

Proposal of a logistics productivity model for a poultry production company in the city of Villahermosa, Tabasco

Propuesta de un modelo logístico de la productividad para una empresa productora avícola en la ciudad de Villahermosa, Tabasco

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Abstract

This study focuses on the implementation and analysis of a logistics model specifically designed for the poultry production environment. This comprehensive methodology seeks to address the challenges inherent to this sector, considering fundamental variables that influence productivity, such as poultry genetics, environmental conditions, nutrition, sanitation, supply chain logistics and efficient resource management. The importance of this approach lies in its ability to systematically identify, analyze and model the flow of processes and factors involved in poultry production. By integrating historical data, real-time monitoring technologies and advanced analytical techniques, it seeks to understand the interrelationship between these variables and how they influence the overall productivity of the poultry enterprise.

Productivity, Logistics model, Poultry Company

Resumen

El presente estudio se centra en la implementación y análisis de un modelo logístico específicamente diseñado para el entorno de la producción avícola. Esta metodología integral busca abordar los desafíos inherentes a este sector, considerando variables fundamentales que influyen en la productividad, tales como la genética de las aves, las condiciones ambientales, la nutrición, la sanidad, la logística de la cadena de suministro y la gestión eficiente de los recursos. La importancia de este enfoque radica en su capacidad para identificar, analizar y modelar de manera sistemática el flujo de procesos y factores involucrados en la producción avícola. Al integrar datos históricos, tecnologías de monitoreo en tiempo real y técnicas analíticas avanzadas, se busca comprender la interrelación entre estas variables y cómo influyen en la productividad general de la empresa avícola.

Productividad, Modelo logístico, Empresa avícola

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Introduction

The poultry industry is an essential component of the agri-food landscape, playing a crucial role in the supply of poultry meat to meet global consumer demands. In this context, productivity optimisation becomes an imperative for the viability and competitiveness of poultry companies.

This study focuses on the implementation and analysis of a logistics model specifically designed for the poultry production environment. This comprehensive methodology seeks to address the challenges inherent to this sector, considering fundamental variables that influence productivity, such as poultry genetics, environmental conditions, nutrition, health, supply chain logistics and efficient resource management.

The importance of this approach lies in its ability to systematically identify, analyse and model the flow of processes and factors involved in poultry production. By integrating historical data, real-time monitoring technologies and advanced analytical techniques, it seeks to understand the interrelationship between these variables and how they influence the overall productivity of the poultry enterprise.

The central proposal of this study is not only to describe the current state of productivity in the poultry industry, represented by a particular company, but also to develop specific strategies and concrete actions based on this logistic model. These strategies aim to enhance production processes, minimise waste, optimise supply chain efficiency and, ultimately, significantly improve the profitability and competitiveness of the poultry company.

Detailed analysis of the data collected and the application of predictive modelling tools will allow scenarios to be projected, trends and patterns to be identified, and precise recommendations to maximise productivity in a poultry environment to be formulated. This approach presents an opportunity to not only increase operational efficiency, but also to drive sustainable practices that promote animal welfare, food safety and long-term profitability in the poultry sector.

Methodology

Effective implementation of a poultry productivity logistics model requires a meticulous and rigorous approach. This methodological section forms the core of the study, being the guiding pathway to a detailed understanding of the steps and procedures used to develop and apply such a model.

In this section, the strategic phases followed to carry out a comprehensive analysis of the key factors influencing productivity within a poultry enterprise are outlined. From data collection and analysis to the proposal of the model, it frames a carefully structured process that seeks to provide a comprehensive and applicable vision for improving operational efficiency in this sector.

The meticulous collection of information, the identification of critical variables and the creation of the logistics model form the fundamental pillars underpinning this study. The robustness and accuracy of the results obtained depend on the thoroughness with which each of these stages is carried out.

Research Instrument

The measurement instrument has 8 criteria, each criterion has questions that serve to obtain information on how the company is currently doing, in order to find out its problems and, based on this, propose a model for improvement. This instrument will be carried out for each area of the company.

