

# **Criteria for Decision-Making in Universities Stated in Institutional Documents**

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*This article identifies the most relevant criteria used by private universities in Bogota for strategic decision-making. For it, the Institutional Development Plans (IDP) and the Institutional Educational Projects (IEP) of 10 of the 16 universities with high-quality institutional accreditation in Bogota, Colombia, were reviewed. In addition, a qualitative content analysis study was carried out, and the Atlas ti software was used to identify and classify the textual information into three categories ("decision-making criteria", "Institutional Educational Project and decision-making", and "Decision-making policies". This analysis offers two proposals for essential criteria for strategic decision-making within universities, presented in the document's results section.*

*Keywords: decision-making in higher education, decision-making at universities, decision-making criteria, strategic decision-making process at universities*

## **INTRODUCTION**

There is a desire to improve problem-solving, like university decision-making skills (Scherpereel, 2015). Specifically, decision-making is selecting a course of action among several alternatives. The commonly identified stages for decision-making are: (1) Clearly define the problem; (2) identify the alternatives; (3) determine the decision criteria; (4) evaluate the alternatives; (5) choose an alternative; (6) Implement the selected alternative, and (7) evaluate the results.

In the decision-making process, there are different categories of decision environments, such as (i) decision-making under certainty (if the data are known deterministically), (ii) decision-making under risk (if probability functions describe the data) and (iii) decision making under uncertainty (if you have little information). On the other hand, if the decision has to be made based on a single criterion, it is classified as a single-criteria decision. In contrast, if the decision requires considering two or more conflicting criteria and at least two solution alternatives, it is classified as a multicriteria decision problem. Furthermore, those problems whose number of alternatives is finite are called discrete multicriteria decision problems.

According to Mayor, Botero, & González-Ruiz (2016), the methodology of multicriteria methods consists of determining the criteria and sub-criteria used for the evaluation, assigning weights to each criterion and sub-criterion, and then analyze each criterion from paired comparisons, and thus identify the relationship between criteria and their importance. Next, the alternatives are evaluated for each criterion based on experts' opinions, assigning a rating and thus obtaining the optimal alternative for the problem.

Regarding decision-making in universities, Rodríguez Ponce (2005) states that the theoretical and empirical contributions to strategic decision-making are associated with discovering how the determinants of this process influence decision-making, what are the behavioural decision-making process variables, how do these variables interact in the decision-making process, what are the variable effects in the decision-making process on the formulation and implementation of the decision, and how does the decision-making process affect the organization's performance or performance effectiveness of the organization. He believes that the challenge is to identify the strategic requirements around the decision-making process for different types of organizations operating in various environments. According to Rodríguez Ponce (2005), an integrative conception of strategic decision-making is required. He found that the main determinants of strategic decisions are the external environment, the senior management team, the organization's internal characteristics, and the nature of the decision. Each of these determinants shows a series of significant variables. For example, the external environment is characterized by the importance of complexity, dynamism and hostility. The senior management team has relevant variables such as diversity, team size, and leadership style. In the same sense, the organization's most significant characteristics are the organization's purpose, size of the organization, and structure of the organization (Rodríguez Ponce, 2005, pág. 17).

In a complementary way, Rodríguez-Ponce (2005) proposes strategic imperatives for Higher Education Institutions (HEIs) to achieve high quality in formulating and implementing strategic decisions. In the strategic decision-making process, they must: Promote rationality, reduce politicization, encourage cognitive conflict and reduce affective conflict, encourage flexibility, promote procedural fairness, promote functional and knowledge diversity, and encourage participatory and collaborative leadership style.

From the above, it is evident that universities increasingly require better decision-making processes, including the rational selection of decision criteria, which is the specific topic addressed in this article.

This document was prepared under the project "design of a method for decision-making in quality assurance in private higher education institutions in Bogota". The structure of the project has four stages: (1) identify decision-making criteria used in private universities with high-quality accreditation located in the city of Bogota; (2) identify decision-making criteria within the quality assurance areas of universities with high-quality accreditation in the city of Bogota; (3) propose criteria for making strategic decisions in the areas of quality assurance in universities; and (4) design a strategic decision-making methodology for the quality assurance areas of higher education institutions. This article is related to the first stage of the research project. It is part of what is known as a multicriteria decision problem in decision-making in higher education institutions. In particular, this article will identify the essential criteria private universities in Bogota use for strategic decision-making. This analysis has taken a sample of high-quality accredited private universities in Bogota, although it can be extended to the rest of the private universities in Colombia.

Precisely, concerning works related to managerial decision-making in universities, Lootsma (1996) states that the application of a multicriteria analysis at universities has contributed to the quality of the decision, the formulation of the criteria, and the definition of the weight of each criterion. Nevertheless, Lootsma (1996) found a difference in applying multicriteria analysis in industries, universities and public administration because of time pressure. Whereas industries apply this technique more efficiently, universities and public administration organizations spend more time in decision-making, which means less efficiency.

