

Sustainability in the global blueberry value chain between Mexico and China

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Abstract

Sustainability has three guiding principles: environmental integrity, social equity and economic prosperity that are integrated into the triple bottom line framework. Being sustainable means integrating environmental, social and economic practices into the processes of the global value chain. This research aimed to analyze sustainable practices and implementation drivers in the blueberry industry. The global blueberry value chain between Mexico and China was used as a case study. Information was collected through semi-structured interviews, field visits and secondary information sources. The analysis allowed the identification of the existence of three types of drivers for the implementation of sustainable practices: government, consumers and non-governmental organizations. In addition, the use of genetics and technology as an environmental practice, compliance with labor laws as a social practice and cost-quality control as an economic practice were identified. And it was determined that the certifications are used as a verification tool. It was concluded that the global blueberry value chain between Mexico and China follows market pressures and economic practices but works on initiatives to improve its environmental and social practices.

Keywords: environmental, global value chain, economic, social.

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Sustainable global value chains

One of the main challenges faced by global value chains (CGVs) is to design production and business models that are capable not only of meeting consumer demands, but also of being sustainable (Silva *et al.*, 2019). Sustainability has three guiding principles: environmental integrity, social equity and economic prosperity that are integrated into the triple bottom line (TBL) framework. By implementing TBL in a CGV, companies can move towards sustainable management, which includes concern with profits, people and the planet (Elkington, 2013).

Companies achieve environmental integrity by ensuring minimal environmental damage in their operations, social equity through social responsibility initiatives and economic prosperity through value creation (Withiphakorn *et al.*, 2019). The environmental aspect is addressed through the efficient use of resources, recycling and the reduction of waste and emissions. The social aspect through compliance with human rights and labor laws, and the impact on local communities. The economic aspect is achieved through economic performance according to operational indicators (Kovács and Illes, 2019).

The balance between the economic, environmental and social aspects has become increasingly important for companies facing social, regulatory and market pressures (Shah and Siddiqui, 2019).

The pressures, which are often driven by a large number of stakeholders (customers, government and advocacy groups), motivate companies to adopt sustainable practices (D'Souza *et al.*, 2020). Consequently, sustainable practices based on the dimensions of TBL, show the efforts of the companies that integrate the CGV, not only to focus on the profitability they can obtain, but on the environmental, social and economic impact as a whole.

Although several articles have approached the sustainable management of the CGV, so far, the three dimensions have not been analyzed in the blueberry industry, so it is expected to find both economic and environmental and social practices driven by consumers. This research aimed to analyze sustainable practices and implementation drivers in the CGVAMCh, to know who promotes practices in favor of sustainability and what sustainability practices are carried out in the blueberry industry.

The case of the global blueberry value chain between Mexico and China

The research is exploratory in nature. It was carried out through a case study, which studied five refrigeration establishments and 12 properties authorized in 2019 by the National Service of Health, Safety and Agrifood Quality (SENASICA) and the general administration of quality supervision, inspection and quarantine (AQSIQ) for the export of fresh Mexican blueberry to China (AGA, 2019). Information was collected through semi-structured interviews, field visits and secondary information sources (Yin, 1998). Information on sustainable practices and implementation drivers was analyzed in relation to the literature on the dimensions of TBL.

The analysis is based on information obtained from refrigeration establishments belonging to the Berries Paradise marketer and properties belonging to independent producers that are connected to the same marketer; these participants were selected because both meet the requirements to participate in the CGVAMCh. The most important source of information were 20 semi-structured interviews with company workers and experts from the blueberry industry, who were presented with a list of sustainable practices, which was developed through the analysis of the literature, linked to each dimension of TBL (economic, social and environmental) and which were complemented by field visits and secondary information.

Global value chain

A global value chain (CGV) links businesses and consumers through production and trade networks, offering companies from developing countries opportunities to integrate into the global economy (Gereffi, 2015).

The literature review shows that the analysis of a CGV is particularly useful for understanding the overall dynamics of an industry, in four dimensions: 1) input-output structure of a product linked to a sequence of value-adding activities; 2) geographical consideration of the spatial dispersion of a production or distribution network composed of companies of different sizes and types; 3) governance structure showing the relationship of authority and power and the type of escalation that is allowed; and 4) institutional context (Gereffi and Fernandez-Stark, 2011).

