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Indicators for management control oriented towards excellence, for integral forest development

Indicadores para el control de gestión orientado a la excelencia, por un desarrollo integral forestal

Indicadores para um controlo de gestão orientado para a excelência, para o desenvolvimento integral da floresta

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ABSTRACT

The particularities of the entities in the forestry sector give particular importance to the management control process, especially because of the need to control the impact of their activity on the interested parties, given the changes in the environment. Therefore, this article aims to design a set of indicators for the evaluation and effective monitoring of the management of agroforestry enterprises in a comprehensive manner in accordance with their potential. The study emphasizes, among other aspects, that the management control models analyzed include instruments mainly focused on the economic-financial area, which limits the integral vision of the decision-making process and therefore decreases the possibility of being proactive and effective before new scenarios.

Keywords: management control; excellence; agroforestry enterprises; indicators

Translated from the original in Spanish

RESUMEN

Las particularidades de las entidades del sector forestal imprimen particularidades al proceso de control de gestión, especialmente por la necesidad de controlar el impacto de su actividad en las partes interesadas dados los cambios del entorno. Por lo anterior, el presente artículo tiene como objetivo diseñar un conjunto de indicadores para la evaluación y monitoreo eficaz de la gestión de empresas agroforestales de forma integral en correspondencia con sus potencialidades. El estudio enfatiza, entre otros aspectos, que los modelos de control de gestión analizados incluyen instrumentos centrados principalmente en el área económico-financiera, lo cual limita la visión integral del proceso de toma de decisiones y por tanto disminuye la posibilidad de ser proactivos y efectivos ante nuevos escenarios.

Palabras clave: control de gestión; excelencia; empresas agroforestales; indicadores

RESUMO

As particularidades das entidades do sector florestal dão particular importância ao processo de controlo de gestão, especialmente devido à necessidade de controlar o impacto da sua atividade sobre as partes interessadas, dadas as mudanças no ambiente. Portanto, este artigo visa desenhar um conjunto de indicadores para a avaliação e monitoramento efetivo da gestão de empresas agroflorestais de forma abrangente, de acordo com o seu potencial. O estudo enfatiza, entre outros aspectos, que os modelos de controle de gestão analisados incluem instrumentos voltados principalmente para a área econômico-financeira, o que limita a visão integral do processo decisório e, portanto, diminui a possibilidade de ser proativos e eficazes diante de novos cenários.

Palavras-chave: controlo de gestão; excelência; empresas agroflorestais; indicadores

INTRODUCTION

Management control as a scientific discipline and as a process has evolved over time; hence, there are various models, approaches and procedures, approached differently by different authors, according to the organizational and concrete conditions where their research is framed.

However, empirical evidence has shown that traditional control systems and mechanisms have not produced the expected results and, on the contrary, they diminish both the organization's capacity to respond to new situations and its ability to take advantage of the space of possibilities in which it finds itself (Bohórquez, 2011).

The agroforestry enterprise fulfills a productive function, providing society with forest goods and services that it needs, establishing itself as a "technical" unit of transformation of factors into products, for which it combines its production factors, while fulfilling its

economic function, carrying out the allocation of resources, making this dual function socially legitimate.

In this case, the responsibility for developing a management control process that makes it possible to reconcile and articulate enterprise management and the management of its forest heritage is of vital importance. This is essential for compliance with international and national criteria, parameters and policies that frame its contribution to the sustainability of the natural environment, helping to advance on the road to business excellence.

Therefore, the purpose of this research is to design a set of indicators that allow the evaluation and effective monitoring of the management of agroforestry enterprises in a comprehensive manner in accordance with their potential. To this end, the first part of the document goes into the theoretical questions about management control from a perspective oriented to excellence. The second part describes the methods used for the selection of indicators. Finally, the results of the design process are described and a set of indicators is proposed.

