equivalent expenditure, see (Townsend, 1994 and Kumar & Mahadevan, 2008).

## 5.4. Possible determinants of the livelihood of the agricultural households

Apart from credit taken for income generating activity, we must identify other possible factors which can also play a positive role to enhance the livelihood of the agricultural labour households. Initially possible explanatory factors will be narrated along with theoretical justification.

1. Size of formal loan for income generating activities (formalloanincome$_i$): The credit from co-operative banks and Self-Help Group is the key source of working capital of the agricultural labour households in our study area to undertake investment in agriculture or other income-generating activities. It is therefore required to assess whether these loans disbursement from formal banking sectors for income-bearing activities are adequate to improve their livelihood.

2. Size of informal loan for income generating activities of the i$^{th}$ households (informalloanincome$_i$): Due to short-term credit and the small and medium amount of loans disbursement with a high interest rate, informal credit may not favourable for using developmental activities compared to institutional credit. Bottomley's Lender's Risk Hypothesis (LRH) (1963, 1975) observed that an imperfection in the credit market exists where due to high probability of default, the interest rate charged by informal credit suppliers is much higher than that of the formal sector. Hence it is also required to examine whether informal loans even taken for income generating activity have any influence on improving their livelihood.

3. Average monthly health expenditure of the family during reference year (healthexp$_i$): Agricultural workers are likely to face chronic health hazards due to the prolonged usage of pesticides. Health impairment not only lowers their productivity but also reduces the number of working days in a year (Antle & Pingali, 1994).

4. Size of institutional loan used for non-income generating activities (formalloannonincome$_i$): It is expected that formal loan use for non-income generating activities like for consumption or medical purposes may create a debt burden of the borrower and can create an impact negatively on MPCI of that household.

5. Size of informal loan used for non-income generating activities of the i$^{th}$ households (informalloannonincome$_i$): Non-institutional credit using for consumption purposes is observed to be a huge debt burden on these households as they need to repay principal money with a high rate of interest during a short time. But it does not help the borrower to generate a

few extra incomes. So, we must investigate whether this credit taken from informal sources creates any impact on the livelihood of the agricultural labour households.

6. Total number of family labourers of the i<sup>th</sup> households (familylabour$_i$): The family labour force may play an influential role in increasing the income of the households. Most of the time agricultural labour households cultivate their land or (and) leased-in land and perform allied activities in agriculture with the help of the family labour force. In the study area, it is observed that the female members might not work outside as agricultural labourers but they engage as family labourers in agriculture and allied activities. As labour cost is very high (Cash Rs 350/day plus kind), these households are not interested to hire labour during the time of their agricultural activity.

7. Financial literacy index (FLI$_i$): Financial literacy develops an individual's financial knowledge and raises awareness of financial services (Atkinson & Messy, 2012). The financially literate households are expected to invest institutional credit more on income-bearing activities and less on income non-generating activities which can influence the Monthly Per Capita Income (MPCI) of a household positively.

Here 'FLI' may not directly depend on MPCI but influence MPCI through the accessibility of credit utilizing on income-generating activities or on income non-generating activities. Hence, we have used 'FLI' as an instrumental variable for the formal credit using income bearing activities (formalloanincome) or for using non-income generating activities (formalloannonincome) and for the informal credit using income bearing activities (informalloanincome) or for using non-income generating activities (informalloannonincome) of the agricultural labour households in our study.

Apart from the above variables, we have taken variables such as age and education of the household head and dependency ratio of the family, which have already been discussed in the sub-section of 5.1.

For the econometric analysis, we initially examine the Multi-co linearity test of all the above-mentioned explanatory variables. Among all the regressors, four variables[19] such as formaloanincome, formalloannonincome, informalloanincome, and informalloannonincome are suffering from multicollinearity problems. Hence, to avoid the problem of multicollinearity

---

[19] Although VIF values of these variables are less than 4.

among the variables, we must consider four separate regression equations in four models to identify the possible factors responsible for the livelihood of the agricultural labour households. The equations of the model-1 can be written as-

$$\text{MPCI}_i = \beta_0 + \beta_1(\text{formalloanincome}_i) + \beta_2(\text{age}_i) + \beta_3(\text{edu}_i) + \beta_4(\text{familylabour}_i)$$
$$+ \beta_5(\text{healthexp}_i) + \beta_6(\text{depratio}_i) + u_{1i} \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \text{(ii)}$$

and $(\text{formalloanincome}_i) = f(\text{FLI}_i, v_{1i}) \ldots \ldots \ldots \ldots \ldots \ldots \ldots$ (iii)

