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Starting Early: Analysing the Impact of Literacy Rates on Financial Literacy Rates in India

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Abstract

This paper aims to analyse the state-wise impact of literacy rates on the financial literacy rates in India. The OECD defines financial education as, "the process by which financial consumers/investors improve their understanding of financial products, concepts and risks and, through information, instruction and/or objective advice, develop the skills and confidence to become more aware of financial risks and opportunities, to make informed choices, to know where to go for help, and to take other effective actions to improve their financial well-being." Financial literacy has been gaining popularity more rapidly than ever in the recent past, amid both developing and developed countries alike. The objective of this paper is to the relationship between literacy rates on the financial literacy rates in India. The methodology employed is a statistical analysis of secondary data collected. The findings show that there exists a positive relationship between literacy levels and financial literacy levels. It is not a particularly strong relationship, though statistically significant. The paper concludes with recommendations and suggestions that could help improve financial literacy rates in India.

Keywords: Literacy Rate, Financial Literacy, Financial Literacy Rate, India

Starting Early: Analysing the Impact of Literacy Rates on Financial Literacy Rates in India

Introduction

The power of money and its control over every aspect of our lives in the present day is undoubtedly undeniable. There has been a pre-existing divide among people based on their economic class, which is often based on income levels. A large majority of social problems that currently exist are either a direct or indirect consequence of poor money management owing to which people of the lower economic class fall into a particular "financial trap" which is similar to the low-level equilibrium trap. However, in this case it refers to the financial attitude of a particular economic class which is then carried forward to the next generations, leaving little room for scope of change which may prove to be troublesome particularly for people from the lower economic strata of society. For instance, the mindset of the average person from a lower-income group would be to earn more money or save what they have, and not to invest or grow what they are already earning. Even if they were to invest, they would most likely also stick to the traditionally "safer" options rather than exploring new ways which may cause them to miss out on growth opportunities. They may also tend to make wrong investments due to lack of adequate financial knowledge, which may cause them to lose some lifelong earnings. Unfortunately, even if the younger generations from a particular stratum are educated, the education alone may not guarantee financial literacy.

While there has been no universally agreed upon definition of the term financial literacy, it broadly refers to the knowledge and skills possessed by someone to make responsible financial decisions, which over time will help them build their wealth and be financially independent (Garg & Singh, 2017). The OECD defines financial education as "the process by which financial consumers/investors improve their understanding of financial products, concepts and risks and, through information, instruction and/or objective advice, develop the skills and confidence to become more aware of financial risks and opportunities, to make informed choices, to know where to go for help, and to take other effective actions to improve their financial well-being." Financial literacy is

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something the educated and uneducated in both developed and developing countries struggle with alike. There is a desperate need for financial education, especially among the youth that will soon be driving the country's economy in a few years. While the initiatives taken across the country have increased with Securities Exchange Board of India (SEBI) and RBI's Financial Literacy drive and the setting up of Financial Literacy Centres (FLCs), these are not adequate, especially since the benefits of such initiatives are difficult to trickle down to the absolute grassroots level where these are most required.

The inclusion of financial literacy programmes in school curriculum is widely acknowledged and advocated by reputed minds across the world and in the country such as former RBI Governor, Raghuram Rajan. While there are various schemes that have been introduced by the government in the past and that will continue in the future, there is a negligible amount of research done on the impact of literacy rates on financial literacy in India. Therefore, it becomes imperative to understand the state-wise levels of financial literacy to implement relevant policies by the respective state governments and municipal corporations. This paper aims to narrow down the identified research gap by addressing the same through the research question: "To what extent do literacy levels determine financial literacy levels in India?"

Literature Review

Financial literacy in India may be considered a relatively new concept. While it is difficult to pinpoint exactly when the initiative was formulated, it can be said with certainty that it has gained popularity only in the last few years. Therefore, most literature that exists pertains to the more developed countries and economies. However, this paper aims to review the current literature that exists pertaining to the financial literacy scenario globally as well as in India.

Financial Literacy Globally

The financial crisis that pulled down the global economy in 2008 can be attributed to various factors. At its very base, it can be broken down to the fact that uninformed consumers began to undertake and use financial products that were not appropriate for them, hence heightening the need for financial literacy now more than ever before (Mavlutova, Sarnovics, & Armbruster, 2015; Blue, Grootenboer, & Brimble, 2015). The same study also aimed to understand the financial literacy levels in schools in Germany and Latvia. The results reflected the lack of financial literacy knowledge among secondary school students, partly because of the curriculum structure and partly because of lack of financial knowledge on the teacher's part. Another study conducted by Blue, Grootenboer, and Brimble (2015) revealed that while financial literacy education is part of the primary and secondary school curricula, there is a greater concern to have more clear policy objectives, professional development, and programme evaluation to support teachers, so as to achieve the policy intentions effectively. Pahnke and Honekamp (2010) also found that financial literacy improves individual retirement planning for households in Germany who have an above-average income.