Criterion 1.0 customer satisfaction	Avance en %									
	10	20	30	40	50	60	70	80	90	100
1. Do you have a method for obtaining up-to-date information and understanding the requirements and needs of your customers?										
2. Do you have programmes to empower staff in contact with the CUSTOMER?										
3. Do you have methods to quickly and effectively receive and resolve CUSTOMER non-conformities?										
4. Do you have methods to determine the satisfaction levels of your CUSTOMERS?										
5. Do you have indicators of effectiveness and efficiency of your system in relation to CUSTOMERS?										
6. Do you have a benchmarking process to compare your system practices with other companies?										
7. Do you have process improvement cycles for customer satisfaction?										

Table 1 Comprehensive measurement instrument. Criterion 1.0 Customer satisfaction
Source: Own Elaboration

This criterion deals with the effectiveness of the systems to know, anticipate and implement the requirements and needs of customers before, during and after the delivery of their products.

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Leadership 2.0 approach	Avance en %									
	10	20	30	40	50	60	70	80	90	100
1. Do you have a method for implementing an Innovation and Quality scheme?										
2. Is there top management interaction in the activities of the Quality process?										
3. Does it have quality principles and values in place, defined, updated, oriented and aligned?										
4. Does it assess the organisational culture and identify and address identified gaps in the desired culture?										
5. Does it have records of leadership performance results?										
6. Do you have indicators of effectiveness and efficiency of your leadership practices?										
7. Do you have a benchmarking process to compare your leadership practices with other companies?										
8. Do you have stages of improvement of your leadership practices?										

Table 2 Comprehensive measurement instrument. Criterion 2.0 Leadership
Source: Own Elaboration

In this criterion, the participation of the leader is observed in order to promote the participation of the staff during the process.

Criterion 3.0 staff development and intellectual capital management	Avance en %									
	10	20	30	40	50	60	70	80	90	100
1. Do you have a method for fostering teamwork?										
2. Do you have a method for determining staff satisfaction?										
3. Do you have processes for improving quality of life at work?										
4. Do you have strategies, plans and programmes for staff development and training including your staff development evaluation?										
5. Do you have a method for intellectual capital management?										
6. Do you have methods to boost staff contribution to the achievement of quality and productivity goals?										
7. Do you have indicators of effectiveness and efficiency of your staff development, quality of work life and intellectual capital management practices?										
8. Do you have a benchmarking process to compare your staff development, quality of work life and intellectual capital management practices with other organisations?										
9. Do you have strategies for improving your people development, quality of work life and intellectual capital management systems?										

Table 3 Comprehensive measurement instrument. Criterion 3.0 Staff development and intellectual capital management
Source: Own Elaboration

This criterion analyses how the organisation detects those personnel who contribute to the company and how to stimulate this potential, as well as how to identify and motivate them and promote health in the workplace.

Criterion 4.0 information and technology management	Avance en %									
	10	20	30	40	50	60	70	80	90	100
1. Do you have databases to plan, manage and evaluate your processes?										
2. Do you ensure the reliability, consistency, timeliness and updating of data and information?										
3. Do you consistently manage and analyse information and data including customer feedback?										
4. Do you have a system for managing technology?										
5. Do you have indicators of effectiveness to manage and improve your information and analysis and technology management systems?										
6. Do you have a benchmarking process to compare your information, analysis and technology systems with other companies?										
7. Do you have milestones for improving your information and analysis and technology management systems?										

Table 4 Comprehensive measurement instrument. Criterion 4.0 Information and technology management
Source: Own Elaboration

This criterion examines how data and information are designed, selected and managed, as well as how their analysis and reliability are carried out, and how technology is managed.

Criterion 5.0 process management and improvement.	Avance en %									
	10	20	30	40	50	60	70	80	90	100
1. Do you have a method for developing your strategic planning?										
2. Do you develop a SWOT analysis?										
3. Do you have methods to ensure that the Mission and Vision are in place and shared by the organisation's staff?										
4. Do you have identified the main strategic performance indicators of the company?										
5. Do you have a methodology to demonstrate Strategic Planning in the operation?										
6. Does it have a methodology to carry out the referential process of Quality practices?										
7. Do you use efficiency and effectiveness indicators to improve your Strategic Planning System?										
8. Do you have stages of improvement in the Strategic Planning process?										

