

Level of Implementation of Management Systems, with Emphasis on the ISO 45001 Standard in Companies Located in The State of Puebla, Mexico and its Surroundings

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Abstract: In recent years, the Mexican industry has been characterized by raising the quality of products manufactured within the country considering the requirements of the most sophisticated customers, as well as the regulations established by the international organization for standardization (ISO). These regulations include those standards that determine the basis for the implementation of a *quality management system, environmental management system and the occupational health and safety management system (OH&SMS)*, these three systems mentioned, represent the most common established in companies within the state of Puebla and its surroundings.

Having established the above, it is a matter of interest to study to verify the level of implementation that these management systems have within companies. Within the study region, there are a large number of companies that have a strongly established quality and environmental management system, leaving the degree of implementation of the OH&SMS at a lower level. This is why the following doubts arise, what is the perception of the employees of the companies, about the degree of implementation of these management systems within the organizations for which they work? With a special emphasis on OH&SMS: focusing on the collaborator, are they aware of the benefits that this system represents for the performance of your daily activities? Focusing on the company, what degree of management system implementation is the one that the company has once the transition from OHSAS 18001 to *ISO 45001* is made?

The main objective of this research is to verify the degree of implementation of these management systems within the aforementioned study region, with special emphasis on the OH&SMS. To carry out its verification, a study was conducted by analyzing data collected through surveys applied to various companies established in the region, to have a concrete overview of the degree of implementation of the aforementioned management systems.

Keywords: Quality Management Systems, Environmental Management System, Occupational Health and Safety Management System, ISO 45001

1. Introduction

At an international level, the agency specialized in the standardization of specifications of both products and systems in order to ensure their efficiency, safety and quality is the so-called "International Organization for Standardization" (ISO) founded in 1946. According to the website of this organization (2019), more than 22,000 international standards for various processes and industries have been published; of these, the quality management systems stand out (ISO 9001: 2015). This standard is used, first when the company needs to demonstrate its ability to provide products and services; and secondly, when the company needs to increase customer satisfaction through the effective implementation of a system that can control various aspects of the processes within the company. On the other hand, the environmental management system (ISO 14001: 2015), provides companies with the necessary tools to handle all varieties of environmental responsibilities and legal requirements related to this point.

According to Fuster (2018), the standard related to occupational safety and health, was agreed by a group of 100 experts related to the topic of more than 70 different countries, and seeks to improve working conditions for employees within

the institutions. In 1997, the OHSAS 18001 standard emerged with specifications for occupational health and safety management systems, this standard is voluntary and was not part of ISO 9001 and ISO 14001 (González, 2013). After this, in March 2018, the replacement of the OHSAS 18001 standard with ISO 45001 was made, with this new standard it is intended to eliminate the existing problems in the integration of ISO 9001: 2015 and ISO 14001: 2015 systems and the currently certified companies will have three years to comply with the new international standard (Rhoden and Cela, 2016).

However, according to ISO (2019), globally and until 2018, this last program has only 11,952 certifications, unlike the most popular programs such as quality management (more than 800,000 certifications) or management of the environment (more than 300,000 certifications). Focusing on Mexico and according to the same database mentioned above, the country has only a number of 77 registered sites where activities related to this management system are carried out, of which, 98.7% already have with a certification by this institution (ISO 45001: 2018). Further and based on the information provided by OHSAS (2007), Mexico only has 37 companies certified under the statutes of the OHSAS 18001: 2007 standard.

1.1 Problem statement

Nagyova et al. (2018) argue that a successful implementation, as well as the continuous fulfillment of various requirements by customers, has generated today that management systems become relevant in the industry. However, and despite the importance it refers to in terms of company employee safety, OH & SMS does not yet have the specific weight due within the industry in Mexico. This is the reason why, in addition to reviewing the degree of implementation of the most flourishing management systems within the aforementioned study region, with a special attention to verify the level of maturity of the OH & SMS.

