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Rural finance and accounting management in small-scale farmers of Los Rios – Ecuador

Finanzas rurales y gestión contable en pequeños agricultores de los Ríos – Ecuador

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RESUMEN

La provincia de Los Ríos, es una de las más importantes productivamente hablando, gracias a su repercusión positiva en la economía ecuatoriana y sus múltiples fincas y agroindustrias dedicadas a la producción agrícola tanto para consumo interno y exportación. El objetivo de esta investigación es analizar la gestión financiera de productores a pequeña escala dedicados principalmente a la agricultura familiar. El estudio se llevó a cabo en la provincia de Los Ríos, donde se explican los principales problemas analizando los pros de llevar una gestión contable para los agricultores, así como los problemas de no mantener registros financieros. Los datos se recopilaron a través de una encuesta semiestructurada que se realizó en productores a pequeña escala que se dedican a la agricultura familiar. Se utilizó estadística descriptiva para explicar la hipótesis principal del estudio. Como principal resultado, más del 50% de los productores, incluso cuando presentan ingresos bajos, tienden a llevar un registro de ingresos y gastos, de manera formal o informal, independientemente de no contar con servicios de capacitación o extensión adecuados que respalden esta gestión. Los productores de Los Ríos tienen una gran fuente de biodiversidad, lo que indica que cosechan

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Vol. 6, N° 1, PP. 65-75

aproximadamente 79 especies y respaldan el autoconsumo y la seguridad alimentaria. Finalmente, se presentan en la discusión implicaciones de políticas pública para la toma de decisiones.

PALABRAS CLAVE: *Finanzas rurales, contabilidad, agricultura, productores, cultivos.*

ABSTRACT

Los Ríos is one of the most important provinces productively speaking, thanks to its positive impact on the Ecuadorian economy and its multiple farms and agro-industries dedicated to agricultural production for both domestic consumption and export. This research aims to analyze the financial management of small-scale producers mainly dedicated to family farming. The study was carried out in the province of Los Rios, where it explains the main issues regarding the pros of having accounting and management for farmers and issues related to not keeping financial records. The data were collected through a semi-structured survey which was carried out on small-scale producers who are engaged in family farming. Descriptive statistics were used to explain the main hypothesis of the study. As a result, more than 50% of producers, even when presenting small incomes, tend to keep a record of incomes and expenses, in a formal or informal method, independently of not having proper training or extension services that support this management. Producers of Los Rios have a great source of biodiversity, indicating they harvest approximately 79 species and support self-consumption and food security. Finally, public policy implications for decision-making are presented in the discussion.

KEYWORDS: *Rural finance, accounting, agriculture, small-scale, producers, crops.*

INTRODUCTION

Due to globalization, finances have become one of the most important tools in any economic activity (Lindao et al., 2016). However, there are people without basic knowledge of accounting or finance, which does not allow them to keep records of incomes and expenses (Grossman et al., 2014).

On the other hand, the Constitution of the Republic of Ecuador in its Article 27: "Education is essential for the knowledge, the exercise of rights and the construction of a sovereign country ", constitutes a strategic axis for national development. However, there are several comments regarding the education (in finance and accounting areas) in rural areas or the agriculture producers. As a result, there is a clear need for a robust agricultural finance system in small-scale producers (Abate et al., 2016).

According to ESPAC (2017), Los Rios is one of the most important provinces in the agricultural matter because of the positive repercussions in the Ecuadorian economy, and a path that allows farmers to use to obtain economic sustenance. Even though smallholder farmers produce 86% of the country's agricultural production, they are resource-poor and on average, own less than one hectare of land (Carrión & Herrera, 2012).

This could imply that a potential high credit demand (mostly coming from smallholders) that is unlikely to be approved by the banking system, because of the risk, transaction cost, and the lack of access to adequate investment inputs (Hoff & Stiglitz, 1990) and

e-ISSN: 2528-8091
Vol. 6, N° 1, PP. 65-75

even more difficult for women farmer access to formal credit (Fletschner & Kenney, 2014). Usually in developing countries, the mainstream financial institutions lack the capacity to serve resources to poor households and smallholder farmers (Obo, 2009).

Therefore, besides informal sources, low-income households and smallholders heavily rely on financial cooperatives and microfinance institutions or even in informal credits, which are now the forerunners in delivering financial services to farmers (Santos-Ordoñez et al., 2017). Their contributions are notable in lending small-uncollateralized loans, in savings mobilization, and in inculcating financial literacy in society (Motsoari et al., 2015).

