

Standardization of the commercial and administrative processes of a computer equipment purchase and sale company in Bogotá

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ABSTRACT: Process standardization is a technique that serves to reduce the cost and execution time of a process, also increases the quality of the product or service and consequently customer satisfaction, on the other hand, increases the flexibility of the company in the face of changes of the market. [1][2] For all these benefits, a series of strategies were developed to standardize the commercial and administrative areas of a company that works in the technological market and did not have established protocols for the aforementioned objects, which caused delays due to added tasks without value, in addition to the fact that all the internal processes covered and those responsible for carrying them out were not identified. For this reason, the diagnosis of the current situation of the organization was made, through techniques such as the problem tree and the Ishikawa diagram; the procedures for the recognition of their operations were documented, characterizing elements such as their goals, scope, inputs, activities, outputs, among others, and preparing the records for each one; It was developed from a study of work times, using time application methods with a stopwatch and estimates made by experts; indicators were established that allow the measurement of the results obtained and the Logical Framework Approach was proposed as a methodology to facilitate the analysis of the impact of the project in question. The result was the creation of procedures, reports and indicators that will promote the normalization of the commercial and administrative areas, this new documentation represents 90% of all the files in these currently. Likewise, proposals for activities that add up to great utility for the improvement of daily procedures were generated, since they allow saving up to 50% of time in various procedures and, consequently, achieving better performance for the company.

KEYWORDS -Standardization, process, documentation, characterization, time, diagnosis, indicator, impact.

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I. INTRODUCTION

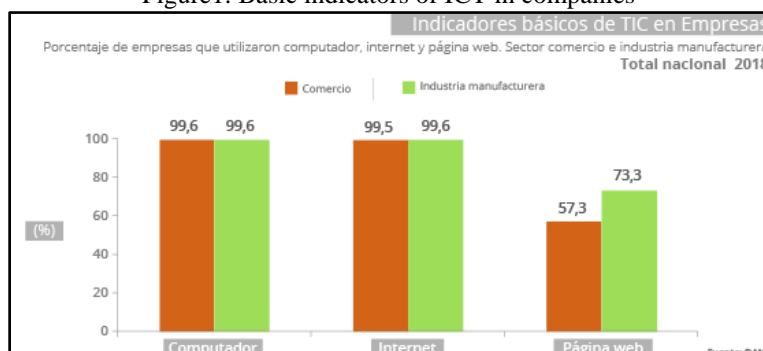
The object of study is a company located in Bogotá that was founded 15 years ago, which works in a technological market, specifically in computer equipment, in which used equipment constitutes 70% of sales; In that same proportion are target customers such as large organizations that require wholesale computers, the other market units on which they focus are homes, students and retailers in general, who make up the remaining 30%. Within its product portfolio are both new and used products. These computers are mainly from Dell, HP and Lenovo brands.

This company is made up of three areas, the administrative area, the commercial area and the operational area. This project focuses on the first two. The sales area is one of the most important because it is in charge of managing relationships with customers and achieving sales objectives, it seeks to obtain a positive result from the work that implies sending a consistent message to potential buyers about the value added that the entity offers, study marketing to define the organization's policy and make decisions based on reliable information, promote the product to reach a greater number of users and increase sales. [3]

The administrative area is in charge of the operation of the company, through planning, organization, direction, execution and control. This department deals with setting objectives, as well as the strategies to achieve them; the definition of the tasks to be carried out and their assignment; provide a suitable work environment so that employees can execute their activities in the best way and monitor performance by comparing it with the goals established in the planning.[4][5][6][7] It is made up of four positions: the Administrative Manager, the Administrative Assistant; the Accounting Assistant and the Human Talent Professional.

Regarding the market in which the company operates, its main product, the computer, continues to be a great tool for companies according to DANE findings, the ICT module carried out the annual manufacturing survey, inquiring 7,256 industrial manufacturing organizations in 2018, [8] which were active at the time of the study. The data found are reflected in Figure 1.

