Assessing farmers' management skills and social participation as part of the planning process and decision-making

Evaluando las habilidades de gestión de los agricultores y su participación social como parte del proceso de planificación y toma de decisiones

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ABSTRACT
This study aims to analyze farmers' management skills and their participation in the decision-making process in their institutions. A total of 130 farmers were surveyed using a questionnaire, focusing on different variables in productive, social and economic areas. A descriptive statistical analysis was used to explain the main evidence. As a result, outstanding farmers' skills for management and participation in agricultural institutions and the community were identified, supporting the decision-making process and strategic planning, regardless of their socio-economic status.

Keywords: management, decision-making, social participation.

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RESUMEN
Este estudio tiene como objetivo analizar las habilidades de gestión de los agricultores y su participación en el proceso de toma de decisiones en sus instituciones. Se encuestó a 130 agricultores utilizando un cuestionario, centrándose en diferentes variables en las áreas productivas, sociales y económicas. Se utilizó un análisis descriptivo estadístico para explicar la principal evidencia. Como resultado, se identificaron habilidades destacadas de los agricultores para la gestión y participación en las instituciones agrícolas y la comunidad, lo que respalda el proceso de toma de decisiones y la planificación estratégica, independientemente de su situación socioeconómica.

Palabras clave: Administración, toma de decisiones, participación social.

INTRODUCTION

The participation of farmers is a vital factor for the success of environmental conservation and rehabilitation because they possess skills, technical knowledge, and organizational capacity to manage natural resources, which has allowed them to live for millennia (IICA, 2018).

Participation is essential to get the rural population involved in the collection of information and the planning process. Participatory methods can be used to collect information on the activities and constraints of male and female farmers. This information can then be shared with policymakers and planners to formulate development plans that consider the interests of the rural population and promote sustainable development (Stroparo & Floriani, 2023). Social participation is a cyclical, ascending, dynamic, complex, and articulated process in which its members organize to share responsibilities. Social participation is a process of

involving individuals in commitment, cooperation, responsibility, and decision-making to achieve common goals (Carapia, 2003).

High-quality results require a good process. The idea of a process is basic for decision-making. One of the most remarkable discoveries of business thinkers from several decades ago is critical to effective results (Mata-García & Zepeda-Moreno, 2022). Being smart or working hard does not ensure the quality or quantity of the result. In the absence of an effective process, the result would be a matter of luck. On the other hand, if there is an adequate process, the quality will improve. By adopting an effective process and training the people, results can be improved (Grant et al., 2011).

The main hypothesis of this article is to determine whether farmers have adequate management skills to participate in the decision-making process. This study is divided into four main chapters: i) the study case introduction containing the conceptual model and justification, ii) the literature review iii) the methods used for collecting data and analysis, and, iv) the results, discussion, and conclusions.

LITERATURE REVIEW

Hansen (1996) defined an agricultural producer as a "natural or legal person who habitually has the agricultural exploitation of the land as the main economic activity". According to FAO (2009), the agricultural producer is the civil or legal person who makes the main decisions on the use of resources and exercises control over the administration of the operations of the farm. You have technical and financial responsibilities and can directly assume them or delegate those related to daily work to a hired manager.

Agricultural communities, on the other hand, it is considered a relatively new socio-economic model of food production and of organizing distribution and sales, aiming to increase the quality of food and the care given to land, plants, and animals - while substantially reducing waste of food and financial risks for producers (Huambachano, 2019). The decision-making process in agricultural plantations depends on different situations since their main source of income and in some cases, food depends on the crops that are grown, which is why farmers usually have to make many decisions regarding their crops and in other cases to the same producers (FAO, 2017; Sanabria Ramos, 2001).

Social participation is described as "the social processes through which groups, organizations, institutions or different sectors (all social actors including the community), intervene in the identification of related problems and come together in an alliance to design, implement and evaluate the solutions" (Sanabria Ramos, 2001). In a community process, citizen participation is the key element, but this participation implies that it is the citizens themselves who decide how they want their future to be (both the most immediate and the most distant) (Oteros-Rozas et al., 2019).