Ergun (2017) analysed the financial literacy levels regarding personal finance of university students in eight European countries, namely, Estonia, Germany, Italy, the Netherlands, Poland, Romania, Russian Federation, and Turkey. It was found that a medium level of financial literacy exists, with a mean of correct answers to the survey handed out being 72.2%. Among other categorizations, students from Poland were found to be more knowledgeable on personal finance. The study also notes that in recent years, environmental and technological influences on financial literacy may be more important than parental influences.

Financial education is a mandatory component of primary school education in the Czech Republic. Similar to the curriculum in Germany, financial literacy is not a separate course but is incorporated into Social Studies, Civics, Citizenship Education, Mathematics, or is carried out in some form of project-based learning within the curriculum of these courses (Opletalová, 2014). The study also stipulated that the level of knowledge, abilities, and skills in the field of financial literacy provided by school education reaches only 50%, leaving the rest to develop through environmental factors.

In alignment with statistics of the of the west, it was found that there exists a moderate level of financial literacy among undergraduate management students in Sri Lanka as well, averaging about 58.74% (Edirisinghe, Keerthipala, & Amarasinghe, 2017). The study also concludes that financial literacy on topics of savings, investments,

insurance, borrowing, and credit are valid determinants of financial behaviour. Isomidinova and Singh (2017) also aimed to study the determinants of financial literacy in Uzbekistan and found that financial education and financial socialization agents have a positive impact on financial literacy whereas money attitude showed no significant impact on the levels of financial literacy. In Malaysia, an emerging market and collectivistic culture closer to India, the research suggested that financial literacy had a significant and positive impact on individual saving. It was also found that saving regularity, gender, income, and educational level influenced the probability of saving positively (Mahdzan & Tabiani, 2013). Another study, conducted in Kenya, revealed that financial knowledge and financial skills were significant in determining personal financial decisions while financial attitudes did not influence significantly personal financial decisions. It was concluded that financial literacy had a positive and statistically significant relationship with personal financial decisions (Mwathi, Kubasu, & Akuno, 2017).

Financial Literacy in India

Financial literacy is becoming increasingly important in India as there is constantly a development of new and complex financial products and services. Low levels of financial literacy coupled with information asymmetry would lead to individuals making incorrect or less beneficial financial decisions. Individual misleading financial decisions eventually snowball and would impact the entire financial system. For instance, studies have found that India has one of the highest savings rate, yet the savings are invested in low-yielding instruments. The resistance towards newer and higher-yielding instruments can stem from lack of financial literacy. Hence, while financial literacy is a concern for individuals, it is also extremely impactful on a country's economic and financial systems. Financial literacy also leads to financial inclusion. While India has a literacy rate of 74.04% (as of 2011) and a youth population of approximately 64% (as of 2017), it has an alarmingly low financial literacy rate of 24% (NCFE, 2011) as compared to the 28% of BRICS nations and 52% of European countries (2015).

There have been various initiatives taken by the government and regulatory bodies in India to increase financial literacy levels in India. The most popular financial inclusion programme from the government is the Pradhan Mantri Jan Dhan Yojana (PMJDY) that was launched in 2014. The objective of the PMJDY is to ensure affordable access of diversified financial services like bank accounts, remittances, credits, insurance, pensions, etc. While there has been an increase in the number of bank accounts opened under this scheme, the next challenge is to keep them active and to encourage people to use them. The RBI has also undertaken "Project Financial Literacy," and set up various FLCs in different states. The National Center for Financial Education (NCFE) was also set up to increase financial education and encourage schools to participate in financial literacy quizzes. Apart from this, financial literacy weeks are also organised. Other regulatory bodies that undertake financial education campaigns and awareness programmes through various seminars, advertisements, and workshops are SEBI, Insurance Regulatory and Development Authority, and Pension Fund Regulatory and Development Authority.

Ambarkhane, Venkataramani, and Singh (2015) propose to develop an index to measure financial literacy levels for college-going students. Another study that aimed to measure the financial literacy levels and its determinants of Gen Y employees in Coimbatore city found the literacy level of only 50.90% in 200 participant employees. It was also found that the financial literacy levels vary greatly based on demographic and socioeconomic factors. There was also an association established between gender, education, income, marital status, and number of defendants with financial literacy levels. Dube and Asthana (2017) compared the financial literacy levels of Uttar Pradesh with the Central Zone States in India on the basis of financial attitudes, knowledge, and behaviours. It was found that the financial literacy level in Utter Pradesh was half of that of India and that in comparison with the other three states (Madhya Pradesh, Chhattisgarh, and Uttarakhand), Uttar Pradesh stood third.

