Livestock Production Chains: Influence On The Social Dimension Of Sustainable Agricultural Development Huando, Huancavelica

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ABSTRACT

Livestock production chains involve stages such as production, transformation and consumption, connecting their different links such as producers, fatteners, processors and marketers. The objective of the study is to determine the relationship between dairy and meat production chains and the social dimension of sustainable agricultural development in the district of Huando, province of Huancavelica, using a quantitative, non-experimental, descriptive and cross-sectional approach, applying a survey with a structured 12-question questionnaire that was applied to a probabilistic sample of 50 from a population of 98 livestock producers, coming from the three associations of cattle producers with export potential in the district of Huando, recognized by the PROCOMPITE Competitive Fund, 2013. Hypotheses 1) there is a direct and significant relationship between dairy production chains and the social dimension of sustainable agricultural development, and 2) there is a direct and significant relationship between meat production chains and the social dimension of sustainable agricultural development. The results show that the social dimension of sustainable agricultural development in Huando has a sustainability index of 0.70, which corresponds to a stable system; the hypothesis test with Kendall's Tau b correlation

coefficient for hypotheses 1 and 2 yielded values of .445** and .263**, respectively, with p< 0.001, with a significant average relationship in both cases. It is concluded that livestock production chains have a positive influence on social development, alleviating poverty and improving living conditions.

Keywords: Production chain; milk; meat; sustainable agricultural development.

INTRODUCTION

Livestock production chains (PPCs) frame a set of inputs (previous transformations, raw materials, transport mechanisms and labor) necessary to obtain a final good; energizing local and regional economies in a sort of direct inclusion in the productive, economic and financial system, the basis for the generation of entrepreneurship and local development, thus improving the standard of living and quality of life (1,2). Thus, these PPPs are based on agrifood chains, constantly seeking the evolution of production, implementing several collection centers, and in turn standardizing their production price in order to be acquired at better quality and lower prices, generating permanent employment (3); the final products of the meat production chain (MPC) are fresh, refrigerated, frozen, dried, salted, smoked meat and its meat derivatives; while in the dairy production chain (DPC), the final products are raw milk and its dairy derivatives (4).

A technology transfer process in the livestock sector must be carried out in a simple language for the producer and at low cost. This process must be accompanied by support and service infrastructure; likewise, to optimize the quality, competitiveness, equity, efficiency and sustainability of the CPL, incentives must be provided for the organization of producers together with access to financing, use of new technologies, management of infrastructure and equipment for marketing and development of the sector (5,6).

The communal cooperatives lack strategic planning, a management planning instrument that defines how to achieve the proposed objectives and describes all the tasks that allow for order and the correct direction of the employees towards the same business objectives. They also lack a SWOT analysis to find the direction in which the business life is heading (7). Vergara et al. (8) agree with this statement, stating that the weaknesses identified in the production chains include weak management in innovation and integration of actors and minimal coordination with support sectors. The importance of this study focuses on integrating the interests of producers with the objectives of

livestock production organizations, in order to improve the social dimension of the district of Huancavelica.

It is important to consider that an agricultural production unit is constituted as any property that has production animals such as cattle, goats, sheep, pigs, poultry, guinea pigs, rabbits, among others, where the livestock process is developed in two processes that begin with the work carried out on the farms, carrying out the production of livestock to obtain live cattle, with its stages of reproduction, breeding, rearing, fattening and marketing of live cattle; continuing with a second process which is the Industrial, that begins at the moment when the cattle on foot enters the benefit plants and ends with the production of meat and packaging of processed meat products. This process comprises four stages: Benefit, Transformation of the meat into carcasses, Preparation and Packaging (10); for this reason, the objective of the present study is to determine the relationship between both dairy and meat production chains and the social dimension of sustainable agricultural development in the district of Huando, Huancavelica. The analysis of this topic is considered relevant because it is expected that a better integration of the livestock production chain will lead to a better quality of life for livestock producers in Huancavelica.