Table 5 Comprehensive measurement instrument. Criterion 5.0 Strategic planning
Source: Own Elaboration

This criterion analyses the planning process, as well as the way in which it develops its strategies and defines its strategic objectives to improve its overall performance and competitive position. Similarly, the way in which it establishes and implements its objectives and plans based on strategic planning is also analysed.

Criterion 6.0 strategic planning	Avance en %									
	10	20	30	40	50	60	70	80	90	100
1. Is there a method for analysis, development and improvement activities of your processes?										
2. Do you have a Quality Management, Environmental Protection and Safety System?										
3. Are your Quality Management and Environmental Protection systems certified by a third party?										
4. Do you adequately and systematically apply the National Occupational Health and Safety Standard?										
5. Do you have methods for process improvement?										
6. Do you have effectiveness and efficiency indicators to improve your Quality, Environmental Protection and Safety Management Systems?										
7. What methodologies do you use to benchmark your systems with other companies?										
8. Do you have stages of improvement of your systems?										

Table 6 Comprehensive measurement instrument. Criterion 6.0 Process management and improvement
Source: Own Elaboration

This criterion analyses the fundamental elements of the Quality Management, Environmental Protection and Industrial Safety System; the design, planning, control, improvement and standardisation of key and support processes and the way in which the institution evaluates and continuously improves them.

Criterion 7.0 impact on society	Avance en %									
	10	20	30	40	50	60	70	80	90	100
1. Do you have mechanisms to stimulate and facilitate the development of other companies in your area of influence in the Total Quality process?										
2. Do you use effectiveness and efficiency indicators to manage and improve your quality culture promotion system?										
3. Do you have a methodology for benchmarking your quality culture promotion system with other companies?										
4. Do you have improvement stages of your quality culture promotion system?										

Table 7 Comprehensive measurement instrument. Criterion 7.0 Impact on society
Source: Own Elaboration

This criterion examines the way in which the organisation makes continuous improvement efforts in its physical, social or economic environment so that other companies in its community develop their own Total Quality programmes.

Criterion 8.0 results	Avance en %									
	10	20	30	40	50	60	70	80	90	100
1. Do you know which of your processes is the key process?										
2. Do you have performance indicators for your key and supporting processes?										
3. Do you have outcome indicators for profitability, performance, productivity and target achievement?										
4. Do you have performance indicators that show the impact on growth, profitability, productivity, achievement of objectives and targets; derived from the following systems: Customer Satisfaction, Leadership, People Development and Intellectual Capital Management, Information and Technology Management, Strategic Planning, Process Management and Improvement and Impact on Society?										
5. Do you analyse your comparative position with other institutions?										
6. Do you have properly documented favourable and unfavourable levels and trends over the last year?										
7. Do you have stages of the indicator system in the organisation?										

Table 8 Comprehensive measurement instrument. Criterion 8.0 Results
Source: Own Elaboration

This last criterion analyses the interrelationships between the company's key indicators and the value created by the quality maturity of its processes and systems; the staff and suppliers in the internal value chain and for its customers, sectors of influence and society, in its social value chain.

Structure for measuring the company

Division of the company by area:

- Human resources: This area is responsible for the recruitment of operating personnel and, in the same way, for verifying that they are trained for their best performance.

- Finance: This area has a close relationship with the sales area, as the sales area has to send a report of what has been sold. In order to have a control in this part of the region since a report has to be passed to the general management of the company bachaco.

- Sales: This area is in charge of the distribution and sale of the products and to follow up day by day the different routes in which the distribution of the product to the clients will be carried out, guaranteeing the total coverage and supply to the commercial premises. As well as the relationship with the person in charge of the finance area, it also has a relationship with the loading and unloading areas.

