

# FINANCIAL LITERACY LEADS TO DEVELOPMENT: MEDIATING ROLE OF FINANCIAL INCLUSION, AN EMPIRICAL STUDY

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## ABSTRACT

The study is performed with the major objective of gaining insights and knowledge about the role and importance of financial inclusion in the holistic development of a nation. The study also laid emphasis in finding the role of social capital as a moderator in the relationship between financial literacy and financial inclusion and impact of mobile banking as a moderator in the relationship between financial inclusion and development through mobile banking. Mediating role of Financial Inclusion was also explored in the study. The study is empirical in nature. The sample size of the study is 197 respondents which were chosen through non probabilistic convenient sampling method. The study uses structural equation modeling approach to find the association between financial literacy and financial inclusion and development. The study also performs hierarchical regression to check the moderation effect and Process Macro for mediation analysis. The research finds that there exists positive significant association

between the level of penetration of the financial literacy and the extent of financial inclusion and between the prevailing level of financial inclusion and the level of nation's development. It was also concluded from the study that mobile banking significantly act as a moderator for the relationship between financial literacy and financial inclusion and social capital was a significant moderator for the relationship between financial inclusion and development of the nation. Financial Inclusion partially mediates the relationship between financial literacy and development of the nation. Since the study is performed only on a sample of 197, belonging to Delhi NCR region, it can be taken as a limitation for the study. In future, the significance of demographic variables on the established relationship can be explored.

## INTRODUCTIONS

Financial Inclusion is truly the foremost objective for most of the nations which are at their developing stage as several research findings

concluded the presence of direct link between financial exclusion and the extent of poverty prevailing in the nation. **World Bank report** defined “Financial inclusion as wide-ranging accessibility to financial services, or as an absence of both the price or non-price barriers for the use of these financial services by the people at large.” The presence of intense financial systems aids in offering a wide variety of financial products like investments, term deposits, loan payment, and hedging or risk management products to people holding diverse variety of needs and aspirations. A comprehensive financial system permits a wide-ranging access for different financial services offered to poor or disadvantaged groups of people specifically. The quest of financial inclusion is mainly intended at motivating the population which is ‘unbanked’ or out of the domain of financial system into the field of a structured, recognized and mechanized financial system (**Pearce, 2011**). It is believed that the lack of access to different financing activities will unfavorably affects growth aspects of the nation and also it will slow down the poverty alleviation mission as well, as in this type of situation it will be hard for the poorly people to gather their savings, or to make their assets, to safeguard themselves against the probable risks, as well as to capitalize for diverse projects which generate high revenue. In some researches emphasis was laid on the vital need of accessing finance by the entrepreneurs as availability of financing activities will encourage entrepreneurs to take risk, presence of financing activities will also provoke them to invest more, which in return will contribute to growth in a positive manner. Several studies conducted in the past like (**Honohan, 2004; Demirguc and Klapper, 2012, etc**) recognized a robust link between economic development and

growth of a nation and the quality of financial access like banking services to the citizens of a country. Financial Inclusion can be viewed as an analytical lens through which one can recognize the existing relationship between finance and the poor. Financial inclusion is an access to on time, satisfactory credit and other economic services which can be used by different susceptible and weaker sections of the society at an affordable cost). As per **Bold 2012, Jenkins, 2008, Porteous, 2006, Ehrbeck, 2012** there is a relationship between the extent of financial inclusion and adoption of mobile payment. Jenkins (2008) said that it is the ability of the mobile money which enables financial inclusion which in return has enormous potential for development. Thus, this paper focuses on establishing the link between financial inclusion and development with the use of mobile banking and social capital.

## LITERATURE REVIEW

**Financial Literacy and Financial Inclusion**  
**Atkinson, Messy (2013)** stated that there is extensive need to scale up the financial literacy level to decrease the degree of people omitted from benefits of monetary or financial services and products. **Klapper, Lusardi ; Oudheusden (2015)** concluded that unless government makes considerable efforts to increase financial literacy levels among people, boosting of financial inclusion by opening accounts or making other financial services available will not show any significant effect. Promoting financial inclusion is significantly related to financial literacy levels. **Singh, Gupta (2013)**, in their paper stated that government should use behavioral factors to strengthen the financial inclusion level instead of focusing only on financial literacy level. Other

models like mobile payment system telecentres etc can be explored for strengthening financial inclusion.

