International Journal of Scientific Research in Engineering and Management (IJSREM)
Volume: 09 Issue: 08 | Aug - 2025 SJIF Rating: 8.586 ISSN: 2582-3930

Determinants of Financial Inclusion in Himachal Pradesh

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Abstract *This study explores the determinants of financial inclusion among rural households in Himachal Pradesh, India, using probit and logit models. A multistage stratified random sampling technique was employed to collect data from 375 respondents across three representative districts. Financial inclusion was analysed across multiple dimensions, including investment, awareness, ownership, credit, microfinance, insurance and pension. Key findings indicate that higher education levels, financial knowledge and income significantly enhance financial inclusion. However, barriers persist for women, individuals Below the Poverty Line (BPL) and certain age groups. Gender disparities were observed, with females showing lower awareness but higher engagement in microfinance. Marital status, family structure and attitudes also emerged as critical factors influencing financial behaviors. The results underscore the importance of targeted policies to bridge inclusion gaps and promote equitable financial access. These insights contribute to understanding rural financial inclusion dynamics and inform strategies to enhance socio-economic well-being in underbanked regions.*

Keywords: *Financial inclusion, Socio-economic factors, Knowledge index, Behaviour index, Attitude index, Knowledge index*

1. Introduction

Financial inclusion and economic growth are currently major topics on the development agenda and have entered the lexicon of the average person. Financial Inclusion is defined as "the process of ensuring access to financial services and timely and adequate credit where needed by vulnerable groups such as the weaker sections and low-income groups at an affordable cost" (Rangarajan 2008). It is basically the delivery of financial services mainly to the low-income group of the society at very low prices (Nwanne and Okorie 2015). Main aim of financial inclusion is to eradicate the financial untouchability of the poor and to provide credit facility mainly to those who need them but cannot afford them. It is widely acknowledged that the objective of inclusive growth is accomplished through the process of financial inclusion. Financial inclusion envisages bringing everyone, irrespective of financial status, into the banking fold for the individual progress and development and thereby achieving comprehensive growth with equity (Choudhary 2014) . Research in the last decade leads us to believe that a well- functioning and inclusive financial system is linked to faster and equitable growth (Honohan 2004) . India is among seven countries home to half the world 's 1.4 billion adults without access to formal banking (Demirguc-Kunt et al. 2021) . The report also noted that large shares of the global population without formal banking (130 million and 230 million, respectively) live in India and China because of their size. People without an account at a financial institution or a mobile money service provider have been classified as unbanked.

Financial Inclusion is an important priority of the Government. With modernization, there was a need to provide proper banking and financial services to people from backward or rural areas (Lal 2017) . The objective of Financial Inclusion is to extend financial services to the large hitherto un-served population of the country to unlock its growth potential. The Government initiated the National Mission for Financial Inclusion (NMFI), namely, Pradhan Mantri Jan Dhan Yojana (PMJDY) in August, 2014 to provide universal banking services for every unbanked household, based on the guiding principles of banking the unbanked, securing the unsecured, funding the unfunded and serving un-served and under- served areas. With a view to further deepening the financial inclusion interventions in the country, PMJDY has been extended beyond 14 August 2018 with the focus on opening of accounts shifting from "every household" to "every unbanked adult". The moto of financial inclusion is form Jandhan to Jansuraksha. Prime Minister Modi has also launched the digital banking unit

initiative involving government and lenders. India has taken another step towards financial inclusion and strengthening digital banking in the country.

A nation needs its weaker sections to be financially independent, for economic and social growth. Despite India boasting economic growth rates higher than most developed countries in recent years, a majority of the country's population still remains unbanked. Financial inclusion is a relatively new socio-economic concept in India that aims to change this dynamic by providing financial services at affordable costs to the underprivileged, who might not otherwise be aware of or able to afford these services. Global trends have shown that in order to achieve inclusive development and growth, the expansion of financial services to all sections of society is of utmost importance. As a whole, financial inclusion in the rural as well as financially backward pockets of cities is a win-win opportunity for everybody involved, the banks/NBFC's intermediaries and the left-out urban population. As income levels and consequently, savings in rural areas increase, it is essential to help earners manage their funds and facilitate incoming and outgoing payments. Allowing people to create simple, no-frills current and savings accounts, relaxing KYC norms and directly crediting social benefits to account owners will bolster an inclusive approach to finance & banking in rural areas.