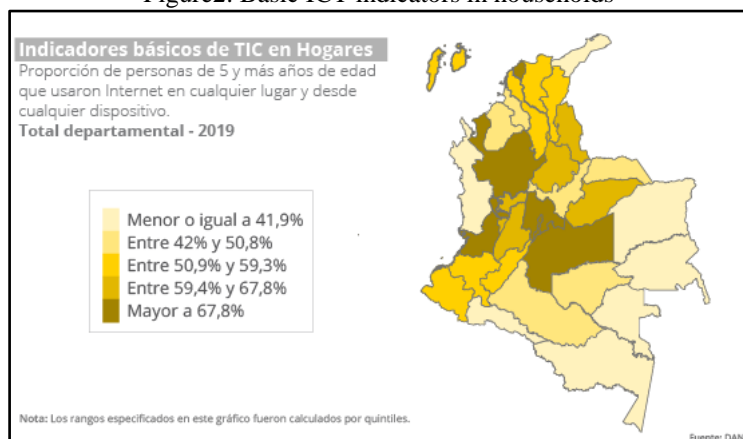
Figure1. Basic indicators of ICT in companies



Source: DANE. 2022

As can be seen, both in the commercial sector and in the manufacturing industry, almost all the companies investigated make use of the computer, this shows that the company is engaged in a viable business, since, as if these favorable statistics were not enough, It can also be seen in Figure 2 that in the homes of the most populated cities in Colombia the proportion of people who use this machine is very high. [9]

Figure2. Basic ICT indicators in households



Source: DANE. 2022

However, regardless of the market context, for every company it is important to document and keep track of all internal activities, the company that buys and sells computer equipment requires intervention to improve business and administrative processes. The entity needs new protocols to apply in its different areas because they are not established, which causes workers to not have clear instructions on the order to carry out their tasks efficiently, this has a negative impact on the aspirations of the organization, since it can generate delays in time and an increase in costs.

According to the information provided by the person in charge of the company's administrative management, there is no standardized process in the administrative and commercial departments, this is caused by a failure of the company's strategic management and generates adverse effects such as inefficient performance of functions, decrease in productivity, increase in questions, complaints and claims from customers, delay in work, among others. These problems could lead to a significant drop in profits and a bad reputation among buyers.

The benefits that result from the documentation of an organization's processes facilitate both the understanding of its behavior and the setting of key indicators for monitoring the performance of its most important areas such as the improvement of quality, competitiveness, productivity and creativity. [10]

This is vital in such a competitive market and it is essential if you want to have permanent development, be at the level of your competitors and satisfy your customers in the best possible way. In addition, it also directs the company to reduce work time and the economic resources used, through the establishment of precise norms, methods and procedures in certain situations, anticipating problems and establishing possible solutions that may arise on the fly. This is intended to contribute to the progress of the business and its positioning in the sector in which it competes.

Due to the above, the following research question arises: What strategies should be developed to standardize the administrative and commercial processes of the organization?

Taking into account that the entity, like any company, focuses on obtaining profits, this project is aimed at supporting that end, specifically standardizing its administrative and commercial processes, for this the following objectives were set: diagnose its current situation, recognize the operations that integrate them through their documentation, develop a time study of these, establish indicators that allow their performance to be measured and propose a methodology to analyze the impacts of the proposal.

Through the stages described above, a series of strategies were obtained based on the diagnosis of the current situation of the organization, a summary of the main problems that the company has, the preparation of a large number of reports and formats that will assist the development of each operation in the processes under study, the duration of their execution, parameters that allow evaluating the performance and degree of execution of the key procedures and a logical framework matrix that will serve as a guide to recognize the level of compliance of the project and the impact it has had on the company.

II. METHODOLOGY

In order to achieve the objectives, it was necessary to establish a methodology in which it is determined what activities must be developed and what mechanisms are going to be used to collect the necessary data.

To carry out the evaluation of the current situation of the processes, information was obtained directly from the company through meetings, dialogues and interviews with those in charge of each area. Then a meeting was held with the commercial director and the administrative manager, who provided relevant information about the company, with this data a SWOT matrix was developed, a technique used to analyze the condition of the organization, specifically, the internal and external, [11] where it was possible to identify strengths, weaknesses, opportunities and threats of the company, as well as strategies ST, SO, WT and WO product of the matrix. The ST strategies consist of taking advantage of the strengths to face the threats of the environment, SO strategies are those that propose to take advantage of the opportunities that can be presented through strengths, WT are based on reinforcing weaknesses to avoid external threats and WO are based on using opportunities to overcome abilities. [12] With the data provided, the main problems were also identified using tools such as the affinity diagram, the problem tree and the Ishikawa diagram.

