

Original article

LEVEL OF INTEGRATION OF THE MANAGEMENT SYSTEM IN THE TRANSPORTATION PORT OPERATION INTERNAL ECONOMY

NIVEL DE INTEGRACIÓN DEL SISTEMA DE DIRECCIÓN EN LA OPERACIÓN PUERTO TRANSPORTE ECONOMÍA INTERNA

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Abstract

The Integration of the Management System is a necessity to keep the subsystems or processes integrated with the strategy, so that all efforts are concentrated and originate results of high impact for society. The objective of this study is to evaluate the integration of the management system of the Internal Economy

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Transport Port Operation (OPTEI). In the investigation, theoretical, empirical, and statistical methods were used. For the diagnosis of the organization, an internal and an external level of integration of the management system (NISDE) was determined. As a result of the study, a low level of integration in the organization was obtained, the need to strengthen the relationships between the key and functional processes and the key processes and external entities is evident. The solution will be to create an improvement proposal plan to increase the level of integration of OPTEI's management system, to fulfill its mission and achieve the vision.

Keywords: System, direction, integration, process, organization integration

Resumen

La Integración del Sistema de Dirección constituye una necesidad para mantener integrado los subsistemas o procesos con la estrategia, que todos los esfuerzos se concentren y originen resultados de alto impacto para la sociedad. El objetivo de este estudio es evaluar la integración del sistema de dirección de la Operación Puerto Transporte Economía Interna (OPTEI). En la investigación, se emplearon métodos teóricos, empíricos, y estadísticos. Para el diagnóstico de la organización se determinó un nivel de integración del sistema de dirección (NISDE) interno y uno externo. Como resultado del estudio se obtuvo un bajo nivel de integración en la organización, se evidencia la necesidad de fortalecer las relaciones entre los procesos clave y funcionales y los procesos clave y las entidades externas. Se tomará como solución crear un plan de propuestas de mejoras para aumentar el nivel de integración del sistema de dirección su misión y alcanzar la visión.

Palabras claves: Sistema, dirección, integración, procesos, integración de la organización

Introduction

The integration of the management system constitutes a superior theoretical and practical result of the organization: processes, suppliers, clients and regulatory entities, through their relationships as a key element to increase its performance.¹ It also favors search, access, replication, transformation and coherent analysis.² In a globalized environment of increasing competitiveness, such as the one organizations face, they require an integrated vision that unifies the set of decisions that impact the organization.³ The growth of new companies and The difficulty in timely addressing the problems that organizations face generates the need to integrate the management system with higher levels of effectiveness.⁴

Different authors have referred to the need to integrate the management system with different approaches.⁵ Likewise, it is necessary to integrate the management system, so that the elements or subsystems are all designed to facilitate the relationships that allow the organization achieve its vision of the future by virtue of the strategies.⁶ In a business scenario, where uncertainty and demands increase, the need arises to integrate the management system, increase and strengthen this indicator.⁷ Such an

indicator constitutes a novel practical theoretical resource, and can be used for its attribute and adaptability, analyzing important relationships based on the level of performance.^{7,8} If there is no integration between the specialties that coexist in the non-business environment for a common goal, said performance levels tend to decrease.⁹

Current business systems, both national and international, seek to increase their levels of efficiency and effectiveness.¹⁰ Entities need to leave behind a management focused only on the operational and focus on a strategic vision that contributes to resolving the insufficient performance of the management system, which hinders customer satisfaction and the growth of the organization.¹¹ Integrated strategic management has evolved in correspondence with the growing needs of business systems.^{12,13} It constitutes a higher stage of management, the coordination of the system of external relations and internal with full participation to achieve the vision of the organization.¹⁴

Likewise, in the information age, companies are required to organize according to new criteria, such as cross-functions, links that integrate suppliers and customers with the organization, and continuous improvement of processes.¹⁵ The integration of the management system of the organization is defined as: the coordination of all processes through relationships that add value or reinforce the fulfillment of the mission to satisfy the present and future needs of customers and society.⁶ Within this concept, it is important include the value chain approach.¹⁶

