

CHARACTERISTICS AND INPUTS OF THE DECISION-MAKING PROCESS LEADING TO CHOICE OF HIGHER EDUCATION INSTITUTION

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ABSTRACT

Research into individuals' decision-making processes has made contributions that have enabled organizations that produce goods and organizations that provide services to improve their business models. However, there are many specific scenarios for which neither the dimensions that comprise the construct of a decision nor the inputs considered in decisions have been investigated. In view of this gap, the study described in this article was designed to provide insight into the characteristics of the decision-making process leading to choosing a higher education institution and the inputs considered in that process. A survey of 267 undergraduate students was conducted and analysis of the results revealed three different types of decision-makers and three categories of factors that they considered of relevance to their decisions. The insight that different decision-maker profiles may call for processes and services to be designed to be compatible with their information acquisition and processing processes is the major contribution made by this paper.

Keywords: *decision-making process; factors of decisions; types of decision-makers.*

RESUMO

O estudo do processo decisório dos indivíduos tem contribuído para o aprimoramento de organizações produtoras de bens e prestadoras de serviço. Porém, restam pouco exploradas as dimensões que compõem o construto decisão e seu conteúdo em situações específicas. Frente a isto, neste artigo foi delimitado o objetivo de compreender as características e conteúdo do processo decisório associado à escolha da instituição de ensino superior. Foi realizada uma survey com 267 respondentes e os resultados indicam a presença de diferentes tipos de decisores e três categorias de fatores relevantes para a escolha. Uma contribuição associada a este trabalho é o entendimento de que diferentes perfis de decisores podem demandar desenhos específicos de processos e serviços que melhor representem seu processo de busca e processamento de informações.

Palavras-chave: *processo decisório; fatores de decisão; tipo de decisores.*

1. INTRODUCTION

Researchers working in many different fields are interested in trying to understand how human decision-making processes occur. For example, for managers of service-provision operations, an understanding of the factors that make up the decision to contract a given service can be of help in identifying which characteristics should be emphasized in communications processes and when assessing quality and levels of satisfaction. In the field of marketing, studies have been conducted to investigate the ways that consumers decide between competing criteria (Green, Krieger, & Wind, 2001) and the heuristics of information processing (Yoon, Cole, & Lee, 2009).

In the field of strategy research, the subject of decision-making is inextricable from the strategic process itself and can be considered a central element of interest (Eisenhardt, & Zbaracki, 1992). For researchers working in this field, understanding how human beings decide can help them to understand the processes and results associated with conception and implementation of strategy.

The study of decision-making processes began to gain pace after work published by Dewey (1933) and then Simon (1945), who described the way that decision-making passes through a series of discrete stages, from perception of a problem, through formulation of alternative choices to making a judgment between them. Over more recent decades, the subject has attracted a great many researchers who congregate around a number of different explanatory paradigms, the most notable of which are approaches based on limited rationality, a political perspective or the "garbage can" model.

Despite the large body of work published on the subject of the decision-making process, the questions of how to define exactly what the concept of a decision is and of which dimensions compromise a decision remained relatively unexplored. Franz and Kramer (2010) have stated that, if the field is to progress, these dimensions must be better understood and that empirical studies investigating the subject are needed to improve understanding of decision-making by individuals and organizations. In agreement with this position, the present study was designed to investigate the decision-making process involved in choosing a higher education institution, in order to provide insight into its characteristics and content.

This particular decision scenario was chosen because it was perceived that it involves a decision that has been increasing in complexity. Over the last few decades, higher education in Brazil has gone through a process of expansion, manifest in growing numbers of students and of higher education institutions (HEIs). A student wishing to enroll on a higher education course today is faced with countless options, which may mean that the decision demands greater effort and analysis. There are also questions relating to the content of this decision-making process that remain relatively unexplored. There are few studies in the Brazilian literature dealing with the criteria that influence students to choose a given HEI. It could be of interest to the management of such organizations to discover which factors primarily affect this decision.

From a theoretical perspective, this study is designed to meet the need to better understand the cognitive processes related to the information organization processes involved in the decision to choose an institution that provides a service. It has become accepted that choices about acquisition of tangible products are related to product characteristics and to the overall marketing mix. In contrast, the dimensions that influence the choice of service provider have received little attention, although it has been shown that the attributes valued by service providers very often contrast with those valued by those contracting their services (Almada & Tontini, 2012). In terms of practical applications, it is to be hoped that the knowledge gained can be used by higher education institutions to organize their communication efforts directed at potential future students and as a means for targeting their quality of services assessment policies on the basis of those attributes that are criticized by students when choosing an HEI.

