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Social Factors Associated with Poverty in Households in Peru

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Abstract: The objective of the research was to identify the determinants of poverty at the household level in Peru in 2020. The research design was descriptive and correlational, with a type of non-experimental research and quantitative approach, and considered the logit econometric model; the sources of information used correspond to the National Household Survey of the National Institute of Statistics and Informatics, from which the variables that are considered determinants of poverty were extracted and managed. It was determined that the size of the household positively influences by 1.3%; the economic income of the head of household negatively influences by 0.000828%; the years of education of the head of household influences by 0.1%; homeownership influences by 0.9%; access to social programs of food and non-food aid influence by 0.9% and 0.6%, respectively; access to drinking water service, hygienic service and electric power service have a negative influence of 1.8%, 0.6% and 1.7%; all these factors are associated with the poverty of households in Peru. Therefore, the social determinants of poverty were household size, economic income, years of education, access to homeownership, access to a social food aid program, access to a social non-food aid program, access to drinking water services, access to hygienic services and access to electric power services.

Keywords: work; social factors; economic income; households; Peru

1. Introduction

Poverty, being a latent problem throughout the world and mainly in underdeveloped countries such as Peru, needs to be studied from different perspectives; in view of the fact that according to the UN, poverty is the condition characterized by severe or poorly met deprivation of basic human needs, including food, drinking water, sanitation facilities, health, housing, education and information (Belaïd 2018; Coulombe and McKay 1996; Gil Izquierdo and Ortiz Serrano 2009; Pachauri and Rao 2013). The most common causes of this problem are the inefficiency in consumption by families and the public sector in terms of the organization and planning of the productive structure, deficiency in the provision of public services, inequitable distribution of income, the low level of development of

markets and the lack of planning and implementation of effective development programs (Acemoglu and Robinson 2017; Banerjee and Duflo 2020; Cardoso 2012; Giddens 2016; Vélez Lara 2018; Xia et al. 2021).

In the consumption model and in the determinants of poverty, demographic and human capital variables adequately explain the performance of consumption and poverty (Crentsil et al. 2019; Marmot 2005; Mukherjee and Benson 2003; Sharma et al. 2019; Stark et al. 2009; Quispe-Mamani et al. 2022); therefore, the greater number of members in the family allows to increase the level of consumption as well as the probability of falling into conditions of poverty, but an opposite effect occurs when the level of schooling of the head of household increases; access to water, sanitation, electricity and internet connectivity services increases consumption; in addition, similar behavior occurs with access to the financial system and the receipt of remittances from abroad (Beegle et al. 2016; Benson et al. 2005; De Janvry and Sadoulet 2000; Lewin et al. 2006; Mereine Berki et al. 2017; Quispe-Mamani et al. 2022; Ringold et al. 2005; Castillo and Brborich 2007).

In this sense, the behavior of poverty in the world has been very varied in recent decades, since the number of people living in the situation of extreme poverty fell from 36% in 1990 to 10% in 2015. However, the decrease became slow in recent years, since in 2018 this decreases in extreme poverty only reached 8.6% and 7.1% in 2019. Poverty in 2019 reached 17%, showing a trend of increasing poverty affecting more than 500 million people, or more than 8% more of the total population of the world, in the times of COVID-19 and putting at risk the progress achieved for many decades by the fight against poverty (Ola et al. 2019; Benson et al. 2005; Awan et al. 2022; Brown and Park 2002; Sekhampu 2017; Coulombe and McKay 1996; Mussida and Sciulli 2022; Lorente-Acosta 2020; Xia et al. 2021; Filgueira et al. 2020; Cretan et al. 2020). The outstanding indicator is the number of people who are in the situation of extreme poverty, exceeding 700 million people, or more than 10% of the world's population; they are the population group that has problems to cover their basic needs, such as food, access to basic water and sanitation services, education and health. This population group has to live on less than 1.90 dollars a day and has its highest proportion in sub-Saharan Africa; the poverty rate in the world by areas is very differentiated, since the poverty rate of rural areas on average amounts to more than triple the index of urban areas (Bétrisey et al. 2016; Bodenstein and Kemmerling 2015; Cretan et al. 2020; Dartanto and Nurkholis 2013; De Janvry and Sadoulet 2000; Keene and Padilla 2010; Lewin et al. 2006; Marmot 2005; Pachauri and Rao 2013; Rupasingha and Goetz 2007; Sekhampu 2017).

In this same line, Gil Izquierdo and Ortiz Serrano (2009) determined that in the last millennium in Spain there was a higher educational level of household breadwinners, a greater presence of women as heads of household, an increase in single-parent households and a decrease in large households. In addition, the risk of extreme poverty decreases with age, access to good levels of education protects families from situations of poverty and heterogeneity in employment status and population density in municipalities is synonymous with poverty. Likewise, government transfers and household savings through contributions (retirement) reduce extreme poverty, as confirmed by Acharya et al. (2022) and Gautam et al. (2021), who determined that poverty in Nepal is subject to social, demographic and geographical factors and environmental shocks, as well as structural reasons such as endowments required by families in both rural and urban areas and education. In addition, these translate into variables such as the gender of the head of household, the occupation of the head of household, the size of the household and the economic income of the household that explain and determine poverty in South Africa, Nigeria and Turkey (Özpinar and Akdede 2022; Onoja et al. 2022; Mdluli and Dunga 2021).