On the contrary, Lawless (1982) believes that universities are more likely to be higher on the effectiveness scale, at least regarding long-term needs. Moreover, Lawless (1982) considers a wrong viewpoint when the Canadian government perceives universities as inefficient in using their resources compared to organizations in the private sector who supposedly manage their businesses efficiently. He explains that the type of decision-making used in universities differs from that used in organizations in

other sectors, regardless of whether they are in the public or private sector. Lawless (1982) remembers that universities are considered among the most complex human organizations, making the selection of decision-making criteria oriented towards effective operation complex and challenging. Lawless (1982) considers that there are no data on universities' costs, results, and effectiveness compared to other organizations, but it is unlikely that universities are low on the effectiveness scale. Lawless (1982) states that decision-making in Canadian universities is based more on public debate, participatory and open to the media, which is very different from decision-making in public or private organizations in other sectors. The public debate on decision-making takes more time, which can be perceived as inefficiency. However, this does not mean that decisions in the private sector, made behind closed doors by a few high-level members of the hierarchy, with limited consultation with other members and minimal debate, are efficient. Besides, there are some differences in decision-making between the UK, Germany and Canada. In the educational systems of the first two named countries, coordination and control are centralized, while in Canada, planning decisions, recruitment of professors, admission of students, and development of programs are decentralized and autonomous (Lawless, 1982).

Kadoić, Begičević Ređep, & Divjak (2018) propose a new method of strategic decision-making in higher education based on the Analytic Network Process (ANP) and the Social Network Analysis (SNA). They used the Design Science Research Process (DSRP) methodology, which is frequently used to design new artefacts, such as models, methods and methodologies (Kadoić, Begičević Ređep, & Divjak, 2018). Concerning the structuring of a decision-making problem, Kadoić, Begičević Ređep, & Divjak (2018) state that the selection of criteria and sub-criteria is a crucial step and that decision-makers must take into account all relevant criteria for each specific problem. Kadoić, Begičević Ređep, & Divjak (2018) also highlight that an institution can have a similar decision-making problem, but its relevant criteria may differ. Based on the combination of the Social Network Analysis (SNA) methodology and the Analytic Network Process (ANP) methodology, Kadoić, Begičević Ređep, & Divjak (2018) propose to utilize the following set of criteria for a decision problem in higher education: benefits, opportunities, costs and risks. On the other hand, the first step of the model proposed by Kadoić, Begičević Ređep, & Divjak (2018) is to identify the relevant criteria of the problem to be solved. Step two establishes the contextual relationships between the criteria and creates an influence matrix. The next step is to measure the influences within the criteria. Finally, the weights of the criteria are calculated. Given the above, this document contributes to the first step related to identifying relevant criteria in universities' managerial decision-making.

On the other hand, in a study describing decision-making practices in Pakistani universities, Anwar, Yousuf, & Sarwar (2008) found that the primary decision-maker in these universities is the vice-chancellor, but that he does not make decisions with objective criteria. Moreover, they found that decision-makers do not show the use of any decision-making method or technique, mainly due to an excessive politicization of these processes and a lack of training in decision-making techniques for university administrators. It was also found that, in most cases, the appointment of those assigned to the Vice-Chancellor position is made without clear decision criteria and is decided instead by political contacts. In addition, Anwar, Yousuf, & Sarwar (2008) found other problems: on some occasions, university directors make decisions without researching the issues well enough, without collecting information from different sources, nor do they analyze the consequences of decision-making. Instead, they resort to favouritism in decision-making and do not make decisions with objective thought. Therefore, it can be inferred that universities in Pakistan do not apply objective criteria for decision-making.

On the other side, Khelifa & Belkacem (2014) researched how decisions are made in public universities in Tunisia. They resorted to reviewing four decision-making models: the collegiate decision-making model, the political decision-making model, the bureaucratic decision-making model, and the anarchic decision-making model. To compare these four models, they took into account six characteristics: "criteria used to make the decision"; "approval of the decision"; "basis of the power of the decision-maker", "autonomy of the decision-maker"; "conflict resolution process"; and "acceptance of the decision". In addition, Khelifa & Belkacem (2014) found different types of decisions grouped into four: pedagogical decisions, scientific decisions, institutional management decisions, and academic staff decisions. Khelifa & Belkacem (2014) found three types of decision-making. Institutional management decisions are generally

made based on the characteristics of the bureaucratic decision-making model; the academic decisions staff are made within the characteristics of the political model; and pedagogical and scientific decisions tend to be made by consensus, which is why they are more in line with the collegiate model of decision-making. Also, the way to make decisions differs between large and small higher education institutions. A political decision-making model approach is most effective in larger institutions, while in smaller institutions, a consensus decision-making model is a better option (Khefacha & Belkacem, 2014).

Ho, Dey, & Higson (2006) studied decision-making techniques in higher education. They begin by describing the evolution of the resources that universities receive from governments. Those resources have been declining, causing universities, especially in the United Kingdom, the United States and the Netherlands, to go from traditional systems financed and supervised by the state to market-oriented systems, in which performance results evaluate institutions. It has led to the understanding that management processes are becoming increasingly relevant. Ho, Dey, & Higson (2006) state that the four main decision problems in higher education are: resource allocation, performance measurement, budget management, and activity programming. They recommend adopting multicriteria decision-making (MCDM) techniques. In their research, Ho, Dey, & Higson (2006) sought to identify the most used multicriteria decision-making techniques to help the management process of higher education institutions. To do this, they reviewed 25 scientific articles between 1996 and 2005. They found that 24% of the articles addressed the decision problem related to the distribution of resources in universities, 44% to performance measurement, 24% to budget planning, and 8% to programming. However, in the paper by Ho, Dey, & Higson (2006), no information was found related to the criteria to be considered in universities' managerial decision-making, which is what is offered in this document.