The next objective, the documentation of the processes, was developed from the information collected through interviews and meetings with workers more directly related to the commercial and administrative areas. With this activity, the aim was to determine aspects such as the purpose, the responsible persons, the scope, item providers, input components, activities, outputs, users or customers, risks, documents involved, resources, controls, and indicators. Subsequently, the procedures related to each process were prepared, as well as the purpose, scope, order of the activities involved, the flowchart and the records related to each one of them. The formats were also made and collected,

Once the commercial and administrative processes were documented, the time study of the operations that made up the procedures began. The study of time is an analysis carried out in a direct and constant way in an activity using a precise tool to measure its duration, for example, a stopwatch, to record the time it takes to complete the task that is being analyzed. [13]

In this case, time study techniques with cumulative and return to zero timing were used, as well as time estimates made by experts in developing similar activities. For this, the company's facilities were visited and the period it took the workers to carry out their activities was recorded, for this the sample size, the frequency of the activity per cycle, the assessment of the work and the supplements were established. (such as personal needs or basic fatigue). [14] Surveys were also prepared with the Google Forms software in which the activities of the different procedures were detailed and it was requested to estimate for each one the period to carry it out, These surveys were completed by some officials of the entity and by experts who carried out similar activities in other companies. The times obtained were located in operations diagrams that were elaborated to represent the events that make up each procedure and their duration.

Subsequently, in order to meet the fourth objective, a series of key indicators were proposed with the purpose of measuring determining aspects of the study processes. A key performance indicator is a way of assessing the level of performance of a process, its value is implicitly linked to a previously set objective. [15] A total of eight indicators were formulated, three for the commercial process and five for the administrative one,

these were: the cost of acquisition per customer, customer satisfaction, the average ticket, sales per product, general liquidity rate, return of the investment, percentage of work continuity and frequency of accidents. For each parameter, the objective, the formula, the source of information, the periodicity of measurement, the periodicity of reporting, the interested parties, were established.

Finally, for the fulfillment of the fifth objective, the Logical Framework methodology was proposed as a method to analyze the impact of the project, which is an instrument in the administration of projects used especially in the planning, execution and evaluation of these through goal-focused system. [16] [17] For this, each of its phases was developed: the study of the actors, the problem tree, the objective tree, the analysis of the alternatives and the logical framework matrix.

The logical framework matrix is where the information from the previous stages is gathered and organized, so that it acquires a vertical and horizontal logic. The vertical is reflected in the column of objectives facilitates the observation of the causal relationships that exist between the tasks, components, purpose and the end; while the horizontal one is displayed in the rows and shows the relationship between the means of verification, the indicators and the objectives, this is that the necessary information must be found in the means of verification to calculate the indicators that in turn must be necessary to determine the achievement of the objective.

III. RESULTS

After capturing and organizing part of the information given by the commercial director and the administrative manager in the external factors evaluation matrix, it was obtained that the opportunities with the greatest value are work in digital media and the acquisition of new technology, on the other hand , the most significant threat is the company's lack of communication channels.

Regarding internal factors, it was observed that the greatest strengths of the company are its good location and the recognition it has managed to obtain thanks to the products it offers, in contrast, its main weaknesses are the scarce use of digital marketing tools and the lack of statistical control of their purchases and sales.

The aspects indicated above were those taken into account to prepare the SWOT matrix, which can be seen in Table 1.

Table 1. SWOT Matrix

SWOT MATRIX		STRENGTHS		WEAKNESSES	
		<ul style="list-style-type: none"> • They are located in one of the best sectors of technology • It is known by companies and people due to the good products they handle • Qualified human talent in each area • Positioning in the technology market 		<ul style="list-style-type: none"> • They do not take advantage of marketing to reach more people • They do not implement a PQRS system (Requests, Complaints, Claims and Suggestions) to improve customer service • They do not document the procedures of each area and job positions • There is no measurement of customer satisfaction • Purchases and sales are not handled statistically • They do not have an employee recognition system. • They do not have a schedule to carry out daily, weekly or monthly activities 	
THREATS	<ul style="list-style-type: none"> • Due to Covid-19, various companies emerged because the demand for technological items increased • Low-cost competitors are entering the market • Global technological changes • Communication channels are few 	ST STRATEGIES	<ul style="list-style-type: none"> • Due to the great recognition and positioning of the company, the entry of competitors that offer products and services at a lower cost will not affect them broadly. • Manage qualified human talent to face changes and technological advances 	WT STRATEGIES	<ul style="list-style-type: none"> • The best campaign is a satisfied customer • Improve and take advantage of communication channels to offer better customer service • Internally organize your processes and daily activities so as not to be affected by new competitors