In the case of Latin America, poverty and extreme poverty had a very unequal and variable behavior translated into economic income and social spending by the state. In 2014, poverty was on average 28.50% and in 2015, it increased to 29.80%; in 2016 and 2017 it remained at 30.70%, in 2018 it increased to 30.10% and in 2019 it was 30.80%. In addition, extreme poverty in 2017 amounted to 10%; in 2018 the situation of extreme poverty amounted

to 10.70% and in 2019 it increased to 11.50%. The critical point is that the incidence of poverty and extreme poverty in these periods had a greater impact on children, adolescents, young people, women and on individuals and families living in marginal and rural urban areas. The existence of greater inequality in the distribution of economic income is shown. according to the results of the Gini coefficient; in recent years it showed a downward trend, demonstrating the existence of an increase in inequality. This is complemented by the social spending made by governments in turn, which on average increased from 10.30% to 11.30% of GDP from 2011 to 2018, making up 52.5% of total public spending; countries that face a challenge in reducing poverty are those that have low social expenditures until now (Fernández Aguerre 2003; Acosta 2020; Bétrisey et al. 2016; Cepal 2018, 2020; Clements et al. 2007; De Janvry and Sadoulet 2000; Durston 2002; Amuedo-Dorantes 2004; Filgueira et al. 2020; Garza Rodriguez 2016; Madueño Sayhua 2020; Cepal 2019; Ramos et al. 2005; Ranis and Stewart 2002; Rodriguez and Smith 1994; Stezano 2021).

In addition, in Latin America there is quite important evidence on poverty, where in the study carried out in the states of the northern border of Mexico it was determined that the main variables that correlate positively with the probability of being poor are residence in the states of Coahuila, Tamaulipas and Chihuahua, household size, being a street worker or working in the agricultural sector, manufacturing, transportation, sales, and domestic service or assistance; while the variables that correlate negatively with the probability of being poor are residence in Baja California, the level of education of the head of the family and age. Therefore, it suggested that policies aimed at reducing poverty in the border region should focus on increasing the educational level of the population and the productivity of workers; they should also promote family and economic planning policies (Garza Rodriguez 2016). Complementarily, Anaya Narváez (2020) determined that the levels of inclusion in the Municipality of Montería are very low and affect more severely the households located in the rural areas. Thus, it is clear that this is a serious problem that requires proposals and ideas that allow for moderating and/or eliminating it in the medium term. Financial inclusion can be optimally explained using probabilistic models such as probit. Therefore, it can be considered that, given the existence of heterogeneity in the positions of assets and contexts of each country, there are many ways and strategies to get out of poverty. De Janvry and Sadoulet (2000) identified four routes out of poverty: the first is the way out, the second is through agricultural development, the third is through the development of multi-activities and finally through welfare.

Some outstanding research in South America occurred in Colombia, where a study on the determinants of changes in poverty in the last decade applying the methodology of micro simulations found that, isolating the effects of labor changes, changes in returns, changes in income distribution and changes in household endowments, the main explanation for the increase in poverty between 1996 and 2000 was labor changes, reflected in higher unemployment; the results of this analysis show that labor changes are the aspect that has the greatest impact on poverty. In this regard, it was essential to direct efforts to improve the performance of the labor market, in particular unemployment, which did not reach the level observed in the years prior to the 1999 crisis (Núñez et al. 2005). In addition, Torres Rivas et al. (2017), determined that the behavior of the determinants of poverty in both Colombia and Venezuela are similar; however, the probability of being poor in the latter country is greater than in Colombia. Households headed by a woman are more likely to be poor; households whose head is unemployed are more likely to be poor; for each year that the head of household's schooling increases, the probability that the household is poor decreases; household assets contribute to the reduction of poverty risks; likewise, as the rate of economic dependence increases, the greater the likelihood of being poor. It is therefore extremely necessary to take these elements into account in the design of anti-poverty policies.

In addition, according to a study carried out in Isla Grande, Colombia, poverty continues to be the priority problem in that locality. In 2009, 62.5% of the population did not obtain sufficient income to overcome the poverty line; the lack of job formalization,

job training and increased educational levels were the main limitations of income and poverty reduction. As for health schemes, 53% of the population were subsidized and 26% were contributory. On the other hand, the formation of social capital had a positive impact on poverty at low levels of per capita income, so that the disarticulations of education and work experience, in addition to nutritional risks, caused a decrease in productivity and income, which allowed an increase in poverty (Ponce Abarca 2018). In recent years, the debate on the levels of poverty achieved in Argentina has increased, due in part to the fact that the National Institute of Statistics and Censuses of Argentina began with the elaboration of baskets valued at regional prices that allowed poverty estimates to be made in several cities of that country. As a contribution to the study of this problem, researchers analyzed the characteristics of the population of the city of Córdoba. Their estimates based on the household survey showed that the variables with the greatest influence on the probability of being poor in Cordoba households are household size, expected participation rate, age of head of household, average years of education of household working-age persons and hourly income of the head of household (Ojeda et al. 2005).

