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Application of the integral technique of productivity evaluation in the bovine industry in the city of Villahermosa Tabasco

Aplicación de la técnica integral de evaluación de la productividad en la industria bovina de la ciudad de Villahermosa Tabasco

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Abstract

Productivity is one of the key factors in any organization, and one that is often not given the necessary attention, regardless of its size or structure. Striving to achieve maximum efficiency and effectiveness in each of the processes carried out within the company should be an absolute priority. Productivity is a crucial indicator, but it is often overlooked. It should be measured objectively and rigorously, and all companies should be able to know exactly what their productivity is like, what it is based on and what is failing. Tabasco is one of the main cattle-producing states in the country, it has an inventory of 1.6 million heads, according to data from the National System for Individual Identification of Livestock (SINIIGA 2019), concentrating more than 55% in small production units with range from 6 to 50 heads. The objective of this study is to present the results of the evaluation that was carried out through the instrument "comprehensive productivity evaluation technique" on the cattle industry in the city of Villahermosa, Tabasco, for further analysis and reflection.

Productivity, Measurement, Evaluation, Competitiveness, Cattle industry

Resumen

La productividad es uno de los factores clave de cualquier organización, y al que muchas veces no se le presta la atención necesaria, no importando su tamaño o su estructura. Esforzarse por lograr la máxima eficiencia y eficacia en cada uno de los procesos llevados a cabo dentro de la empresa debería ser una prioridad absoluta. La productividad es un indicador crucial, pero muchas veces se pasa por alto. Debería medirse de forma objetiva y rigurosa, y todas las empresas deberían ser capaces de saber exactamente cómo es su productividad, en qué se basa esta y en qué fallan. Tabasco es uno de los principales estados productores de ganado bovino del país, cuenta con un inventario de 1.6 millones de cabezas, según datos del Sistema Nacional de Identificación Individual de Ganado (SINIIGA 2019), concentrando más del 55% en pequeñas unidades de producción con rango de 6 a 50 cabezas. El objetivo del presente estudio es dar a conocer los resultados de la evaluación que se realizó por medio del instrumento “técnica integral de evaluación de la productividad”, sobre la industria bovina en la ciudad de Villahermosa, Tabasco, para su posterior análisis y reflexión.

Productividad, Medición, Evaluación, Competitividad, Industria bovina

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Introduction

Productivity allows us to measure what is produced in any organization, based on the resources that we are using for it, so its objective is to optimize that amount of resources used to obtain better results. This serves to find out if we are efficient in what we do or if we need to adjust the processes we carry out, if we need to improve or adapt them in order to grow. The ideal result is to obtain the greatest amount of results using the least possible amount of resources, that would imply maximum efficiency.

Productivity measurement is the only process capable of telling us how well or how poorly we are using our resources, in this way we can identify all those weak points in our management, which translate into points of unproductivity and make it impossible for us to reach be more profitable.

Through continuous improvement, it is possible to be more productive and competitive in the market to which the organization belongs, on the other hand, organizations must analyze the processes used, so that if there is any problem it can be improved or corrected; As a result of the application of this technique, organizations may grow within the market and even become leaders.

Therefore, through the application of the TIEP instrument and the analysis of results, the benefits of carrying out a productivity evaluation process are exposed.

Background

The definition of productivity is complex and does not reflect only a technical and managerial problem.

The concept of productivity is closely related to that of production. They are parallel concepts between which similarities and differences can be established.

In this sense, production, whether gross or net, is, as Miguel (1959) points out, an absolute concept. From a quantitative point of view, the concept of productivity is relative, since the idea of quantity is associated with that of quality (Estiballo and Zamora, 2002).

Productivity, understood as the relationship that exists between the resources that a company invests in its operations and the benefits that it obtains from it, is a fundamental indicator in the analysis of the state of a company and the quality of its management. The concept of productivity implies the interaction between the different factors in the workplace (Belenguer and Guiarro 2018).

Output (or results achieved) is related to many different resources such as output per hour worked, per unit of material, or per cost; Instead, productivity is affected by a combined set of many determining factors such as the quality and availability of materials, the availability and production capacity of machinery, the attitude and skill level of the workforce, the managers' motivation and effectiveness; output or performance, costs, and results are non-equivalent components of productivity effort.

Most associate the concept of productivity with that of production, because productivity is something more visible, tangible and measurable.

The more the goals and objectives of different organizations, institutions or companies vary, the more different their definitions of productivity will be.

The International Labor Organization has been promoting for many years a progressive approach to productivity based on the effective and efficient use of all resources: capital, land, materials, energy, information and time, as well as from work. To push that idea forward, you need to combat some common misconceptions about productivity.

Productivity is not just labor efficiency or 'labour productivity', even though labor productivity statistics are still useful data for policy making.

In general, productivity could be viewed as a global measure of how well organizations meet the following criteria:

- Objectives: extent to which they are achieved.

- Efficiency: how effectively resources are used to create a useful product.

