

## Standardization of Internal Audit processes for an oncology specialized entity

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**ABSTRACT :** *The health entity in which the standardization was developed dedicates its functions to the prevention and treatment of cancer, continual improvement in these organizations is of vital importance since being a degenerative disease and with high level of mortality its operations have a direct impact towards the community, therefore they require some specific control guidelines to fulfill the institutional objectives established in each one of the activities that are carried out; In this context, through internal control and the standardization of institutional processes is intended to establish order, manage and respond to risk through audits, obtaining optimum results in the administrative measurements managed by the institution and monitored by state organizations. In addition, the actions carried out to verify compliance with each of the indicators of the areas belonging to the entity specialized in oncology are described, facilitating continual improvement from its internal analysis.*

**KEYWORDS** –*Audit plan, Indicators, Internal control, Standardization.*

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### I. INTRODUCTION

Processes globalization and the speed of change in the organizational environment have created the need to implement different internal control methodologies in order to generate an orderly administration of the institutions, this being one of the main objectives set by the companies. According to Velandia Nancy, institutions must consolidate and redesign their systems, making them flexible enough to adapt to the changing regulatory and business environment, which refers to the adoption of a coherent body of rules for the conduct of market participants, aimed at maintaining standards of organization and discipline, as well as integrity, increasing the levels of professionalism of participants and complying with rules and other regulations [1]. Understanding the importance of internal control in the organization becomes a key factor when it comes to using resources to prevent possible fraud or losses, which is why it is important that companies now have a guarantee of the investment made and certainty of results based on efficiency, effectiveness and economy, so it is essential to have control tools.

This control must be accompanied by a processes standardization, this methodology generates unification through patterns or algorithms on all the activities that are contained in the institution, the objective of this mechanism is to guarantee that everything fulfills a same standard, to facilitate its understanding and fingering for any member of the company, this improves the quality, reduces the time of work and diminishes the flexibility in the institutional conscience.

The oncology specialized entity is of national scope and is in charge of carrying out actions of education, prevention and early diagnosis of cancer, has experienced changes in its management in order to increase the quality of its service, with an advanced growth in recent years, between 2015 and 2016 had corporate and software improvements which generated the need to standardize their processes and implement the internal audit area to monitor operations, and to organize the administration's actions, as the lack of established methodology meant that the audits carried out not were not related to internal control monitoring, the virtue of the project's implementation is the optimization of the fulfillment of institutional objectives, the improvement of the audit plan and avoiding that the information will continue to be ambiguous.

To achieve the above described, it is essential to apply the COSO 4 model in the articulation of the Internal Audit area, considering the five components of the model (diagnosis-control environment, risk assessment, control activities, information - communication and monitoring/supervision), defined as follows:

Diagnosis-control environment is the support in which the organization plants its institutional conscience and demonstrates the commitment to comply with ethical values and administrative integrity, assures

the fulfillment of the supervision tasks and generates responsibilities to the employees; at the same time it grants discipline for the follow-up of the objectives of the internal control system.

Risk assessment identifies the possible risks that may be encountered, these may have a positive or negative outcome and are found internally or externally, all must be evaluated; this process must be objective and understandable as it results in the communication and management of the risks encountered.

Control activities are methodologies of prevention or detection that are established in the procedures with the main objective of reducing the impact and probability of risks, these must be carried out in each of the areas of the institutions and in all the processes that are carried out in it, with the purpose of assuring the fulfillment of the objectives.

Information and communication component define the methodology in which the institutions exchange information within the organization, the data should be circulated to each corner of the organization with the aim of improving the performance of control activities.

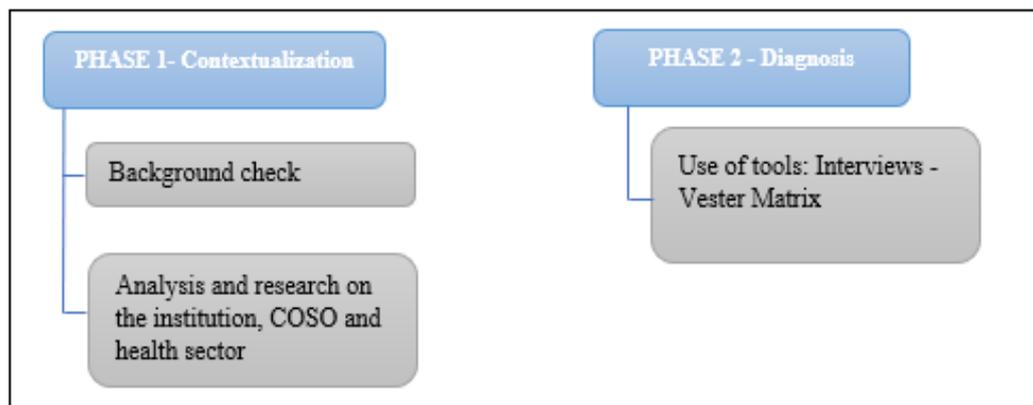
Monitoring/supervision is the function to measure the performance of the Internal Control structure, taking into account those responsible at each level of control, their functions, reports, and monitoring activities; all findings found about the efficiency and deficiency of the control system must be communicated and corrected in an effective manner [2].

