ANALYSIS OF LABOR CONDITIONS AS PART OF ORGANIZATIONAL SUSTAINABILITY IN ECUADORIAN BANANA SECTOR COMPANIES

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Abstract
In summary, the analysis of labor conditions is essential to improve organizational sustainability in companies in the Ecuadorian banana sector. This can be achieved through the use of advanced statistical tools, such as multiple correspondence analysis, and through the implementation of sustainable practices that promote the well-being of workers and the long-term profitability of the companies.
Key words: working conditions, multiple correspondence, sustainable practices, organizational sustainability.

Introduction
The banana sector is one of Ecuador's main economic engines, generating employment and income for thousands of people throughout the country. However, this sector has also faced challenges in terms of organizational sustainability and the working conditions of workers (Coral & Mithöfer, 2022). Organizational sustainability refers to the ability of a company to maintain its operations in the long term, in economic, social and environmental terms. In the context of the Ecuadorian banana sector, this implies the need to implement
sustainable practices that promote the well-being of workers and the long-term profitability of companies (Cruickshank, 2014).

In order to achieve organizational sustainability, it is essential to analyze labor conditions in Ecuador's banana sector companies. This includes aspects such as remuneration, working hours, labor benefits and workplace safety. (Billo, 2020)

A thorough analysis of working conditions can reveal areas for improvement and opportunities to implement more sustainable practices. For example, the need to increase remuneration to ensure fair pay and improve staff satisfaction, or to provide better working conditions to ensure the safety and well-being of workers may be identified (Raynolds, 2022).

Working conditions are a transcendental factor in organizational sustainability, the International Labor Organization (ILO), defends and promotes occupational health in a legal framework that seeks a considerable reduction in diseases and disabilities that are evidenced as a result of the incorrect conditions that usually arise in the workplace. (Cuesta, 2007).

According to official UN figures, approximately two million workers die each year because they have found themselves in a work environment that does not meet the conditions necessary to be considered safe work. (United Nations, 2019)

For its part, the ILO Declaration on Fundamental Principles and Rights at Work and its follow-up, agrees and contemplates establishing a commitment between governments and groups of workers and employers to respect and defend values that are transcendental for human beings, among these inherent commitments is established "a safe and healthy working environment", as a framework for the protection of working people against occupational and non-occupational diseases, as well as occupational accidents. (ILO, 2022)

The ILO, in the annex to the Declaration of Philadelphia, in its search for social justice, establishes that all human beings without distinction have the right to development within a framework of freedom, dignity, economic security and equal opportunities. It also emphasizes the importance of promoting among all nations of the world, the facility for the employee to exercise those activities in which they can enhance their skills and knowledge in the best way and with the enabling environment, always looking for the common good. (ILO, 2017)

The 2030 Agenda for Sustainable Development, defined after a negotiation process of approximately 3 years between the governments of the UN member nations and civil society, established those points that encompass the three essential dimensions to achieve global sustainability. Among the objectives set out in this agenda is "decent
work and economic growth", which aims to generate equal opportunities in order to promote inclusive and sustainable economic growth. (ILO, 2022)

To achieve this, it is essential that new economic policies and development plans be elaborated in the light of equal opportunities and decent work for all, which collaterally benefits the global economy. (Zuniga et al., 2022).

The analysis of labor conditions in Ecuadorian banana companies is essential to assess their organizational sustainability. Organizational sustainability refers to the company's ability to maintain its economic, social and environmental viability over the long term (Kuecker, 2007).

In the context of the banana sector, it is known that working conditions can be a key factor affecting the organizational sustainability of companies. Workers in the banana sector often face difficult working conditions, including long working hours, low wages, and lack of social protection (Alarcón, 2022).

To improve organizational sustainability, companies in the Ecuadorian banana sector must improve the working conditions of their workers. This may include measures to ensure fair wages and safe and healthy working conditions, offer benefits such as health insurance and paid vacations, and foster a respectful and fair working environment. (Melo & Wolf, 2005).