Equations of the model-2 can be written as-

$$\text{MPCI}_i = \gamma_0 + \gamma_1(\text{formalloannonincome}_i) + \gamma_2(\text{age}_i) + \gamma_3(\text{edu}_i) + \gamma_4(\text{familylabour}_i)$$
$$+ \gamma_5(\text{healthexp}_i) + \gamma_6(\text{depratio}_i) + u_{2i} \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \text{(iv)}$$

and $(\text{formalloannonincome}_i) = f(\text{FLI}_i, v_{2i}) \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots$ (v)

Equations of the model-3 can be written as-

$$\text{MPCI}_i = \delta_0 + \delta_1(\text{informalloanincome}_i) + \delta_2(\text{age}_i) + \delta_3(\text{edu}_i) + \delta_4(\text{familylabour}_i)$$
$$+ \delta_5(\text{healthexp}_i) + \delta_6(\text{depratio}_i) + u_{3i} \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \text{(vi)}$$

and $(\text{informalloanincome}_i) = f(\text{FLI}_i, v_{3i}) \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots$ (vii)

Two equations of the model-4 can be written as-

$$\text{MPCI}_i = \mu_0 + \mu_1(\text{informalloannonincome}_i) + \mu_2(\text{age}_i) + \mu_3(\text{edu}_i) + \mu_4(\text{familylabour}_i)$$
$$+ \mu_5(\text{healthexp}_i) + \mu_6(\text{depratio}_i) + u_{4i} \ldots \ldots \ldots \ldots \ldots \ldots \ldots \text{(viii)}$$

and $(\text{informalloannonincome}_i) = f(\text{FLI}_i, v_{4i}) \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots$ (ix)

Now, the summary statistics of all the explanatory variables used in equation (ii), (iv), (vi) and (viii) are described as in the following table 7.

**Table-7 Summary statistics[20] of the variables used in the models-1,2,3 and 4**

| Variables | Variable descriptions | Mean | Std. Dev | Min | Max |
|---|---|---|---|---|---|
| MPCI | Monthly Per Capita Income of the family (Rs.) | 1446.71 | 935.35 | 72.99 | 6846 |
| formalloanincome | accessed formal loans (Rs) using income generating activities | 22125.93 | 15683.01 | 0 | 75000 |
| Formalloannonincome | accessed formal loans (Rs) using consumption purposes | 6527.41 | 2829.63 | 0 | 35000 |
| informalloanincome | taken informal loans (Rs) using income generating activities | 11490.17 | 4787.65 | 0 | 50000 |
| informalloannonincom | taken informal loans (Rs) using consumption purposes | 16197.34 | 11423.27 | 0 | 100000 |
| familylabour | total number of family labourers | 2.5061 | 0.7433 | 1 | 5 |
| healthexp | average monthly health expenditure | 836.902 | 415.97 | 350 | 3733 |

Source: Authors' calculation

In equation (ii) of model-1, accessibility of formal loans using income-generating activities (formalloanincome) of the family may suffer from endogeneity problem. Some unobserved individual characteristics such as skill, proficiency, or any entrepreneurship ability can influence in making of institutional credit decisions of the households that may lead to biased results in OLS regression analysis.

---

[20]The summary statistics of the factors such as 'age','edu', and 'FLI' are already described in the Table-6.

To avoid the endogeneity problem, we use instrumental variable analysis using the Two-Stage Least Square Method. Here, the error term, $u_{1i}$ captures unobserved factors which is assumed to be correlated with the exogenous variable (formalloanincome) in the equation (ii). To allow the correlation between the regressor and the error term, we have taken the variable 'FLI' which is strictly exogenous and uncorrelated with $u_{1i}$.