MATERIALS AND METHODS

The research was carried out in the district and province of Huancavelica, Peru, with a descriptive level and quantitative approach in which PPPs were analyzed, applying the survey technique with a questionnaire as an instrument that was structured with 12 questions applied to a probabilistic sample of 50 livestock producers in the district of Huancavelica. The population of 98 livestock producers in the district of Huando is made up of members of the associations of agricultural producers Nueva Esperanza de Muque, Asociación de Productores Agropecuarios Sumaq Vaca Vaca VÑahuincucho - APASUVA and Asociación de Productores Agropecuarios Nueva Esperanza de Muque, Asociación de Productores Agropecuarios Sumaq Vaca VacaÑahuincucho - APASUVA, and Asociación de Productores Agropecuarios Los Aliados - APALA, whose details are shown in Table 1. Sampling was carried out using the formula to determine the sample size (n=50) for known populations, where N=98, Z = 1.28, d = 0.06, p = 0.65, q = 0.35, in order to determine the sample size (n=50) for known populations. 0.35, in order to evaluate its sustainable agricultural development in its social dimension, determining its sustainability index according to the biogram values suggested by Sepúlveda (10). The variables evaluated were livestock production chains and the social dimension of sustainable agricultural development.

Table 1 List of dairy and meat producer associations in the Huando District.

N°	ASSOCIATION NAME	CPL	CPC
1	Association of agricultural producers Nueva Esperanza de Muque Huando	21	14
2	Asociación de Productores Agropecuarios Sumaq Vaca Ñahuincucho – AP	22	13
3	Asociación de Productores Agropecuarios Los Aliados - APALA	15	13
	SUBTOTAL	58	40
	TOTAL POPULATION	98	

Source: Regional Executive Resolution N° 051-2014/GOB.REG-HUANCAVELICA/PR, 2014.

RESULTS

Table 2 shows the influence of livestock production chains on sustainable agricultural development, in its social dimension, for the district of Huancavelica, so that the biogram of the sustainability indexes in the social dimension is shown in Figure 1 and Figure 2, for the indicators and sub-indicators, respectively.

Table 3 shows that Kendall's Tau b correlation coefficient is positive and closer to zero than to unity, obtaining a value of .445, which is statistically significant, with $p < 0.001$.

Table 4 shows that Kendall's Tau b correlation coefficient is positive and closer to zero than to unity, obtaining a value of .263, which is statistically significant, with $p < 0.001$.

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Table 2 Sustainability Index in the Social Dimension of the district of Huando, Huancavelica

Indicators	Subindicators		Values obtained (%)	IDS by Sub-indicator	IDS by Indicator	IDS by Dimension
	1	Better planning with productive institutions productive institutions	65	0.65		

Organization	2	Improved competitiveness in organized organized groups	60	0.60	0.60	0.70
	3	Increased interaction with livestock producers	55	0.55		
Health	4	Increased consumption of potable water	60	0.60	0.60	
	5	Improving the perception of health quality health	60	0.60		
	6	Expansion of service centers	60	0.60		
Education	7	Improved reading and writing efficiency	80	0.80	0.80	
	8	Increased acceptance of livestock studies	80	0.80		
	9	Improvement of commercial livestock education	80	0.80		
Housing	10	Improvement of electrical installations	70	0.70	0.78	
	11	Extension of water and sewage services	85	0.85		
	12	Media optimization communication	80	0.80		

