

Artículos de Investigación

Prospects of the Agro-Industrial Cluster for the Commercialization of Bananas. Case Study in Ecuador*

Perspectivas del cluster agroindustrial para la comercialización del banano. Estudio de caso en Ecuador

José Armando Pancorbo Sandoval^aDOI: <https://doi.org/10.11144/Javeriana.iued27.paic>

Universidad Técnica Equinoccial, Ecuador

ORCID: <https://orcid.org/0000-0002-8082-6720>

Jorge Luis Tinoco Gonzáles

Universidad Técnica Equinoccial, Ecuador

ORCID: <https://orcid.org/0000-0003-3370-084X>

Received: march , 28, 2022

Accepted: august , 04, 2023

Published: december , 15, 2023

Sonia Emilia Leyva Ricardo

Universidad Técnica Equinoccial, Ecuador

ORCID: <https://orcid.org/0000-0002-4556-2301>

Sebastiana del Monserrate Ruiz Cedeño

Universidad Técnica Equinoccial, Ecuador

ORCID: <https://orcid.org/0000-0002-9887-9222>

Abstract:

The objective of this study is to identify the feasibility prospects of a cluster to be implemented as the business development model of a business association in the La Concordia region of Ecuador based on a logistic model that enables the appropriate use of resources. The methodological design of this study comprises the application of surveys, interviews, the geo-marketing technique, and the open space model, thus establishing a procedure that, given qualitative and quantitative variables, enables mapping production and commercialization areas and identifying an appropriate location for constructing a collection center. The model proposed aims to leverage the advantages of the chosen location, reduce the technological gap, and promote technological innovation in business management to enhance productivity and competitiveness in the region.

Keywords: market study, general management, business association, business organization, technological innovation.

Resumen:

El objetivo de este estudio es identificar las perspectivas de factibilidad de un cluster para ser implementado como modelo de desarrollo empresarial de una asociación empresarial en la región de La Concordia, Ecuador, basado en un modelo logístico que permita el uso adecuado de los recursos. El diseño metodológico de este estudio comprende la aplicación de encuestas, entrevistas, la técnica de *geo-marketing* y el modelo de espacio abierto, estableciendo así un procedimiento que, dadas variables cualitativas y cuantitativas, permita mapear las áreas de producción y comercialización e identificar una ubicación apropiada para la construcción de un centro de acopio. El modelo propuesto pretende aprovechar las ventajas de la localización elegida, reducir la brecha tecnológica y promover la innovación tecnológica en la gestión empresarial para mejorar la productividad y competitividad de la región.

Palabras clave: estudio de mercado, dirección general, asociación empresarial, organización empresarial, innovación tecnológica.

Introduction

The current trends regarding business clusters focus on the possibility of creating economies of scale and achieving collective efficiency by implementing complementary processes for managing supplies, raw materials, and transport [1].

Author notes

^a Correspondence author: pancor49@gmail.com

Generally, clusters focus on strengthening commercial relations that generate competitive advantages for the business conglomerate as a whole [2, 3].

Moreover, the competitive advantage of a regional strategic cluster is defined by the creation of business-to-business links according to individual capabilities and functions and the quality and strength of the economic and institutional relations related to business management [4]. This is achieved through a process-based horizontal integration [5, 6].

Ecuador is a major exporter of agricultural products, among which bananas are one of the most important staples. In 2019, the provinces that generated the greatest number of local sales were Guayas (\$ 15.5 million dollars), Los Ríos (\$ 5.7 million dollars), and El Oro (\$ 3.8 million dollars). These three provinces together accounted for 88.0% of domestic crop product sales. From 2018 to 2019, Morona Santiago reported 84.1% growth in sales, with similar trends in El Oro, Cañar, Cotopaxi, Manabí, Napo, Santa Elena, and Santo Domingo de los Tsáchilas [7].

Provinces such as Santo Domingo de los Tsáchilas, which specialize in banana farming, place greater emphasis on quality than quantity. This is typical of the banana market in Ecuador, which is also affected by a high degree of risks such as uncertain weather conditions, pests, diseases, global market instability, price variations, and even certain government policies that pose challenges to guaranteeing a supply of agro-industrial products at the required quality levels. That is why agro-industrial systems need to improve their responsiveness and overcome disruptions inherent in banana farming [3]. However, in many cases, it is impossible to find solutions conducive to integrating the value chain of a given agricultural product during its life cycle [8].

The development of farming in Ecuador is characterized in particular by few or the lack of predictions on the most suitable crops according to soil characteristics and logistic analyses that facilitate the optimal use of the technical resources available to companies. That is why the object of study of this research is a business association of the La Concordia region that mainly produces bananas.

In a preliminary diagnosis, it was determined that the business association under study does not fully implement the various formulas that influence farming and commercialization activities. Consequently, the objective of this article is to identify the feasibility prospects of a cluster as the business development model of the aforementioned association.

This article consists of three sections. The first section is a review of the theory of the formation of clusters as a strategic business model. The second section describes the methodology used. Finally, the third section describes the most important results of the case study.