Initially endogeneity test is required to detect whether endogeneity problem is present in our study. If the model suffers from endogeneity problem, then we can apply Instrumental variable analysis applying the Two-Stage Least Square method. To perform endogeneity test, we initially use the two-step procedures in the equation (ii) with the help of instrumental variable analysis are as follows-

Firstly, we regress endogenous variable 'formalloanincome$_i$' on its exogeneous regressors of equation (ii) and the instrumental variable 'FLI', of equation (iii). Then the augmented equation can be written as-

$$\text{formalloanincome}_i = \beta_0' + \beta_1'(\text{age}_i) + \beta_2'(\text{edu}_i) + \beta_3'(\text{familylabour}_i) + \beta_4'(\text{healthexp}_i)$$

$$+ \beta_5'(\text{depratio}_i) + \beta_6'(\text{FLI}_i)) + \varepsilon_{1i} \ldots\ldots(x)$$

Secondly, after regressing the endogenous variable (formalloanincome$_i$) on regressors and the instrumental variable FLI$_i$ in equation (x), we get estimated residual form $\widehat{\varepsilon_{1i}}$ for ($\widehat{\text{formalloanincome}_i}$) and introduce it in the original equation (ii). Hence, the new equation becomes–

$$\text{MPCI}_i = \beta_0'' + \beta_1''(\text{age}_i) + \beta_2''(\text{edu}_i) + \beta_3''(\text{familylabour}_i) + \beta_4''(\text{healthexp}_i)$$

$$+ \beta_5''(\text{depratio}_i) + \theta\widehat{\varepsilon_{1i}} + u_{1i}. \ldots\ldots\ldots\ldots\ldots (xi)$$

Where, the Null Hypothesis is $\hat{\theta} = 0$. There is no existence of endogeneity problem in the model if we accept the Null Hypothesis. The presence of endogeneity problem is established here as the parameter estimates of $\widehat{\varepsilon_i}$, i.e., $\hat{\theta}$ is significant, i.e., the study rejects the null hypothesis in our model. We, therefore, have used the instrumental variable analysis in the regression equation (ii) considering the Financial Literacy Index (FLI$_i$) as an instrumental variable[21] of accessibility of formal loan for using income generating activities (formalloanincome).

---

[21] The value of partial F-statistic test is more than 10, indicated as Financial literacy index (FLI) is a strong instrumental variable of the formal loans utilizing income bearing activities (formalloanincome) of the labour

Similarly due to the existence of endogeneity problem of formal loan using non-income generating activities (formalloannonincome), non-formal loans using income generating activities (nonformalloanincome)[22] and non-formal loans using non-income generating activities (nonformalloannonincome), we have followed the two stage least square method using instrumental variable technique in the equation (iv), (vi) and (viii) of model-2, 3 and 4 as in the earlier model-1 of equation (ii). Financial Literacy Index (FLI) is used as an instrumental variable in all three remaining situations.

Now Table-8 represents the results of the Instrumental variable regression analysis in four separate models are as follows-

**Table-8: Instrumental variable analysis: Dependent variable- Monthly Per Capita Income (MPCI)**

|  | Equation (ii) (Model-1) | Equation (iv) (Model-2) | Equation (vi) (Model-3) | Equation (viii) (Model-4) |
|---|---|---|---|---|
| Observations | 405 | 405 | 405 | 405 |
| Variables | Value of the coefficient | Value of the coefficient | Value of the coefficient | Value of the coefficient |
| formalloanincome | 0.1194*** (0.2091) | | | |
| formalloannonincome | - | -0.5958 (0.1478) | - | - |
| informalloanincome | - | - | 0.0641*** (0.0249) | - |
| informalloannonincome | - | - | - | -0.4847** (0.1203) |

---

households.

[22] The accessibility of informal loans using income-generating activities (informalloanincome) of the family may suffer from endogeneity problem. Some unobservable household attributes, work environment, productivity of labour and nature of investment on asset endowment may affect household demand for credit and consequently, its estimations become biased.