Finally, to achieve the processes standardization and a complete improvement for the institution, the COSO 4 model must be complemented with internal and external audits carried out by the area periodically since this is an objective assurance and consultation activity, created to improve the operations of an organization, contributing to the fulfillment of the objectives with a systematic and disciplined approach to evaluate and improve the effectiveness of risk management, control and governance processes [3].

## II. METHODOLOGY

In this study, was made a descriptive analysis of the situations, risks and different contexts present in the activities carried out by the Internal Audit area in the oncology specialized entity, considering the needs and requirements of the stakeholders and the processes.

Based on this, the project is carried out in five phases (Fig.1, Fig.2 and Fig.3); the first phase consists of a review of background information on studies carried out in institutions aimed at the health sector and companies that have successfully applied the COSO regulations, using them as a guide and contextualization for the subsequent development of the project. The second phase consists of a detailed diagnosis of the Internal Audit area through interviews with the employees in charge of the processes and later the construction of the Vester Matrix since it is an effective tool to identify causes and effects of the area's problems.



**Figure 1.** Phases applied prior to process standardization

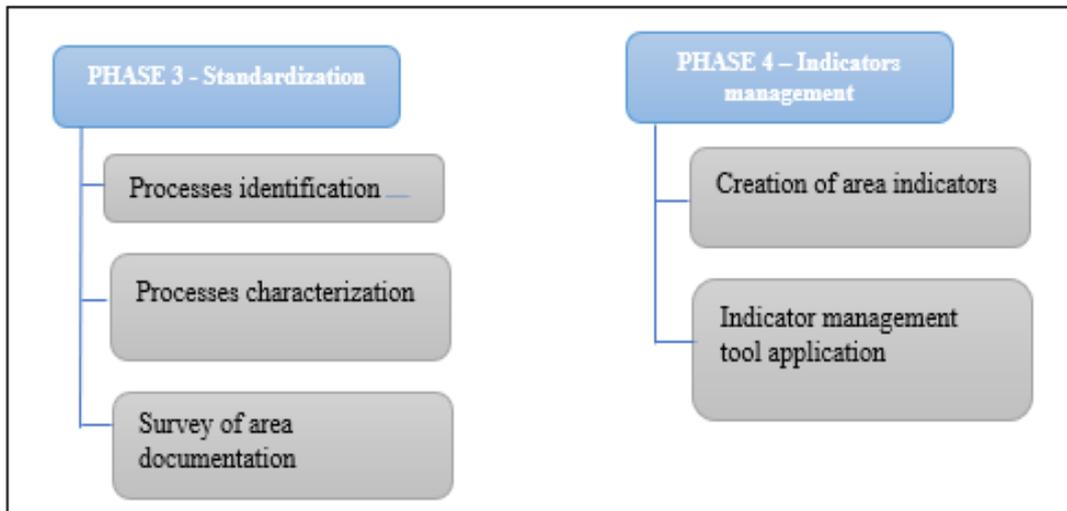


Figure 2. Phases for the application of process standardization

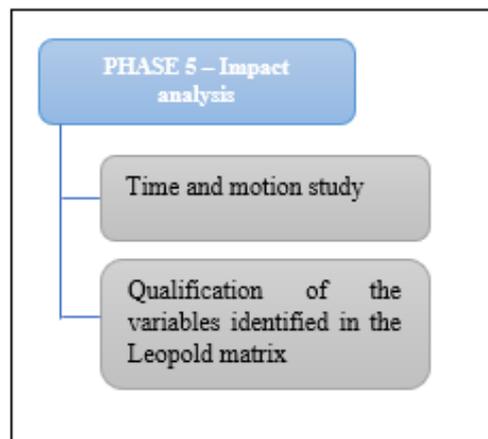


Figure 3. Evaluation of process standardization

The third stage consists of collecting the necessary documentation for the processes standardization within the area, based on the diagnosis and a characterization of processes, this tool describes how a process works in accordance with their requirements, there are identified components such as: outputs (products / services), inputs, activities, suppliers, customers, resources, objectives, stakeholders among others [3]. Subsequently, a system is generated to measure compliance with the institution's indicators through a tool created for the project.