Poverty in the case of Peru was very critical compared to the existing levels in Latin America, given that in 2016, 20.70%, or 6 million 518 thousand people, were in the condition of poor, being a lower value by 1.1% compared to 2015; in 2017 poverty increased to 21.70%; in 2018 it decreased to 20.50%; in 2019 it decreased to 20.20%, but in 2020 it increased to 30.10%, due to the effects of COVID-19 and the implementation of the different restrictive policies of social and economic scope. The social group most affected by poverty was the young population, that is, children and adolescents, since poverty increased in this group from 26.9% in 2019 to 39.9% in 2020, likewise due to direct effects of COVID-19. In the general population group, poverty increased from 20.20% to 30.30% between 2019 and 2020, showing a greater increase in the population group under 18 years of age and at the level of geographical areas, poverty in the rural areas was 45.70% and in the urban areas it was 26.00% in 2020. According to the INEI (2021), the poverty line for 2020 to cover the costs of a basic food and non-food basket was 360 soles/month/habitant; people whose monthly expenditure is less than 360 soles are part of the poor, while the extreme poverty line was 191 soles/month/inhabitant, including those whose monthly expenditure does not cover the value of the basic basket of food consumption (Lara Quispe and Ponce Montero 2014; Ariza and Retajac 2020; Cepal 2022; Chavez and Lufin 2022; De Janvry and Sadoulet 2000; Herrero Olarte et al. 2021; Lozada-Urbano et al. 2022; Barba Solano 2009; Madueño Sayhua 2020; Minaya Aguirre 2021; Ponce Abarca 2018; Samamé Monje 2020; Schreiner 2012; Verdera 2007).

In addition, some evidence in the Peruvian case tried to show that the determinants of poverty under the asset approach are access to basic housing services such as drinking water, electricity, sanitation and telephones, which allow to significantly reduce the scenarios of being poor; in addition, having a title to the home and the greater number of members in the household also contributes to the decreased probability of being poor. On the contrary, not having a considerable level of education and when the head of the household has origins of native language being either Quechua or Aymara and/or another native language allows the increase in the probability of falling into the level of greater poverty (Quispe Quispe and Roca Garay 2019); this was also confirmed by Minaya Aguirre (2021), who also established that the language of the head of household contributes to the reduction in the probability of being poor, and the variables of residence and the conditions of being unemployed contribute towards the increase in the probability of being poor.

Other research conducted in the Junín region of Peru in 2012 showed that, for rural areas, the determinants of poverty are household size and sex of the head of household, which maintain a direct relationship with poverty; in the case of sex of the head of household, it is considered favorable that the household is directed by someone of the male sex. Also significant are income recipients, years of study of the rest, possession of business assets and membership of associations; all these variables maintain an inverse relationship with poverty. For the urban areas, the determining factors are the size of the household,

number of jobs and availability of hygienic services, which are directly related to poverty; also, income recipients, years of study of the rest, sex of the head of household, age of the head of household and possession of business assets, which have an inverse relationship with poverty. In summary, when people do not have access to property or if they have it, it is of insufficient quantity and quality, or when they do not have access to quality salaried jobs and only manage to find themselves in low-quality jobs, their income is very low and they only have money for consumption, without the possibility of saving or accumulating other assets and getting out of poverty (Lara Quispe and Ponce Montero 2014).

Of all the evidence shown in the previous points, it can be highlighted that, in recent decades, the Peruvian government has made multiple efforts to reduce the level of poverty of Peruvian families. Fortunately, this rate has been reduced by a good percentage; however, the poverty standards set by international bodies such as the World Bank and the United Nations Development Programme have not yet been met (PNUD), which through the Millennium Development Goals (ODM) set out to eradicate extreme poverty and hunger; universalize primary education; promote gender equality; improve health; address the lack of education and lack of access to water and sanitation; reverse environmental degradation and foster a global partnership for development (Torres Rivas et al. 2017; Quispe Mamani et al. 2022). According to the INEI (2021), by 2020, 30.1% of Peru's population (9 million 820 thousand people) were in a situation of poverty; that is, they had a level of expenditure lower than the cost of the basic consumption basket composed of food and not food. When comparing these results with those of 2019, it is observed that poverty levels have suffered a sharp increase of 9.9% (3 million 330 thousand poor people) more than in 2019. Likewise, in terms of the area of residence, poverty affected 45.7% of the population in rural areas and 26.0% in urban areas; the departments with the highest incidence of poverty are Ayacucho, Cajamarca, Huancavelica, Huánuco, Pasco and Puno, in which the population in poverty ranges between 41.4% and 45.9%, alarming figures that require immediate intervention by the state and the private sector.

In this understanding, the solution to the problem of poverty in Peruvian households is based on the performance of the private sector (private investment), as it is the most efficient and the most dynamic sector compared to the state sector; in view of the fact that the BCRP for the year 2019 determined that approximately 80% of the total investments corresponded to private investment. However, by 2020 due to the social confinement, many companies in this sector were forced to stop their activities; consequently, thousands of families entered a process of impoverishment due to lack of income. For this reason, it is essential that the government promote the business activities of the private sector, since this constitutes the engine of the economic-social development of Peruvian families, through the generation of more jobs, greater tax collection, increase in PIB and others. Therefore, the central objective of the research was to identify the social determinants of poverty at the household level in Peru in 2020 and analyze how the social factors identified influence the poverty of Peruvian households in 2020.

2. Materials and Methods

2.1. Design, Type and Approach to Research

The research design is descriptive, correlational, of a non-experimental type and with a quantitative approach because it is aimed at identifying the factors that determine monetary poverty in Peru in 2020. To identify these variables, the database of the National Institute of Statistics and Informatics (INEI) was accessed, specifically the National Household Survey (ENAHO), which is a primary and official source (Mendoza Bellido 2014).