| | | | | |
|---|---|---|---|---|
| age | -14.5136*** | -15.4758*** | -21.2437*** | -19.4456*** |
| | (6.0818) | (6.1538) | (8.7981) | (7.8571) |
| edu | 52.144 | 3.7399 | 157.455 | 98.658 |
| | (18.661) | (16.058) | (44.652) | (31.401) |
| familylabour | 133.3093* | 158.808** | 940.997** | 173.757*** |
| | (65.1046) | (81.562) | (251.834) | (83.851) |
| healthexp | 0.3801 | 0.4148 | 0.1962 | -1.5839 |
| | (0.1372) | (0.1378) | (0.1417) | (0.4978) |
| depratio | -691.371*** | -264.739* | -322.305** | -1605.984*** |
| | (159.463) | (103.171) | (158.408) | (313.967) |
| Constant | 1216.615*** | 401.282* | -2248.377** | -6775.595*** |
| R-squared | 0.1388 | 0.1388 | 0.1167 | 0.1167 |
| Adjusted R-squared | 0.1083 | 0.1083 | 0.0953 | 0.0953 |

**Note**: *** indicates 1% level of significance, ** indicates 5% level of significance and * indicates 10% level of significance. Standard errors of the coefficients are written in parenthesis.

*Discussion:*

Table - 8 shows that size of institutional credit taken by the agricultural labour households for income-bearing activities increases their monthly per capita income. It is also observed that 1% more accessibility of non-institutional loans for using income-generating activities of the sample households results in the enhancement of Monthly Per Capita Income (MPCI) by 0.064 percentage points. A greater numbers of family labourers engaging their agriculture and allied activities can enhance the MPCI. This may happen due to more number of family members of the sample households are involved into diversified occupations (Kundu and Das, 2021). But a non-institutional loan using consumption purposes reduces the MPCI of the family. Our evidence further suggests that the higher dependency ratio of a family and aged household head influence MPCI of the household negatively. The other variables such as accessibility of institutional credit for family consumption, monthly health expenditure of the family, and

educational attainment of the household head have no influence on the livelihood of the labour households.

## 6. Conclusion and Policy Implications:

Basic objective of the present study was at identifying the possible factors which can help the agricultural labour households to get institutional credit and tried to estimate the impact of the institutional loans on their livelihood when used in income-generating activities. The Probit Regression analysis shows that the operational holdings is one of the crucial determinants for the availability of institutional credit. We have also recognized that the female members involved in SHG are economically empowered through employment opportunities and enhancement of credit absorptive capacity. Moreover, diversified allied agricultural income and non-farm income have a positive and significant impact on the accessibility of their institutional loans. The higher financial literacy index of the households boosts them to do more financial transactions in the formal banking sector. Using Instrumental Variable analysis, it is further observed that the institutional borrowing using income-generating activities impacts the MPCI of the households positively. Non-institutional sources of loans (such as, informal credit society) for income-generating activities in our study have a vital role in creating job opportunities, especially, for the landless labourers, enabling them to be free from at least a chronic level of poverty. We have also shown that the possibility of monthly per capita income will be increased if the households are less dependent on informal credits for consumption purposes throughout the year. Besides that, the lower age of the household head and less dependency ratio in the family is better for the livelihood of the agricultural labour households. Most important issue requires to make institutional credit available among the agricultural labour households is to enhance financial literacy among the members and that can be done if in each bank, there is a help desk which can help these poor customers to accustom in different banking related activities. Accessibility of formal credit becomes much easier if a female member of the sample household is a SHG member. Arranging better group corpus among the self-help groups can help the agricultural labour households to get larger amount of institutional credit from the group which can be used for income generating activities and ultimately can create positive impact on average monthly per capita income of those poor households. Special arrangement is also required among the agricultural labour households belonging to backward class so that they can get more institutional credit to improve their livelihood.

**References:**

1. Agarwalla, S.K., Barua, S.K., Jacob, J. and Varma, J.R., 2015. Financial literacy among working young in urban India. *World Development*, *67*, pp.101-109.

2. Antle, J.M. and Pingali, P.L., 1994. Pesticides, productivity, and farmer health: A Philippine case study. *American Journal of Agricultural Economics*, *76*(3), pp.418-430.

3. Atkinson, A. and Messy, F.A., 2012. Measuring financial literacy: Results of the OECD/International Network on Financial Education (INFE) pilot study.

4. Baffoe, G. and Matsuda, H., 2015. Understanding the determinants of rural credit accessibility: The case of ehiaminchini, Fanteakwa District, Ghana. *Journal of sustainable development*, *8*(6), pp.183-195.

5. Banerjee, A. V., Gertler, P. J., & Ghatak, M., 2002. Empowerment and efficiency: Tenancy reform in West Bengal. *Journal of political economy*, *110*(2), 239-280.