Therefore, in the population space, decisions are made, by consensus, on what are the priorities to be worked on based on the plan. Moreover, the acceleration of development plans and projects requires adequate economic and financial resources, natural, and technological, planning, the improvement of the administration, structural reforms (tax, agrarian), and the conscious and organized participation of the population (Ostrom & Ahn, 2003). The active or passive, positive or negative role that the population plays in the formulation of plans and projects constitutes an accelerator or a brake. Consequently, without diminishing the importance of other resources, popular participation is essential for development (Alarcón Conde & Álvarez Rodríguez, 2020).

Therefore, Narayan and Cassidy (2001) good plans can be drawn up with adequate financing and technical resources; however, these may fail due to a lack of decision and the willingness of the population to put them into practice. Then, it is imperative to i) Interpret social reality, that the population understands them and makes them their own and that they put them into practice and, ii) The population is the one that must conceive, execute, and take advantage of the benefits of the plans.

On the other hand, social participation in agriculture is a path to achieve sustainability, which mostly focuses on the ability to develop lifestyles and levels of consumption orientated to the preservation of the resource's stocks. It is characterized by an approach oriented to the conservation of resources and the fulfillment of the present generations' needs without compromising future generations (Borrelli, 2016).

METHODS

The study case took place in Los Rios – Ecuador. The research is predominantly descriptive with the objective of supporting the central hypothesis presented in this article. Quantitative tools were used to gather data and present the main results.

A semi-structured questionnaire was used as a survey to obtain information about farmers' situation. The survey was conducted in the households of participants after they agreed on written consent. This data was obtained from a study conducted among the agriculture producers in the whole province of Los Rios. The sample was determined using a probabilistic simple random sampling. The survey's primary purpose was to investigate attitudes towards the production activity, farmers' characteristics (demographics), and management skills, 136 valid questionnaires were obtained, which were carried out randomly in 10 different cities of Los Rios.

The questionnaire had questions regarding the main indicators which are:

Table 1: Indicators for Evaluation

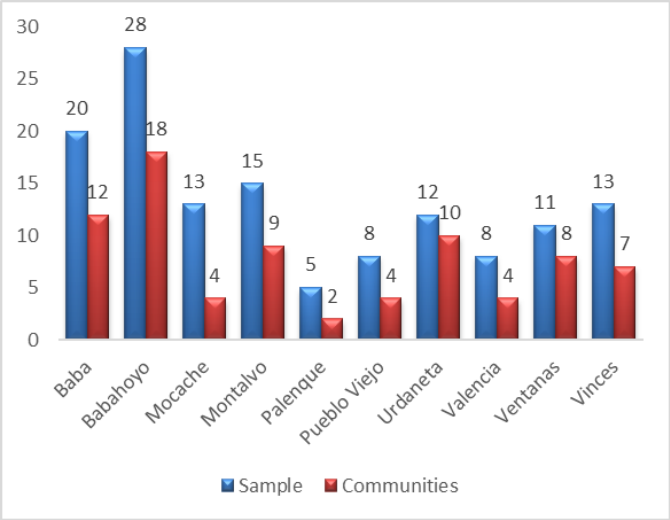
Indicators	**Measure**	**Description**
Management Skills:	Extension Services Management Training Accounting Records	Availability of carry an adequate management coming from external methods or self-preparation.
Social Participation:	Associativity Benefits equity Decision Making	Evaluate social participation regarding associativity, work in projects, equality and decision making.

To analyze the data, we used three different methods for each one of the three core indicators. Descriptive statistics helped to study the food security indicators using tables, describing the primary information to explain appropriately the results obtained from collected data in the field. We constructed an amoeba graph in order to determine the level of social participation regarding different indexes. We also used colors to identify the risk level according to the

sustainability model proposed by Sepúlveda (2008), where: red = high level, orange = critic level, yellow = unstable risk, blue = stable level, and, green = adequate level.