2.2. Model Specification

Given the type of information obtained, in the research a binary model is used for the estimation; the more suitable one is the Logit-binomial model, so that the estimation was made through the maximum likelihood method. The logit-binomial model refers to the probability of being poor P(Poor = 1) with the following form:

$$\begin{aligned} P(Poverty = 1) &= 1/(1 + \acute{e}(-(\beta_0 + \beta_1 X\_1 + \beta_2 X\_2 + \cdots + \beta_k\ X\_k + e_i))) \\ P(Poverty = 1) &= 1/(1 + \acute{e}(-(\beta_0 + \beta_1 Household\ size + \beta_2 Income + \beta_3 Gender + \beta_4 Age \\ &\quad + \beta_5 Year\ of\ education + \beta_6 Homeownership \\ &\quad + \beta_7 Access\ to\ a\ social\ food\ aid\ program + \beta_8 Access\ to\ a\ social\ non \\ &\quad - food\ aid\ program + \beta_9 Drinking\ water + \beta_{10} Servicios\ higinicos \\ &\quad + \beta_{11} Energia\ electrica + e_i))) \end{aligned}$$

2.3. Techniques

The techniques for data collection and information processing used in the study were of a documentary nature (books, journals and other digital materials), where the literature on the subject was reviewed; then the INEI website was accessed, specifically the ENAHO; subsequently, the selected variables were corrected; then, through the STATA software, the regression was made on the set of observations and finally, the variables were analyzed descriptively and related.

Perhaps the limitation of applying the Logit-Binomial model is that it categorizes the poverty variable only into two groups, the poor and the non-poor, in addition to the fact that the unit of measurement of this variable is qualitative. From there, other research could emerge applying more complex models such as the Logit-Multinomial and maximum verisimilitude models to be able to measure poverty in a quantitative way, that is, monetary poverty, which is subject to the information that must necessarily be guaranteed for its application.

2.4. Population and Sample

The population in Peru for the year 2020 according to the National Institute of Statistics and Informatics (INEI) was 32,626,948 inhabitants. For the analysis of this research, the type of sampling was probabilistic: area, stratified, multistage and independent; a representative sample "n" was used for the selected variables, the same that was obtained from the National Household Survey (ENAHO), referring to the Survey of Living Conditions and Poverty, 2020 (annual data), with a sample of 21,985 observations.

2.5. Variable Analysis

In the present research, poverty was taken as a dependent variable, which is analyzed with respect to the poverty line established by the INEI. By 2020 it amounted to 360 soles per month per inhabitant; the person whose expenditure is less than 360 soles is considered poor and those with expenses greater than that amount are part of the group In the case of independent variables, the characteristics of the household, the head of household and the dwelling are included, as shown in the following Table 1.

Table 1. Operationalization of variables.

Variables	Factor	Indicator	Category	Data Type	Collection Instrument
Dependent					National Household Survey (ENAHO)–Survey of living conditions and poverty, period 2020 (annual data)
Poverty (Y)	Economic-social	Poverty line	1 = Poor (below the poverty line) 0 = Not poor (above the poverty line)	Qualitative	
Independent					
Features of the home:					
Household size	Social	Number of people	Numerical	Quantitative	
Income	Economic	Soles	Numerical	Quantitative	
Characteristics of the head of household:					
Gender	Social	Sex of the respondent	1 = Man 0 = Woman	Qualitative	
Age	Social	Years	[16–25] [26–59] [60–98]	Qualitative	
Years of education	Social	Years	Numerical		
Possession of physical capital and access to social programs:					
Homeownership	Economic	-	1 = Own 0 = Not own	Qualitative	
Access to a social food aid program	Economic	-	1 = Have access 0 = No access	Qualitative	
Access to a social non-food aid program	Economic	-	1 = Have access 0 = No access	Qualitative	
Basic housing services:					
Drinking water	Economic-social	-	1 = Have access 0 = No access	Qualitative	
Hygienic services	Economic-social	-	1 = Have access 0 = No access	Qualitative	
Electrical energy	Economic-social	-	1 = Have access 0 = No access	Qualitative	

3. Results

3.1. Descriptive Analysis of the Social Determinants of Poverty in Peru

Analyzing the determinants of poverty, the following table shows the behavior of the determining variables. A total of 93.68% of the number of respondents are associated with the condition of poverty and only 6.32% are in the condition of not poor, thus showing the existence of a critical and alarming scenario which requires immediate attention from the state through the implementation of actions, programs and public policies. This result coincides with the average of monetary poverty, which was 0.9368, with a standard deviation of 0.2434 (Table 2). In this sense, the size of the household that is represented by the total number of members per household is a determinant of poverty. For the Peruvian case, it is constituted by single-person households to very large households, where 0.94% correspond to the first and 0.08% are extended families. Likewise, the predominant family extension at the Peruvian level is four members per household representing 22.98% and five members of the household representing 21.45%, coinciding in the same way with the average amounting to five members per household, with a standard deviation of 2.13 (Table 2).

Of the total variables considered in the analysis, the most important variable to explain poverty is the economic income of the head of household. According to Table 2 and Figure 1, a great difference between household groups and social groups is shown; there is a variability that goes from S/. 100 soles/month, economic income obtained by the amount of

1.61% of the total households studied, up to an economic income of S/. 16,380 soles/month, generated only by a single household of the total respondents. In addition, on average the economic income of heads of household amounts to S/. 997.02 soles/month, with a variability of S/. 1085.99 soles/household, showing important differences by type of household and their conditions.

