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Financial inclusion and poverty levels in the Department of Huanuco, Peru, 2025

Inclusión financiera y niveles de pobreza en el Departamento de Huánuco, Perú, 2025

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ABSTRACT

Objective. To determine the relation among the levels of financial inclusion and poverty in the Department of Huanuco, Peru, 2025. **Methods.** This research had a quantitative approach and a non-experimental design, with an explanatory, longitudinal or evolutionary level. Since the research was conducted with secondary data, it was not necessary to determine a representative sample. Data related to financial inclusion were extracted from the database of the Superintendencia de Banca, Seguros y AFP, while poverty data were extracted from the Instituto Nacional de Estadística e Informática during the study period. **Results.** High levels of financial inclusion were found to be inversely related to poverty levels in the Department of Huánuco; furthermore, the explanatory variables regarding access to credit (AC), banking penetration ratio (BAN) and microfinance intermediation ratio (INT) in both models explained 96% of the endogenous variable, poverty levels (monetary poverty [MP] and unsatisfied basic needs [INT]). **Conclusions.** The signs of the coefficients estimated by the model are in accordance with the signs indicated by economic theory (negative relationship between the three exogenous variables and the endogenous variable); with respect to the relationship between the variables financial inclusion and poverty, when the variables AC, BAN, INT increase by one unit; on the other hand, PM and NBI decrease inversely by -6.127, -0.031, -0.1108, respectively.

Keywords: *study; design; models; analysis of variance; econometric.*

RESUMEN

Objetivo. Determinar la relación entre los niveles de inclusión financiera y pobreza en el Departamento de Huánuco, Perú, 2025. **Métodos.** Esta investigación fue de enfoque cuantitativo y diseño no experimental, con nivel explicativo, longitudinal o evolutivo. Dado que la investigación se realizó con datos secundarios, no fue necesario determinar una muestra representativa. Los datos relacionados a la inclusión financiera fueron extraídos de la base de datos de la Superintendencia de Banca, Seguros y AFP, mientras que los datos de pobreza fueron extraídos del Instituto Nacional de Estadística e Informática durante el período de estudio. **Resultados.** Se encontraron altos niveles de inclusión financiera que se relacionan inversamente con los niveles de pobreza en el Departamento de Huánuco; además, las variables explicativas respecto al acceso al crédito (AC), ratio de bancarización (BAN) y ratio de intermediación microfinanciera (INT) en ambos modelos explicaron en un 96 % a la variable endógena, niveles de pobreza (pobreza monetaria [PM] y necesidades básicas insatisfechas [NBI]). **Conclusiones.** Los signos de los coeficientes estimados por el modelo están acordes a los signos que indica la teoría económica (relación negativa entre las tres variables exógenas y la variable endógena); respecto a la relación entre las variables inclusión financiera y pobreza, cuando aumenta en una unidad las variables AC, BAN, INT; por su parte, PM y NBI disminuyen inversamente en -6,127, -0,031, -0,1108, respectivamente.

Palabras clave: *estudio; diseño; modelos; análisis de varianza; econométrico.*

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INTRODUCTION

The problem posed lies in determining what the relationship is between the levels of financial inclusion and the levels of poverty in the Department of Huánuco, with the purpose of demonstrating the existence of an inverse relationship between financial inclusion and poverty.

In this regard, De Olloqui et al. (2015) indicate that financial inclusion in Latin America and the Caribbean has experienced important advances; however, half of the adult population does not access the financial system.

According to studies by the World Bank (2018), financial services contribute to promoting development by facilitating investment in education, health, and business. Likewise, in a report prepared for the Central Reserve Bank of Peru (2018), it is stated that, in recent years, the role of microfinance institutions has contributed to access to credit for natural and legal persons with financing needs. In the same way, García (2021) indicates that microfinance institutions have been fulfilling in recent years a leading role in banking penetration and in the democratization of credit aimed at micro and small enterprises in the formal and informal sectors of Peru, historically not served by traditional banking. This includes people who have the skills, knowledge, and understanding to make the best use of these products and services. Moreover, for García (2019), "financial exclusion is often a symptom of poverty, as well as a cause" (p. 1). Access to financial services contributes to creating business opportunities for the population, by generating sustainable income in the long term with the objective of achieving a better standard of living.

With respect to the study variables, there is empirical evidence that allows concluding that the financial inclusion of households is inversely related to monetary poverty (Narváez Anaya et al., 2020). At the international level, with respect to the study variables, the contributions of the Superintendency of Banks of Panama (2015), the contribution of Morduch (1995), that of Chibba (2009), and, finally, the studies of Beck et al. (2007) were considered.