Himachal Pradesh, a predominantly rural state with a unique socio-economic and geographical profile, offers an important context for studying the determinants and impact of financial inclusion. This research aims to examine the factors influencing financial inclusion in Himachal Pradesh, focusing on dimensions such as investment, awareness, ownership, credit, microfinance, insurance and pension. By employing probit and logit models, this study provides a comprehensive analysis of socio-demographic, economic and behavioral determinants. The findings are expected to contribute to the growing literature on financial inclusion and provide actionable insights for designing targeted interventions.

Author(s)	Findings
Allen et al. (2016)	Richer, more educated, older, urban, employed and married individuals are more likely to own accounts, save and borrow formally. High-quality institutions, strong contract enforcement and political stability positively influence financial inclusion. Barriers include high costs, distance and low trust in the banking system.
Fungacova & Weill (2015)	In China, richer, more educated and older men are more likely to be financially included. Barriers include lack of money, documentation and trust in the banking system. Women face exclusion due to family dynamics or lack of personal accounts. Older individuals are affected by distance and religious reasons.
Kostov et al. (2015)	Financial literacy and aspirations significantly influence financial inclusion decisions in South Africa. Gender also plays a role, with differences in inclusion outcomes.
Demirguç-Kunt et al. (2013)	A significant gender gap exists globally in account ownership, saving and credit. Barriers for women include low financial literacy, lack of guarantees and systemic constraints. Gender discrimination is less evident in informal finance and women in some countries are more likely to use informal financial services.
Aterido et al. (2013)	In Africa, women face financial exclusion due to broader socio-economic factors such as education and employment. However, they are more likely to use informal financial services, with no significant gender discrimination in informal finance.

Demirguç-Kunt et al. (2013)	Muslims are less likely to have formal accounts and save formally compared to non-Muslims, particularly in Sub-Saharan Africa. Common barriers for Muslims include low income, lack of education and rural residence. Religion is cited more frequently as a barrier by Muslims.
Demirgüç-Kunt et al. (2015)	Globally, 62% of adults own a formal account, with mobile banking innovations driving inclusion in developing economies. In Africa, mobile banking adoption is high, with several countries reporting more mobile money accounts than formal bank accounts. Significant regional disparities exist in financial inclusion levels.

III. Methodology

Sampling design

Multistage random sampling was used to select districts, blocks, gram panchayats and ultimately rural households in the study area.

Selection of districts

At the first stage of sampling stratified random sampling was used to selection of the districts. Strata's were formed based on the number of bank branches in each district. Districts were divided on the basis of number of bank branches in each district. First strata constituted of districts with less than and equal to 100 bank branches, In second strata constituted of districts with 101-200 bank branches and third strata constituted of districts with more than and equal to 201 bank branches. One district from each of the three strata was selected.

Table 3.1: List of the selected districts in the study area

Strata	No.of Bank Branches	Districts	Selected Districts
1	≤ 100	Lahaul & Spiti, Kinnaur, Bilaspur, Chamba	Lahaul & Spiti
2	101-200	Kullu, Sirmaur, Una, Hamirpur, Mandi	Kullu
3	≥ 201	Solan, Shimla, Kangra	Shimla

Selection of blocks

At the second stage of sampling, a complete list of blocks falling under selected districts was prepared and 30 per cent of blocks were chosen randomly from each selected district (Table 3.2).

Selection of Panchayat

At the third stage of sampling, a complete list of panchayats was prepared from each selected block and out of which10 per cent of panchayats were selected randomly from each selected block (Table 3.2).

Selection of the sampled respondents

At the fourth stage of sampling respondents were selected from each panchayat in consultation with the Panchayat Secretary and Panchayat Pradhan (Table 3.3).

