

Standardization of the processes of Academic Office in the Faculty of Engineering at Universidad Libre Bogotá

María Alejandra Abril Molina¹, David Felipe Pérez Vargas¹ and MBA Ing Ever Fuentes Rojas¹

¹Industrial Engineering Program, Universidad Libre, Bogotá D.C - Colombia

ABSTRACT: *This project focuses on the standardization of academic processes in the Academic office of the Faculty of Engineering at Universidad Libre, Bogotá campus, because through an exhaustive initial diagnosis, processes that lacked clear and documented procedures were identified, which allowed proposing guidelines for their standardization and formalization. A total of 37 academic procedures were identified, out of these 12 were not unified.*

As a result of the diagnosis, critical areas that required improvement were highlighted, and performance indicators were proposed to evaluate the effectiveness of academic processes, such as the time it takes to resolve cases of the CUA and the satisfaction of students with academic services. These indicators were designed to provide relevant data that facilitate future decision-making and ensure the continuous quality of the services offered. It is expected that once these indicators are implemented, 85% of the cases of the CUA will be managed to satisfaction, 90% of positive responses in the student satisfaction surveys and that the employability rate of graduates in the first post-graduation year will be 80%.

In addition, an impact analysis was carried out using ECLAC's methodology, evaluating the possible social, economic and institutional benefits of the proposed standardization. The concrete findings of the analysis suggest that the implementation of these processes could improve the development of activities in the management of the Academic Secretary, optimize the use of resources, and increase the satisfaction of students, teachers, and others involved in the academic process.

In conclusion, the standardization of academic processes has proven to be an effective strategy to improve internal management and has a positive impact on the university community.

KEY WORD: *Standardization, processes, Academic secretary, indicators, impact*

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I. INTRODUCTION

The standardization of processes in the Academic Secretariat is crucial to guarantee the efficiency and quality of the services offered by the Faculty of Engineering at the Universidad Libre Bogotá. This project seeks to identify and document the existing academic processes and propose improvements that ensure more effective management and the satisfaction of all those involved, their correct is essential for the development of academic activities, allowing a more transparent and efficient administration.

The background of this study reveals that many educational institutions face significant challenges in the management of their administrative and academic processes. According to Romagnoli (2012), organizational diagnosis is an essential tool for identifying weaknesses and areas for improvement within an organization. In the context of higher education, the efficient management of academic activities is essential to ensure the quality of service and student satisfaction. Various theories and methodologies of organizational diagnosis, document management, performance indicators, and impact matrix will be applied [1].

Evaluating the current situation of the Institution is crucial, since the organizational diagnosis is an essential tool to identify the skills and shortcomings of an entity, allowing the generation of an effective action plan.

The diagnosis must be dynamic, systematic, in-depth and comprehensive, adapting to the constant changes in the environment and seeing the entity as an interconnected whole [2], which provides valuable information on the company's weaknesses and strengths, facilitating strategic decision-making. Thompson and Strickland (2012) highlight the importance of considering both internal and external factors to verify the organization's capabilities [3]. One of the most used methods is SWOT analysis, along with external factor assessment matrices (MEFE) and internal factors (MEFI) to obtain a holistic view of the institution [4].

Document management is another fundamental component. According to Ponjuan (2015), it implies optimizing the use of the organization's information resources. In the field of higher education, this process has

evolved from manual methods to automated systems thanks to ICTs, allowing a more efficient administration of records and information [5].

Process standardization refers to the uniform application of technical specifications and methodologies to improve quality in the organization. This ensures that processes are consistent and verifiable, facilitating their implementation at different times of organizational management [2]. To standardize procedures, a diagnosis of current activities must first be made, which serves as an effective tool for future decision-making and strategic planning. It is important to involve the work team, collect accurate data and provide feedback to identify successes and failures. There are several types of diagnosis that can be used: organizational, functional, cultural, strategic and integral [6].