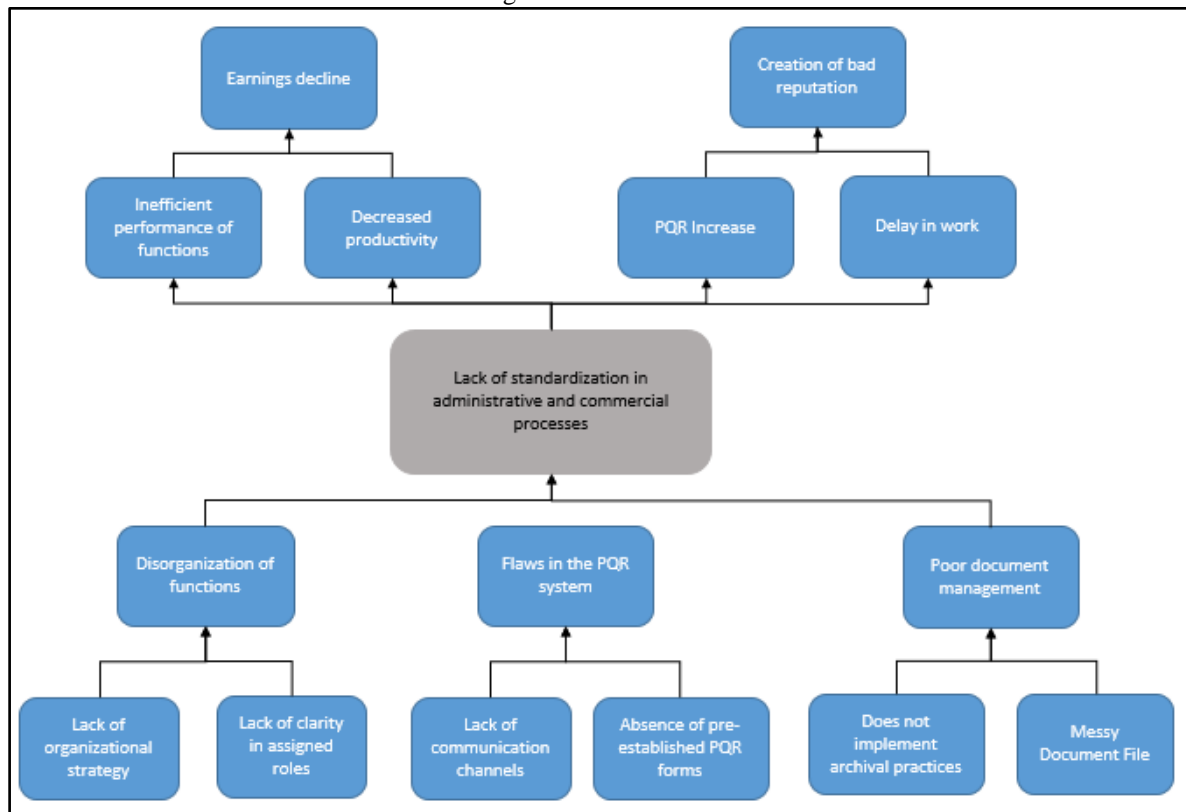
OPPORTUNITIES	<ul style="list-style-type: none"> Despite the fact that they are in an area where there are various companies that offer similar products, they are not afraid of competition due to the position they have gained over the years. Digital media can be used to reach more people They have reliable suppliers and significant experience in the market Acquisition of new technology 	SO STRATEGIES	<ul style="list-style-type: none"> Increase customer segment based on good customer reputation Due to the qualified human talent, digital platforms can be used to increase visibility in front of customers 	WO STRATEGIES	<ul style="list-style-type: none"> Train staff to be prepared for new technologies Take advantage of positioning to reach new customers by offering quality products Make use of digital tools to statistically organize purchases and sales
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Source: The authors. 2022

According to the SWOT matrix, ST strategies consist of maintaining its good position so that it is not affected by the entry of new competitors with lower costs and in keeping qualified human talent to counteract technological advances; WT strategies are to improve communication channels to offer better customer service and correctly organize daily activities; For their part, SO strategies lie in increasing the customer segment using the good reputation of the company and creating platforms using the knowledge and skills of the company's human talent; by Lastly, WO strategies are based on training staff in new technologies with which statistics can also be applied to the buying and selling process.