At the national level, with respect to the study variables, financial inclusion and levels of poverty, there is the contribution of Burneo (2007), who finds that there is a positive relationship between public banking penetration and economic growth, which would indirectly imply supporting the hypothesis that "greater banking penetration in the economy has an impact on the reduction of poverty levels in a specific country or region" (p. 20). Along the same lines, there are the contributions of Poggi (2014) and Granados De la Vega (2017), who indicate that financial services directly and significantly influence financial inclusion among users of the Banco de la Nación Macro Region III Huancayo (t = 21.886; sig. = 0.000); therefore, they contribute to the reduction of poverty.

In the same way, at the level of the Department of Huánuco, there is the contribution of Aguirre (2010), who indicates that the objective of the work was to demonstrate that there is a relationship between banking penetration and financial intermediation ratios and the level of economic dynamism; on the other hand, he also demonstrated that the levels of banking penetration and financial intermediation in the Huánuco area were lower than the national average.

In accordance with the problem presented, the objective of this research was to determine the relationship between the levels of financial inclusion and the levels of poverty in the Department of Huánuco (Peru), 2025.

METHODS

Type and area of study

The level of the research was explanatory (Mendoza, 2016), given that "the fundamental objective of economic science is to explain what causes what" (p. 46). But, in addition, because it seeks to explain why the reality under study is as it is (Caballero, 2014). Likewise, it had a quantitative approach, a non-experimental design and, due to the form of collection of secondary data, it was longitudinal or evolutionary, because for the study data were collected at different points in time in order to make inferences about the evolution of the research problem or phenomenon, its causes and its effects (Hernández Sampieri et al., 2014), for which a historical series (2000–2015) was considered. Based on this, it was possible to verify and test the hypotheses through the description of the variables of the problem. The information collected for the present research was strictly of a secondary type. The reliability of the instrument was determined, according to Vara (2015), "by fidelity to sources and publicity; it is the guarantee that the data are faithful to the original source" (p. 395).

Population and sample

Statistical data of a financial nature were used, which were taken from secondary sources. It should be noted that in this type of studies it is not possible to specify by whom the population is constituted; therefore, the items of delimitation, distribution, and population were not included in the work that was carried out.

Given that the research was conducted with secondary data, it was not necessary to determine a representative sample. Likewise, because the present research work was longitudinal in nature, no sample was used. The data related to financial inclusion were extracted from the database of the Superintendency of Banking, Insurance and AFP (SBS), while the poverty data were extracted from the National Institute of Statistics and Informatics (INEI) during the study period.

Variable and data collection instrument

Regarding the variable "financial inclusion," it was measured through three key indicators. First, the percentage of the population with access to the financial system was considered, which allows evaluating the degree of banking penetration among inhabitants. Second, the banking penetration ratio was analyzed, which measures the relationship between the number of accounts in the financial system and the total population. Finally, the financial intermediation ratio was used, which indicates the level of credit granted in relation to the deposits captured by financial entities, which reflects the capacity of the system to channel resources toward productive activities.

Regarding the variable "levels of poverty," it was evaluated through two fundamental indicators. The first was the percentage of the population that was below the poverty line, which allows identifying the level of income insufficient to cover basic needs. The second indicator was the percentage of the population with unsatisfied basic needs (UBN), which reflects deficiencies in essential aspects such as housing, education, health, and basic services.

According to Nicomedes (2018), the type of applied study seeks the solution of practical problems; moreover, because in the research the research problem or hypothesis is formulated. Under this precept, the study was developed within the typology of applied research. Theoretical econometrics is related to the development of appropriate methods to measure the economic relationships specified by econometric models, for which econometrics relies on mathematical statistics, and a very popular method is ordinary least squares (Gujarati and Porter, 2010). In this sense, by applying the ordinary least squares method (simple pool), two econometric models were estimated:

First model: $PM_t = \beta_0 + \beta_1 AC_t + \beta_2 BAN_t + \beta_3 INT_t + \varepsilon_t$. Where: PM_t = percentage of the population below the monetary poverty line in period t; AC_t = percentage of the population that accesses the financial system in period t; BAN_t = banking penetration ratio in period t; INT_t = financial intermediation ratio in period t; ε_t = disturbance term in period t, includes the other variables that affect poverty levels but were not taken into account in this research; β_0 = level of monetary poverty when the financial inclusion indicators are equal to zero; β_1, β_2, β_3 = measure the sensitivity of monetary poverty levels to variations in the percentage of the population that accesses the financial system, the banking penetration ratio, and the financial intermediation ratio, respectively

Second model: $NBI_t = \beta_0 + \beta_1 AC_t + \beta_2 BAN_t + \beta_3 INT_t + \varepsilon_t$. Where: NBI_t = percentage of the population with unsatisfied basic needs in period t; AC_t = percentage of the population that accesses the financial system in period t; BAN_t = banking penetration ratio in period t; INT_t = financial intermediation ratio in period t; ε_t = disturbance term in period t, includes the other variables that affect poverty levels but were not taken into account in this research; β_0 = level of poverty based on unsatisfied basic needs when the financial inclusion indicators are equal to zero; β_1, β_2, β_3 = measure the sensitivity of poverty levels, based on unsatisfied basic needs, to variations in the percentage of the population that accesses the financial system, the banking penetration ratio, and the financial intermediation ratio, respectively.