**H1:** There is an influence of level of financial literacy on the level of financial inclusion.

### **Banking through Mobile and Financial Literacy and Inclusion.**

**Donovan,(2012)** stated that introduction of mobile money will embrace world's poor into the domain of financial services and thus can strengthen the financial inclusion. **Etim(2014)**, in his paper stated that government should focus on using different electronic payment modes for reimbursing amount like salaries or collecting revenues. Through this financial inclusion can be encouraged as numerous people will hold or use their bank accounts in a more efficient manner, which they otherwise are not using.

**Hughes, Lonie (2007)** in paper had concluded that mobile banking will aid in bringing individuals into the communications and monetary channel worldwide. **Lal, Sachdev (2015)** in their paper concluded that services offered by mobile banking can be deployed effortlessly for strengthening the extent of financial inclusion countrywide, which will automatically reduce the poverty level and will contribute towards the economic development of the country.

**H2:** There is a moderation effect of Mobile banking penetration on the relationship between the level of Financial Literacy and the extent of Financial Inclusion.

### **Financial Inclusion and Development**

**Chibbaa (2009)** in his paper concluded that financial inclusion offers multi-dimensional answers to cope with the problem of poverty, it also aids in promoting inclusive growth and

in achieving millennium development goals. **Sarma, Pais (2008)** in their paper by using index of financial inclusion (**Sarma,2008**) concluded that extent of human development bears a strong relation with financial inclusion. They also laid emphasis on importance of social factors like income level of the country are significantly contributing in deciding the financial inclusion level prevailing in the country.

**Allen, Carletti, Cull, Qian, Senbet, Valenzuela (2014)** in their paper concluded that recent developments in financial services offered to citizens of a nation, will significantly contribute in development of infrastructure and mobile banking is positively contributing in strengthening the financial inclusion. Gabor, **Daniela and Brooks (2017)**, in their paper concluded that digitalization is helping the financial inclusion in a positive manner by providing new ways of expanding the inclusion activities and by bringing poor households into the category of generators of financial assets. **Laha (2015)** in his paper through cross sectional analysis of Indian states concluded that financial inclusion is strongly positively related with human development as states which hold high level of human development index usually have relatively higher index of financial inclusion. Also **Babajide, Adegboye, Omankhanlen(2015)**, concluded that financial inclusion is a important factor in economic growth or progress of the country as it directly or indirectly determines the final output of the economy. **Shetty (2008)** In his paper had said that financial inclusion via microfinance channel helps in upscaling the household income, expenditure, assets, employment. Thus, financial inclusion is positively related with the development and progress of a nation as it attempts to pause the vicious circle of poverty.

**Kaur, Singh (2015)** through their paper concluded that financial inclusion strengthens the financial development of the nation by broadening the resource base of the nation. **Neaime, Gaysset (2017)** had written that only poverty inequality is decreased by financial but it had no effects for poverty reduction and financial inclusion significantly contributes for financial stability. **Sarma(2008)**, in his paper formulated an Index of financial Inclusion wherein Human Development Index, among other factors are given weightage for the calculation. This showed that human development is associated with financial inclusion.

**Kelkar, (2010)**, stated through research that financial inclusion will significantly contribute towards economic development. **Sarma, Pais (2011)**, in their paper found that levels of human development most often move with the level of financial inclusion index of the country. Along with factors of social economic dimension, other factors like infrastructure, pay, dissimilarity of income, literacy, expansion of cities, towns, other physical infrastructure facilities are also essential for connection and information purposes. **Sharma, Kukreja (2013)** also highlighted the necessity for financial inclusion in promoting sustainable and comprehensive development and growth of the nation.

**H3:** There is an impact of extent of financial Inclusion prevailing in the country on the Development level of the nation.

### **Social Capital and Financial Inclusion and Development**

**Guiso, Sapienza, Zingales (2004)** highlighted a very strong association between social capital prevailing in the area and the level of financial contracts. They concluded that social capital can

be considered as a most significant antecedent for financial development. **Candiya, Bongomin, Ntayi, Munene, & Nabeta, (2016)**, in their paper stated that as a moderator, role of social capital was also significant in the association between financial literacy level and extent of financial inclusion. Being a mediator it enhances the degree of association between the level of financial literacy and the financial inclusion. Thus, one can conclude that if social capital is not present then literacy level has little role in improving the magnitude of financial inclusion in the country.