MATERIALS AND METHODS

There are countless researches on management control and excellence, referring to the link between both theories, we can quote authors such as Kompu, Sofia and Greatbanks and Richard (2003), cited by Silva, Pastor and Tejedor (2014).

Within the framework of the object of study, instruments were applied to carry out the research with the aim of evaluating a set of indicators proposed by each of the perspectives based on the consultation of bibliography on the management of agroforestry companies.

The information was collected "in situ" taking into account the criteria of specialists, managers and workers in the forestry sector in the country, as well as academics in the area of forestry and economic sciences, who freely expressed their opinions and considerations on the process of control in agroforestry enterprises.

For the application of the survey, the method used was the direct survey, by means of a questionnaire self-completed by the interviewee, presented in the hands of an interviewer. A particular case of the "classic collection of information" as proposed by Santos et al. (2003), cited in Pérez et al. (2009) also called PAPI (Paper Assisted Personal Interviewieng). Systematic sampling with random start was used, by which the sampling units were selected, that is, the individuals at the survey points, even though the population was known, it was decided to use the number of workers present in the base enterprise units at the time of application. This type of sampling was selected to obtain information from the majority of workers in these entities even when they are distant from each other; also because agroforestry activities concentrate a part of the workers in the forest and access to these areas is difficult for the researcher.

SPSS software version 21.0 was used for statistical data processing. For this purpose, the most relevant questions in the study were analyzed, with numerical and ordinal variables, the latter being coded in numerical scales to facilitate the analysis of the results.

The correlations found both within the same perspective and between the five proposals were analyzed, obtaining horizontal and vertical relationships respectively. The Pearson Bivariate correlations were used to carry out this correlation study. This correlation measures the linear relationship between two variables. Thus, the indicators that best describe the objectives of the perspectives and those with the lowest correlation coefficient are determined, avoiding high correlations that contain objectives referring to common elements.

This was taken into account in the selection of the indicators:

1. Importance given to the indicator (average of the ratings given by respondents)
2. Capacity of the indicator to represent the stated objective
3. Importance given to the related objective
4. Avoidance of high correlations between indicators

RESULTS AND DISCUSSION

The definition of management control has been analyzed in previous research by Nogueira (2002), González (2006), Cómas (2013), Valdés (2014) cited by Pérez Martínez and Fernández Hernández (2018), Díaz Martell and Vega García (2015) and Espinosa (2016) claims that it allows each organization to make strategic decisions; For this purpose, it takes into account the potentialities it possesses derived from the analysis of the environment, for which the use of pertinent and relevant information involving all levels and functions of the organization is fundamental, therefore, management control is exercised at the level: strategic, tactical and operational level.

It can be seen that the evolution of management control contributes to its transformation into a coordination function by adopting a proactive nature. According to Espino Valdés (2014), management control is not focused on locating errors or deviations, but is a process through which managers try to prevent them from occurring. Therefore, management control becomes a collaborative function, a means to avoid alarms and suggest appropriate solutions to certain situations.

For Diaz Martell (2016), management control is a process by which the administration, in conjunction with the rest of the members of the organization, anticipates, controls and makes decisions regarding critical factors for success, key processes and expected results, through an effective integration that leads to predicting the fulfillment of expected goals and promoting improvement in accordance with the demands of the environment.

Among the tools associated with management control, the Balanced Scorecard (BSC), proposed by academics Kaplan and Norton in the 90's, stands out. It allows translating the business strategy into a coherent set of indicators, grouped into four perspectives: financial, customers, internal processes and learning and growth.