Finally, an impact analysis of the project from the social point of view is applied, through an adaptation of the Leopold matrix, defining the key activities carried out by the area and a respective evaluation from 0 to 5 to each of these, in two scenarios taking into account the economic, social and management variables, together with previously identified decisive activities that affected the project; also in this stage, an analysis of times and movements is made, led by experts in Auditing, with the purpose of identifying the activities that are recurrent within the processes and at the same time are key to evaluate the evolution of the same from the time-cost perspective.

### III. RESULTS

#### III.I. DIAGNOSIS

Initial diagnosis was carried out through an interview with the people responsible for the internal audit area in which opportunities for improvement in the application of adequate documentation for the registration and control of audits were highlighted, in order to create records and establish criteria for the development of internal activities, in order to have clear and not unambiguous information.

In 2018, the Internal Audit area carried out audits and based on them, recommendations were made, however, little control was found on those, and there was no evidence of the existence of standardization in the activity record formats for the proper inspection of compliance with the findings found in them.

At the same time, through the Vester matrix, nine incident factors were identified in the lack of follow-up control and documentation of the area:

- Lack of documentation.
- Lack of records.
- Few audits performed.
- Lack of follow-up to control.
- Lack of indicators.
- There is no process characterization.
- Little planning.
- No unified records.
- Lack of disclosure of activities and results

Along with the internal audita rating of 0 to 3 was made, in which 0 indicates that the factor does not influence among the others and 3 is the maximum value of dependency. In Table 1, the development of Vester matrix is found, relating the factors identified previously in the analysis carried out.

**Table 1:** Vester matrix

CD	PROBLEM	P1	P2	P3	P4	P5	P6	P7	P8	P9	X
p1	Lack of records	0	3	1	2	3	0	1	3	0	13
p2	Lack of records	3	0	1	3	3	1	2	3	2	18
p3	Few audits performed	3	3	0	3	2	1	3	2	0	17
p4	Lack of follow-up to control	1	1	2	0	3	2	3	1	2	15
p5	Lack of indicators	1	1	1	3	0	2	3	1	1	13
p6	There is no process characterization	3	3	2	1	3	0	2	2	0	16
p7	Little planning	3	1	3	3	2	3	0	2	3	20
p8	No unified records	1	1	0	2	2	1	2	0	2	11
p9	Lack of disclosure of activities and results	1	1	0	1	2	1	3	2	0	11
<b>Y</b>		16	14	10	18	20	11	19	16	10	
<b>Total weightings assigned</b>		81									
<b>Number of weightings with 3</b>		24									
<b>Coefficient obtained</b>		30%									
<b>Result</b>		<b>Consistent</b>									

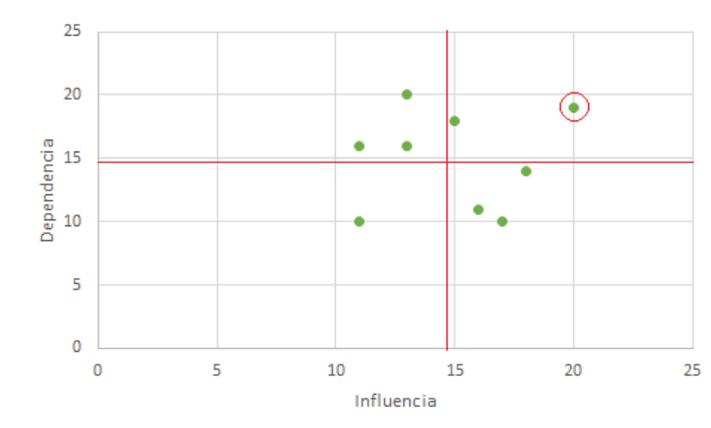
Subsequently, four quadrants were identified: passive, active, critical and indifferent where the following is evident (Fig.4):

Passives: There are three out of the nine factors identified (lack of indicators, lack of records, no unified records), which are indicators of efficiency of the identified problem.