The remainder of this paper contains a discussion of theory, first with relation to the subject of decisions and their dimensions and then with relation to the factors involved in choosing an HEI; a section on methodology, describing the research procedures; a section covering the results, with a description and analysis of the main findings; and a concluding section that summarizes the paper's contributions and recommends avenues for future research.

2. CHARACTERISTICS OF THE DECISION-MAKING PROCESS: The Dimensions of a Decision

The decision-making process is a central point in management theory and studies of the subject have attempted to identify the various different forms of decision-making, the roles played by individuals and groups in the decision-making process and the impacts that these actors have on the decisions that result. The subject has great breadth and there are a number of different approaches to studying it. The most relevant paradigms that have emerged are the rationality, political and garbage can models (Eisenhardt & Zbaracki, 1992; Langley, Mintzberg, Pitcher, Posada, & Saint-Macary, 1995).

The paradigm based on rationality is the most traditional approach to studying the decision-making process and three distinct avenues of investigation can be identified over the course of its development. During the first phase, work by early twentieth-century economists constructed a theoretical-empirical framework, often described as "classical rationality", in which decision-makers are described as being able to separate themselves

from non-rational influences and conduct analyses that will lead to an optimal solution (Gibcus, Vermeulen, & Radulova, 2008).

Edwards (1954) considered that the unifying factor in the work of these economists', from the 1930s onwards, was the belief that people are completely informed, infinitely sensitive and fully rational. The information possessed is not only complete in terms of knowledge of possible paths of action, but also with respect to their consequences. Human sensitivity is infinite in the sense of perceiving information and options as continuous and infinitely divisible. Finally, from this perspective, rationality implies two things: actors are able to rapidly define the objectives they wish to achieve and are also always able to act in a way that is compatible with the logic of maximization.

In counterpoint to the classical theory of rationality is the theory of bounded rationality. The decision-making process came to be seen as central to management theories after Simon (1945; 1997) proposed that the more traditional view of management which deals with effective action should be supplemented with a new dimension: decision-making. He challenged the belief in actors' ideal rationality, pointing out that the decision-making process is both comprised of and influenced by factual issues and values and so the results of a decision cannot simply be considered correct or incorrect to the exclusion of the values that molded the decision itself.

Simon (1945; 1997) called attention to factors that distance organizational actors from objective rationality, such as imperfect knowledge, the difficulties of anticipating consequences and limited knowledge of the possibilities for action. He pointed out that perfect knowledge is unattainable because of difficulties with both acquisition and processing of information and so only part of the information needed by decision-makers is available to them, in other words, "complete rationality is limited by lack of knowledge" (Simon, 1997, p. 113). Anticipation of the consequences of decisions, in turn, is unfeasible because it demands reflection on the future, which is itself impossible to anticipate in its totality. It is often impossible to imagine the consequences of a choice in advance. Additionally, even in cases in which consequences have been fully described, their impacts on people may be very different from those imagined beforehand. Finally, human imagination and rationality are not powerful enough to enable prediction of all possible behaviors.

The neoclassical rationality school attempted to reconcile the idea of total rationality with human actions (Gibcus, Vermeulen, & Radulova, 2008). Having recognized that human judgment in decision-making is far from ideal, researchers began to investigate the types of errors that are made and discovered that people tend to make similar errors (Beach & Connolly, 2005). Work published by Tversky and Kahneman (1971, 1973 and 1974) can be seen as the starting point of a process culminating in the consolidation of a research stream investigating individuals' cognition and their judgment tendencies. Over the intervening decades, a series of biases and heuristics have been mapped and recommendations made on how to increase agents' rationality, with the expectation that this could lead to a decision-making process that was less prone to bias.

Another avenue of research into decision-making approaches the subject from a political angle. This perspective puts greater weight on the values and normative elements that control the decision-making process. This type of research often investigates processes of negotiation, the influence of powerful actors on decision-making, and the role of dominant coalitions and their influences. The underlying premise that provides the foundation for this school of thought is that decision-making is a socially-constructed process, on the basis that social actors have agency (the power to act) and that their agency is both controlled by social structures and creates social structures. Scholars who adopt this perspective focus on understanding how and why individuals, groups and organizations exercise the power and influence that model the decision-making process.