**H4:** There is a significant moderation effect of Social Capital on the association between Financial Inclusion and Development.

## **RESEARCH METHODOLOGY**

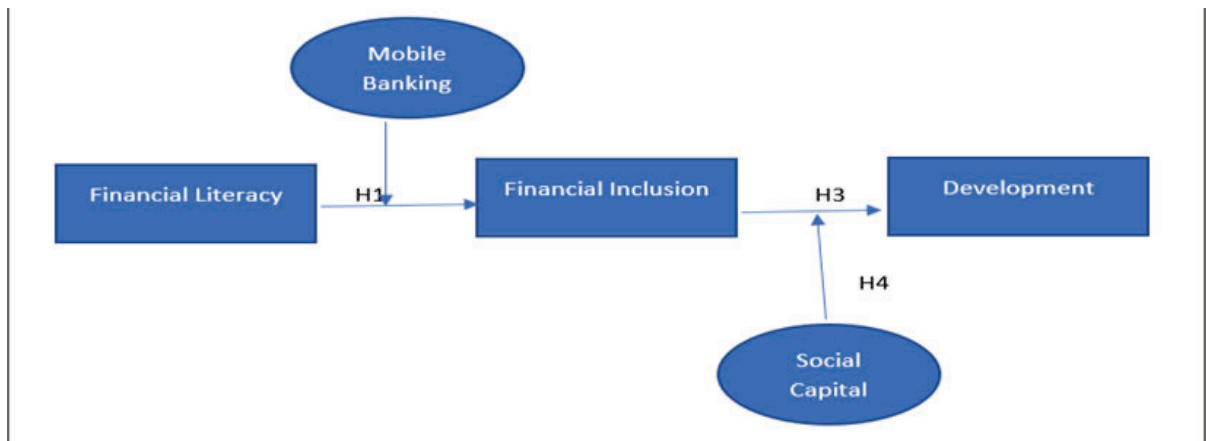
A well-structured questionnaire was considered in carrying out the research work. The questionnaire consists of seven statements for financial literacy (adapted from the work of Atkinson, Messy (2013), Klapper, Lusardi; Oudheusden(2015), five for mobile banking penetration (adapted from Donovan(2012), Hughe, Lonie(2007)) five for financial inclusion, (adapted from Chibbaa (2009), Sarma, Pais(2008)), four for social development (adapted from the work of Guiso, Sapienza, Zingales (2004) Candiya, Bongomin, Ntayi, Munene, & Nabeta, (2016)), and five for development (adapted from the work of Arindam Laha (2015), Babajide, Adegboye, Omankhanlen(2015)).

The respondents chosen for the study is a common individual who lives in the Delhi NCR region. Area for the study is chosen as it is convenient for the researcher as well Delhi is a metropolitan city. We have used non probabilistic sampling method

to identify the respondents for the study. For collecting data, we have used online questionnaire method whereby we mail the questionnaire to the respondents. The online questionnaire method is considered as a appropriate tool for collecting the data as the respondent willingly have chosen to participate in the study by filling the online questionnaire. Moreover, respondents were also

encouraged to forward the questionnaire to their known ones in order to have a good sample size. In total the questionnaire was send to 275 individuals, out of which 197 responses were deemed fit to be included in the analysis as rest of the responses were incomplete with respect to one or more construct.

**Figure 1: Proposed Research Model**



(Author's own model)

This is a conceptual model designed to figure out the association between FL and FI ; FI and DV. Furthermore, moderation effect of mobile banking penetration & social development will be calculated on FL and FI; FI and DV. Mediating role of the financial inclusion on association of financial literacy and the level of development will also be analyzed.

## DATA ANALYSIS AND FINDINGS

### Reliability and Sample Sufficiency Test

To assess the reliability of scale used for study along with each construct, we computed the Cronbach Alpha, which is used as a measurement tool for checking internal consistency of the items. The overall value for the complete scale is coming out to be .981 which is above the threshold limit of 0.7. To validate the adequacy of sample size, Kaiser –Meyer–Olkin (KMO) measure is used along with Bartlett's Test of Sphericity whose value is coming out to be .960 which is above the minimum level of 0.6 along with significant value of Bartlett's test. Reliability of each construct is listed in table no. I

## CONSTRUCT RELIABILITY AND VALIDITY

To ensure about the validity of the construct, researcher has to check both the convergent and discriminant validity. For ensuring that the constructs which are predicted to be related are actually related or not, convergent validity is tested. Discriminant validity is used in ensuring whether constructs which are assumed to be unrelated are actually unrelated or not. If the value of CR more than 0.7, and the value of AVE is greater than 0.5 and the value of CR is also more than AVE then , convergent validity is assured. If the values of  $AVE > MSV$  and  $AVE > ASV$  then there is a case of discriminant validity. The calculated value for this model in table no.1 indicate that both conversant and discriminant validity exist.