Finally, the study territory is Los Rios province, which is one of the 24 provinces of Ecuador, located in the coastal region of the country. Its total population is 527,559 people, and its capital is Babahoyo (Naranjo, 2004). In this province, water is a valuable resource, water bathes its lands and makes it the most fertile area in Ecuador, and it is from that it gets its name (Los Rios in Spanish means Rivers). The study collected data in 10 different cities of the province, where a convenience sample was reached in each one of the cities surveyed, reaching 78 rural communities, between parishes and precincts, where most small-scale agricultural producers are; better presented in the following Figure 1:

Figure 1: Sample and communities in Los Rios



RESULTS

The results show a quantitative and qualitative analysis using descriptive statistics to explain the results obtained from the study population. Initially, Table 2 details the main products that were mentioned by small-scale producers, indicating the products destined to sale and self-consumption, products harvested in gardens, and minor products harvested. The

surveyed producers own approximately from 1 to 15 hectares, with an average of 6.02 hectares, where they develop their production activities.

Table 2: Los Rios main products' harvest and destination

Mainly sale destined		**Mainly self-consumption destined**		**Harvested in family gardens**		**Minor harvested crops**	
Rice	58%	Orange	18%	Peppermint	6%	Oregano	4%
Cocoa	35%	Watermelon	17%	Pumpkin	5%	Passionfruit	4%
Maize	25%	Lemon	14%	Yucca	5%	Soursop	3%
Banana	19%	Mango	13%	Lemongrass	5%	Coconut	3%
Plantain	12%	Melon	8%	Beans	4%	Tangerine	3%
Soy	8%	Papaya	8%	Coriander	4%	Cherry	3%
Sugar cane	4%	Guava	8%	Aloe	3%	Tomato	3%

Within its production, Los Ríos farmers mainly grow rice, cocoa, and corn. In addition to the products mentioned in Table 1, it was also mentioned to have family gardens and small farms, in which fruit, vegetables, and herbs products are harvested. Table 2 presents the product species studying the mentioned crops as primary, secondary, and additional products and, they harvest approximately 79 products supporting the biodiversity and the food security in small-scale producers' families.

We present the top relevant crops and their destination, i) mainly destined for sale such as rice, cocoa, and corn; ii) destined for home consumption, mainly fruit species such as orange, watermelon, and mango; iii) grown in family gardens, rich in plant and herbal species and iv) smaller species such as oregano, passion fruit or coconut. Species diversification supports adequate consumption and contributes to the nutrition of farmers, in turn improving the well-being of the community and the health and safety of its inhabitants (Kennedy, Ballard, & Dop, 2011).

Instead, Table 3, collected information about the producers' income, analyzing different categories that represent: i) poverty line, ii) minimum wage, iii) basic basket of goods, iv) medium income, and v) higher incomes. In Table 4, we aimed to analyze the percentage of

producers that could access extension services, training, and accounting management, according to each income construct.

Table 3: Accounting management according to family income

Income Interval	Extension Services (Yes = 27.8%)	Technology Training (Yes = 28.8%)	Accounting Records (Yes = 71.0%)
$1.00 – $85	29,41%	11,76%	58,82%
$85.00 - $400.00	31,25%	26,56%	75,00%
$400.00 - $714.00	20,69%	31,03%	72,41%
$714.00 - $1000.00	18,75%	25,00%	50,00%
Higher than $1000.00	42,86%	85,71%	85,71%

The extension service to small-scale producers in Los Ríos is limited, both from the public sector and academia. Farmers who declare income of more than $1000, have obtained extension services in 42.85%, for the rest of the groups, the percentages of producers do not exceed 31.26%. On the other hand, small producers declare that less than 31.03% have received training related to technology, social networks, and the Internet, in the case of the group with the highest income, 85.71% declare knowledge. While more than 50% keep records of income and expenses to control their production, even those who are in the poverty line, where 58.82% declare having income and expense records, evidencing that accounting is not an issue of income, any economic level in farming has the possibility of carrying accounting of incomes and expenses, even when they have limited extension services and training.

Then, it is imperative to measure the accounting management criteria according to the level of education. Table 4 synthesizes this information, where producers indicated only 27.8% could access extension services coming from public institutions or academies, and 28.8% of farmers are trained in technology services. However, 71% of the surveyed producers keep records of accounts and finances to control their income and expenses, sometimes, in not formal methods, but they make their effort to have control.