Within this school, the strategic decision-making process is a privileged locus of study because the complexity, importance and uncertainty involved provoke political behavior by groups and individuals (Child, Elbanna, & Rodrigues, 2010). Eisenhardt and Zbaracki (1992) reviewed this literature and identified three essential characteristics of research that takes a political perspective on decision-making: i) it describes the organization itself as a political system; ii) it sees decisions as a reflection of the intentions of the more powerful actors; and iii) it argues that the decision-making process is a setting for political actions such as formation of coalitions, negotiation, lobbying and cooptation, and construction of conflicting agenda, among others.

Cohen, March and Olsen (1972) painted a different picture of the decision-making process, approaching it as a chaotic event. Their central argument rests on the assertion that decisions in organizations are very often taken under conditions that differ radically from those described in previous theories. They proposed a "garbage can"

model of decision-making that would include elements so far ignored. Part of the model derived from the realization that preferences are very often problematic in organizations and that longitudinal studies of the decisions that are taken have not revealed any clear patterns. The theory also assumes that participation in decisions is fluid, i.e. that not all participants in the process or all decision-makers are stable or clearly identifiable. Finally, these authors also state that technology may not be clearly understood by all participants in the organization. Taking these three elements together (ill-defined preference, fluid participation and unclear technology), the authors define organizations as organized anarchies. In their original article (Cohen, March, & Olsen, 1972), these authors state that these conditions have frequently been observed in educational, public and illegitimate organizations.

The garbage can theoretical model was designed on the basis of a computer simulation in which decisions, problems and decision-makers meet as a function of the energy flows needed to solve problems. In this description of the decision-making process, objectives are multiple and contradictory, technology is ambiguous and decisions taken are the fruit of fortuitous encounters between decision-makers, problems and solutions (Gibson, 2012). Lomi and Harrison (2012) consider that this model is one of the most influential and substantial efforts to describe organizational decision-making processes, but that it contains difficult-to-accept elements which continue to feed controversy with relation to the theory, even 40 years after the original article was published.

Notwithstanding the several different approaches to the subject, the conceptual construct of the decision itself has been little studied and defining it remains problematic. Franz and Kramer (2010) point out that although we intuitively recognize that not all decisions are equal, the literature does not yet contain an adequate body of work to enable delineation of the concept's dimensions. Chia (1994) claims that decisions are actually more a daily flow of meanings constructed and positions adopted than clearly distinct events. This interpretation means that investigations of decisions must include analysis of the chain of choices that culminate in a given personal or organizational behavior.

According to Nutt (2011), the term covers a range of actions running from perception of a problem to implementation of a solution. He differentiates between 'decision' and 'choice', whereby the latter is a simpler process of comparing pre-existing alternatives. Langley et al. (1995) define a decision as a commitment to a course of action, although the authors themselves recognize that in the literature this concept is beset with ambiguities that create barriers to the advancement of knowledge in the field.

Franz and Kramer (2010) reviewed published work discussing the dimensions of decisions, proposing a series of factors which they considered should aid in understanding the characteristics and could provide a basis for future investigations. The primary objective of these studies would be to form a typology of decisions and so provide a basis for description of decision-making processes common to each type. These dimensions are listed in Table 1.

Table 1: Dimensions of Decisions

Dimension	Characteristics
Scope	Personal to Social
Structure	Structured to amorphous
Control	Impulsive to Strategic
Importance	Insignificant to very important
Difficulty	Very easy to very hard
Relationship with other decisions	Independent to interdependent
Participation	Individual to collective
Results	Very unsatisfactory to very satisfactory

Source: Adapted from Franz, L. S., & Kramer, M. W. (2010). The dimensions of decision: a conceptual and empirical investigation. In: Nutt, P. C., & Wilson, D. C. (Ed.) *Handbook of Decision Making*, 517-540. West Sussex: Wiley.

These dimensions will be adopted in the present study, which is designed to add to the repertoire of empirical investigations of the subject, limiting the scope of investigations to the characteristics of decisions taken in the context of choosing a higher education institution. In view of this focus, the following section contains a review of criteria that are relevant to choosing a higher education institution (HEI).

3. DECISION-MAKING PROCESS INPUTS: Factors Considered When Choosing a Higher Education Institution

Choosing between different service providers demands complex information processing which is very often linked with making judgments between intangible characteristics and multiple competing factors. Previous studies have shown that service providers and their clients may have different interpretations of the attributes of a service provision process (Almada & Tontini, 2012; Biazon & Jeunon, 2013) and also that there are heuristics and cognitive biases inherent to the decision-making process involved in choosing an education institution (Santos, Spers, Ponchio, & Rocha, 2010). One of the great challenges facing the managers of service providers is to understand the attributes that individuals take into account in their decision-making processes and include them in their service quality assessments and their internal and external communication processes. There is research in the literature that has investigated and discussed the specific attributes relevant to choosing an HEI, and these studies will be described below.