Theoretical review

The growing need of both public and private actors to be able to make decisions on and manage a greater number of territorial variables in shorter periods of time and in complex, highly competitive environments compels us to reconsider some of the territorial analysis instruments normally used by local governments and private companies [1].

Logistic services are seen as a strategic component for the distribution of goods [2]. It is evident that the availability of quality services is directly related to the selection and evaluation of providers, among other variables [3]. However, there are other critical logistics-related problems that must also be considered, such as the identification of techniques that allow greater efficiency in transport and storage management. In this regard, it is very important that the areas designated for the storage and processing of agro-industrial products are well located [4].

According to Díaz Pinzón et al (2017), the incorporation of information and communications technologies (ICT) in organizations allows for greater access to information. It facilitates access to

information that was previously difficult to obtain and minimizes the time required to access such information, facilitating quick retrieval and delivery, which facilitates timely decision-making.

In this regard, there is no doubt that the use of new ICT accelerates the response of actors and facilitates the decision-making process in a dynamic environment [1]. As Heywood, Cornelius, and Carver (2006) [6] assert, change is happening so fast that it is a defining feature of modern society, so the adoption of fast and agile working systems is necessary to promote the socioeconomic and territorial development of local entities and their environment. The introduction of new technologies in an organization can strengthen alignment with the organization's strategy. This strategic coherence can help improve the organization's overall efficiency, creativity, flexibility, and learning and strengthen the organization's global alliances and their independence from the ICT department [5].

The accumulation of technological knowledge that precedes breakthroughs and the use of new communications technologies have made knowledge available globally and almost instantly. However, this is less visible in the Ecuadorian agro-industrial sector. This phenomenon has contributed to the perception of knowledge as one of the factors influencing production [7].

The authors have drawn from previous studies [8, 9, 10, 11] and, after consulting the most recent literature, decided to focus their research on the use of geomarketing tools to identify valid solutions to the logistical problems that affect the agro-industrial activity of the cooperative targeted by this study.

Dacom (2009) identifies geomarketing as a discipline based on the existence of a set of techniques for analyzing a business from a new perspective that is critical for decision-making. From a geographic perspective, the use of cartography, together with spatial and statistical analysis tools and digital maps, contributes to the visualization of markets, customers, and corporate data, allowing effective and efficient decision-making [12]. Geomarketing is useful for studying the competitive environment of a given area where there may be an excessive number of similar companies, which may compete with one another [13]. Geomarketing helps companies determine the probability of growing where they have not yet devised any distribution strategy and will prevent them from making mistakes, resulting in wasting money and time (Vázquez, 2010).

The use of cartographic instruments [14] with statistical tools makes it easier for marketers to carry out geographic analyses of sales to solve problems that may arise in the commercialization area, such as identifying and locating customers? Recent developments in Big Data technology and advanced data analytics make it possible to manage large volumes and more types of data that were previously unthinkable. These technologies, whose unit costs are continuously decreasing, constitute a much more efficient and agile tool for businesses, including agribusinesses [15]. At the same time, the analytical capacity needed to extract as much intelligence as possible from such data continues to improve and is now more accessible to a greater number of users [16]. These technologies are sophisticated, have wider reach, and continues to grow and penetrate all sectors and activities.

The agricultural sector is not only part of this trend, but it is also one of the areas that could be very favorably impacted by a strong commitment to Big Data technology and advanced analytics. The sector is subject to considerable global competition involving a wide variety of agents in the production and distribution chains that must continuously improve their efficiency levels. These often open-source technologies are capable of operating with multiple variables and are capable of automating many operations and decisions, and depend on statistics to guarantee successful results [15].

The first step to use these technologies is to digitize many of the sector's operations, leaving traces, in the form of data, of the decisions and operations related to agricultural production, processing, manufacturing, storage, marketing/commercialization, and distribution of agro-food products. Similarly, implementing appropriate storage and processing systems is important in farming, so it is recommended that farming associations, like the object in the present study, consider establishing collection centers for the following purposes: 1) leverage precision agriculture machinery and infrastructure, 2) optimize the transformation and

handling of agro-food products, 3) improve quality, 4) optimize planning and use of the resources required in the transformation process, 5) improve logistics and the distribution of agro-food products by means of a better analysis of logistic processes, and 6) analyzing trends to adapt the marketing and commercialization of agro-food products by determining and segmenting demand, aligning it with supply, anticipating market fluctuations and imperfections to the organization's advantage.

The literature reviewed for this study references six interesting farming cluster projects, implemented as Public-Private Partnerships (PPP), for melon and apple farming in Brazil, pineapple and lemon in Mexico, raspberry in Chile, and sugarcane in Colombia. Mistrust due to the opportunistic behavior of some cluster members was identified as the main barrier to the cluster's consolidation. Another finding was that most of actors in cluster chains identified government support and intervention as an important factor and a guarantee of control.