The extension services are variable in every level of education, and it doesn't have a linear behavior of increasing, while training increases according to the level of education. Only 11.1% of farmers are trained when they have incomplete school, those values are increasing, and further college education has higher values, from 61% to 100%. Finally, farmers keep records independently of their level of studies. More than 55% of the farmers in each construct keep accounting records, in both, formal and informal methods.

Table 4: Accounting management according to family income

Education Level	**Extension Services (Yes = 27.8%)**	**Technology Training (Yes = 28.8%)**	**Accounting Records (Yes = 71.0%)**
Incomplete School	33,3%	11,1%	88,9%
Complete School	25,0%	13,9%	65,7%
Incomplete High School	23,8%	23,8%	55,0%
Complete High School	29,0%	36,7%	80,6%
Incomplete College	14,3%	64,3%	78,6%
Complete College	50,0%	61,7%	66,7%
Post-graduate Program	0,0%	100,0%	100,0%

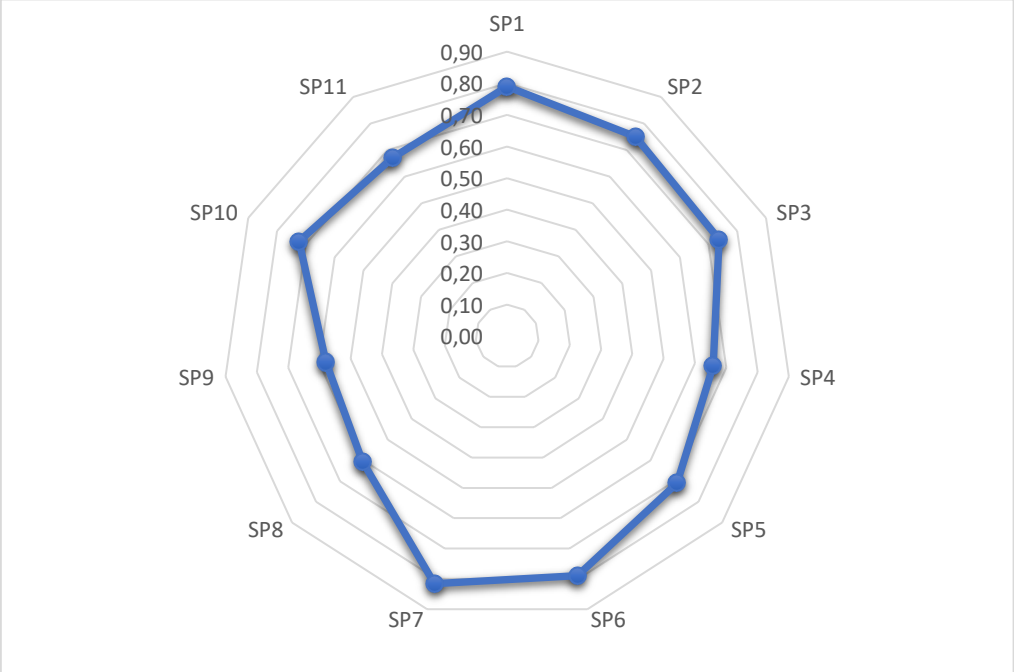
On the other hand, we developed an amoeba graph to assess social participation. Initially, we noticed that only 35.2% of farmers in Los Rios belong to an agricultural association or cooperative, this is such a reduced quantity of producers that work together to create better opportunities. From this percentage of farmers, we evaluated how the participation is carried out according to the surveyed producers' answers. Figure 2 presents the graph where we considered the main 11 indexes to explain the social participation in this province and also Table 5 gathered this information.