If HEI are to successfully combat obsolescence and prosper, understanding of transformations in the competitive scenario and alignment with the multiple demands of the market are fundamental (Mund, Durieux, & Tontini, 2001). Despite the apparent simplicity of this statement, the challenge remains of how to decode the aspects that are valued socially within the higher education process, which are to be an amalgam of objective factors such as structure and intangible factors such as the institution's image (Mainardes & Domingues, 2009; Antunes, 2013). This mixture of tangible and intangible factors was also identified in a study conducted by Aléssio, Domingues, and Scarpin (2010) with 191 students, in which they identified 12 relevant factors making up six distinct groups of characteristics. The most important of these factors were either related to attributes of the HEI (campus safety, infrastructure and the cost of fees) and or to market perceptions (acceptance in the labor market and tradition).

Perfeito, Becker, Silveira and Fornoni (2004) interviewed 218 students at eight higher education institutions in the west of the state of Paraná, Brazil, and compiled a list of 15 attributes to be classified by the students in order to determine which characteristics influenced their choice of education institution. The most important of these were teachers' qualifications; quality of teaching; ease of access; and friends who already studied at the institution. Some of the factors identified by Perfeito et al. (2004) and Aléssio et al. (2010) were also highlighted in a study conducted by Miranda and Domingues (2006), who analyzed the process of choosing an HEI in a sample of 2,818 secondary education students who were interested in taking an undergraduate course in management. The most important factors were: quality of teachers; acceptable price (cost of fees); and accessibility of the HEI.

Sousa, Rabêlo Neto and Fontenele (2013) conducted a study with 264 students in their final year of secondary education, finding that behavioral beliefs, rather than normative or control beliefs, made the most significant contribution to the decision-making process. Their findings indicated that beliefs related to the HEI's influence on the professional futures of its graduates, the credibility of its degrees and the future contribution to obtaining a good job had the greatest effect on choosing a given organization for higher education. Research conducted by Biazon and Jeunon (2013) with 983 students graduating from secondary education found that the attributes they considered most relevant were the quality of the course and the teaching staff, the institution's reputation in the market and its rating by the ministry of education, teaching methods used and infrastructure. Special emphasis was put on the teaching staff because of the great impact they have with relation to teaching quality and motivation. These criteria identified in the literature are summarized in Table 2.

Table 2: Factors in choosing a higher education institution

Factor	References
Acceptance in the market	Biazon and Jeunon (2013); Souza et al. (2013)
Friends who already study at the HEI	Perfeito et al. (2004)
Ease of access	Miranda and Domingues (2006); Perfeito et al. (2004)
Infrastructure	Aléssio et al. (2010); Mainardes and Domingues (2009); Antunes (2013)
Quality of teaching	Miranda and Domingues (2006); Perfeito et al. (2004); Biazon and Jeunon (2013)
Teachers' qualifications	Perfeito et al. (2004); Biazon and Jeunon (2013)
Security	Aléssio et al. (2010)
HEI's tradition	Souza et al. (2013); Aléssio et al. (2010); Biazon and Jeunon (2013)
Value of fees	Miranda and Domingues (2006); Aléssio et al. (2010)

Source: Compiled by the authors from a review of the literature

These factors affecting the choice of an institution are similar to factors used to evaluate quality of teaching. Walter, Prado and Tontini (2011) found that aspects such as image and teachers' qualifications affect perceptions of quality. It is possible that these elements also have an influence on students remaining at the institution, since satisfaction with the HEI is one of the dimensions found to be predictive of leaving or remaining at an institution (Tibola, Canopf, Tontini, & Frega, 2012). Milan, Corso, Eberle and Lazzari (2014) showed that the factors image, cost-benefit ratio, teaching staff and infrastructure are among those that have the greatest effect on students' overall satisfaction during their courses. They also reported finding that these dimensions have an impact on repurchase intent, which could have an influence on whether a student returns to the institution for additional education services. These factors drawn from the literature were used in data collection, as described in the following section, presenting the methodological procedures employed.