**Table 1: Reliability and Cronbach Values**

Construct	No. of items	Alpha Value	AVE	CR	MSV
Financial Literacy	7	0.941	0.718	0.946	0.88
Mobile Banking Penetration	5	0.971	0.861	0.969	0.874
Financial Inclusion	5	0.971	0.874	0.972	0.88
Development	5	0.975	0.881	0.947	0.839
Social Capital	4	0.972	0.912	0.976	0.269

(Source: Research Output)

The above table highlights the reliability statistics of each construct which is used in the analysis of the study. Since the alpha vale is greater than 0.7 for all constructs i.e. FL (.941), Mobile banking (.971), Financial Inclusion (.971), Development (.975) These values indicate that there is an internal consistency between the statements used to measure a factor /construct. Thus we can perform further analysis using these constructs. Discriminant and convergent validity of the constructs are also meeting the desired criteria as the AVE is greater than 0.5 and also CR is greater than 0.7. Since, discriminant and convergent validity are meeting the desired criteria, we can perform further analysis.

**Table: 2: Reliability Statistics of Measurement Scale**

Construct	Measurement Scale	Cronbach Alpha	Mean	SD	SRW	Factor Loading
<b>Fiancial Literacy</b>	FL1	0.941	3.45	1.247	0.544	0.465
	FL2		3.59	1.309	0.871	0.768
	FL3		3.731	1.2263	0.911	0.82
	FL4		3.42	1.015	0.862	0.775
	FL5		3.32	1.066	0.869	0.751
	FL6		3.741	1.2160	0.923	0.842
	FL7		3.71	1.201	0.89	0.79
<b>Mobile Banking</b>	MB1	0.971	3.635	1.3280	0.975	0.865
	MB2		3.71	1.330	0.866	0.78
	MB3		3.690	1.3479	0.963	0.834
	MB4		3.68	1.312	0.868	0.79
	Mb5		3.624	1.3097	0.962	0.856
<b>Financial Inclusion</b>	FI1	0.971	3.52	1.434	0.936	0.679
	FI2		3.82	1.236	0.932	0.76
	FI3		3.731	1.1968	0.929	0.757
	FI4		3.569	1.5225	0.946	0.718
	FI5		3.741	1.1776	0.932	0.751
<b>Development</b>	D1	0.972	3.553	1.5855	0.953	0.759
	D2		3.574	1.2376	0.922	0.824
	D3		3.695	1.3204	0.926	0.813
	D4		3.320	1.4688	0.96	0.751
	D5		3.685	1.2341	0.931	0.797
<b>Social Capital</b>	SC1	0.975	3.132	1.4579	0.942	0.917
	SC2		2.827	1.6290	0.962	0.882
	SC3		3.051	1.4133	0.973	0.953
	SC4		3.051	1.4525	0.943	0.946

(Author's Own Output)

The above table shows the factor loading of each statement along with standardised regression weights and mean and standard deviation. The factor loadings of each statement is above the threshold limit of 0.5 which signifies that factor is extracting sufficient variance from the statement. This suggest that each statement is having good or significant relationship with the factor obtained. Seven

statements are leading to one factor named Financial Literarcy, whereas five statements are leading to one variable named mobile banking, five statements are framing one variable named financial inclusion, four statements are used in the development factor and social capital fcator. The above table also displays the mean and standard deviation of each statement. Since the mean value for statementa are close to 3, it implmes data is not skewed in the formation.

