

Study of Financial Literacy and Its Impact on Rural Development in India: Evidence Using Panel Data Analysis

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Abstract- *The paper aims to examine the impact of financial literacy on financial inclusion and rural development in India. We take secondary data from 29 states and two union territories in India for three fiscal years, i.e., 2018 to 2020. The present study uses panel data analysis (PDA) to test the hypothesis. As per result, financial literacy positively impacts financial inclusion and rural development. The present study suggests that the banks and government should pay more attention to expanding financial literacy. It is an essential part of financial inclusion. Both are important for socio-economic development. It increases impressive economic growth and alleviates poverty, which can be accomplished by investing in infrastructure that improves banking services.*

Indexed Terms- *Financial literacy, Financial Inclusion, Rural development, Banking, KCC.*

I. INTRODUCTION

This study aims to investigate the relationship between financial literacy, financial inclusion, and rural development in India. Financial inclusion (FI), such as the Kisan credit cards and other financial products and services, has an option for rural development [17]. It can be possible when financial literacy covers rural populations in India. Financial literacy is a unique part of financial inclusion, helping financial inclusion. Financial literacy is the most important social welfare microfinance and suitable development and its positive impact on financial inclusion and rural development [19]. The most important is financial knowledge for rural people and financial training for

the best result of financial inclusion. Financial literacy is the most valuable welfare benefits financial inclusion and proper development factor, and it has a positive impact on financial inclusion and rural development [23]. Financial awareness and financial education are critical for the rural population. Financial inclusion does not mean that everyone has access to all available financial services, but not everyone has access [1]. There is a need to provide people with continuous access to financial services to improve their standard of living [2].

Financial inclusion is the availability of affordable banking services to vulnerable low-income groups. The basic premise of financial inclusion in India is to have a savings or current account with any bank. This includes credit insurance services and more [8]. On some other economic figures, every developing country the developed country in the world is attempting to achieve unified financial inclusion [32]. In this regard, the Government of India has launched several major initiatives, including the nationalization of banks, the establishment of cooperative banks, the establishment of regional rural banks, the implementation of a bank licensing policy, and, most recently, the introduction of the Pradhan Mantri Jan Dhan Yojana (PMJDY) [35]. Pradhan Mantri Jan Dhan Yojana has assisted the poor and marginalized in opening bank accounts with no or low minimum balances [33]. The Reserve Bank of India, like the Indian Government, has undertaken numerous initiatives to enhance banking services for the unbanked rural population [35]. Setting up of new branches in new ATMs RBI continues to encourage the banking sector to implement NRE and enable

bankers to use Information and Communication Technology through the BC model [39].

The RBI has made consistent efforts, and the government has declared many policies to increase financial inclusion [44]. Bank extending into rural areas, ATMs, agro-based loans, KCCs, GCCs, and PMJDY are some of the government's efforts to combat poverty and economic exclusion [40]. Financial exclusion is caused by inclusion barriers such as remoteness, a lack of proper documents, high costs, and a lack of financial literacy [43]. These must be overcome to increase financial inclusion. Government initiatives such as linking Aadhar cards to bank accounts, no-frills accounts, financial literacy, microfinance institutions, KCC, and GCC can help people overcome financial exclusion [16]. There are several significant challenges in financial integration, such as bridging the gap between these social sectors within the formal financial system and strengthening credit mechanisms to provide financial knowledge and promote financial and economic development [15]. Unlimited access to public goods and services is necessary for an open and efficient society [14]. Because banking services are in the nature of public interest. The main objective of this public policy is to ensure that all residents have access to banking and payment services without any discrimination [13].

There has been no study in India to explore the impact of financial literacy (FL) on financial inclusion and rural development. Financial literacy is essential for financial inclusion, socio-economic development. Financial literacy is necessary for financial inclusion in India's agriculture and plays a vital role in socio-economic development. The present study focuses on financial literacy and its impact on India's financial inclusion and rural development. This area has lacked research, and the crucial need for scenario study is the driving force for this research; we have picked to examine the impact of financial literacy on financial inclusion and rural development in India using panel data analysis.

The analysis of the panel's data captures the practical aspects of financial understanding and its implications for financial inclusion and rural development in India better than normative economics or regression studies

[10]. Therefore, panel data analysis has been chosen as an integral part of the model.

This paper attempts to explore the impact of financial literacy on India's financial inclusion (FI) and rural development (RD). In doing so, it attempts to empirically identify rural areas in India with specific factors associated with the level of financial literacy. We are using different variables from previous studies, and we are using the secondary data from 29 states and two union territories data for fiscal years 2018 to 2020.