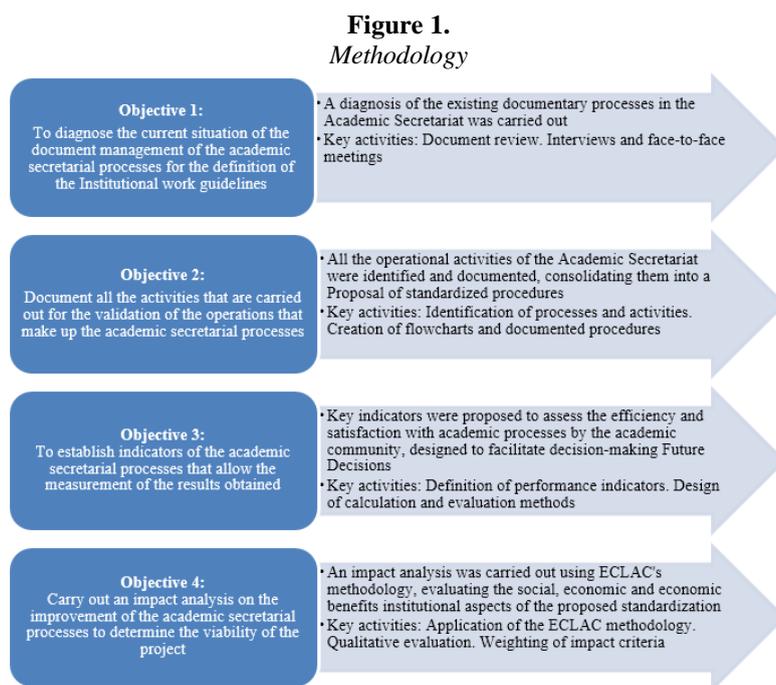
Organizational diagnosis is the most frequent, as it helps to better structure the sections of the company and to understand the role of each employee. Tools such as SWOT analysis, interviews, and graphical analysis are useful for this purpose [7]. They can also be used at an operational, cultural, and strategic level to get a complete picture of the company and its areas for improvement. Document management makes it possible to identify information needs and shortcomings, which facilitates automated control and cost reduction. Schematics based on ISO 9001 help to organize processes in a structured and visually represented way [8].

Establishing process indicators is essential to measure results and improve performance and customer satisfaction. The most important include cost-effectiveness, effectiveness, project management performance, process performance, and quality. These indicators allow continuous monitoring and benchmarking to improve the organization's activities [9]. On the other hand, impact analysis was first exposed by Robert S. Arnold and Shawn A. Bohner, software engineers from the United States in their book *Software Maintenance* in 1996. In this book, Arnold and Bohner indicate that impact evaluation is identifying the effects of change or evaluating what needs to be modified to generate change. According to the authors of the book, there are mainly three types of impact analysis: The first one they present is the traceability impact analysis, which is responsible for identifying the links and relationships between requirements, specifications, design elements and tests to determine the scope of the initial change. Next is the dependency impact analysis, used to determine the depth of the impact and, finally, an experimental analysis where the experience of organizational experts looks like what happened in past situations to determine what might happen in the future [10].

In this sense, an analysis of a case is presented that contributes to other institutions of Higher Education on how academic processes can be improved through the application of different tools that contribute to continuous improvement.

II. METHODS AND MATERIALS

Figure 1 presents the methodology used in the project. This tool allowed us to have a panoramic view of the different phases of the project, identifying the specific objectives and the key activities used for its development.



Source: The Authors, 2024

For the development of the project, a methodology divided into several stages was followed. First, a diagnosis of the current situation of the object of study was carried out, this consisted of the review of existing documentation on the processes and the subsequent analysis of the information obtained through face-to-face meetings with the Secretary of the Academic Secretariat and administrative technicians.