On the other hand, those small-scale farmers are mostly dedicated to family farming. According to Toader & Roman (2015), family farming is a subject of great importance for the sustainable development of rural communities and the promotion of a healthy lifestyle. family farming is a means of organizing agricultural, forestry, fisheries, pastoral, and aquaculture production which is managed and operated by a family and predominantly reliant on family labor, including both women's and men's (FAO, 2014). This is the predominant form of agriculture in the food production sector for both developing and developed countries (Juárez, 2011). Thus, subsistence and semi-subsistence small farms are of particular importance in the current global agricultural policy (Davidova & Thomson, 2014). They are a way of life, through which much of the rural population provides their livelihood.

The purpose of this study is to inform the financial environment in small-scale producers in the Province of Los Rios – Ecuador, focusing on their issues such as contributions and resources, accounting records, and information systems, which could influence the development of many families. Then, the question that guides our study is: Do small-scale producers in the province of Los Rios keep finance methods or accounting records that could support their production activity?

Extension services are important to create knowledge in rural areas. According to Menconi et al. (2017), a participatory rural planning process (PRPP) is imperative where "it is an inclusive path that aims to compare and integrate the expert knowledge with the local knowledge for the taking over of responsibility and shared commitments". Therefore, Baloch & Thapa (2018) proposed strategies with a bottom-up approach that have been designed through the use of participatory tools to support the generation of knowledge by voice and opinion of farmers. Menconi et al. (2017) highlight the use of participatory strategies, which support the improvement of the empowerment level, empirical knowledge, and existing relationships between actors and interest groups in the territory inside the PRPP, where these agents are mainly the farmers and other participants involved in these production activities.

The article is presented according to this structure: i) introduction including main theories that support our study, ii) methods introducing tools to collect information, iii) main results and analysis of data, and iv) discussion and conclusion based on the hypothesis presented.

e-ISSN: 2528-8091
Vol. 6, N° 1, PP. 65-75

DEVELOPMENT

This study is based on a descriptive analysis using qualitative and quantitative methods to gather and analyze data.

A semi-structured questionnaire was used to gather information about the investigation of farmer entrepreneurial types. These data were obtained from a survey conducted across the agriculture producers in Los Rios, which included items based on qualitative interviews. The sample was a simple random probability sampling (with confidence: 90% and error: 7%), where the primary purpose of the survey was to investigate attitudes towards the production activity (farm size and products) and farmer characteristics (demographics).

For statistical analysis, after tabulating the information, the aim is to present the results of the main survey information using descriptive statistics. As the study is qualitative and quantitative-based, different types of variables are studied, such as quantitative: (number of hectares, production), dichotomous (demographics, accounting-related), scalar (agrees with… decision making, participation), and binomials (gender, association). It was planned to carry out a structured analysis of the information obtained, to generate an explanatory model appropriate to the reality of small-scale producers in the province.

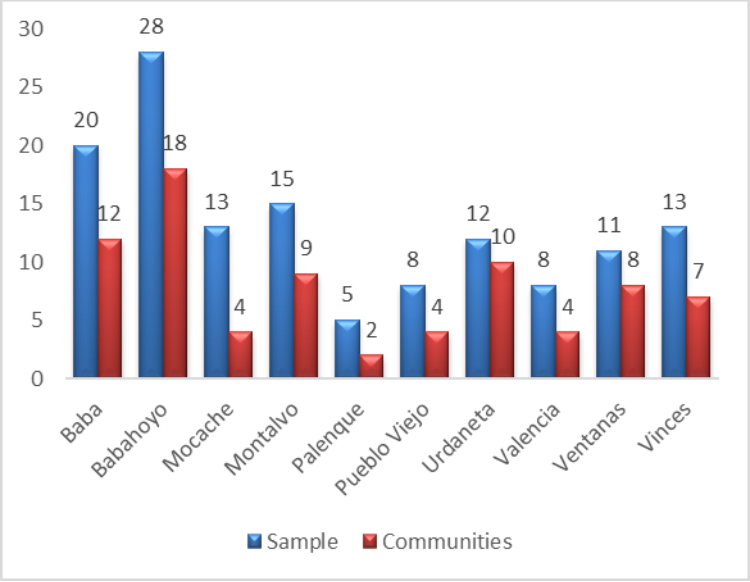

Figure 1: *Sampled communities in Los Ríos*

A quantitative and qualitative analysis was developed where descriptive statistics was the main tool to explain the obtained results. Mainly, the aim was to support the hypothesis with the data collected in a synthesized method. This study managed to collect data in 10 different cities of the province, reaching 78 communities, where small-scale agricultural producers are concentrated, as can be seen in Figure 1:

The province of Los Ríos is located in the coastal region of the country. The capital city is Babahoyo and the most populated city is Quevedo. In the province, water is an important resource because it bathes its lands and makes it the most fertile area in Ecuador and from there it gets its name (Naranjo, 2004).

e-ISSN: 2528-8091
Vol. 6, N° 1, PP. 65-75

According to David Salazar et al. (2017), Los Ríos stands out for its agricultural activity being the main source of production, it occupies the first place in the republic in the production of cocoa and is second in the coast in the production of coffee, having also the rice production and fishing as important activities.

Initially, we presented some demographic information, in Table 1 are detailed the main products gathered from surveys. It should be noted they are small-scale producers because they possess approximately 1 to 15 hectares, with 6.02 hectares on average that they use for their production. The top 10 products are mentioned as follows:

Table 1: *Productive analysis of Los Rios*

Product	Percentage	Sale destination	Household consumption
Rice	32,74%	79,6%	20,4%
Cocoa	24,66%	97,2%	2,8%
Maize	14,80%	70,0%	30,0%
Plantain	9,42%	50,0%	50,0%
Soy	6,28%	100,0%	0,0%
Orange	4,48%	75,0%	25,0%
Banana	3,14%	80,0%	20,0%
Tangerine	1,79%	50,0%	50,0%
Corn	1,35%	100,0%	0,0%
Sugar cane	1,35%	33,3%	66,7%

In Table 1, producers explain their top ten products destined for sale and consumption, where rice, cocoa, maize, plantain, and soy are the greater commodities. However, it is important to highlight they cultivate 79 products into their production, which supports food security. According to Kennedy et al. (2011), 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.

Table 2: *Species diversification*

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%

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Vol. 6, N° 1, PP. 65-75

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. Also, it analyzes its family income, if they keep off-farm income, and/or agricultural insurance according to each construct.

Table 3: *Producers' finance according to family income*

Income Interval	Family income	Off-farm income (Yes= 30.83%)	Agricultural Insurance (Yes = 23,31%)
$1.00 – $85	12,78%	5,88%	23,53%
$85.00 - $400.00	48,12%	35,94%	20,31%
$400.00 - $714.00	21,80%	24,14%	27,59%
$714.00 - $1000.00	12,03%	50,00%	18,75%
Higher than $1000.00	5,26%	28,57%	42,86%

Approximately 48.12% of producers are located on the poverty line, in which some manage to reach the basic salary, in terms of family income, however, 35.94% of these producers generate off-farm income mainly in agro-industrial activities, for other large farmers or companies. On the other hand, the high-income ranges also show off-farm income, mostly in commercial activities or small ventures. In terms of agricultural and livestock insurance, between 18% and 28% of farmers have insurance, except for the producers who have the highest profit (greater than $ 1,000.00) in which 42.86% have insured their crops against adverse risks.

Table 4: *Relatedness among Accounting management and family income*

Income Interval	Extension Services	Technology Training	Accounting Records
Extreme poverty line ($1.00 – $85)	28,31%	12,66%	59,72%
Poverty line ($85.00 - $400.00)	32,15%	25,66%	74,10%
Minimum wage ($400.00 - $714.00)	21,99%	30,23%	71,31%
Basic food basket ($714.00 - $1000.00)	19,55%	26,10%	51,50%
Higher than $1000.00	43,96%	86,10%	86,50%

Table 4 presents the producers who could access extension services, technology training, and take accounting records to manage their production activities. The greater percentage is for producers which have income superior to $1000, where they can access extension services in 43.96%, technology training in 86.10%, and carry accounting records in 86.50%, when, the intervals of extreme poverty and poverty, have minor percentages in those areas.

e-ISSN: 2528-8091
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Table 5: *Producers' finance according to education*

Education Level	Family income *> min wage*	Off-farm income	Agricultural Insurance
Incomplete School	21,4%	27,8%	33,3%
Incomplete High School	23,8%	19,4%	23,8%
Incomplete College	44,4%	50,0%	14,3%
Complete School	30,6%	22,9%	19,4%
Complete High School	48,4%	40,0%	25,8%
Complete College	75,0%	50,0%	25,0%
Post-graduate Program	100,0%	100,0%	0,0%

In Table 5, we evaluated the relationship between income and education level, where only 38.1% of surveyed farmers report an income superior to the minimum wage, 30.8% have off-farm, income, and 23.3% keep agricultural insurance. As it was predicted, the family income increased according to the level of education, and 21.4% of the surveyed producer with incomplete schools exceed the minimum wage, while it starts to increase in percentage. However, even when the producer has completed high school or incomplete college, no more than 50% could reach a minimum wage. The producers with complete college and post-graduate programs are above this percentage.