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- Effectiveness: result achieved compared to possible result.

- Comparability: way of recording productivity performance over time.

Although there are many different definitions of productivity, the most common criterion (and not one definition) for designing a productivity model is to identify the correct output and input components according to long, medium-, and short-term development goals. of the company, the sector or the country.

There are different methodologies to measure productivity, which have specific purposes that are useful in various cases. However, for the purposes of effective comparisons between companies, regions, chains or sectors, an approved methodology is required (CPC and OITE, 2002).

It is noteworthy that productivity is a concept that has been present in the analysis of many economists and has been developed historically. In the last century, two stages were defined, broadly speaking: one in which the authors were mainly concerned with developing the concept theoretically, analyzing what the determining factors are (incorporating or breaking them down); and the second, in which the research focused, fundamentally, on refining the measurement methods.

According to Botero (2006), there are two main aspects: one is related to efficiency measures, which go back to Farrell (1957); the other, those that address the variation in total factor productivity (TFP), which refer mainly to Solow (1957).

The importance of the bovine industry.

Today, the livestock sector represents one of the fastest growing components of the agricultural sector worldwide, with beef being the second most consumed livestock product, surpassed only by poultry, mainly chicken. Meat production is the most widespread in rural areas, since it is carried out, without exception, in all areas of the country and even in adverse environmental conditions that do not allow the practice of other productive activities. There are four types of TIF establishments Slaughter, Cutting and deboning, Refrigeration and Transformation.

Tabasco is one of the main cattle producing states in the country, it has an inventory of 1.6 million heads, according to data from the National System for Individual Identification of Livestock (SINIIGA 2019), concentrating more than 55% in small production units with range from 6 to 50 heads.

The state of Tabasco has a tropical climate with 10 months of rain per year and an average annual rainfall of 2,250 mm (Inegi 2019), which allows for a supply of green fodder most of the year, which is a business opportunity. in the stages of development at mid-fattening and finishing steers.

It is important to mention that in the area there is a presence of companies in the meat industry, which demand supplies of half-fattened and finished animals.

The cattle industry cattle ranching is the main economic activity in rural areas, it is important to highlight the regional cattle culture, represented to a large extent by the Regional Livestock Union of Tabasco, which brings together around 14 thousand ranchers of the almost 33 thousand livestock producers, this organization is shown as an example at the national level, with 70 years of existence it has shown a solid union strength.

Comprehensive productivity evaluation technique (CPET)

The Comprehensive Productivity Measurement Technique is based on 10 priority elements in any organization, whether from the intangible or tangible point of view, since both aspects are necessary to consider when productivity measurement is required; The first step that we must fulfill as evaluators is to have a systemic and comprehensive approach, if this aspect does not really exist, it should be considered that there will be biases.

On the other hand, the knowledge that the evaluator has of both internal and external contexts is also important, in order to be able to carry out his work and focus the parties questioned on the content of each of the basic elements of productivity.

The Comprehensive Productivity Measurement Technique is based on 10 elements:

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1. Conceptual approach of the company.
2. Process knowledge.
3. Social scope of the organization.
4. Planning administration.
5. Management involvement.
6. Creativity and organizational innovation.
7. Knowledge of the client(s).
8. Technological development.
9. Macroeconomic knowledge.
10. Comprehensive development of human resources.

To consider handling the Comprehensive Productivity Evaluation Technique, it is necessary to have extensive knowledge of the context variables, and when carrying out the practical work, consider the participation of each of them in the organization.

Also, as each company is different, the weight of the item can change. Then all this will influence the results of the study scenario.

The evaluator must consider the result of all these elements integrated into the technique used, and from there carry out the corresponding analysis, which will determine which variables are impacting the company, as well as the level of productivity.

Previous measuring instruments

A measurement instrument is a technique or set of techniques that will allow a numerical assignment that quantifies the manifestations of a construct that is measurable only indirectly (Herrera, 1998).

Research instruments are operational tools that allow data collection; however, it must be taken into account that research practices without a defined epistemology become an instrumentalization of techniques (Sandín, 2003) so that every instrument must be the product of an articulation between paradigm, epistemology, theoretical perspective, methodology and techniques for data collection and analysis.

The main properties of a measurement are reliability and validity (Carmines and Zeller, 1987).

Instead of classifying the types of validity, Messick (1989) proposes collecting different types of evidence based on the use and objectives of the instrument, including content evidence, construct evidence, and its predictive value.

In addition, it must be taken into account that validity is not an intrinsic property of the instruments, but will depend on the objective of the measurement, the population and the context of application, so that an instrument may be valid for a particular group, but not for others.

Validity is not a dichotomous trait, but one of degree, that is, it cannot be stated conclusively that a test is valid, but rather it can be stated whether it has certain degrees of validity for certain specific uses and certain populations (Alfaro and Montero, 2013).