4. METHODOLOGY

According to the criteria set out by Cooper and Schindler (2003), this study can be classified as exploratory (an initial exploration of a setting, with no tests of relations of causality), in the field (data collection is conducted with respondents who have experienced the setting with no manipulation by the researcher) and cross-sectional (with a single data collection point, with no follow-up of variables over time). In terms of orientation, this research can be considered a survey.

The study population was defined as students on undergraduate courses. The sampling technique employed was non-probabilistic by convenience (Malhotra, 2006). Data collection was conducted using questionnaires designed on the Qualtrics system that were sent directly to undergraduate students' e-mail accounts and were also published on social media. Since the respondents were not defined in advance, a filter question was included to eliminate respondents who were not enrolled on undergraduate higher education courses at the time they responded.

The questionnaire was subdivided into three blocks that were subjected to different forms of data analysis. The items designed to collect data on the profile of the respondents were analyzed using descriptive statistics with calculation of frequencies and central tendencies. The block of items on the characteristics of the decision-making process comprised 29 questions with statements about the choice made, selected on the basis of results published by Franz and Kramer (2010). Respondents were requested to indicate their degree of agreement along a seven-point Likert scale (where 1 = completely disagree and 7 = completely agree). The results for this block of results were used to calculate descriptive statistics and then subjected to multivariate cluster analysis.

Nine questions were related to the criteria relevant to choosing an institution. The respondents were requested to indicate the degree of relevance of each factor on a seven-point Likert scale (where 1 = not relevant; 7 = extremely relevant). The characteristics offered on the questionnaire were drawn from prior research into the subject. Descriptive statistics were calculated and then multivariate factor analysis was conducted with the aim of reducing the number of dimensions in the data.

5. DESCRIPTION AND ANALYSIS OF THE DATA

Initially, a total of 267 questionnaires were completed, 67 by people who were not students, which were discarded. Next, 55 partially completed questionnaires were eliminated. The analyses presented below therefore relate to the responses of 145 undergraduate students.

The mean age of the sample of respondents was 23.5 years with a standard deviation of 5.58 years. Almost half of the sample (49.70%) comprised students aged 20 to 23 years. Sex distribution was balanced, with 51.7% of male respondents and 48.3% female respondents. The majority of respondents were residents of the state of Paraná, accounting for 79.3%.

The institutions at which these students studied were classified as public or private and 45.5% of the respondents were from public institutions with 53.8% from private institutions. The great majority of these respondents (85%) had enrolled at their institution since 2010; demonstrating that the decision-making process about which they were questioned be considered recent, facilitating their recall from memory of the factors that influenced the decision-making process.

With relation to respondents' prior experience of higher education, 39.3% of the interviewees reported that this was not the first time they had chosen an HEI. For 60.7% of respondents, the decision process analyzed was their first and only experience of choosing a higher education institution. The degree courses on which

respondents were enrolled were varied, with predominance of Management (39.3%), History (21.4%), Engineering (8.3%), Technology (4.8%) and Law (4.1%). Other courses accounted for 18.6% of the respondents.

5.1 Characteristics of the Decision-making process

Analysis of the frequencies of responses given to the block of questions about dimensions of the decision-making process investigated supports certain statements about the way higher education institutions are chosen. In order to facilitate description, items have been classified either as variables associated with the decision-making process or as elements related to the emotional impact of the decision.

The most striking characteristic of the **process** was a belief in the rationality involved, since 87% of respondents agreed either completely or partially that the choice they made was based on rational criteria. According to 83.8% of the respondents, there was trustworthy information on which to base decision-making and 76% believed that the time they had available was of sufficient to make the choice. The relevance of the choice is highlighted by the facts that 80.6% of the respondents recognized that it had an impact on other decisions and that 77.6% conducted detailed analysis before arriving at the final decision. Aligned with this finding is the perception of the high cost of changing decisions, since the majority (61.4%) disagreed completely or partially that it would be easy to change HEI after having made a choice. Other decision characteristics indicated by the respondents were that the process of choice was simple (73.4%) and quick (66%).

The most notable characteristic of the **emotional** factors associated with the choice under investigation was respondents' high degree of confidence their own judgment (77.5%) and lesser confidence in the judgment of others, since just 36.2% agreed to any degree that they had trusted in someone else. The majority of respondents reported no procrastination (82.1%) and stated that going through the process had not demanded effort (76.6%), and neither had it caused frustration (73.6%), stress (72.9%), or anxiety (63.6%). There were also low levels of agreement with statements about the importance of emotional factors in selecting an HEI (16%), the risk of having chosen the wrong institution (17.4%) and the perception of being pressured by others (23.9%). The results are shown in full in Table 3.