In order to discover problems and areas of opportunity in organizations, with the aim of correcting the first and taking advantage of the second, diagnosis is the essential first step to perfect the functioning of the organization.¹⁷ Integrated diagnosis refers to the assessment of weaknesses and problems.¹⁸ To make better decisions by the general management of the organization, within the framework of the outlined strategy and its planning, contributing to the economic development of the country, the organizational diagnosis applied in the key areas of the organization , it is essential.⁸

Taking into account the conception of integration of the management system, the level of integration of the management system (NISDE) and the proposed diagnostic instruments, there is a novel, theoretical and methodological resource for increasing the level of external and internal integration of the management system of the organization.^{19,20}

Focused on the primary or main processes, in which the Port Transport Operation Internal Economy (OPTEI) organizes and controls compliance for the delivery of products or services, the existing insufficiencies in the integration with each of these processes or activities are investigated to achieve the fulfillment of its mission efficiently and effectively in the decision-making process. Since there is no coordination in all processes through the relationships that add value or reinforce the fulfillment of the mission of satisfying the present and future needs of society, this constitutes the object of the research presented. The article aims to evaluate and analyze the integration of the management system of the Operation Port Transport Internal Economy (OPTEI).

Materials and methods

To meet the objective of the research, different methods and tools were applied, which provide value to each of the results obtained. Theoretical methods were used, which allowed us to reveal the essential relationships of the research object, which are fundamental for the understanding of the facts and for the formulation of the research hypothesis. Empirical and other methods were also used and are summarized below:

- The analysis-synthesis method is very useful for the bibliographic search and the elaboration of the theoretical-methodological references of the research topic, it allows the processing of empirical, theoretical and methodological information.
- Induction-deduction is established based on the general knowledge of the integration of the management system to the particular knowledge of its use in the OPTEI.
- Empirical methods allow for preliminary analysis of information, as well as verification and verification of theoretical concepts. At the same time, they allow us to reveal and explain the fundamental characteristics and essential relationships of the phenomenon under study, based on a whole series of practical procedures and research means.
- The documentary analysis serves to reveal the level of institutional priority, reflected in the main regulatory documents of the OPTEI.
- The survey in the research and development activity was one of the essential tools to characterize the problematic situation of the research and observation to know the direct perception of managers about the level of integration of the management system (NISDE) in the OPTEI.
- The interview allowed verbal collection on a topic of interest to the interviewer, it was used to recognize the performance of the NISDE of the OPTEI management system.
- Observation is the careful examination of the different aspects of a phenomenon in order to study its characteristics and behavior within the environment in which it develops. Carefully observe the phenomenon, fact or case, take information and record it for later analysis, a source of support for the researcher to obtain the greatest number of data.
- Statistical methods as a sequence of procedures for managing qualitative and quantitative research data, through collection, counting, presentation, description and analysis techniques. It is used to analyze the behavior of important and critical relationships in the OPTEI management system. The empirical data obtained are tabulated and appropriate generalizations are established.

The main results of the research are obtained from developing a concept of integration of the organization's management system, taking into account that the organization's management system must integrate all subsystems as part of an organizational strategy, which are united by a common purpose: the one that indicates its mission to satisfy the present and future needs of society. In this research, the integration of the organization's management system is conceived as: the coordination of all processes through relationships that add value (also called horizontal) or reinforce the fulfillment of the mission to satisfy present and future needs.

Steering System Integration Level (NISDE)

A meter is proposed to evaluate the level of integration of the organization's management system, known by its acronym NISDE: it is an indicator that allows evaluating the integration of the system based on external relationships (between key processes with external entities, suppliers, clients and regulatory

entities), as well as the internal relationships (between the key processes with all the processes of the organization), the meter is based on creating the map of external and internal relationships as illustrated in the **Figure 1**.



Matrix of external relations

Matrix of internal relations

Figure 1. Concept of integration of the company's management system **Source:** Alfonso, 2007⁷

Where: EEi: External entities Pi: Process (i) of the company

The importance of the relationship is evaluated, which can be classified as an important relationship (IR) if it directly affects the fulfillment of the organization's mission. Relationship performance in fulfilling the mission, important relationships of poor performance in fulfilling the organization's mission, is classified as critical relationship (CR). NISDE can then be calculated based on the unit minus the ratio between the amount of CR and the amount of RI; when the meter approaches 1 you have high levels of integration. The NISDE meter in its mathematical function is:

The external entities would be external suppliers and clients, regulatory entities (political, legal and social) and the processes would be key or functional activities.