However, in recent years, CGV is not only studied through the analysis of the role played by the companies that integrate it, where they are located, what activities they carry out, how and who organizes the chain, how activities are improved and what regulation governs the chain, but also through their sustainable practices. CGV is sustainable if it carries out environmental, social and economic practices included in the interactions between its links.

Sustainable practices

The global blueberry value chain between Mexico and China consists of three main links: production, marketing and distribution. Sustainable practices in the context of this CGV relate to the TBL framework, which is based on the integration of social, environmental and economic practices, which help to create value. The sustainable practices, identified in the CGVAMCh, which have a positive impact on the image of the companies that integrate it (producers, marketers and distributors) and of the blueberry industry in general, therefore focus on the environmental, social and economic aspect (Figure 1).

On the environmental side, cleaner production practices stand out. Some of the environmental actions found correspond to the use of new ‘Sophia’ varieties, the planned elimination of agrochemical containers, the reduction in the use of insecticides to protect pollinators and beneficial insects, the design of the production process incorporating the principle of efficiency in the use of water (drip irrigation system, substrate and tunnels), the acquisition and use of molecules allowed in the export market that comply with the consolidated sanitary registration (RSCO) and

the optimal use of them, and a good integrated phytosanitary management. Work is done on practices for the measurement of water footprint, the use of precision technologies and the use of biodegradable packaging.

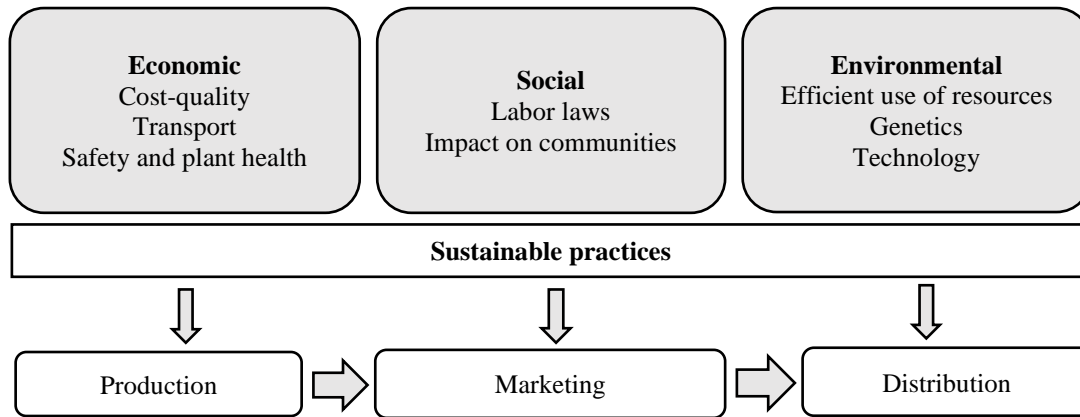


Figure 1. Economic, social and environmental practices in the CGVAMCh.

Regarding the social aspect, companies seek to relate to the surrounding communities by developing social projects (support for community initiatives for the improvement of infrastructure, sports activities, etc.), follow national and international laws against labor exploitation and child labor, generate employment in the local community (harvesting, for instance, is a labor-intensive activity requiring between 8 to 10 day laborers per ha), decent income (three to six minimum wages at harvest), good working conditions (safe and clean workplaces), and donate fruit to charities.

On the economic side, the companies that participate in the CGVAMCh maintain their businesses profitable through processes that allow them to respond quickly to the needs of their customers and market changes, while controlling the costs and quality of the product and thereby obtaining growth in their sales, profits and market shares. Some activities that allow such control are: the optimization of loads and transport routes by reducing times or costs, the use of adequate temperatures in storage and transport, the inspection of packing and packaging material to ensure that they meet all quality and safety requirements and the verification of the product in compliance with quality, safety and phytosanitary requirements to avoid rejections and losses.

The main barriers to implementing sustainable practices are: the cost of implementation, the resources available and the knowledge available; however, the adoption of such practices is inspired by the values and beliefs of each actor that integrates the CGVAMCh. Sustainable practices used in the industry are promoted by the National Association of Berry Exporters (Aneberries); through the delivery of courses on issues of environmental and social sustainability, reinforced by the international fruit and vegetable alliance for the promotion of social responsibility (Ahifores) and directly supported by the marketer, which has become more active in the promotion of sustainable practices to then link them to its brand and thereby improve its competitiveness and commercial value.