On the other hand, various management control models have been developed, where:

- It highlights an evolution in terms of concepts and tools that are incorporated, say control by results and performance indicators; alignment with the legal regulatory framework; strategic approach and management tools and emphasis on service quality; continuous improvement, process approach, monitoring and performance management (BSC).
- The common stages are planning (using strategic planning as a starting point), evaluation (based on indicators of efficiency, effectiveness, economy and quality) and monitoring.
- The main axis is the analysis and fulfillment of the enterprise's strategy.
- The objectives are its basic support.
- The diagnosis is treated in different aspects, but in the majority, it is the starting point for the implementation of a management control system and its permanent character is assumed.
- With regard to process management, the treatment is diverse, especially with regard to measuring the quality in each of the elements that make them up, either to correct errors, or deviations, and to meet the standards and requirements demanded by customers. In most cases, quality is evaluated separately from the other objectives.
- The trend towards the application of the BSC as a tool for the integral management of indicators is highlighted.
- There is a limited analysis of environmental impact.
- Integrated management indicators are not defined in all of them.

Because of all these elements, it is recognized that an operationalized strategy is required that can lead the entire management system of the organizations to a higher stage of its management, balancing the enterprise needs with those of the environment.

In view of the above, it is important for this research to link the precepts of management control with enterprise excellence, which is recognized as a management philosophy, culture, or strategy based on outstanding practices whose aim is that the organization should satisfy in a balanced way the needs and expectations of customers, employees, shareholders, and society in general (Deulofeu, 2018).

Within enterprise management, this term was coined from the emergence of models in the West, although already in 1982, the American W. E. Deming (whose work gave rise to the Prize in Japan that bears his name) in his book "Out of the Crisis", emphasized the relationship between quality, productivity and competitiveness, and indicated the need to change the management style of companies in the United States. For the discipline of management, the 1980s was a period of great practical and academic activity that gave rise to the development of the management approach known as Total Quality Management (TQM) (Oakland & Tanner, 2008; Ruiz Torres et al., 2015). A series

of criteria, concepts and values are beginning to be used, which set the guidelines for those companies that wish to go beyond quality in their processes.

This research maintains that in the case of agroforestry enterprises, the application of excellence-oriented approaches translates into increased capacity expressed in greater productivity, better technology, increased motivation and commitment of workers, environmental sustainability and involvement in the development of the territory. Enterprise excellence is therefore a state or philosophy of management, based on the sustained success of the company's results, the satisfaction of the needs and expectations of the interested parties, in accordance with the requirements of the forest management project and the criteria of sustainable forest management.

That is why it is considered that management control oriented to excellence for agroforestry enterprises the systemic and strategic process, aimed at monitoring and measuring results based on performance standards, the evaluation of associated risks and relevant and timely information, which allows senior management to adjust actions to gradually achieve a state of sustained success[1] that contributes to the satisfaction of the needs and expectations of stakeholders, all from the forest management project and the criteria of sustainable forest management (Perez Martinez, 2019).

It is of vital importance, in the management control oriented to excellence, the monitoring and supervision of the processes, of their interrelation, because for the particular case of the agroforestry enterprises these condition the reach of the results of the enterprise in the three dimensions of sustainability: ecological, economic and social, which contributes to the adoption of a change of philosophy of management to achieve and maintain high levels of performance. Hence, the adoption of control instruments must be consistent with this objective.

For the realization of the proposal, a descriptive statistical analysis was made of the indicators for each perspective, which are the result of the documentary review of the management and control of agroforestry enterprises. Through this analysis and the correlation analysis, the most strongly related indicators are obtained. The reliability analysis of the indicator scale was carried out using Cronbach's alpha, with a value of 0.933.

The analysis of the indicators showed that the most valued were the indicators of the financial perspective, being these: economic profitability with a valuation of 5.92 and cost of production with 5.88. The indicators: level of client satisfaction and product diversification with values of 5.46 and 5.58 respectively, are the most valued with respect to the client perspective; this relationship is very interesting given that those surveyed recognize the need for agroforestry enterprises to monitor the extent to which they advance towards innovation in new products, this should largely lead to an increase in the degree of satisfaction of the enterprise's external and internal clients.

[1] According to ISO 9004:2009, sustained success is the result of an organization's ability to achieve and maintain its objectives over the long term.