Continuing with some documents related to decision-making criteria in universities, Pont Vidal & Andre (2016) address the logics, rationalities and processes of decision-making from the comparison of the limitations in two theoretical concepts: the theory of the decision over code in the multi-relational perspective as a critique of linearity by Lucien Sfez, and the grounded referential analysis in Niklas Luhmann's self-referential systems theory. They do it based on three questions: what type of rationality do managers assume when making a decision? How are information systems used for decision-making? Third, do the decisions depend on the manager's experience? Or they depend on the rationality in which they are made? The hypothesis proposed by Pont Vidal & Andre (2016) considers that the decision process of the managers at Higher Education Institutions (HEIs) still takes little into account a logic derived from a multirationality for contingency or strategies for reducing contingency. Pont Vidal & Andre (2016) state that, despite the growing importance of decision-making logic in HEIs, few observations and studies still focus on this topic (p. 158). Few studies in Latin American countries have dealt in detail with the logic, criteria, and effects of decisions in the academic field. Pont Vidal & Andre (2016) seek to initiate a reflection on the process and logic of decision-making in HEIs. They find that decision-making in HEIs in Brazil is a process framed in a highly hierarchical, bureaucratic and normative logic that does not allow the decision-making manager to propose improvised or individual actions. Pont Vidal & Andre (2016) recommend making more precise observations about the rationalities existing in the decisions, combining qualitative and quantitative methods to measure as best as possible the impacts and consequences of such decisions in HEIs.

Also, Zhang, Jiang, Liu, & Liu (2020) proposed an integrated decision-making model to analyze key performance indicators (KPI) in university performance management. The article's main objective is to propose a model to identify the key performance indicators (KPIs) and how they relate to university performance management. The proposed model is based on the DEMATEL (Decision-making trial and Evaluation Laboratory) method and the LHFSSs (Linguistic Hesitant Fuzzy Sets) method. The DEMATEL method is a technique to analyze the interrelation between system elements in different fields. On the other hand, the LHFSSs method is used to represent the qualitative preferences of decision-makers, considering and acknowledging their validity and inconsistency. Combining these two methods (Zhang, Jiang, Liu, & Liu, 2020) developed the LHF-DEMATEL model to assess performance indicator relationships and identify KPIs for university performance management. Zhang, Jiang, Liu, & Liu (2020) applied their model to a

Shanghai university to illustrate the proposed model's flexibility and effectiveness. As a result, 14 performance indicators were identified, as shown in Table 1.

**TABLE 1**  
**PERFORMANCE INDICATORS CONSIDERED IN THE CASE STUDY OF**  
**ZHANG, JIANG, LIU, & LIU**

<b>Aspects</b>	<b>Performance Indicators</b>
Teacher team building	Quantity and structure
	Professional skills
Conditions of teaching and use	Teaching support infrastructure
	Financing income
Professional curriculum building	Number of key disciplines
	Quality of newly established specialities
Studio style construction	Studio style construction
	Guide and level of service
	Social recognition
Teaching achievements	Student employment rate
	Level of scientific research of teachers
	Achievements in communications infrastructure
	Teacher satisfaction
	Student satisfaction

Fuente: Zhang, Jiang, Liu, & Liu (2020).

Besides, Smith (2014) proposed a dynamic decision-making model that addresses strategic paradoxes, understanding the latter as performance tensions at the organization level that arise from the plurality of stakeholders, resulting in competing strategies and goals. Strategic paradoxes are the tensions between global integration and local adaptation, financial profitability and social missions, and high commitment versus high performance. Indeed, leaders face pressure to address multiple competing strategic demands, which challenge them. Smith (2014) addresses the paradox of exploring and exploiting, but he considers that these two actions are domains inconsistent with each other but necessary for long-term success. It should be clarified that, for Smith (2014), "exploiting" means improving the technology gradually of an existing product and marketing strategies to increase efficiency in the same target market, and "exploring" refers to how to develop and commercialize non-incremental innovations.

Then, it is found that there are works aimed at contributing to models or methodologies for strategic decision-making in higher education institutions in different parts of the world. However, the search did not find a specific proposal of strategic decision-making criteria for universities.

This article aims to propose decision-making criteria based on documents such as the Institutional Development Plans (IDP) and the Institutional Educational Projects (IEP) of the higher education institutions considered in the study. In addition, the criteria proposed in this document can serve as a basis for proposing some criteria of this type in future studies based on different sources of information, such as interviews or surveys of directors of higher education institutions.

To obtain the information that served as the basis for this article, the analysis of two types of documents from ten private universities with high-quality accreditation in Bogota was used, identifying information related to criteria for decision-making. These documents were the Institutional Educational Project (IEP), and the Institutional Development Plan (IDP) of each institution included in the study.

The institutional educational project is considered the navigation chart of the institution. It is the document in which the university defines its pedagogical strategy, the principles governing university activities, and the teaching and didactic resources required to fulfil the mission. In addition, an institutional development plan of a university expresses strategic aspects such as the objectives, programs, resources,

schedule and management indicators that the institution's management proposes to achieve in a specific period. Therefore, these documents are essential for understanding higher education institutions' pedagogical and strategic aspects.

The systematization of the information was carried out using the Atlas ti software. First, the twenty documents corresponding to the IDP and IEP of the ten universities selected for the study were loaded into the software. Next, reading said documents began, and each phrase related to decision-making was identified. Each identified phrase was the basis for a new category or was included in an existing category created in a previous phrase. Then, each category was labelled with a central idea that described each phrase. At the end of reading the documents, some categories directly related to decision-making emerged. These categories were: "Decision-making criteria", "Institutional Educational Project and decision making", and "Decision Making Policies". Finally, using the Atlas ti software, a file with all the phrases of each of the three categories was requested. Annexes 1, 2 and 3 were constructed with this file, which served as the basis for identifying the essential decision-making criteria in universities.