Actives: Three factors were identified as the primary cause of the difficulties encountered (no data, few audits performed, no process characterization) and therefore require attention and priority management in process standardization.

Critical: Two out of the nine factors were identified (poor planning, lack of control) and are understood as problems, therefore they require great care in their analysis and management since the results of the project depend on their intervention.

Indifferent: An indifferent problem is obtained within the identified variables (lack of dissemination of activities and results), i.e. its influence within the project is reduced and therefore no time is spent on its correction.



**Figure 4.** Dependency Graph

### III.II. STANDARDIZATION

The standardization and creation of documentation in the Internal Audit area in the oncology specialized entity, is executed with a process approach in which each activity performed requires management and control; everything was structured according to the institutional objectives and activities identified previously, also considering external and internal agents and resources needed to build its characterization based on the PDCA cycle, defined as a strategy of continuous quality improvement in four steps, planning, doing, checking and acting [4].

Therefore, considering the previous diagnosis were defined objectives, scope, stakeholders, inputs, outputs and controls required for the identified sub-processes: internal and external audit, physical inventory count and risk management. This process includes all aspects related to internal control and the implementation of actions against results in performance evaluations from audit planning to the follow-up of the respective improvement plan.

Each one of the three sub-processes identified contains specific activities that are necessary for the fulfillment of the institutional objectives and contribute to preserve the quality in the service of all the functions of the area, in them the Deming cycle already mentioned was applied, being distributed of the following way:

Internal and external audit: identification of needs, preparation of audit program, review of annual audit program, disclosure of audit program, selection of staff to carry out audits, audit plan, execution (field work, preparation of audit report), review of final audit report, preparation of improvement plan and monitoring of improvement plan.

Risk management: based on the internal control model COSO, control environment diagnosis, risk assessment, event identification, risk assessment/analysis, control activities, information/communication and monitoring/supervision.

Physical inventory count audit: review of the general inventory programming letter, visual verification of the inventory warehouse, accompaniment to the opening of the inventory report, carrying out and verification of three counts, closing report reviewing, receipt of the inventory report, audit report issuance, improvement plan preparation-adjustment and follow-up.

In this way, the necessary documentation was generated for each activity and sub-process, providing continuous improvement, taking into account that, with the exception of the risk matrix already stipulated by each area, the standardization was carried out without a historical or a previously existing base in the institution, obtaining as a result the creation of a procedure for each sub-process, twenty-six formats, thirteen matrices, eight instructions and four external documents taken into consideration (Fig. 5)

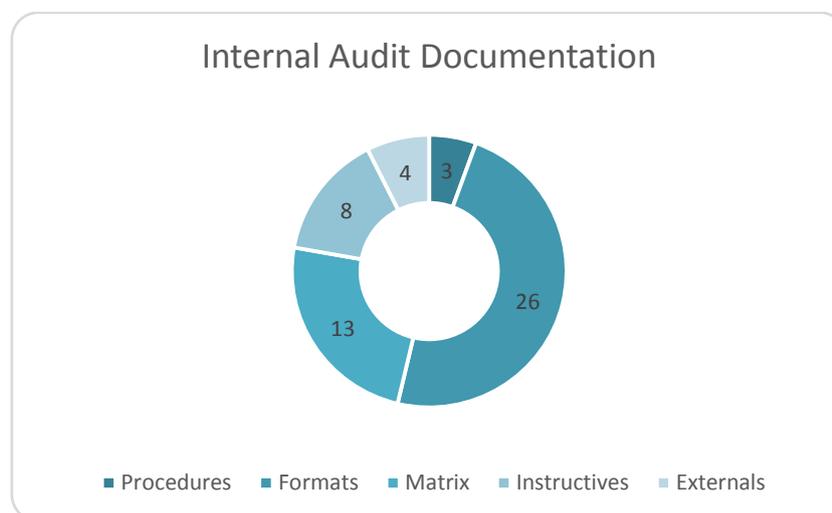


Figure 5. Internal audit documentation

### III.III. INDICATORS MANAGEMENT

After the standardization it was necessary to apply a measurement system through indicators, considering that within any organization it is indispensable to review and measure the impact and progress of each of the actions that have been generated [5], managing indicators is fundamental since it allows us to identify the weak points that require immediate attention, to know the strong factors in order to intensify them, and to evaluate the efficiency of the decisions taken throughout the institution, remembering that we can only improve what we can measure [6].

