

Value Chain of the Main Agricultural Products of Escárcega, Campeche, Mexico

Felix Alejandra Luna-Medina¹, María Del Carmen Gómez-Camal², Maximiliano Vanoye-Eligio^{3*}, Paula Viveros-Moreno⁴, Ludwin Jaime Estrada-Ramírez⁵

¹⁻⁵Tecnológico Nacional de México/ITS de Escárcega. Escárcega, Campeche, México.

¹ORCID: <https://orcid.org/0000-0002-1052-9253> , ²ORCID: <https://orcid.org/0000-0003-1693-2753>

³ORCID: <https://orcid.org/0000-0002-6438-9479> , ⁴ORCID: <https://orcid.org/0000-0001-7150-9152>

⁵ORCID: <https://orcid.org/0000-0002-5307-173X>

ABSTRACT

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The agricultural value chain is a fundamental analytical approach for understanding the organization, generation, and distribution of value in agri-food systems. The municipality of Escárcega, Campeche, has a strong agricultural focus based primarily on staple crops such as maize (*Zea mays* L.) and rice (*Oryza sativa* L.), which play a central role in the local economy and regional food security. The objective of this study is to analyze the structure and functioning of the value chain for Escárcega's main agricultural products through a comprehensive review of scientific and documentary literature. The results reveal a value chain dominated by primary production, with a low level of agro-industrial processing, limited producer organization, and a strong dependence on intermediaries for marketing. These conditions limit value capture by local producers. It is concluded that strengthening the value chain requires comprehensive strategies focused on productive organization, technological innovation, and access to differentiated markets.

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Corresponding Author:

Maximiliano Vanoye-Eligio

INTRODUCTION

Agriculture is one of the pillars of economic, social, and territorial development in Mexico, playing a fundamental role in food security, rural job creation, and the provision of raw materials for various agri-food industries (Detsch, 2018). In this sense, the agricultural value chain has become a strategic tool for understanding the sector's production dynamics, identifying bottlenecks, improving competitiveness, and promoting more inclusive and sustainable development (Silva et al., 2024; Reyna Espinoza, 2025). The agricultural value chain encompasses all activities, from input provision, primary production, processing, distribution, and marketing to final consumption, integrating multiple economic and social actors (Porter, 1985; Peña et al., 2008; FAO, 2014; Zamora et al., 2019). In Mexico, the agricultural sector exhibits marked productive heterogeneity, characterized by the coexistence of small-scale, traditional production systems and highly technified schemes oriented toward the national and international markets (Díaz-Bautista, 2003; Álvarez, 2025). This diversity is reflected in the different value chains, which vary in complexity, level of integration, access to technology, and degree of market integration. For example, some agricultural products, such as avocados, berries, and tomatoes, have managed to consolidate highly competitive, export-oriented value chains, while other staple crops face structural limitations related to production fragmentation, low value-added, and weak links with subsequent stages of the chain (SAGARPA, 2017; OECD, 2019).

The value chain approach allows for a comprehensive analysis of production and commercial processes, highlighting the importance of coordination among actors, chain governance, and the distribution of generated value (Peña et al., 2008). In the agricultural sector, this approach is particularly relevant due to dependence on natural factors, price volatility, seasonal production, and the vulnerability

of producers to climate and market risks (Baquero-Melo, 2017; Prócel Carrera, 2018). The FAO (2014) states that strengthening agricultural value chains is key to improving the incomes of small-scale producers, fostering technological innovation, and promoting sustainable production practices. In Mexico, one of the main challenges for agricultural value chains is the limited participation of primary producers in the higher value-added stages, such as processing and marketing. This leads to an unequal distribution of benefits and lower incomes for producers compared to intermediaries and large companies (Schwentesiús and Gómez, 2015). Furthermore, the lack of collective organization, limited access to financing, and the low adoption of modern technologies hinder the effective integration of small farmers into more dynamic and competitive value chains (Cárdenas Fontecha et al., 2024). On the other hand, national and international trade agreements have significantly transformed agricultural value chains. Consequently, these chains have been forced to adapt to increasingly stringent demands from consumers and international markets, which has increased the need for innovation, certification, and traceability in production processes (OECD-FAO, 2020). In addition to the above, agricultural value chains are of particular importance in Mexico, as many of them are located in rural regions with high levels of marginalization and poverty. However, for agricultural value chains to truly become drivers of development, it is necessary to implement comprehensive public policies that promote collaboration among producers, agribusinesses, research institutions, and markets, as well as equitable access to infrastructure, training, and financing (ECLAC, 2018). In this context, analyzing the value chain of agricultural products in Mexico is fundamental to identifying opportunities for improvement and designing strategies to increase the sector's competitiveness, reduce productivity gaps, and strengthen the inclusion of small and medium-sized producers. This literature review aims to analyze the structure, actors, limitations, and opportunities of the value chain for the main agricultural products in the municipality of Escárcega, Campeche, Mexico.

MATERIALS AND METHODS

The study employed a qualitative approach, based on a review of narrative and analytical literature. Scientific articles indexed in databases such as Scopus, Web of Science, and Google Scholar were consulted, as well as technical reports from international organizations and Mexican government agencies. Selection criteria included studies related to agricultural value chains, rural development, and agricultural production in Mexico and southeastern Mexico. The collected information was systematized and analyzed thematically, organized according to the main links in the value chain.