In addition, analysis tools such as the affinity diagram and the problem tree were used to recognize negative circumstances, problems such as those that can be seen in figure 3 were found.

Figure 3. Problem tree



Source: The authors. 2022

Due to these techniques it can be established that the main problems of the company have to do with the disorganization of activities, the bad PQR system and the lack of communication channels, these obstacles cause that it is not possible to reach the standardization of the processes and this in turn causes profits and reputation to decrease [18].

The documentation of the commercial and administrative procedures resulted in the consolidation of the characteristics of the processes and the preparation of the following procedures:

- Administrative area: 10
- Commercial area: 5

As well as the realization and compilation of a large number of formats, instructions, annexes, flowcharts and operations diagrams to support the different activities of the different procedures in the two areas.

Thanks to the study of times, data on the approximate duration to complete each activity of each process were obtained. Based on this information, the execution time of each procedure was established, as can be seen in Table 2.

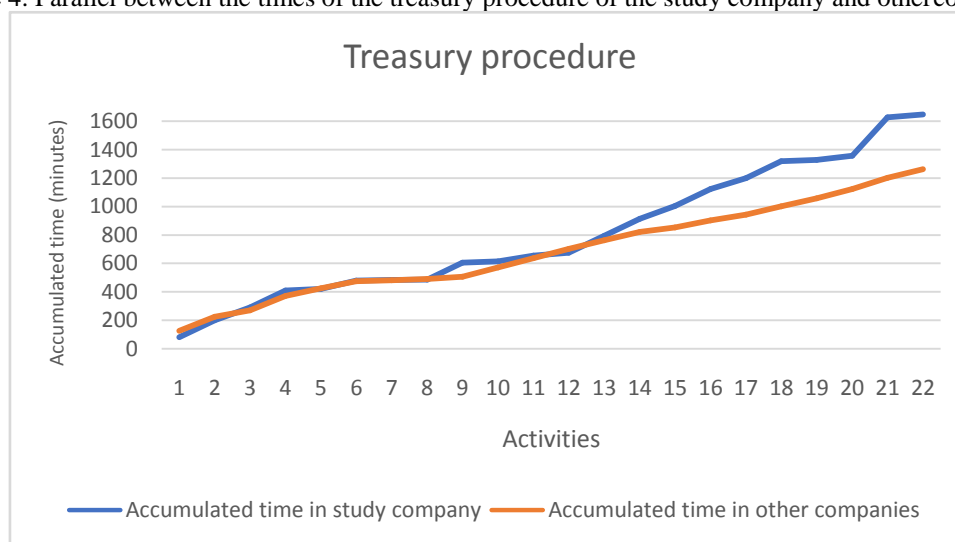
Table 2. Ideal times for each procedure.

Nº.	Process	Recorded time (minutes)	Recorded time (hours)
1	Retail	1775	29,6
2	Marketing	866	14,4
3A	Customer service (points of sale)	85	1,42
3B	Customer service (virtual)	49	0,8
3C	Customer service (phone)	75	1,2
4	Rental	7700	128,3
5	Dealers	3159	52,6
6	Accounting management	1834	30,6
7	Treasury	1428	23,8
8	Administrative	1825	30,4
9	Wellness	12201	203,4
10	Training	11511	191,9
11	Human talent information management	2843	47,4
12	Payroll settlement	723	12
13	Disciplinary	545	9,1
14	Personnel selection	8293	138,2
15	Security and health at work	12971	216,2

Source: The authors. 2022

The times of the retail, marketing and customer service procedures were taken using the time study technique with cumulative timing and back to zero; the times of the remaining procedures were determined by experts performing the same activities. The latter allows a comparison between the time available to the company under study to carry out its tasks and the time it takes other organizations to carry out similar operations. Although the tasks vary greatly in their development from one company to the other, this parallelism can provide an idea of how efficiently the different tasks are being performed. (See figure 4)

Figure 4. Parallel between the times of the treasury procedure of the study company and other companies



Source: The authors. 2022

As can be seen, the duration of the execution of the treasury procedure is longer in the company under study than in other entities, this was also evidenced in the other processes evaluated, although this is not decisive due

to the differences between each company. It could be an indication of low productivity and efficiency in carrying out tasks.