Taking these referents into account, the logical sequence to design a research instrument for measurement purposes is divided into four phases (Table 1), first the theoretical considerations and objectives of the research, second the validation of expert judges, third the selection of the sample for the pilot test and the administration of the instrument and fourth, the process for the psychometric validation.

Logical sequence for the process of design, drafting and validation of an instrument.	
First phase	Objectives, theory and construct
Second stage	Expert judgment validation
Third phase	Pilot test
Fourth phase	Psychometric Validation (unidimensionality)

Table 1 Logical sequence for the process of design, drafting and validation of an instrument
Source: Own contribution (2021)

The first analysis to which the instrument must be submitted is the one-dimensionality test of the construct. For this, the analysis of the sedimentation graph is proposed (Graphic 1).

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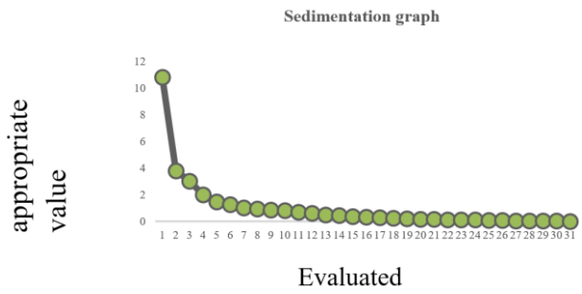


Graphic 1 Sedimentation chart
Source: Own contribution (2021)

Methodology

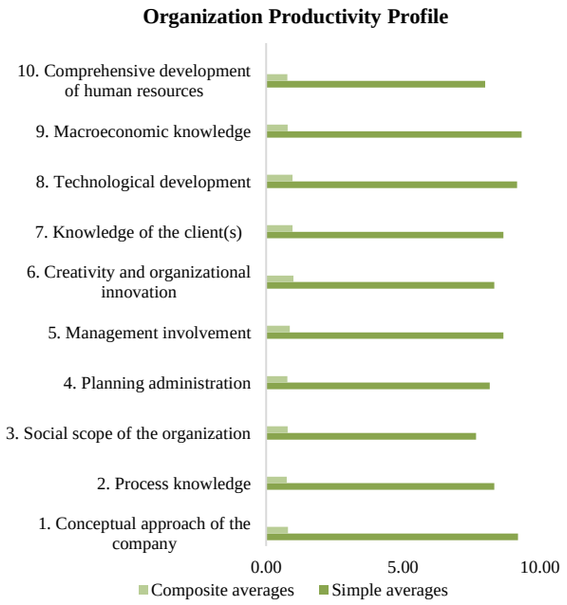
The main objective of the study is to know the integral technique of productivity evaluation that facilitates the measurement from the intangible or tangible point of view, which was applied the TIEP instrument (Table 2), which consists of two questions or more for each element., it is emphasized that prior knowledge of the meaning of each element must be had, considering the participation of each of them in the organization.

TIEP (Integral Productivity Evaluation Technique)														
	Economic Variable		Political Variable		Environmental Variable		Cultural Variable		Technological Variable		Social variable			
Element	P	E	P	E	P	E	P	E	P	E	P	E	P/S	P/C
1. Conceptual approach of the company														
2. Process knowledge														
3. Social scope of the organization														
4. Planning administration														
5. Management involvement														
6. Creativity and organizational innovation														
7. Knowledge of the client(s)														
8. Technological development														
9. Macroeconomic knowledge														
10. Comprehensive development of human resources														

Table 2 TIEP
Source: Own contribution 2021

Analysis of results

Based on the instrument that was applied to the organization's collaborators, the results shown in graph 2 were obtained, which gives us a scenario of the internal and external situation of the context variables that affect it.



Graphic 2 Organization productivity profile
Source: Own contribution 2021

It is observed that the data obtained reflect that the sector has experienced an increase in productivity, according to the indicators of the elements that are observed in (graphic 2) above.

Recognizing that the ten elements have the same degree of importance, macroeconomic knowledge, technological development and the conceptual approach of the company are highlighted, since they are the ones that obtained weighting.

It is important for the cattle industry to have a broad knowledge and certainty about the macroeconomic environment, since it is always in constant change.

Regarding technological development, any industry in any field can improve its processes, make them more efficient, so the capacity for innovation and technological development is key to achieving this.

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This refers to the reaction that the organization will have to the need for technological change to overcome the traditional patterns of processing, production, sales process, as well as adding value to products and services.

Lastly, it is of great interest to mention the importance that the conception of the conceptual approach has for organizations, since it provides the company with greater flexibility and capacity for adaptation and, therefore, with a greater capacity for anticipation and action. in a dynamic environment.

Conclusions

Assessing productivity in the cattle industry through the aforementioned instrument allows us to expand our panorama and have a real scenario of the state in which it is found.

It also encourages the participation, involvement, interest and commitment of the various collaborators in the industry, both managers and operating personnel.

These results create a precedent for the contribution of new elements and approaches to achieve more efficient results in the use of all resources and fulfillment of goals and objectives in order to improve productivity.

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