

# A RANKING APPROACH FOR INDIAN STATES ON THE BASIS OF COVARIATES OF FINANCIAL LITERACY

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#### Abstract

It is fact that financial literacy is not a straight forward concept as it required several domain specific knowledge and practice by the individual or society where its behavior and knowledge is to be studied. Academic work has concluded that financial literacy is an antecedent to various healthy financial behaviors. Several excellent recent literature reviews have drawn different conclusions about the effects of financial literacy and financial education. There are numerous factors that may be cause of increasing or decreasing financial literacy but it is not so easy to identify those covariates because of their subjectivity and domain specific variability. We therefore entrusted to develop an approach of classifying some of positive and negative factors of financial literacy among many on the basis of correlation analysis on the available data for the Indian states. Also, a ranking mechanism is developed for the different states of India on the basis of financial literacy and their some identified covariates. There is moderately good coordination (50%) between the proposed method and the direct ranking method provided on the basis of financial literacy of data of states compiled from the National Centre for Financial Education Report, 2015 of India. Financial literacy is a complex phenomenon and more sensitive towards omission of variables in the study plausibly produce overestimates or underestimates of the effect of financial literacy on the financial behaviors of the individual and society as well.

**Key-word:** Financial Literacy, Covariates, Financial Systems, Financial Inclusion, Meta-Analysis, Rank Correlation.

#### 1. Introduction

The economic progress of a country, states, districts or even at lower level up to community/society or individual as well, depends on the behavior and proper planning of the available resources income and its utility. It is not enough to earn an income but also needs to make informed and wise decisions about what to do with the money once it reaches to domain of interest. Failure to utilize the money prudently leads to growing debt, misuse of credit facilities and in the long run slows down economic growth. Either way financial literacy stimulates better living standard and a confidence about the future. Decisions related to financial issues are difficult in most of the cases. To leave a better life it is prominent to make a proper

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comparison, savings or borrowing options with different interest rates and term structures. It can be difficult for those who are not finance savvy—and even a knowledgeable individual may need to rely on calculators or spreadsheets to make truly informed decisions. Yet, many households are not knowledgeable, and often receive little assistance when making these decisions.

Thus, financial literacy which is defined as "the ability to process financial information and make informed decisions about personal finance has received growing attention in the developed markets and, emerging markets as a potentially important determinant of household well-being" is the most important issue for a healthy society and nation.

It is a very difficult to get financial empowerment among the population like India because of its large area and population with diverse nature in terms of caste, creed, poor and marginalized population along with richer section and religion across the length and breadth. However, if government and other financial regulatory authorities jointly work to spread financial awareness and provide financial products and services to lower costs then the financial empowerment will not be hurdle for nation.

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# Financial Empowerment and Inclusion in Population

In the study on "The Effect of Financial Literacy and Financial Education on Downstream Financial Behaviors" by Fernandes et al.(2013), authors have suggested three models to see the effect on financial literacy using meta analysis. In the first model they have considered demographic variables as only predictors/covariates and in the second model they included financial education while in the third model more covariates like numeracy, consumer confidence-investing, planning for money-long term, and willing to take investment risks are considered. It is difficult to identify and included several covariates in the study, though different studies have been done on this line of action. It is also fact that by increasing the predictor variables in the model the better model will be obtained, but it might be possible that the included covariates may not have a good impact on the study variable. Morgan and Trinh (2017) have also studied on "Determinants and Impacts of Financial Literacy in Combodia and Vietnam". They have considered the harmonized OECD/INFE questionnaire of adult financial literacy (OECD



2015c) to ensure comparability with studies of other countries. The questionnaire includes questions about individual information (such as gender, age, income, occupation, and other sociodemographic information) and questions about financial literacy as well as financial inclusion. Financial literacy questions are designed to capture the financial behavior, attitudes, and knowledge of adult people in a wide range of finance including making ends meet, long-term financial planning, and financial product selection. Lusardi and Mitchell (2006) added a set of financial literacy questions to the 2004 Health and Retirement Study (HRS), a survey of US persons aged 50 and older, which have served as a model for later surveys. Lusardi and Mitchell (2014) provide an extensive review of the literature on factors related to financial literacy.