To assess the impact of these measures on organizational sustainability, key performance indicators such as turnover rate, absenteeism, productivity and the company's financial performance can be used. In addition, employee surveys can be conducted to assess their satisfaction with current working conditions and to identify areas for improvement.

In another area, the supreme law of Ecuador, called the Constitution of the Republic of Ecuador, establishes articles that are aligned with the common good of society, where the State's commitment to the rights and guarantees that have been approved in international instruments in force is ratified. (Bebber, 2022).

The Constitution grants guarantees to Ecuadorian citizens, stating for example that work is a right and a social duty, which enjoys full state protection through the definition of those fundamental obligations that the employer is subject to comply with. (Constitution of the Republic of Ecuador, 2008).

The aforementioned regulations establish that labor legislation must be subject to the principles of social law, i.e. equality and non-discrimination, participation and inclusion, accountability and the practice of a State of rights.
At the same time, it emphasizes the employee's right to receive fair remuneration, to work in safe environments for the development of their work, to their legal benefits, to free association, the right to strike, to collective bargaining, among others.

While it is true that this law is mandatorily applicable to all companies domiciled in Ecuador, there is a remnant of institutions that do not abide by the supreme provisions and violate the rights of workers.

One of the sectors in which, due to its nature, this type of irregularities is observed is the banana sector. In Ecuador, one of the star products of the General State Budget is bananas, a staple food produced in tropical areas, which has positioned the country as the world's leading exporter of this product and its presence in international markets is increasing. (FAO, 2020).

According to the Report on the evolution of the Ecuadorian economy in 2021 and prospects 2022, balance of payments from January to December 2021, it was considered one of the best performing goods within the range of non-oil exports, and also surpassed its export record, becoming a benchmark for the Ecuadorian economy. (Central Bank of Ecuador, 2022)

There are approximately 192,000 hectares of banana plantations in the country, distributed among small, medium and large companies. It is interesting to identify that 78% of these plantations belong to small enterprises, which means that most of the economy of the banana sector revolves around small or family businesses and the Popular and Solidarity Economy, making this agricultural sector a contributor to the reduction of rural poverty by generating employment opportunities where those who cannot be hired by large companies can provide their services. (Ministry of Foreign Trade, 2017).

Despite the great scope of this sector and the international trade opportunities that depend on it, due to the increasing exports and the tax revenues generated by this activity, workers are often subjected to labor exploitation. Thanks to a survey applied to three companies in this area, it has been found that ___% of the employees are subject to at least one illegal condition. In this scenario it is common to observe minors working, people who perform a lot of physically demanding work without safety measures, salaries that are not in line with those of the market, legal benefits that are not complied with, extended working hours that are not paid according to the law, among other similar situations (Macaroff & Herrera, “The labor exploitation of workers in this sector is not only a problem for the company's employees, but also for its employees. (Macaroff & Herrera, 2022).

Ecuador's banana value chain is a fascinating case research on its long history dates back to the early twentieth century, since So it has always been very dynamic and adaptable to change. At the same time, it
maintains the status of the world’s leading banana exporter in 2020, during the Covid-19 pandemic, banana exports increased by 7%, Overall level compared to 2019, but spot prices are much lower, Normal level, (Valdez-Aguilar et al., 2022) despite overall resilience

Covid-19 impact on value chains and local food prices exacerbates pre-existing vulnerabilities at the micro level and introduces new risks(González-Suárez et al., 2022).

The purpose of this article is to evaluate the working environment and employment conditions as part of the Corporate Social Responsibility of companies in the Milagro canton dedicated to banana cultivation, by identifying the factors involved in the working conditions that cause the greatest impact in the banana sector, and how this directly affects the sustainability and growth of the company over time.

**Methodology**

Bananas and plantains accounted for 41.8% of Ecuador’s main agricultural products in 2020, as traditional non-oil exports, slightly behind shrimp (43%) and followed by cocoa (10.9%) (Zuniga et al., 2022).

Ecuador currently accounts for 32% of world exports. More than 83% of the 190,381 hectares of cultivation in Ecuador are in three coastal provinces: Los Ríos, Guayas and El Oro, of which 9.6% is organic. (INEC, 2020).