While there is a moderate amount of research that has been conducted on financial literacy in India, there is not sufficient research conducted on the impact of literacy rates on financial literacy in India. This study aims to address the research gap identified through the analysis followed in the next section of this paper.

Method

This paper employs quantitative methods of research through an analysis of secondary data.

Assessments and Measures

The data regarding both variables chosen for the correlation and regression analysis are the financial literacy rates and the literacy rates for the States and Union Territories in India. The aim of the study is to determine the relationship between literacy rates and financial literacy rates in India. However, owing to the lack of recent data on financial literacy rates, the data collected for both rates are for the year 2011. The data were collected from the state-wise detailed published reports pertaining to the financial literacy levels by the NCFE. However, there was no data available for Jammu and Kashmir, as well as the state of Telangana as it was not yet formed. The independent variable in this analysis is literacy rates and the dependent variable is the overall financial literacy rate.

The regression model used for this analysis is the simple linear regression model. This model uses one independent variable to predict the value of another dependent variable. The simple linear regression model is explained below.

Linear Regression Equation

Mathematically, a linear regression is represented by the following equation:

$$y = bx + a + \varepsilon \quad .....(1)$$

Wherein;

- y is the dependent variable.
- x is the independent variable.
- b is the slope of a regression line, which refers to the rate of change for y values corresponding to a change in x values.
- a is the Y-intercept, which refers to the value of y when all x variable(s) values are equal to 0. On a graph, it is indicated by the point where the line intersects with the Y-axis.
- ε is the random error term, and accounts for the difference between the actual value and the predicted value of a dependent variable.

The linear regression equation always includes an error term to account for the real-life indicators that may not always be necessarily precise. However, in Excel, the error term calculation is accounted for and thus the linear regression is performed using the least squares method such that:

$$y = bx + a \quad .....(2)$$

With the variables used in this particular study, the linear regression equation would be:

Financial Literacy = b * Literacy rate + a

Table 1 provides a summary of the state-wise data collected, alongside literacy levels for the same year, which is also depicted in Fig. 1 below.

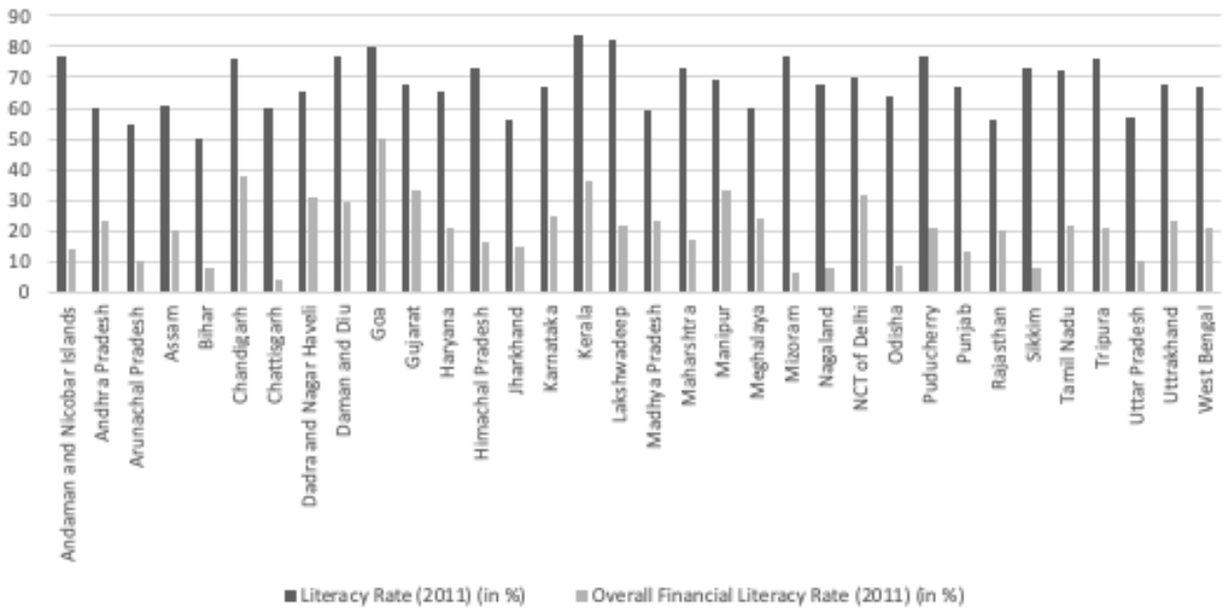

Fig. 1: State-wise Literacy Rates as Opposed to Financial Literacy Rates in India