**Table 3: Correlation Table**

	Mean	SD	Gender	Age	Monthly Income	SC	DV	FI	MB	FL
<b>Gender</b>	1.5939	0.49	1							
<b>Age</b>	2.05	0.82	0.048	1						
<b>Monthly Income</b>	2.31	0.77	0.086	.341**	1					
<b>SC</b>	2.8914	1.36	0.091	0.0077	0.008	1				
<b>DV</b>	4.0824	1.5	0.043	0.0471	-0.068	.449**	1			
<b>FI</b>	3.2372	1.09	0.037	-0.004	-0.092	.530**	.933**	1		
<b>MB</b>	3.6354	1.25	0.079	0.0035	-0.131	.482**	.831**	.946**	1	
<b>FL</b>	3.4961	1.05	0.059	0.0014	-0.115	.522**	.874**	.959**	.955**	1

(Author's Own Output)

The table above highlights the degree of correlation between different constructs. The r value between FL and FI (.959), FI and DV(.933), SC and FI (.530), SC and FL(.522), MB and FI(.946) respectively. All the correlation values between different constracts show a positive relationship.

**Table 4: Model Fit Indices**

Fit Index	Goodness of Fit Index (GFI)	Comparative Fit Index (CFI)	Tucker-Lewis Index (TLI)	Chi-square/degrees of freedom (CMIN/DF)	Root Mean Square Error of Approximation (RMSEA)
Achieved Value	0.744	0.931	0.922	3.096	0.103
Accepted Threshold Levels	>0.80	>0.90	>0.90	As high as 5.0	< 0.07
	(Mac Callum & Hing, 1997)	(Hu and Bentler, 1999)	(Hooper et al., 2008)	(Kline, 1998)	(Stinger, 1990) And between 0.08 to 0.10 (MacCallum et al., 1996)

(Author's Own Output)

The proposed model was tested using Structural Equation Model. The path analysis has significant role in deciding the model fit of the study. The value of different model indices like the Goodness of Fit Index (GFI), Chi-square/ degrees of freedom (CMIN/DF), index named the index of Comparative Fit Index (CFI), along with the value of another index named Tucker- Lewis Index (TLI), and value of Root Mean Square Error of Approximation Index (RMSEA) were considered to validate the model fit. For the path analysis, it is found that values for indices of model fits are as per the recommended level. From table it can be identified. The values of Goodness of Fit Index (GFI), the result of Comparative Fit Index (CFI), along with the value of Tucker- Lewis Index (TLI), and the Chi-square/ degrees of freedom (CMIN/DF) and also the value of Root Mean Square Error of Approximation (RMSEA) are all as per the decided criteria. Hence it is found that the model is fit with given data. The values achieved for Goodness of Fit Index (GFI) is.744, the result of Comparative Fit Index (CFI) is.931, along with the value of Tucker- Lewis Index (TLI)is.90, and the Chi-square/ degrees of freedom (CMIN/DF) is 3.096 and also the value of Root Mean Square Error of Approximation (RMSEA) is.103.

**Table 5: Regression Results**

IDV	DV	R	R square	Adjusted R square	Std. Error of the Estimate	Durbin Watson	F	Sig.	Hypothesis
FL	FI	0.959	0.92	0.92	0.30774	1.75	2242.2	0	H1 supported
FI	DV	0.933	0.087	0.869	0.54068	2.047	1303.56	0	H2 supported

(Author's Own Output)

First, from the table VI it is evident that FL has significant impact on FI, where r square (0.920), se (0.30774), f (2242.20 ) and  $p < 0.05$ . Also, it is clear that FI also plays a significant role in DV as r –square (.870), se(.54068), f(1303.55) and  $p < 0.05$ . Thus, the results from above table shows that, there exists significant association between the level of Financial Inclusion and the degree of Financial Literacy and the extent of Development and Financial Inclusion as the value of statistics i.e. f value is coming out to be significant as its value is greater than 4 and p value is significant. Through the above results hypothesis 1 and 3 are supported in the study as significant relationship is established between the variables.

In regression analysis, if the association between two variables is dependent on the presence of a third variable, then it is known as moderation analysis and the variable which is impacting the association externally is known as a moderator in the analysis.

To test the moderation effect of penetration of mobile banking and Social Capital on the above calculated association at midlevel of Financial Literacy and the extent of Financial Inclusion and

between extent of Financial Inclusion and level of Development, hierarchical regression was run with calculated Z scores of the variables and interaction effect was checked.