2. Method

A survey was conducted to carry out the verification of the aforementioned management systems; this survey is made up of two main sections. The first part focused on gathering information from respondents. The second section of the survey focuses on the verification of the management systems that the selected companies have, as well as the degree of implementation of each of the programs; In addition to this, special emphasis is placed on the level of implementation of the occupational health and safety management system. This last section was carried out through multiple-choice questions based on the Likert scale which allow knowing the level of affinity or discrepancy that companies have regarding the implementation of said health and safety system. In addition, different questions were asked regarding the possible reasons why companies do not have an implemented system of these characteristics and, if they have it, corroborate the degree of maturity of various points added to the ISO 45001: 20018 standards.

To analyze the study sample, and in accordance with the information presented by the 2014 economic censuses by the “Instituto Nacional de Estadística y Geografía” by its acronym in Spanish (INEGI, 2014). In Mexico there are more than 4,200,000 companies established in national territory, of which 11.6% (489,530) are dedicated to the manufacturing branch, object of study of this research. Of these companies, approximately 500 companies dedicated to this business are located in the study region, the states of Puebla and Tlaxcala.

Of the manufacturing companies located in the aforementioned study region, a total of 112 surveys were conducted, of which 96 surveys (86%) were correctly answered, leaving 16 questionnaires unavailable due to the ambiguity of the responses collected. For the analysis of the data collected, and choosing a 95% confidence level, the instrument was validated with an acceptable Cronbach alpha value above 0.7.

2.1 Results Obtained

The first section of the survey focuses on the collection of general information of the respondents, such as their gender (Table 1), location of the company for which they work (Table 2) and the economic activity in which it operates the company they work for (Table 3). The collected responses are found below:

Table 1. Gender

<i>Gender</i>	<i>Total responses</i>	<i>Percentage</i>
Woman	79	70.59%
Man	33	29.41%
Total	112	100%

Table 2. Company Location

<i>Company Location</i>	<i>Total responses</i>	<i>Percentage</i>
Puebla	94	83.93%
Tlaxcala	18	16.07%
Total	112	100%

Table 3. Business Activity

<i>Business Activity</i>	<i>Total responses</i>	<i>Percentage</i>
Automotive	72	64.29%
Manufacturing	26	23.21%
Metal-Mechanic	14	12.50%
Total	112	100%

The second part of the survey focuses on the collection of specific information regarding the management systems present in the different companies. Starting by knowing whether or not companies have an OH&SMS as can be seen in Figure 1. From which the information presented in Figure 2 is derived, because of having the printed one with the system indicated above, it is asked if said system has an international certification either through OHSAS 18001: 2007 or ISO 45001: 2018.

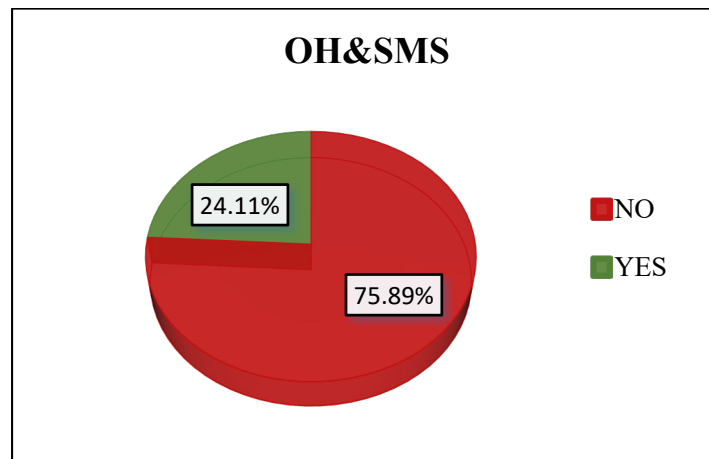


Figure 1. Is There an Occupational Health and Safety Management System Implemented in The Company?