In Mexico, a previous study [18] pinpointed the main problems of the tequila-agave cluster through a qualitative exploratory study. Madoery (2009) carried out a case study in Rosario, Argentina to evaluate the scope of government policies targeting agro-industrial conglomerates based on primary and secondary information from the public, private, and academic sectors.

Other authors, such as Geldes, Felzensztein, Turkina, and Durand (2016) [19], analyzed the collaboration between various companies to conduct the marketing of an agro-industrial cluster in Chile, as the positive external impact of clusters in this area has rarely been explored. This study measured the variables of proximity and cooperation, which are involved in collaborative marketing activities. It must be noted that the Development Bank of Latin America [20] has initiated an ambitious program to promote agro-industrial clusters in Bolivia, Ecuador, Peru, and Venezuela. The promotion of these clusters was entrusted to the Center for International Development (CID) of Harvard University and Latin American Center For Competitiveness And Sustainable Development (CLACDS). The initiatives implemented by the Corporation for Export and Investment Promotion (CORPEI in Spanish) and the Ministry of Industries of Ecuador are also noteworthy.

Materials and methods

Identifying the feasibility prospects for an agro-industrial cluster begins with the analysis of the spatial information on the sector. This study requires the use of digital inputs such as orthophotography to guarantee the veracity and quality of the information obtained. A Garmin 60csx satellite station with a GA38 high-profile outdoor antenna were used to collect data on the properties of the members of the association studied.

For data collection, the authors departed from a specified distance relative to the properties so that the data would be more homogeneous. With the help of a vehicle and the satellite station on TRACK mode, the authors traced the route of the road to the properties and saved the data. Afterwards, the authors used the data collected to calculate many variables in terms of distance and road conditions. Relevant information regarding the condition of the roads and the main access driveways and byways was collected en route to each property.

The objective of the first topographic survey was to determine the relative position of one or more points on a horizontal plane. The horizontal distances and horizontal angles or directions were measured. The method used in this case is known as planimetry. The properties and the results of the topographic survey were analyzed through georeferenced maps of the area in AutoCAD and the design of the plan. Additionally, qualitative and quantitative variables were identified to establish the possible location of the collection center. The center's dimensions and the daily load balance from the farms to the port were also calculated.

To identify the prospects for the development of the association's business, the authors interviewed the members of the association's board of directors who had worked in the agro-industrial sector for more than

ten years. The weaknesses, strengths, opportunities, and threats to implementing a cluster in the association were then identified. The main objective of the interviews was to learn the associates' opinions on the possible application of clusters as a business management model in their association. Interviews were conducted at the association's headquarters in an open and transparent atmosphere for four hours in the morning and two hours in the afternoon. The associates were divided into groups, and that division was maintained throughout the research process.

Results

After applying the open space technique [21, 22], several problems were identified with the aid of the association members. There is no updated record of the soil characteristics and the farming techniques used. There are difficulties with the conservation and distribution of agricultural products. Organic banana production continues to be viewed as a problem instead of an opportunity in terms of production costs. The decisions on crop changes are based on experience and not on technical studies. Furthermore, integrating companies within the same region of the association is not regarded as a good strategy to collaborate to provide services that would improve banana product quality and companies do not perceive the benefit of cooperation. Based on the initial diagnosis and the information obtained from the application of the open space technique, the authors identified a company that produces banana snacks as a potential partner for collaboration.

Application of geomarketing technique.

The georeferencing results were reflected in maps representing the properties of the associates, the access roads to those properties, and the main roads in Concord city, as shown in Figure 1 (the areas where organic farms are located are depicted in green). Organic farms are represented with yellow (Figure 2).

Roads are a guide for data management, visualization, and spatial representation. Therefore, they can be regarded as a strategic instrument for territorial management, planning, decision-making. This is part of the development strategies for identifying an optimal location for a collection center. The association and its collaborators are also located on the map (Figure 3).