Figure 1. Biogram with social dimension indicators

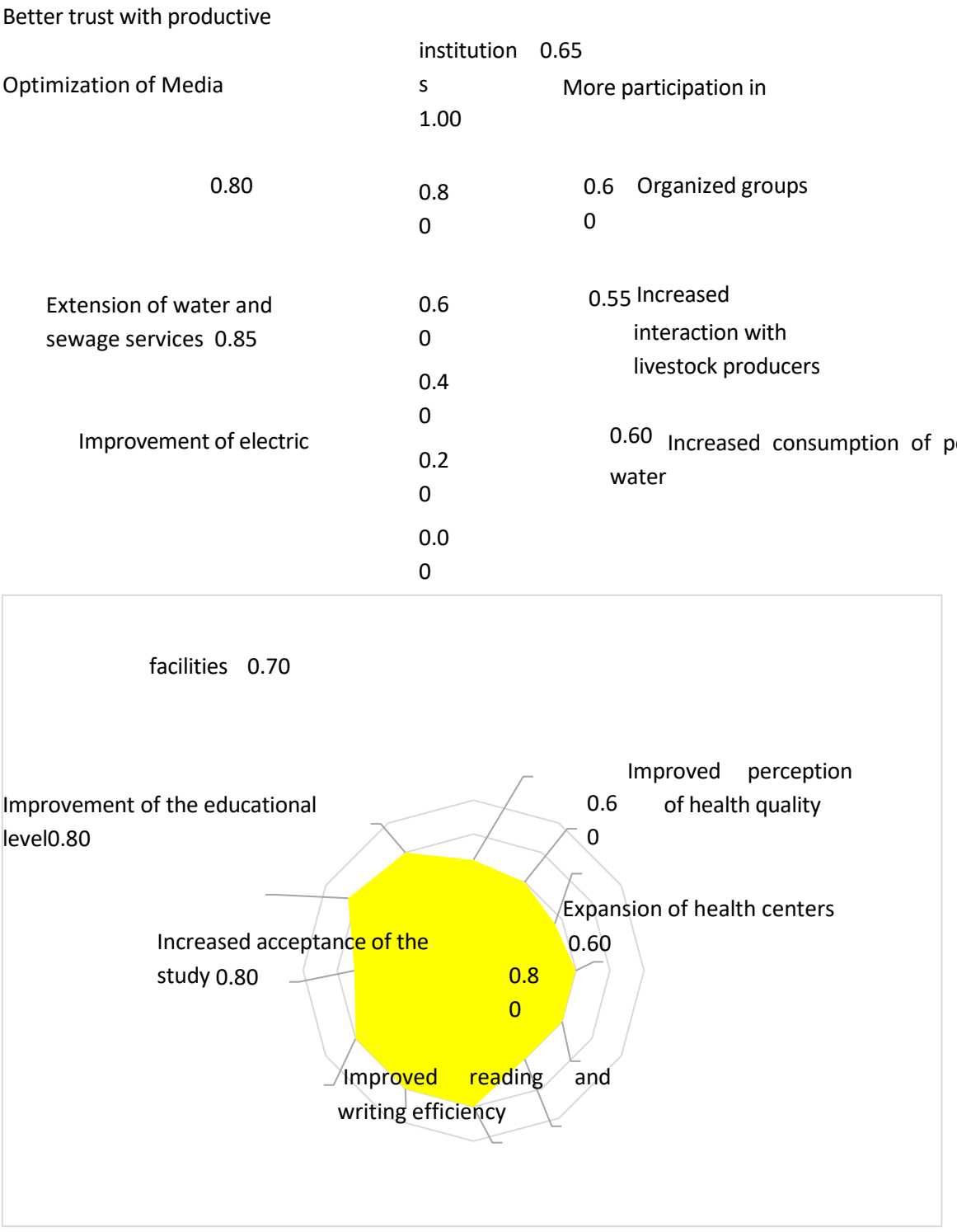

Figure 2. Biogram with sub-indicators of the social dimension

Table 3. Kendall's Tau b correlation coefficient of the first variable Dairy Production Chains with the second variable Social Dimension of Sustainable Agricultural Development of Huando, Huancavelica

			Social dimension of agricultural sustainable development	Dairy Productive chains
Kendall Tau B	Social dimension of sustainable agricultural development	Correlation coefficient	1.000	.445**
		Sig. (bilateral)		,000
		N	58	58
	Dairy productive chains	Correlation coefficient	.445**	1.000
		Sig. (bilateral)		
		N	58	58

**. The correlation is significant at the 0.01 level (bilateral)

Table 4. Kendall's Tau b correlation coefficient of the first variable Meat Production Chains with the second variable Social Dimension of Sustainable Agricultural Development of Huando, Huancavelica

			Social dimension of sustainable agricultural development	Dairy Productive chains
Kendall Tau B	Social dimension of sustainable agricultural development	Correlation coefficient	1.000	.263**
		Sig. (bilateral)		.000
		N	40	40
	Meat production chains	Correlation coefficient	.263**	1.000
		Sig. (bilateral)		
		N	40	40

**. The correlation is significant at the 0.01 level (bilateral)

DISCUSSION

The competitiveness of the dairy sector increased by up to 60%, positively influenced by integration in the milk production chain (PC), in agreement with Echevarría T and Olivera (11) who found that greater integration in the PC increases income and decreases production costs; while Sotomayor (12) affirms that the dimensions and social capital variables of the cheese PC, such as production, transformation and marketing, are statistically significant; However, Márquez (13) indicates that it is of vital importance to strengthen PC in the production, transformation and distribution links, applying innovation in the processes together with efficiency and customer satisfaction to achieve competitive advantage in the cheese factories, also recommending the development of technological innovations with new processes, which in the long term will be the most important constituent element of competitive advantage.

Inadequate planning in the purchase of raw materials and transportation routes for goods affects the production process of a trading company. In the present study, an improvement of up to 65% was found in the planning with productive institutions. According to Tinoco and Zamora (14), who assert that in order to achieve the objectives and goals of the company, an integrated logistics coordination throughout the supply chain is essential, because it is the one that guarantees that all the operations necessary for the supply of raw materials to meet the needs of customers are fully met.