In order to assess compliance with the processes, different indicators were proposed for each of the procedures. Table 3 shows some examples.

Table 3. Indicators of commercial and administrative processes

Name	Aspect that measures	Formula	Variable name
Customer satisfaction	Degree of satisfaction with the products and services of the company	TM/CO	Numerator TM: Total invested in the marketing campaign Denominator CO: Clients obtained
Deviation from accounting records	Percentage of deviation of the values of the accounting record of the company with respect to the values of the banks	$ 100 - ((VL / VB) * 100) $	VL: Values of a period x in the accounting books of the organization VB: Values of a period x in bank records
General liquidity rate	Ability of the company to settle its debts in the short term	$(A/L) * 100$	A: Current assets L: Current liabilities

Source: The authors. 2022

Four indicators were proposed to measure the performance of the commercial area and five for the administrative area. The customer satisfaction indicator was traced in order to know the satisfaction achieved in the consumer in front of the products and services offered; the indicator of deviation of the accounting records was designed to support the accounting management procedure, denoting how much the company's accounting varies compared to the bank files; The general liquidity rate indicator is designed to specifically assist the treasury process, signaling the company's ability to meet its obligations.

As a technique to analyze the impact of the project on the results obtained by the company when implementing all its elements, the Logical Framework Approach was used, from which a matrix was obtained that synthesizes and organizes the information generated, as can be seen in Table 5.

Table 5. Logical framework matrix

	Narrative summary	Indicators	Means of verification	Assumptions
Goal	<ul style="list-style-type: none"> Increase company productivity Increased customer satisfaction Improve company reputation 	<ul style="list-style-type: none"> Productivity of the administrative area Productivity of the commercial area Customer satisfaction level 	<ul style="list-style-type: none"> company accounting Customer satisfaction surveys 	<ul style="list-style-type: none"> Project execution continuity Continuous evaluation of processes Standardization of the remaining processes of the company
Purpose	Develop strategies that lead to the standardization of the commercial and administrative processes of the organization	<ul style="list-style-type: none"> Time spent for each process execution Percentage of fulfillment of the work plan Percentage of achievement of objectives Variation of the execution time of a process 	<ul style="list-style-type: none"> audit reports Action plan document Goal planning document Study of times 	<ul style="list-style-type: none"> Continuous measurement of process times Willingness of staff to follow procedures Filling out the proposed formats
Outputs	<ul style="list-style-type: none"> Diagnosis of the current situation of the commercial and administrative processes of the company Documentation of the commercial and administrative processes that are carried out for the recognition of the operations that integrate them Development of a time study of operations in commercial 	<ul style="list-style-type: none"> Customer acquisition cost Customer Satisfaction Degree Most and least sold products Sales by product Deviation from accounting records 	<ul style="list-style-type: none"> Minutes in goal fulfillment meetings Control sessions and customer service management which must be recorded in a record Company accounting books 	<ul style="list-style-type: none"> Responsible execution of elaborated procedures Constant completion of control mechanisms

	<ul style="list-style-type: none"> Establishment of the indicators of the commercial and administrative processes that allow the measurement of the results obtained Analyze the impacts on business and administrative processes to determine the success of the project 	<ul style="list-style-type: none"> General liquidity rate Return of investment Percentage of employment continuity Accident frequency Deviation from accounting records 	<ul style="list-style-type: none"> Archives of the entity's occupational health and safety area Archives of the company's human talent area 	
Activities	<ul style="list-style-type: none"> Make schedule of activities set budget make work plan Characterize the processes Document activities Conduct interviews with officials Sift the collected information Identify problems using the problem tree and the Ishikawa diagram Make a SWOT matrix Make affinity diagram Develop strategies and action plans to solve problems record results Identify process risks Determine the necessary indicators to measure the operation and compliance with the procedures Determine a methodology to analyze the impact of the project on the performance of the company 	Cost performance ratio (budgeted cost of the project / actual cost of the project)	<ul style="list-style-type: none"> Schedule of activities Technology World Accounting 	<ul style="list-style-type: none"> Provision of project executors Willingness of company personnel to collaborate with the development of the project

Source: The authors. 2022

The matrix can identify the activities that must be carried out to complete the components, which in the case of this project are the specific objectives, that is, the assessment of the current situation of the company, the documentation of the procedures, the development of a study of times, the creation of indicators to measure the current methods and the approach of a methodology to evaluate the effects of the proposal in the processes.