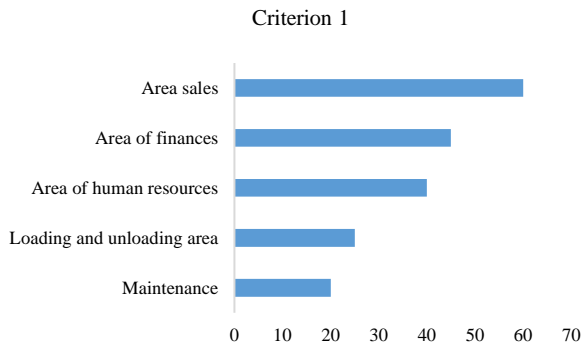
- Maintenance: This is in charge of maintaining each unit for the best performance both on the outward and return journeys and verifies that the operator does not misuse the unit and also to preserve the chicken containers in optimal conditions.

- Loading and unloading area: This area is in charge of the reception and dispatch of the goods at the point of sale.

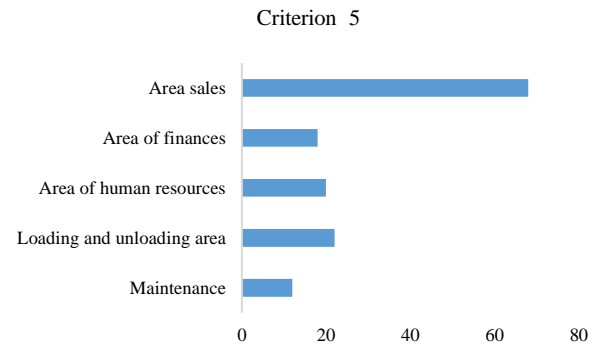
Results

Through the application of the instruments shown above, in the areas of Human Resources, Finance, Sales, Maintenance and Loading and Unloading, the experts in each area were in charge of aggregating percentages of progress in terms of productivity for each of the criteria. This was done through interview sessions with the researcher.

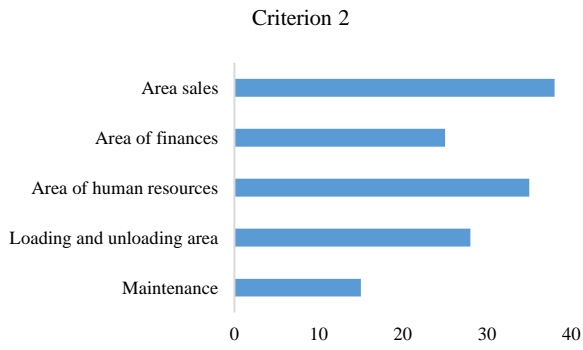
In this process, the following graphs were designed to show the degree of progress of each area per evaluated criterion. In graphs 1 to 8, the results of the departments by criteria are shown:



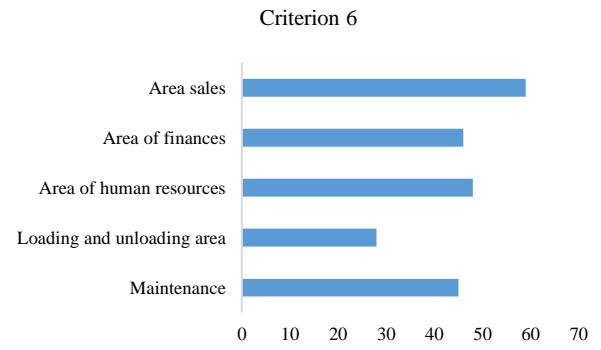
Graph 1 Departmental results by criterion 1
Source: Own Elaboration



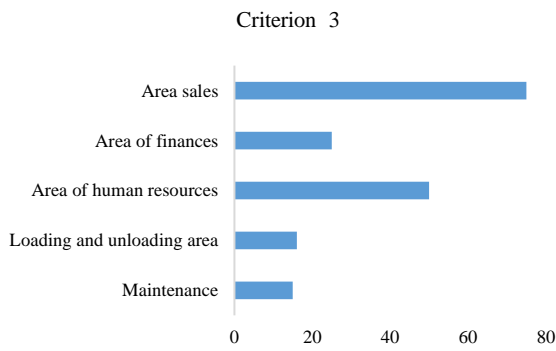
Graph 5 Departmental results by criterion 5
Source: Own Elaboration