Table 1: State-Wise Literacy Rates as Opposed to Financial Literacy Rates in India

States and Union Territories	Literacy Rate (2011) (in %)	Overall Financial Literacy Rate (2011) (in %)
Andaman and Nicobar Islands	77	14
Andhra Pradesh	60	23
Arunachal Pradesh	55	10
Assam	61	20
Bihar	50	8
Chandigarh	76	38
Chattisgarh	60	4
Dadra and Nagar Haveli	65	31
Daman and Diu	77	29
Goa	80	50
Gujarat	68	33
Haryana	65	21
Himachal Pradesh	73	16
Jharkhand	56	15
Karnataka	67	25
Kerala	84	36
Lakshwadeep	82	22
Madhya Pradesh	59	23
Maharshtra	73	17
Manipur	69	33
Meghalaya	60	24
Mizoram	77	6
Nagaland	68	8
NCT of Delhi	70	32
Odisha	64	9
Puducherry	77	21
Punjab	67	13
Rajasthan	56	20
Sikkim	73	8
Tamil Nadu	72	22
Tripura	76	21
Uttar Pradesh	57	10
Uttrakhand	68	23
West Bengal	67	21

Results

Correlation

	Literacy Rate	*Overall Financial Literacy Rate*
Literacy Rate	1	
Overall Financial Literacy Rate	0.419558687	1

Correlations are used to determine the relationship between variables. They provide information regarding the strength of the relationship between two variables and whether the relationship is a positive or negative one. A positive correlation would occur when a change in one variable leads to a change in the other variable in the same direction. On the other hand, a negative correlation is when the change in one variable would be accompanied by a change in the opposite direction of the other variable.

Correlations are measured by the coefficient of correlation (r) which ranges from -1 to +1. If $r > 0$, it implies that there is a perfectly positive correlation, if $r < 0$ then it implies a negative correlation, and if $r = 0$ it implies no relationship. The strength of the relationship is determined by the closeness of r to -1 or +1.

The coefficient of correlation between the two variables in the study is 0.419. This suggests that the two variables

are positively and moderately correlated. However, as statistical correlation does not signify causation, it does not hint at whether the two variables influence each other. This simply implies that the two variables are moderately related to each other.

Regression Analysis

As per the Summary Output of the linear regression, we may decipher the results as follows:

Table 3

SUMMARY OUTPUT

Regression Statistics	
Multiple R	0.419558687
R Square	0.176029492
Adjusted R Square	0.150280413
Standard Error	9.579809218
Observations	34

ANOVA

	df	SS	MS	F	Significance F
Regression	1	627.3898184	627.3898184	6.836341452	0.013507672
Residual	32	2936.727829	91.77274465		
Total	33	3564.117647			

	Coefficients	Standard Error	t Stat	P-value	Lower 95%	Upper 95%	Lower 95.0%	Upper 95.0%
Intercept	-13.923362	13.36820281	-1.04152833	0.305435807	-41.15350004	13.30677606	-41.1535	13.30677606
X Variable 1	0.510781424	0.195354411	2.614639832	0.013507672	0.112857511	0.908705337	0.112857511	0.908705337

Regression Statistics

Multiple R: This refers to the Correlation Coefficient that indicates the strength of the relationship between two variables. The correlation coefficient can be any value between -1 and 1, and its absolute value indicates the relationship strength. The higher the absolute value, the stronger the relationship. +1 means a strong positive relationship, -1 means a strong negative relationship, and 0 means no relationship at all. The results for the analysis at hand suggest a moderate positive relationship (0.419) between the variables.

R Square: R^2 refers to the Coefficient of Determination, which indicates the goodness of fit of the variables. The R^2 value is calculated from the sum of the squared deviations of the original data from the mean. Its value may lie between 0 and 100%, with a higher value signifying a greater fit. In this analysis, R^2 is 0.176, which indicates a low fit. It means that approximately 17% of our values fit the regression analysis model. This implies that 17% of the dependent variables (y-values) are explained by the independent variables (x-values).

Adjusted R Square: This refers to the R square adjusted for the number of independent variable(s) in the model and is used in place of R^2 in case of a multiple regression analysis.

Standard Error: The standard error term, as mentioned earlier, indicates the precision of a regression analysis. The smaller the number, the more certain you can be about your regression equation.

Observations: This is merely the number of observations in a model, which in this study is 34.

