

Quality management system for Cardón Rent Car, C.A

Sistema de gestión de la calidad para la Empresa Cardón Rent Car, C.A

Franklin Jesús Piñerez Díaz¹ , Eduvigis Sorrentino¹ , Oscar Antonio Caldera Molleja¹

¹Universidad Nacional Experimental “Francisco De Miranda”, decanato del área de postgrado dirección de Postgrado del área de tecnología, maestría en gerencia de la calidad y producto. Venezuela.

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Corresponding Author

Franklin Jesús Piñerez Díaz 

ABSTRACT

The objective of this research project was to propose a quality management system design for Cardón Rent. Car C.A. This objective contributes to establishing the guidelines and requirements subject to the standard that will improve the processes identified for the satisfaction of quality services, thereby providing the necessary attributes to the quality management system in each process carried out in the performance of the company's tasks. The problem presented in this company is the lack of certification, since it bases its guidelines on the National Institute of Aquatic Spaces (INEA) in order to be able to carry out its operations in the docks and ships as required by that institution in aquatic spaces, which was the reason and key focus of the research. To this end, a documentary and field investigation was proposed, with a non-experimental and bibliographic design, at a descriptive level of research and in the form of a feasible project. To achieve the overall objective, the service line was first characterized, and then the current situation of the company was diagnosed, evaluating the different parameters of the standard through the instrument: checklists yielding reliable results, with a degree of non-compliance of 75 % through the evaluation of 118 items. The processes that make up the process map were also identified, which will contribute to the sampling for the diagnosis of possible shortcomings in the current processes. In this regard, direct observation was carried out, and unstructured interviews were conducted with a finite population of 37 people, including the general manager, operations manager, and all personnel involved in all production processes, in order to understand the current perspective and identify strengths and weaknesses. This information was then used to design a quality management system manual based on the requirements of the ISO 9001:2015 standard for Cardon Rent. Car C.A., and as a result, provides benefits that will drive it to improve its operations and serve as support when it decides to pursue international certification.

Keywords: ISO 9001:2015 Quality Management System; Continuous Improvement; Productivity; Benefits; PHVA.

RESUMEN

El presente trabajo de investigación tuvo como objetivo proponer un diseño de un sistema de gestión de la calidad para la empresa Cardón Rent. Car C.A, tal objetivo contribuye a establecer los lineamientos y requisitos sujetos a la norma que permitirán mejorar los procesos identificados para la satisfacción de los servicios de calidad para así, proporcionar atributos necesarios al sistema de gestión de la calidad en cada proceso que se realicen en la consecución de las labores de la empresa. La problemática presentada en esta empresa es la falta de certificación, ya que la misma basa su lineamiento con el Instituto Nacional de Espacios Acuáticos (INEA), y así poder prestar sus operaciones en los muelles y buques en lo requerido por dicha institución en los espacios acuáticos, el cual fue razón y clave esencial de la investigación. Para tal fin se plantea una investigación tipo documental y de campo, con un diseño no experimental y bibliográfico, del nivel de investigación descriptivo y modalidad proyecto factible. Para alcanzar el cumplimiento del objetivo general, primeramente se caracterizó la línea de servicio para luego proceder al diagnóstico de la situación actual de la empresa donde se evaluaron los distintos parámetros de la norma a través del instrumento: listas de chequeo arrojando resultados confiable, con un grado de incumplimiento del 75 % mediante la evaluación de 118 ítems, así mismo se identificaron los procesos que constituyen el mapa de procesos, y que contribuya a la toma muestras para el diagnóstico de las posibles falencias en los procesos presentes. En este sentido se realizó la observación directa, la entrevista no estructurada a una población finita de 37 personas en la cual está conformada por gerente general, gerente de operaciones y todo personal involucrado en todo procesos productivos, de tal forma que se pueda entender toda la perspectiva actual y resolver así las fortalezas y debilidades para luego poder diseñar el manual del sistema de gestión de la calidad basado en los requisitos de la norma ISO 9001:2015 para la empresa Cardon Rent. Car C.A.,

y como resultado, le aporta bondades que la impulsen tanto a mejorar su funcionamiento y les sirva de apoyo al momento de que estas quieran optar por una posible certificación internacional.

Palabras clave: Sistema de Gestión de la Calidad ISO 9001:2015; Mejora Continua; Productividad; Beneficios; PHVA.

INTRODUCTION

In a business environment characterized by high competitiveness,^(1,2,3,4) constant technological changes, and growing market demands,^(5,6,7,8) organizations have found it necessary to adopt systems that guarantee operational efficiency,^(9,10,11,12) continuous improvement, and customer satisfaction.^(13,14,15,16) In this context, the ISO 9001:2015 standard represents an internationally accepted framework for the design and implementation of Quality Management Systems (QMS),^(17,18,19,20) with the aim of improving the overall performance of organizations, facilitating compliance with customer and legal requirements, and promoting sustainable development.^(21,22,23,24)

The adoption of ISO 9001:2015 allows companies to establish well-defined processes, assign responsibilities, reduce errors, increase efficiency, and respond effectively to the needs of the environment.^(25,26,27,28) In particular, the process-based approach of the standard allows for the analysis and control of organizational activities in an interrelated manner,^(29,30,31,32) which is essential for achieving strategic and operational objectives.^(33,34,35,36)

In Venezuela, many companies in the service sector still face significant challenges in terms of process standardization, document management, and the application of quality principles.^(37,38,39,40) Cardón Rent Car, C.A., a company dedicated to vehicle rental and related services, has identified the need to design and implement a QMS that will enable it to improve its performance, meet customer expectations, and facilitate its potential international certification.^(41,42,43,44)

What aspects should be considered when characterizing the vital processes of Cardon Rent Car, C.A.?

Objective

To design a quality management system for Cardon Rent Car C.A., in accordance with the guidelines of the ISO 9001:2015 standard.

METHOD

The methodological framework is a fundamental part of the structure used to carry out the proposed research. It comprises a series of elements that clearly and precisely specify the epistemological approach, type, level, and design of the research, population and sample, as well as the different data collection techniques and instruments and methodological phases, serving as support in the achievement of the planned objectives.

Epistemological Approach

Epistemological approaches according to Rodríguez⁽¹⁾ they state that “qualitative research studies reality in its natural context, as it happens, trying to make sense of or interpret phenomena according to the meanings they have for the people involved.” Based on the author’s statement, qualitative research involves the use and collection of a wide variety of materials, interviews, personal experience, life stories, observations, historical texts, images, and sounds that describe routines, problematic situations, and meanings in people’s lives.

In fact, Pérez⁽²⁾ points out that “qualitative research studies reality in its natural context and how it happens, extracting and interpreting phenomena according to the people involved.” According to the author, a variety of instruments are used to collect information, such as interviews, images, observations, and life stories, which describe routines and problematic situations, as well as the meanings in the lives of the participants.

According to a study, “qualitative methods start from the basic assumption that the social world is constructed of meanings and symbols. Hence, intersubjectivity is a key element of qualitative research and a starting point for reflexively capturing social meanings.” According to the author, social reality as seen in this way is made up of meanings shared intersubjectively. The objective is the intersubjective meaning attributed to an action. Qualitative research can be seen as an attempt to gain a deep understanding of the meanings and definitions of a situation as presented to us by people, rather than producing a quantitative measure of their characteristics or behavior. Given the above, it can be understood that this qualitative approach to research is dialectical and systemic, as it considers knowledge to be the result of a dialectic between the subject, with their interests, values, and beliefs, and the object of study. It is also systemic due to the high level of structural complexity produced by the variables that comprise it. In this order, the post-positivist approach considers knowledge as the result of the relationship between the knowing subject and the known object.

In fact, the epistemological approach to be used in this research will be post-positivist, qualitative methodology, since it represents a broader perspective of theoretical and practical reality, which allows us to address the ISO 9001:2015 quality management system. Thus, the theory of knowledge or philosophy of science on which qualitative methodology is based considers that knowledge is the result of the dialectic between the subject’s interests, values, beliefs, among others, and the object of study. That is why it is a system based on the theory of rationality, that is, a paradigm framed within post-positivist epistemology.

In other words, a study points out that “the post-positivist orientation rescues the subject and its importance. The mind constructs perception or the known object, informing or shaping the amorphous matter provided by the senses, through its own forms or categories.” Likewise, as mentioned by the author, post-positivist epistemology shows that there is no direct relationship in the cognitive process of our mind between the empirical, visual, auditory, and olfactory image and external reality, but that it is always mediated and interpreted by the personal and individual horizon of the researcher.

According to a study, “Qualitative research is research that studies the quality of activities, relationships, issues, media, materials, or instruments in a given situation or problem. It seeks to achieve a holistic description, that is, it attempts to analyze a particular issue or activity exhaustively and in great detail.” According to the author, qualitative research can be seen as an attempt to gain a deep understanding of the meanings and definitions of the situation as presented to us by people, rather than producing a quantitative measure of their characteristics or behavior. That is why qualitative research is the search for information through methodologies that aim to find and understand the meanings of the relationships that are created in people’s minds. The subject is the center of qualitative research.

For the reasons outlined above, qualitative approaches advocate addressing subjective and intersubjective realities as legitimate objects of scientific knowledge, studying everyday life as the basic setting for the construction, constitution, and development of the different planes that shape and integrate the specific dimensions of the human world, and, finally, highlighting the unique, multifaceted, and dynamic nature of human realities. That is why this research presents a qualitative epistemological approach.

Likewise, this research is qualitative in nature given its holistic vision, being a systematic activity aimed at the in-depth understanding of educational and social phenomena, the transformation of socio-educational practices and scenarios, decision-making, and also the discovery and development of an organized body of knowledge.

The Method

According to the information mentioned in the previous sections, the approach used in this research is based on qualitative ethnographic research which will focus on a descriptive study of a group of individuals who are accustomed to sharing their way of life together. To this end, the process of information gathering will be related to the current state of the categories of corporate social responsibility and competitive strategy, which will be presented at the time of data collection, without deducing or confirming hypotheses.

Similarly, with the intention of achieving the objectives, a checklist was designed to provide guidance in achieving the established objectives, in order to collect the necessary information. This process allowed for the analysis and observation of the facts.

Likewise, according to Hernández⁽³⁾, interviews in qualitative research “are more intimate, flexible, and open, and are therefore defined as a meeting to exchange information between one or more people called the interviewer and another called the interviewee or interviewees.” As the author notes, the first interviews in qualitative research are open as the work progresses.

In line with the above principles, the categorized content will be grouped to establish the relationships between the categories of analysis and the subjects to be interviewed. Subsequently, once the grouping has been carried out, the interpretative structures will be designed according to the interviewees’ statements. Subsequently, a diagnosis of the current situation will be made and a theoretical construct will be revealed to strengthen the theories related to the categories of analysis of this study.

Type of Research

In accordance with the contribution to the general objective set out in Chapter I, this research, according to Palella et al.⁽⁴⁾, indicates that “the type of research refers to the kind of study to be carried out. It provides guidance on the overall purpose of the study and on how to collect the necessary information and data.” According to the author, it was based on the characterization of its processes, as described in the specific objectives. It is also framed as a projective type of research, feasible project modality, because a quality management system design was established for the company Cardon Rent, Car C.A., where changes and problem solving can occur after identifying the current situation.

In terms of type, it falls within the field that “consists of collecting data directly from the reality where the events occur without manipulating or controlling variables, through the concrete work of the researcher and his team”,⁽⁵⁾ using this statement by the author, agrees with the data collection that was carried out directly from the company’s processes and personnel, allowing the needs and source of information required for the research to be determined. In addition to this, it also falls within the type of documentary research that focuses exclusively on the compilation and information of the ISO 9001:2015 standard, as relevant to this research, accessing fundamental approaches and logical aspects of its content, as well as previous degree theses that provided support and theoretical bases to complement this research.

According to a study, descriptive research “lies in detailing some fundamental characteristics of homogeneous sets of phenomena. Descriptive research uses systematic criteria that reveal the structure or behavior of the phenomena under study, thus providing systematic information that is comparable with that from other sources.”

The feasible project “consists of the preparation and development of a proposal for a viable operating model to solve problems, requirements, or needs of organizations or social groups. It may refer to the formulation of policies, programs, technologies, methods, or processes. The project must be supported by documentary or field research or a design that includes both modalities.”⁽⁶⁾

In relation to the above, it is considered a feasible project, since a quality management system was designed. An analysis of the current situation was carried out through an internal study, establishing parameters to evaluate the status of Cardón Rent. Car C.A. with respect to the requirements of the standard and thus conceptualize the quality management system for subsequent documentation. It can also be said that this research is descriptive in nature, as the processes within the company were evaluated and

analyzed. Non-experimental research “is carried out without deliberately manipulating the variables, that is, it is research where we do not intentionally vary the independent variables. What we do in non-experimental research is observe phenomena as they occur in their natural context and then analyze them”. In relation to the above, no variables that could affect the results will be manipulated.

Research Design

If the design is well conceived and consistent with the questions, the approach, and the objective of the study, its results will have a greater chance of success in generating scientifically valid knowledge. The term design refers to “the plan or strategy devised to obtain the desired information”.⁽⁷⁾ Based on the authors’ approach, the research was classified as non-experimental, in which no variables are deliberately manipulated, allowing for clear observation of the reality under study in its everyday environment, in order to subsequently present the results of the research, in line with the objectives set out in the study. The study carried out at Cardon Rent. Car C.A. falls within this definition, as the data will be collected using a checklist that will be applied to the employees of the company in question, which will allow for a diagnosis of the current situation with respect to the requirements of the ISO 9001:2015 standard.

This study is also considered to fall within the category of bibliographic or documentary design, in which “work is carried out with secondary materials that have already been produced, which can be used to guide and direct the research”.⁽⁸⁾ Based on this statement, this work will generate new knowledge from the review and analysis of documents to extract data from both printed and electronic sources for the development of the quality management system design. It is imperative to identify a range of similar past experiences with which to direct and focus the research on quality and excellence.