Once the information provided was collected and analyzed, a flowchart of the activities was prepared and the most relevant processes were selected, determining those responsible within each procedure. In the next stage, five indicators were proposed: effective follow-up of cases by the Academic Unit Committee (CUA), average time for resolution of CUA cases, student satisfaction with the academic processes, student satisfaction with the academic degree process, and graduate employability rate in the first year after graduation. The first indicator focuses on the percentage of student cases managed to satisfaction. This indicator measures the effectiveness of the committee in resolving cases, using the CUA case files as a source. The methodology consists of searching the records, verifying the minutes of the cases presented and validating the decisions made, and then quantifying the cases resolved on the total number of approved cases. The evaluation is carried out by the secretary of the CUA monthly to improve the service provided to students and facilitate their academic procedures [11].

The second indicator, the average time to resolve cases of the CUA, measures the efficiency in the management of student cases. It is calculated by reviewing the time elapsed between the initial filing of the case and its complete resolution, and then obtaining an average of these times. This indicator is monitored monthly, also by the Secretary of the CUA, to identify areas for improvement in response times and resolution of cases.

Student satisfaction with academic processes is the third indicator. It measures the effectiveness of academic procedures by the percentage of positive responses in periodic student satisfaction surveys. The data is collected and analyzed to calculate a satisfaction index, which is used to identify areas for improvement and optimize the academic experience [12].

The fourth indicator, student satisfaction with the academic degree process, also measures effectiveness, but focuses specifically on the graduation process. Periodic surveys of students who have completed the degree process provide the data needed to calculate the satisfaction rate. Finally, the employability rate of graduates in the first year after graduation is an indicator of effectiveness that evaluates the relevance of academic programs in preparing students for the labor market. It is measured by the percentage of graduates who obtain employment in their field of study within the first year after graduation. The Alumni Office collects and analyzes this data annually, providing information to ensure that academic programs respond to the demands of today's society [13]. Finally, an impact analysis was carried out to evaluate the viability of the project with the ECLAC methodology, which consists of identifying the social benefits of the project, the quantifiable and non-quantifiable costs, and it is concluded by using the multi-criteria index method.

III. RESULTS

The standardization of the processes of the Academic Secretariat at the Universidad Libre headquarters Bogotá has led to significant results, this project has made it possible to identify and document those that did not have a clear procedure, to improve the efficiency of the activities that are carried out. The results achieved for each objective are described in detail below:

Diagnosis of the Current Situation

A thorough review of all existing documentation related to the processes of the Academic Secretariat was carried out. It was possible to identify the functions that each member must perform, it was defined if the activities were missionary, strategic and/or supportive, and whether it was documented (Table 1 shows a part of how this activity was carried out). The review made it possible to identify gaps in the documentation, such as the lack of standardized procedures for activities such as: follow-up to CUA cases, academic degrees, and reports of students who apply for scholarships, which hindered uniformity and efficiency in the execution of the processes. As part of the diagnosis, interviews were conducted with the different actors within the Academic Secretariat, which revealed the existence of undocumented procedures that depended largely on the individual experience of the collaborators.

Additionally, a detailed mapping of the current workflows within the Academic Secretariat was developed. This mapping visualized every step within the administrative processes, from receiving requests to the final response to students. The results of this diagnosis were compiled in a detailed report that served as the basis for the formulation of proposals for institutional guidelines. This report not only identified existing problems, but also offered concrete recommendations for process improvement, including the need to implement standardization of procedures and instructions.