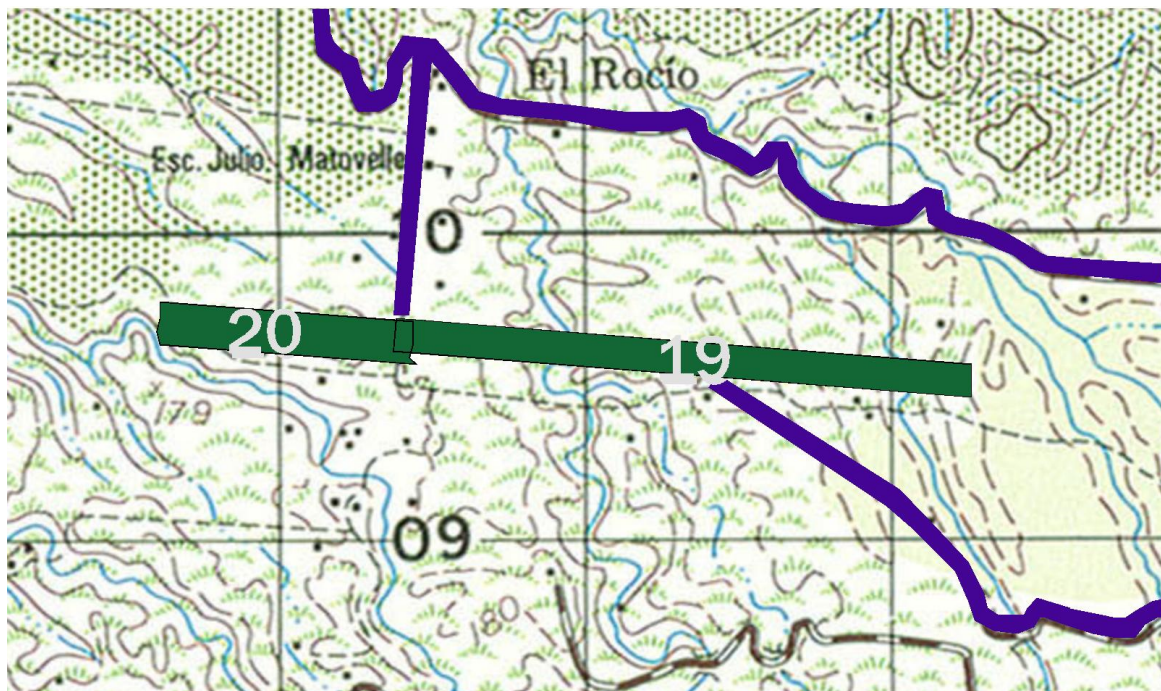


FIGURE 1.
Polygon
Source: Tinoco, 2017.

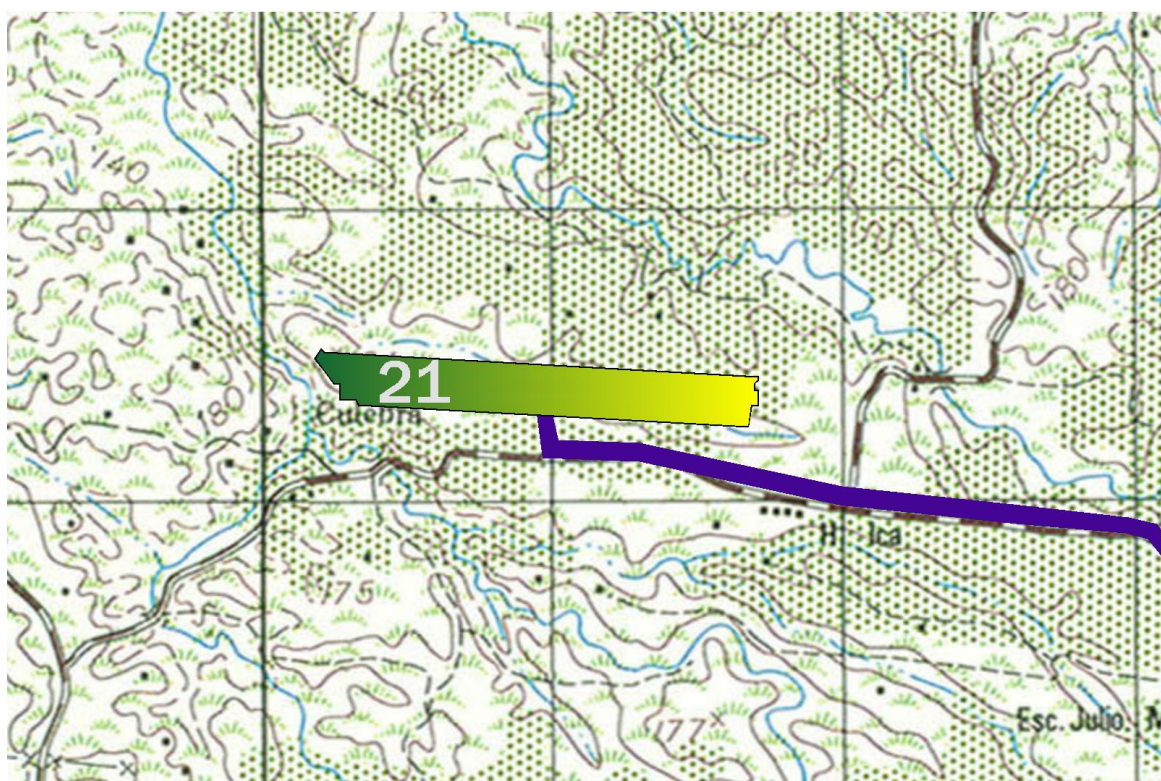


FIGURE 2.
Location of the association
Source: Tinoco, 2017.



FIGURE 3.
Differentiation of organic farms
Source: Tinoco, 2017.

Out of the total number of farms identified, 78% are classified as nonorganic and the rest (22%) as organic (Figure 4). The latter have a total land area of 389 hectares, in which the main crop is bananas (Figure 5). There is no homogeneous representation, as farmer 4 owns 27% of the total number of hectares. Farmer 2 accounts for 20%, farmer 5 for 12%, farmer 8 for 14%, farmer 1 for 11%, and the others range between 3% and 7%.