The country like India, presently, there are only a few organizations working in the field of financial literacy. They are RBI, SEBI, MCA (IEPF), ICAI, ICSI, ICWAI, STOCK EXCHANGES, etc. We have entrusted to use a very different way to see the ranking behavior of different states of India on the basis of financial literacy with new mechanism of ranking of the states with different covariates.



#### Figure-2

## 2. Data and Methodolog

In the present study the financial literacy of 31 States and Union Territories of India is considered (on the basis of availability of data regarding covariates considered in the study and financial literacy) from the different data sources of India regarding covariates and from

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National Centre for Financial Education Report, 2015 (NCFE) for the financial literacy. Also, different covariates like Education Index, Health Index, Income Index, Human Development Index, Standard of Living Index, Poverty Index and some vital rates like IMR, CBR, and CDR are considered among many for the study using correlation matrix. The data sources are Sample registration system (SRS-2015), Health and Family Welfare (2015), Directorate of Economics and Statistics, NCFE Survey-2015. Using correlation coefficient between covariates and financial literacy, we have divided covariates into positive and negative factor on the fact that the covariates that negatively correlated with financial literacy are considered as negative factors.





The Karl Pearson's correlation coefficient formula between financial literacy (FL) and any covariate X is given by:  $r(FL, X) = \frac{Cov(FL, X)}{\sqrt{Var(FL)\sqrt{Var(X)}}}$ , its value lie between -1 to

+1. Also the rank correlation coefficient between FL and X is given by  $\rho(FL, X) = 1 - \frac{6\sum_{i=1}^{n} d_i^2}{n(n^2 - 1)}$  when ranks are not repeated and di represents the difference

between the ranks. The formula with repeated rank is given by

The ranks of different Indian States and Union Territories are calculated on the basis of positive and negative covariates of financial literacy of these states. For the positive covariates the ranks are in descending order while for negative covariates it is in ascending order. Finally the sum of all ranks values corresponding to each positive and negative covariate of the sates and rank averages are calculated as:

Rank Average = 
$$\frac{\sum Rank_{positivecovariat} + \sum Rank_{negaivecovariat}}{All Considered Covariates}$$

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# Table1

		Overall	
States	<b>Total Rank Sum</b>	Rank(Proposed)	Rank Average
Andhra Pradesh	258	26	43.00
Arunanchal Pradesh	178	14	29.67
Assam	201	19	33.50
Bihar	281	31	46.83
Chhattisgarh	267	29	44.50
Gowa	88	1	14.67
Gujrat	201	19	33.50
Haryana	215	23	35.83
HP	181	16	30.17
Jharkhand	236	25	39.33
Karnatka	180	15	30.00
Kerla	136	4	22.67
MP	261	27	43.50
Maharashtra	193	17	32.17
Manipur	136	4	22.67
Meghalay	169	12	28.17
Mizoram	144	8	24.00
Nagaland	137	6	22.83
Orissa	226	24	37.67
Punjab	214	22	35.67
Rajasthan	263	28	43.83
Sikkim	155	11	25.83
Tamilnadu	172	13	28.67
Tripura	153	10	25.50
Uttapradesh	275	30	45.83
Westbengal	212	21	35.33
Chandigarh	107	3	17.83
Daman and Div	193	17	32.17
Dadar and Nagar			
haveli	145	9	24.17
Delhi	100	2	16.67
Puducherry	140	7	23.33
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	Table 2	
States and Union Territories	<b>Overall Rank (Proposed)</b>	Direct Rank (FL)
Andhra Pradesh	26	11
Arunanchal Pradesh	14	24
Assam	19	18
Bihar	31	27
Chhattisgarh	29	31
Gowa	1	1
Gujrat	19	5
Haryana	23	14
HP	16	21
Jharkhand	25	22
Karnatka	15	9
Kerla	4	3
MP	27	11
Maharashtra	17	20
Manipur	4	3
Meghalay	12	10
Mizoram	8	30
Nagaland	6	27
Orissa	24	26
Punjab	22	23
Rajasthan	28	18
Sikkim	11	27
Tamilnadu	13	13
Tripura	10	14
Uttapradesh	30	24
Westbengal	21	14
Chandigarh	3	2
Daman and Div	17	8
Dadar and Nagar haveli	9	7
Delhi	2	6
Puducherry	7	14
Correlation [Overall		
Rank(Proposed),	0.50	
Direct Rank(FL)]	(p<0.01, p<0.05)	
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$$\rho(FL, X) = 1 - \frac{6 \left[ \sum_{i=1}^{n} d_i^2 + T_{proposed} + T_{direct(FL)} \right]}{n(n^2 - 1)}$$

Here T is the adjustment due to repeated ranks which is given by  $\frac{m(m^2-1)}{12}$ , where m is the

no. of repeated of ranks.