Furthermore, it is evidenced that having an off-farm income could improve income, and it is also related to the level of education. The producers with no complete high school are above 27.8%, while the producers with complete high school and superior levels exceed 40%. Regarding agricultural insurance is not directly related to the level of education, only 33.33% of the surveyed producers keep insurance, whereas less than 33.33% of each education construct has included this service into their expenses.

Table 6 analyze the management criteria according to the producers' education level, small scales producers consider that 27.8% could access extension services, 28.8% have proper training in technology services, but, 71% of them, keep records of their activities to use them in managerial and decision-making activities.

Table 6: *Accounting management according to education level*

Education Level	Extension Services	Technology Training	Accounting Records
Incomplete School	33,3%	11,1%	88,9%
Incomplete High School	23,8%	23,8%	55,0%
Incomplete College	14,3%	64,3%	78,6%
Complete School	25,0%	13,9%	65,7%
Complete High School	29,0%	36,7%	80,6%

e-ISSN: 2528-8091
Vol. 6, N° 1, PP. 65-75

Complete College	50,0%	61,7%	66,7%
Post-graduate Program	0,0%	100,0%	100,0%

Results show that the higher percentage is presented in producers who finished college, where 50% of producers received extension services, 61.7% have access to technological services, and 66.7% keep accountant records. For producers with post-graduate records, don't have access to extension services, but are present 100% in technological training and keeping records of their activities. The minor percentages are presented for producers who haven't completed the secondary education, they reach no more than 33% in extension services, 23.8% in technology training, however, they consider they carry records to control their activities.

CONCLUSIONS

Based on local development and the well-being of the community and producers, new strategies are imperative, such as extension efforts by public institutions or academia focused on learning paths on issues of PC utilities, internet, and social media, implementation of new technologies, associativity, and better innovation mechanisms for having more action within the value chain (Bada et al., 2017).

When the farmers have a better knowledge of accounting and finance management, they could improve in: i) better skills development for controlling their current production activity, ii) boost the saving capacity of the farmers, as the ability to access to credit and, iii) contribute to higher levels of associativity, where farmers are more consolidated to work in groups and access to new benefits (Santos-Ordoñez et al., 2016). Thus, public policies must be focused on the intervention on training and other support programs for increasing the level of knowledge of farmers in the order they could generate better methods of control and accounting.

According to the farmers' perception some limitations are important to highlight, i) age and gender are also important for learning, they consider higher ages are not willing to learn new methods, ii) they experiment difficult barriers for accessing credit, investment, and innovation packages, iii) they consider public and financial institution consider them risk agents, and it is difficult to manage any transaction, then, they usually hold back to try (Hoff & Stiglitz, 1990).

We motivate further research in this area, initially, with a greater sample in every community to validate the results are maintained. Then, extension service and education, we propose participatory rural appraisal methods based on bottom-up strategies (Solano et al., 2018), thus, we know what the strengths and weaknesses are and look up to solve them. Finally, methods to keep biodiversity in their crops (Rose et al., 2019), and better ways to get into the value chain, to promote the products, not focusing just on main products but on the additional products they present.

As reflected in these results, the main hypothesis of this study could be approved. Farmers keep accounting records independently from their level of education and income, in formal or informal ways. For farmers, its economy is based and sustained on productive

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processes, where the availability of resources is used to develop and elaborate products that allow them their subsistence (Parraguez et al., 2018).

In conclusion, most farmers in Los Ríos province keep a record of their economic activities regarding their production in formal or informal methods. Furthermore, their resources as capital and knowledge have not allowed them to properly manage their financial accounts, however, they are trying to control them. Thus, the lack of incentives and programs that support farmers is necessary for their local development.

Additional benefits were found in this study when analyzing economic activity. The producers mention harvesting approximately 79 different plant species, among vegetables, fruits, and herbs. This biodiversity could support food security because most products are self-consumption destined and also, improving local (and even rural) development, affecting both, farmers and the community level.

Besides validating the research hypothesis, we consider it is a replicable and extrapolated element that contributes to the generation of knowledge and innovation, by obtaining useful and reliable qualitative results, which also improve the collective situations of the farmers and communities.

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