Population and Sample

The population is the universe where the relevant results are analyzed for the purpose of the study.^(9,45,46) In this sense, and based on the author’s proposal, the population selected for this research is finite, which allowed us to obtain the necessary information to evaluate weaknesses and strengths through the application of the instrument, (checklist) related to the design of the quality management system under the guidelines of the ISO 9001:2015 standard. A total of thirty-seven (37) people who make up the organizational structure of the company Cardón Rent. Car C.A. were consulted and interviewed for this study.

Table 1. Population of Cardón Rent. Car C.A	
Description	Number of Employees
President	1
Vice President	1
Operations Manager	1
Administration	1
Accounting	1
Tax assistant	1
Contract management	1
SIHO-A Coordinator	1
HR Coordinator	1
General Implementation Supervisor	1
Logistics	1
SIHO-A Analyst	1
Environmental Analyst	1
Supervisor	1
Foreman	1
Mechanics	2
Drivers	7
Blacksmith	1
Maintenance	1
Security guard	2
Vacuum operators	5
Assistant	4
Total	3
Source: Data provided by Cardón Rent. Car C.A	

The population is finite because the number of units that comprise it is known, and there is a documentary record of those units.⁽¹⁰⁾ In this sense, the population of the company Cardon Rent. Car C.A can be seen in the table above, which shows that the

population is finite, as it is small. Taking the universe under study as a reference, it constituted a delimited population, insofar as it was organized by certain elements. For this reason, sampling criteria were not applied in order to extract a small sample from the universe. With regard to the sample, a study considers that the sample represents “a representative and finite subset extracted from the accessible population.” In this research, the criterion indicated by the aforementioned author was applied, who states that “if the population, due to the number of units that comprise it, is accessible in its entirety, it will not be necessary to extract a sample. Consequently, it will be possible to investigate or obtain data from the entire target population, without it being strictly a census.” Given the characteristics of this small and finite population, all the individuals that comprise it were selected as the sample, that is, the (37) employees of the company Cardon Rent. Car C.A.

After defining the population, several information gathering techniques and instruments were considered and incorporated throughout the research process.

Information Collection Techniques and Instruments

The information collection technique is the procedure or particular way of obtaining data or information.^(10,47,48) This explains that the technique “is the method used by the researcher to collect information. In terms of instruments, these are, in principle, any resource used by the researcher to approach phenomena and extract information from them”.⁽⁵⁾ Below is a set of techniques that support the study, which were taken into account for its development:

- Document review as support for the development of the research, such as previous degree theses that provided support and theoretical foundations to complement this research. Analysis of documentary sources, detailing the ISO 9001:2015 standard as relevant to this research, accessing fundamental approaches and logical aspects of its content and proposals, as bibliographic data useful for the case under study and its background were detected.
- Direct observation was obtained through our own means, allowing us to observe the situation as it is and as it presents itself in reality, through which we obtained the necessary information regarding the company Cardón Rent Car C.A., viewing the facilities, activities, and interpersonal relationships carried out for the development of the process map, as well as the identification of the diagnosis of the current situation to proceed with the conceptualization of the quality management system.

Tools

Checklist

The instrument (checklist) indicates the presence or absence of an aspect or behavior to be observed.^(10,49,50) In reference to the above, this instrument was applied to identify weaknesses and opportunities for improvement in the research, and was structured in three columns:

- The left column lists the elements or behaviors to be observed.
- The middle column has a space to mark if the aspect or behavior is present.
- The space in the right-hand column is used to indicate whether the element or behavior is not present. This instrument was used to carry out this research, in accordance with the guidelines of the ISO 9001:2015 standard.

Notebook

The notebook is where information about facts, events, or occurrences in the field is recorded, which will help analyze the situation when collecting the material.^(11,51,52) In addition, the recording of information is a procedure used to locate and obtain a set of information required to meet the general objective and specific objectives of the research.^(12,53,54) In reference to the above, it is a tool created to support the teaching and learning process, in which all types of records, queries, tasks, illustrations, and information are made. It is extremely important, as it allowed us to visualize and interpret the type of tasks and proposals within the diagnostic research of the company Cardon Rent. Car C.A.

Data Processing and Analysis Techniques

Data processing and analysis are tasks that researchers use to obtain information, leaving them in possession of a certain amount of data from which it will be possible to draw general conclusions that point to clarifying the problem formulated at the beginning of the work.^(5,55,56) In this sense, once the necessary information has been obtained, certain methods are available, which will be mentioned below, through which the respective analyses that served to support the resolution of the problem posed are obtained:

Bar charts

Bar charts are two-dimensional graphical representations in which the basic graphical objects are a set of rectangles arranged in parallel so that their length is proportional to the magnitude they represent.^(13,57,58,59) According to the author, the data obtained from the checklist and after tabulation were used to create graphs, using vertical bar graphs for better comparison and quantitative analysis.

Methodological Phases

This research presents the methodological procedure used to fulfill and achieve each of the objectives set, structured in four (4) phases:

Phase I: Characterize the service line of Cardon Rent. Car C.A

Starting from this point, it is vitally important to have a clear understanding of the service line, as this is what generates value and satisfaction for its workers, and is considered the focal point for the development of the process map that must contain the design of the quality management system with a view to achieving greater efficiency, effectiveness, and efficacy.

Taking Serna's theory⁽¹⁴⁾ as a reference, these are the basis for the quality management system. A PEPSC diagram was also drawn up, identifying each of the inputs, processes, and outputs involving both suppliers and customers. Flowcharts were also drawn up to visualize the sequence of each of the processes at Cardón Rent. Car C.A.

Phase II: Diagnosing weaknesses in quality management at Cardon Rent. Car C.A

In this phase, the current situation of Cardón Rent. Car C.A. was evaluated based on the ISO 9001:2015 standard, thus establishing the parameters that are being met within this context and the deviations presented, supported by techniques such as document review and direct observation, as well as the application of a checklist in accordance with clauses 5, 6, 7, 8, 9, and 10 of said standard, allowing for a clear picture of how the company stands with the selected quality management system. The results were analyzed using bar charts (to show the level of compliance), which allowed us to establish the corresponding actions together with the company. A SWOT matrix was also developed as a general analysis of the strengths, opportunities, weaknesses, and threats found in all the company's processes.

Phase III: Conceptualize the operating structure of the quality management system for Cardon Rent. Car C.A

In this phase, the structure of the quality management system for Cardón Rent. Car C.A. was conceptualized to determine the levels of documentation based on the ISO 9001:2015 standard and an analysis of the process map, identifying the procedures required by the standard, plus those required by processes that are essential within the company due to their nature, and with a hierarchical pyramid-type structure, referring to the documented information necessary to support the functioning of the processes, by means of a definitive and comprehensive list of procedures with their respective unique coding and identification, which the company must possess. Emphasis is placed on the documentation of operational procedures that are critical to the proper functioning of the organization and in accordance with the needs identified in the execution of the previous phases.

Phase IV: Configure the documentary information and plans necessary for the implementation of a quality management system at Cardon Rent. Car C.A

After analyzing the diagnosis and establishing the document structure of Cardón Rent. Car C.A., we finally proceeded to configure the documentary information, such as the plan for the implementation of the quality management system manual in accordance with the ISO 9001:2015 standard, in order to define the responsibilities and time required for the execution of actions in each work area, to make continuous improvement an integral part of our daily activities.

RESULTS

Analysis of the current situation

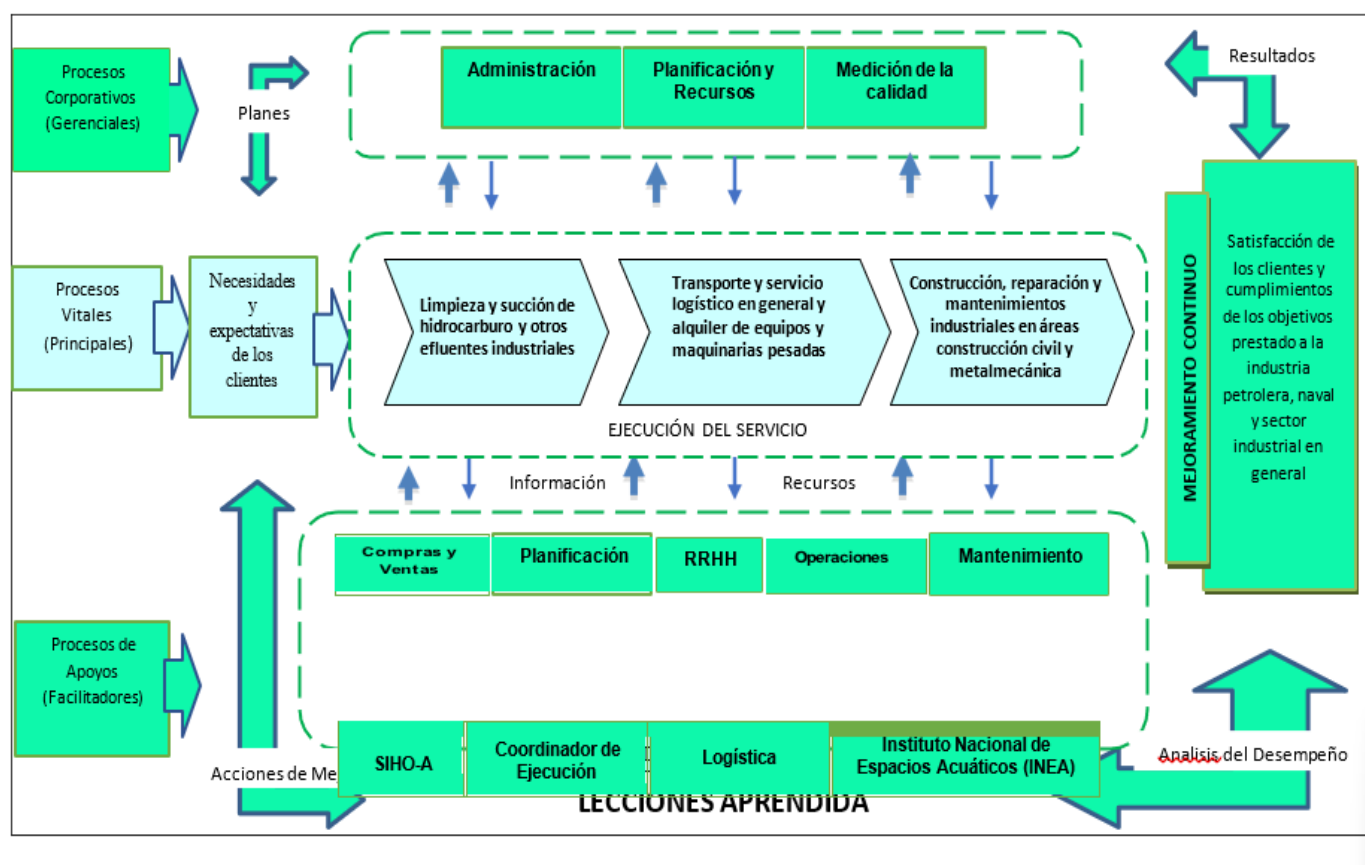
The following chapter presents and analyzes the results achieved from the characterization of the process line carried out as a focal point for the development of the process map that should contain the proposal based on continuous improvement, with a view to achieving greater efficiency, effectiveness, and efficacy. Taking as a reference the Serna theory⁽¹⁴⁾, which identified the management, vital, and support processes of the company Cardon Rent. Car C.A., these are the basis for the quality management system. In addition to the diagnosis of the current situation as a result of the application of the checklist with respect to the ISO 9001:2015 quality management system, in order to detect the weaknesses of Cardon Rent. Car C.A., and taking into consideration the requirements established by the standard. Continuing the evaluation, the structure of the quality management system will be conceptualized to determine the levels of documentation based on the ISO 9001:2015 standard.

Characterization of the Vital Processes of Cardon Rent. Car C.A

The main services provided by Cardon Rent. Car C.A. are the cleaning and suction of hydrocarbons and other industrial effluents, transportation and logistics services in general, and the rental of heavy equipment and machinery, as well as industrial construction, repair, and maintenance in the civil construction and metalworking areas. These are broken down into three processes represented schematically in the process map (figure 1). This was validated through group meetings, which were held to identify each of the aspects that make up the processes and thus more easily understand the activities carried out by the company and its environment. The main processes identified are in figure 1.

In addition, Cardón Rent. Car C.A. established the sequence and interaction of the processes shown in the above map by characterizing them and identifying and classifying the inputs, outputs, and activities within the PHVA cycle. Similarly, these management and administrative tasks are committed to:

- Establishing the relevant criteria and methodologies to ensure the proper functioning and control of the processes.
- Design a system that enables the control and measurement of service quality, through which Cardón Rent. Car C.A. can continuously improve these vital processes by identifying failures in service and execution, as well as establishing actions to mitigate the causes of problems and thus prevent them from recurring.



Source: data provided by Cardon Rent. Car C.A

Figure 1. Cardón Rent. Car C.A. Process Map

Management Processes

These are defined by the areas that receive strategic information and analyze it in detail in order to make decisions that have an organizational impact and promote the company's progress. The following are the three (3) management processes of the company:

Administration

This process is the responsibility of the administrator, who initiates the process of coordinating, directing, motivating, and accompanying the members of the different teams that make up the company to distribute responsibilities efficiently and effectively in the processes, thereby efficiently controlling the infrastructure. Manage transfers and purchases, maximizing the benefit to the company and eliminating unnecessary expenses.

Planning and Resources

This department is responsible for planning the management of the organization, its activities, projects, expenditure and investment budgets, and procuring the necessary resources, materials, infrastructure, and work environments, with a commitment to establishing and developing the best strategies to achieve greater customer satisfaction.

Quality Measurement

Its function is to ensure that quality is measured in such a way that the organization's processes satisfactorily meet customer requirements.

Vital Processes

These are the areas where inputs are defined by customer needs and requirements, and through the execution of their activities, these are fulfilled in order to satisfy customer needs. Part of their focus is on achieving continuous improvement. The three (3) vital processes of the company are listed below:

Cleaning and Suction of Hydrocarbons and other Industrial Effluents

Ensure that all facilities, surfaces, equipment, and tools used are properly cleaned and disinfected to prevent them from being a source of environmental contamination for workers and stakeholders. The following is a description of this first vital process of the company (table 2).