The primary motivation for this research is the essential need for a situation study assessment and the scarcity of research in this area. We decided to examine the impact of financial literacy and financial inclusion on Indian farmers. Financial literacy can improve financial inclusion and rural development. Most uses of financial services are helping to economic growth; people in rural areas must be educated about the importance of financial products and services [9].

This paper's first section is under stands the study's problem and introduction. The second section is the research framework of financial literacy and rural development. The third section is a literature review. Hypothesis formulation, and fourth is data and methodology. Fifth is the results section, the sixth is a discussion of the study, and the last section is the conclusion and limitations of the study.

II. FINANCIAL LITERACY AND RURAL DEVELOPMENT FRAMEWORK

Financial literacy and financial inclusion are very important for unbanked people, and financial inclusion affords to involve those who do have no access to banking services [36]. In India, the rural sector is not fully covered in financial inclusion because there is a lack of financial literacy, infrastructure, and banking connectivity [27]. Financial literacy is helping to use financial products and services [25]. Financial literacy and financial inclusion provide a practical solution to the problem of attempting to bring financial products and services to the unbanked in India [24]. This study aims to define the impact of financial literacy on financial inclusion and rural development in India.

III. LITERATURE REVIEW AND HYPOTHESIS FORMULATION

The literature on the topic covers the financial literacy of rural areas in Indian and how it contributes to the economic growth of the agricultural sector. The literature review is divided into two sections, financial inclusion and financial literacy in the first part, and the second part is about financial inclusion and rural development. This literature review investigates the association between financial literacy and the financial inclusion of farmers and rural development.

A. Financial inclusion and financial literacy

Financial inclusion is one of the most urgent inclusive growth and economic development issues in the present scenario. The term "financial inclusion" was first used in British terminology when it was discovered that about 7.5 million people did not have a bank account. However, financial inclusion in the Indian economy is not new [20]. The Reserve Bank of India took initiatives in 1969 to provide financial access to unbanked groups, including bank nationalization, setting up of RRBs, and introducing SHG-bank linkage programs [21].

Financial inclusion is defined as the availability of reasonably priced financial products, including savings, credit, banking and insurance, and payment and fund transfer facilities, which are exempted from banking services [22]. Financial inclusion includes access to a wide range of financial products and services at a minimal cost. This includes banking facilities and other financial services such as mortgages, property, and insurance [7]. The focus of financial inclusion is the need to have those who are not already covered in the protection of financial institutions [3]. Financial inclusion is an innovative concept that promotes banking habits of rural people through alternative technologies. As India is considered to have one of the largest rural populations globally, financial inclusion involves ensuring that every household Has a bank account [34].

The two pillars are financial inclusion and financial literacy. Financial inclusion works on the supply side by providing in-demand financial markets/services, whereas financial literacy works on the demand side by educating people about what they can demand [43]-

[31]-[41]. Financial inclusion and financial literacy go hand in hand - Financial Sustainability Development Council - Financial inclusion and financial literacy must be prioritized [44]-[38]. Developing countries are plagued by low literacy rates, limited access, and a lack of demand (Joshi, 2011).

Financial literacy is a set of processes or activities to enhance the knowledge and skills of clients and the wider community [29]-[30]. Financial literacy is a person's ability to understand and evaluate the information needed for a decision by understanding the financial consequences of that decision [47]. Financial literacy occurs when a person has a range of skills and abilities that a person can use to achieve goals with existing resources [48]. Financial education is conducted by insurance cooperatives of banks and other financial institutions to promote financial content. Financial training is a factor in a better understanding of financial education. This is expected to increase the financial range [44]. Financial literacy is an essential part of financial inclusion, and both are important for socio-economic development. For this reason, better financial literacy can boost financial inclusion and upgrade economic growth [5].

B. Financial Inclusion and Rural Development

In developing countries such as India, financial inclusion has emerged as one of the essential inclusive growth and long-term development aspects [4]. Financial inclusion is when traditional financial institutions ensure vulnerable groups, such as weaker sections and low-income groups, have access to the necessary financial products and services at an affordable cost, fairly and transparently [6]. In our country, the RBI has developed a financial inclusion rule to provide banking services to disadvantaged and low-income groups at the lowest possible cost [11]. Banks have viable options for inclusive growth through rural development, creating opportunities for economic growth and job creation. Financial inclusion is a critical component of development [12]. Access to finance improves people's ability to engage in economic activities that lead to growth, even though financial inclusion has become a hot topic for sustainable development on the global policy agenda. It is assumed that financial inclusion will boost the economy, thereby reducing economic inequality [45]-[18]. Financial inclusion is expressed in the

characteristic of financial permeability among the general public, easy access to credit, and the group's use of banking and finance to support their business or work [46].

Financial literacy and financial inclusion promote financial inclusion, and it is adopting rural development, though the effects of economic growth are much more substantial [28]. The economy positively impacts economic growth and financial inclusion, specifically banking penetration and banking service availability. Financial inclusion is critical to developing a solid and efficient financial structure that facilitates the country's economic growth [26].