Table 3: Characteristics of the Decision-making process

Characteristics of the Decision	Rational decision	Trustworthy information available	Confidence in own judgment	Enough time for decision	Impact on other decisions	Quantity of information considered	Simplicity	Speed	Cost of changing decision	Relevance of information from others.	Risk involved	Decided long in advance (vs. at last moment)	Quantity of variables considered	Quantity of analysis necessary
N	142	142	142	139	144	143	143	144	141	141	141	140	143	144
Mean	6.01	5.63	5.57	5.42	5.41	5.31	5.31	5.01	4.96	4.83	4.40	4.27	4.27	4.24
Standard deviation	1.28	1.37	1.35	1.39	1.54	1.70	1.75	1.97	1.75	1.74	1.77	2.04	1.86	1.91
Characteristics of the Decision	Many HEI options available	Alternative choices considered	Knowledge required	Decision on based on single factor	Confidence in others' judgment	Ease of changing decision	Caused anxiety	Pressure from others	Possibility of error	Emotional decision	Stress	Frustration	Effort	Procrastination
N	144	145	143	142	141	140	143	142	144	144	144	144	145	140
Mean	4.08	4.01	3.73	3.51	3.43	3.10	3.03	2.79	2.74	2.61	2.54	2.53	2.46	2.13
Standard deviation	2.12	1.92	1.75	2.08	1.89	1.61	1.99	1.87	1.75	1.65	1.79	1.82	1.73	1.62

One of the limitations of these analyses is related to the high degree of data dispersion, generating significant standard deviations (from 2.12 to 1.28), which indicates the means of the dimensions do not provide a good representation of all occurrences (Field, 2009). With a view to expanding the insights gained, a cluster analysis was conducted, in which groups are formed according to proximity between objects in a multiplanar space defined by axes for all of the measures (variables) employed (Pereira, 2004).

There are several possible criteria for clustering (single-linkage, complete-linkage, centroid-linkage or mean-linkage). For the purposes of this study, hierarchical clustering was conducted using Ward's method and the squared Euclidean distance. According to Dutra, Sperandio and Coelho (2008), this method attempts to form groups by minimizing the internal errors between the vectors of each object and the mean vector for the cluster, thereby ensuring greater similarity between objects within each cluster. Anova with Tukey's post hoc test was used to compare means, in order to identify in which dimensions clusters differed from each other, with $\alpha=0.05$, which was chosen as the most appropriate cutoff for significance because it enables differences between more than two clusters to be tested and because the dataset fulfills the prerequisite of more than 20 cases per cluster (Hair, Black, Babin, Anderson, & Tatham, 2009).

The first cluster, later given the label of 'Relaxed decision-makers', contained 49 students (40% of the sample) and grouped together those respondents who found the decision easiest and reported the least adverse emotions. These students scored significantly lower on items related to stress, frustration, effort and pressure from others. Their results indicated faster decision-making, greater perceived ease of decision-making and less procrastination. The items related to the decision-making process revealed that they took less information into consideration, conducted fewer analyses, made greater use of rational factors and were less influenced by emotional factors, generated a lower number of alternative options and felt that little prior knowledge was required.

Another cluster, labeled as 'Suffering, analytical decision-makers', comprised 22 respondents (18% of the sample) and grouped together those who reported more adverse emotional reactions and a more complex decision-making process. This subset of students had significantly higher indices for stress, frustration, and effort, and perceived a higher degree of risk and more pressure from others. They considered the decision-making process to be slow, reported more procrastination and found the choice more difficult. Their decision-making process combined rational and emotional balance, was based on a greater number of analyses and generated a larger number of alternative options. For these students the decision did require prior knowledge, including considering and trusting information provided by others.

Finally, a third cluster, labeled 'Analytical decision-makers', contained 51 students (42% of the sample) who reported a complex decision-making process, but free from the adverse emotions. As such, this cluster is a hybrid of the other two, in that it exhibits similar emotional behavior to the first cluster and a similar decision-making process to the second. In this subset, low levels of stress and frustration were common, but there was a degree of anxiety. Their decision-making process was less simple and slower than the first group and they considered a larger number of variables, which led to the generation of a greater number of alternative choices. Table 4 summarizes the profiles of each of these clusters according to the results observed.