**Table 6: Hierarchical Regression Results for Checking Moderating Role**

Path	Interaction Effect	Standard Error	Standardized Beta	t- value	p-value
FL-> MB -> FI	0.237	0.1	0.179	2.376	0.018
FI ->SC->DV	0.21	0.037	0.198	5.754	0

(Author's Own Output)

The above table shows the moderation results of the study. The moderating role of mobile banking in the relationship between financial literacy and financial inclusion is coming out to be significant as the interaction effect is significant and value of t is greater than 2. This shows that with the penetration of mobile banking facilities, more and more people are holding bank accounts and are actually reaping its benefits. The moderating role of social capital is also significant in the relationship between financial inclusion and the level of development as again here the interaction effect is significant. The result of the study indicates that interaction is significant (.000) which signifies that third variable significantly influencing the relationship between independent and dependent variable. Thus, from the results stated in table no. VII, we can conclude that there is a moderation effect of mobile banking penetration on the financial literacy level and the extent of financial inclusion and also of social capital on the association between the extent of financial inclusion and the level of development. Thus, hypothesis 2 and 4 are also supported and accepted in the study.

**Table No. 7: Mediating Role of Financial Inclusion (FI) on Financial Literacy (FL) and Development (DV)**

Path	Direct Effect	Indirect Effect	P value	LLCI	ULCI
FL -> FI -> DV	-0.3592	1.601	0.0053	-0.6103	-0.1078

(Author's Own Output)

The mediation analysis shows that Financial Inclusion mediates the relationship between financial literacy and development of the nation as both the direct and indirect effects are significant. Besides these, there is no zero present between the lower and the upper limit of confidence interval which signifies the presence of a significant mediation impact of the variable. (Jaccard & Jacoby, 2010). In the mediation analysis both i.e. direct and indirect effects are present we can come to the conclusion that financial inclusion partially mediates (Jaccard & Jacoby, 2010) the relationship. Financial literacy is a factor which is very important in a person's life and financial well-being. If a person is financially stable, he/she can contribute more significantly in the development of the

nation. This situation is further strengthening with the help of financial inclusion as higher the level of financial inclusion in the country more will be the development prevailing in the country (Mandira Sarma, Jesim Pais (2008) Allen, Carletti, Cull, Qian, Senbet, Valenzuela (2014) Gabor, Daniela and Brooks (2017)). This is supported by the above results of mediation analysis.

## DISCUSSION AND CONCLUSION

The study finds significant relationship between financial literacy and financial inclusion and financial inclusion and development of the nation. Also the moderating effect of the mobile banking on the relationship between financial literacy and financial inclusion and of the social capital on the relationship between financial inclusion and development was justified in the study. Partial mediating role of financial inclusion was also noticed on the relationship between financial literacy and development of the nation. The empirical findings of the study give a clear understanding that the result indicates a significant positive association between the extent of financial literacy level and financial inclusion as concluded by many researchers (Atkinson, Messy (2013) Klapper, Lusardi, Oudheusden (2015)). The study also suggest that there is a significant relationship between Financial inclusion and Development, same as being concluded by other researcher (Gabor, Daniela and Brooks (2017) Babajide, Adegboye, Omankhanlen (2015) Shetty (2008)). As concluded by these authors in their studies similar findings have been indicated by this research also. Furthermore, the moderating role of both the variable is coming out to be significant as the interaction effect is significant (.000). The results of moderation effect of mobile banking penetration on the financial literacy level and the extent of financial inclusion is

found to be similar with the previous studies of Donovan (2012), Etim (2014), Hughes (2007), Lal, Sachdev (2015) and also the moderating role of social capital on the association between the extent of financial inclusion and the level of development is significant as found in the previous work of Guiso, Sapienza, Zingales (2000), Candiya, Bongomin, Ntayi, Munene, & Nabeta, (2016). It is a major finding as this finding can be used by policy makers to formulate strategies to promote use of mobile banking. Although government has started promoting digital banking or mobile banking as it itself has started using electronic methods. The government can also take initiatives to promote mobile banking as they have started paying salaries, collecting revenues using digital modes. All these measures will improve the extent of financial inclusion and thus development of the nation. The mediating results of the study are in assonance of the findings of the previous researches wherein Mandira Sarma, Jesim Pais (2008) Allen, Carletti, Cull, Qian, Senbet, Valenzuela (2014) Gabor, Daniela and Brooks (2017) stated that there exists a strong association between financial inclusion and development. With the help of this finding the policy makers, concerned bodies can make requisite steps to promote or increase the level of financial inclusion along with due emphasis on financial literacy to increase the level of development.

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