Analysis of Variance (ANOVA)

Though the ANOVA component is seldom used for a simple linear regression analysis in Excel, a brief explanation of its components is as follows:

- df indicates the number of the degrees of freedom associated with the sources of variance.
- SS refers to the sum of squares. The smaller the Residual SS as compared to the Total SS, the better the model fits the data.
- MS refers to the mean square.
- F is the F statistic, or F-test for the null hypothesis. It tests the overall significance of the model.
- Significance F is the P-value of F.

However, the last component (Significance F) is of importance. The Significance F value, as mentioned earlier, indicates the extent of reliability (or statistically significant) that the results show. If Significance F is less than 0.05 (5%), the model is considered reliable and a value greater than 0.05, it would indicate unreliability. The value of Significance F in this study is 0.01 which

is lesser than 0.05, indicating a statistically significant relationship between the variables.

Discussion

The above results indicate that while there exists a positive relationship between literacy levels and financial literacy levels, it is not a particularly strong relationship, though statistically significant. It is also observed that a higher literacy rate is often accompanied by a higher financial literacy rate. Amid the many other social issues India aims to tackle, this poses yet another challenge. While India has adopted a variety of policies and programmes to encourage education and literacy, as seen from above, education alone may not tackle the problems of lack of financial literacy. However, it may contribute to help tackle it in some capacity of its relationship as drawn from above and as seen by Morgan and Trinh (2018) in Vietnam and Cambodia. Therefore, there is an urgent need to pay greater attention to the incorporation of financial literacy in school curriculum as well as having a concrete centralised plan of action. Agarwal (2019) suggests three steps in which the school curriculum could be made more inclusive of financial education as follows:

- Introduce financial literacy as early as class three, and have a graded course for grown up students. Colleges must have a compulsory credit course on financial literacy, focusing on how to start one's financial life for final year students.
- Train teachers in personal finance as they themselves need this literacy. Given that a high percentage of teachers are women, training them would have a larger impact as that they can influence their children and others around them.
- The NCFE (which is promoted by the Reserve Bank of India, Securities and Exchange Board of India, Insurance Regulatory, and Development Authority of India, Pension Fund Regulatory and Development Authority) conducts a yearly financial literacy test – National Financial Literacy Aptitude Test. Like National Talent Search Examination (NTSE), this test must be compulsory.

P. Arya (2018) also provides an eight-step recommendation to make financial education in India content relevant and appropriately deliverable through:

- Improved outreach, particularly to disenfranchised communities and vulnerable segments of communities: the poor and unemployed, rural communities, pensioners, and others. This requires better and more efficient targeting, which should be part of a national strategy.
- Exposure over a lifetime, which is needed to reinforce previous learning, and because the financial landscape is always changing along with people's financial needs.
- Relevant content that takes cognizance of the target audience's previous learning and attitudes, their environment, and their financial knowledge needs.
- An appropriate context, without which programmes tend to fail. There must be a form of motivation and the target audience must perceive the context as relevant.
- An appropriate delivery mechanism such as classroom-based programmes which lend themselves to more in-depth training, or multimedia which has a broader reach and can be more entertaining.
- A national strategy that clearly spells out the overall objectives of financial literacy, and is explicit about the responsibility of the government, the private sector, and the non-profit sector.
- Develop global guidelines and standards for financial literacy initiatives and consumer protection frameworks in financial markets and help out stakeholders in implementing those rules and standards.
- Extend baseline surveys of financial capability to developing countries to produce analogous data on current levels, monitor progress towards goals, and provide an orientation point for impact evaluations.

The grandeur of the idea of achieving a higher financial literacy rate cannot be achieved merely through the arbitrary introduction of schemes and initiatives. Although there have been a lot of initiatives and policies carried out by the RBI and SEBI in recent times such as the National Strategy for Financial Inclusion, there is a lack of a centralised structure and its implementation that result in the initiatives not reaping benefits currently. Additionally, policies such as opening up banking outlets are not adequate if the consumers are unaware of how to avail these facilities; this proves to be counterproductive.

According to a survey conducted by Standard and Poors, India, 76% of the adult population does not understand key financial concepts, despite the improvement in India's global financial inclusion status.

However, a major limitation of this study is the lack of availability of data. Though there are establishments of institutions such as the NCFE, the data available are outdated. The data in this study have been drawn from 2011, after which political and geographical changes, as well as regulatory policies and initiatives, have taken place. Owing to this limitation, it is also difficult to ascertain whether policies, initiatives, and their implementation have been effective or not. Future research and policy could aim at covering the existing limitations in order to gain a holistic understanding of the issue at hand.

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