Results and discussion

To diagnose the level of integration of the organization's management system in the Operation Port Transport Internal Economy OPTEI, a NISDE (internal) and a NISDE (external) were determined, through two double-entry matrices, one of external relations and one of external relations. one of internal relations. It was determined whether the environment is favorable to achieve the vision and whether the necessary capacity to fulfill the organization's mission is developed, through the analysis of

the vision and mission matrices with respect to strengths, weaknesses, threats and opportunities. The main problems of the organization were identified with the OPTEI directors.

External analysis

It was determined which of the factors external to the organization could have influence in terms of facilitating or restricting the achievement of objectives, that is, circumstances or events present in the environment that sometimes represent a good opportunity that the organization could take advantage of, either to develop further or to solve a problem. There may also be situations that represent threats to the organization.

As this organization relates to many external entities, an exchange of ideas and opinions was carried out with the directors of OPTEI, resulting from this debate the fundamental entities with which it relates. Within the list, the most important suppliers and clients were selected based on guaranteeing compliance with the organization's mission, in order to prepare the relationship matrices of these entities with the key processes.

External Entities

Customers:

- Wholesale Companies (E1).
- Hotel chains (E2).
- Food industry (E3).
- Wholesale Trade Warehouses (Stores) (E4).

Agentes Reguladores:

- Cuban Maritime Authorities (AMC) (E5)
- MININT (E6)
- ADUANA (E7)
- State Traffic Unit (UET) (E8)
- Health Authorities (E9)

Suppliers:

- National Industry (E10).
- Importing Companies (E11).

Likewise, the key processes of the organization were listed, these being:

- Maritime port operations (P1).
- Extraction and return of containers (P2).
- Railway operations (P3).
- Automotive operations (P4).
- Extraordinary Events (P5).

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Table 1 presents the OPTEI external relations matrix and shows 13 external relations classified as critical because they have high importance and low performance. Within the framework of the debate with the OPTEI Board of Directors, each cell of the matrix was assessed for its importance (I) and performance (D) on a scale of 1 to 5 points. A relationship was considered important if it significantly influences the organization's mission or the satisfaction of needs, and the performance of the relationship expresses the degree of fulfillment.

Entidades Externas/Procesos Claves	E1	E2	E3	E4	E5	E6	E7	E8	E9	E10	E11
	I=5										
P1	D=3	D=5	D=3	D=3	D=5	D=5	D=5	D=5	D=5	D=3	D=5
	I=5										
P2	D=3	D=5	D=5	D=5	D=5	D=5	D=5	D=3	D=5	D=5	D=3
	I=5	I=5	I=5	I=5		I=5		I=5	I=5	I=5	
P3	D=5	D=5	D=5	D=5		D=5		D=5	D=5	D=5	
	I=5	I=5	I=5	I=5		I=5		I=5	I=5	I=5	
P4	D=3	D=5	D=3	D=3		D=5		D=5	D=5	D=5	
	I=5	I=5	I=5	I=5		I=5		I=5		I=5	I=5
P5	D=3	D=5	D=3	D=3		D=5		D=5		D=3	D=5

Table 1. Matrix of external relations of the OPTEI

Source: self-made

Relationships that endanger the fulfillment of the organization's mission, given their high importance and low performance, are called critical relationships and when they have high importance, they are called important relationships.

RI. Important relationships. Relationships that have an I \geq 4. RC. Critical relationships. Relationships that have an I \geq 4 and a D \leq 3.

With the information in Table 1, the NISDE is calculated as follows:

NISDE= 1-(RC/RI) NISDE=1-(13/46) NISDE=0.71

With the external NISDE result of 0.71, reservations are observed in the level of integration with respect to the external sector, which means that there are important relationships with low performance that limit the fulfillment of the OPTEI mission.

Internal analyses

Taking into account the same criteria of importance and performance, the analysis of internal relationships is equally considered, including important (IR) and critical (RC) relationships. In this case, the analysis is between the key processes and all the processes of the organization.

