KPI INDICATORS AND OBJECTIVES OF INTEGRATED MANAGEMENT SYSTEMS IN INDUSTRIAL COMPANIES IN ROMANIA

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Abstract:

The paper presents the results of a study on internal and external performance indicators, which are essential in any organization to achieve strategic objectives.

The study was based on the collection of information from 147 organizations, the respondents being organizations active in industrial engineering in Romania, which have implemented at least two management systems in an integrated management system.

The information of the study brings benefits to the trends (sustainability) in organizations and their application by top managers will sustainably develop the organization with a resilient view of emerging risks.

Keywords: Performance indicators (KPI), Integrated management system, Objectives of integrated management systems

1. Introduction

The integration of several Management Systems (MS) into an Integrated Management System (IMS) allows organizations to coordinate and streamline their organization processes, achieve their strategic objectives, and improve their performance, managing all resources in a sustainable way for the company and finally ensuring the satisfaction of the interested parties.

To evaluate how the integration of SM into an efficient and effective SMI has been achieved, a series of key performance indicators (KPIs) must be followed, these having an important role in achieving the strategic objectives of the company and ensuring the satisfaction of the interested parties.

A detailed analysis of the control factors of the performance indicators (KPIs) in the firms that have implemented SM was carried out by several researchers who considered the performance obtained through monitoring and analysis carried out by management [1, 2, 3, 4]. The analysis attempted to investigate the effects of SM implementation in an SMI, examining the consistent use of KPIs through efficient and effective management, and considering sustainable integration, with the main objective being to ensure stakeholder satisfaction.

As Oliver states, L [5] KPIs are determined and analyzed following internal or stakeholder audits.

For KPIs to be analyzed they must first be:

1. Defined;
2. Measured;
3. Improved;
4. Controlled [3]

The main objective of KPI indicators is to identify and monitor certain strategic and operational objectives, objectives that play a crucial role in monitoring and evaluating organizational performance.

What are KPIs? KPIs are key targets that evaluate the organizational performance, of a system or just of a process concerning certain well-established objectives. Each organization

sets its objectives and KPI indicators at the same time, to evaluate the degree of achievement of the planned performance. Organizations establish certain categories, types, and values of KPIs, which are assigned to different types of organizational activities or processes, such as product quality, stakeholder satisfaction, productivity, worker performance, etc.

The managerial experience of implementing some SMIs has shown that to be successful in achieving performance, integrated management systems must have SMART objectives (specific, measurable, to be defined in time to be effective).

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As stated by [14, 15, 16] performance indicators must have certain properties and must take into account certain objectives to ensure ease of use, comparability, and consistency, such as:

1. Comprehensible: definitions and theoretical terms must be clear and well-defined;
2. Useful: procedures must be deeply clear to ensure comparability, even if an indicator is only for an internal, the indicators must be easy to apply and measure;
3. Standardized: a standardization or functional unit is needed to understand the indicators;
4. Representative: all defined indicators must represent the performance of the organization and company process;
5. Consistent: all KPIs must be reliable with the organization's SMI policy;
6. Sensitive: The stress sensitivity of the system must be perceptible and the stress response predictable.

The objectives of the implementation of KPIs indicators help and guide organizations by clearly and concisely defining managerial targets so that they can measure, optimize, and improve SMI thus determining the increase in performance, efficiency, and organizational effectiveness.

A methodology for defining KPIs indicators is proposed by Kerzner [27] and Parmenter [28], a methodology that can be carried out in three main stages: identifying the critical and successful factors of the organization; defining the measures that will work in the organization; taking action to manage performance.

In Parmenter's view, the groups of KPI indicators that must be used for monitoring and measurement are: a) financial results; b) customer orientation; c) internal processes; d) innovation and learning; e) employee satisfaction; f) environment and the community as a whole [28].

2. Research methodologies

For the research, 837 organizations that have at least two integrated management systems (quality - environment; quality, health, and safety at work, environment - health and safety at work) were contacted (by phone, by email, and at the company headquarters), etc.). This was first checked on the organization's official website, after which a phone call or a visit to the organization's headquarters was made. The basis used to identify the necessary information about organizations that are certified was the websites of the Romanian Accreditation Association www.renar.ro [17] and www.listafirme.ro [18].