RESULTS AND DISCUSSION

A more detailed analysis of the municipality's production structure suggests that low vertical integration of the value chain is one of the main factors limiting value-added generation in the region. Specifically, the lack of infrastructure for agro-industrial processing and limited integration with regional processing companies mean that most agricultural production leaves the municipality in its raw state. This situation significantly reduces the possibilities for productive diversification, rural job creation, and the development of local production chains. According to data from the Agri-Food and Fisheries Information Service (SIAP, 2023), the municipality of Escárcega has agricultural land dedicated to staple crops such as corn and rice. In recent years, corn has represented a significant proportion of the municipality's planted area, with variable yields mainly associated with rainfed production systems. Rice cultivation, meanwhile, is one of the region's strategic products due to its economic importance and the presence of areas with favorable soil and climate conditions for its production. Based on the reviewed literature and regional statistical information, the main actors and functions within the agricultural value chain of the municipality of Escárcega were identified (Table 1). Furthermore, the literature review indicates that agricultural production in Escárcega is concentrated primarily on staple crops such as corn and rice, which represent the largest proportion of the planted area and production volume. The input link exhibits a high dependence on external suppliers, with limited access to certified seeds, quality fertilizers, and irrigation technologies. The production chain is dominated by rainfed systems with low levels of technology, which increases vulnerability to climate variability and leads to unstable yields. Agro-industrial processing is in its infancy and limited to primary processes such as drying, storage, and marketing of undifferentiated grain. Marketing is primarily carried out through intermediaries, commonly known as "coyotes," which reduces producers' bargaining power and their ability to capture value.

The results align with previous studies indicating that agricultural value chains in rural regions of Mexico are characterized by a fragmented structure and weak integration among their links. The limited organization of producers and restricted local processing limit competitiveness and territorial economic development. Several authors emphasize that strengthening agricultural value chains requires strategies focused on association, technological innovation, and access to differentiated markets. In the case of Escárcega, the results of the value chain analysis of agricultural products confirm that local production dynamics reproduce structural patterns observed at the national level, characterized by weak articulation among the production, processing, and marketing links. As various studies indicate, primary producers continue to participate mainly in the initial stages of the chain, where the least added value is generated, thus limiting their capacity to improve income and living conditions (Schwentesiús & Gómez, 2015; Rello & Morales, 2002). In Escárcega, this situation is exacerbated by the predominance of small and medium-scale production units with limited access to infrastructure, financing, and technology. One of the most significant issues identified is the heavy reliance on

intermediaries for marketing agricultural products. While these actors play a crucial logistical role by connecting producers to regional and national markets, they also concentrate a significant portion of the economic value generated, reducing farmers' profit margins. This phenomenon aligns with the findings of the FAO (2019), which indicates that the lack of collective organization and direct marketing mechanisms weakens producers' bargaining power and deepens the asymmetries within the value chain. In the case of Escárcega, the limited presence of local agro-industries further restricts opportunities for raw material processing and rural job creation. Similarly, the low adoption of value-added processes, such as primary processing, differentiated packaging, and quality certification, hinders the competitiveness of the region's agricultural products. Furthermore, technological and training gaps persist in Escárcega, restricting the adoption of productive and organizational innovations. This situation aligns with the arguments of Kaplinsky and Morris (2001), who emphasize that strengthening intermediate links is key to achieving a more equitable distribution of value. On the other hand, the analysis also reveals strategic opportunities for strengthening agricultural value chains in the region. Escárcega's productive diversity and agro-ecological conditions offer significant potential for developing products with differentiated attributes, such as those linked to sustainable practices, local markets, and short supply chains. Recent studies indicate that sustainability-oriented value chains not only improve economic performance but also contribute to environmental conservation and territorial development (FAO, 2020). In this sense, incorporating sustainability criteria can become a key factor in improving regional competitiveness. From a public policy perspective, these findings reinforce the need to design comprehensive strategies that promote collaboration among the various actors in the value chain. Gereffi et al. (2005) argue that value chain governance is central to determining who controls production processes and how benefits are distributed. In the case of Escárcega, strengthening producer organizations, accessing financing programs, and establishing links with academic and research institutions could contribute to improving the coordination and efficiency of the chain. As a general observation, it is noted that developing more inclusive agricultural value chains in Escárcega, Campeche, requires not only investments in infrastructure and technology but also changes in organizational and governance structures. Integrating producers into higher value-added stages, along with promoting fairer and more sustainable marketing strategies, is fundamental to boosting rural development and reducing structural inequalities in the regional agricultural sector. Finally, the study highlights the need to promote territorial development strategies based on strengthening local capacities, institutional coordination, and fostering agri-food innovation. Promoting associative models, producer cooperatives, and direct marketing networks could significantly contribute to improving value distribution within the production chain.

Table 1. Actors and functions within the agricultural value chain of the municipality of Escárcega.

Value Chain Stage	Main Actors	Functions
Input Supply	Supplier companies, agricultural distributors	Supply of seeds, fertilizers, agrochemicals, and machinery
Primary Production	Local agricultural producers	Sowing, agronomic management, and crop harvesting
Collection and Storage	Intermediaries, collection centers	Purchasing, temporary storage, and logistics
Processing	Mills, small agro-industries	Basic processing, cleaning, drying, and packaging
Commercialization	Intermediaries, regional markets	Distribution and sale of products in local and regional markets

CONCLUSIONS

The literature review reveals that the value chain for the main agricultural products of Escárcega, Campeche, is dominated by primary production, with low levels of processing and limited integration into higher-value markets. These conditions limit income generation and the competitiveness of the local agricultural sector. However, the analysis also identifies clear opportunities to strengthen the value chain through producer organization, the incorporation of value-added processes, and the design of targeted public policies. This study provides a solid conceptual foundation for future empirical research and for the formulation of territorial rural development strategies.

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