In the present research, the validation process was omitted because a bibliographic record was used.

Techniques and procedure for data collection

The technique used in the study was documentary review. This technique collects information or data sources through bibliographic references, which are freely available in physical and digital media, as well as information from secondary sources, such as specialized microfinance texts, specialized economic journals, the virtual platform of the SBS, the INEI, among others.

Data análisis

For the statistical analysis, econometrics was used, which is the combination of the use of mathematical models and descriptive and inferential statistics to develop explanatory models (Gujarati and Porter, 2010), taking into account the indicators and dimensions of each study variable. The programs EViews and Stata were used, through which the information was processed, and the hypothesis was tested using the Prob (F-statistic) test. In particular, a multivariate regression model was used.

Ethical aspects

The study that was carried out was developed within the basic ethical principles in research, such as: a) respect for persons, b) pursuit of the common good, and c) justice. Likewise, it is specified that the present research did not require informed consent from any person, given that the objectives of the research are designed to obtain information from secondary sources, whose information is freely available to the general public

RESULTS

For the first econometric model, it is confirmed that financial inclusion reduces poverty in Huánuco. The most influential variable is access to the financial system (AC), with a coefficient of −5.2388 and high significance ($p = 0.0049$), which indicates that greater banking penetration reduces poverty. The banking penetration ratio (BAN) and the financial intermediation ratio (INT) also have negative effects on poverty (−0.0482 and −0.0232, respectively), although with a lower impact. Both are statistically significant ($p < 0.05$). The model explains 95.81% of the variability of poverty

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Table 1
Estimation of the econometric model

Variable	Coefficient	Std.Error	t-Statistic	Prob.
C	0,904716	0,024733	36,57952	0,0000
AC	-5,238824	1,523360	-3,438993	0,0049
BAN	-0,048242	0,055654	-0,866829	0,0403
INT	-0,023185	0,015085	-1,536992	0,0152
R-squared	0,958130	Mean dependent var.		0,622125
Adjusted R-squared	0,947663	S.D. dependent var.		0,154924
S.E. of regression	0,035442	Akaike info criterion		-3,629504
Sum squared resid	0,015074	Schwarz criterion		-3,436357
Log likelihood	33,03603	Hannan – Quinn criter.		-3,619613
F-statistic	91,53479	Durbin-Watson stat.		1,816213
Prob(F-statistic)	0,000000	----------		

Note. Taken from the estimation of the econometric models through EViews 10.

(R^2 = 0.9581) and is robust (F-statistic = 91.53, p = 0.0000). No serious problems of autocorrelation are detected (Durbin–Watson = 1.816) (see Table 1).

For the second econometric model, it is confirmed that financial inclusion reduces poverty, with an R^2 of 0.9627, which indicates that 96.27% of the variability in poverty is explained by the variables of the model. Access to the financial system (AC) is the variable with the greatest impact on poverty reduction (coef. = −6.1272, p = 0.0002), thus showing a strong and highly significant negative relationship. The banking ratio (BAN) and the financial intermediation ratio (INT) also present negative effects (coef. = −0.0318 and −0.0111, respectively), although their impact is lower and their significance is lower but valid (p < 0.05). The model is robust (F-statistic = 103.33, p = 0.0000) and does not present autocorrelation problems (Durbin–Watson = 1.945) (see Table 2).

In Table 3, the theoretical sign is compared with the estimated sign of financial inclusion: percentage of the population that accesses the financial system (AC), banking ratio (BAN), and financial intermediation ratio (INT). In this sense, the three coefficients yielded by the econometric models are negative and coincide with the theoretical expectation, therefore they are classified as "Correct".

Table 2
Estimation of econometric model 2

Variable	Coefficient	Std.Error	t-Statistic	Prob.
C	0,643558	0,018302	35,16273	0,0000
AC	-6,127242	1,127284	-5,435404	0,0002
BAN	-0,031771	0,041184	-0,771444	0,0345
INT	-0,011083	0,011163	-0,992816	0,0137
R-squared	0,962731	Mean dependent var.		0,401438
Adjusted R-squared	0,953413	S.D. dependent var.		0,121513
S.E. of regression	0,026227	Akaike info criterion		-4,231719
Sum squared resid	0,008254	Schwarz criterion		-4,038572
Log likelihood	37,85375	Hannan – Quinn criter.		-4,221828
F-statistic	103,3268	Durbin – Watson stat.		1,945860
Prob(F-statistic)	0,000000	----------		

Note. Taken from the estimation of the econometric models through EViews 10.