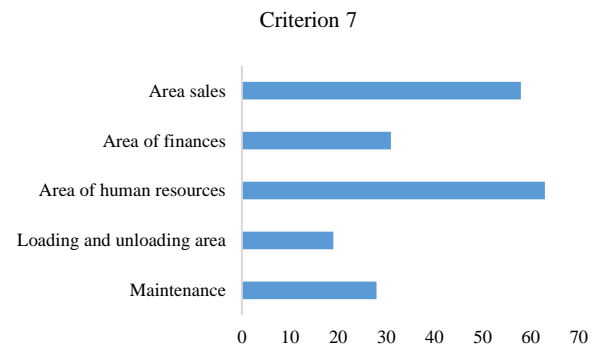
Graph 2 Departmental results by criterion 2
Source: Own Elaboration



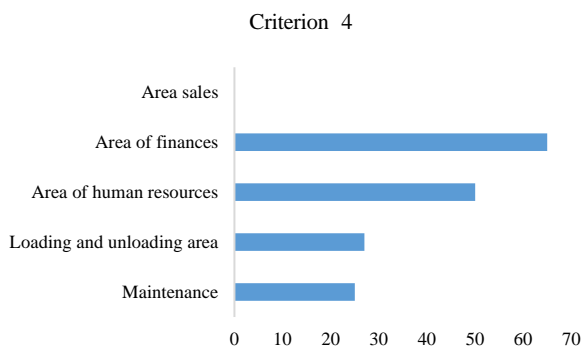
Graph 6 Departmental results by criterion 6
Source: Own Elaboration



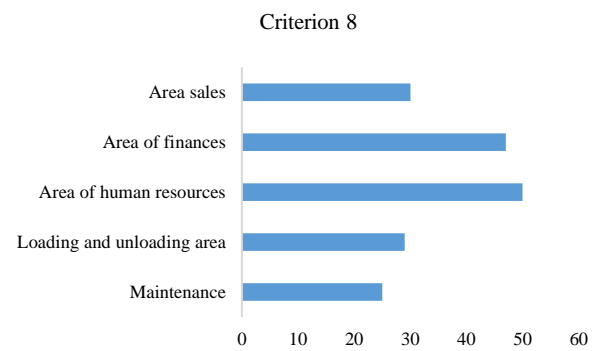
Graph 3 Departmental results by criterion 3
Source: Own Elaboration



Graph 7 Departmental results by criterion 7
Source: Own Elaboration

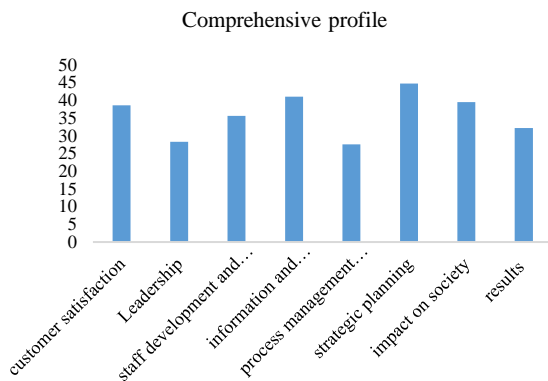


Graph 4 Departmental results by criterion 4
Source: Own Elaboration



Graph 8 Departmental results by criterion 8
Source: Own Elaboration

With respect to the results shown in the previous graphs, an overall bar chart was made, showing the final percentages per criterion, and an overall average in logistics productivity progress can be obtained.



Graph 9 Overall results by criterion

Source: Own Elaboration

The overall average obtained was 35.93 points and taking into consideration the following classification, it can be considered that the evaluated company is in a degree of development, observing the lack of work in leadership and strategic planning.