Table 3.2: Selection of blocks and gram panchayats

District	Block	No. of Gram Panchayats	Gram Panchayat selected	Respondents Selected	Total
Shimla	Mashobra	30	Bhont	15	45
			Dummi	15	
			Dhalli	15	
	Basantpur	24	Dumehar	15	30
			Karyali	15	
	Theog	59	Sarion	15	90
			Basa Theog	15	
			Cheog	15	
			Sarog	15	
			Kot Shilaroo	15	
			Roni Matiana	15	
	Totu	34	Chanog	15	45
			Dhamoon	15	
			Baggi	15	
Kullu	Naggar	41	Gojra	15	60
			Vashisht	15	
			Jagatsukh	15	
			Shaleen	15	
	Kullu	37	Bajuara	15	60
			Dunkhrigahar	15	
			Bhumteer	15	
			Bashing	15	
Lahaul	Lahaul	32	Darcha	15	45
			Madgram	15	
			Udaipur	15	
Total	**7**	**257**	**25**	**375**	**375**

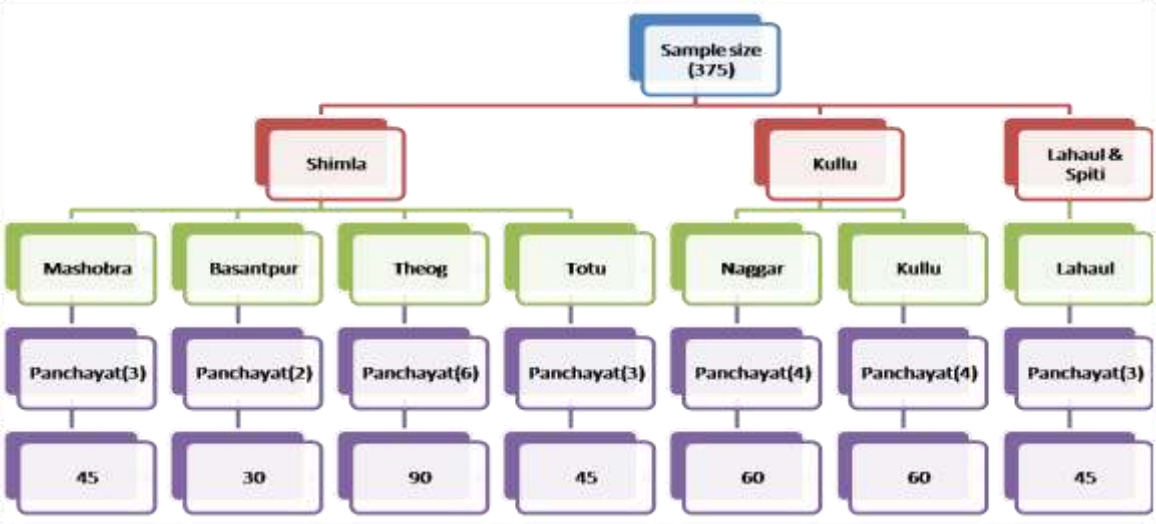

Fig 3.1: Schematic representation of sampled households in the study area

Data Collection

The collection of data has been done in the year 2023 to 2024. Both primary and secondary data has been collected for the present study to achieve the objectives. Data has been collected from the rural

households with the help of well-designed questionnaire after extensively reviewing the literatures and consultation of the experts. Hence, both primary and secondary data were collected to meet the objectives of the study.

Secondary data

The secondary data required for the present study were collected from various sources, including publications, government departments such as NABARD, the Department of Drinking Water and Sanitation, the Directorate of Economics and Statistics, Land Records, as well as books, journals, ResearchGate, Academia, Krishi-Kosh, Shodhganga and various reports and websites.

Analytical Framework

i. Probit Model

The Probit model is similar to the Logit model but uses the normal cumulative distribution function (CDF) to model the probability. The Probit model estimates the probability of an event occurring by assuming a normal distribution of the error term.

Probit Regression Formula: The Probit model can be written as:

$$\Phi^{-1}(P) = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \cdots + \beta_n X_n$$

Where:

P is probability of financial inclusion

$\Phi^{-1}(P)$ is the inverse of the normal cumulative distribution function, also known as the Probit link function

β_0 is constant term

$\beta_1, \beta_{2,\ldots\ldots}, \beta_n$ is coefficients of the independent variables

$X_1, X_2, \ldots, X_n$ is explanatory variables

Table 3.3: Independent Variables and Descriptions of Determinants of Financial Inclusion