Table 2. Characterization Diagram for Cleaning and Suction of Hydrocarbons and Other Industrial Effluents

					
	Vital Process:	Cleaning and suction of hydrocarbons and other industrial effluents			
	Responsible	Cardon Rent. Car C.A.			
	Objective of the Process:	To ensure that all facilities, surfaces, equipment, and tools used are properly cleaned and disinfected to prevent them from becoming a source of environmental contamination for workers and stakeholders.			
SUPPLIER	PROCESSES / ACTIVITIES	PROCESSES/ACTIVITIES	OUTPUT	CUSTOMER	
These are the people, companies, organizations, agencies, among others, that deliver the inputs or information required for the execution of the process.	Identification of needs. Service request.	Cleaning of swimming pools, wells, and industrial process separators Cleaning and degassing of storage tanks. High-pressure water washing of roofs, walls, and floors of industrial equipment. Internal and external cleaning of pipes, coolers, and heat exchangers. Sediment and other fluid extraction services using vacuum and high-vacuum trucks.	Measurement and analysis of áreas for improvements. Recording of and preventive actions. Customer satisfaction. Excellent process results.	Paraguana Refining Center (CRP) PDVSA National Institute of Aquatic Spaces (INEA). And other sectors of the industry in general.	
DOCUMENTS			DOCUMENTS		
PHYSICAL: Computer, telephone, printer, facilities, and stationery.			Cleaning control plan.		
HUMAN RESOURCES: The entire Cardon Rent. Car C.A. team.			Consolidation of bids submitted.		
TECHNOLOGICAL: Microsoft Office Word, Excel, and Internet.			Control of the status of environmental projects.		
			Customer satisfaction survey.		
Source: Cardon Rent. Car C.A.					

Transport and General Logistics Services and Heavy Equipment and Machinery Rental

Table 3. Diagram characterizing transportation and logistics services in general and heavy equipment and machinery rental

	Vital Process:	Transportation and General Logistics Services and Heavy Equipment and Machinery Rental Heavy			
	Responsible	Cardon Rent. Car C.A.			
	Objective of the Process:	To improve transport conditions and achieve greater competitiveness for Cardón Rent. Car C.A. within its sector. In addition, these are some of the specific objectives of this management process: greater competitiveness, reducing errors and increasing the speed of solutions, seeking the highest quality of service offered, increasing performance, and boosting productivity.			
SUPPLIER	INPUT	PROCESSES/ACTIVITIES	OUTPUT	CUSTOMER	
These are the people, companies, organizations, agencies, among others, that deliver the inputs or information required for the execution of the process.	Identification of needs. Request for service.	Drilling fluid transportation service. Crude oil and formation water transportation service. Coker transfer service. Collection, handling, and final disposal of industrial and non-industrial waste. Dredging, handling, treatment, and disposal of Contaminated Waste. Rental of heavy equipment and machinery.	Measurement and analysis of areas for improvements. Customer satisfaction.	Paraguana Refining Center (CRP) PDVSA National Institute of Aquatic Spaces (INEA). And other sectors of industry in general.	
RESOURCES			DOCUMENTS		
PHYSICAL: Computer, telephone, printer, facilities, and stationery. HUMAN RESOURCES: The entire team at Cardón Rent. Car C.A. TECHNOLOGICAL: Microsoft Office Word, Excel, and Internet.		Take improvement actions. Consolidate bids submitted. Monitor project status. Customer satisfaction survey.			
Source: Cardon Rent. Car C.A.					

Improve transport conditions and increase the competitiveness of Cardón Rent. Car C.A. within its sector. However, these are some of the specific objectives of this management: greater competitiveness, reducing errors and increasing the speed of solutions, seeking the highest quality of service, increasing performance, and increasing productivity at the lowest possible cost. The following is a description of this second vital service line of the company (table 3).

Industrial Construction, Repair, and Maintenance in Civil Construction and Metalworking

Promoting the development and construction of civil and industrial works, road, urban, and rural systems, the construction and assembly of electrical works covering the civil, mechanical, electrical, industrial, and metalworking areas, repairs of any kind, as well as earthworks, general industrial maintenance, and rental of heavy machinery, equipment, and tools. The following is a description of this third line of vital services provided by the company (table 4).

Table 4. Characterization Diagram of Industrial Construction, Repair, and Maintenance in Civil Construction and Metalworking Areas				
	Vital Process:	Industrial Construction, Repair, and Maintenance in Civil Construction and Metalworking Areas and Metalworking		
	Responsible	Cardon Rent. Car C.A.		
	Objective of the Process:	To promote the development and construction of civil and industrial works, road, urban, and rural systems, the construction and assembly of electrical works covering the civil, mechanical, electrical, industrial, and metalworking areas, repairs of any kind, as well as earthworks, industrial maintenance in general, rental of heavy machinery, equipment, and tools.		
SUPPLIER	PROCESSES/ ACTIVITIES	PROCESSES/ACTIVITIES	OUTPUT	CUSTOMER
These are the people, companies, organizations, agencies, among others, that deliver the inputs or information required for the execution of the process.	Identification of needs. Request for service. Information about work performance.	Construction, repair, and maintenance of industrial facilities in the civil construction area. Construction, repair, and maintenance of industrial facilities in the metalworking area.	Measurement and analysis of areas for improvements. Recording of and preventive actions. Customer satisfaction. Excellent process results	Paraguana Refining Center (CRP) PDVSA National Institute of Aquatic Spaces (INEA). And other sectors of industry in general. Work performance measurements Updates to project documents
RESOURCES	DOCUMENTS			
PHYSICAL: Computer, telephone, printer, facilities, and stationery. HUMAN RESOURCES: The entire Cardon Rent. Car C.A. team. TECHNOLOGICAL: Microsoft Office Word, Excel, and Internet.	Maintenance process file. Consolidation of bids submitted. Project status control. Customer satisfaction survey.			
Source: Cardon Rent. Car C.A.				

Support processes

These are processes that belong to the same organization and are necessary for the main process to function properly. The following is a list of the company's nine (9) support processes:

Purchasing and Sales

This is the strategy followed for the acquisition of supplies for the production of goods and services, with the aim of monitoring the process from the moment a customer requests a specific service from the company until it is tested, delivered, and paid for. The person responsible for this management must liaise with suppliers according to customer requirements, negotiate payment terms, and transport materials, equipment, and tools to the work area, thus ensuring the smooth running of the project from start to finish.

Planning

Consolidate and monitor the annual operational plan of activities in order to provide good service in line with customer needs and the company's strategic objectives, which include: monitoring and control of the training and budget execution action plan, monitoring and control of accounting transactions, in order to ensure the efficient use of the company's financial resources and coordinate activities aimed at carrying out administrative procedures and processes for the requisition of both operational and office equipment and materials, to ensure operational continuity and the physical execution of the company's programs.

HR

Responsible for recruiting, selecting, training, and employing personnel in order to meet the company's needs in areas related to internal control.

Operations

Manages the material and technical resources necessary for the proper functioning of the operational areas, evaluating their proper use in accordance with the service and quality standards established by the company, in order to ensure that the service offered to customers is in line with their requirements and needs.

Maintenance

Carry out cleaning and hygiene activities in the space and facilities, equipment, and furniture using instruments and supplies, maintain the company's facilities in optimal condition, and ensure that functions are carried out within the established time frames.

SIHO-A

Maintain and continuously improve our occupational health, safety, and environmental system by identifying, defining, and evaluating operational and administrative processes in the workplace to minimize, control, and prevent risks in a systematic and disciplined manner, recognizing our commitment to our employees. Our purpose is to strengthen and consolidate a culture of prevention and gender equality among workers, with special attention to women, establishing mechanisms that prevent discrimination and avoid the occurrence of any undesirable event, incident, accident, occupational illness, environmental damage to facilities, workers, and third parties, as well as the preservation of a healthy environment for future generations.

We adopt measures to improve conditions, the work environment, and the use of free time, rest, and social tourism to improve the quality of life of workers and their families as an added value to their work.

Implementation Coordinator

Support the strengthening of the company in all aspects related to the coordination, monitoring, and control of all works included in the planning.

Logistics

Plan and manage the flow of materials, equipment, and heavy machinery more efficiently between our suppliers and our customers, including the creation and implementation of control and improvement systems.

National Institute of Aquatic Spaces (INEA)

Promote aquatic surveillance at the national level to meet the needs of seafarers and entities related to the aquatic sector, enforcing compliance with current legal regulations, with social responsibility and promoting popular participation. In which it expressed its interest in joining the regional committee for the response to oil spills (derreada, CREPAD), due to the increased number of spills caused by problems with vessels.

Description of the operating structure of Cardon Rent. Car C.A.*Historical Overview*

Cardón Rent. Car, C.A., is a company founded on October 16, 1990, with the vision and objective of providing quality services within the oil, naval, and industrial sectors in general. We have highly trained human resources, cutting-edge tools and equipment, and extensive experience and solidity in the market, which allow us to offer services that meet the needs and satisfaction of our customers on a daily basis. At Cardón Rent. Car, C.A., we are committed to continuing to work for the economic development of the country.

That is why we are committed to the growth of the company, striving to deliver quality products and services that meet our customers' expectations. To this end, we create innovative and exclusive procedures for each service, within the national legal framework that protects and preserves the health and safety of our workers, preventing personal injury, occupational illnesses, property damage, and impacts.

Mission

Cardón Rent. Car, C.A.'s mission is to guarantee the delivery of profitable products and services that meet and exceed the expectations of our customers, employees, and shareholders. To this end, we rely on cutting-edge technology and equipment, as well as specialized, trained personnel who are committed to quality objectives and strategies that allow us to consolidate our position in the market, thereby ensuring the economic growth of the company and contributing to the productive strengthening of the country.

Vision

Cardón Rent. Car, C.A., aims to project itself and maintain its position as the leading company in the national and international market for the excellence of its services in the areas of industrial cleaning, transportation, logistics, and industrial maintenance. We strive to be pioneers in offering innovative, efficient, and exclusive services to each customer, continuously improving the training of our human talent and the technologies used by our teams, leaving a mark of the highest standards of quality and performance.

Values

Responsibility: at Cardon Rent. Car, C.A, we are responsible for the actions and decisions we take and accept the consequences they may generate. Therefore, we ensure that we fulfill all our obligations in a timely, effective, and efficient manner in order to

generate security and trust in all our customers, employees, and shareholders.

Integrity: at Cardón Rent. Car, C.A, we consider honesty to be a fundamental value. Therefore, we act with sincerity and integrity, taking a reasonable, fair, and decent attitude toward ourselves, our colleagues, our customers, and our suppliers.

Loyalty: at Cardón Rent. Car, C.A, we identify with the goals and objectives of our organization. We act with honor, gratitude, and fidelity, seeking through these actions the mutual loyalty of our customers, employees, and suppliers, establishing a mutually beneficial relationship with them.

Respect for the individual: at Cardón Rent. Car, C.A, we recognize and promote the value and dignity of each person. Therefore, we treat our staff without distinction and with kindness, providing them with tools that allow them to develop their own qualities to the fullest in order to become better people.

Quality Policy: to continuously improve quality by providing equipment and professionally trained personnel to carry out effective and efficient operations in accordance with legal standards, procedures, and regulations, under the most demanding national and international quality standards, which meet and exceed the expectations of our customers, employees, and shareholders.

Quality Objectives:

- Maximize effectiveness and efficiency in all processes.
- Continuous training of all personnel in line with our values.
- Comply with the standards of the ISO 9001 quality management system.
- Ensure well-being and future viability.
- Conduct training programs to improve employees' skills and knowledge so that they can perform the tasks required by the quality management system.
- Constantly improve the company's productivity through the advancement of technological techniques.
- Comprehensively improve administrative and operational processes.

Context of the Organization

Cardón Rent. Car C.A. must define the internal and external factors that may affect it, using technical tools such as management and strategic tools, such as the SWOT strategic plan, to achieve this objective.

Internal and External Context

As part of the analysis process using the tools defined by the company, it must identify the aspects it considers relevant and which, if not controlled or taken into account, could affect the organization from its internal or external environment. Internal aspects should take into account the state of the organization, the performance of its processes, and the experience, knowledge, and skills that may have a positive or negative impact. External factors should include political, economic, sociocultural, technological, and legal aspects that, depending on how they change, may affect the organization's operations.

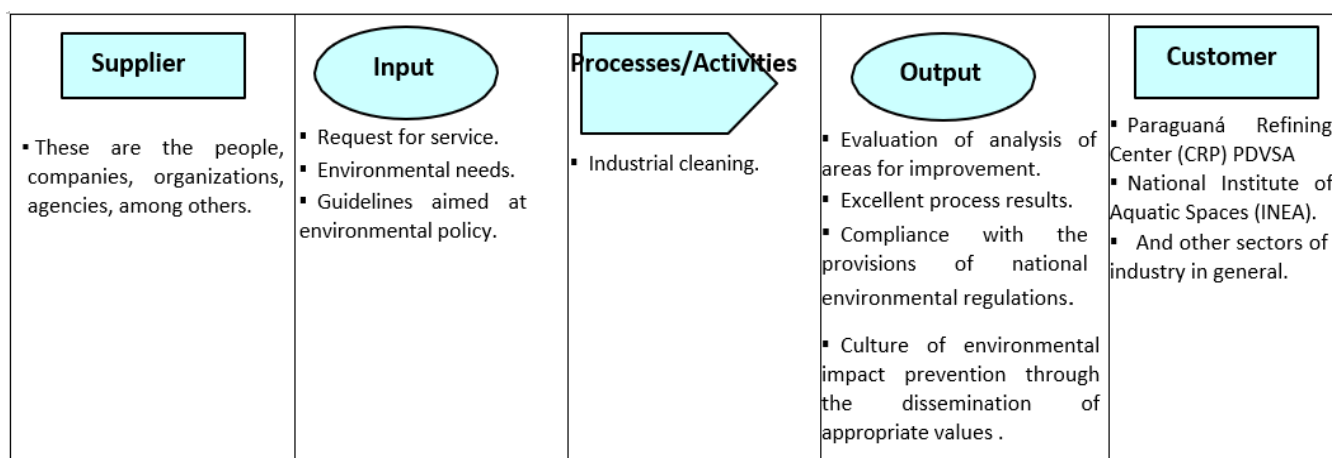
This tool is key to conducting a detailed analysis of the current situation of Cardon Rent. Car C.A., based on its strengths, opportunities, weaknesses, and threats (SWOT) with respect to its environment, taking into account the competition with other companies operating in the Paraguana Refinery Center, providing a clear vision of the current and future outlook. This information was obtained through unstructured interviews and notebooks, in order to obtain as much information as possible about the company's internal and external environment (table 5).