This document is organized as follows. Section 2 describes the methodology, where the selected sample is presented, and the steps followed to achieve the objective of proposing some essential criteria for decision-making in universities. Section 3 presents the main phrases and the criteria found in the institutional documents included in the study. Given that in section 3, criteria repeated in different phrases were identified. In section 4, these criteria are grouped by affinity or similarity, and the frequency with each of them is presented. Section 5 discusses the criteria obtained by following the proposed methodology. In this section, eight identified criteria are first presented and then grouped by affinity, in order to propose four criteria for strategic decision-making in universities. Section 6 shows the conclusions of the study, followed by the references. Finally, an appendix include Annexes 1, 2 and 3.

## **METHODOLOGY**

In Bogota, Colombia, there are 31 universities, of which six are public and 25 are private. Considering that the research objective was to propose criteria for strategic decision-making in private universities, documents from private higher education institutions in Bogota with high-quality accreditation from the National Accreditation Council (CNA) were reviewed.

The CNA is a public entity responsible, among other functions, for verifying that higher education institutions in Colombia that high-quality request accreditation meet the highest levels of quality in the training of their students.

At the time of the study, it was found that 16 of the 25 private universities in Bogota had high-quality accreditation. Therefore, ten were randomly selected to review their IDP and IEP, assuming their institutional documents would also be high quality. Specifically, it was sought to identify sentences with information related to decision-making.

Given that Atlas ti is a software that facilitates qualitative data analysis and the organization and systematization of textual information in categories, a hermeneutical unit (name used to identify a work file in this software) called "Bogota Accredited Universities Documents" was created. First, the 20 documents corresponding to IDP and IEP of the sample were uploaded there. Next, the 20 documents loaded into the software were read to identify decision-making-related sentences. Every time a phrase with this characteristic was identified, it was "coded" or classified by generating a new code or label or classifying the phrase with one of the codes or labels previously created during reading. Finally, after reading the documents, one order was given to the Atlas ti software to output a document with the codes or labels produced during the reading. As a result, eight codes or labels (categories) were produced, three directly related to university strategic decision-making criteria. These categories were: "decision-making criteria", "Institutional Educational Project and decision-making", and "Decision-making policies".

A textual analysis was carried out with the phrases classified in these three categories. Some tables were constructed (see Annexes 1, 2 and 3), where the phrases identified can be seen in the first column. The second column shows the specific decision-making criterion obtained for each phrase. Specifically, Annex 1 shows the phrases and criteria related to the category called "Decision Making Criteria", Annex 2

shows the phrases and criteria related to the category "PEI and Decision Making", and Annex 3 shows the phrases and criteria related to the category "Decision-Making Policies". 88 criteria were identified, but most of them were similar or the same. For this reason, the next step was to join these 88 criteria into eight groups according to their similarity. The eight criteria for decision-making shown in column two of Table 2 become the first proposal of eight criteria for strategic decision-making at universities.

These eight criteria were then reviewed according to their affinities, which made it possible to identify criteria with a high degree of affinity in their description. By consolidating or grouping the eight criteria according to their degree of affinity, four criteria for strategic decision-making in universities resulted, which can be seen in the third column of Table 3. These four criteria become another proposal for strategic decision-making at universities.

Finally, the classic decision-making matrix format was proposed with the four criteria obtained in Table 3 (see Table 4). For every two proposals, each criterion weighting was assigned. The third column of Tables 2 and 3 shows the frequency of appearance of the criteria found in the documentary review. In this way, the objective initially proposed to identify the essential criteria for strategic decision-making in Universities is achieved.

### **CRITERIA FOR DECISION-MAKING BASED ON IEP AND IDP OF ACCREDITED UNIVERSITIES**

According to Universidad Jorge Tadeo Lozano (2011, pág. 18), The Institutional Educational Project (IEP) serves as an instrument for decision-making, the definition of priorities and the articulation of the academic and administrative processes of the University. Also, according to Universidad Antonio Nariño (2005), The Institutional Educational Project includes the axes of general direction for institutional development and the description of the process to consolidate the quality of education with academic excellence in the University.

On the other hand, according to Universidad Católica de Colombia (2020), a development plan seeks to strengthen academic quality and institutional identity in an articulated manner with the current needs and the environment's future requirements through improvement plans at the institutional level and academic programs. For Universidad Antonio Nariño (2017), The development plan is a document that establishes the institution's course for the following years and whose fundamental purpose is the search for excellence in fulfilling its substantive functions.

According to the above, it is evident that IDP and IEP are essential documents for institutions and include the most relevant administrative and pedagogical aspects that each higher education institution must take into account in its decisions and strategic actions. Therefore, these documents were the primary source for defining the criteria for strategic decisions.

Regarding the category "Decision-Making Criteria" in IEP and IDP documents reviewed, 34 sentences were identified, obtaining a total of 47 criteria for decision-making (see Annex 1). About the category "Institutional Educational Project and Decision Making" in IEP and IDP documents reviewed, 18 sentences were identified, obtaining 23 criteria for decision making (see Annex 2). Finally, nine sentences were identified for the category "Decision-Making Policies" in IEP and IDP documents reviewed, obtaining a total of 18 criteria (see Annex 3).

According to the last, Annexes 1, 2 and 3 collect 61 phrases related to the three categories that emerged from reading the documents using the Atlas ti software. Each of these phrases (in the first column of Annexes 1, 2 and 3) allows inferring 88 criteria for decision-making, presented in the second column of said annexes. However, many of these criteria are repeated or similar. Therefore, in the next section, they are grouped according to the similarity of meaning they have to refine them and propose criteria basics for strategic decision making in universities.