Table 2. Descriptive analysis of the determinants of poverty.

Variable	Mean	Std. Dev.	Min	Max
Poverty	0.9368	0.2434	0	1
Household size	5.1160	2.1393	1	20
Income	997.0257	1085.99	5	16,380
Gender	0.4801	0.4996	0	1
Age	1.9192	0.6197	1	3
Years of education	8.9599	4.9772	0	18
Homeownership	0.5723	0.4948	0	1
Access to a social food aid program	0.4338	0.4956	0	1
Access to a social non-food aid program	0.8047	0.3964	0	1
Drinking water	0.7890	0.4080	0	1
Hygienic services	0.7642	0.4245	0	1
Electrical energy	0.9853	0.1203	0	1

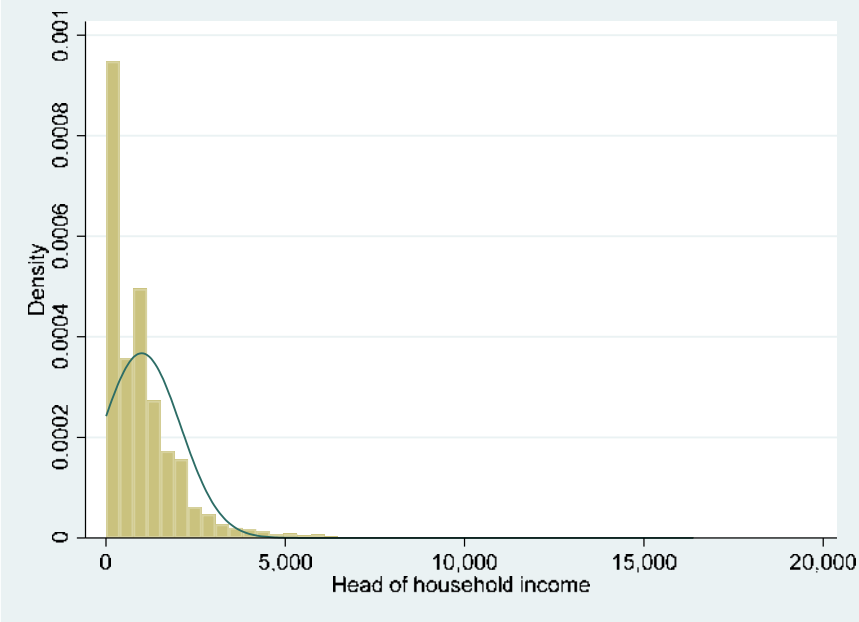

Figure 1. Economic income of the head of household.

The above is closely related to the explanation that can be given by the head of household and its characteristics. When studying the gender of the head of household, it is seen that of the total of respondents, 51.99% belong to the female gender and 48.01% correspond to the male gender; therefore, it can be concluded that in Peru households led by women predominate (Table 2). In addition, the age of the head of household is decisive in the conditions of poverty in Peru, since the age of majority is considered as 18 years; however, in special cases with the prior authorization of a judicial authority and the parents of the minor, the age of majority can be acquired from the age of 16 years. The predominant age of the heads of household is the adult (26–59 years), which represents 60.95%, followed by the young age (16–25 years), which constitutes 23.57%, and the elderly (60–98 years), which represent 15.49%, showing that most households in Peru are being led by women and adults (Table 2).

Another important variable is the years of education of the head of household, which extends from those heads of household who do not have educational training, representing 4.89% of the total of respondents, to 18 years of education, representing only 1.84% of the total households. The predominant years of schooling at the level of the households studied is 11 years, representing 20.52%, which shows that a large part of the population only reached the level of complete secondary education; on average they obtained the amount of 8.95 years of education, with a standard deviation of 4.97 years, limiting the members of the household, since many of them have decided to join the labor market without having a higher level of educational training (technical, university or postgraduate studies) (Table 2). When considering the characteristics of housing and the household as a determinant of poverty, it shows that it contributes in an important way to it, given that 57.23% of respondents have their own home and 42.77% do not have their own home. The latter rent or their housing is in the process of titling, reflecting in this way the reality of many homes in Peru that require the intervention of the state both for the issue of formalization and support for their building, in order to have their own home that does not generate greater expenses in rent or lease (Table 2).

In addition, the variables of household service and food services are very important for the explanation of poverty. This is the case for access to a social food aid program for household members that contributes categorically to the reduction of poverty; of the total number of respondents, 43.38% indicated that they receive support from a social food aid program, such as the Social School Breakfast Program, the Social Glass of Milk Program or the National School Feeding Program (Kaliwarma) and 56.62% are not beneficiaries of any social food aid program, thus demonstrating that more than half of the population studied can still meet their food needs in a particular way and is not assisted by the state (Table 2). In the case of access to a social non-food aid program, 80.47% of those surveyed confirmed that, if they receive support from one or more social non-food aid programs such as the Cuna Más Social Program, Together Program, National Mobilization Program for Literacy (PRONAMA), withdrawal from Compensation for Time of Service (CTS) and Pension Fund Administrators (AFP), and only 19.53% of those surveyed do not receive any non-food social program.