Table 5. SWOT Strategic Plan Matrix

STRATEGIC PLAN SWOT MATRIX			
			
Positive	STRENGTHS	WEAKNESSES	Negative
Internal Qualified personnel in the field of industrial effluent treatment and other activities. Its management complies with environmental legislation, seeking to minimize environmental impact. Heavy machinery, equipment, and supplies have corresponding replacements in the warehouse so that in the event of a failure, they can be replaced immediately, preventing prolonged downtime. Good infrastructure. Good management of routine operations and actions to be taken in the event of special situations. Recognized company.		External Incomplete safety equipment; some safety equipment necessary to carry out operations is missing. Unsafe situations exist in areas of the plant that are frequented by operators to carry out the corresponding procedures. Some parts and instruments in the plant are not the most suitable for carrying out the assigned tasks, which sometimes has an impact on subsequent processes. Poor implementation of quality management systems, new technologies, and other advanced services. Low average productivity in the oil and shipbuilding industries.	

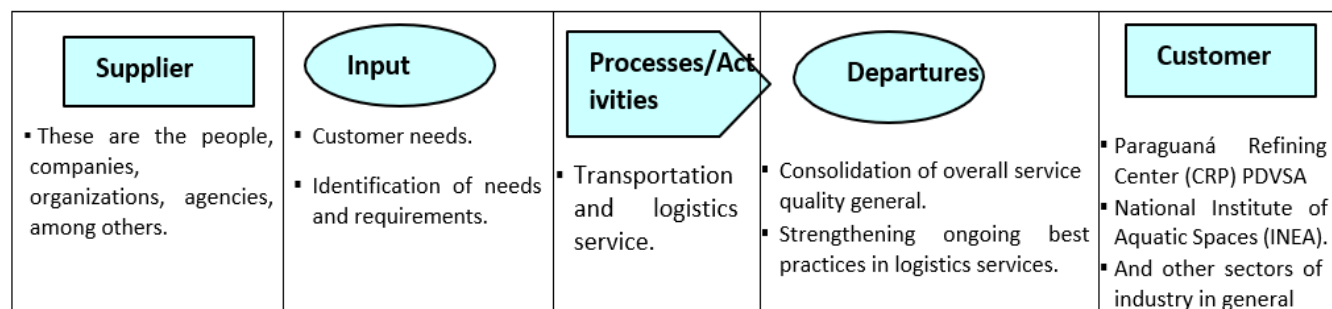
OPPORTUNITIES	THREATS
External Increase in the technical and procedural knowledge of operators. Acquisition of new equipment, technologies, and resources that facilitate or improve administrative and operational processes. Ample space that allows for future physical remodeling. Preparation of manuals for procedures that do not exist. Compliance with regulations. Development of new projects. Good geographical location. Penetration of new markets through information technologies.	Changes in current environmental legislation. Shortage of inputs required for operations carried out in the workshop. Entry of unwanted chemicals into the plant's effluent. Presence of obsolete equipment due to technological updates. Lack of environmental awareness regarding the management of industrial effluents. Emergence of new competitors due to market globalization.
Source: Cardon Rent. Car C.A	

PEPSC diagram



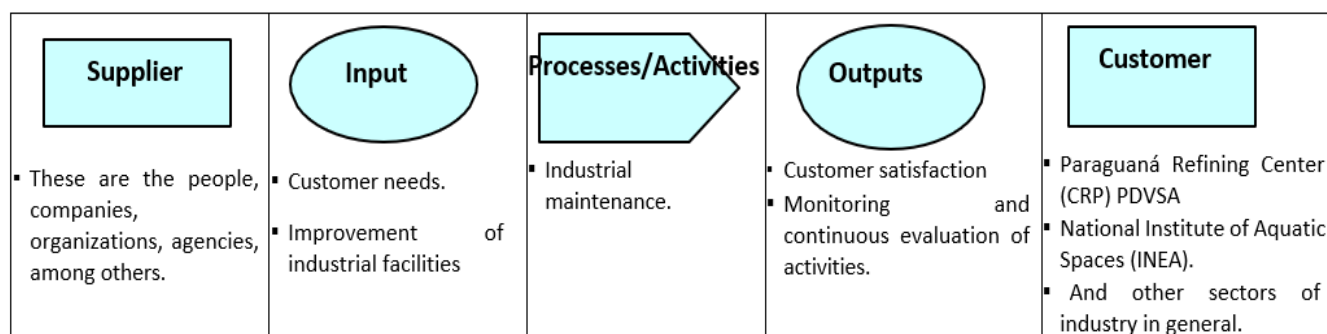
Source: Cardon Rent. Car C.A

Figure 2. PEPSC diagram of the cleaning and suction process for hydrocarbons and other industrial effluents



Source: Cardon Rent. Car C.A

Figure 3. PEPSC diagram of the General Transportation and Logistics Services and Heavy Equipment and Machinery Rental Process



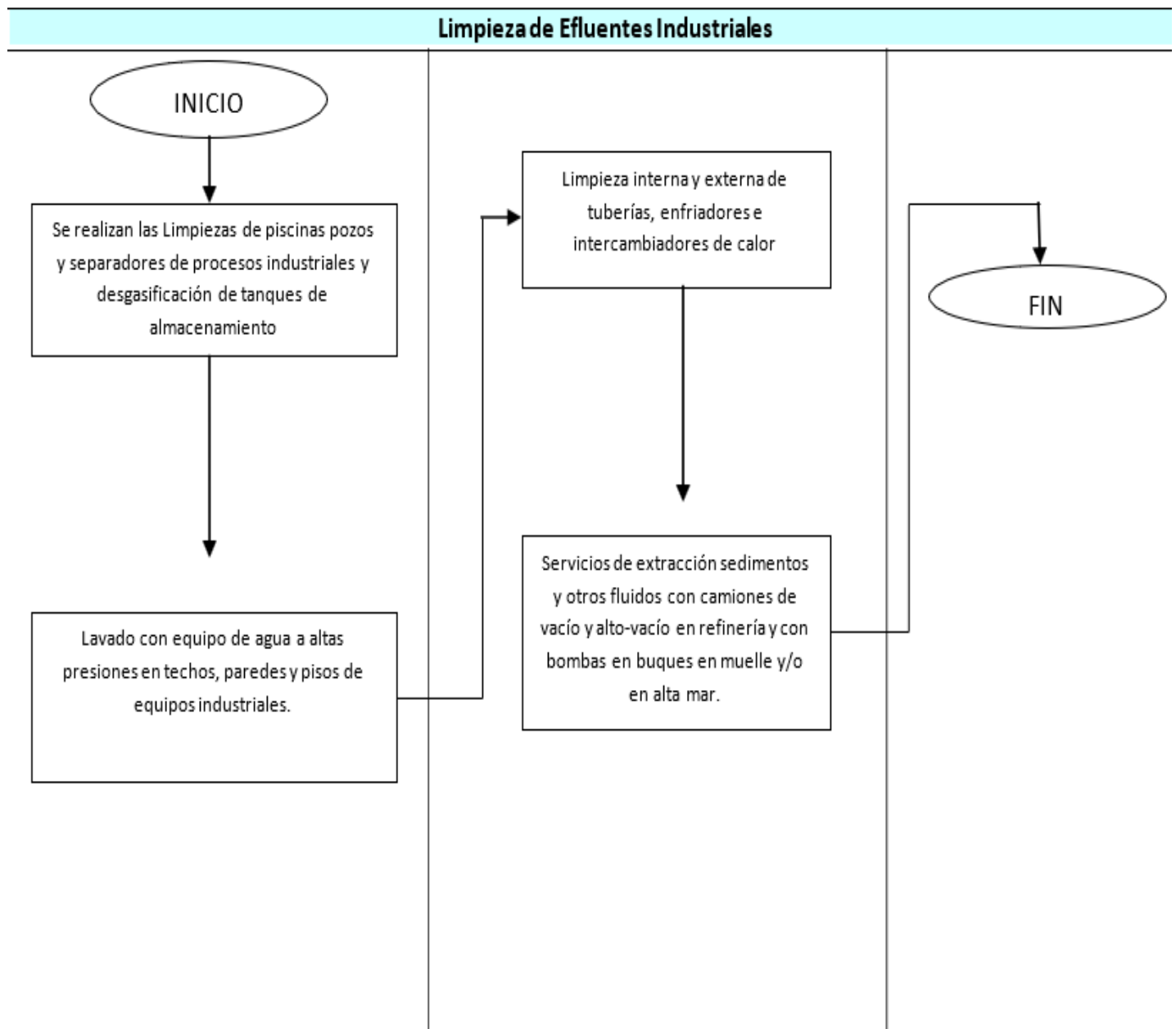
Source: Cardon Rent. Car C.A

Figure 4. PEPSC diagram of the Industrial Construction, Repair, and Maintenance Process in Civil Construction and Metalworking Areas

Based on information gathered in unstructured interviews with Cardon Rent. Car C.A. personnel, we were able to identify the company's main line of services and vital processes, which were used to construct the PEPSC diagram (figures 2, 3, and 4), allowing us to identify suppliers, inputs, processes, outputs, and customers who request and receive such services.

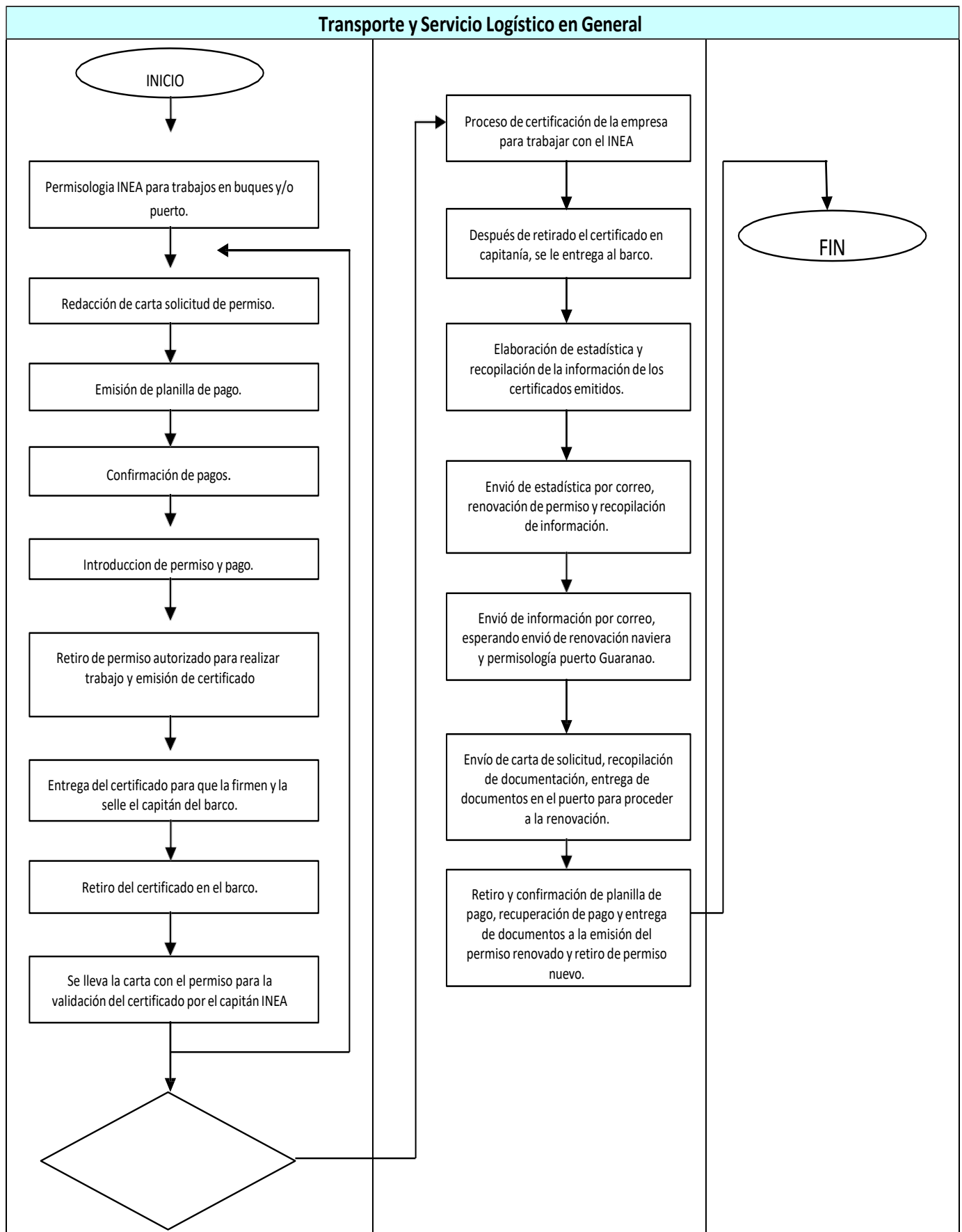
Flow Chart

This procedure shows the sequence of steps in each vital process or workflow. This flowchart was created so that all Cardon Rent. Car C.A. employees have a common understanding of how the process works, in order to obtain suggestions for improvement.