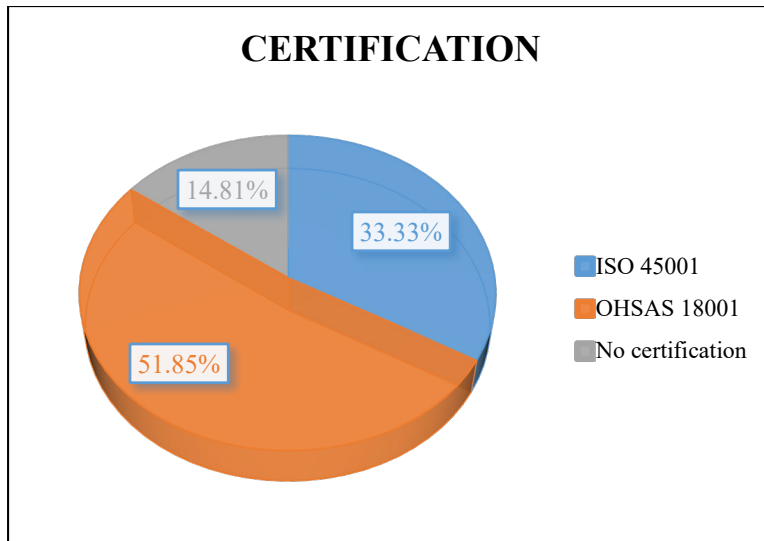


Figure 2. Company Certifications

Once differentiated whether or not the companies had an OH&SMS, a series of questions were made that allowed us to better understand the panorama regarding the reality of these systems within organizations. The information presented in Figure 3, is applicable for those companies that do have this management system and where the perception that employees have regarding specific points present in the international standard is verified. Meanwhile, Figure 4 indicates some possible reasons why companies that do not have this management system have failed to implement it within the organization. The results obtained are presented below:

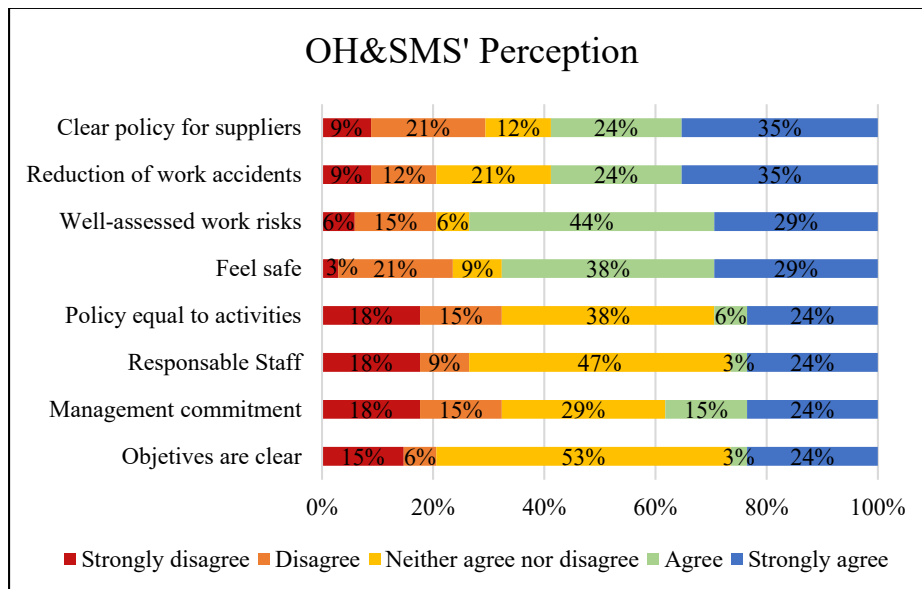


Figure 3. Perception of the OH&SMS

As shown for the previous figure, key points mentioned in the standard are highlighted, such as the clear objectives and the commitment of the managerial level with respect to the program. The collaborators are not clear that these points are

adequately addressed. In contrast, and with a fairly high percentage, employees consider that the reduction of accidents, as well as feeling safer in their jobs and attention to risk assessment are adequately addressed by the responsible staff.