**RESULTS: ESSENTIAL CRITERIA FOR STRATEGIC DECISION-MAKING IN UNIVERSITIES**

Given that the objective is to identify the main decision criteria that may be identified in the institutional documents of some of the accredited universities in Bogota, the second column of Table 2 shows a grouping of the criteria initially inferred in the second column of Annexes 1, 2 and 3.

**TABLE 2  
GROUPING OF DECISION-MAKING CRITERIA IDENTIFIED IN THE REVIEW OF IEP AND IDP OF UNIVERSITIES**

<b>Criteria identified in institutional documents: PEI and IDP</b>	<b>Grouping of criteria by affinity</b>	<b>Frequency</b>
Economic, social and environmental sustainability.	Economic/financial sustainability.	10
Economic sustainability.		
Financial sustainability.		
Financial sustainability.		
Financial sustainability.		
Fit to budget.		
Economic sustainability.		
Economic sustainability.		
Financial, academic and market sustainability.		
Financial sustainability of the institution.		
Equity in the distribution of resources.	Efficiency/rationality in the use of resources.	18
Rationality in spending and/or investment.		
Rationality in investment and expenses.		
Benefit-cost ratio.		
Degree of academic and administrative efficiency in the use of resources implied by the decision.		
Efficiency.		
Effectiveness.		
Productivity.		
Benefit-cost ratio.		
The degree to which the decision adds value.		
Resource optimisation; risk management.		
Degree of transparency and efficiency in resource management.		
Contribution to the generation of value.		
Efficiency in the use of resources.		
Contribution to process improvement.		
Orientation to results.		
Efficiency.		
Effectiveness.		

Decisions based on reliable, timely and transparent information.	Availability of objective information for analysis.	7
Decisions based on the information and rational indicators.		
Decision-based on reasons (rationality).		
Decision supported by reliable information.		
Sufficiently discussed decision.		
Critical analysis of the decision.		
Decisions based on discussion and rational analysis.		
Approach to strategy.	Degree of alignment and contribution to the institution's mission and strategy.	13
Contribution to the achievement of the strategy.		
Support for the achievement of the strategic vision.		
Contribution/adjustment to the principles and philosophy of the institution.		
Support for the institutional mission.		
Contribution to the fulfilment of the mission.		
Contribution to the fulfilment of the mission and the scope of the vision.		
Contribution to the mission and the IEP.		
Contribution to the achievement of the institutional principles and the philosophical and axiological framework of the university.		
Alignment with the IEP.		
Degree of articulation with the organization's strategy.		
Articulation of the decision with the current systems and with the strategy.		
Harmony or articulation degree with the institutional strategy.		
Grade of fit to humanism and ethics.	Ethics of the decision.	10
Decision adjusted to ethics.		
Ethics and transparency.		
Contribution to ethics education and critical thinking.		
Ethics.		
Ethics.		
Ethics.		
Ethical decision.		
Ethical decision.		
Transparency.		
Consideration of interest groups or stakeholders.		

Degree of application of university social responsibility.	Degree of application of organizational/university social responsibility.	9
Contribution to human well-being.		
Application of University Social Responsibility.		
Degree of benefit to the university community.		
Corporate social responsibility.		
Recognition of stakeholders in the decision.		
Stakeholder recognition.		
Consideration of stakeholders or interest groups.		
Support for comprehensive training.	Contribution to the comprehensive training of students.	5
Support for student learning and comprehensive training.		
Contribution to the comprehensive training of students.		
Contribution to the comprehensive training of students.		
Comprehensive training.		
High-quality orientation.	Contribution to the high quality of training.	11
Quality improvement.		
Contribution to high quality.		
Contribution to high academic quality.		
Contribution to quality.		
Pursuit of high quality.		
Contribution to the quality of academic programs.		
Contribution to the high quality of training.		
Contribution to high quality.		
Contribution to high academic quality.		
Contribution to modern and agile management.		
Contribution to the reputation of the institution.	Other criteria	3
Relevance of the decision.		
Decision opportunity.		

Source: the authors.

The third column in Table 2 presents the frequency of appearance of each criterion identified in the review of the institutional documents of the ten universities observed. The criteria identified and presented in the second column of Table 2, organized from highest to lowest percentage, are as follows:

- Efficiency/rationality using resources (21%).
- Degree of alignment and contribution to the institution's mission and strategy (15%).
- Contribution to the high quality of training (13%).
- Economic/financial sustainability (12%).
- Degree of ethics of the decision/decision adjusted to ethics (12%).
- Degree of application of organizational/university social responsibility (10%).
- Availability of objective information for analysis (8%).

- Contribution to the comprehensive training of students (6%).
- Other criteria (3%).

According to the above, eight essential decision criteria are identified for strategic decisions in university institutions.

When reviewing these eight criteria, it is found that some of them can be grouped by their degree of affinity. For example, "efficiency/rationality in the use of resources" is directly related to "economic/financial sustainability", so these two criteria could be grouped into one. On the other hand, the criterion "contribution to the high quality of training" is directly related to the criterion "contribution to the comprehensive training of students" since this last criterion is an essential part of what is considered high quality of training. Likewise, the "degree of ethics of the decision/decision adjusted to ethics" criterion is directly related to the "degree of application of organizational/university social responsibility" criterion. It is common to find that the study plans of management programs offer a subject that combines these two topics, which allows us to consider that these criteria can be grouped into one.

According to the above, Table 3 presents the proposed grouping, thus going from eight criteria (see Table 2) to four criteria for strategic decision-making in universities.