6. Bardhan, P. and Udry, C., 1999. *Development microeconomics*. OUP Oxford.

7. Bharti, N., 2018, Evolution of agriculture finance in India: a historical perspective, *Agricultural Finance Review*, Vol. 78 No. 3, pp. 376-392.

8. Bhatia, N. and Chatterjee, A., 2010. Financial inclusion in the slums of Mumbai. *Economic and Political weekly*, pp.23-26.

9. Bhattacharjee, M., Rajeev, M. and Vani, B.P., 2009. Asymmetry in information and varying rates of interest: a study of the informal credit market in West Bengal. *Margin: The Journal of Applied Economic Research*, *3*(4), pp.339-364.

10. Bhattacharjee, M., Rajeev, M., & Vani, B. P., 2009. Asymmetry in information and varying rates of interest: a study of the informal credit market in West Bengal. *Margin: The Journal of Applied Economic Research*, *3*(4), 339-364.

11. Bhattacharyya, S., 2005. Interest rates, collateral and (de-) interlinkage: a micro-study of rural credit in West Bengal. *Cambridge Journal of Economics*, *29*(3), 439-462.

12. Census 2011. Census of India, Govt. of India, Ministry of Home Affairs, www.*censusindia.gov.in*

13. Chandrasekhar, S., 2014. Reading the tea leaves on financial inclusion: the case of rural labour households. *Economic and Political Weekly*, pp.43-51.

14. Chavan, P. and Ramakumar, R., 2002. Micro-credit and rural poverty: An analysis of empirical evidence. *Economic and Political weekly*, pp.955-965.

15. Chowhan, S.S. and Pande, J.C., 2014. Pradhan Mantri Jan Dhan Yojana: A giant leap towards financial inclusion. *International Journal of Research in Management & Business Studies*, *1*(4), pp.19-22.

16. Cole, S.A., Sampson, T.A. and Zia, B.H., 2009. *Financial literacy, financial decisions, and the demand for financial services: evidence from India and Indonesia* (pp. 09-117). Cambridge, MA: Harvard Business School.

17. Dasgupta, R. 2009. Two Approaches to Financial Inclusion. *Economic and Political Weekly*, Vol. 44, No. 26/27, pp. 41-44.

18. Dasgupta, R., 2002. Priority sector lending: Yesterday, today and tomorrow. *Economic and Political Weekly*, pp.4239-4245.

19. Dev, S.M., 2006. Financial inclusion: Issues and challenges. *Economic and political weekly*, pp.4310-4313.

20. District Statistical Handbook, purba Medinipur 2014. Bureau of Applied Economics & Statistics, Department of Statistics & Programme Implementation, Government of West Bengal, West Bengal.

21. Frost, J., 2019. Heteroscedasticity in regression analysis. *Retrieved from Statistics by Jim*.

22. Gupta, R.M., 1992. Lender's Risk Hypothesis, Rural Interest Rate and the Shadow Wage in the Urban Sector. *Journal of Economic Development,* Vol. 17, No. 2, pp. 37-47

23. Karthick, V. and Madheswaran, S., 2018. Access to Formal Credit in the Indian Agriculture: Does Caste matter? *Journal of Social Inclusion Studies*, *4*(2), 169-195.

24. Khandker, S.R. and Faruqee, R.R., 2003. The impact of farm credit in Pakistan. *Agricultural Economics*, *28*(3), pp.197-213.

25. Kumar, A., Mishra, A.K., Saroj, S. and Joshi, P.K., 2017. Institutional versus non-institutional credit to agricultural households in India: Evidence on impact from a national farmers' survey. *Economic Systems*, *41*(3), pp.420-432.

26. Kumar, A., Singh, D.K. and Kumar, P., 2007. Performance of rural credit and factors affecting the choice of credit sources. *Indian Journal of Agricultural Economics*, *62*(902-2016-67995).

27. Kumar, A., Singh, K.M. and Sinha, S., 2010. Institutional credit to agriculture sector in India: Status, performance and determinants. *Agricultural Economics Research Review*, *23*(2), pp.253-264.

28. Kumar, S. and Mahadevan, R., 2008. *Construction of An Adult Equivalence Index to Measure Intra-household Inequality and Poverty: Case Study* (No. 363).