Independent variables	Variables	Description
Socio demographic	Age	Age of the respondent in years (Continuous, 1=18-25; 2=26-35; 3=36-45; 4=46-55; 5= above 56)
	Gender	Gender of respondent (Dummy, female 1, male 0)
	Marital status	Marital status of respondent (Dummy, married 1, unmarried 0)
	Family type	Family type of respondent (Dummy, joint 1, nuclear 0)
	Educational status	Educational status of respondent (Dummy, 1= below graduation; 0= graduation and above)
	Occupation	Occupation of the respondent in (Continuous, 1= government employee; 2= private employee; 3=

		business; 4= agriculture/horticulture; 5= student &others)
	Economic status	Economic status of respondent (Dummy, APL 1, BPL 0)
	Annual income	(Continuous, 1= upto 100000; 2= 100000-200000; 3= 200001-300000; 4=300001-400000; 5= above 400001
Knowledge	Risk averse nature	How well do you understand the risks and potential returns of such investments?(Dummy, yes1, no 0)
	High inflation means cost of living is increasing	Do you know how inflation influences purchasing power and everyday expenses?(Dummy, yes1, no 0)
	Diversification helps in risk mitigation	Are you aware of the benefits of diversification in reducing financial risks?(Dummy, yes1, no 0)
Attitude	Satisfaction	(Continuous, 1=completely agree; 2= somewhat agree; 3=neither agree nor disagree; 4= somewhat disagree; 5= completely disagree)
	Living for today vs. planning for tomorrow	(Continuous, 1=completely agree; 2= somewhat agree; 3=neither agree nor disagree; 4= somewhat disagree; 5= completely disagree)
	Money as a Resource for Spending	(Continuous, 1=completely agree; 2= somewhat agree; 3=neither agree nor disagree; 4= somewhat disagree; 5= completely disagree)
Behaviour	Careful Planning Before Purchases	(Continuous, 1=completely agree; 2= somewhat agree; 3=neither agree nor disagree; 4= somewhat disagree; 5= completely disagree)
	Timely bill payments	(Continuous, 1=completely agree; 2= somewhat agree; 3=neither agree nor disagree; 4= somewhat disagree; 5= completely disagree)
	Monitoring financial affairs	(Continuous, 1=completely agree; 2= somewhat agree; 3=neither agree nor disagree; 4= somewhat disagree; 5= completely disagree)
	Financial planning before purchase	(Continuous, 1=completely agree; 2= somewhat agree; 3=neither agree nor disagree; 4= somewhat disagree; 5= completely disagree)

Table 3.4: Dependent Variables for Determinants of Financial Inclusion

Dependent variables	Description
Investments	Whether the respondent has made investments (Dummy, yes1, no 0)
Credit	Whether the respondent has access to credit (Dummy, yes1, no 0
Microfinance	Whether the respondent has used microfinance services (Dummy, yes1, no 0
Insurance	Whether the respondent has insurance coverage (Dummy, yes1, no 0
Pension	Whether the respondent has a pension plan (Dummy, yes1, no 0
Investment	Whether the respondent has invested in any financial products (Dummy, yes1, no 0
Awareness	Whether the respondent is aware of financial inclusion programs (Dummy, yes1, no 0

4. Results

Probit Model Results

To identify the determinants of financial inclusion among rural households in Himachal Pradesh, the probit model was employed to analyze factors influencing financial inclusion across multiple dimensions—investment, awareness, ownership, credit, microfinance, insurance and pension.

The coefficients in Table 4.1 represent the relationship between predictor variables and the likelihood of financial inclusion, while standard errors (S.E.) indicate the precision of these estimates. The statistical significance of key predictors is highlighted to provide insights into the factors shaping financial inclusion. Separate models were estimated for each aspect of financial inclusion to capture the unique determinants for each dimension.

In this analysis, the intercept is less critical to interpret on its own, as it serves as a baseline. It provides the foundation against which all other coefficients are compared, indicating how deviations from the baseline influence the likelihood of financial inclusion.

For the regression models in table 4.1 and table 4.2, the intercept corresponds to the following baseline characteristics:

1. Age: 18–25 years (youngest age group in the sample).
2. Gender: Male.
3. Marital Status: Single.
4. Type of Family: Joint family.
5. Educational Qualification: Below graduation.
6. Primary Occupation: Government employee.
7. Economic Status: Above Poverty Line (APL).
8. Annual Income: Up to ₹1,00,000.