Out of the 837 organizations that were contacted, 147 organizations responded to the questionnaire. They have at least two integrated management systems. At 17 organizations, the questionnaires were completed at the organization's headquarters, and only 2 questionnaires were completed by phone, due to the complexity of the questionnaire and the long time spent talking on the phone, approximately 30-40 minutes/questionnaire, and the others were received by email.

The response rate to the questionnaire was 17.56%, a rate that is due to the reluctance of organizations to provide information about the implementation of SMI, and due to the policies of large corporations that do not want to provide

any information at all, the data is considered confidential.

For this study, the studies of Salomone, Will, and Peralta were taken as a reference, the strategies being to contact the manager of each organization and complete the questionnaire by him or by a person responsible for the integrated management system (IMS) or someone subordinate to them [17, 29, 30].

The mixed method supported by some researchers who carried out research using questionnaires [18, 19, 20, 21, 22, 23] was also used, this consists of contacting the respondent for a courtesy call, thus increasing the chances of receiving an answer.

Comparing the percentage obtained with other researchers [24, 25, 36, 39] it is specified that a response rate of 20 % is considered a very good rate, and regarding the response rate another study considers that the response rate obtained under 10% is considered good [26].

3. Results and discussion

For this research, a series of indicators considered to reflect the resilience of organizations' performances, internal and external KPI performance indicators were followed, which guided the organization to establish objectives and carry out strategic planning for the continuous improvement of SMI. For the study of these indicators, multiple-choice-type questions were formulated. From the questionnaire that includes several questions, only 2 questions were extracted that had KPI indicators in mind. The questions used for the study were:

1. *What are the internal and external performance indicators (KPIs) by which the organization is guided?*

I1 - the score obtained from the annual audits;
I2 - the score obtained from customer audits;
I3 - the number of complaints received from customers;
I4 - the semi-annual or annual evaluation (score) received from clients;
I5 - the annual profit obtained.

The question asked which of the KPIs are used to track the performance of SMI, to evaluate the critical factors related to the organization's goals, and the success of the organization, and to track how the organization succeeds in fully or partially integrating SMI.

As a result of the analysis of the obtained data, the performance indicators were ranked as follows:

1) The score obtained as a result of customer audits - representing 51.68% of the expressed options;
2) The score obtained following the annual audits - representing 24.83% of the expressed options;
3) The annual profit obtained – representing 18.79 % of the expressed options;
4) The number of complaints received from customers – representing 3.36% of the expressed options;
5) The semi-annual or annual evaluation (score) received from customers – representing 1.34% of the expressed options.

The results obtained on the performance indicators were grouped in a cluster-type dendrogram, Figure 1, which highlights the links between: 1 - the score obtained following audits from clients, 2 - the score obtained following annual audits, and 3 - the annual profit obtained, these representing the main components by which organizations should be guided.

The other answers, as can be seen in Figure 1, do not represent important indicators by which the organization could be guided.

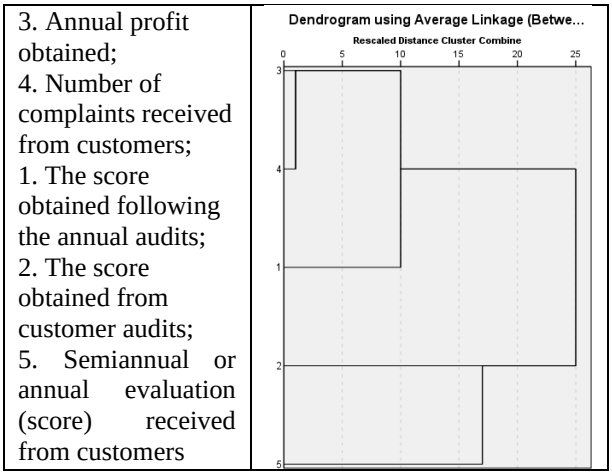

Figure 1 - *Cluster dendrogram*

The analysis took into account the size of the organization relative to the number of employees. After evaluating the responses, it was observed that:

1) Organizations with a size between 30-100 employees expressed the option that the most important performance indicator by which organizations are guided is:

- The score obtained following annual audits – 63.3%;
- The score obtained following audits from customers – 24.2%;
- Annual profit obtained – 9.0%.