Table 4: Typology of Decision-makers, Based on Process of Choosing an HEI

Group	Characteristics
Relaxed decision-makers	Simple decision-making process, without adverse emotions
Suffering, analytical decision-makers	Complex decision-making process, with adverse emotions
Analytical	Complex decision-making process, without adverse emotions

Higher education institutions could use the typology of decision-makers described above as a foundation on which to construct a range of different profiles for their actions. Since 60% of the students exhibited a complex decision-making process with a considerable demand for information and a large number of alternative choices generated, it can be assumed that to cater to this particular public it is necessary to provide a wide range of information. As such, efforts to raise awareness by providing more information on infrastructure, courses and the HEI's profile could provide a route for a given institution to enter candidates' lists of possible choices for taking a higher education course. Such a foundation could also contribute to mitigating the negative emotions felt by almost 1/5 of the sample. In contrast, for the 40% of respondents who took their decisions considering a

lower number of variables and alternative options, it may be more appropriate to take a more direct approach to publicity, constructing more generic messages containing less complex data related to the institution.

Since 1/5 of the sample (18%) reported that they had suffered adverse emotional experiences, including feelings of stress, concerns about risk and frustration, it is possible that providing a face-to-face guidance service to interact with these candidates individually could be a source of competitive advantage for an HEI. The consumer experience related to higher education services is permeated by issues related to the service and care provided by HEI staff (Tibola et al., 2012), and so providing a counseling service to help potential students taking the decision of which HEI to choose could help to project a positive image by mitigating the adverse emotional experiences associated with choosing an institution.

Other characteristics of the decision-making process revealed in the data include the fact that the decision is predominantly taken at the end of secondary education (32% of respondents) and very often after the results of university entrance exams have been published (25%) or soon before the deadline for registering for entrance exams (18%). This finding indicates that communication with the target public should be intensified at the end of academic years and close to the dates on which students register for university entrance exams and to the dates on which the results are published, all of which are critical points for this decision-making process.

With relation to the scope of decision, this process was seen as “individual” by 73% of the sample, as “familial” by 20% of respondents and as “organizational” by 5%. This individual scope is also reflected in the frequency with which others were included in the decision-making process, since 44% of the sample stated they had decided on their own, 45% had decided on their own, while considering the opinions of others, and just 11% had decided in conjunction with other people. None of the respondents stated that the decision was taken by somebody else.

5.2 Factors considered when choosing a Higher Education Institution

As was expected, all of the seven factors were considered relevant to choosing a higher education institution, with mean scores over 3.5; in other words closer to the "very relevant" extreme of the scale. Table 5 lists the descriptive statistics for the factors investigated. Of these, the factors considered most relevant by students were quality of teaching (6.50), higher education institution's acceptance by the employment market (6.34), teachers' qualifications (6.29) and the higher education institution's tradition (6.19).

Table 5: Factors Relevant to Choosing a Higher Education Institution

	Quality of teaching	Acceptance in the market	Teachers' qualifications	HEI's tradition	Ease of access	Infrastructure	Value of fees	Security	Friends already study at HEI
N	141	138	137	140	130	131	110	116	124
Mean	6.50	6.34	6.29	6.19	5.53	5.33	5.27	4.65	3.93
Median	7.00	7.00	7.00	7.00	6.50	6.00	6.00	5.00	4.00
Standard deviation	0.997	1.264	1.267	1.409	1.942	1.825	2.081	2.136	2.379

After descriptive analysis of the criteria considered relevant to choosing a higher education institution, an exploratory factor analysis was conducted with the objective of studying the possibility of reducing the number of dimensions analyzed. This analysis identified three components with eigenvalues greater than 1 which together explained 62% of variance. The choice of these components for analysis was also supported by the Kaiser-Meyer-Olkin test result of 0.704. Field (2009) classifies this value as good and Kaiser (1974, apud Field, 2009) considered values greater than 0.5 to be acceptable. This analysis was conducted for the results from 82 questionnaires with all questions answered.

Component 1 groups the various intangible factors that affect students' perceptions of quality at the point of choosing an education institution. Component 2 is composed of tangible factors and, as such, factors that are more easily measurable and comparable by students. Component 3 comprises factors related to convenience. These groupings are illustrated in Table 6.