Additionally, the Attitude Index**,** Behavior Index and Knowledge Index were included as binary variables, coded as follows:

- Attitude Index: 1 = Positive attitude towards financial inclusion, 0 = Otherwise
- Behavior Index: 1 = Positive financial behavior, 0 = Otherwise
- Knowledge Index: 1 = Respondent has financial literacy, 0 = Otherwise

The coefficients for these indices indicate the change in the log-odds (or probability, in transformed models) of financial inclusion when respondents exhibit positive attitudes, behaviors, or financial knowledge.

	Investment		Awareness		Ownership		Credit		Microfinance		Insurance		Pension	
	Coeff	S.E	Coeff	S.E	Coeff	S.E	Coeff	S.E	Coeff	S.E	Coeff	S.E	Coeff	S.E
(Intercept)	-0.78502	0.73586	-0.73549	0.65006	-0.7913	0.5975	0.43433	0.63575	-0.03326	0.83329	0.794043	0.591996	-0.46659	0.60501
Age 26-35	-0.10149	0.36233	0.52574	0.53455	0.1699	0.3669	-0.98894*	0.40076	-0.74125	0.56825	-0.499228	0.351333	0.26285	0.35179
Age 36-45	1.451944**	0.50945	0.18643	0.61764	-0.5897	0.4907	-0.32333	0.55159	-0.97941	0.65402	-0.115851	0.472972	0.35719	0.46084
Age 46-55	1.26483*	0.52427	-0.36256	0.65172	-0.4846	0.5030	-0.44818	0.57135	-1.25921.	0.69730	-0.083681	0.492385	0.14068	0.47540
Age 56 and above	1.233881*	0.53209	-0.32524	0.65206	-0.4101	0.5119	-0.74458	0.57706	-1.31992.	0.71275	-0.279208	0.501830	0.60156	0.47860
Gender Female	0.629344***	0.18953	-0.617711**	0.21751	0.1528	0.1811	-0.43806.	0.22717	1.011588***	0.25088	-0.218179	0.186294	-0.541433**	0.19404
Marital Status Married	-1.7467***	0.42831	-0.09060	0.53324	0.9199*	0.4019	-0.02498	0.47011	1.47388**	0.53271	-0.242616	0.388779	0.14572	0.37737
Type of Family: Nuclear Family	-0.24362	0.17708	0.24793	0.20286	0.2749	0.1758	-0.37989.	0.20172	-0.627733**	0.23773	-0.329243.	0.179563	-0.885577***	0.17003
Education: Graduation and Above	-0.21440	0.22570	1.675533***	0.45318	-0.2013	0.2259	-0.37927	0.24213	0.56198.	0.30526	0.472842*	0.221678	-0.10900	0.22938
Occupation: Private Employee	0.11573	0.41641	-0.11784	0.46273	-0.5242	0.4256	0.02991	0.42298	0.32748	0.54180	0.842032*	0.384122	0.35917	0.37354
Occupation: Business	-0.89137*	0.38668	0.36332	0.40473	0.3548	0.3810	0.64316	0.39990	0.68033	0.51511	0.460441	0.366761	-0.26593	0.35526
Agriculture/Horticulture	-0.891744**	0.32397	0.50539	0.33845	0.5935.	0.3187	-0.02263	0.32866	0.41172	0.45264	-0.376830	0.296125	0.14285	0.28861
Occupation: Student & Others	-0.91180*	0.36165	0.55338	0.39229	0.7501*	0.3547	0.48903	0.38081	-1.655066*	0.71408	-0.186170	0.335594	-0.19576	0.33214
Economic Status: BPL	0.95509	0.58479	-1.054003**	0.39196	0.7228.	0.4048	-0.68872	0.43922	-1.223321*	0.51385	-0.538616	0.392031	-0.05231	0.42831
Annual Income: 100,0001-2,00,000	1.514355**	0.57898	-0.40138	0.36083	-0.2254	0.3620	-0.46671	0.40339	-0.972114*	0.43705	-0.345595	0.368073	0.932601*	0.41020
Annual Income: 200,001-3,00,000	1.620588**	0.57578	0.22438	0.37817	-0.1860	0.3687	-1.405600**	0.43664	-1.717787***	0.49312	-0.853247*	0.381671	1.112433**	0.41541
Annual Income: 3,00,001-4,00,000	1.656811**	0.60324	-0.03165	0.42172	-0.7314.	0.4061	-0.81080.	0.46987	-1.415855**	0.53332	0.609881	0.407926	1.021332*	0.45320
Annual Income: 4,00,001 & above	1.944088**	0.61672	0.55098	0.46114	-0.8019.	0.4237	-0.23793	0.46888	-1.490500**	0.56065	0.477391	0.424769	0.51989	0.46304
Knowledge Index	0.448119*	0.22113	0.782888***	0.22816	-0.1588	0.2191	0.516699*	0.25152	0.03673	0.28946	0.124964	0.220440	0.13720	0.22913
Attitude Index	-0.08182	0.17116	-0.04009	0.20144	0.2672	0.1698	-0.6659***	0.18612	-0.833844***	0.23578	-0.422645*	0.166287	0.05605	0.17070
Behaviour Index	0.401118*	0.19631	0.33190	0.21664	-0.2075	0.1933	0.437600*	0.22026	0.24161	0.24603	0.005553	0.194771	-0.619466**	0.20248