Table 1.
Document review

FUNCTIONS	MISSIONARY	STRATEGIC	SUPPORT	DOCUMENTED?
1. To comply with and enforce, as appropriate, the constitutional provisions, the Laws, and the Statutes and Regulations of the University.	X			NO
2. To be responsible for the system of registration, annotation and control of grades of the students of the Academic Programs attached to the faculty.	X			YES
3. To prepare, together with the Dean, Program Directors and Area Heads, the academic calendar and submit it to the Academic Unit Committee for approval.			X	NO
4. To plan, organize, and direct the system of registration, annotation, and control of grades and other academic acts, in accordance with the systems provided for the process of admissions and academic registration.		X		YES
5. To process the applications of students and professors, substantiate and present them to the Academic Unity Committee, and communicate the latter's decisions on them.			X	NO
6. To secrete the sessions of the Academic Unit, Curriculum, Self-Evaluation Coordination and Accreditation Committees of the Faculty. To prepare the minutes and certify the communications that may be necessary.			X	NO
7. To plan, organize and direct the process of admission, enrollment and renewal, after verifying the requirements.	X			YES
8. Authorize the academic registration for the corresponding period in accordance with the curriculum and prerequisite regime and other provisions that govern the matter, within the deadlines established in the calendar for enrollment or renewal of the same.	X			YES
9. Authorize modifications to the academic record in terms of cancellation and addition of subjects, in accordance with current regulations and report the news to the Office of Admissions and Registration.	X			YES
10. Authorize, at the request of the students, the change of day or group, considering the requirements stipulated for this purpose by the Student Regulations.			X	NO

Source: The Authors, 2024

Documentation of Activities

A thorough identification of all activities carried out was carried out. Each activity was classified according to its relevance and impact on the overall academic management process, which made it possible to identify redundant activities, those that did not add value to the process, and those that were critical for the efficient functioning of the Secretariat.

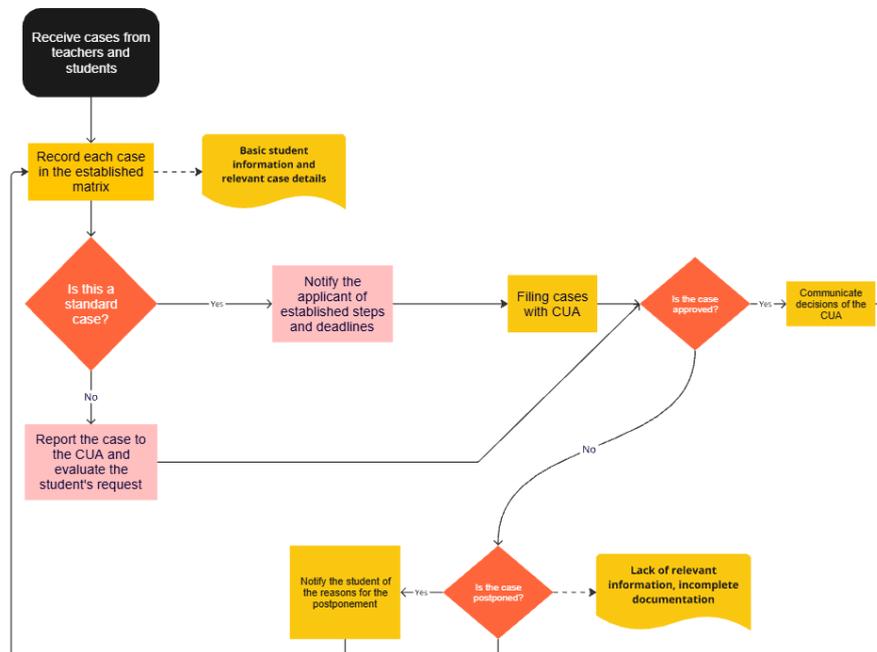
Based on the identification of activities, detailed flowcharts were developed that describe each process in a logical and sequential way, in Figure 2 you can see an example of one of the diagrams developed.

The flowcharts included all possible variations in the processes, from the most routine activities to those that required more complex decisions. Its creation was instrumental in visualizing the interdependencies between different departments and spotting potential points of failure. Once the activities were documented, standardized procedures were proposed to ensure that all operations are carried out consistently and in accordance with best practices. These procedures were designed to be flexible, allowing adaptations according to specific needs, but maintaining a common core that guarantees coherence in academic management.

The proposed standardized procedures address key areas such as the management of the follow-up to CUA cases, the reporting of students who apply for scholarships, academic degrees, secretariat of the sessions of the Academic Unit Committees, authorization of deferred evaluations in the terms indicated by the rules and the

supervision of the timely delivery of grades within the terms set in the student regulations.