There are approximately 8,851 banana producers, of which 46% grow less. More than 30 hectares have been sold to some 200 export companies.

The banana value chain includes several stages and stakeholders. Generally, local producers sell their products directly to exporters or intermediaries. Exporters often act as intermediaries between manufacturers and large international traders. Some producer associations have sought to export their products directly (Rodríguez-Mañay et al., 2022). Large trading companies supply products to importers, who in turn supply products to wholesalers who are responsible for distribution to established traders and trading companies that distribute at the point of sale until they reach the final consumer (Bebber, 2022). In addition, many other stakeholders are also part of the banana value chain, such as government and NGOs; coordination; logistics and transportation; and testing and certification participants (Raynolds, 2022).

Based on the analyses carried out, training and development of personnel is considered to be the main factor in the working environment and employment conditions. In view of this need, a training plan is proposed, in which the other aspects of CSR are immersed.
The company's methods are inductive and deductive, in the sense that direct information gathering was carried out from the companies, either through a survey (Kyosimire, 2021). Stratified probability sampling was conducted in three companies and the sample size was set at 400 individuals.

According to the economic sector to be investigated, three companies dedicated to the cultivation of bananas in the canton of Milagro were taken as a sample, both the companies and the respondents were determined according to the accessibility of the universe to be investigated. The following are the main characteristics of the agricultural companies selected as a sample, dedicated to the cultivation of bananas in the city of Milagro, company A, company B and company C.

For data collection, a stratified probability sampling was determined and provided according to the following table.

**Table 1- Proportional Stratified Probabilistic Stratified Probability Sampling**

<table>
<thead>
<tr>
<th>Companies</th>
<th>Population</th>
<th>Proportion</th>
<th>Sample</th>
</tr>
</thead>
<tbody>
<tr>
<td>Company A</td>
<td>243</td>
<td>41%</td>
<td>163</td>
</tr>
<tr>
<td>Company B</td>
<td>231</td>
<td>39%</td>
<td>154</td>
</tr>
<tr>
<td>Company C</td>
<td>124</td>
<td>21%</td>
<td>83</td>
</tr>
<tr>
<td>Total</td>
<td>598</td>
<td>100%</td>
<td>400</td>
</tr>
</tbody>
</table>

The tool used was a section of the Self-Assessment Manual for Organizational Development of Social Responsibility (DERES), a Uruguayan non-profit institution dedicated to the development of corporate social responsibility. The results obtained were analyzed using statistical techniques such as chi-square to test hypotheses and relevant variables.

The Self-Assessment Manual for companies developed by DERES is a tool that allows organizations to analyze performance with respect to different areas of CSR, in order to determine the degree of development of CSR in the company. (Aza, 2019). The self-assessment manual consists of five questionnaires based on the CSR areas mentioned below:

Values and Ethical Principles
Working Environment and Employment Conditions
Community Support
Environmental Protection
Responsible Marketing
According to the research project developed, the questionnaire would be taken from the Working Environment and Employment Conditions area.

**Figure 1: Stratified Probability Proportional Stratified Sampling**

Note: Taken from the results of the survey applied.

A survey-type data collection instrument was applied with a heterogeneity of 50%, a margin of error of 5% and a confidence level of 95% (ALCIVAR et al., 2019). (ALCIVAR et al., 2019).

This quantitative study used a survey research methodology, to examine working conditions as part of organizational sustainability in Ecuadorian banana sector companies, the frequency of use perceived effectiveness and barriers to effective practice (Sanchez Mata et al., 2018).

The survey was taken by means of a questionnaire of closed questions, consisting of 27 items with Likert model alternatives. (Azione & Nhedzi, 2021). The items were assigned a score detailed in the following table.

**Table 2 - Scores assigned to each alternative**

<table>
<thead>
<tr>
<th>Response alternatives</th>
<th>Assigned score</th>
</tr>
</thead>
<tbody>
<tr>
<td>Not applicable to our case</td>
<td>0</td>
</tr>
<tr>
<td>Yes (always)</td>
<td>1</td>
</tr>
<tr>
<td>Sometimes</td>
<td>2</td>
</tr>
<tr>
<td>No (never)</td>
<td>3</td>
</tr>
</tbody>
</table>

Source: Adapted from (Khatun, 2021)

For this study, a descriptive statistical analysis was employed in which scores and standard deviation of the responses were compared, principal component analysis (Kormos & Wisdom, 2021).