Table 4.1: Probit Model Coefficients for Determinants of Financial Inclusion

Note: The significance levels are indicated as follows: *** p < 0.01; ** p < 0.05; * p < 0.10; (. dot) p < 0.1; (none) indicates p ≥ 0

Investment: Individuals aged 36-45 are positively and significantly (**) indicating they are more likely to invest compared to the reference group, likely aged 25 and below. Similarly, those aged 46-55 and 56 and above are also positively and significantly (*) suggesting middle-aged and older individuals have a higher likelihood of investment. Gender plays a crucial role, with females being positively and highly significant (***) indicating that women are

more likely to invest than men. Conversely, marital status shows a negative and highly significant (***) meaning married individuals are less likely to invest. Additionally, higher annual income levels are significantly and positively associated with investment, especially for income categories exceeding ₹100,000.

Awareness: Women are negatively and strongly significant (**) implying they are less likely to be aware of financial services compared to men. Education plays a pivotal role, with graduation and above being positively and highly significant (***) demonstrating that higher education substantially enhances financial awareness. Those Below Poverty Line (BPL) show a negative and significant (**) reflecting lower financial awareness. A higher knowledge index is positively and highly significant (***) boosting awareness and underscoring the importance of knowledge in financial literacy.

Ownership: Marital status is positively and significant (*) highlighting that married individuals are more likely to own financial products or services. Similarly, students and others not categorized in conventional occupations also show a positive and significant (*) indicating higher ownership rates in this group.

Credit: Individuals aged 26-35 are negatively and significantly (*) meaning they are less likely to access credit compared to younger individuals. Annual income levels between ₹200,001 and ₹300,000 are negatively and significantly (**) showing a lower likelihood of credit access among households in this income bracket. Financial knowledge, reflected in a higher knowledge index, is positively and significantly (*) indicating it facilitates credit access. On the other hand, attitudes, as measured by the attitude index, are negatively and highly significant (***) demonstrating that unfavorable attitudes hinder credit access.

Microfinance: Women are positively and highly significant (***) showing they are much more likely to engage with microfinance services. Married individuals also have a positive and significant (**) association with microfinance use. A higher knowledge index is positively and weakly significant (*) suggesting a modest positive effect on microfinance engagement. However, the attitude index is negatively and highly significant (***) indicating that negative financial attitudes limit microfinance utilization.

Insurance: Gender differences in insurance ownership are insignificant, suggesting no meaningful variation between men and women. Education levels, particularly graduation and above, are positively and weakly significant (*) showing higher education improves insurance uptake. The knowledge index is positive but insignificant, indicating limited direct impact. However, higher annual income levels significantly enhance the likelihood of owning insurance, with varying levels of significance across income brackets.