Figure 2.
Flowchart of case tracking for the CUA

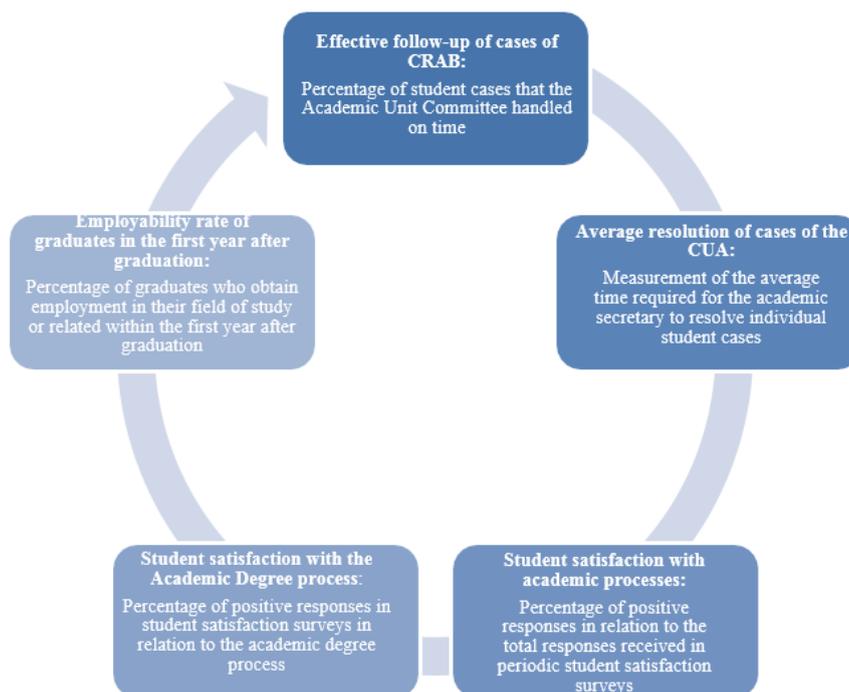


Source: The Authors, 2024

Setting Indicators

Key performance indicators were identified and selected that would be essential to measure efficiency, effectiveness, and satisfaction within the processes of the Academic Secretary. These indicators included the average time for resolving applications to the CUA, the student satisfaction rate with academic services, the efficiency in the processing of degrees, and the employability rate of graduates (See Figure 3). These indicators were chosen for their ability to provide critical and actionable information that allows processes to be continuously improved. For each indicator, specific calculation methodologies were developed that detail how to collect and analyze the data. For example, the average request resolution time indicator was calculated by reviewing the time from the initial receipt of a request to its final resolution. These calculations included the analysis of historical cases and the application of statistical models to forecast trends and areas for improvement. The implementation of these indicators and the proposed continuous evaluation system could transform the way in which the Academic Secretariat manages its processes. By providing a clear, data-driven view of operational efficiency and user satisfaction, the Secretariat could adjust its strategies more quickly and effectively, ensuring that academic services remain aligned with student and staff needs and expectations.

Figure 3.
Proposed indicators



Source: The Authors, 2024

Impact Analysis

ECLAC's methodology was used to conduct a detailed impact analysis, which included both qualitative and quantitative evaluations of the social, economic, and institutional benefits of the project. This analysis provided a comprehensive view of how standardizing processes could affect the institution, as well as students and administrative staff.

The social analysis focused on the satisfaction of students and administrative staff. It is expected that the standardization of academic processes will increase transparency and equity in the management of procedures, which in turn will improve the perception of academic services. In addition, standardization would facilitate communication and collaboration between the different departments, promoting a more efficient work environment and will increase the quality standards of the faculty, as evidenced in Table 2.

Table 2.