The lack of specific literature is not limited to just concepts. This approach also requires a new approach that has never been seen before in the literature. The hypothesis proposed in this study based on the literature review is as follows:

H1: Financial literacy is significantly impacting on financial inclusion of farmers in India.

IV. DATA AND METHODOLOGY

A. Data

This paper contains data of 29 states and two union territories of India for the total time span of 3 years (2018- 2020). These states and Uts and this particular time period are chosen as they have sufficient data for the study to get a reliable outcome. The secondary data of Kisan credit card has been retrieved from the RBI, and the data of literacy rate is obtained from an article published in Times Now. Total two models have been developed to study the problem, as we have only one dependent and two independent variables to be analyzed. Table 1 discusses the variables mainly used in the study.

Table 1. List of Variables

SN	Variable	Type	Code	Definition	Citations
1	Literacy rate	DV	LR	The literacy rate for any population measures the fraction of the population, above a certain cut-off age, that is literate.	Kapur and Murthi (2009)
2	Kisan credit card (number)	IV	Kcc_n	The KCCS aims at extending adequate and timely support from banking system to the farmer, to meet the crop production and ancillary activities.	Singh and Sekhon (2005)
3	Kisan credit card (amount)	IV	Kcc_a	Kisan Credit Card has been made for the investment credit requirement of farmers.	RBI (2017)

Note: DV and IV represent the dependent variable and independent variable, respectively.

B. Methodology

The panel data model (PDM) is used to analyze the data in the current study. As per Hsiao (2007) and Baltagi (2008), the panel data model contains features of the other famous analysis models, cross-sectional and time-series. Therefore, it has been observed that PDM can provide comparatively more information than a single time series or cross-section analysis.

The model specifications are given as follows:

$$LR_{it} = \beta_0 + \beta_1 kcc_nit + u_{it} \quad \text{Eq.1}$$

$$LR_{it} = \beta_0 + \beta_1 kcc_ait + u_{it} \quad \text{Eq.2}$$

Where LR is the dependent variable, i represents cross-section, and t represents time series. β_0 is the constant term, and β_1 is the coefficient of the independent variable and kcc_nit, and kcc_ait are the independent variables used in the study. In contrast, u_{it} in the model is considered the error term.

V. RESULTS

A. Descriptive statistics and correlation

Table 2. Descriptive Statistics

Variables	Mean	SD	Min	Max
LR	78.01581	7.993667	61.8	96.2
Kcc_no	2180151	2669463	4000	12005000
Kcc_amt	2178083.871	2705863.712	1560	11307020

Note: Mean, SD, Min, Max is mean value, standard deviation, minimum and maximum respectively.

Table 3. Correlation Matrix

VAR	IND_LR	NO_KCC	AMT_KCC
IND_LR	1		
NO_KCC	-0.44482*	1	
AMT_KCC	-0.38239*	0.89715*	1

Note: * represents a significant correlation coefficient at 0.05.

Descriptive statistics of the variables (LR, kcc_no, kcc_amt) used in the study have been shown in table 2 and table 3, respectively. The mean value of literacy rate in Indian states and union territories is calculated to be 78.01581, indicating a higher literacy ratio. In contrast, the standard deviation is 7.993667, which means the ratio does not deviate much from the mean value. The minimum and maximum values are 61.8 and 96.2, respectively. The average value of the kcc_no variable is 2180151, which means that a vast no. of Kisan credit cards has been issued in different parts of India. The standard deviation is calculated to be 2669463, which indicates that a substantial amount

of deviation is present from the variable's value. The minimum and maximum values are 4000 and 12005000, respectively, showing an enormous difference. The last variable included in this study, kcc_amt, shows the mean value of 2178083.871, which means that many Kisan credit cards are being issued on average. On the other hand, the deviation from the mean value is calculated to be 2705863.712. The minimum and maximum values are 1560 and 11307020, respectively.

B. Result of model I

Table 4. Result of Regression Analysis (Model 1)

Variable Name	Dependent Variable: LR			Robust Standard Errors		
	Coefficient	SE	p-value	Coefficient	SE	p-value
Constant	70.69849	8.93362	0.000	70.69849	1.92906	0.000
Kcc_no	.560753	.684093	0.416	.560753	.147831	0.001
R- Square	0.2396					
SE of Regression	3.3668741					
F-test Fixed Effect	11.88* (.0000)					
Breush-Pagan Test	52.31*(.0000)					
Hausman Test	5.73 *(.0167)					
No of observations (n)	93					
Degree of freedom	61					
Wald test for Heteroscedasticity ¹	4.4e+05*(.0000)					
Wooldridge Autocorrelation	9.713*(.0040)					

Note: Wald test of heteroscedasticity has the null of no heteroscedasticity. Wooldridge test of autocorrelation in panel has the null of no autocorrelation (with 1 lag). Robust estimates are estimated due to significant Heteroscedasticity and Autocorrelation. DV is LR (literacy rate). Kcc_no is the log of kisan credit card number. * sig at 5%.

