CHARACTERISTICS OF RURAL HOUSEHOLDS AND THEIR SOCIO-ECONOMIC NEEDS

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ABSTRACT

Each year, millions of dollars are allocated to aid programs in developing countries, yet their true impact on vulnerable populations remains uncertain. This study aims to examine the socio-economic characteristics of rural communities and assess their development needs. Specifically, it seeks to profile rural households and identify their key socio-economic priorities. Applying the Schwartz formula, a survey was conducted among 81 households in the Itasy Region. A systems approach was used to rank their socio-economic needs, revealing three distinct household categories: disadvantaged, middle-class, and affluent. The findings categorized households into three groups: disadvantaged, middle-class, and affluent. The primary socio-economic needs identified include education level, maize and rice cultivation, off-season vegetable farming, livestock ownership (zebus and pigs), household size, and income from agricultural and livestock activities. Vulnerable individuals in the region face significant challenges due to slow local economic growth and unfavorable social and environmental conditions. Additionally, several obstacles hinder development, including exploitative practices by the wealthy and intermediaries, deep-rooted traditional customs, and resistance to social change.

Key words: *Development, vulnerable populations, economic growth, development projects, agrarian reform*

INTRODUCTION

Every year, millions of dollars are allocated to aid developing countries. The positive impacts of economic growth, investments in human capital, and the provision of safety nets for vulnerable populations are well-documented, allowing for the evaluation of social development programs in Madagascar (World Bank, 2020). However, the tangible effects of aid initiatives on these populations remain insufficiently identified and measured.

Currently, the Malagasy government prioritizes programs focused on human capital development. In the education and health sectors, several social programs have been introduced, such as the distribution of free school kits at the beginning of each school year, school feeding programs (a key component of the World Food Programme's (WFP) efforts in education), and a nutrition program coordinated by UNICEF in partnership with the National Nutrition Office (ONN) and the Ministry of Health. In the infrastructure sector, the creation of new towns such as Imeritsiatosika and the construction of social housing remain high priorities. There are also low-cost housing projects in the Itasy region, alongside the construction of schools and Basic Health Centers (CSB) funded by the Fonds d'Intervention pour le Développement (FID), which also generate High Intensity Labor (HIMO) jobs and contribute to food security for the underserved. These initiatives are among the 17 main objectives of the current State program (IEM, 2019).

Despite these efforts, Madagascar faces significant challenges in its development. The country lags behind in several key indicators, including education and health. It ranks as the fifth highest country in the world for the number of children not attending school and has a high prevalence of stunting, with one in two children under the age of 5 affected. Although there has been a slight improvement in the country's Human Development Index (HDI) from 0.512 to 0.519, Madagascar dropped three places in global rankings, moving from 158th to 161st (UNDP, 2012).

Economically, the country has seen some progress, with exports of goods and services in economic free zones and growth in the construction sector in urban areas. Public investment and small industries have spurred GDP growth, increasing from 2.3% in 2013 to 5% in 2018. However, this growth primarily benefits the urban population, while the rural population continues to engage in agriculture, which remains excluded from the broader economic recovery (INSTAT, 2020).

In the Itasy Region, several development programs have been implemented to improve various sectors:

- The Pôles Intégrés de Croissance Phase 2 program, which promotes sustainable tourism around the Itasy lakes (PIC2, 2016),
- The Watersheds and Irrigated Perimeters Project, which rehabilitates irrigation infrastructure and supports farmers in improving agricultural production, especially rice (BVPI-SEHP, 2017),
- The Programme d'Urgence pour la Préservation des Infrastructures et la Réduction de la Vulnérabilité (Emergency Program for Infrastructure Preservation and Vulnerability Reduction), which focuses on rural road rehabilitation to open up agricultural areas and improve market access (ADB, 2015),
- The Projet de Croissance Agricole et de Sécurisation Foncière (Agricultural Growth and Land Tenure Security Project), which aims to secure land titles for farmers, enhance agricultural value chains (e.g., rice, maize), and build farmers' capacities (IFAD, 2018).

These initiatives aim to enhance agricultural productivity, strengthen household resilience, develop basic infrastructure, and promote sustainable tourism and agribusiness. However, despite these efforts, chronic and persistent poverty still affects at least two-thirds of Madagascar's population, presenting a major barrier to progress (INSTAT, 2020).

Given these contradictory realities, it is essential to explore the socio-economic characteristics of the rural population and their specific development needs. The following research questions arise from this concern:

- What are the socio-economic characteristics of the rural population?
- What are the socio-economic needs of rural households?