Social Benefits

Source: The Authors, 2024

<p>SOCIAL BENEFITS OF STANDARDIZING ACADEMIC SECRETARY PROCESSES IN THE FACULTY OF ENGINEERING</p>	<ul style="list-style-type: none"> -To increase the quality standards of the University -In compliance with regulatory requirements, university's turntables included -Improvement of work skills in topics such as automation -Knowledge of how processes work -Safe work environments that provide well-being to the worker by optimizing their productivity -Teamwork and collaboration between areas -Increases the satisfaction of all users involved in the processes of the Academic Secretary
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From an economic perspective, the analysis highlighted the possibility of better resource utilization, including the reduction of costs associated with optimizing response times. Standardization could allow the Academic Secretariat to operate more efficiently, reducing the need for additional resources and maximizing the use of existing resources. This approach would not only generate economic savings, but also improve the quality of the service offered.

At the institutional level, the analysis underscored the relevance of standardized processes for the proper development of academic activities. The implementation of standard procedures could strengthen the position of the Faculty of Engineering within the University, aligning its practices with the best international standards and

increasing its competitiveness. This institutional strengthening would contribute to improving the reputation of the faculty and attracting more students and high-quality academics.

The analysis included the weighting of criteria using the multi-criteria index method, which allowed prioritizing the most critical variables for the success of the project. Among the weighted criteria, the "Relevance" of standardized processes received a high rating, underscoring their importance for the sustainability and growth of the institution. The weighting also highlighted economic benefits as a key factor, supporting the long-term viability of the project. In this case, an evaluation must be made to identify the criteria, their respective evaluation variables, and finally the description of each one [14]. Subsequently, each criterion evaluated was worked on, assigning a score from 1 to 5 according to the percentage participation, obtaining the relevance of each criterion (See Table 3) [15].

Table 3.
Method weighting

Evaluation criteria	Evaluation variable	Description
Social	Relevance	This criterion seeks to measure the level of importance of the processes of the Academic Secretary
	Vulnerability reduction	With this criterion, it is possible to evaluate the level of vulnerability obtained by implementing the standardization of processes
	Project Coverage	This criterion analyzes the impact generated by the implementation of standardized processes
Economic	Efficiency	Measures whether the project adequately meets the standards according to the regulations
	Proceeds	Satisfaction of the personnel involved with the institution due to the quality of the results
Institutional	Participation	Level of participation of the institution in the population

Source: The Authors, 2024

With ECLAC's qualitative impact methodology, three evaluation criteria were considered for the weighting of the method, these were: social, economic and institutional. In the social part, the evaluation variable with the highest rating was "Relevance", this seeks to measure the level of importance of the processes of the Academic Secretary; Once the other criteria have been analyzed, it can be concluded that this has a high degree of importance for the correct development of the processes that are carried out, since they will increase the efficiency and quality of the activities, as well as the satisfaction of all those involved.

On the other hand, one of the objectives of applying this methodology is that both the University and the students and developers of the project, obtain desired benefits from being able to learn and apply new knowledge at a professional and work level, which is why the variable that also has a greater result in the economic evaluation criterion are the "benefits" that take into account the satisfaction of the personnel involved with the institution by the quality of the results [17].

IV. DISCUSSION

The article by Vanessa Flórez and Nicolás Carmona seeks to improve the administrative management of a Faculty of Higher Education through the application of the process approach. The methodology used, divided into five stages (initial diagnosis, identification of processes, implementation of the documentary cycle, improvement actions and evaluation of results), provides a comprehensive framework to diagnose existing administrative management. This process includes the precise identification, detailed characterization and exhaustive documentation of administrative processes, together with the formulation of concrete proposals for their optimization. In addition, the study included semi-structured interviews with personnel involved in administrative processes, document audits, and analysis of historical data [18]. This methodological approach is relevant to compare the proposals and results obtained in the standardization of academic processes in the Academic Secretariat of the Faculty of Engineering.