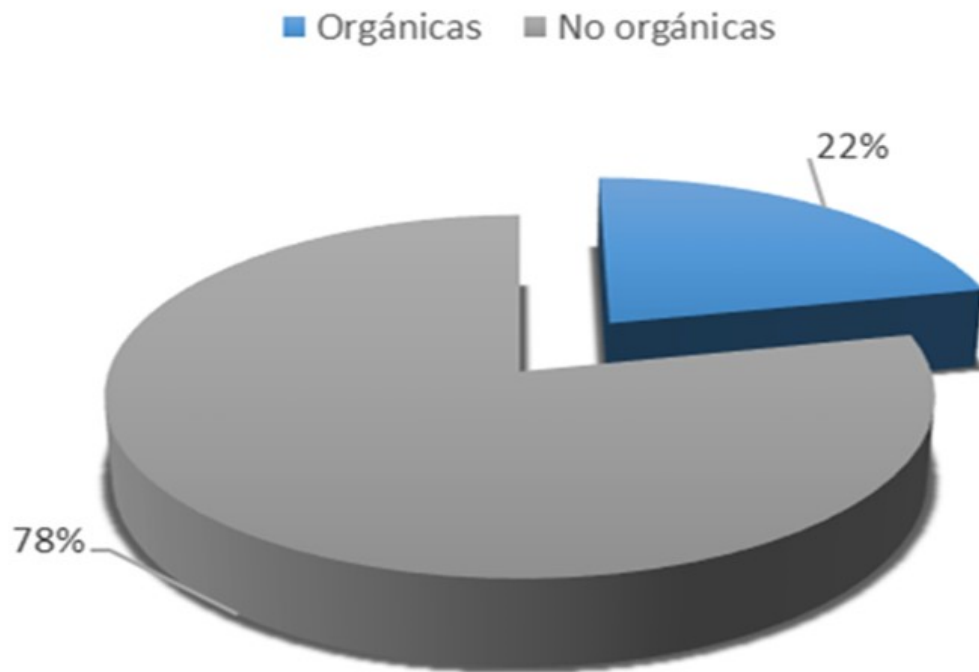


FIGURE 4.
Classification of organic and nonorganic farms
Source: Tinoco, 2017.

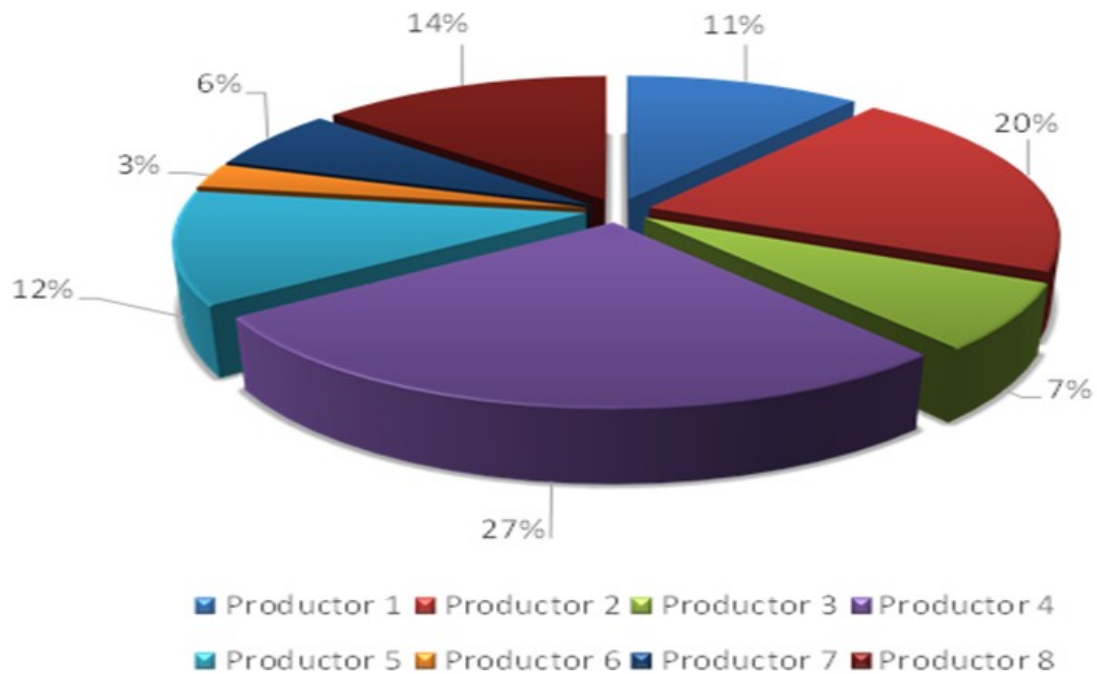


FIGURE 5.
Performance of the association's farms
Source: Tinoco, 2017.