Finally, when analyzing the services of the household and how they contribute to combating poverty in Peru, it is clearly evident that they are important. For example, 78.9% of respondents confirmed that they have access to drinking water services and 21.1% of respondents do not have access to drinking water services. This shows that it is still necessary to continue implementing programs and projects that guarantee households to have this basic service; in the case of access to hygienic services or basic sanitation, 76.42% of respondents indicated that they have access to hygienic services, given that their homes are connected to the rural drainage or sanitation system and 23.58% of respondents indicated that they do not have access to hygienic services, so their basic needs are carried out in latrines, blind or outdoors. In the case of access to the electric energy services, 98.53% of the respondents confirmed that they have access to the electric energy services and 1.47% do not have access to said services; this shows the lack of these services in those groups of households located in marginal urban areas and in rural areas, where sometimes state intervention is minimal or access is restricted (Table 2).

3.2. Analysis of the Influence of Social Variables Determining Poverty in Peru

In reference to the relationship between household size and poverty, a direct relationship is indicated; therefore, in the face of an increase or decrease in household size, poverty also tends to increase or decrease, which is corroborated by the Pearson's ϱ value equal to 0.206, determining a low positive correlation. The opposite occurs with economic income, since it has a negative or inverse relationship. With an increase in economic income in the household, poverty decreases, which is corroborated by the value obtained for Pearson's ϱ equal to -0.260, so they have a low negative correlation. In the case of the gender of the head of household, there is a direct relationship with poverty; if the gender of the head

of household is male, then poverty also increases, as when men dedicate themselves to generating economic income, the household is abandoned and consequently falls into the scenario of poverty, which is confirmed by the value obtained for Pearson's ϱ equal to 0.003, showing a low positive correlation (Table 3).

In the case of the age and years of education obtained by the head of household, it is evidenced that they have a negative or inverse relationship with poverty; if the age or years of education increases by 1 year, then there is a probability that poverty will decrease, which coincides with economic theory. The value obtained in Pearson's ϱ is -0.059 and -0.161, respectively, determining that there is a low negative correlation in both cases (Table 3). Similarly, home ownership is important to ensure the reduction of poverty, as there is an inverse relationship; if the household has a home of its own, then poverty decreases significantly, as corroborated by the value obtained in Pearson's ϱ equal to -0.120, which shows a low negative correlation (Table 3).

In the case of access to a social program of food aid and access to a social program of non-food aid, these are directly related to poverty and it is also consistent with economic theory, given that excessively promoting social programs for the population have severe repercussions over time. It becomes a support for a bad habit of misusing the resources of the state for actions without prosperous results, as confirmed by the values of Pearson's ϱ, of 0.167 and 0.175, showing they have a low positive correlation with poverty.

Access to housing services such as drinking water, toilets and electricity have an inverse or negative relationship with poverty, since an increase in the conditions of services in housing contributes to the reduction of poverty in an important way. This is confirmed by the value obtained for Pearson's ϱ, -0.109, -0.107 and -0.030, respectively, thus determining the existence of a low negative correlation in all cases.

After having determined the relationship of the determining variables with poverty in households in Peru, we proceeded with the regression of the Logit-binomial model in the statistical package Stata 16.0. and it was confirmed that the determinants of poverty in Peru are the size of the household, economic income, years of education, access to home ownership, access to a food aid social program, access to a non-food aid social program, access to drinking water service and access to hygienic service. Given that all these variables have individual significance at the 95% confidence level, except for access to electricity service, which is significant at the 90% confidence level; therefore, they meet the conditions of having global and individual significance. In addition, performing an analysis of the statistics, the Pseudo R2 of 24.77% and a Log pseudolikelihood of -3899.100 were obtained, which shows that the model found is consistent and efficient, so its analysis and interpretation are appropriate to explain the determinants. of poverty in Peru (Table 4).

To determine the influence of social variables on poverty in Peru, the marginal effects of the Logit-binomial model were obtained, the results of which are shown in Table 5.

Considering the determining variables identified in Table 4 and the marginal effects of these, household size has a positive influence on poverty; with an increase in household size by a person, the probability of being poor increases by 1.3%. The economic income of the head of household negatively influences the probability of being poor; with an increase in the monthly economic income of the head of household by S/. 1.00 sol, the probability of being poor decreases by -0.000828%.

Likewise, the years of education of the head of household negatively influences the probability of being poor. If the years of education of the head of household increases in a period, then the probability of being poor decreases by 0.1%. Homeownership negatively influences the probability of being poor; if the family has title to their home, then the probability of being poor decreases by 0.9%. On the other hand, access to social programs of food and non-food aid positively influence the probability of being poor; if any member of the family accesses a social food or non-food program, then the probability of being poor increases by 0.9% and 0.6%, respectively.

Table 3. Relationship between the determinants of poverty in Peru.