Implementation drivers

The economic, social and environmental practices implemented in the global blueberry value chain between Mexico and China are driven by various actors exerting different pressures (Figure 2).

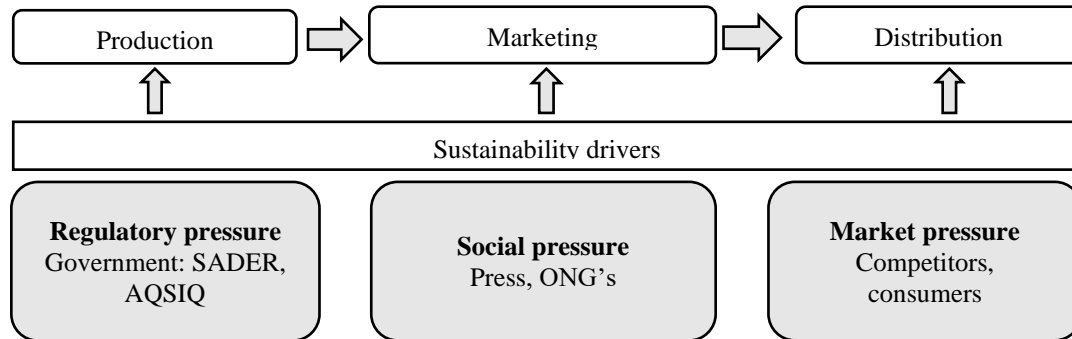


Figure 2. Regulatory, market and social pressures in the CGVAMCh.

Government agencies such as the Secretariat of Agriculture and Rural Development (SADER) in Mexico and the General Administration of Quality Supervision, Inspection and Quarantine (AQSIQ) in China exert regulatory pressure on producers and the marketer to comply with the established requirements. The regulatory pressure in the global value chain is related to the verification of harvesting, packaging, storage and transport facilities, to verify that they comply with the guidelines established in the protocol of phytosanitary requirements for the export of fresh blueberry fruits from Mexico to China.

The market pressure exerted by consumers on sustainability issues increases the recognition and reputation of a brand when the companies that integrate the CGVAMCh meet their expectations, and the pressure exerted by competitors gives them learning opportunities on new sustainability practices. Therefore, market pressure drives companies participating in the CGVAMCh to adopt social and environmental sustainability practices that allow them to gain a competitive advantage over their competitors and improve their relationship with consumers.

Social pressure, exerted mainly by NGOs and the media, focuses its attention on how the companies participating in the CGVAMCh manage environmental problems (water resource management, waste, inputs, pesticides, etc.) and workers' rights (housing, health, training, wages, etc.) and increase public awareness.

Certifications

Although companies participating in the CGVAMCh may employ economic, social and environmental practices, certification schemes have a growing impact on their ability to generate and demonstrate them. The companies that integrate the CGVAMCh are governed and evaluated by certifications that control sanitary and phytosanitary conditions, traceability, the use of pesticides, etc. For example, global good agricultural practice (Global GAP) includes compliance

criteria for all stages of production, from preharvest activities, such as soil management and use of fertilizers, to postharvest activities such as packaging and storage, including safety, environmental, and worker welfare issues.

The companies that integrate the CGVAMCh evaluate the cost-benefit offered by the certifications, if they find an increase in demand, a reduction in failures by strengthening quality and safety and an improvement of production and marketing processes they will maintain it; and although the certifications can give an indication of the state of sustainability, they are only a guide, the practices implemented so far indicate that the approach of the CGVAMCh towards sustainability follows market pressures and economic practices, which allow them to access the Chinese market.

Conclusions

The main reason why the companies that integrate the CGVAMCh are interested in the topic of sustainability is to ensure compliance with the requirements of their customers. However, this allows them to carry out actions that result in better social, economic and environmental impacts. Regarding the economic aspect, companies promote their own growth and income, in the social aspect, they help to improve the standard of living of the community where they settle and that of their employees, in the environmental aspect, they reduce the consumption of resources and pollution. Certifications are important for blueberry production and trade, as they provide assurance of compliance with labor, environmental or commercial standards, which allows them to maintain their commercial position. In addition, other strategies that allow the opportunity to differentiate and do more with less are implemented.

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