The total yield of the farms ranges between 1,300 and 2,860 per hectare, with an average of 2,049.25 per hectare. When comparing the productivity of organic farms with that of nonorganic farms, only one farm ranks below the average, with a yield of 1,820 per hectare and a deviation of 229.5 per hectare.

Proposal of a collection center for the conservation and distribution of banana.

The feasibility of establishing a collection center for the conservation and distribution of bananas was verified. The creation of an alliance between the Chifles company and the association was conceived as the first step toward creating an agro-industrial cluster.

The application of geo-marketing techniques made it possible to identify the closest and most distant farmers relative to the area that was chosen for establishing the collection center, which is 9 km from the Concordia-Pedernales highway. Various parameters or characteristics were considered to determine the location of the facility such as the terrain characteristics, topography, proximity to the raw materials and residential areas, the availability of labor force, road and transportation accessibility, the culture of the population, the availability of general services, the possibility of people entering the area selected, demographics, the proximity to other businesses, the local economy, and other cities.

A. Having La Concordia canton nearby is an advantage. The selected location is a good place to source a variety of agricultural supplies and other materials needed to operate the collection center and administrative facilities.

B. Most of the collection center workers reside in La Concordia canton, which is crucial because they have access to a variety of means of transport to go to their workplace. This enables workers to save time and transportation costs.

C. The quality of public services, quality of life, and other variables, such as access to basic utilities, such as drinking water, electricity, internet, and mobile phone and telephone services, were analyzed to select the most economical location for the collection center.

D. To understand the availability of the labor force, whether there was public transportation (e.g., bus routes, taxi cooperatives, motorcycle taxis) available for workers' mobility.

E. Assessing road quality, which includes the transport of farms' products to the collection center and the movement of trucks taking containers to the nearest port, is critical to understanding the availability of access roads.

F. Regarding legislation and applicable government regulations, to implement the collection center project, it is necessary to apply for relevant permits from the autonomous government (GAD) of La Concordia canton. It has been indicated that the collection center must be built outside the urban perimeter of La Concordia canton in the UAPA5H2 area (Agricultural Production Unit) so that the relevant land use permits can be obtained.

The location proposed for the collection center is based on the fact that it is a strategic place for efficient operation in terms of logistics, transportation, access roads, and proximity to the Concordia district. The area suggested has a two-way road with two lanes that is in excellent condition and can be accessed by all the farms in the association. The collection center would be close to the urban area of La Concordia, which facilitates access to the supplies needed on plantations and to basic services, including mobile phone service. In addition, the price of the land of the proposed location is not as high as other places (e.g., on the La Concordia-Santo Domingo highway) initially proposed by the associates as the most logical location. Furthermore, the location is at a minimum distance from the urban center (8 km), which is required by the GAD of La Concordia to grant the operations permit for this type of facility.

The collection center will be the main node from which added values will derive for the generation of potential products obtained from the banana residues collected, which account for 0.01% of the collection center's daily production. Therefore, companies located in the city of La Concordia could specialize in products such as banana flour or rachis fiber, which produces an ideal construction material when mixed with concrete that can reduce construction costs. This is just an example of some of the byproducts that could be derived to improve the banana value chain and enhance the effectiveness and efficiency of its business management. This encourages the transformation of farming into an agro-industrial process, which would contribute to the positioning of La Concordia city as an agro-industrial destination by using the waste of the collection center in new ways to generate added value. Figure 6 proposes a diagram of the possible services derived from the collection center.

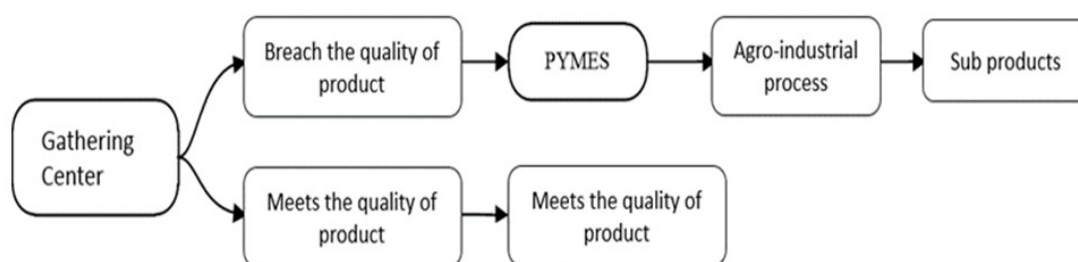


FIGURE 6.

Business cluster scheme

Source: Made based on Tinoco, 2017.

The collection center will use trucks with a capacity ranging from five to seven tons, together with trailers. Goods will be transported in pallets or directly in boxes. Six containers will be moved on a daily basis, which can carry an average of 6,600 boxes, each weighing from 42.5 to 43 pounds. If containers are exported to North America, then 960 boxes will be shipped grouped in 20 pallets. If the destination is Europe, then 1,080 boxes will be shipped in 64 pallets. In the case of Russia, which is the most distant destination, 1,200 boxes will be shipped without organizing them in pallets because the journey is longer and the cargo space must be optimized. It is evident that each container can carry at least 48 pallets.