Variable	Poverty	Household Size	Income	Gender	Age	Years of Education	Homeownership	Access to a Social Food Aid Program	Access to a Social Non-Food Aid Program	Drinking Water	Hygienic Services	Electrical Energy
Poverty	1.000											
Household size	0.206	1.000										
Income	−0.260	−0.111	1.000									
Gender	0.003	0.007	−0.005	1.000								
Age	−0.059	−0.132	0.076	−0.049	1.000							
Years of education	−0.161	−0.128	0.291	0.002	0.005	1.000						
Homeownership	−0.120	−0.030	0.223	−0.013	0.091	0.207	1.000					
Access to a social food aid program	0.167	0.276	−0.240	−0.016	−0.110	−0.300	−0.226	1.000				
Access to a social non-food aid program	0.175	0.156	−0.296	0.007	−0.109	−0.243	−0.218	0.351	1.000			
Drinking water	−0.109	−0.039	0.143	−0.016	0.055	0.175	0.315	−0.243	−0.188	1.000		
Hygienic services	−0.107	−0.073	0.221	−0.006	0.061	0.243	0.392	−0.265	−0.214	0.395	1.000	
Electrical energy	−0.030	0.002	0.052	−0.009	0.021	0.073	0.110	−0.095	−0.049	0.126	0.193	1.000

Table 4. Logistic regression of the monetary poverty model.

Logistic Regression		**Number of Obs**	**=**	**21,985**	
		Wald chi2(9)	**=**	**1787.31**	
		Prob > chi2	**=**	**0.000**	
Log Pseudolikelihood = −3899.1003		**Pseudo R2**	**=**	**0.2477**	
Poverty	Coef.	Std. Err.	z	P > z	[95% Conf.	Interval]
Household size	0.6171	0.0255	24.1900	0.0000	0.5671	0.6671
Income	−0.0004	0.0000	−16.2900	0.0000	−0.0005	−0.0004
Years of education	−0.0485	0.0075	−6.4400	0.0000	−0.0633	−0.0338
Homeownership	−0.4332	0.0775	−5.5900	0.0000	−0.5851	−0.2813
Access to a social food aid program	0.4584	0.0968	4.7400	0.0000	0.2687	0.6481
Access to a social non-food aid program	0.2616	0.0681	3.8400	0.0000	0.1280	0.3951
Drinking water	−1.1744	0.1461	−8.0400	0.0000	−1.4607	−0.8882
Hygienic service	−0.3118	0.1278	−2.4400	0.0150	−0.5622	−0.0614
Electrical energy	−1.6558	0.9942	−1.6700	0.0960	−3.6044	0.2928
Constant	4.1759	1.0056	4.1500	0.0000	2.2050	6.1468

Table 5. Marginal effects of the poverty model in Peru.

Variable	**dy/dx**	**Std. Err.**	**z**	**P > z**	**[95%**	**C.I.]**	**X**
Household size	0.013	0.001	21.650	0.000	0.011	0.014	5.116
Income	-8×10^3	0.000	−13.390	0.000	0.000	0.000	997.026
Years of education	−0.001	0.000	−6.250	0.000	−0.001	−0.001	8.960
Homeownership	−0.009	0.002	−5.430	0.000	−0.012	−0.005	0.572
Access to a social food aid program	0.009	0.002	4.770	0.000	0.005	0.013	0.434
Access to a social non-food aid program	0.006	0.002	3.490	0.000	0.003	0.009	0.805
Drinking water	−0.018	0.002	−10.180	0.000	−0.022	−0.015	0.789
Hygienic service	−0.006	0.002	−2.660	0.008	−0.010	−0.002	0.764
Electrical energy	−0.017	0.004	−4.020	0.000	−0.025	−0.009	0.985

On the other hand, access to drinking water service, to hygienic service and to electric power service negatively influence the probability of being poor; if the household has access to drinking water, hygienic service and electrical energy, then the probability of being poor decreases by 1.8%, 0.6% and 1.7%, respectively, which shows that together these variables can contribute towards the fight against poverty by 4.1%, either in the rural areas or the urban areas of the regions of Peru.

Finally, it is evident that the sex and age of the head of household, although they have a positive relationship with the probability of being poor, do not have a decisive influence on the poverty status of families. Evidence for this result is the gender equality that was imposed in recent decades; that is, both women and men have the same possibilities in terms of employability and income. Likewise, no matter how old the individual is, skills are what determine employment, access to information, income and other factors that determine whether a person is poor or not.

4. Discussion

The outstanding results obtained for the determinants of poverty in Peru are very consistent with what was determined by Quispe Quispe and Roca Garay (2019); when seeking to explain the determinants of poverty for 2009, 2011 and 2016, they found results very similar to our research, as the trend of the coefficients are very similar. Access to drinking water service in 2009 explained poverty in −10,335%; in 2009 it explained by −9962 and in 2016 it explained by −0.945%; in our research, it explains by −1.8%. In the case of access to hygienic services, in 2009 it explained poverty by −4019%, in 2011 it explained by −3877%, and in 2016 it explained at −3881%; in our research, it explains poverty by −0.6%. Access to electricity service in 2009 explained poverty by −20,823%, in 2011 it explained by −10,278%, and in 2016 it explained by −5423%; in our research, poverty

is explained by −1.70%. In the case of the number of members in the household, in 2009 it explained poverty by 8357%, in 2011 it explained by 7421%, and in 2016 it explained by 5288%; in our research it explains by 1.30%, demonstrating the compatibility in the marginal effects and its explanation for poverty. This also coincides with what was investigated by Garza Rodriguez (2016), where the variables of analysis coincide in explaining poverty; demographic variables and those of human capital adequately explain the performance of poverty. In addition, the increased number of family members increases the likelihood of being poor, but the opposite effect occurs when the head of household's income level and years of schooling increase. Access to water, sanitation and electricity reduce the likelihood of poverty.