With respect to the indicators that relate to the environment, the indicator "energy efficiency" and the "implementation of an environmental management system" were placed above the others. Likewise, for those surveyed, the indicators "compliance with production plans and cost and expense index" are the most valued with respect to their internal processes, with values of 5.75 and 5.50 respectively. Likewise, the involvement and motivation of the company's workers, in addition to the evaluation of their performance, are the most valued elements among the indicators of the learning and growth perspective, with values of 5.50 and 5.46 respectively.

The vertical and horizontal relationships[2] between the indicators were analyzed. To carry out this correlation study, the Pearson Bivariate correlations were used to establish the correlation that measures the linear relationship between two variables. In the case of the indicators, given that the number of variables to be evaluated is large, a condition with a value greater than 0.65.

The analysis showed that, given the independence of the indicators, the number of horizontal relationships between indicators is extensive and with high correlation coefficients. A first observation made by the author is that, among the indicators focused on the natural environment, it is where the greatest number of horizontal relations have been found (13), showing that those surveyed agreed that some indicators in this group are very closely related to each other, although relations can also be found with other groups. Vertical relationships are displayed between all the blocks of indicators, although those with a higher correlation coefficient are the market-related issues. This implies that the indicators of this group are related to all the others, under these results it can be affirmed that, if an agroforestry enterprise is a positive reference in front of its clients, this is due to a good operation of the processes that it offers and in an efficient management of its financial resources.

In summary, the study of the indicators revealed that:

- The most significant indicators according to those surveyed were economic-financial (average of 5.54), followed by those related to the natural environment (average of 5.21).
- In the case of the horizontal relations between indicators, the most correlated are found in the group focused on the natural environment, even though in the "market" and "work environment and human resources" groups there are also numerous relations. This analysis warns about the existence of redundant indicators that can be integrated.
- The vertical relations of the indicators are given among all the groups; the one that has greater implication is that of "market" having relation with all the others.

[2] Horizontal relationships are analyzed between indicators from the same perspective and vertical relationships between indicators from all perspectives.

Financial Perspective

1. Total Annual Revenues
2. Economic Profitability
3. Profit Margin
4. Percentage of research budget
5. Liquidity
6. Economic Solvency
7. Total sales

Customer Perspective

8. Level of customer satisfaction
9. Increase of the client portfolio
10. Number of Claims
11. Product diversification
12. Achievements and Awards

Environmental Perspective

13. Polluting Sources
14. Energy Efficiency Coefficient
15. Environmental Profitability
16. Contingency Coefficient
17. Environmental Responsibility Index

Internal Process Perspective

18. Results of audits carried out
19. Compliance with production plans
20. Quality Management System
21. Percentage of products for export
22. Percentage of products from import substitutes
23. Defect Index

Learning and growth Perspective

24. Employee Satisfaction Index
25. Performance Assessment
26. Technical availability of transport
27. Innovation rate
28. Facilities for training and education
29. Number of projects promoted
30. State of construction infrastructure and equipment

EXCELLENCE LEVEL

$$EEAF = \frac{\sum_{i=1}^{k} [p_j \cdot v_j]}{10 \sum_{i=1}^{k} v_j} \text{ x } 100$$

Being:

Pj: indicator score

Vj: relative weight or weighting of indicators

K: number of indicators

Hernández (2010) cited by Pérez (2019) bases the valuation scale on the proposal, but only proposes four value scales as follows (Table 1):

Table 1 - Level of excellence rating scale

Category	Intervals		Interpretation
Excellent	0.80	1.00	Sunny
Good	0.60	0.80	Good weather
Regular	0.40	0.60	Cloudy
Bad	0	0.40	Lightning bolts

Source: Own elaboration

The analysis carried out made it possible to describe a set of indicators that, in the opinion of experts in the sector's social practice, are those that make it possible to monitor enterprise management and its impact on the sector's stakeholders, on their way to excellence.

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Conflict of interest:

Authors declare not to have any conflict of interest.

Authors' contribution:

The authors have participated in the writing of the paper and the analysis of the documents.