Pension: Women are negatively and strongly significant (**) suggesting they are less likely to have pensions. Nuclear families show a negative and highly significant (***) association with pension ownership, implying that individuals in nuclear families are less likely to secure pensions. Higher annual income levels are positively significant (* and **) pointing to a greater likelihood of pension ownership among wealthier households. Finally, behavioral traits measured by the behavior index are negatively and significantly (**) indicating that certain behaviors, possibly related to saving habits or long-term planning, adversely affect pension ownership.

	Investment		Awareness		Ownership		Credit		Microfinance		Insurance		Pension	
	Coeff	S.E	Coeff	S.E	Coeff	S.E	Coeff	S.E	Coeff	S.E	Coeff	S.E	Coeff	S.E
(Intercept)	-1.4198	1.3436	-1.08035	1.16409	-1.2279	1.0184	0.765874	1.123313	-0.09297	1.56723	1.4297944	1.0164539	-0.6553	1.0271
Age 26-35	-0.1948	0.6153	1.58827	1.06432	0.2710	0.6265	-1.671403*	0.716357	-1.40650	1.07018	-0.8574920	0.6014562	0.3915	0.5946
Age 36-45	2.3706**	0.8866	0.95577	1.18648	-0.9813	0.8505	-0.475772	0.997981	-1.77942	1.19517	-0.2322585	0.8152442	0.5202	0.7775
Age 46-55	2.0965*	0.9084	-0.16395	1.25740	-0.8252	0.8634	-0.720844	1.030617	-2.35605.	1.28751	-0.2310576	0.8483547	0.1639	0.7986
Age 56 and above	2.0797*	0.9192	-0.14849	1.26172	-0.7300	0.8802	-1.268415	1.039093	-2.40348.	1.31867	-0.6100543	0.8672344	0.9710	0.8012
Gender Female	1.0478**	0.3214	-1.23301**	0.41033	0.2303	0.3031	-0.737835.	0.416310	1.84885***	0.44708	-0.4109906	0.3206958	-0.9377**	0.3356
Marital Status Married	-2.8742***	0.7492	-0.65402	1.03941	1.4996*	0.6946	-0.058514	0.855785	2.69410**	1.01434	-0.3602982	0.6696636	0.2860	0.6360
Type of Family: Nuclear Family	-0.3948	0.2963	0.46701	0.37214	0.4246	0.2959	-0.713395*	0.359905	-1.14489*	0.45105	-0.6050495.	0.3101930	-1.4510***	0.2851
Education: Graduation and Above	-0.3073	0.3791	4.24917***	1.27029	-0.4137	0.3846	-0.652924	0.424512	0.91085	0.55489	0.7996900*	0.3768781	-0.1573	0.3907
Occupation: Private Employee	0.1929	0.7280	-0.65511	0.82558	-0.9417	0.7615	0.009342	0.746480	0.95126	1.05195	1.4072453*	0.6531142	0.5441	0.6240
Occupation: Business	-1.4678*	0.6632	0.28844	0.70195	0.6105	0.6566	1.020602	0.705747	1.48824	1.00433	0.8418173	0.6230568	-0.4378	0.5919
Agriculture/Horticulture	-1.4549**	0.5633	0.66741	0.59002	0.9778.	0.5598	-0.121945	0.577220	0.89292	0.91332	-0.6584259	0.5013288	0.2233	0.4808
Occupation: Student & Others	-1.4604*	0.6245	0.89761	0.70466	1.2130*	0.6178	0.840816	0.675770	-2.90308*	1.44095	-0.2156535	0.5702828	-0.3672	0.5587
Economic Status: BPL	1.6019	1.1111	-2.10892**	0.71363	1.2781.	0.7157	-1.223039	0.817511	-2.19973*	0.92985	-0.9966538	0.6884743	-0.1619	0.7503
Annual Income: 100,0001-2,00,000	2.6083*	1.1021	-0.68529	0.61959	-0.3832	0.6105	-0.812360	0.729060	-1.77542*	0.79220	-0.6017558	0.6324155	1.4918*	0.7172
Annual Income: 200,001-3,00,000	2.7624*	1.0945	0.46329	0.65598	-0.3208	0.6210	-2.468088**	0.797071	-3.22826***	0.91258	-1.480053*	0.6592337	1.8079*	0.7231
Annual Income: 3,00,001-4,00,000	2.7862*	1.1346	-0.04459	0.73770	-1.2223.	0.6819	-1.363821	0.844361	-2.66020**	0.98361	1.0418546	0.6920581	1.7069*	0.7859
Annual Income: 4,00,001 & above	3.2632**	1.1572	1.15989	0.81846	-1.3826.	0.7166	-0.422641	0.839594	-2.66454**	1.02700	0.8356330	0.7228158	0.7941	0.8014
Knowledge Index	0.7125.	0.3680	1.31821***	0.39938	-0.2471	0.3648	0.929174*	0.455002	0.09399	0.52666	0.1571863	0.3724892	0.1863	0.3887
Attitude Index	-0.1424	0.2879	-0.07686	0.36857	0.4238	0.2873	-1.1585***	0.330512	-1.48715***	0.43524	-0.690524*	0.2833015	0.0728	0.2906
Behaviour Index	0.6863*	0.3290	0.56954	0.38711	-0.3187	0.3250	0.813458*	0.395197	0.35210	0.44407	-0.0008982	0.3333357	-1.0410**	0.3475