The overall objective of this study is to characterize households based on their socio-economic situation and to identify their needs and expectations. The two specific objectives are:

- To characterize households based on their socio-economic situation.
- To identify the socio-economic needs of rural households.

The following hypotheses are proposed:

- Households are characterized by the most developed socio-economic activities.
- Household needs influence the selection and implementation of development programs and projects.

METHODOLOGY

1.1 Household typology

Benchmarking was employed as part of the analysis process. Initially, a Hierarchical Ascendant Classification (HAC) was conducted to identify the specific characteristics of the households. Following this, a Discriminant Factorial Analysis (DFA) was performed to validate the classification results. This step allowed us to explore the correlations between the variables and calculate the corresponding p-values. Variables with p-values greater than 0.2 were deemed statistically insignificant.

The ranking functions derived from the Discriminant Factorial Analysis (DFA) were subsequently applied to standardize the scale, transforming negative values into positive ones. Following this, the observations were normalized by dividing each value (xi) by the sum of all values (Σxi). The maximum, or "benchmark," value for each observation was then identified. To facilitate a clearer visual representation, radar charts were constructed to depict the data for each class.Analysis of households' socio-economic needs.

1.2 Analysis of socio-economic needs of households

The prioritization of households' socio-economic needs, along with the analysis of variable dominance and influence effects, was employed to test the second hypothesis: "The needs of rural households should be considered in the decision-making processes of development programs and projects."

1.2.1 Scheduling

The scheduling process was employed to identify and prioritize the socio-economic needs of households. This procedure began with a Hierarchical Ascending Classification (HAC) of the variables, followed by a Discriminant Factorial Analysis (DFA). Subsequently, variables with a p-value greater than 0.2 (α risk of error) were excluded. The lower diagonal part of the correlation matrix was also removed. If the residuals of certain variables had

absolute values exceeding the significance threshold, they were replaced by "X"; otherwise, their values were left empty. The significance threshold was set at 0.215. Finally, the variables were grouped according to their minimum values, establishing an order of priority.

The following formula was applied:

$$|\rho| > \frac{t_{\alpha=0,05}}{\sqrt{n-2+t^2_{\alpha=0,05}}}$$

With: t = 1.96
n =81 (number of households surveyed)

1.2.2 The dominance effect and the impact of resilience

This step facilitated the construction of the strategic rectangle by identifying influential and dominant variables. After eliminating insignificant variables, the values of **X** and **Y** were determined using the following formulas:

X = L/P
Y = L*P

where:
L represents the sum of the absolute values of the row variables in the correlation matrix.
P denotes the sum of the absolute values of the column variables in the correlation matrix.

The X values were then arranged in descending order, with those exceeding 1 ($X > 1$) classified as influential variables. Similarly, the Y values were sorted in descending order, and the highest values were used to identify the dominant variables.

RESULTS

1.3 Typology of households based on socio-economic characteristics

The typology of rural households is categorized into three distinct classes:

- **Class 1: Disadvantaged Population**

This group comprises households engaged in small-scale activities such as poultry farming and work in the tertiary sector. Their income from primary activities is nearly exhausted by daily expenditures, leaving little to no financial surplus (Figure 1).

- **Class 2: Middle-Class Population**

These households are involved in moderately scaled agricultural and livestock activities, including small-scale cattle and pig rearing, vegetable cultivation, and rice farming (Figure 2).

- **Class 3: Wealthier Population**

This category consists of households primarily engaged in high-scale trade, such as the sale of pigs and poultry, as well as large-scale off-season vegetable cultivation. Additionally, they participate in secondary economic activities, including rice collection and resale, zebu farming, and zebu trading (Figure 3).