80-100 MENDIAL CLASS

65-80 COMPETENT

45-60 RELIABLE

25-40 DEVELOPMENT

0-20 INITIAL

The model for the improvement of the productivity of the company that is proposed was generated for the improvement of the company Bachoco S. A, de S.V after having a complete diagnosis with the help of the measurement tool through 8 criteria carried out in the five areas of the company that will give a better performance, all this with a systematic and comprehensive approach to achieve an environment in the company, efficiency and effectiveness for greater productivity. In order for this system to work, aspects must be implemented that generate:

- Sensitisation of the staff this is a very important point because the problem that arises today in various organisations is due to the lack of will of the employee, generating a lack of attitude and aptitude towards the work environment.

Sensitisation is an essential requirement for team growth as it encourages the employee to have a mind that is more capable of contributing and receiving good information for their work environment.

- More leadership in decision making, staff training for more knowledge, motivational meetings in which the staff is taken into account, listening to comments to reduce the lack of attitude and finally the recognition of the work team are proposed. If the company puts these criteria as key points for the process of staff awareness, it will have favourable results in which it will have trained and committed staff to manage intellectual capital within the work environment.
- Human resources: In the area of human resources there is a need for certain training that helps to relate to certain areas in order to obtain information from them, and more communication from the staff towards this area is recommended.
- Finance: The finance area is one of the most important areas of the company as it is the one in charge of the monetary issues of the organisation, in this area more teamwork is proposed, working under responsibility complying with the standards assigned to them, in which plans should be generated to optimise certain resources for the welfare of the company.
- Sales: In this area can be determined as one of the most important of the company as it is through which generates the distribution of products through various outlets for the satisfaction of external customers, however it is of greater care as it should implement sales methods that are more feasible for the company making its workers in this area feel committed to the level of sales that is generated for a greater gain in both parties.

- Maintenance: In this area we recommend more updates in their operating systems for greater effectiveness of the processes generating maintenance periods to different areas that are responsible for processing.
- Loading and unloading area: In this area we recommend a method that facilitates the daily activities that are generated at the time of sending and receiving the material.
- Strategic planning: It could be observed in the Bachoco company in the part of the strategic planning, it is required a design of the strategic plan, since they do not have the fulfilment of the mission and the vision of form in which it is written fulfilling the values that is established to be company leader in the processing.

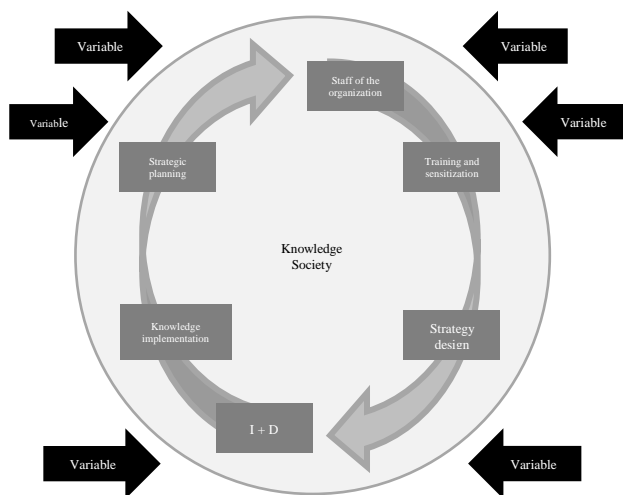


Figure 1 Integral proposal
Source: Own Elaboration

Conclusions

It is important that the functioning of any organisation is based on the interaction between the processes starting with the personnel for a better functioning from the particular to the general with what we have through an information society in order to reach a knowledge society through which certain items that must be related for the functioning of a before during and after the processes through the sensitisation of the personnel and the design of strategies for the achievement of the strategic planning are fulfilled.

In this project it was possible to interact with a company and a real situation in which the main productivity problems could be identified. Being a company of international stature, there was the opportunity to analyse the logistics of this company of great experience, obtaining the possibility of finding certain aspects of the company that could be improved.

After analysing the company we came to the conclusion that the branch has a certain deficiency in production in which we will implement a logistics model to help reduce the failures of the organisation.

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