2) Organizations with a size between 100 - 500 employees expressed the option that the most important performance indicator by which organizations are guided is:

- The score obtained following annual audits – 19.0%;
- The score obtained following audits from clients – 66.6%;
- The number of complaints received from customers – 8.3%;
- Annual profit obtained – 5.9 %.

3) Organizations with a size > 500 employees expressed the opinion that the most important performance indicator by which organizations are guided is:

- The score obtained following annual audits – 9.0%;
- The score obtained following audits from clients – 84.8%;
- Annual profit obtained – 6.6 %.

To highlight the links between the size of the organization it was noted with: A – small organizations (30-100 workers), B – medium organizations (100-500 workers), C – large organizations (> 500 workers), and the number of standards (S2 - two standards, S3 – 3 standards, S4 > - more standards).

Table 1. *Correlation of results according to standards and organization size.*

Nr. standard	Type Org.	I1	I2	I3	I4	I5
S2	A	0.180	0.072	**0.655**	0.093	0.001
S2	B	0.084	0.137	0.319	**0.431**	0.028
S2	C	**0.357**	0.198	0.003	0.355	0.088
S3	A	**0.633**	0.271	0.087	0.009	0.000
S3	B	**0.744**	0.044	0.063	0.148	0.002
S3	C	0.125	**0.468**	0.014	0.371	0.023
S4>	A	**0.607**	0.372	0.020	0.000	0.001
S4>	B	0.124	**0.602**	0.083	0.122	0.070
S4>	C	0.133	0.051	**0.771**	0.041	0.004

In Table 1, a Pearson correlation was performed that measures the degree of linear relationship between two variables, ranging from -1 (perfect negative correlation) to 1 (perfect positive correlation), with 0 indicating no correlation.

For organizations with S2, the variable I3 has a significantly positive correlation with the type of standard "A" (0.655), while I4 has a significant positive correlation with the type "B" (0.431).

The organization with S3 shows significant positive correlations between I1 and type "B" (0.744) and between I2 and type "C" (0.468).

The organization with S4> has significant positive correlations between I1 and type "A" (0.607) and between I2 and type "B" (0.602).

In Figure 2, a multidimensional analysis was performed for the main components that have a significant influence on the control factors in organizations.

For a clearer mapping, the size of the "A, B, C" organization was grouped in Figure 2 with S2 - A, S2 - B, S2 - C, S3 - A, S3 - B, S3 - C and S4 - A, S4 – B, S4 – C.

Analyzing Figure 2, it was observed that I2, i.e., "score obtained from customer audits" and I3 are influenced by the size of the organization "C" organization > 500 workers, this being the main question with the highest number of answers.

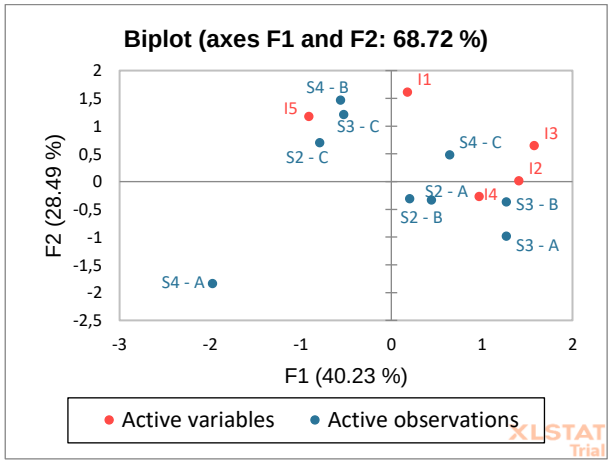

Figure 2 – *Multivariate analysis for principal components*

Question I4 was preferred by both small, medium, and large organizations. The other questions are distributed at the opposite pole of

Figure 2, which signifies low importance regarding the control factor.

The smaller the organization, the more the control factor (KPI) by which the organization is guided is the annual score obtained from the annual audits.

The larger the size of the organizations, the more the control factor is focused on the requirements of the interested parties and the fulfillment of the expectations of all the interested parties [32, 33, 35, 37, 38].

As can be seen in Figure 2, the score obtained by organizations with a number > 500 workers was chosen as the most important control factor, obtaining 84.8% of the responses.