Table 5: Indexes of Social Participation

Indicator	**Name**	**Index**
Planning Meetings	SP1	0,79
Equally participation in decision making	SP2	0,75
Clear Rules and Standards	SP3	0,74
Household benefits	SP4	0,66
Equity in sharing benefits	SP5	0,71
Gender equality	SP6	0,79
Female legal members	SP7	0,82
Equally Socieconomic level	SP8	0,61
Create projects	SP9	0,58
Paritipating in projects decisions	SP10	0,72
Community decision making	SP11	0,67
Integrated Index		***0,71***

According to farmers' answers, we can indicate that most of the indexes are at a stable level, and then support the participation process (when they are part of an association). Then, the associations call to farmers to adequate meetings to plan their processes (0.79), and they indicated they have equal participation in the decision-making process (0.75), which is mostly the main hypothesis of this article. On the other hand, associations presented clear rules and standards to carry on the operations (0.74), and they could get equal benefits from the associations (0.71 and 0.66) and projects coming from it. Producers also indicated there is equality in socioeconomic level (0.61) and gender (0.79), having female farmers as legal members as the only adequate level in the study (0.82). Associations are failing according to the producers in project creations (0.58) according to Agricultural activities or any other producing activity where they can participate, being this index unstable, but they can participate in the projects' decision-making (0.72) when they have them. Finally, they could participate also in community decision-making (0.67), but the level is minor to other indexes.

Figure 2: Built-in Indexes of Social Participation



Elaborated by the authors

In the amoeba graph in Figure 2, we integrated the indexes to look up the level of participation as a whole. As we mentioned before. in the figure we can see a stable level of social participation, close to the edge, the exceptions are SP8 and SP9, where farmers consider all the members of the association to have equal economic levels and the association's ability to create projects. However, having reviewed the management skills and extension services they received, they have a well-managed process, allowing people to participate in the decision-making and focusing on generating a "be part" feeling for the farmers.

DISCUSSION

The participation of families in gardens is one of the factors that can increase food diversity (Gutiérrez, 2012); it is also considered the engine for community development from an agroecological approach since it is the foundation for sustainable agriculture (Altieri et al., 2011).

The main objective of this study was to determine that regardless of socioeconomic factors, agricultural producers can participate in decision-making since their knowledge is useful and

considerable for their production activities. Given the results obtained, the results determined that participation is important and is well-managed between associated producers of Los Ríos.

Participation is not only achieved through contact with farmers, but on the contrary, it is one of the activities that require the most continuity and consistency in an area, because participation is also a degree of trust, communication between producers, and degree of confidence that will vary in reaching according to regional ethnic peculiarities (Oteros-Rozas et al., 2019).

Moreover, a stable level of social participation could guarantee farmers better offers in the productive sphere and with society. We can see important information in the document about how participation in the agricultural sectors of the province of Los Ríos is managed, and its analysis provides relevant information to be considered from the perspective of farmers, regardless of their socioeconomic level.

One of the limitations of this study is that the survey did not include all the cantons of Los Ríos. This can be a point for improvement. Anyhow, the arguments have high validity due to the number of responses, which allowed us to validate the information. Finally, this research provides a striking and innovative vision; it represents the first step to documenting part of the dietary diversity and livelihoods in the rural populations of Ecuador.

CONCLUSIONS

Despite the exploratory nature of this research, it is clear that in the rural areas of the Los Ríos province at the level, it has a stable participation level in their associations and community. Our research supported the hypothesis of this study: Agricultural producers of Los Rios have an appropriate stable level of participation in the decision-making process even when their capabilities are not the best, due to the lack of extension services and the demographic conditions as income and academic level.

According to the results of the surveys, it was possible to determine that both men and women have high participation and are part of decision-making within the association and the community to which they belong, although most women expressed doubts about their power to decision within the association that they integrate, it was evidenced women could access

legally to the associations and they can participate into the planning and decision-making process (FAO, 2017).

Regarding our research question, it is determined that by the criteria of the respondents, participation in associations is important regardless of their socioeconomic level and their intervention positively influences decision-making in resource management and the actions they have an impact on the development of communities. Future research could be essential to study better ways of accessing local markets, i.e., on the organic production side, through third-party certifications or Participatory Guarantee Systems (Cuéllar-Padilla, 2010; INFOAM, 2013; Meemken & Qaim, 2018; Pino, 2017), to increase participation in small-scale producers.

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