**TABLE 3**  
**GROUPING OF DECISION-MAKING CRITERIA BY AFFINITY OR COMPLEMENTARITY**

<b>Eight criteria</b>	<b>Relative frequency</b>	<b>Four proposed Criteria</b>	<b>Relative frequency</b>
Efficiency/rationality in the use of resources	21%	Rationality in the use of resources and economic/financial sustainability	33%
Economic/financial sustainability	12%		
Degree of alignment and contribution to the institution's mission and strategy	15%	Degree of alignment and contribution to the mission and strategy of the decision based on objective information	23%
Availability of objective information for analysis	8%		
Degree of ethics of the decision / decision adjusted to ethics	12%	Ethics and Organizational / University Social Responsibility	22%
Degree of application of organizational/university social responsibility	10%		
Contribution to the high quality of training	13%	Contribution to comprehensive training and the high quality of student training	19%
Contribution to the comprehensive training of students	6%		
Other criteria: _____	3%	Other criteria: _____	3%

Source: the authors.

By using these four criteria within the classic decision-making matrix, the following matrix is obtained (see Table 4):

**TABLE 4**  
**SUPPORT MATRIX FOR STRATEGIC DECISION-MAKING IN UNIVERSITIES**  
**(FOUR CRITERIA)**

Criteria	Weighting	Alternatives					
		Alternative 1	Alternative 2	Alternative 3	Alternative 4	Alternative 5	Alternative 6
Rationality in the use of resources and economic/financial sustainability	33%						
Degree of alignment and contribution to the mission and strategy of the decision based on objective information	23%						
Ethics and Organizational / University Social Responsibility	22%						
Contribution to comprehensive training and the high quality of student training	19%						
Other criteria: _____	3%						
_____							

Source: the authors.

It should be clarified that this proposal of criteria for strategic decision-making in universities can and should be adjusted to each institution. For example, the 3% corresponding to "Other criteria" (which arose from grouping "relevance of the decision", "timeliness of the decision", and "contribution to the reputation of the institution") could be removed from the matrix and redistribute the criteria weight percentages. In addition, a fifth criterion could also be taken into account, which arises from the directors' decisions of each university institution. On the other hand, weighting percentages for each criterion were assigned based on the frequency of appearance of related criteria. However, this percentage can be distributed from a different methodology, such as a discussion under the Delphi methodology or the Hierarchical Analysis Process methodology.

### **DISCUSSION OF THE OBTAINED CRITERIA**

From the methodology followed, eight criteria were obtained for strategic decision-making in universities, which can be used to make decisions using a classic decision-making matrix (see Table 2). On the other hand, when regrouping by affinity or by the complementarity of the eight criteria initially obtained, four criteria were obtained that can also be used in a classic decision-making matrix (see Table 4). However, the use of one or another proposal (eight or four criteria) will depend on the decision that the directors of each institution consider suitable. Therefore, another alternative is to take these two proposals as a basis and carry out a process of adapting the criteria that allows them to define a personalized matrix adjusted to each institution's characteristics and strategic particularities.

Another aspect that opens a door for future studies is the methodology for assigning weights to each criterion. In this document, these weights were assigned based on the frequency obtained from the criteria originally obtained and grouped in Table 2 (for the eight-criteria proposal) and Table 3 (for the four-criteria proposal). In addition, a space is opened for other studies that propose weightings through other methodologies, such as the Delphi or the Hierarchical Analysis Process methodology.

Furthermore, it can be considered a good starting point to obtain the decision criteria from two types of documents from 10 of the 16 universities with high-quality accreditation in Bogota (IDP and IEP). However, it opens the possibility of increasing the number of universities taken into account from 10 to 16.

Moreover, although the documents included in this study (IEP and IDP of the universities) are essential to understanding the pedagogical and strategic aspects of the institutions, other types of institutional documents could be included to extract more applicable criteria for strategic decision-making.

On the other hand, it is possible to continue identifying decision criteria in universities, also resorting to interviewing officials at the management level to collect their opinions and extract the criteria they apply in making strategic decisions.

Finally, addressing the "university ethics and social responsibility" criterion is convenient. It could help to have greater clarity regarding whether it can be considered that there are degrees of ethics in the decisions, or if verify whether the decision is ethical or not is a better option. Although there are studies on ethical models in organizations and methodologies to assess the ethical level in organizations, no studies applied to universities were found, which opens a space to address this criterion, but applied to higher education institutions.

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**APPENDIX: SUPPLEMENTARY MATERIAL**