There is a low level of interrelation of 55% among producers of fresh milk and its derivatives, identifying the critical points of the CPL which are: high unit costs of production, articulation to uncompetitive markets with uncompetitive artisanal processing, disorganization and limited technification; this may be due to the fact that the vast majority of farmers have silvopastoral systems on their hectares of pasture but on the perimeter of their land; They raise 6 to 7 head of cattle per hectare, without the adequate use of watering troughs or the use of balanced feed to complement the feeding and nutrition of the cattle, which results in low milk yields (16).

It is important that education be directed to commercial livestock production, in such a way that, in the present study showed an improvement of up to 80%, satisfying the demands of the market to improve profitability, since meat production has not experienced any development and in this aspect, there is the possibility of educating small producers, in order to achieve a massive commercialization of meat, at regional and national markets. However, another alternative would be the production and commercialization of wool and milk derivatives (17). On the other hand, Andablo et al. (18) assert that the

level of governance exercised by the actors in their linkages defines the benefits that are able to obtain from their participation in them, not only at the level of the company or family, but also in terms of the positioning of the country, the community or social group to which they belong, moving from a lower to a higher level of governance in the CPC, for rural families, which is essential to improve their subsistence.

The CPC has a deficient interrelation among its producers, which does not go beyond 55%. Consequently, the production of products and by-products is very heterogeneous despite having a presence in the local market, and it is difficult to compete at the regional level in the face of low prices for imported meat (19,20), similar to the incidence in the Loreto region, where the CP of Amazonian ornamental fish, as a potential exporter to the Japanese market, was considered very good by 64.71% of those surveyed in 2019 (21). This minimal interrelationship is reflected in the social aspect, where the population has certain difficulties to establish associative links with people who are not linked to them in a family or community way, so distrust is usually very high (22). On the other hand, the commercialization system is affected by the lack of integration of producers for sales and by the low production levels, since there is no knowledge about technified breeding, and there is no processing plant at regional level due to the lack of knowledge about processing techniques (23).

The degree of acceptance of the livestock study increased to 80%, in contrast to Furquim et al. (24) who report that the knowledge of the actors of the beef CP about the System of Identification and Certification of Cattle and Buffaloes was relatively low, taking into account the cast of actors considered, being possible to identify a favorable discourse from 5.0% of the respondents against the negative evaluation in 33.0% of the answers. These results show that misinformation is an additional factor that explains the low adhesion to the system (24). This implies that the chain lacks coordination, organization, cooperation and articulation, which limits its performance and potential to generate development. It also limits the improvement in the quality of life of the agents involved in the chain, basically the rabbit producers that make up the primary link (25).

Certainly, the PPP is not fully integrated since the participating agents do not establish long-term relationships. Such is the case of livestock intermediaries, who do not have a fixed establishment, so their work is not registered or regulated in any way, offering livestock producers low prices for their products, keeping high profits in a short time, simply by being the link between other links in the chain and channeling the arrival to the final consumer, so that the greatest marketing margin is for retailers and wholesalers (26).

An adaptive segmentation strategy is proposed that responds to the life cycle of the product, introducing it initially in the segments that would recognize in the meat its nutritional benefits before the price, and during the growth and maturity stage of the product. It is proposed to permanently consolidate the positioning by benefit and expand the initial segmentation, going from a niche market to a socio-economic one, offering different presentations and varieties of the product according to the level of income, thus penetrating the entire market in all socio-economic strata (27); while the presentation of the products produced by semi-industrial companies is very different from that of industrialized products, due to the type of market to which it is directed (28).

CONCLUSIONS

The real difference in the productivity of livestock production chains, one compared to the other, lies in the way they manage their internal processes towards a better education of society, where the main strengths of their actors are centered on their experience in livestock management, possession of their own land for exploitation and their predisposition to trust productive institutions for the opening of local and regional markets; in such a way that the optimization of the means of communication contributes to an increase in the yield and quantity of harvested plots, scenarios that have a positive impact on these production chains.

As a weakness, it was identified that livestock producers do not have a good relationship with other producers, so they are unaware of trade policies, official prices and relevant legal procedures; thus, a low associativity associated with micro-parceling leads to a low volume of supply and a non-standardized production among producers, being at the same time the first cause that hinders the development of the livestock production chain.

Thanks to the development of livestock production chains, the social dimension of sustainable agricultural development in the district of Huando, Huancavelica has a sustainability index of 0.70, which corresponds to a stable system. There is a significant medium-weak relationship between livestock production chains and sustainable agricultural development in the district of Huando, Huancavelica.

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