The amount of waste generated is 0.01% of the total amount, which means that 14 boxes of waste resulting from maturation will be produced per week. This favors the transformation of banana farming into an agro-industrial process, which would contribute to the positioning of La Concordia city as an agro-industrial destination by reusing the waste of the collection to generate added value. From another perspective, if no collection center is set up, then there is a risk of contamination due to the mixing of products in the farms. This topic is an avenue for future research.

The feasibility prospects of forming a cluster were identified based on the association's weaknesses, strengths, opportunities, and threats (Table 1).

TABLE 1.
Identification of the weaknesses, strengths, opportunities, and threats of the case under study

STRENGTHS	WEAKNESSES
Existence of national and international organizations with proven experience in the foreign trade of organic bananas Availability of labor force Reputation as one of the best in the world	Inappropriate communication channels between some sectors Low productivity Farmers' lack of market knowledge Lack of infrastructure in packing centers and poor road conditions in some areas Failure of the Organic Banana Working Commission to efficiently promote exports Limited state support Minimal incentives to scientific research and technical assistance
OPPORTUNITIES	THREATS
Elimination of intermediaries Consolidation of the ASSOCIATION brand Permanent demand with a tendency to grow in the case of organic bananas, in part created by retailers specialized in organic food	Existence of non-standardized quality control regulations, which causes discrepancies between farmers and buyers Adverse climatic events such as El Niño and floods The fact that the European Union does not maintain its policies on banana imports Insufficient supply of organic fertilizers Existence of new competitors Variability of international prices

Source: Own elaboration.

With regard to the possibility of recovering investment in the construction of the collection center and the resources used, the prospects are positive. This, in addition to other factors, justifies the investment.

Discussion

The tools applied in this study make it possible to identify the lack of organizational strategies within the banana value chain, which consequently affects the effectiveness and efficiency of business management. There are organizational barriers that impact the agro-industrial process, such as farmers' lack of knowledge of the market and the lack of multidisciplinary work between the entities involved in the aforementioned process.

Several studies on the application of agro-industrial clusters have been conducted. For example, in Almería (Spain), there is an intensive horticulture cluster whose competitiveness consists not only of the availability of exceptional territorial resources but also, increasingly, certain factors of advancement, such as specialized personnel, contextual knowledge, research and development infrastructures, training centers, the accumulation of experience, technological and productive innovation, and a favorable institutional framework [23]. In the case of the Tecomán cluster (Colima, Mexico), although the degree of integration between raw materials and industrial processes is relatively low, there are at least four companies that are fully integrated to produce distillate and centrifuged lemon oil, fresh peel, and lemon juice.

In addition, out of the 16 industrial companies analyzed, nine have packing plants, so they can benefit both from safe raw materials and their residues that can be further processed [28].

The authors of this article agree with Estrella Ramón et al. [29] that SMEs belonging to specific sectors of a local economy must develop their joint competitive advantages to establish synergies and increase the international renown of the sector in question. The authors also reviewed previous research papers on the topic of this study, such as those of Misakov, Khamzatov, Temroкова, Misakov & Dikareva (2018), which calls for the development of a modern agro-industrial complex, which would constitute not only a territorial economic complex but also an integrated socioeconomic system. This could generate structural problems in the companies of the territory.

Conclusions

The procedure applied allowed the validation of the design of a production center and its characteristics. It was determined that the optimal location for establishing a collection center is the province of Santo Domingo de los Tsáchilas in the canton of La Concordia. Identifying the prospects of forming a cluster from the association studied would make it possible to take advantage of the concentration of resources and capacities. Economies of scale would give the associates various competitive advantages, thus achieving a dominant position in the economic activity of the region. It is recommended that research continue throughout the construction of the collection center to study the possible risks for farms in case the proposed facility is not built.

References

- [1] R.B. Kalaki y M. F. Neves, "Plan estratégico para el sistema agroindustrial brasileño de cítricos", *Gestão & Produção*, vol. 24, no. 2, pp. 338-354, 2017.
- [2] P. Phochanikorn, C. Tan y W. Chen, "Análisis de barreras para la logística inversa en la industria del aceite de palma de Tailandia utilizando un método difuso de toma de decisiones multimetierio para priorizar las soluciones", *Granular Computing*, pp. 1-18, 2019.
- [3] N. R. Galo, P. C. Ribeiro, R. C. Mergulhão, and J. G. V. Vieira, "Selección de proveedor de servicios logísticos: alineación entre criterios e indicadores", *Innovar: Revista de ciencias administrativas y sociales*, vol. 28, no. 69, pp. 55-70, 2018.
- [4] F. Sánchez Galván, C. L. Garay Rondero, C. Mora Castellanos, D. E. Gibaja Romero, and H. Bautista Santos, "Optimización de costos de transporte bajo el enfoque de teoría de juegos. Estudio de caso. Transport costs optimization under game theory approach. Case study.", *Revista Electrónica Nova Scientia*, vol. Nova Scientia, N° 19, Vol. 9 (2), 2017. ISSN 2007 – 0705, pp.: 185 - 210 2018.
- [5] B. H. Díaz Pinzón, J. S. Gómez Medina, J. D. García González, M. Román, H. Arturo, and F. E. Sanabria Villamizar, (2017) "Contribución de las iniciativas de tecnologías de la información en las organizaciones: una revisión de la literatura", *Innovar*, vol. 27, no. 66, pp. 41-55, 2017.