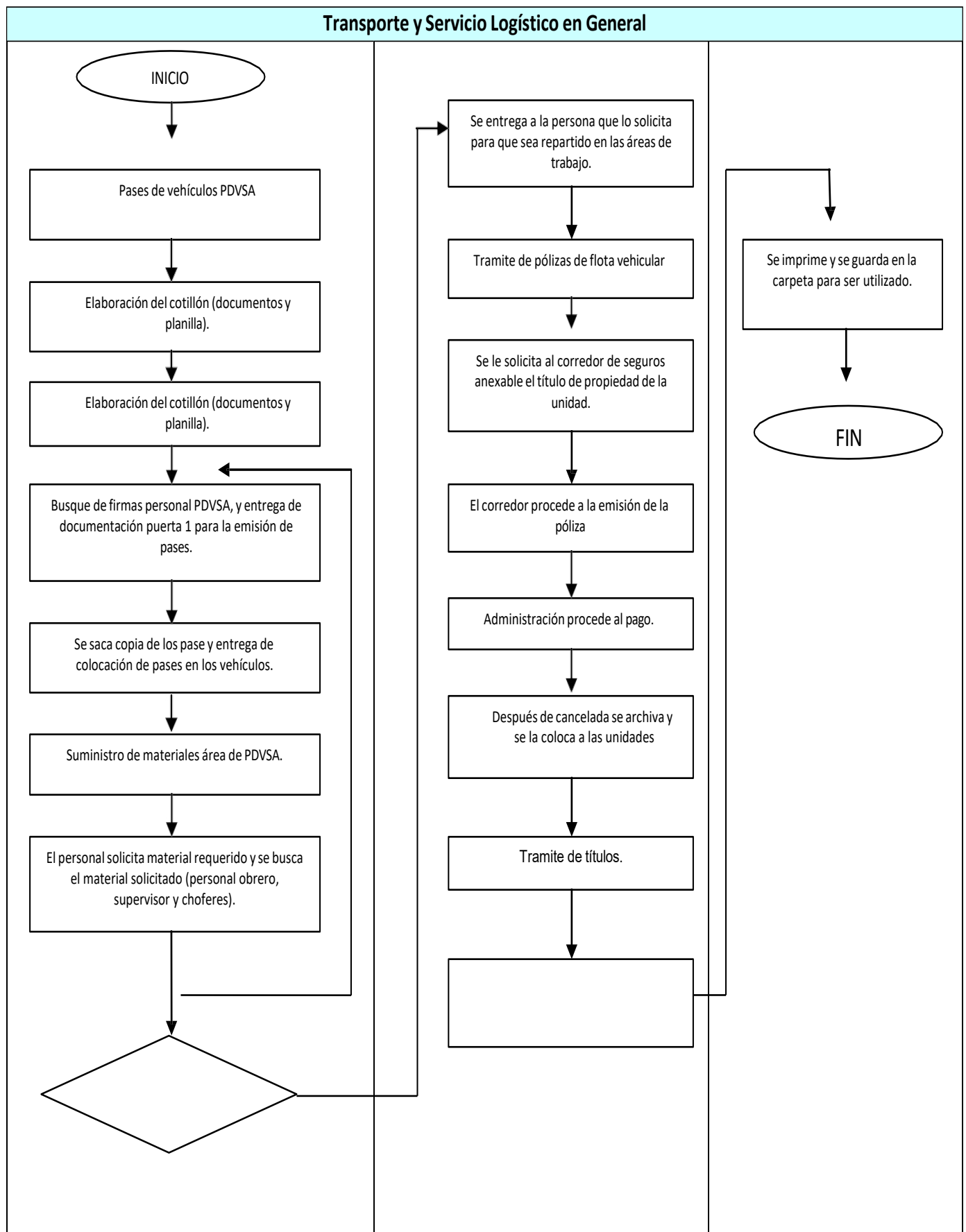
Source: Cardon Rent. Car C.A

Figure 5. Flowchart for Industrial Effluent Cleaning



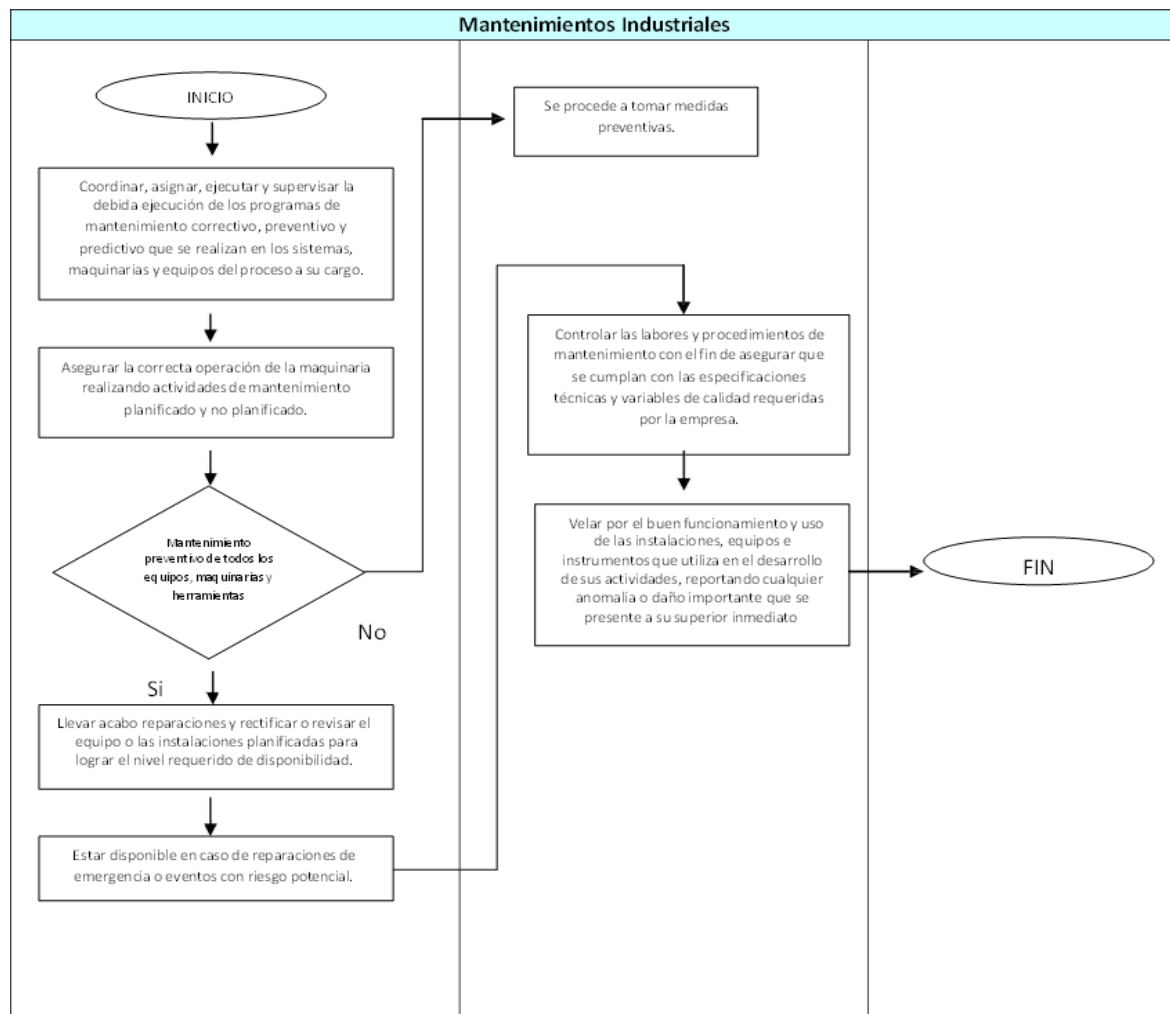
Source: Cardon Rent. Car C.A.

Figure 6. Flowchart for Transportation and General Logistics Services



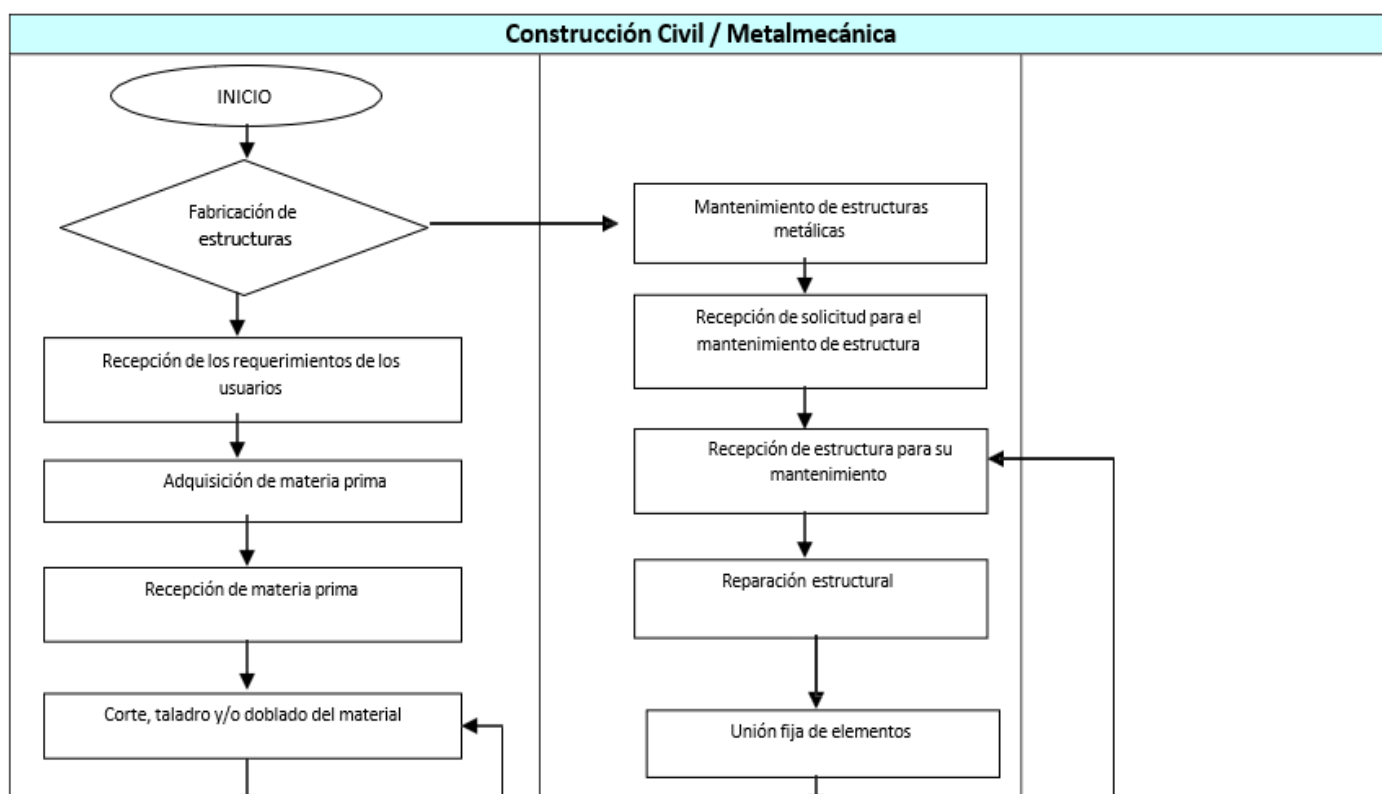
Source: Cardon Rent. Car C.A

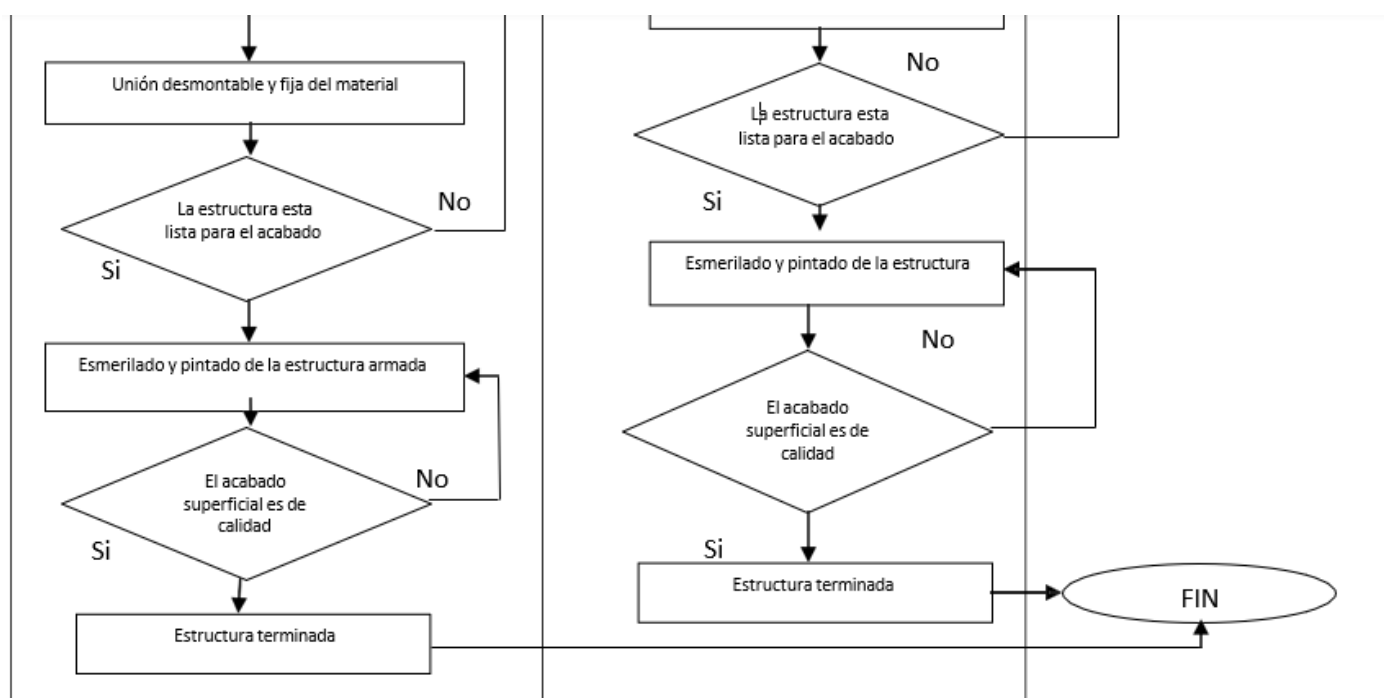
Figure 7. Flow Chart for Transportation and Logistics Services in General



Source: Cardon Rent. Car C.A

Figure 8. Industrial Maintenance Flow Chart





Source: Cardon Rent. Car C.A

Figure 9. Flow Chart for Civil Construction/Metalworking

Diagnosis of weaknesses in quality management at Cardon Rent. Car C.A

Once the service line had been characterized and the operating structure of Cardon Rent. Car C.A., we proceeded to apply the checklist, with 118 items based on the requirements of the ISO 9001:2015 standard, which was applied to the person specialized in the subject, in order to determine the degree of compliance with the standard. This list includes six clauses grouped as follows: leadership, planning for the quality management system, support, operation, performance evaluation, and improvement. The results were analyzed using bar charts, which allowed us to establish the corresponding actions together with the company.