Multiple correspondence analysis (MCA) is a statistical technique that allows analyzing the relationship between categorical variables in a data set. This technique can be applied to analyze labor conditions in...
Ecuadorean banana sector companies as part of organizational sustainability (Charity, 2020).

To apply the MCA in the analysis of working conditions, it is first necessary to define the relevant categorical variables. Some of the variables that could be considered are: salary, working hours, labor benefits, job security, among others. Then, information on these variables would be collected from a representative sample of workers in the banana sector (Baumann & Bultmann, 2020).

Within data analysis, multivariate methods that allow us to analyze the systematic patterns of variations with categorical data, the MCA is a descriptive technique that, unlike the PCA, studies the relationships between several categorical variables and, more precisely, between their categories (Escofier, 1990). Its domain of application, therefore, are rectangular tables containing individuals in rows and the possible categories of the variables in columns. The starting point is a data matrix $Z$ with $n$ rows and as many columns as the sum of the categories of the set of variables to be analyzed ($p$). These include the work of Benzecri (1978), Greenacre (1984) and the homogeneity analysis of Gifi (1981) (Escofier, 1990).

For multiple correspondence analysis (MCA), which contains the information corresponding to more than one categorical variable and is a rectangular table where the rows are individuals or observations and the columns are usually variables in condensed coding with categories or modalities represented by consecutive numbers (Quaglino, Pagura, 1998), we indicate $R$ to the $I \times J$ matrix of variables in their condensed coding and $r_{ij}$ to the category of variable $j$ chosen by individual $i$. If $k_j$ is the number of possible modalities of variable $j$, then a general term $Z$ matrix $Z_i^k$ can be constructed such that: the data are ordered in a table $Z=(Z_1, Z_2, ..., Z_s)$, which is called a complete disjunctive table consisting of a set of individuals $1, \ldots, i, \ldots, n$ (in rows), a set of variables or qualitative characters $J_1, \ldots, J_k, \ldots, J_q$ (in columns) and an excluding set of modes $1, \ldots, mk$ for each qualitative character.

$$J = \sum_{k=1}^{Q} m_k$$

Where $Z$ is a matrix $(n,p)$ such that

$$Z_{ij} = \begin{cases} 1 & \text{si el individuo } i \text{ elige modalidad } j \\ 0 & \text{si el individuo } i \text{ no elige modalidad } j \end{cases}$$
The following proposition indicates the form of the chi-square statistic for the binary matrix $Z$ if it were treated as a contingency table. The chi-square statistic associated with the test of independence on the binary $Z$ matrix is given by,

$$X^2 = n(J - Q)$$

the chi-squared statistic associated to $Z = \{Z_{ij}\}$

Total inertia $X^2(Zq) = ntr(Q^TQ)$

Once the information is available, the MCA can be applied to explore the relationships between variables and find patterns that allow the identification of labor conditions that are related to each other. The analysis can allow the identification of groups of workers with similar labor characteristics, which can be useful in designing human resource management policies and strategies that improve organizational sustainability(Kyosimire, 2021).

Multiple correspondence analysis (MCA) is a statistical technique that allows analyzing the relationship between categorical variables in a data set. This technique can be applied to analyze labor conditions in Ecuadorian banana sector companies as part of organizational sustainability(Regulation, 2022).

The objective of applying the MCA in this context would be to identify patterns and relationships between different labor conditions that may be affecting the organizational sustainability of companies in the banana sector in Ecuador. Organizational sustainability refers to the ability of a firm to maintain its operations in the long term, in economic, social and environmental terms(García, Babici, & Cisneros, 2022).