- [6] I. Heywood, S. Cornelius y S. Carver, *An Introduction to Geographical Information Systems*. Sala Prentice; Edición: 3ª edición ISBN-10: 0131293176. Año 2006.
- [7] CEDIA (2020) SECTOR BANANERO ECUATORIANO. Disponible en <https://blogs.cedia.org.ec/obest/wp-content/uploads/sites/7/2020/08/Sector-bananero-ecuatoriano-final.pdf>
- [8] J. Bossio, "Flujos de información en áreas rurales: el caso de Combayo, Cajamarca," *Estudio Developong Appropriate ICTs. Universidad de Reading de UK*, 2001.
- [9] M. J. Caro Encalada and C. E. Leyva Morales, "El cluster de la industria del software en Mérida, Yucatán," *Contaduría y administración*, no. 224, pp. 137-157, 2008.
- [10] L. López Posada and G. Calderón Hernández, "Análisis de las dinámicas culturales al interior de un clúster empresarial," *Estudios gerenciales*, vol. 22, no. 99, pp. 13-37, 2006.
- [11] A. Martínez, "Proyecto Equipo Negociador ALCA en su Componente de Competitividad," *Con venio*, vol. 57, 2003.
- [12] V. Snieska, I. Zykiene y D. Burksaitiene, "Evaluation of location's attractiveness for business growth in smart development", *Economic Research-Ekonomska Istraživanja*, vol. 32, no. 1, pp. 925-946, 2019/01/01 2019.
- [13] L. de la Fuente, "Marketing retail: cómo aumentar las ventas en la oficina de farmacia," *Farmacia Profesional*, vol. 29, no. 5, pp. 15-17, 2015.
- [14] E. L. Otero, P. A.M. Gallego y R.M. Pratt, "Click-and-Mortar SMEs: Attracting customers to your website", *Business Horizons*, vol. 57, no. 6, pp. 729-736, 2014.
- [15] T. Shelton y A. Poorthuis, "The Nature of Neighborhoods: Using Big Data to Rethink the Geographies of Atlanta's Neighborhood Planning Unit System", *Annals of the American Association of Geographers*, pp. 1-21, 2019.
- [16] S. J. Roffé, J.M. Fitchett y C. J. Curtis, "Clasificación y mapeo de la estacionalidad de las precipitaciones en Sudáfrica: una revisión", *South African Geographical Journal*, vol. 101, no. 2, pp. 158-174, 2019/05/04 2019.
- [17] C. Guaipatin, "La cooperación público-privada como instrumento de desarrollo: Lecciones de seis aglomeraciones agroindustriales en América Latina," *European Review of Latin American and Caribbean Studies*, 2007.
- [18] A. Coelho, "Eficiencia colectiva y upgrading en el cluster del tequila," *Análisis económico*, vol. 22, no. 49, 2007.
- [19] C. Geldes, C. Felzensztein, E. Turkina y A. Durand, "¿Cómo afecta la proximidad a la cooperación de marketing entre empresas? Un estudio de un clúster de agronegocios", *Journal of Business Research*, vol. 68, no. 2, pp. 263-272, 2015.
- [20] Banco de Desarrollo de América Latina. (2012). (CAF). *Iniciativas de transformación productivas*. Available: publicaciones.caf.com/media/.../revista-caf-iniciativas-transformacion-productiva.pdf
- [21] J. A. Pancorbo, M. Alfonso, and S. Benavides, "Contribución del marketing a la gestión comercial en un centro urbano desde un enfoque de desarrollo sostenible," *Revista Economía y Desarrollo (Impresa)*, vol. 146, no. 2, 2018.
- [22] R. Friedmann, "Identidad corporativa para comunas," *Revista Chilena de Administración Pública*, Santiago: CED. S/vol, no. 6, pp. 1-45, 2000.
- [23] J. Á. Aznar Sánchez, "El clúster agroindustrial de la horticultura intensiva de Almería: surgimiento, dinámica y perspectivas," *Cuadernos de Estudios Agroalimentarios (CEA)*, no. 2, pp. 199-217, 2012.

Notes

* Research article.

Licencia Creative Commons CC BY 4.0

How to cite this article: Pancorbo Sandoval, J. A., Tinoco González, J. L., Leyva Ricardo, S. E., Ruiz Cedeño, S. Del M., "Prospects of the agro-industrial cluster for the commercialization of bananas. Case study in Ecuador." *Ing. Univ.* vol. 27, 2023. <https://doi.org/10.11144/Javeriana.iued27.paic>