Table 6: Components and factors of choosing a Higher Education Institution

	Component		
	1	2	3
HEI's tradition	0.846		
Quality of teaching	0.812		
Acceptance in the market	0.739		
Teachers' qualifications	0.734		
Security		0.783	
Ease of access		0.640	0.433
Infrastructure		0.603	
Value of fees		0.508	
Friends who already study at the HEI			0.792

Therefore, the principal factors related to choosing a higher education institution can be grouped into three distinct components, labeled 'Intangible Factors', 'Tangible Factors' and 'Convenience'. Identification of these components as distinct could help the managers of higher education institutions in the process of choosing communication practices. To put it another way, it can be claimed that the cognitive association of different criteria (for example: tradition, quality, acceptance and teachers' qualifications) may mean it is unnecessary to include all of these elements in communications and that it would be better to attempt integrated communication on intangible aspects, tangible aspects and convenience.

The insight that students cognitively group together certain characteristics of higher education institutions may provide a basis for organizational communication policies and should have an influence on management of service provision. Specifically with relation to communication, dividing messages along three axes (intangible factors, tangible factors and convenience) makes it possible to cover all of factors that students consider valuable without information redundancy. In other words, the cognitive grouping identified provides a basis for supposing that if a single communication effort includes information on both tradition and quality of teaching, for example, the target public may consider this to be a single characteristic. As such, it would therefore be more fruitful to provide information on tradition and infrastructure, which the students see as relevant but distinct elements. In turn, the implication of this analysis for management of service provision processes is that procedures to assess satisfaction and indicators chosen to measure quality should include variables from all three dimensions.

6. FINAL COMMENTS

The theoretical and empirical paths followed in this investigation provide a basis for certain conclusions. The first of these relates to the objective of expanding understanding of the characteristics of the decision-making process leading to the choice of higher education institution. The primary conclusion is that this process is predominantly rational, individual, relevant and interrelated with other decisions. Additionally, the results show that there are multiple paths to the final decision. Whereas one subset of the decision-makers considered that the choice demanded little analysis and reported suffering few adverse emotions, another subset described their analysis as intense and experienced frustration and anxiety as a result of the process.

This description of the decision-making process has both theoretical and empirical implications. For higher education institutions, it suggests that it should be possible to cater for different styles of decision-making by diversifying communication, providing detailed information on which "analytical decision-makers" can base their decisions, while taking a more direct approach to "relaxed decision-makers". Additionally, a face-to face counseling service for candidates with personalized support and contact could help to attenuate the adverse emotional experiences to which "suffering analytical decision-makers" are susceptible, thereby creating a factor of differentiation to attract these students.

There are also conclusions for theory to be drawn from the analysis of which dimensions are most relevant to the decision-making process investigated. The evidence of individual scope, a predominantly rational character, and a multiplicity of decision-maker types together with a number of different analytical paths to the decision all support the claim made by Franz and Kramer (2010) that, in order to understand the decision-making processes of individuals and organizations, it is necessary to understand in greater detail the dimensions of the decisions themselves.

This study also attempted to describe the content of the decision and analysis and the results showed that many of the elements identified in previous literature are indeed relevant, with particular emphasis on quality of teaching and the HEI's acceptance in the employment market. It was also found that these elements clustered together to form three categories: 'Intangible Factors', 'Tangible Factors' and 'Convenience'. The practical implication of this for higher education institutions is the need to communicate what they have to offer in all three categories. Detailed descriptions of information relating to several factors in a single category (for example, tradition, quality of teaching and teachers' qualifications) may be interpreted by the target public as redundancy and fail to cover other relevant dimensions, such as tangible factors and elements of convenience. From a theoretical perspective, this finding contributes to an enhanced understanding of the cognitive elements of the decision-making process, since it provides evidence of the construction of cognitive groups of criteria that affect the decision.

In possession of these findings, certain recommendations for future studies can be made. The identification of different types of decision-makers in this study of choosing a higher education institution raises questions related to the possibility that different people and different organizations take different paths to other types of decision. It is therefore recommended that studies be conducted to analyze the characteristics of other decision-making processes, to determine whether it is possible to construct groups in situations that differ from the one studied here. One possible approach to such an analysis would be to investigate the relationship between clusters of decision-makers and individual characteristics, such as cognitive style, and organizational aspects, such as department and hierarchical level within and organization.

With regard to decision content, the scope and objectives of this article did not extend to exploration of the links between this content and perceived quality of service provision or satisfaction. Future investigations will be needed to elucidate whether decision makers who value a certain attribute at the moment of choice (for example, campus security) will also consider that attribute important when assessing the quality of the service provided. Studies investigating decision attributes and their relationships with satisfaction could confirm or reject this hypothesis. Irrespectively, it can be stated with confidence that better understanding of individuals' decision-making processes and of the content they evaluate during these processes can provide a foundation for better-designed organizational practices and for improving quality and productivity in service provision.

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