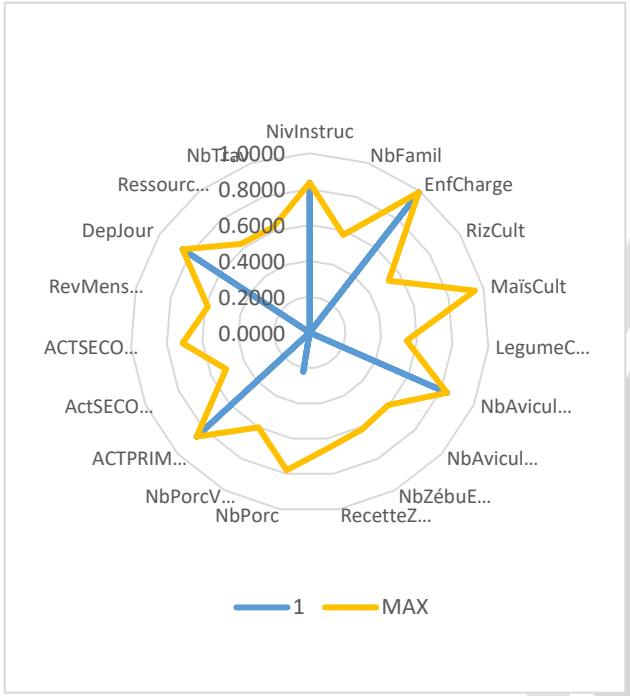

Figure 1 ***: Class 1 – Disadvantaged population***

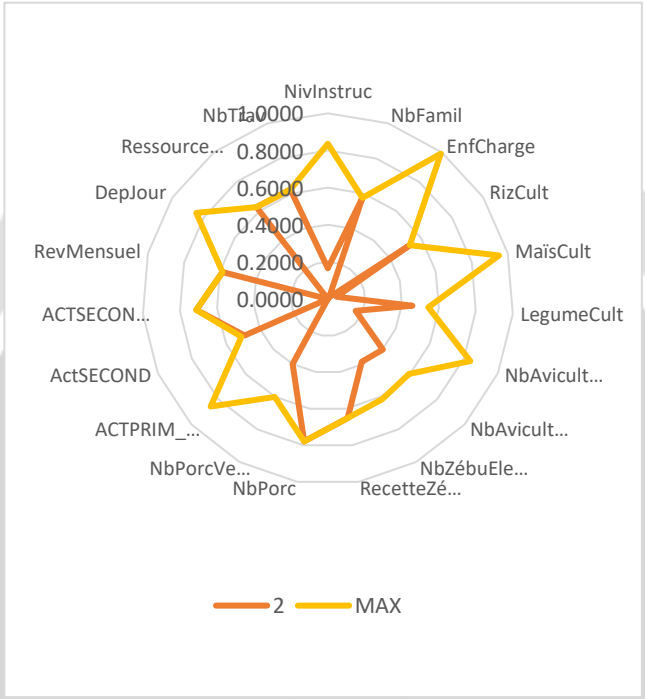

Figure 2 ***: Class 2 - Middle class population***

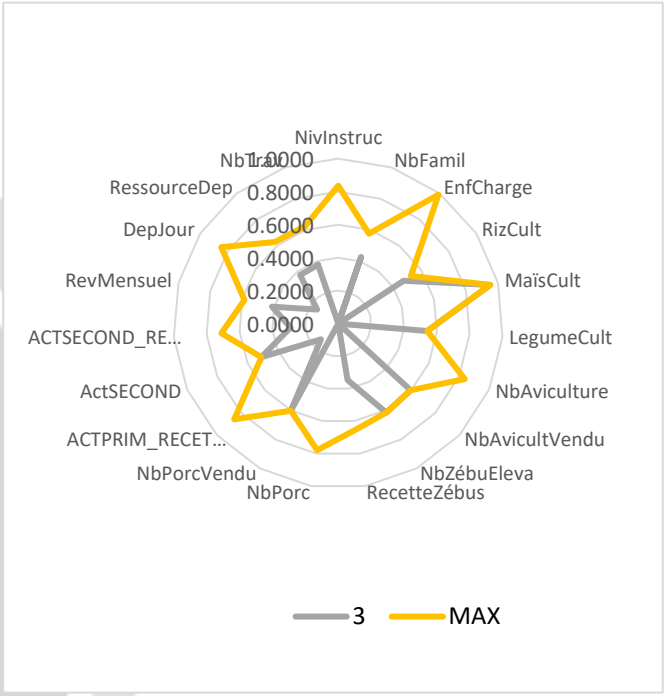

Figure 3 : Class 3 – Wealthier population

Legend :

NivInstruc	Education level	NbPorc	Number of pigs	RevMensuel	Monthly Income
MaïsCult	Maize Cultivation	NbPorcVendu	Number of pigs sold	DepJour	Daily expenditure
RizCult	Rice Cultivation	ACTPRIM_RECETTE	Income from Primary	RessourceDep	Expenses in relation to resources
LegumeCult	Vegetable Cultivation	NbAviculture	Number of poultry farms	EnfCharge	Dependent Children
NbZébuEleva	Number of Zebus	ActSECOND	Secondary activity	NbTrav	Number of workers in the Household
NbFamil	Number of Households	NbAvicultVendu	Number of poultry sold		
RecetteZébus	Income from zebus	ACTSECOND_RECETTE	Income from secondary		