Therefore, a system of indicators was applied to respond to the needs, institutional objectives and legal regulations, for its correct origin and understanding it was indispensable to answer questions such as, ¿what is

measured?, ¿where is it measured?, ¿when is it measured?, ¿why is it measured?, and ¿who measures it?, this to guarantee that the indicator will generate a precedent and give rise to constant improvements in the area processes, finally, twelve indicators were established on the management carried out by the sub-processes, which were distributed in two groups (Fig. 6).

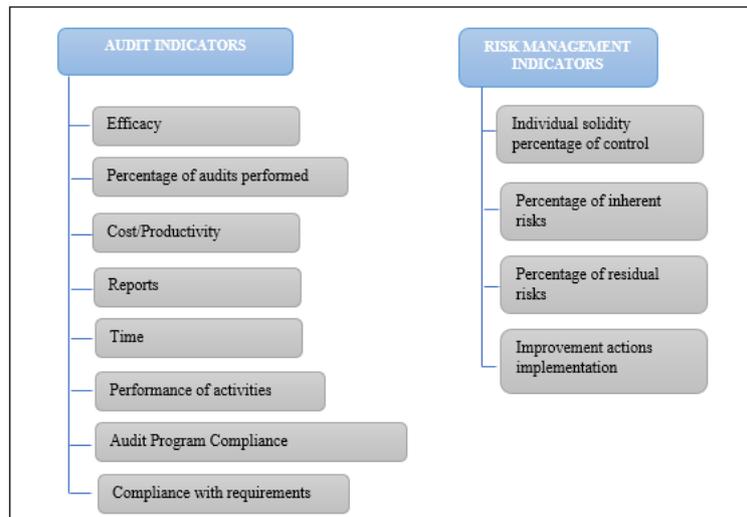


Figure 6. Indicator management

Each indicator was analyzed and selected by the area because it provides results that can be used for continuous improvement of the organization, it is important to keep taking them periodically according to the time stipulated for each one, in order to compare their behavior and make assertive decisions for the benefit of the institution.

In addition to the application of the indicator system, a tool was created with the help of Microsoft Excel software, since one of the activities carried out by internal audit is the periodic review of compliance with the indicators for each area or process being audited. The tool allows validating and verifying what percentage of indicators evaluated by the institution are being fulfilled in order to take corrective actions against possible noncompliance or delays by the auditees, the results of a simulation is shown in Fig. 7 as an example.

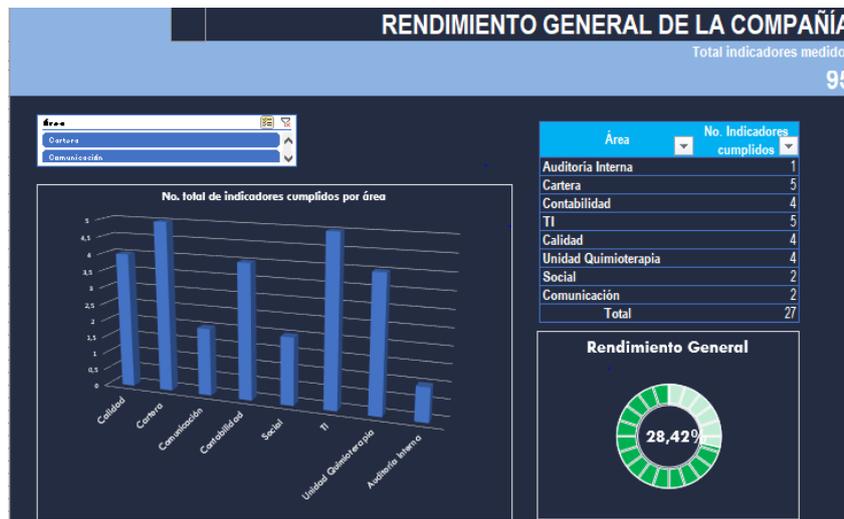


Figure 7. Simulation result of the indicator management tool

This tool was also designed to fully evaluate the twelve indicators obtained through standardization, generating compliance graphs for each of them with respect to the "goal" set in the organization (Fig.8)



Figure 8. Outcome evaluation of internal audit indicators

III.IV IMPACT ANALYSIS

The Leopold Matrix was adapted for impact evaluation because it is useful for the effective identification of impacts in a project. To structure the matrix, it is necessary to locate in the rows the factors that can be affected, and in the columns the actions to be evaluated [7]. For this project the matrix was applied considering the key activities that the area has and in which a direct change was presented when executing the standardization, the data considered for the qualification were taken before and after its application (Table 2).