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Table 2 presents the matrix of internal relations of the OPTEI, in which 12 critical relations are observed. Matrix of internal relations of the OPTEI

Procesos Claves/Procesos Funcionales	P1	P2	Р3	Р4	Р5
		I=5	I=5	I=5	I=5
P1		D=3	D=3	D=3	D=3
	I=5		I=5	I=5	I=5
P2	D=3		D=5	D=3	D=3
	I=5	I=5		I=5	I=5
P3	D=3	D=5		D=5	D=3
	I=5	I=5	I=5		I=5
P4	D=3	D=3	D=5		D=3
	I=5	I=5	I=5	I=5	
P5	D=5	D=5	D=5	D=5	

Table 2. OPTEI internal relations matrix

Source: self-made

NISDE= 1-(RC/RI) NISDE=1-(12/19) NISDE=0.37 (internal NISDE)

As a result of the diagnosis, a NISDE (external) = 0.71 and a NISDE (internal) = 0.37 were obtained, the low integration is given by the internal relations of the OPTEI, mainly by Port Maritime Operations (P1), Extraction and container return (P2) and automotive operations (P4).

After a detailed analysis of the external and internal relationships with respect to the OPTEI, it was possible to reach the conclusion that there are deficiencies that cause the existence of critical relationships in the different processes of the organization, that is, activities that will have a poor performance due to several negative elements that affect the correct functioning of each of the OPTEI processes.

As a result of the study, a low level of integration in the organization was obtained, the need to strengthen the relationships between key and functional processes and key processes and external entities is evident.

On the other hand, the main problems that affect the correct functioning of the OPTEI were formulated. To formulate the main problems that cause critical relationships in the different processes of the organization, that is, activities that will have poor performance, a detailed analysis of the external and internal relationships with respect to the organization with the managers was carried out. and OPTEI specialists. A process analysis of the fulfillment of the operations was carried out and the main causes detected at the discretion of the OPTEI board of directors for the fulfillment of the activities during the chain were obtained.

Table 3 shows the result of the analysis with the OPTEI managers to identify the fundamental causes that affect the insufficient level of integration of the OPTEI management system, based on a scale 1-5, where: 5 is the most important, 4 important, 3 moderately important, 2 little important and 1 is not important.

Causas	Problemas	Importancia
Organizational Deficiencies	Low level of integration	5
Lack of control and monitoring of operations by the	of all those involved in	5
institutions involved in the operation	the operation	
Lack of coordination and integration of transport companies		5
and entities with the organization during the operation		
OPTEI does not have the required technological equipment	Difficult access to	2
	required information	
Progressive deterioration in the technical state of specialized	Deficiencies in the	3
transport with a low coefficient of technical availability	loading and unloading	
Deterioration of port infrastructure, shortages of cargo	process	3
handling equipment and impacts on storage capacities in ports		
Impossibility of employment of transport groups as they cannot	Deficiencies in the	4
supply the necessary fuel demand due to the US measures	transportation of goods	
towards Cuba and the global economic crisis	to their destinations	

Table 3.	Main	problems	detected	in the	OPTEI
	main	problems	actocica	in the	OI I DI

Source: self-made

Conclusions

It was possible to carry out an analysis of the level of integration of the management system (NISDE) in the OPTEI, a tool never before applied that produced a result of interest for decision makers. The NISDE (external) of 0.71 and the NISDE (internal) of 0.37 allow us to corroborate that the low integration is given by the internal relations of the OPTEI, mainly by the Maritime Port Operations (P1), the Extraction and return of containers (P2) and Automotive Operations (P4).

With the research developed, the main problems that affect the correct functioning of the organization were formulated, obtaining as the main and most important the insufficient level of integration in the organization, determining the causes that affect the low level of integration of the management system of the organization. OPTEI, all of which allows the Board of Directors to deploy an action plan with a view to raising the level of integration of the management system and thus a greater contribution to the fulfillment of the mission, strategic objectives and processes.

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Conflict of interests

The authors declare that they have no conflicts of interest.

Authors' contribution

- Madelyn Junco Vázquez: Conceptualization, Formal analysis, Research, Validation, Writingoriginal draft, Writing: review and editing.
- Daniel Alfonso Robaina: Conceptualization, Formal analysis, Methodology, Writing: review and editing.
- Sebastiana Del Monserrate Ruiz Cedeño: Conceptualization, Writing: review and editing.