In model one, we have examined the relationship between the dependent variable (literacy rate) and independent variable (no. of Kisan credit cards). The output of model one is depicted in table 4. As per the description of various outputs from the table, the R-square shows only 0.24 percent variability in LR, which can be explained by the independent variable, kcc_no. The SE is also calculated to be of value 3.36. The Hausman test indicates the random effects in the model. Breush- Pagan test is also proved to be

significant, showing the presence of heteroscedasticity. Wald test and Wooldridge test also show significant values, rejecting the null hypothesis. The independent variable, kcc_no, has a positive coefficient (.560753) and p- value (0.001) is lesser than 0.05, which means that kcc_no positively impacts the LR, and the association is significant. Therefore, with the help of our analysis, we accept hypothesis H₁.

C. Result of model II

Table 5. Result of Regression Analysis (Model 2)

Variable Name	Dependent Variable: LR			Robust Standard Errors		
	Coefficient	SE	p-value	Coefficient	SE	p-value
Constant	65.21323	15.5088	0.000	65.21323	4.37561	0.000
Kcc_amt	.9962076	1.20648	0.412	.9962076	.340479	0.006
R- Square	0.2008					
SE of Regression	3.3666043					
F-test Fixed Effect	12.29*(.0000)					
Breush-Pagan Test	55.85*(.0000)					
Hausman Test	3.02 (.0823)					
No of observations (n)	93					
Degree of freedom	61					
Wald test for Heteroscedasticity ¹	3.8e+05*(.0000)					
Wooldridge Autocorrelation	9.933*(.0037)					

Note: Wald test of heteroscedasticity has the null of no heteroscedasticity. Wooldridge test of autocorrelation in panel has the null of no autocorrelation (with 1 lag). Robust estimates are estimated due to significant Heteroscedasticity and Autocorrelation. DV is LR. Kcc_amt is the log of kisan credit card amount. * sig at 5%.

In model two, we investigated the relationship between the dependent variable (literacy rate) and the independent variable (amount of Kisan credit cards). The description of all the values required to interpret the result of model two is depicted in table 5. As per the description from the table, the R- square shows only 0.20 percent variability in LR, which can be explained by the independent variable, kcc_amt. The SE is calculated to be of value 3.36. The Hausman test indicates the random effects in the model. Breush-Pagan test is also proved to be significant, with a value of 55.85, showing the presence of heteroscedasticity. Wald test and Wooldridge test also show significant values, rejecting the null hypothesis. The independent variable, kcc_amt, has a positive coefficient (.9962076) and p- value (0.006) is lesser than 0.05, which means that kcc_amt positively impacts the LR, and the association is of significant nature. Therefore, with the help of the above interpretation, we accept hypothesis H₁.

VI. DISCUSSION

In this study, after a literature review, the research focused on financial literacy (FL), financial inclusion (FI), rural development (RD) in India. We frame the hypothesis of this study, and we test the hypothesis (H₁) with the appropriate model (Table 4, Table 5) is a concern with the developed methodology (Eq.1, Eq.2). the first and second model in variable Number of KCC is positively significant with Literacy Ratio. The second model expresses the all-variable high credibility and stability (Table 4, Table 5). The literature supports the hypothesis of the study, and that financial literacy significantly affects the rural development and financial inclusion of farmers in India. This research is focused on financial literacy and financial inclusion rural development of farmers in India. This study is done by 29 states data and two union territories in India, and we are taking different variables from previous studies. Our findings express that the government and banks should provide the financial literacy program through camps in the rural

sector in India, so the rural sector needs financial education for economic development and poverty elevation and to reduce the risk of Fraud. Government and banks should improve IT infrastructure and WIFI networks in rural areas [46]-[16].

CONCLUSION AND LIMITATION

This study investigates the influences of financial literacy on rural development in India. The results show that financial literacy positively impacts India's financial inclusion and rural development. Financial literacy can help the adoption of financial technology and rural development. Financial literacy is very important for rural and urban development, and it supports the adoption of financial inclusion. Government and banks should provide training through the campaign in rural areas programs for using financial products and services, and it is beneficial for rural development [46]-[17].

The significant factor is financial literacy, financial inclusion, and rural development focused in this study. India is a developing country, and there is a lack of financial and digital literacy and the need to study in this sector for rural development. This study can be carried out by primary data analysis for future research, and they also can increase the number of states, union territories, and years of data.

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