Table 3
Assignment of signs of the indicators of the study variables

Determination of the coefficient sign			
Parameter	**Estimated sign**	**Theoretical sign**	**Conclusion**
AC	-	-	Correct
BAN	-	-	Correct
INT	-	-	Correct

This alignment supports, first of all, the robustness of the theoretical approach, given that the literature maintains that greater access to banking and intermediation expands opportunities for saving, credit, and investment, reducing household vulnerability and, ultimately, poverty. By empirically verifying the same direction in the two models, monetary poverty and unmet basic needs, the negative sign reinforces the internal coherence of the study and ensures that the inverse relationship observed does not arise from specification failures or omitted variables.

Secondly, the fact that all coefficients have the same sign supports the relevance of the estimates shown in Tables 1 and 2. While the results quantify the impact (for example, the decrease of 5.24% in monetary poverty when AC increases by one percentage point), Table 3 shows the qualitative verification that each coefficient fulfills the premise that "greater financial inclusion, lower poverty". This additional control strengthens the reliability of the conclusions and suggests that policy recommendations (deepening rural banking, lowering basic financial service costs, and stimulating intermediation) rest on both solid data and consistent internal logic (see Table 3).

DISCUSSION

With respect to the poverty variable, the United Nations Development Programme (UNDP, 2015) indicates that poverty is a complex phenomenon that strongly limits the freedom of individuals and families to develop their capacities and integrate into society, preventing them from achieving fulfillment and contributing their own wealth to the community where they live. In the same way, the Economic Commission for Latin America and the Caribbean (ECLAC, 2023) indicates that "poverty is a multidimensional phenomenon that encompasses material and non-material aspects, income, health, deprivations related to human development such as freedom, dignity, etc." (p. 3).

The results of the research with the application of the proposed theoretical model demonstrate that there is an inverse relationship between financial inclusion (access and use) and poverty levels, monetary poverty (PM) and unmet basic needs (NBI); that is, the greater the financial inclusion, the lower the levels of poverty. This is related to the contributions of Cecchetti et al. (2006), who emphasized that, for Narváez Anaya et al. (2020), "the adequate development of the financial system has positive effects on the macroeconomic environment" (p. 129), with respect to the inverse relationship of the study variables between financial inclusion and poverty.

In this regard, Aparicio and Jaramillo (2012) indicate that, in Peru, one of the main reasons that hinder the expansion of financial services is geographic diversity, with the Department of Huánuco not being alien to this reality. For its part, the Scottish Executive (2005) states that financial inclusion is access to appropriate financial products and services for individuals.

In the same way, the results are related to the contribution of Burneo (2007), who finds the existence of a positive relationship between public banking penetration and economic growth, which would indirectly support the hypothesis that "greater banking penetration in the economy has an impact on the reduction of poverty levels in a specific country or region" (p. 20). In the same line, it is related to the works of Poggi (2014), Granados (2017) and Aguirre (2010), who indicated that financial depth is achieved through financial intermediation; that is, the greater the banking penetration and financial depth, the lower the poverty.

CONCLUSIONS

The statistical-econometric analysis in correlational terms allows observing that there is an inverse relationship between the endogenous variables (poverty: PM and NBI) and the exogenous variables (financial inclusion: access to credit (AC), banking ratio (BAN) and microfinancial intermediation ratio (INT)). In addition, this is evidenced in the correlations shown in the study.

Likewise, the estimation and econometric tests, applying the respective tests, allow verifying the general hypothesis and the specific hypotheses, in the sense of confirming an inverse relationship between financial inclusion and poverty levels; which, in summary, means affirming that the greater the (micro) financial inclusion, the lower the levels of poverty, which is true for the Department of Huánuco

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Recomendations

It is suggested to open other forms of study in the field of financial inclusion, incorporating new variables, such as the quality of service in financial institutions, the coverage of personalized attention by microfinancial entities to MYPEs and the rural sector, etc. In the same way, it is advised to seek mechanisms to promote the banking inclusion of inhabitants with scarce resources, older adults, boys and girls, to disseminate the importance of savings and credit in secondary schools, as well as in universities. Microfinancial entities (municipal savings banks) should also adopt policies to exempt microentrepreneurs, students and vulnerable sectors from payments for the use of service windows and ATMs, so that they massively use financial services.

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Authorship contribution

GRLA: drafting, discussion, and final review of the article.
PGYK: data collection and information tabulation.
BRJR: conception and design of the article.
CBRA: statistics and data analysis and interpretation.

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