Both studies highlight the strategic importance of implementing process standardization, as it contributes significantly to improving operational efficiency and raising the quality of the service offered to students and other stakeholders. The literature suggests that all organizations, including higher education institutions, need to continuously improve to be more competitive, attract a larger number of students, have a qualified academic body, and attract the interest of companies for research projects and consultancies [19]. Process standardization emerges as a key tool to optimize resources and ensure a consistent, high-quality experience for all involved, which, in turn, can improve institutional reputation and increase student retention, crucial factors for the faculty's long-term

growth and sustainability [20].

However, there is a significant difference between the two studies in terms of their approach. While Flórez and Carmona's article addresses administrative management at the faculty level without addressing a specific academic area, the project focuses on the standardization of processes in the Academic Secretariat of the Faculty of Engineering. This differentiation allows for a more focused analysis in the study, by employing a qualitative impact analysis methodology, which is distinguished by its holistic evaluation of the effect of process standardization.

The analysis began with a thorough diagnosis to identify critical processes, supported by semi-structured interviews with key personnel to collect meaningful qualitative data. In addition, the methodology defined specific performance indicators that reflect both operational efficiency and users' perception of quality.

On the other hand, Flórez and Carmona's study uses a methodology based on theoretical frameworks, focused on the application of existing approaches to process improvement, such as incremental improvement, which promotes the implementation of gradual changes within the daily operation, seeking to obtain "early victories" and quick results. In addition, it evaluates the support provided by the information technology area and considers the materialization of risks associated with the changes implemented, adapting to the particularities of the organizational context. This technique provides valuable insights into the implementation of the process approach in the administrative management of faculties.

In summary, both studies underscore the crucial relevance of process standardization to improve efficiency and service quality in educational settings. Although each research provides different approaches and methodologies, they contribute to a broader and deeper understanding of the topic, offering complementary perspectives that enrich the analysis of administrative management in higher education institutions.

Based on the proposed standardization, several areas are identified for future projects that could complement and significantly expand the impact of this study. A key aspect is that, once the proposed performance indicators have been implemented, they should be subject to a continuous evaluation project, which would allow not only to analyze the effectiveness of the indicators in real time, but also to make proactive adjustments based on the results obtained, ensuring that the processes remain aligned with the strategic objectives of the Academic Secretary.

In addition, once the results of the standardization have been evaluated in the Academic Secretary, the expansion of the project to other areas of the Faculty of Engineering, or even to other faculties of the University, could be considered. This expansion project would allow the methodology used to be adapted to the needs and particularities of each process, promoting a culture of continuous improvement throughout the institution.

To ensure the successful implementation of these standardized processes, it is critical that the personnel involved receive the appropriate training. Therefore, a project focused on the training and development of administrative staff would be essential. This project should include training programs in the use of the proposed new procedures and tools, as well as the creation of support resources that facilitate the transition to the new operating standards. In this way, it would ensure that the entire team is aligned with the objectives of standardization and trained to execute the processes with maximum efficiency.

V. CONCLUSIONS

The standardization of academic processes in the Academic Secretariat of the Faculty of Engineering of the Universidad Libre Bogotá is a proposal that seeks to improve the efficiency and quality of administrative processes, with a focus on the satisfaction of all those involved. Through analysis and detailed documentation, a solid foundation has been laid for the optimization of internal procedures.

Document management emerges as a crucial component in this process, as it allows the use of resources to be organized and systematized, ensuring that processes are consistent and verifiable. This document structuring facilitates greater transparency and accessibility in the management of the Academic Secretary's Office, which is essential for the correct development of its functions.

In addition, the impact analysis carried out with ECLAC's methodology has made it possible to evaluate the potential benefits of this standardization from a social, economic and institutional perspective. The results of this analysis highlight the relevance of the proposed processes, underlining their importance to strengthen academic and administrative activities within the faculty.

In conclusion, the proposal for standardization of academic processes in the Academic Secretariat of the Faculty of Engineering represents a promising strategy to improve the internal management of the entity. This research has the potential to generate a significant positive impact on the university community, contributing to greater operational efficiency and the continuous improvement of the services offered.

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