29. Kundu, A. and Das, S., 2021. Occupational Diversification as Livelihood Strategy Among the Agricultural Labour Households of West Bengal, India. *Management and Labour Studies*, p.0258042X211026149.

30. Laha, A., Kuri, D. and Kumar, P., 2011. Determinants of financial inclusion: A study of some selected districts of West Bengal, India. *Indian journal of finance*, *5*(8), pp.29-36.

31. Leeladhar, V., 2006. Taking banking services to the common man-financial inclusion. *Reserve Bank of India Bulletin*, *60*(1), pp.73-77.

32. Mishkin, F.S., 2008. *The importance of economic education and financial literacy: a speech at the Third National Summit on Economic and Financial Literacy, Washington, DC, February27, 2008* (No. 368).

33. Mitchell, O.S. and Lusardi, A., 2015. Financial literacy and economic outcomes: Evidence and policy implications. *The journal of retirement*, *3*(1), pp.107-114.

34. NSSO, 2006. *Employment and unemployment in India, 2004–05*, NSS 61st Round (Report No. 515, Parts I & II). New Delhi: Ministry of Statistics and Programme Implementation, Government of India.

35. NSSO, 2006. Some aspects of operational land holdings in India, 2002–03, NSS 59th Round (January–December, 2003), National Sample Survey Organisation, Ministry of Statistics & Programme Implementation Government of India, New Delhi. Available at 492_final.pdf (mospi.nic.in)

36. NSSO, 2013. *Situation Assessment Survey of Agricultural Households*,70th round (January – December, 2013), National Sample Survey Organization, Ministry of Statistics and Programme Implementation, Government of India, New Delhi

37. Rajeev, M., & Deb, S. (1998). Institutional and non-institutional credit in agriculture: Case study of Hugli district of west Bengal. *Economic and Political Weekly*, 2997-3002.

38. Ramachandran, V.K. and Swaminathan, M., 2002. Rural banking and landless labour households: institutional reform and rural credit markets in India. *Journal of Agrarian Change*, *2*(4), pp.502-544.

39. Ramji, M., 2009. Financial inclusion in Gulbarga: Finding usage in access. *Center for Micro Finance Working Paper*, *26*.

40. Rangarajan, C., 2008. Report of the committee on financial inclusion. *Ministry of Finance, Government of India*.

41. Reserve Bank of India, 2018. Annual Report on Credit Delivery and Financial Inclusion, 2017-18, Mumbai. Available at   Reserve Bank of India - Annual Report (rbi.org.in)

42. Reserve Bank of India, 2019. Report of the Internal Working Group to Review Agricultural Credit, September 06, 2019. Available at   Reserve Bank of India - Reports (rbi.org.in)

43. Sarma, M. and Pais, J., 2011. Financial inclusion and development. *Journal of international development*, *23*(5), pp.613-628.

44. Sharma, D., 2016. Nexus between financial inclusion and economic growth: Evidence from the emerging Indian economy. *Journal of financial economic policy*.

45. Swamy, V., 2014. Financial inclusion, gender dimension, and economic impact on poor households. *World development*, *56*, pp.1-15.

46. Tang, S. and Guo, S., 2017. July. Formal and informal credit markets and rural credit demand in China. In *2017 4th International Conference on Industrial Economics System and Industrial Security Engineering (IEIS)* (pp. 1-7). IEEE.

47. Thorat, U., 2006. Financial inclusion and millennium development goals. *RBI Bulletin*, *50*(2), pp.239-243.

48. Townsend, R. M., 1994. Risk and insurance in village India. *Econometrica: Journal of the Econometric Society*, Vol.4 pp. 539-591.

49. Tulasi, G., Golait, R., Sethi, M. and Goel, S., 2017. Involuntary exclusion and the formal financial sector. *Economic and Political Weekly*, *52*(36), pp.67-72.

50. Vasilevska, D., 2015. Education as a factor in the development of human capital: case of Latvia. *Universal Journal of Management*, *3*(2), pp.79-84.

51. Yorulmaz, R., 2013. Construction of a regional financial inclusion index in Turkey. *BDDK Bankacılık ve Finansal Piyasalar Dergisi*, *7*(1), pp.79-101.