**ANNEX 1  
DECISION-MAKING CRITERIA IDENTIFIED FROM THE CATEGORY "DECISION-MAKING CRITERIA" IN IEP AND IDP**

<b>Phrases related to criteria identified in IEP</b>	<b>Criteria identified in IEP</b>
Three dimensions of sustainability (economic, social and environmental) (Universidad EAN, 2020).	Economic, social and environmental sustainability.
Identification of interest groups or interested parties (Universidad EAN, 2020).	Consideration of interest groups or stakeholders.
Decision-making criteria: revenue generation, operation, strategy and reputation (Universidad EAN, 2020).	Economic sustainability; approach to strategy; reputation.
Achieve not only institutional accreditation but academic programs accreditation (Universidad Santo Tomás, 2004).	High-quality orientation.
Implement modern management techniques and methodologies (Universidad Santo Tomás, 2004).	Contribution to modern and agile management.
Reason for being of the institution: serve students (Universidad Santo Tomás, 2004).	Support for student learning and comprehensive training.
Degree of efficiency and effectiveness (Universidad Santo Tomás, 2004).	Efficiency and effectiveness.
In decision-making, [...] the decisive criteria are adjustment to the institutional Mission, Christian humanism, support for the academic-critical domain of the profession with a [...] strategic vision, [...] (Universidad Santo Tomás, 2004).	Support to the institutional mission; degree of adjustment to humanism and ethics; support for the achievement of the strategic vision.
Knowledge and respect of the principles and philosophy of the USTA (Universidad Santo Tomás, 2004).	Contribution/adjustment to the principles and philosophy of the institution.
Learning achievements imposed by the curriculum [...] are valued, based on comprehensive training (Universidad Santo Tomás, 2004).	Support for comprehensive training.
All members of the educational community are responsible for conservation, adequate use and promotion of the economic means for the running of the university (Universidad Santo Tomás, 2004).	Financial sustainability.
Decision-making should be assigned to the most competent employees [...] so that each university function is guaranteed to "use" the means funds necessary for its development (Universidad Santo Tomás, 2004).	Financial sustainability; equity in the distribution of resources.

The structure of the USTA imposes the need for surveillance –by collegiate bodies– of the actions in charge of executive managers (Universidad Santo Tomás, 2004).	Surveillance and control; Financial sustainability.
Hierarchy of decisions on expenses and investments: a) what is necessary to cover labour requirements and the demands of university operations; b) to meet the infrastructural demands [...] for the different academic units; c) [...] (Universidad Santo Tomás, 2004).	Rationality in spending and/or investment.
Prepare specific budgets to articulate them in a general budget (Universidad Santo Tomás, 2004).	Fit to budget.
Rationalize investment and operating costs (Universidad Santo Tomás, 2004).	Rationality in investment and expenses.
The USTA will seek and promote: a) fair wages and social security for its workers; b) care for the neediest, a requirement of social justice (Universidad Santo Tomás, 2004).	Degree of application of University Social Responsibility.
The USTA spends and invests preferably in what makes it an institution of research, teaching, culture and promotion, at the service of Colombian society and the university community itself. (Universidad Santo Tomás, 2004).	Benefit-cost ratio.
Conservation, improvement, and increase assets and income (Universidad Santo Tomás, 2004).	Economic sustainability.
As a non-profit entity, it reinvests its economic surpluses in its development and the improvement of its resources, in the university community's human well-being, and the improvement of quality (Universidad Santo Tomás, 2004).	Contribution to the fulfilment of the mission, contribution to human well-being, and quality improvement.
The university's growth and consolidation by its principles and objectives, the elevation of the quality of its services, the accreditation of its graduates, and the integral progress of its workers (Universidad Santo Tomás, 2004).	Economic sustainability, contribution to high quality, application of University Social Responsibility.
Human decisions' ethical and moral character (Universidad de la Salle, 2007).	Decision adjusted to ethics.
Our strategic commitment for 2020-2024 revolves around three pillars: 1) Sustainability, innovation and solidity; 2) Academic quality; and 3) Efficiency (Universidad Central, 2020).	Financial, academic and market sustainability; contribution to high academic quality; degree of academic and administrative efficiency in the use of resources implied by the decision.
Speed, quality, timeliness, and state-of-the-art technological support (Universidad Central, 2020).	Contribution to quality.
<b>Phrases related to criteria identified in IDP</b>	<b>Criteria identified in IDP</b>
Guarantee academic programs' high quality and relevance (Universidad Jorge Tadeo Lozano, 2015).	Pursuit of high quality; relevance of the decision.
The management will be carried out and evaluated based on indicators that correspond to the following	Effectiveness.

criteria: Efficiency [...] (Escuela Colombiana de Ingeniería Julio Garavito, 2017).	
Efficiency. Understood as the way to do better what is already being done with the available resources (Escuela Colombiana de Ingeniería Julio Garavito, 2017).	Efficiency.
Productivity. It is obtaining the maximum benefit in the use of available resources. (Escuela Colombiana de Ingeniería Julio Garavito, 2017).	Productivity.
Involvement. It refers to the collaboration, contribution and commitment of every one of the members of the university (Escuela Colombiana de Ingeniería Julio Garavito, 2017).	Participation or contribution of the different actors involved.
Harmonized action of the dependencies and people that make up the organization (Escuela Colombiana de Ingeniería Julio Garavito, 2017).	Degree of articulation with the organization's strategy.
Equity. It refers to the distribution of resources according to the hierarchy of needs based on criteria derived from the mission and institutional objectives of each academic and administrative unit. (Escuela Colombiana de Ingeniería Julio Garavito, 2017).	Contribution to the fulfilment of the mission and the scope of the vision.
Transparency. Understood as the capacity of the institution to explain, disclose and have available, without any subterfuge, its internal operating conditions and its results. (Escuela Colombiana de Ingeniería Julio Garavito, 2017).	Ethics and transparency.
Impact/benefit, both economically and the benefit to members of a community (Escuela Colombiana de Ingeniería Julio Garavito, 2017).	Benefit-cost ratio.
Integrated and interoperable information systems to support management and decision-making operations (Universidad de la Salle, 2021).	Articulation of the decision with the current systems and with the strategy.

Source: the authors.

## ANNEX 2 DECISION-MAKING CRITERIA IDENTIFIED FROM THE CATEGORY "INSTITUTIONAL EDUCATIONAL PROJECT AND DECISION MAKING" IN IEP AND IDP

<b>Phrases related to criteria identified in IEP</b>	<b>Criteria identified in IEP</b>
The University maintains participation and decision mechanisms that guarantee consensus for the benefit of the university community, in harmony with the IEP and with the IDP. (UDCA - Universidad de Ciencias Aplicadas y Ambientales, 2021).	Degree of benefit to the university community. Degree of alignment or harmony with the institution's strategy.
Promote the comprehensive education of students. Train leaders with a critical sense of reality and ethical commitment (Universidad Santo Tomás, 2004).	Contribution to the comprehensive training of students. Contribution to ethical training and critical thinking.