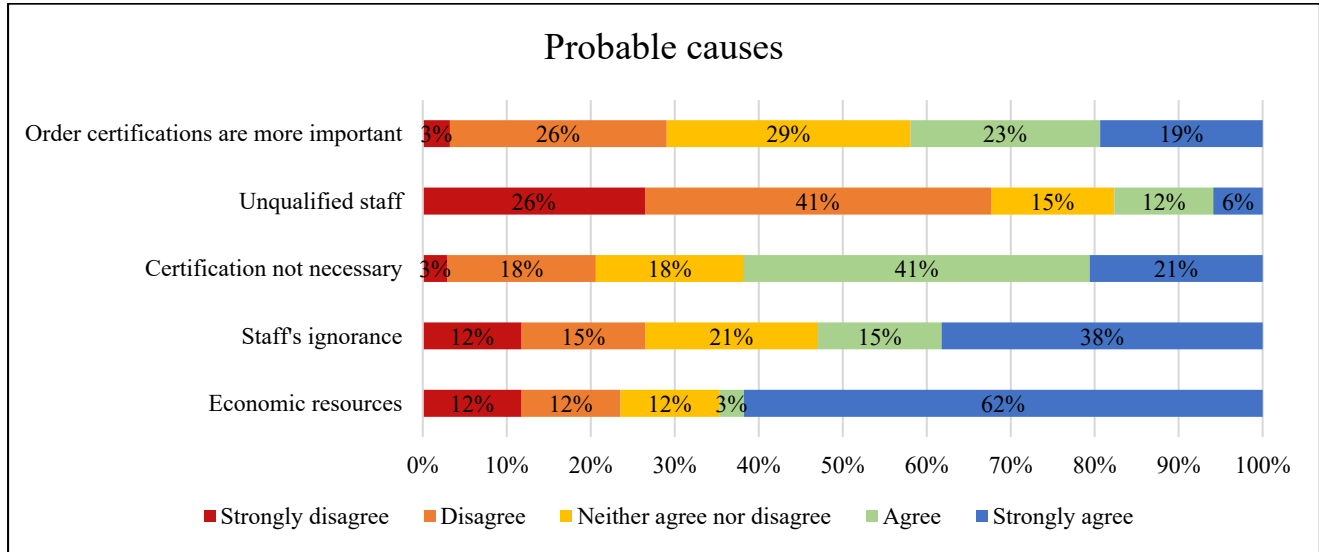


Figure 4. Probable Causes of the Lack of System Implementation

With respect to companies that do not have an OH & SMS implemented, it is highlighted that one of the main causes is the lack of economic resources, indicating that the companies do not have a budget destined to meet this type of international requirements, on the other hand, it is strongly agreed with the fact that this certification is not as necessary as the quality or environmental management systems could become.

Finally, questions were raised to identify the employees' perception regarding the degree of implementation of the quality, environment and OH&SMS management systems of the companies where they work. Figure 5 shows the results obtained:

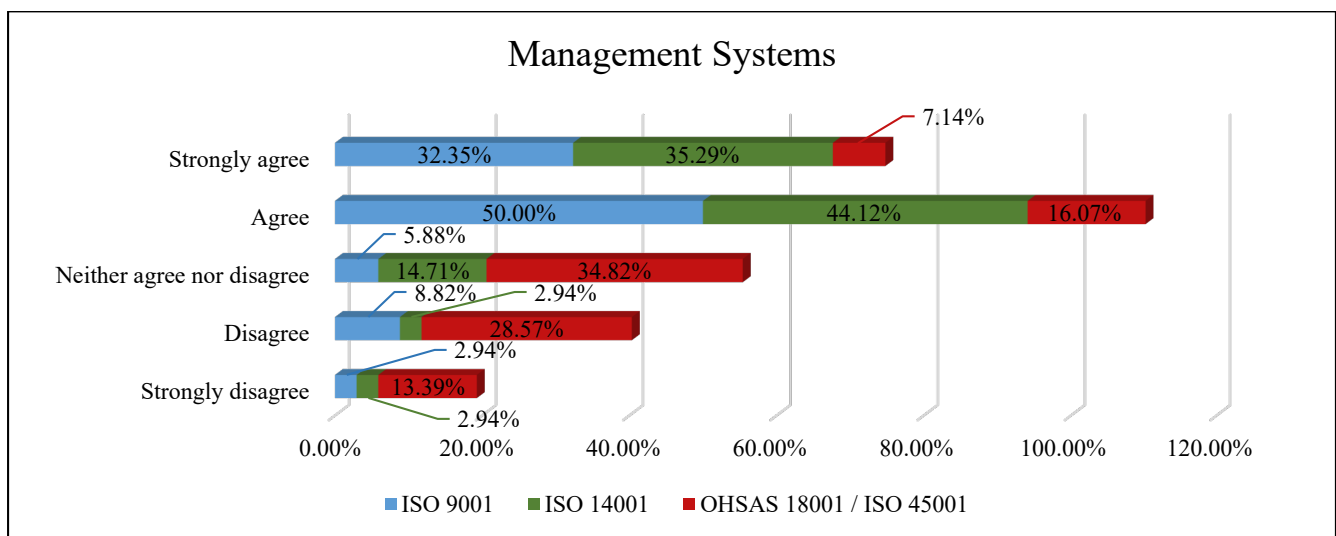


Figure 5. Level of implementation of management systems

As can be seen in the Figure 5, both the standard referring to the ISO 9001 quality management systems and the ISO 18001 environmental management system are strongly implemented within the organizations studied; however, with respect to OH&SMS there is still a long way to go with respect to the implementation of these types of standards.

3. Conclusions

Rajaprasad & Chalapathi (2015) mention that OH & SMS are designed so that any organization has control over occupational health risks within its institutions and thus can increase its performance; thus, the first step that every organization must take to establish this type of system is to develop a formal policy that encompasses the objectives to be developed in terms of security. In addition to this, Ionascu et al. (2017) argue that the implementation of the various management systems regulated by ISO 9001, ISO 14001 & OHSAS 18001 / ISO45001 standards lead to a considerable increase in the financial performance of the organizations that apply them, and that there is a directly proportional relationship between this financial performance and the amount of international certification that companies obtain.

Focusing on OH & SMS, object of study of this research article, Fernández-Muñiz et al. (2012) mention that OHSAS 18001 / ISO 45001 certifications have become in recent years the most popular measures that companies are adopting to promote continuous improvement with regard to safety conditions in the workplace. In addition to the aforementioned, Chang and Liang (2009) argue that the main objective sought by these safety standards is to promote and promote good practices in the area of occupational health and safety through duly structured systems that allow proper management of security issues within an institution.

According to the companies that have an OH & SMS implemented, the collaborators of these companies highlight three main characteristics with respect to this management system, first, that there is a considerable reduction of accidents within the daily activities of the company; secondly, that employees feel more secure when carrying out their activities, and, finally, counteracting what is indicated by ISO 45001, the management level is not deeply involved with respect to the implementation and development of the system.

Thus, after the completion of this study, it is corroborated that not only the most popular management systems in the study region are those of quality management and the environment - which have the largest number of companies certified before international organizations - but also, the lack of implementation of OH&SMS is evident; which, according to the information collected, could provide additional financial benefits to companies that opt for the implementation of this system. In addition, the study shows that the lack of financial resources allocated for this type of management systems and the belief that this type of methodology is not as indispensable as other systems, are the main reasons why companies in the study region They do not yet have an OH & SMS implemented.

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