It is also coincident with what is determined by Rodriguez and Smith (1994), in view of the fact that the determinants of poverty in Costa Rica in rural and urban areas are the gender of the head of household, explaining by 51.72% and 47.84%, the marital status explaining by -28.36% and 47.72%, the age of the head of household explaining by 3.66% and 0.42%, the years of education explaining by −8.70% and −11.37% and the number of members of the family explaining in 76.24% and 201.08%.

In addition, the results obtained in our research are complemented by what is evidenced by Madueño Sayhua (2020), who showed that urban poverty in Arequipa is determined by social characteristics such as the age of the head of household. The same that has an inverse relationship with poverty and explains it in 0.14%, and the availability of work is also a determinant of poverty and explains negatively in 9.43%. These results are also complemented by what was found by Ponce Abarca (2018), since at the level of poverty in Peru is determined and explained by household size (22.65%), the number of income recipients (−1.85%), years of education of household members (−1.25%), years of education of the head of household (−0.223%), the age of the head of household (−0.115%), agricultural land tenure (−0.112%), access to drinking water service (−3.38%), internet possession (−8.104%) and if you have the home title deed (−2.62%).

According to Gil Izquierdo and Ortiz Serrano (2009), the factors that explain the probability that a household is part of the group with low economic income are sociodemographic characteristics, given that the risk of reducing extreme poverty is subject to age of the household member. Another important variable is the size of the household, and other variables that explain poverty are the educational level and access to the labor market. The higher the educational level of the household member, then the better are conditions to face poverty, and the greater the heterogeneity in labor situations, the greater the probability of reducing poverty, which is also confirmed by Pachauri and Rao (2013). In addition to seeking to identify the determinants of poverty, Trommlerová et al. (2015), incorporated the aspect of empowerment to get out of poverty, establishing that age, gender, marital status, nationality, economic activity and health determine the individual and collective empowerment of Gambian communities.

In addition, our results are very similar to those obtained by Samamé Monje (2020), who, by also applying the Logit model as in our research, was able to determine that access to hygienic services explains poverty by −13.34%, the number of children by each head of household explains by 5.56%, the level of education of the head of household explains by −1.43% and the access to electricity service explains by −9.31%. In addition, we agree with Acosta (2020), who also established that in the case where the head of household has a low level of education, is a woman, or has an inadequate job, then as a consequence there is a greater probability that the household is part of the group in a situation of poverty.

Kwaghe et al. (2010) determined that poverty in households engaged in agricultural activity increased thanks to the age of the heads of household, the number of periods or years of experience in the development of agricultural activity, the size of the household, the child dependency ratio and the adult dependency ratio. In this regard, they were able to determine that poverty was low thanks to the increase in the number of years of formal education by heads of household and the number of extension contacts per season. All of the above is consistent with the present research. All of the above is also

corroborated by Kasri (2017), who found that at a younger age, low level of education, low level of formal occupation, counting on a smaller household size and the existence of non-economic assistance in Zakah contribute towards increasing the probability of being poor; in addition, age explains poverty by −0.60%, gender explains by −3.40%, marital status by 1.20%, primary education explains by −9.20%, incomplete secondary education explains by −18.10%, complete secondary explains by −19.30% and university education explains by 35.70%; the development of small businesses explains poverty by −16.30%, other types of jobs account for 14.80% and household size explains poverty for 4.60%.

Finally, it is consistent with what was determined by Sobrino (2015), who found that in Mexico employment explains poverty by −34.00%, if the head of household is a woman explains poverty by 99.50%, and education explains poverty by −93.00%, among others. This is also complemented by López (1996), according to whom poverty in Chile is explained by secondary education, the title of ownership of housing, the implementation of extension and technical assistance to agriculture, participation in public extension programs and the costs of inputs for agricultural production. Gómez (2012), as in our research, determined that the larger the population in the urban area, the effect is a lower intensity of poverty; the lower the level of education in the household, the larger the family and the greater presence of women as heads of household, then the higher the incidence of poverty in urban areas.

5. Conclusions

In Peru in the year 2020, the social variables that determine poverty were the size of the household, economic income, years of education, access to home ownership, access to a social program of food aid, access to a social program of non-food aid, access to drinking water service, access to hygienic service and access to electricity service.

In addition, the size of the household, access to social programs of food and non-food aid positively influence the probability of being poor; but the sex and age of the head of the household, despite the fact that they have a positive relationship with the probability of being poor, do not have a decisive influence on the poverty condition of the families. In the case of the economic income of the head of household, the years of education of the head of household, home ownership and access to drinking water service, toilet service and electricity service negatively influence the probability of being poor.

The behavior of the determining variables shows that 93.68% of the households studied are associated with the condition of being poor and only 6.32% are in the condition of not being poor. This shows the existence of a critical and alarming scenario which requires immediate attention from the state through the implementation of actions, programs and public policies that are oriented towards reducing poverty, mainly in rural and marginal urban areas, where most of the population is found and whose population seeks a better opportunity to improve the quality of life of its members.

Finally, it is important to highlight the investigations considered in the discussion, given that the results obtained coincide with the present investigation. Despite the existing limitations in access to information, this could be carried out as proposed from the present investigation by continuing to conduct other research related to the determinants of poverty and incorporating the variables considered in other countries and regions, such as housing characteristics, heterogeneity of employment status, individual and collective empowerment and development of productive activities, among others.

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