Table 2. Factors evaluated in the impact

Factors	Prior to project	Project expectations
Number of audits	10 audits are performed	14 audits are performed
Percentage of evaluated indicators	65% of indicators are verified	85% of indicators are verified
Percentage of audits performed	75% of audits programed are performed	87% of audits programed are performed
Response time	Average response time is 13 days	Average response time is 8 days

Below (Table 3), is the final table of the weighting and results of the four factors evaluated, these were obtained in a meeting with the head of the area who due to her experience has the knowledge of what are the most important activities within the daily processes of the area, taking into account the number of optimal audits to be conducted in the institution, the approved indicators of each of the areas and compliance with the objectives.

Table 3. Leopold Matrix Development SCENARIOS

Factors	Prior to project	Project expectations	Weighting	Score before	Project score	Total before	Project total
Number of audits	10 audits are performed	14 audits are performed	30%	3	4	0,9	1,2
Percentage of evaluated indicators	65% of indicators are verified	85% of indicators are verified	25%	2	4	0,5	1
Percentage of audits performed	75% of audits programed are performed	87% of audits programed are performed	30%	3	4	0,9	1,2
Response time	Average response time is 13 days	Average response time is 8 days	15%	3	5	0,45	0,75
<b>Total</b>						6,9	4,15

With the information obtained, it can be concluded that the project had a positive impact on the oncology specialized entity, obtaining a total score of 4.15, and having an improvement of 66% in the processes of the area, making clear the critical activities that must be taken into account for the proper development of institutional objectives (Performance of audits - percentage of compliance).

#### III.IV.I TIME AND MOTION STUDY

The study of times is a technique used to record the times and working rhythms of the phases that make up the processes of the area. It is necessary to execute this record in a certain way, for this project it was done using the time sheet technique. This technique consists of measuring a specific task under the knowledge of two or more experts, adjusting any changes in order to establish a standard time for it [8].

The time recording is carried out in a table, in which the processes and activities are related to the time periods evaluated by the experts, in some cases a column of observations is included in the table so that the experts can detail some key element that must be taken into account to understand their measurements. The collections were made by three auditors, one belonging to the institution and two externals, who were given a weighting of 40% and 30% respectively, obtaining 100%.

For the measurement to be objective, it was necessary to consider the experience of the experts in both internal and external audits, their professional profile, and in order to avoid interference between the information, neither had contact with the results of the other, the tables with the sub-processes and activities to be evaluated were provided to them, and they had to be completed in minutes to obtain standard responses; as an example, the following table shows one of the tables completed for the process described above.

**Table 4.** Time recording  
**RISK MANAGEMENT**

Activity	Name	Time			External experts appraisal	Internal expert appraisal	Average time
		Exp 1	Exp2	Exp Liga			
1	Diagnostics-Control environment	180	180	240	30%	40%	204
2	Event identification	120	360	360	30%	40%	288
3	Risk assessment/analysis	120	480	600	30%	40%	420
4	Control activities	200	300	240	30%	40%	246
5	Information & communication	120	180	120	30%	40%	138
6	Monitoring and supervising	360	300	300	30%	40%	318

With this study was obtained that the internal and external audit procedure needs an average time of 95.5 hours to be carried out, since for its total diligence the field work and the elaboration of reports after such audits must be considered; as for the risk management procedure, it was found that its duration is 26.9 hours, however, the time of elaboration does not influence the level of importance it requires to bring value to the institution.

Finally, the last procedure (physical inventory counting audit) has two sections, the first one that refers to the physical inventory counting had a duration of 37.5 hours, the experts made observations regarding the reception of the reports since this time depends on the people in charge of their diligence; the second section that corresponds to the random counts has a duration of 18.6 hours being the process that needs less work time within the area.

#### IV. DISCUSSION

When the main objective of a company is to provide services with a high-quality level, the most effective way to achieve this is by efficiently managing its processes, when and where they occur and with the intervention of the entire institution [9].

Considering the above, the importance of process standardization in the development of new procedures that benefit organizations is demonstrated, particularly in the case studied. It has been shown that the quality of service in the Insurance area of the Juan Pablo II Health Center has increased steadily during the study period [10].