The matrix also presents the indicators that must be used to monitor the execution of each level of objectives, the means or sources of information to calculate the parameters, and the conditions that must be met for their achievement.

IV. DISCUSSION

The standardization of processes is a way for any company to achieve better results both in terms of quality and costs, since by going from executing tasks in a disorganized way and without a specific focus to carrying out typified activities that lead to a specific objective and delimited, saving time, reducing expenses and improving the conditions of the product, this is because all the people involved in the process will have knowledge about its purpose, the deadlines assigned to deliver the product or service, the expected characteristics, the way of execute each phase, among others. [19][20]

However, according to information provided by the president of Colombia Productiva, Camilo Fernández de Soto, only 34.8% of Colombian companies have a quality certification, and only 35.1% of these entities have ISO certification. 9001 of the International Organization for Standardization. [21]

Although this is worrying for the level of quality in companies in the country, it means an opportunity for the company to gain an advantage over its competition. Well, according to the study "The performance impact of business process standardization: An empirical evaluation of the recruitment process" by Björn Münstermann, Andreas Eckhardt and Tim Weitzel, in which an empirical analysis was carried out based on data from 156 companies. To evaluate the hypothesis that process standardization has a positive impact on the duration, cost, and condition of commercial procedures, it was found that its implementation has a decisive effect on procedure time, cost, and, above all, quality. , with a coefficient of determination of 61.9%. [22]

In addition, according to Zully Chavez and Gianluca Quiroz in their work "Standardization of processes and their impact on the productivity of the organization Negociaciones Minera Chavez SAC, year 2017", the duration of the execution of the standardized activities was reduced by 50% thus achieving an increase in productivity of 75%. All of this thanks to the creation of graphics, procedures and follow-up sheets, control sheets and a functions and operations manual that gave them more organization to execute the processes and reduce time. [23]

This information supports the company's initiative to standardize its commercial and administrative processes in the search to make them more efficient. If the company manages to implement the procedures developed in this project, monitor and improve execution times based on the time study prepared in this work, evaluate performance through the proposed indicators and analyze the impact using the logical framework matrix, surely You will be able to stand out in the technological market, thus increasing your profits and your prestige.

V. CONCLUSIONS

In order to achieve the standardization of the business and administrative processes of the company, it is necessary that it implement and use the results of this project in the development of activities in these areas.

Based on the diagnosis made with the SWOT matrix, the problem tree, the affinity diagram and the Ishikawa diagram, it can be asserted that the main drawbacks of the company lie in the disorder of the work in the different sections and the non-application of technologies to improve the internal communication of the organization.

For this reason, throughout this project the processes of the company under study were characterized in such a way that it will not only be reflected in the methodology and the tasks currently developed, but also the activities proposed by the authors will be evidenced, the objective of each process, the indicators to measure their performance, the suggested changes to increase their efficiency, among others. This same modality was applied in each one of the procedures that made up the commercial and administrative processes and several formats were elaborated with the purpose that the results of the operations of the same type vary as little as possible when they are executed and that this uniformity can also be seen in performance.

To reinforce the characterization of the company's processes, a time study was carried out that aims to reflect as closely as possible the duration of each procedure, in this way the company will have reference data to optimize the execution time of its activities, thus increasing productivity and efficiency in the offer of services and products and entering into a dynamic of continuous improvement. In addition, it will make it easier for the entity to calculate delivery times, which will have a positive impact on punctuality and therefore on the image before the public and customers.

With the logical framework matrix, the monitoring of the usefulness of the project is facilitated, since for each level of objectives (activities, components, purpose, purpose) the precise indicators were established to assess their degree of compliance, the sources of information to obtain the data necessary to calculate them and the necessary conditions that must be produced in order to execute or achieve each stage of the hierarchy of objectives. With this tool, the company will be able to continue implementing those factors that generate revenue or make adjustments to the strategies that do not provide the desired effects.

Finally, the importance of Industrial Engineering tools in the development of this project is highlighted, as these are the basis for the execution of each stage of this and thus providing solid foundations to establish the strategies that will lead to the standardization of the commercial process and the administrative process of the company.

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