Link its different academic units to regional development projects and community promotion (Universidad Santo Tomás, 2004).	Corporate social responsibility.
Form and consolidate the university's academic community (Universidad Santo Tomás, 2004).	Recognition of stakeholders in the decision.
A culture is favourable to dialogue and the critical exchange of reasons, ideas and epistemological orientations. (Universidad Jorge Tadeo Lozano, 2011).	Decision-based on reasons (rationality).
The risks assumed when undertaking them are mitigated, their chances of success are increased, and added value is generated for the Institution and society. Therefore, it is necessary to appeal to business intelligence and indicators that provide technical bases for decision-making (Universidad Central, 2020).	The degree to which the decision adds value. Decisions based on the information and rational indicators.
The IEP becomes the benchmark for decision-making (Escuela Colombiana de Ingeniería Julio Garavito, 2017).	Alignment with the IEP.
It will guide the management toward the benefit of the community members (Escuela Colombiana de Ingeniería Julio Garavito, 2017).	Stakeholder recognition.
It will establish and apply a financial model by the institutional nature and objectives, in which [...] the institution's financial viability are specified. (Escuela Colombiana de Ingeniería Julio Garavito, 2017).	Financial sustainability of the institution.
It will be committed to optimising resources, diversifying sources of income, reducing risks, and reinvestment of its surpluses. (Escuela Colombiana de Ingeniería Julio Garavito, 2017).	Resource optimisation; risk management.
It will manage resources efficiently and transparently in order to guarantee financial availability. (Escuela Colombiana de Ingeniería Julio Garavito, 2017).	Degree of transparency and efficiency in resource management.
It will provide consolidated financial information with quality, timeliness, reliability and transparency. (Escuela Colombiana de Ingeniería Julio Garavito, 2017).	Decisions based on reliable, timely and transparent information.
<b>Phrases related to criteria identified in IDP</b>	<b>Criteria identified in University IDP</b>
In this sense, bioethics and the humanities are considered the fundamental axis for the integral formation of students [...] (Universidad El Bosque, 2016).	Contribution to the comprehensive training of students.
The structuring and implementation of a comprehensive evaluation model for decision-making that guides strategic planning and the quality of academic programs (Universidad El Bosque, 2016).	Contribution to the achievement of the strategy. Contribution to the quality of academic programs.
Likewise, comprehensive training is consolidated by including bioethics and the humanities in the curricula. (Universidad El Bosque, 2016).	Integral formation. Ethics.

Evaluation processes in academic management are aimed at the quality of teaching and learning (Universidad El Bosque, 2016).	Contribution to the high quality of training.
Consolidate the integration of bioethics and the humanities at the micro-curricular level (Universidad El Bosque, 2016).	Ethics.
Promote strategies that consolidate training in bioethics and humanities in the different programs (Universidad El Bosque, 2016).	Ethics.

Source: the authors.

### ANNEX 3 DECISION-MAKING CRITERIA IDENTIFIED FROM THE CATEGORY "DECISION-MAKING POLICIES" IN IEP AND IDP

<b>Phrases related to criteria identified in IDP</b>	<b>Criteria identified in universities IDP</b>
It will focus on the decisions and institutional actions and the effort of the managerial work to achieve the principles that determine the philosophical and axiological framework of the University (Universidad EAN, 2020).	Contribution to the achievement of the institutional principles and the philosophical and axiological framework of the university.
The members of the Eanista Community must be guarantors of ethical behaviour, with respect for the other, for difference, plurality and diversity (Universidad EAN, 2020).	Ethical decision.
Its decisions and activities will expose the result of the impacts generated in the social, environmental, and economic fields. (Universidad EAN, 2020).	Consideration of stakeholders or interest groups.
The generation of value must mediate the actions of the directors and other collaborators of the University; for this reason, we will seek to maximise the use of resources without conditioning efficiency, effectiveness, timeliness and quality. (Universidad EAN, 2020).	Contribution to the generation of value. Efficiency in the use of resources. Contribution to high quality.
In order to enrich decisions with more significant institutional impact (Universidad EAN, 2020).	Decisions based on discussion and rational analysis.
The EAN University will be managed as a knowledge company, where academic quality, process management and endless encouragement towards good results prevail. (Universidad EAN, 2020).	Contribution to high academic quality. Contribution to process improvement. Orientation to results.
In the UDCA, decisions from the highest governing bodies and directors are oriented toward the realisation of the Mission and the development of the IEP, according to a normative, procedural, ethical and moral framework, that allows evidencing the action with transparency, efficacy, efficiency, therefore, effectiveness (UDCA - Universidad de Ciencias Aplicadas y Ambientales, 2021).	Contribution to the Mission and the IEP. Ethical decision. Transparency. Efficiency. Effectiveness.

An articulated and integrated information system that facilitates decision-making and agile and safe management for the benefit of the university community (UDCA - Universidad de Ciencias Aplicadas y Ambientales, 2021).	Decision supported by reliable information.
Consensual decisions are guaranteed, including discussion spaces that promote the critical spirit and solidarity, tolerance, respect, and acceptance of the other in their difference of opinion and thought (Universidad El Bosque, 2016).	Sufficiently discussed decision. Critical analysis of the decision.

Source: the authors.