In the project carried out by Arredondo Freddy, as mentioned in the previous paragraph, it was possible to present the significant result obtained by standardizing processes in health sector organizations. At the same time, in the project described in this article, it was possible to verify that through the standardization carried out

there was an increase in the quality of the processes carried out by the area, taking into account that internal audit is a transversal process that affects everything from the internal movements of the organization to the service provided to users.

Along with the standardization, the analysis of the characterization of projects takes strength when making the feedback of the results, according to the project made by Ospina Carlos using the PDCA cycle facilitates the company processes identification and the description of the same ones, at the same time it contributes to the identification of the risks associated to the process of Management of purchases and inventories, which allowed the design of the control points [11]; by comparing the results obtained in this standardization, using the Deming cyclespecific control points were identified, which were analyzed in the improvement plan contributing value to the fulfillment of the institutional objectives.

At the same time, López Andrés's project was developed under the COSO methodology and is a clear case of success in its application. It indicates the importance of this methodology since it provides reasonable assurance that the organization's objectives related to the efficiency and reliability of information will be met [12], as well as in this article where internal control is evaluated through the identification, evaluation and control of risks based on the documentation carried out under the risk management methodology.

Entering the topic of the importance of management indicators, according to the project carried out by Ospina Carlos, at the end of his research he refers to the fact that the application of indicators is still pending, since in their absence the decisions taken were not based on facts and data from the day-to-day process, which is why there was a dependency on the perception of the company's personnel [13]; On the other hand, in this project, by developing management indicators in a timely manner, a compliance control and detailed plan was obtained to evaluate the area's main activities. This was complemented by the tool developed in Microsoft Excel to facilitate the monitoring of indicators for the rest of the institution.

In addition, in order to apply the impact evaluation of the process standardization, a Leopold matrix was made, where factors such as the number of audits performed, the response time by the area to requirements and the evaluation of the compliance with indicators were qualified, because in the interviews applied at the beginning it was evident that these were the weakest points in terms of management. The results of the evaluation reflect the importance of the project, as the total score improved by 66%.

Finally, taking into account that the purpose of the time study is to determine the standard of an individual or group operation within an organization [14], the data obtained by the experts was interpreted towards the processes of the internal audit area, which are key to evaluating the effectiveness and use of resources within the institution and at the same time increasing the quality of service by focusing on the points with the longest duration.

With what has been described above, it can be demonstrated that the processes standardization not only organizes the methodologies used, but also manages a legal and regulatory order on which organizations rely to facilitate the fulfillment of their internal objectives, at the same time reduces work time and ensures the ability to measure and control the results for each of the sub-processes and activities that are performed. It is a process that adds value to the institution and generates commitment in those involved regardless of their level of membership, and generally significant improvements are obtained by applying it correctly as evidenced in this article.

## **V. CONCLUSIONS**

In the standardization carried out, engineering tools were applied in the internal audit area, generating added value in decision making, which will be reflected in the future and in turn will facilitate process management through an integrated documentary system with indicators of the identified sub-processes.

Furthermore, the characterization of processes carried out was fundamental to identify the strategic actions that facilitated the realization of the standardization activities as well as their monitoring, evaluation and control.

Resistance to change is usually a factor that affects the projects development; however, in this institution a systematic management was achieved in which the development of objectives was carried out in parallel with the organizational culture and teamwork, generating responsibilities, commitments and adding value to the activities carried out; this project not only provided results to deploy a competitive advantage but also added skills and resources to optimize processes, generating effectiveness to the results of the health care provider entity.

A reduction in the time necessary to carry out each subprocess is evidenced, which is supported by the results obtained in the study of times and movements executed, which ultimately falls on a reduction in the workload for workers.

The tool developed for the area represents a relief and an improvement for the people in charge of monitoring the compliance with the indicators belonging to the whole institution, since it is an easier, faster and more effective way to apply these controls periodically.

Once the management of the standardization has been completed, and in the daily work life already the document management taken normally is required a new time study since these will present a reduction against those taken for the evaluation of times carried out.

Finally, all the processes carried out in the standardization must go hand in hand with technology, staff training and proper communication and feedback among stakeholders, with the aim of increasing the level of competitiveness and innovation of the institution, and thus obtaining synergy between results and institutional objectives.

## **VI. AUTHORS CONTRIBUTION**

The information contained in this article is based on a project carried out thanks to the work and supervision of the authors, real results were obtained which have not been copied or falsified, this guarantees its authenticity.

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