→

1.4 Socio-economic needs of households: an analytical perspective

1.4.1 Prioritization of households' socio-economic needs

The prioritization of households' socio-economic needs revealed that the level of education (NivInstruc**)** emerged as the most significant socio-economic factor, followed by maize cultivation (MaïsCult**).** In third position were rice cultivation (RizCult**),** off-season vegetable cultivation (LégumeCult**),** and the number of zebus raised **(**NbZébuEleva**),** followed by the number of households **(**NbFamil**),** income derived from zebu farming **(**RecetteZébus**),** the number of pigs **(**NbPorc**),** and the number of pigs sold (NbPorcVendu). Additionally, income from primary activities **(**ACTPRIM_RECETTE**)** was also identified as a significant variable **(**Figure 4**).**

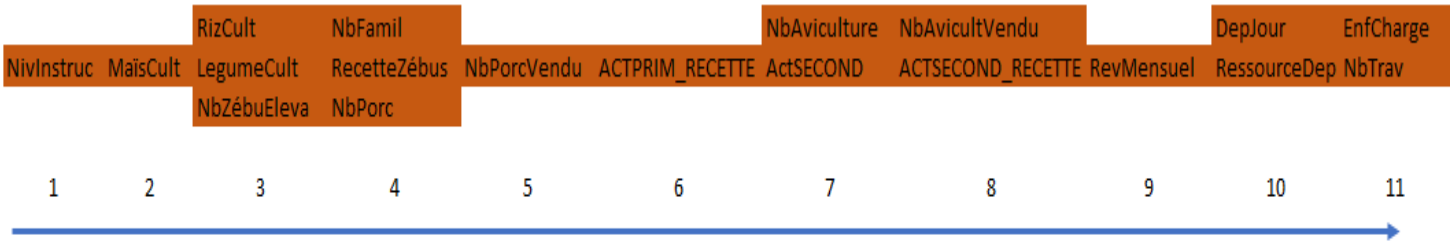

Figure n° 1 : Hiérarchisation des besoins selon l'activité socio-économique des ménages

Légende :		NbFamil	Number of Households	NbAvicultVendu	Number of poultry sold
NivInstruc	Education level	NbPorc	Nomber of pigs	Rev Mensuel	Monthly income
MaïsCult	Maize Cultivation	NbPorcVendu	Nomber of pigs sold	DepJour	Daily expenditure
RizCult	Rice cultivation	ACTPRIM_ RECETTE	Incom from Primary activity	Ressource Dep	Expenditure in relation to resources
Legume Cult	Vegetable cultivation	NbAviculture	Number of poultry farms	Enf Charge	Dependent children
NbZébu Eleva	nomber of zeu	ActSECOND	Secondary activity	NbTrav	Number of workers in Household
Recette Zébus	Income from zebus	ACTSECOND _RECETTE	Income from secondary activity		

1.4.2 Strategic rectangle of socio-economic activities of dominant and influential variables

In the context of innovative decision-making tools for development programs and projects, the following strategic variables must be identified: the variables highlighted in green, namely the number of pigs (NbPigs), income from zebu farming (ReceiptZebus), maize farming (MaïsCult), and the number of zebus raised (NbZébuEleva), are classified as dominant. Additionally, variables such as the number of poultry farms **(**NbAviculture**),** rice farms **(**RizCult**),** vegetable farms **(**LegumeCult**),** education level **(**NivInstruc**),** and the number of households **(**NbFamil**)** exhibit influential effects, as evidenced by changes in all variables where (X = L/P) exceeds 1 **(**Table1**).**

Table 1 *:* Variables of dominance and influence effect

Codes	Variables	X = L/P	Y = L*P
NbPorc	Nomber of pigs	1,01	27,12
RecetteZébus	Income from Zebus	1,85	13,37
MaïsCult	Maize Cultivation	4,43	9,87
NbZébuEleva	Nomber of zebu	3,49	9,71
NbAviculture	Maize crop	1,62	6,79
RizCult	Rice Cultivation	3,58	6,61
LegumeCult	Vegetable Cultivation	3,79	6,26
NivInstruc	Education level	4,57	4,57
NbFamil	Number of f Income from Zebus	3,51	3,51

X = X-axis Y = Y-axis

L = row-wise sum of significant inter-variable correlations
P = column-wise sum of significant inter-variable correlations
X = Abscissa
Y = Ordinate

DISCUSSIONS

3.1 Vulnerability and precariousness

The findings of multivariate statistical analyses allow for the classification of the surveyed households into three distinct categories, with the first category—comprising the majority of the population (80%)—consisting primarily of impoverished households. This segment of the population can be characterized as both vulnerable and precarious. Household economic activities are generally small-scale, and income from primary sources is nearly depleted by daily expenditures (Figure 1).