For each of these, the results will be presented in graphs, which allow the degree of compliance of Cardon Rent. Car C.A. with the requirements of the ISO 9001:2015 standard to be assessed. The checklist shows the clauses of the ISO 9001:2015 standard in rows, with three criteria (Yes, No, N/A, Comments) in columns that determine the company's status with respect to each clause. Below is an analysis of the clauses checked:

Clause 5: Leadership

To analyze clause No. 5, it was necessary to understand the three sub-clauses that comprise it, which are as follows:

- Leadership and commitment.
- Policy.
- Roles, responsibilities, and authorities in the organization.

These sub-clauses generated the following results, which can be seen in table 6. Using the data obtained from this table, the percentages of compliance and non-compliance of Cardon Rent. Car C.A. with the standard were plotted in figure 10.

Sub-clauses	Yes	No	Total items checked	Yes	No
5.1	1	2	3	33	67
5.2	0	2	2	0	100
5.3	2	2	4	50	50
Total	3	6	9	33	67

This data can be seen in the following figure 10.

Analyzing the data in the figure above, it can be said that Cardon Rent. Car C.A. is 67 % non-compliant with clause 5.1, as management does not communicate the importance of meeting customer requirements. Clause 5.2 is 100 % non-compliant, as management does not ensure that customer requirements are met. Clause 5.3 is 50 % compliant, as senior management ensures that the quality policy is committed to meeting requirements and thus provides a reference for establishing and reviewing quality objectives. The other 50 % is non-compliant because senior management does not have a representative responsible for promoting

awareness of customer requirements and implementing the necessary processes for the quality management system.

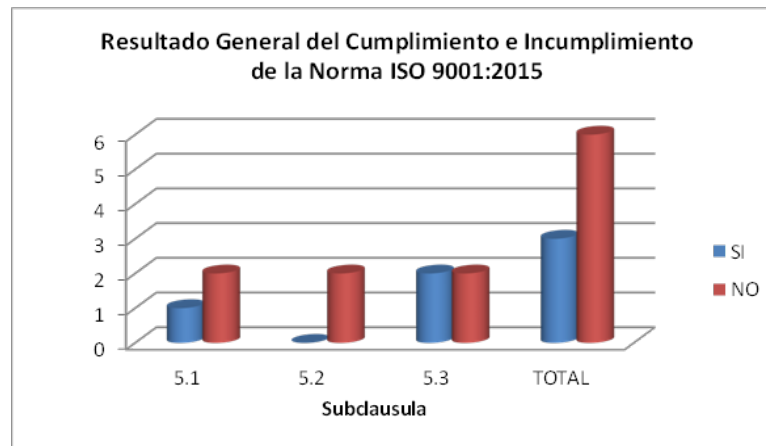


Figure 10. Percentage of compliance and non-compliance with Clause 5

Clause 6: Planning

This clause is divided by the ISO 9001:2015 standard into three sub-clauses, which are:

- Actions to address risks and opportunities.
- Quality objectives and planning to achieve them.
- Planning for changes.

For the study of these sub-clauses, I obtained a series of data that can be seen in table 7, and with the data obtained from this table, the percentages of compliance and non-compliance of the company Cardon Rent. Car C.A. with respect to the standard were graphed, which can be seen in figure 11.

Sub-clauses	Yes	No	Total items checked	Yes	No
6.1	0	2	2	0	100
6.2	0	2	2	0	100
6.3	0	2	2	0	100
Total	0	6	6	0	100

This data can be seen in the following figure 11.

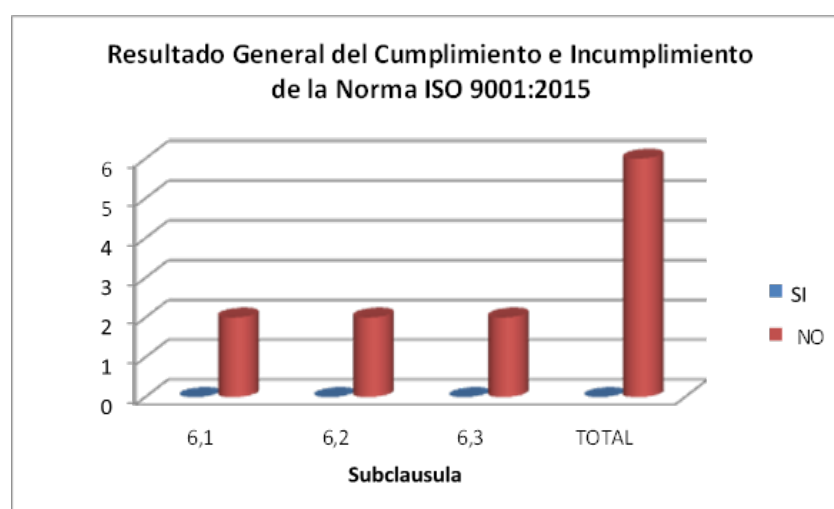


Figure 11. Percentage of compliance and non-compliance with Clause 6

When looking at the results in figure 11 and analyzing them, the three sub-clauses 6.1, 6.2, and 6.3 are not complied with by Cardon Rent. Car C.A. by 100 %, as it does not plan the functions and processes necessary for the quality management system to address risks and opportunities.

Clause 7: Support

This clause consists of five sub-clauses, which are:

- Resources.
- Competence.
- Awareness.
- Communication.
- Documented information.

In these sub-clauses, it is necessary to guarantee the support of the services provided by the company in such a way that they can contribute positively to the development and consolidation of the processes, offering quality services. Table 8 shows the data obtained in relation to the level of compliance with the ISO 9001:2015 standard, which is then used to obtain the graph of the percentages of compliance and non-compliance of the company Cardon Rent. Car C.A, with respect to the standard, which can be seen in figure 12.

Sub-clauses	Yes	No	Total items checked	Yes	No
7.1	9	6	15	70	30
7.2	5	0	5	100	0
7.3	1	1	2	50	50
7.4	0	2	2	0	100
7.5	0	5	5	0	100
Total	15	14	29	60	40

This data can be seen in the following figure 12.

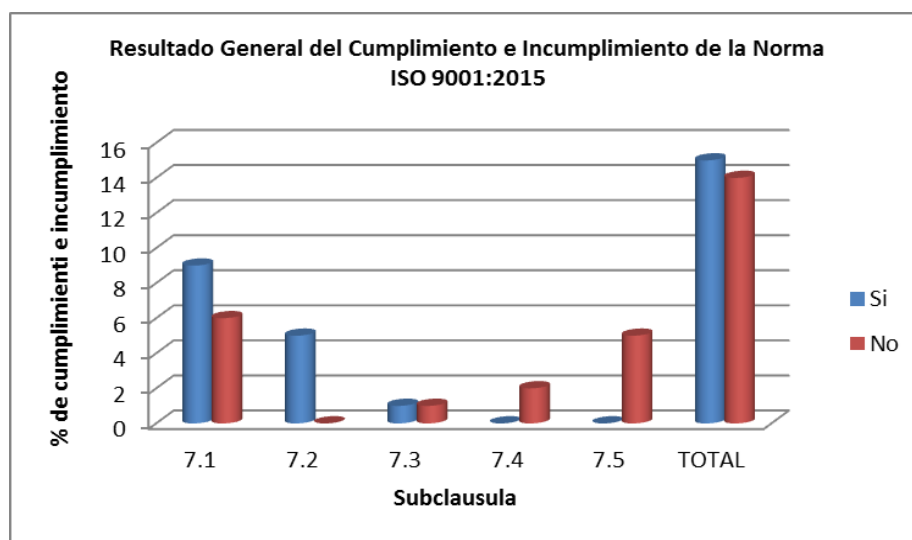


Figure 12. Percentage of compliance and non-compliance with Clause 7

This figure shows that the company Cardon Rent. Car C.A., in sub-clause 7.1 has a 70 % compliance rate, which is of great importance for the achievement of resources. With regard to sub-clause 7.2, the company complies 100 % with the standard, as it determines the competencies, skills, and experience that a person must have in accordance with the position required for the strengthening of the skills or competencies to be improved. Sub-clause 7.3 is 50 % compliant, as the company ensures awareness that the product or service purchased is described and meets the specified purchase requirements. When evaluating sub-clause 7.4, we found 100 % non-compliance because communication is not encouraged among staff to ensure they are aware of and familiar with it. Sub-clause 7.5 is 100 % non-compliant, as the company does not provide information on the documentation required by ISO 9001:2015, in addition to the documented information required by the processes.

Clause 8: Operation

This clause consists of seven sub-clauses, which are:

- Operational planning and control.
- Requirements for products and services.
- Design and development of products and services. (NOT APPLICABLE).

- Control of externally provided processes, products, and services.
- Production and provision of the service.
- Release of products and services.
- Control of non-conforming outputs.

Through the evaluation in relation to this clause, the following data was collected and is shown in Table 9, and consequently, the following figure 13 was established

Table 9. Percentage of compliance and non-compliance with Clause 8					
Sub-clauses	Yes	No	Total items checked	Yes	No
8.1	0	5	5	0	100
8.2	2	6	8	20	80
8.4	3	4	7	40	60
8.5	9	7	16	70	30
8.6	0	8	8	0	100
8.7	0	5	5	0	100
Total	14	35	49	32	68

These data can be seen in the following figure 13.

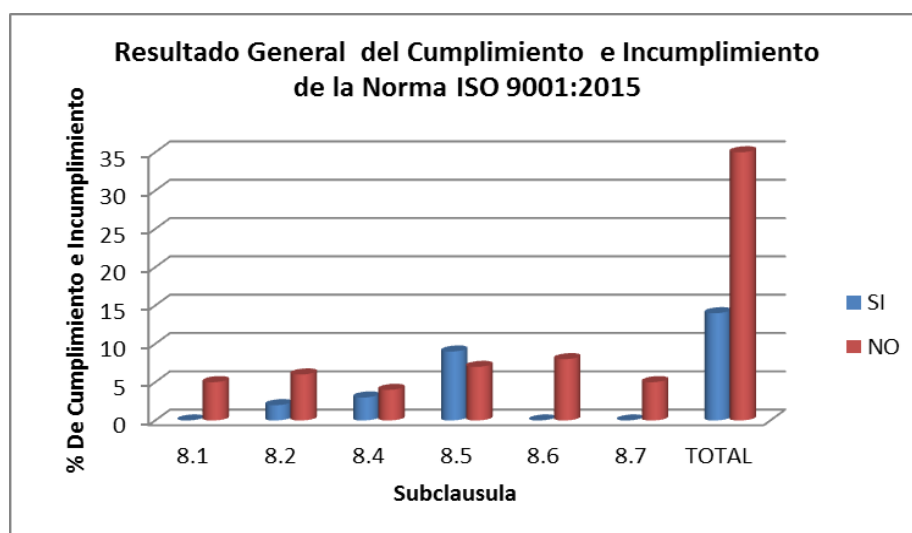


Figure 13. Percentage of compliance and non-compliance with Clause 8

In sub-clause 8.1, Cardon Rent. Car C.A. is 100 % non-compliant with regard to operational planning and control because the company does not control the processes aimed at meeting customer requirements and the service provided as required by ISO 9001:2015. Sub-clause 8.2 is 80 % non-compliant, meaning that the company does not determine the requirements for the provision of the service. Sub-clause 8.4 is 60 % non-compliant, while sub-clause 8.5 is compliant, as the company determines the availability of information that allows for the monitoring and measurement of externally provided services. Sub-clause 8.6 is 100 % non-compliant because the company does not plan the appropriate stages to verify that the requirements for products or services are met. Finally, clause 8.7 is 100 % non-compliant with the standard because the company does not establish a documented procedure to define the requirements for reviewing non-conformities.

Clause 9: Performance evaluation

This clause is divided into three sub-clauses, which are:

- Monitoring, measurement, analysis, and evaluation.
- Internal audit.
- Management review.

In relation to these sub-clauses, the following data shown in Table 10 will be evaluated, and consequently, the following figure 14 was established.

Table 10. Percentage of compliance and non-compliance with Clause 9					
Sub-clauses	Yes	No	Total items checked	Yes	No
9.1	2	7	9	20	80
9.2	0	6	6	0	100
9.3	0	5	5	0	100
Total	2	18	2	20	80

This data can be seen in the following figure 14.

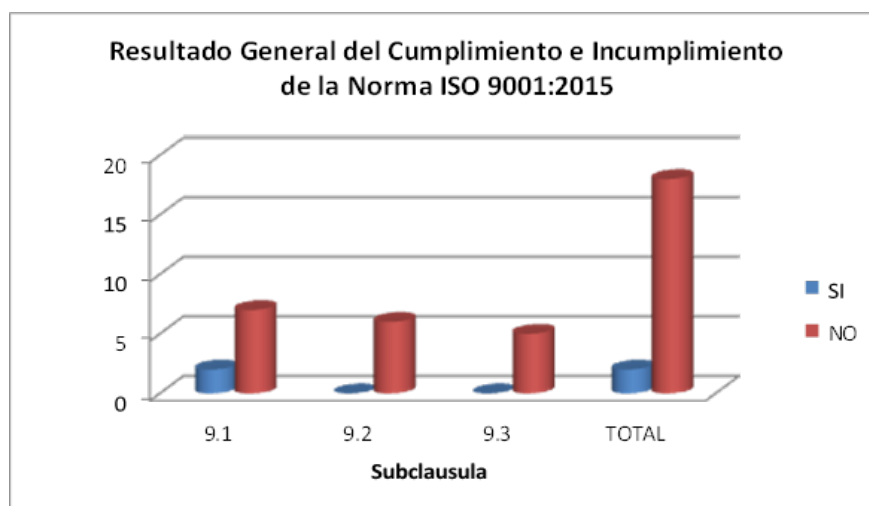


Figure 14. Percentage of compliance and non-compliance with Clause 9

With regard to the above figure, it can be summarized that sub-clause 9.1 is 80 % non-compliant, as the company does not evaluate the monitoring of the processes that make up the quality management system. Sub-clause 9.2 is not complied with at all because there is no quality management system in place, and sub-clause 9.3 is not complied with because the performance of the processes and the conformity of the service are not evaluated.