Table 4.2: Logit Model Coefficients for Determinants of Financial Inclusion

Note: The significance levels are indicated as follows: *** $p < 0.01$; ** $p < 0.05$; * $p < 0.10$; (. dot) $p < 0.1$; (none) indicates $p \geq 0.1$.

Table 4.2 ensures the robustness of the results, a binary logit model was also estimated alongside the probit model. Table 4.2 presents the logit coefficients for the determinants of financial inclusion across different dimensions. The overall direction and significance of the coefficients remain largely consistent with the probit results, confirming the reliability of the findings.

For instance, middle-aged and older individuals continue to show a higher likelihood of investment and financial inclusion, while females exhibit significantly higher engagement in microfinance but lower participation in pension schemes. Education and higher income levels remain strong predictors of financial awareness and insurance uptake, consistent with the probit estimates. Similarly, unfavorable financial attitudes negatively influence credit and microfinance utilization, whereas knowledge and behavior indices have positive and significant effects.

The consistency of results across both models suggests that the findings are not sensitive to the choice of specification, thereby strengthening the validity of the conclusions. Hence, the probit model is used as the main model for detailed interpretation (Table 4.1), while the logit model (Table 4.2) serves as a robustness check.

5. Conclusion

This study examines the determinants of financial inclusion among rural households in Himachal Pradesh, highlighting the critical role of socio-demographic, economic and behavioral factors in shaping financial inclusion. The findings underscore that higher education levels, financial knowledge and annual income significantly enhance financial inclusion across dimensions such as investment, awareness, credit and microfinance. Gender disparities persist, with women exhibiting higher participation in microfinance but lower financial awareness. Behavioral indices, including positive financial attitudes and knowledge, emerge as strong predictors of financial inclusion.

Despite progress, barriers such as low awareness among Below Poverty Line (BPL) households and limited credit access for certain income groups indicate the need for targeted interventions. These insights contribute to understanding the dynamics of financial inclusion in rural settings and provide actionable strategies for enhancing equitable access to financial services.

6. Policy Recommendations

To promote financial inclusion, targeted financial literacy programs should be implemented, focusing particularly on women and Below Poverty Line (BPL) households to enhance their awareness and understanding of financial services. Collaborations with local self-help groups (SHGs) and community organizations can be leveraged to deliver training on investment, credit and insurance products. Addressing gender disparities is crucial, requiring the design of gender-sensitive financial products and capacity-building programs to empower women with skills for effective financial decision-making. Additionally, integrating financial literacy into school and college curriculums can foster early awareness, while vocational training programs emphasizing financial management can prepare rural youth for better financial participation. Simplifying credit application processes and reducing transaction costs will enhance accessibility to credit, especially for low-income households. Expanding microfinance initiatives tailored for marginalized communities can further bridge the inclusion gap. Leveraging technology by promoting digital financial services such as mobile banking and digital wallets can overcome geographical barriers, provided the necessary digital infrastructure, including internet access and mobile networks, is developed in remote areas. Finally, the success of financial inclusion efforts must be supported by robust monitoring and evaluation mechanisms, using data-driven approaches to identify gaps, refine strategies and establish localized financial inclusion indices to track progress and set benchmarks for improvement.

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