Precariousness predominantly affects the most disadvantaged members of society, who face multiple challenges, including limited financial resources, inadequate housing, health concerns, psychological distress, and uncertainty about the future. The accumulation of these difficulties is further exacerbated by low local economic growth and unfavorable social and environmental conditions (Rakotomanana, 2021).

An analysis of interviews conducted with beneficiaries of development programs and projects, focusing on household needs and priorities (Figure 6), alongside socio-economic household characteristics (Figure 1), revealed critical issues and infrastructural needs within rural communities. These include access to electricity, the construction of basic health centers, and the establishment of high schools. Furthermore, the majority of students surveyed were able to identify these priorities, yet most had discontinued their education at the secondary level. Mahieu (2011) argues that inadequate income, barriers to accessing essential services, low educational attainment, and certain group behaviors are key indicators of vulnerability.

According to Chambers (1989), vulnerability is often exacerbated by poorly conceived policies and program interventions that fail to account for local realities and the diverse socio-economic and cultural contexts of rural households. His approach emphasizes the importance of strengthening households' adaptive capacities rather than merely providing post-crisis relief. Chambers underscores the necessity of context-sensitive policies to effectively reduce vulnerability and poverty.

3.2 Different obstacles to development in the itasy region

1.6.1 Excessive exploitation of the wealthy populations and collectors

Rural workers are often subject to exploitation through low wages, harsh working conditions, and, in some cases, a lack of social protection. Wealthy landowners or entrepreneurs frequently capitalize on this readily available, low-cost labor. In terms of market dynamics, collectors serve as intermediaries, exerting significant influence over trade. However, the organization of marketing remains a persistent challenge, further exacerbated by the lack of post-harvest processing infrastructure (PROSPERER, 2008).

Highly vulnerable households, particularly those unable to repay their debts, sometimes resort to using their labor as collateral. In such cases, lenders require borrowers to work in their fields as a form of repayment, with compensation determined by the amount of labor provided (Razafindrakoto, 2022).

1.6.2 Practice of *varimaintso* or rice lending

The reliance on informal financing mechanisms by vulnerable households in their daily activities presents a significant barrier to the development of rural communities in the Itasy Region. According to Razafindrakoto (2022), this practice includes the lending of rice or money during the lean season, with repayment occurring at harvest time. Borrowers are required to repay in paddy, often amounting to two to three times the original loan value. This system results in exorbitant interest rates ranging from 100% to 200% over a period of several weeks to a few months, further exacerbating financial insecurity among rural households.

1.6.3 Traditional practice

The majority of farmers operate in a state of economic instability, as reflected in their small-scale production areas, reliance on traditional farming methods, and the high proportion of output allocated for self-consumption (PROSPERER, 2008).

Gannon and Sandron (2006) argue that the activation of solidarity mechanisms can threaten a community's economic sustainability. Specifically, adherence to traditional practices and cultural rites, such as *fomban-drazana* and *fihavanana*, may hinder innovation and the implementation of development projects when they require unanimous approval. In other words, these social norms can act as barriers to the adoption of new agricultural techniques by shifting the risks associated with individual innovation onto the broader community. As a result, to avoid potential harm to the collective, individuals may be reluctant to adopt innovations unless they have been proven to have a high likelihood of success.

1.6.4 Resistance to social change

Rural populations often resist or partially accept innovations due to their adherence to traditional values and social structures. Boudon (1984) suggests that such resistance stems from the irrational behaviors of rural communities, which are deeply influenced by ancestral traditions. Dozon (1985) further affirms that rural African societies resist progress, largely because they remain dependent on traditional practices and have limited capacity for innovation or rational economic decision-making. Mendras and Forsé (1983) argue that social change should be understood as the outcome of a series of individual actions, emphasizing the importance of individual agency in driving transformation.

1.7 Dominance of livestock in household production systems

The analysis of household typology based on socio-economic needs (Figures 2 and 3) reveals that livestock play a crucial role in the farming systems of rural households. For many rural families in this region, livestock is often the primary source of income. Cattle, poultry, and pigs are raised both for personal consumption and for sale.