#### 3. Discussion and Recommendations

In the above study an effort is made to study the behavior of ranking and its changing pattern through the financial literacy of states and union territories of India obtained through Financial Education Report, 2015 (NCFE) and the proposed methodology based on covariates of financial literacy. Figure-5 shows that there is beautiful resemblance between our method and direct ranking through the data of study variable for 31 states and union territories of India. The rank correlation coefficient between both mechanism comes to be 0.50 which is also significant at 1% level (p<0.01). Gowa is having first rank position among the Indian states and territories in both methods while Delhi is at second position in our methodology. In the direct ranking Chandigarh succeeded Delhi and got second rank. Chandigarh is having third rank in proposed method while Kerla got this rank in direct ranking. Bihar and Chhattisgarh got lowest rank in both methods. Gujrat and Karnatka got 5<sup>th</sup> and 9<sup>th</sup> rank in the direct method while 19<sup>th</sup> and 15<sup>th</sup> rank in proposed method. Similar fluctuation has been seen in Nagaland and Mizoram as 8<sup>th</sup> and 6<sup>th</sup> position in proposed one while 30<sup>th</sup> and 27<sup>th</sup> position in direct one. There are some deviations in the ranks of other states and union territories in both methods with average ranks 15.90 and 15.58 and standard deviation 9.11 and 8.99 in proposed methods and direct ranking method respectively. Nearly 8% reduction in standard deviation is seen in the proposed ranking method. Thus it is recommended to use this method with proper mechanism of selecting covariates that influence the financial literacy very much using variable selection criterion and regression analysis to see significant impact on financial literacy and variation in ranking pattern. Although financial behavior is not so straightforward as it depends on much non linear dynamic behavior of society and individual as well.



						Co	rrelatio	ns						
		Medical Dr. Facility	FL2015	IMR	IMR_BR	CDR	CBR	Education Index	Health Index	Income Index	Human Dev. Index	S<40	Below SLI	Household Pov Index
Medical	Pearson Correlation	1	157	.150	284	.178	156	518**	010	595**	346	.079	349	.321
Dr. Facility	Sig. (2- tailed)		.384	.403	.109	.321	.385	.003	.956	.000	.057	.673	.054	.078
	Ν	33	33	33	33	33	33	31	31	31	31	31	31	31
	Pearson Correlation	157	1	.015	.013	- .167	1.000**	.279	.044	.288	.203	.008	.062	227
FL2015	Sig. (2- tailed)	.384		.933	.942	.352	.000	.129	.816	.116	.274	.966	.742	.219
	N	33	33	33	33	33	33	31	31	31	31	31	31	31
IMR	Pearson Correlation	.150	.015	1	909**	- .186	.015	086	387*	083	307	.095	.003	.019
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	Sig. (2- tailed)	.403	.933		.000	.300	.933	.644	.031	.655	.093	.612	.988	.918
	N	33	33	33	33	33	33	31	31	31	31	31	31	31
	Pearson Correlation	.178	167	186	.110	1	165	170	.238	054	.082	116	186	.113
CDR	Sig. (2- tailed)	.321	.352	.300	.544		.358	.360	.197	.771	.659	.535	.316	.543
	N	33	33	33	33	33	33	31	31	31	31	31	31	31
	Pearson Correlation	156	1.000**	.015	.013	- .165	1	.280	.048	.290	.207	.004	.064	229
CBR	Sig. (2- tailed)	.385	.000	.933	.942	.358		.127	.799	.113	.265	.982	.734	.215
	N	33	33	33	33	33	33	31	31	31	31	31	31	31
Election	Pearson Correlation	518**	.279	086	.055	.170	.280	1	.291	.850**	.766**	283	.385*	804**
Index	Sig. (2- tailed)	.003	.129	.644	.770	.360	.127		.112	.000	.000	.123	.032	.000
	N	31	31	31	31	31	31	31	31	31	31	31	31	31
13				nternat	ional Journ	al in Co	mmerce,	IT and Socia	al Science	es				