Results

Overall, the use of MCA in this context can provide a more complete picture of labor conditions in the Ecuadorian banana sector and allow companies to make informed decisions to improve their organizational sustainability. However, it is important to keep in mind that multiple correspondence analysis is an advanced statistical technique that requires specialized skills in data analysis and statistics for its correct application and interpretation.
Table 3 - Contribution to Chi-square

<table>
<thead>
<tr>
<th>Eigen value</th>
<th>Inertias Chi-Squared (%)</th>
<th>% cumulative</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>0.31</td>
<td>1345.04</td>
</tr>
<tr>
<td>2</td>
<td>0.28</td>
<td>1112.27</td>
</tr>
</tbody>
</table>

To apply the MCA in the analysis of working conditions, it is first necessary to define the relevant categorical variables. Some of the variables that could be considered are: salary, working hours, labor benefits, job security, among others. Then, information on these variables would be collected from a representative sample of banana workers (Dí, 2023). (Dí, 2023).

Figure 2. Company Inertia

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The following points represent the modalities of the same response variable, connected with the dimensions for each study variable, we obtained the table shown below in Figure 2, which explains the total
inertia, a measure similar to the total variation of the degree of dependence existing between the variables X and Y, the proportions of inertia explained by each of the dimensions i were calculated, which help us to measure the importance of each of the dimensions in explaining the observed dependencies, as well as the proportions of the accumulated inertia explained by the first 2 dimensions, for the first one (41.3% of the inertia), 3% of the inertia). The second with (21.8% of the inertia) indicated the minimum number of dimensions necessary to explain these dependencies to the total contributions to measure the importance of each of the modalities of the variables analyzed in the construction of the axes or factors constructed by the ACM where the first two axes or dimensions are the ones that best represent. These 2 axes accumulate 63.1% of the total inertia.

**Figure 3. Biplot of the Companies**

The results for the group of main characteristics of component 1 are below the average, it is important to highlight that this characterization represents an average behavior of both tables, which means that there is interaction between the characteristics of the study and the environments. The consensus between the spatial configuration of the group experience, residences, position, age and seniority obtained from the ACM was quantified.

"It is concluded that this analysis is a first step for a quality assurance system to be implemented in the company in the future."
"The main results are (1) production in subcontracting does not penalize firms but can be a positive determinant of growth, especially when combined with a predisposition to innovation; (2) since a non-linear relationship between growth and subcontracting emerges, an organizational mode that is not fully specialized in subcontracting activity or direct sales could be ideal; and (3) the strong dualism of the Italian industrial structure is confirmed, since southern subcontractors demonstrate worse performance and slower growth."

Milagro is a city dedicated to manufacturing and commerce, and part of this dynamism is the cultivation of bananas, which has always been Ecuador’s forte. In this sector it is necessary to maintain and increase the quality of production and work, and it does not matter that any company pays special attention to its employees, who are the basis of its success.

Conclusions
In conclusion, multiple correspondence analysis (MCA) can be a useful tool for analyzing labor conditions in Ecuadorian banana companies as part of organizational sustainability. This analysis can allow the identification of patterns and groups of workers with similar labor characteristics that could be the object of human resource management policies and strategies to improve the company's sustainability.

The analysis of labor conditions is a key factor in assessing the organizational sustainability of companies in Ecuador's banana sector. Companies should take steps to improve the working conditions of their workers and regularly evaluate their performance in terms of key performance indicators and employee satisfaction.

Based on the results of the survey used during the course of this project, it was possible to evaluate the work environment and the labor situation within the framework of corporate social responsibility of the company in the Milagro canton dedicated to the cultivation of bananas. We can draw the following conclusions.

It was found that the current working conditions and work environment of employees of a banana production company in the state of Milagro are not gender-sensitive.

Multiple correspondence analysis (MCA) can be a useful tool for analyzing labor conditions in Ecuadorian banana companies as part of organizational sustainability. This analysis can allow the identification of patterns and groups of workers with similar labor characteristics that could be the object of human resource management policies and strategies to improve the sustainability of the company.
It has been found that the owners of a banana production company in the state of Milagro do not pay the necessary attention to prevention programs to improve the working conditions of their employees.

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Journal of Namibian Studies, 33 S2(2023): 2542–2556 ISSN: 2197-5523 (online)