In pastoral and agropastoral societies, livestock farming functions not only as a means of accumulating and transmitting wealth but also as a savings mechanism within rural communities. As productive capital, livestock meets household needs and provides a buffer against various family and social events, as well as external risks such as climatic crises. The range of livestock products, from intermediate goods like milk, eggs, and animal traction to final products such as hides, leather, and meat, enhances both the economic and food security of households. The diversity of species raised, with differing production cycles, further supports household resilience and stability (Alary, 2011).

The role of livestock farming on farms is linked to the various production and savings functions it serves, which in turn affect the ways in which livestock products are exploited and valued. The savings function is reflected in the growth and demographic structure of the herd, while investment is determined by the exploitation rate, which includes animal purchases and sales. Cash-flow functions are driven by the use of intermediate products (milk, wool, leasing, transport) and the regular sale of certain animals (Alary, 2011). This role is particularly evident in livelihood approaches (Ellis and Mdoe, 2003; Carter and Barrett, 2006), which draw in part on the well-being

theories formalized by Sen (2002). Sen's framework highlights the concept of "capabilities," which play a key role in reducing vulnerability and enhancing overall well-being.

1.8 Education and development

1.8.1 Importance of education

Research and analysis of field results have allowed us to assess the importance of education and to identify its socio-economic and cultural effects. The level of education stands out as the most significant socio-economic factor (Figure n°6), with the variables "Level of education" and "Number of family members" (Table n°1) showing influential effects on system-wide changes affecting rural households in the Itasy Region.

Education is a fundamental driver of socio-economic development. Numerous economists argue that education is pivotal in increasing labor productivity and improving the standard of living, as work performed by better-educated individuals represents a higher-quality factor of production. According to Malinvaud (1994), education should facilitate access to culture and professional skills, serving as one of the most powerful means of social progress. From an economic perspective, investment in education enhances individual capabilities, improves productivity, facilitates job market integration, and leads to higher salaries (Becker, 1981).

Furthermore, Sen (1999) emphasizes education's role as a key factor in human development. Education not only boosts economic productivity but also strengthens individual capacities to lead autonomous lives and actively participate in democratic processes. The ultimate goal of education for sustainable development (ESD) is to foster a more sustainable Malagasy society by ensuring equitable access to relevant training, enabling citizens to acquire the skills and competencies necessary to find or create decent employment opportunities (PES, 2017).

1.8.2 Effects of education on socio-economic and cultural aspects

Education is not limited to the acquisition of individual skills; it also has significant socio-economic and cultural impacts. According to Psacharopoulos and Woodhall (1988), education influences fertility rates. In poorer and more illiterate societies, delays in the education system can lead to higher fertility rates. However, the delay in marriage and the first pregnancy, resulting from the pursuit of higher education, reduces the likelihood of having many children.

From a socio-economic perspective, Becker (1981) explains that reducing fertility and improving the well-being of all children requires considerable investment from parents, including expenses for education, health, and other needs. In this regard, an increase in the demand for quality education and living standards for children often leads to a reduction in the number of children parents choose to have. This shift reflects a broader trend where the focus on quality of life and long-term investments in children's futures leads to lower fertility rates and greater socio-economic stability.

CONCLUSION

Several international donors provide essential financial resources to support development programs and promote economic growth. However, before initiating the program or project process, it is crucial to first identify the characteristics of households based on their socio-economic situation. Additionally, understanding the needs of the rural population is fundamental. Theoretical and practical research have yielded two key findings: the typology of households based on socio-economic characteristics and the socio-economic needs of rural households. These two sets of results validate the two sub-hypotheses developed.

Firstly, the typology of households based on socio-economic aspects categorizes households into three classes: Class 1 represents disadvantaged populations, Class 2 includes the middle class, and Class 3 corresponds to wealthier rural populations. The observed results confirm the first sub-hypothesis, which states that "households are characterized by the most developed socio-economic activities."

Secondly, the socio-economic needs of households focus on the prioritization of their needs and the strategic framework of household needs. The findings confirm the second sub-hypothesis,"the needs of households determine the development programs to be implemented."
All results support the main hypothesis: "The socio-economic activity most developed by households determines their needs for programs and development projects."

After analyzing the characteristics of rural households and identifying their socio-economic needs, a critical question remains: To what extent do development programs and projects truly address these needs?

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