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	Pearson Correlation	010	.044	- .387 <sup>*</sup>	.295	.238	.048	.291	1	.242	.823**	792**	043	420*
Index	Sig. (2- tailed)	.956	.816	.031	.108	.197	.799	.112		.191	.000	.000	.818	.019
	N	31	31	31	31	31	31	31	31	31	31	31	31	31
	Pearson Correlation	595**	.288	083	.050	.054	.290	.850**	.242	1	.721**	303	.508**	570**
Income Index	Sig. (2- tailed)	.000	.116	.655	.791	.771	.113	.000	.191		.000	.097	.004	.001
	N	31	31	31	31	31	31	31	31	31	31	31	31	31
	Pearson Correlation	346	.203	307	.226	.082	.207	.766**	.823**	.721**	1	699**	.241	708**
Human Dev.Index	Sig. (2- tailed)	.057	.274	.093	.222	.659	.265	.000	.000	.000		.000	.191	.000
	N	31	31	31	31	31	31	31	31	31	31	31	31	31
S<<40	Pearson Correlation	.079	.008	.095	057	- .116	.004	283	.792 <sup>**</sup>	303	699**	1	124	.448*

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	Sig. (2- tailed)	.673	.966	.612	.761	.535	.982	.123	.000	.097	.000		.506	.011
	N	31	31	31	31	31	31	31	31	31	31	31	31	31
D.1	Pearson Correlation	349	.062	.003	.059	- .186	.064	.385*	043	.508**	.241	124	1	.088
SLI	Sig. (2- tailed)	.054	.742	.988	.752	.316	.734	.032	.818	.004	.191	.506		.637
	N	31	31	31	31	31	31	31	31	31	31	31	31	31
	Pearson Correlation	.321	227	.019	.041	.113	229	804**	420*	570**	708**	.448*	.088	1
Household Pov Index	Sig. (2- tailed)	.078	.219	.918	.827	.543	.215	.000	.019	.001	.000	.011	.637	
	N	31	31	31	31	31	31	31	31	31	31	31	31	31
**. Correla	tion is signifi	cant at th	e 0.01 lev	vel (2-t	ailed).	1	1	L	1	1	1		I	
*. Correlati	ion is significa	ant at the	0.05 leve	l (2-ta	iled).									

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10	http://ijmr.net.in, Email: irjmss@gmail.com



## Reference

- 1. Subha, M.V. and Priya, P.S. (2014), The Emerging Role of Financial Literacy Financial Planning, IJISET International Journal of Innovative Science, Engineering & Technology, Vol. 1 Issue 5, 400-408.
- 2. Anshika and Singla, A. (2017), Financial Literacy in India-An Appraisal, ICRTESM, 1288-1294.
- 3. Fernandes, D., Lynch, J.G., and Netemeyer, R.G.(2014), Financial Literacy, Financial Education and Downstream Financial Behaviors, Forthcoming in Management Science, Available at SSRN: https://ssrn.com/abstract=2333898.
- 4. Lusardi, A., and Mitchell, O.(2006), Financial literacy and planning: Implications for retirement wellbeing, Pension Research Council Working Paper 1, The Wharton School.
- 5. Lusardi, A., and Mitchell, O. (2014). Financial Literacy and Economic Outcomes: Evidence and Policy Implications, J Retire. 2015 Summer; 3(1): 107–114.
- 6. Morgan, P.J. and Trinh, L.Q.(2017), Determinants and Impacts of Financial Literacy in Cambodia and Vietnam, ADBI Working Paper Series, Asian Development Bank Institute (ADBI).
- https://www.oecd-ilibrary.org/pisa-2015-financial-literacyframework\_5jfq226fnkjd.pdf.
- 8. National Centre for Financial Education Report, 2015, India.