Clause 10: Improvement

This clause consists of the following three sub-clauses:

- General.
- Non-conformity and corrective action.
- Continuous improvement.

With regard to each of these sub-clauses, the data shown in table 11 will be evaluated, and the following figure 15 has been established accordingly.

Table 11. Percentage of compliance and non-compliance with Clause 10					
Sub-clauses	C	N/c	Total items checked	C	N/c
10.1	0	1	1	0	100
10.2	0	3	3	0	100
10.3	0	1	1	0	100
Total	0	5	5	0	100

This data can be seen in the following figure 15.

This figure shows a 100 % level of non-compliance with the three sub-clauses, as the company does not have a quality management system in place and does not establish a documented procedure for defining requirements. Table 12 below shows a general summary of the results obtained in clauses 5, 6, 7, 8, 9, and 10 with respect to the requirements of ISO 9001:2015.

For each of the data shown in table 12, the following figure 16 will be presented, as a result of the overall compliance and non-compliance of the company Cardon Rent. Car C.A, with respect to clauses 5, 6, 7, 8, 9, and 10 of the ISO 9001: 2015 standard.

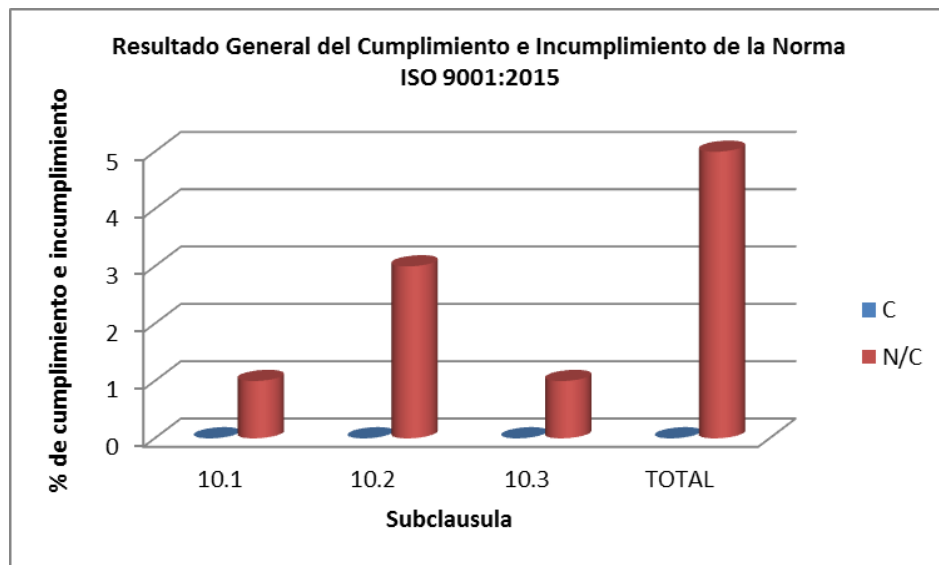


Figure 15. Percentage of compliance and non-compliance with Clause 10

Table 12. Percentage of Overall Compliance and Non-Compliance

Clauses	Yes	No	Total items checked	Yes	No
5	3	6	9	33	67
6	0	6	6	0	100
7	15	14	29	52	48
8	14	35	49	29	71
9	2	18	20	20	80
10	0	5	5	0	100
Total	34	84	11	29	71

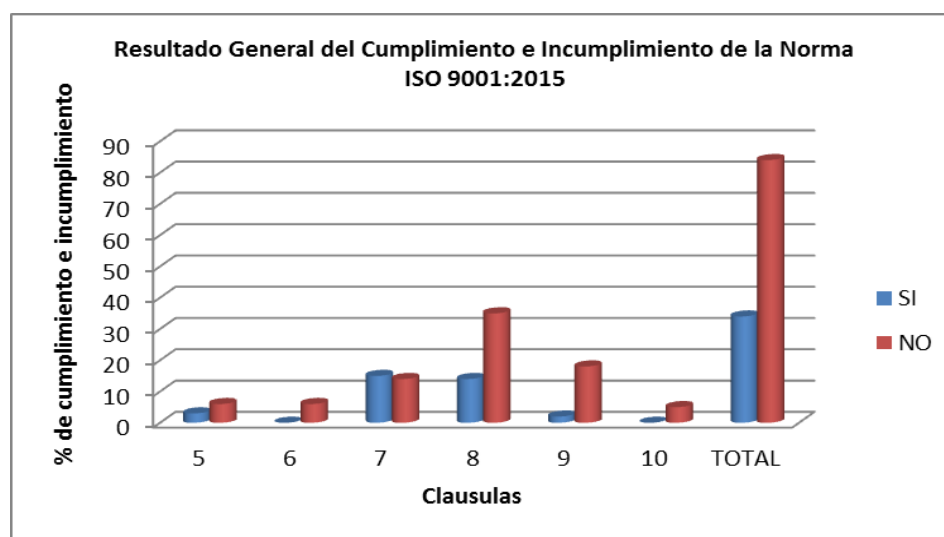


Figure 16. Percentage of Overall Compliance and Non-Compliance

By analyzing the figure, the level of compliance and non-compliance of Cardon Rent. Car C.A. can be determined as follows:

- Clause 5: leadership complies with 3 items out of a total of 9 items, representing 33 % compliance, while the remaining percentage is non-compliant, i.e., 67 %, resulting in a lack of defined leadership, quality objectives, and policies that are appropriate to the company's purpose and take into account the review of processes and customer satisfaction levels.
- In clause 6: planning, a total of 6 items were checked, of which 6 did not comply with the clause, representing 100 % non-compliance. This is because the company does not plan the functions and processes necessary for the quality management system to address risks and opportunities.
- In clause 7: support, 29 items were reviewed, resulting in 15 items in compliance, representing 52 % compliance with the standard, as it determines the competencies, skills, and experience that a person must have according to the position

required to strengthen the skills or competencies to be improved and which are of great importance to achieve customer satisfaction.

- In clause 8: operation, 49 items were evaluated with a non-compliance result of 68 % in terms of operational planning and control, as the company does not control the processes aimed at meeting customer requirements and the service provided.
- In clause 9: performance evaluation, 20 items were checked, reflecting a non-compliance result of 80 %, as the company does not evaluate the monitoring of the processes that make up the quality management system.
- In clause 10: improvement, five items were checked, resulting in 100 % non-compliance, as the company does not have a quality management system in place and does not establish a documented procedure to define requirements.

In addition, it does not keep records of reviews and take appropriate action based on the weaknesses detected in the company, nor does it have documented service processes in place to verify that requirements are met.

It is important to note that the above results were derived from the application of the unstructured interview based on ISO 9001:2015 for the company Cardon Rent. Car C.A. A 29 % level of compliance and a 71 % non-compliance with all the clauses set out in the aforementioned standard can be noted, representing a total of 118 items, of which 34 were compliant and 84 were non-compliant. This means that a quality management system must be developed that is capable of eliminating those procedures that prevent the company from achieving the desired results and, in turn, presenting in a detailed and documented manner the processes necessary to ensure that the service provided is quality- under demonstrable criteria. in order to provide customers with a service of approved quality both internally and externally, which would ensure that, in terms of quality, the customer will be completely satisfied with the service in accordance with their requirements.

The proposed plan

Conceptualization of the Operating Structure of the Quality Management System

Once the characteristics and current situation have been analyzed and the processes carried out at Cardon Rent. Car C.A. have been identified, the proposal for the conceptualization of the document structure of the ISO 9001:2015 quality management system is presented.

General Structure of the Quality Management System



Source: ISO 9001:2015

Figure 17. Document Pyramid of the ISO 9001:2015 Quality Management System

The structure of the content of the documentation at each level is defined in detail below:

- Level A: this is where the Quality Management System Manual is found. This document describes the quality policies and objectives, organizational aspects, and compliance with the requirements of the ISO 9001:2015 standard. In other words, the manual refers to the procedures and instructions that influence the quality of services and the proper functioning of the system.
- Level B: this contains the documented procedures that describe the activities of the individual functional units necessary to implement the elements of the quality management system, which were organized into three basic manuals, as follows:
 1. Administrative Procedures Manual: covers the completion of forms and administrative procedures for the provision of services by the company.
 2. Quality Area Administrative Procedures Manual: contains the procedures necessary to comply with the requirements of the ISO 9001:2015 standard, which guarantees the effective functioning of the processes for the provision of services and the quality management system.
 3. Job Description Manual: this provides a detailed description of all positions and their relationship to their environment, as well as an overview of the company's organizational structure, so that the positions within it are in line with the quality management system.

- Level C: represents all records that serve or provide evidence of the proper functioning of the processes and the entire quality and audit support system. For ex , for the proposed quality management system, the records generated as a result of using a procedure must be identified, and it must be defined where they should be kept and for how long they should be archived, based on their function of improving product quality or service delivery. This information allows the management of an organization to be verified and measured.

Contents of the Quality Management System Documents

For the documented procedures that make up the quality management system, a standardized format will be used for presentation, which has already been designed by Cardon Rent. Car C.A., in accordance with the provisions of instruction CRC-IT-DE-01, filling in the pages of the documents belonging to Cardon Rent. Car C.A., the document must have the following aspects, such as the corporation's logo in the upper left corner of the format and its other components, which are mentioned below:

- Version and date of revision.
- Title at the top (name) of the document
- Identify the serial number of the documents following the nomenclature for document identification.
- Number of pages in the document.
- Title in the center of the document
- Prepared by: the quality specialist
- Reviewed by: the authority and specialist in the area of quality
- Approved by: name of the organization responsible for approving the document.

		MANUAL DE GESTION DE LA CALIDAD ISO 9001:2015 (b)		
Código: CRC-MG-PL-01 (c)	Versión: 1 (a)	Fecha: 24/02/2023 (a)	Pág. 96/274 (d)	
(e)				
APROBACIONES	NOMBRE	CARGO	FECHA	FIRMA
(f) Elaborado por:				
(g) Revisado por				
(h) Aprobado por				

Source: instructions for completing the pages of Cardon Rent. Car C.A

Figure 18. Format of the Quality Management System Manual

Figure 18 below shows the format of the quality management system manual with respect to the requirements of ISO 9001:2015.

Quality Management System Manual

This manual was prepared following the instructions of Cardon Rent. Car C.A, with registration code CRC-MG-PL-01, in accordance with the requirements of the quality management system. This manual can be viewed and is defined by a series of elements, which are structured as follows:

- Introduction: this is a brief preamble on the purpose of the manual.
- Historical Overview: brief summary of the organization's history.
- Purpose: this refers to the description of the “why” and “what” or the reason for this manual. It should be written clearly and precisely so that it can be understood by all those involved.
 - Scope: describes the areas in which the document is applicable, making the relevant delimitations.
 - Mission: the motive, purpose, goal, or reason for the existence of a company or organization. It should be written clearly and precisely so that it can be understood by everyone involved.
 - Vision: the long-term direction the company is heading in, serving as a guide and incentive for strategic decisions on growth and competitiveness. It should be written clearly and precisely so that it can be understood by everyone involved.
- Quality Policy: these are the measures or provisions that the organization has in place to achieve continuous improvement, seen as part of the process of providing high-quality products and services to its customers.
- Quality Objectives: these are the goals that management intends to set in order to achieve the highest level of quality.

- **Organizational Chart:** a diagram showing the internal organizational structure of the formal organization of the company, its relationships, and its hierarchical levels.
- **Description of the Elements of the Quality Management System:** this section defines and establishes each of the requirements of the ISO 9001:2015 standard.
- **Glossary:** this refers to the terms and/or abbreviations used in the text of the document.
- **Appendices:** support or backup material referred to within the documentation of the manual.

Job Description Manual

The following manual contains detailed information on all the requirements for each job position and responsibilities within the company Cardon Rent. Car C.A, with its respective registration code CRC-DC-RH-01. Its contents are detailed below:

- **Introduction:** this refers to a brief preamble describing the purpose of the manual.
- **Objectives:** the objectives deal with the goals that the company will achieve when it establishes the manual, as it aims to make operations easier for workers and clarify the responsibilities they will have in the execution of production.
- **Responsibilities:** this section outlines the purpose of this document when implemented in an organization, the benefits of carrying out the activities described in it, and the responsibilities of each employee during the process.
- **Profile:** this refers to the level of education, knowledge, and experience required to perform the job.
- **Organization chart:** a diagram showing the internal organizational structure of formal management, its relationships, and its hierarchical levels.
- **Job description:** a list of duties and responsibilities, reporting relationships, and working conditions to ensure smooth operation throughout the entire organizational structure.
- **Glossary of Terms:** list of technical concepts related to the content and techniques used in the preparation of procedure manuals, which serve as a support for their use or consultation.