The I5 performance indicator is mainly considered by medium and large enterprises and is not an indicator followed by small enterprises that do not also consider the I5 indicator on the score obtained from annual audits. A broader perspective of the indicators is given by large enterprises that emphasize I2 and I3 indicators and less on I4 evaluation that is carried out by customers and I1 obtaining appreciation after evaluation by external audit. An important performance indicator for small and medium-sized enterprises is that of the evaluation carried out by customers I4.

It can be seen that the way small businesses value performance indicators differ significantly from the way large businesses do, probably due to a stronger connection between customers and the staff who made the assessment and the larger businesses' orientation towards ensuring profit.

2. *What is the most important control factor for the implementation of integrated management systems*?

I1 - annual audits from clients;
I2 - audits by certification bodies;
I3 - other factors (listed).

For question number 2, those resilient indicators were pursued through which control can be achieved when evaluating the implementation of SMI in organizations. The evaluation factor regarding the control exercised by the interested parties, i.e., customer audits, was considered the most important factor, being preferred by 104 organizations, representing 70.75% of the respondents' choices.

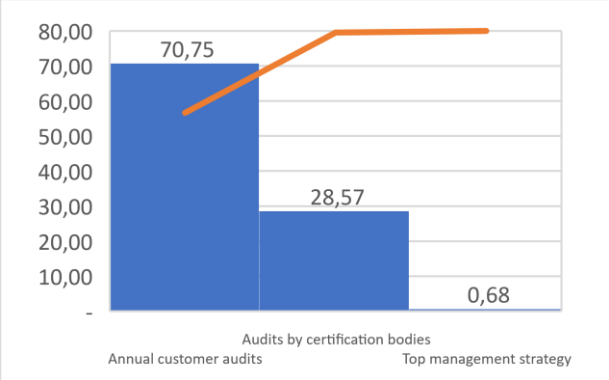

Figure 3 – *The percentage obtained for question no. 2*

The analysis took into account the size of the company concerning the number of employees. Following the evaluation of the answers to question no. 3, we note that:

1) Organizations with a size between 30-100 employees expressed the option that the most important performance indicator by which organizations are guided is:

- The score obtained following annual audits – 63.3%;
- The score obtained following audits from customers – 24.2%;
- Annual profit obtained – 9.0%.

2) Organizations with a size between 100 - 500 employees expressed the option that the most important performance indicator by which organizations are guided is:

- The score obtained following annual audits – 19%;
- The core obtained following audits from clients – 66.6%;
- The number of complaints received from customers – 8.3%;
- Annual profit obtained – 5.9 %.

3) Organizations with a size > 500 employees expressed the option that the most important performance indicator by which organizations are guided is:

- The core obtained following annual audits – 9.0%;
- The core obtained following audits from clients – 84.8%;

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As can be seen in Figure 3, the score obtained by organizations with a number > 500 is chosen as the most important control factor, obtaining 84.8% of the responses.

The "outsourcing" factor of the assessment of activities, processes, and management systems represents the possible dependence of companies on external resources for monitoring SMI, and rather it functions as a "control factor" in the internalization process since any outsourcing activity can put in danger the process of incorporating SMI experience into the organizational knowledge goal [34, 40].

4. Conclusions

The importance of monitoring KPI factors is essential for any organization, stakeholder assessment represents the opinion and perception of those who have an interest or involvement in the organization's activities and results. These KPI factors can reflect the satisfaction level of stakeholders, their feedback, expectations, and requirements.

The research results show that organizations, regardless of the majors (A, B, or C), must focus on satisfying the interested parties and implicitly on analyzing the objectives achieved by the interested parties, continuously improving their requirements. Stakeholder audits can quickly identify issues or concerns and take action to improve customer satisfaction. This can lead to customer retention and increased loyalty.

By monitoring and evaluating feedback from stakeholders, organizations can identify weaknesses in the quality of their products and services and implement improvements to bring them to a higher level.

The research shows that the evaluation carried out by the interested parties and their feedback sustainably develops the organization with the following benefits: improving the satisfaction of interested parties, increasing the quality of products and services, optimizing relations with partners and suppliers, improving the working environment for workers, risk management, social responsibility, increasing the reputation and trust of the organization, entering into compliance, improving the continuous improvement strategy and introducing risk-based thinking.

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