Document Coding System for the Quality Management System Manual for Cardon Rent. Car C.A

Table 13. Nomenclature for the identification of quality management system documents

CRC-XX-YY-NN	
CRC	Acronyms referring to Cardón Rent. Car C.A.
XX	Corresponds to the type of document.
YY	Corresponds to the Title of the Specific Process.
NN	Corresponds to the consecutive number starting from 01
Source: CRC-CI-PR-01 control of documented information, Cardon Rent company. Car C.A	

Table 14. Type of Document

Documented Information	Code
Quality Policy	PQ
Quality Objectives	OC
Organizational Structure	EO
Management Indicators	CI
Matrix	MA
Vision	VI
Mission	MI
Process Map	MP
Manual	MN
Quality Management Manual	MG
Organization Manual	MO
Scope of the QMS	AL
Procedure	PR
Process Technical Data Sheet	FP
Job Description	DC
Form	FR
Work Instruction	IT
Strategic Plan	PE
Quality Plan	PC

Occupational Health and Safety Plan	PS
Environmental Plan	PA
Checklist	LV
Master List	LM
Source: CRC-CI-PR-01 control of documented information Cardon Rent. Car, C.A	

Table 15. Specific Process			
Type of Process	Process	Specific Process YY	Process
PD	Direction and Planning (Includes strategic planning, QMS planning, planning of actions to address risks and opportunities, planning of objectives, and planning of)	DE	Strategic direction
		PL	Planning
PA	Support	AD	Administration
		GS	Industrial Safety, Occupational Health and Environment (SIHO-A)
		CC	Product Purchasing and Service Contracting
		MI	Infrastructure Maintenance
		HR	Human Resources Management
		CI	Documented Information Control
PO	Operations	ES	Execution of the Vehicle Rental Service
		CS	Control of Non-Compliant Departures
PE	Performance Evaluation	RD	Management Review
		MD	Performance Measurement and Analysis
		MS	Customer Satisfaction Measurement and Analysis
		AI	Internal Audits
PM	Improvement	AM	Corrective and Improvement Actions
Source: CRC-CI-PR-01 control of documented information, Cardon Rent. Car C.A			

Preparation of Quality Management System Documentation

Table 16 below shows the quality management system manual and job descriptions with their corresponding codes for Cardon Rent. Car C.A., with the aim of providing an overview of the elements shown in the following list:

Table 16. Quality Management System Manual	
Code	Document
CRC-MG-PL-01	Quality Management System Manual
CRC-DC-RH-01	Job Description Manual
Source: CRC-CI-PR-01 control of documented information Cardon Rent. Car C.A	

Configuration of documentary information and plan for the implementation of the quality management system

The following are the phases for implementing a quality management system for Cardon Rent. Car C.A., including the activities established in accordance with the requirements of ISO 9001:2015 and those proposed by the company itself. The estimated time for implementation is 12 months.

The implementation process must follow the phases described in detail, including their activities and duration. Considering the above, it is essential for Cardon Rent. Car C.A. to integrate a quality management system into all its processes that allows quality to be a fundamental factor in achieving good performance by its employees.

Once the idea or need to seek implementation for the subsequent certification of the quality management system at Cardon Rent. Car C.A. arises, it is necessary to understand the entire process that will lead to this objective, for which a schedule of activities was proposed to establish goals for a specific period (figure 19).

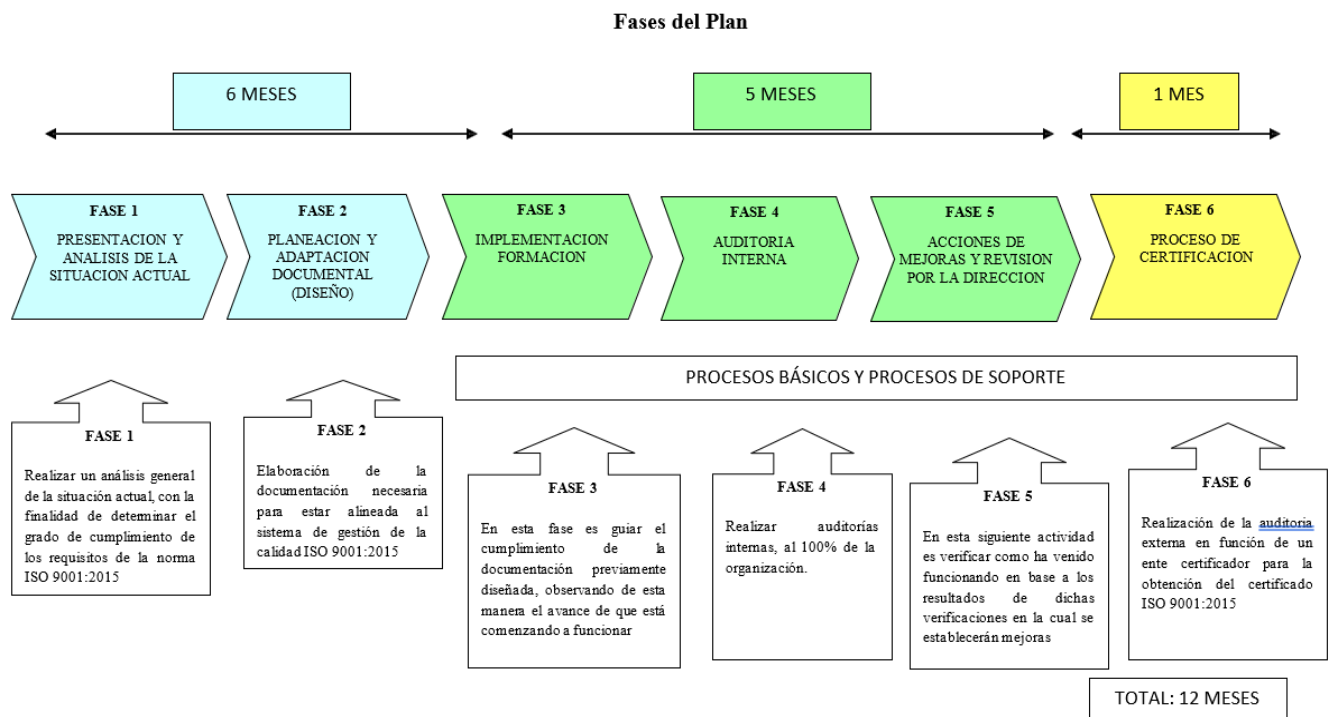


Figure 19. Implementation Plan for the ISO 9001:2015 Quality Management System

Phase 1: Presentation and analysis of the current situation

In this phase, the actual status of the areas involved in relation to the quality management system to be expanded according to ISO 9001:2015 is evaluated and planned, with the aim of drawing up a program of activities, defining more detailed responsibilities, and taking into account all the particular circumstances of the plan. The following tasks must be carried out within this phase:

- Study of the organizational structure.
- Confirm the appointment of the quality representative.
- Understanding of the company's operations.
- Status of processes and their degree of systematization.
- Study of existing documentation.
- Identify the resources needed for the plan.
- Plan schedule.
- Organization of participating personnel.
- Methodology for monitoring the progress of the plan.
- Report analyzing the current situation
- Work program with the plan's objective and scope.
- Planning of visits.
- Meeting to present the plan to management.

Phase 2: Planning and adaptation of documentation (design)

Based on the information obtained in phase 1, the necessary documentation for the quality management system will be defined and developed, identifying the objectives and key procedures for the preparation of the quality manual. The following tasks must be carried out during this phase:

- Review of the quality policy and objectives.
- Authorization of the quality policy.
- Actions to implement the quality policy.
- Establishment and measurement of processes (using histogram tools, Pareto diagrams, check sheets, control charts, and scatter diagrams).
- Identification of processes and their interaction.
- Identification of quality management system documentation.
- Defining operational, monitoring, and control documents or procedures.
- Identification of general records.
- Identification of necessary documentation: document structure.
- Document: general process map.
- Analysis of process interaction.
- Process maps.

- Responsibility matrix.
- List of approved procedures to be documented.
- Review of the quality manual.
- Review of administrative procedures.
- Review of operating procedures.
- Procedures related to the process.
- Quality plans.

Phase 3: Implementation, training

Based on the information obtained in phase 2, the quality system documentation will be defined and developed, analyzing the processes and formalizing the documents on which the quality system is based. The following tasks must be carried out during this phase:

- Dissemination and implementation of procedures.
- Dissemination meetings.
- Implementation of procedures.
- Generate evidence of activities carried out.
- Informal (undocumented) evaluation of implementation.
- Training to understand the ISO 9001:2015 standard.
- Minutes of dissemination and training meetings with commitments.
- Training materials.
- Evaluation of training activities.
- Records of activities carried out.
- Measurement of indicators.

Phase 4: Internal audit

A comprehensive internal audit will be scheduled with the organization's own staff to assess the degree of implementation of the ISO 9001:2015 quality management system. The following tasks must be carried out during this phase:

- Planning of audits.
- Training of quality auditors.
- Implementation of internal audit procedures.
- Preparation and performance of audits.
- Identification of non-conformities.
- Determination of actions to correct nonconformities found. (Cause-effect diagram).
- Records evidencing the planning and scheduling of the internal audit.
- Internal audit training courses.
- Checklists required for audit preparation.
- Records of the audit's performance.
- Final audit report.
- Corrective actions resulting from the audit.

Phase 5: Improvement actions and review by management

Once phase 4, the internal audit, has been completed, phase 5 involves implementing a corrective action and improvement plan for the non-conformities detected. The results of this will serve as the basis for reviewing the ISO 9001:2015 quality management system. The following tasks must be carried out during this phase:

- Draw up an action plan for the non-conformities detected.
- Responsible person.
- Commitment date.
- Activity to be carried out.
- Implement the preventive action methodology. (Cause-effect diagram).
- Monitor compliance with the actions.
- Communicate the actions taken to the personnel involved.
- Review the quality management system.
- Review the points established in the ISO 9001:2015 standard.
- Detect significant and potential changes to the quality management system.
- Action plan for detected non-conformities.
- Minutes generated from the management review (commitments/agreements).

Phase 6: Certification process

Contact and select the certification company to obtain ISO 9001:2015 certification, bearing in mind that the certification body chosen by Cardon Rent. Car C.A must be sought, provided that all the system processes operate effectively and all procedures are implemented by staff.

CONCLUSIONS

As a result of this research, the following conclusions are drawn based on the achievements obtained from the objectives set:

The use of the ISO 9001:2015 quality management system for Cardon Rent. Car C.A. has resulted in a significant increase in related elements due to the strengthening of all control and information protection characteristics that are essential for the continuous improvement of the QMS. That is why it is vitally important to identify the vital processes of the service line, such as industrial cleaning, transportation and logistics services, and industrial maintenance, which were then characterized, thus allowing for an understanding of each of the activities performed by the company and its environment. This grouping of activities made it possible to identify the company's vital processes, proceeding to the development of the process map, the PEPSC diagram, and the flow chart.

On the other hand, the diagnosis regarding quality management was studied through the application of a checklist that showed the level of compliance of Cardon Rent. Car C.A. with the ISO 9001:2015 standard. The results for each of the clauses were as follows: leadership: 33 %, planning: 0 %, support: 52 %, operation: 29 %, performance evaluation: 20 %, and improvement: 0 %, with an overall non-compliance rate of 71 %. Based on the results obtained, it can be said that the implementation of a quality management system is necessary, with a notable commitment from senior management, which should focus its functions on decision-making and resource management for the quality management system.

To conceptualize the quality management system, a documentation system was developed to support it. This document system is based on the pyramid structure established by the ISO 9001:2015 standard and the analysis of the processes that, by their nature, are essential to the requirements of the company on which this system is based. This has made it possible to develop the necessary documentation for the quality management system, such as the quality manual and the job description manual. Finally, with the fulfillment of each of the specific objectives, the documentary information of the plan for the implementation of the quality management system necessary for the company Cardon Rent. Car C.A. was configured, with the aim of continuously improving all its processes, allowing for better use of resources and obtaining more and better benefits, providing it with recognition and prestige in the national and international market where it offers its services.

RECOMMENDATIONS

In accordance with the conclusions of this research, the following recommendations are proposed:

- Implement the ISO 9001:2015 quality management system to ensure greater efficiency and monitoring of processes in order to make the right decisions to increase profitability and productivity.
- Make the documentation concerning the ISO 9001:2015 quality management system available to the entire Cardon Rent. Car C.A. company.
- Encourage employees to take responsibility for the quality of the service they provide and the accuracy of diagnostic and preventive processes.
- Apply maintenance and control programs to keep documents and records up to date for management reviews.
- Promote a process-based approach, achieving alignment and integration under a common philosophy of quality.
- Conduct internal audits to determine that the ISO 9001:2015 quality management system complies with planned arrangements, in order to take actions that lead to continuous improvement in customer satisfaction.

FINANCING

None.

CONFLICT OF INTEREST

The authors declare that there is no conflict of interest.

AUTHORSHIP CONTRIBUTION

Conceptualization: Franklin Jesús Piñerez Díaz, Eduvigis Sorrentino, Oscar Antonio Caldera Molleja.

Data curation: Franklin Jesús Piñerez Díaz, Eduvigis Sorrentino, Oscar Antonio Caldera Molleja.

Formal analysis: Franklin Jesús Piñerez Díaz, Eduvigis Sorrentino, Oscar Antonio Caldera Molleja.

Research: Franklin Jesús Piñerez Díaz, Eduvigis Sorrentino, Oscar Antonio Caldera Molleja.

Methodology: Franklin Jesús Piñerez Díaz, Eduvigis Sorrentino, Oscar Antonio Caldera Molleja.

Project management: Franklin Jesús Piñerez Díaz, Eduvigis Sorrentino, Oscar Antonio Caldera Molleja.

Resources: Franklin Jesús Piñerez Díaz, Eduvigis Sorrentino, Oscar Antonio Caldera Molleja.

Software: Franklin Jesús Piñerez Díaz, Eduvigis Sorrentino, Oscar Antonio Caldera Molleja.

Supervision: Franklin Jesús Piñerez Díaz, Eduvigis Sorrentino, Oscar Antonio Caldera Molleja.

Validation: Franklin Jesús Piñerez Díaz, Eduvigis Sorrentino, Oscar Antonio Caldera Molleja.

Visualization: Franklin Jesús Piñerez Díaz, Eduvigis Sorrentino, Oscar Antonio Caldera Molleja.

Writing – original draft: Franklin Jesús Piñerez Díaz, Eduvigis Sorrentino, Oscar Antonio Caldera Molleja.

Writing – review and editing: Franklin Jesús Piñerez Díaz, Eduvigis Sorrentino, Oscar Antonio Caldera Molleja.

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