

Management decisions through the neuro management in the universities of zone 3 of Ecuador

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ABSTRACT

The entry of a new millennium has allowed the creation of a more dynamic and changing environment in Higher Education Institutions, where academic authorities must make decisions, which must be based on a validated theoretical model and with a demonstrated level of effectiveness and based on strategic tools. as Neuromanagment, which aims to enhance performance, through brain capacities, openness to learning, recognition and coding of new options that allow a holistic vision; generating a new business thought characterized by being more human and anchored in an integral and communicational management. Therefore, the objective was to formulate a theoretical proposal for the implementation of neuro-management as a strategic means for making managerial decisions in the universities of zone 3 of Ecuador. The study was based on the experiential introspective epistemic approach, through field research. The methodology was qualitative. The interpretive paradigm and the recommended procedure for category saturation were used, supported by the following methods: constant comparative, theoretical sampling, open, axial and selective coding. The collection, analysis and presentation of data was approached through semi-structured interviews, which were triangulated with participant observation and documentary sources, to guarantee reliability. It was concluded that neuromanagement is directly linked to decisionmaking, when the decision maker applies impulses, intuition and premonition as a way to choose a course of action.

Keywords: Neuromanagement, Strategy, Decision making, Higher education institutions

Introduction

To make successful decisions, they must be supported by a validated theoretical approach or model with a demonstrated level of effectiveness. Since the appearance of Neuromanagement as a strategic tool for managers and the need to promote techniques aimed at enhancing their performance through brain capacities, people with managerial responsibilities today, in the era of globalization, must be open to learning, recognition and codification of new options that allow a holistic vision where not

only variables related to the measurable are considered, but also to the emotional ones, which implies working by human conglomerates.

Maturana (1996), affirms that individual beings are social sine qua non beings, and that in turn societies are the conjunction of individual beings, also affirms that the particularities of these societies are determined by the diverse load of each of their members and by the interrelationships that are established [1].

Given that communities are complex in nature due to the influx of innumerable variables, humans have been developing laws in different organizations; to be part of them, regardless of the existence of affinities and diversities. Within them, the establishment of coexistence norms is proposed, designed for these humans, to which Echeverría (2011), points out as structured based on three dimensions: physical, emotional and communicative, which converge to form the spirit [2].

With regard to the specifically individual level of the manager in charge of decision-making, Robbins and Coulter (op. Cit) share the idea that this is a person who enjoys a certain authority and

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responsibility in planning, organization, direction and control of processes within an organization. However, Henry Mintzberg, points out that the concept has traditionally spread that they are executives who make great business decisions, who have developed great strategic thinking, who always keep in mind the long term of their firms, who are astute and agile in decision-making and that your work is focused on the most important issues.

Mintzberg (2009), identified what in his opinion are the three managerial roles as follows [3]: Interpersonal roles (as representative or figurehead of the organization before people or entities outside the company, leader who is responsible for the motivation and union of efforts of their subordinates and Coordinator or link between the firm and the environment or inside), Informative roles where the reception and communication of information is the fundamental job (Monitor or supervisor who looks for information outside and inside, Information disseminator within the organization and Spokesperson who is responsible for transmitting information abroad) and Decision roles (Entrepreneur who seeks to improve his company or unit and designs its adaptation to change, problem solver who is responsible for solving unforeseen events, Resource allocator who decides who does what or who gets what and Negotiator).

While, uncertainty is fought with the greatest amount of information, all that can be obtained and it is very important to assimilate it. For De Saint-Exupéry (2014), in his work *The Little Prince* "It is through the heart that we see correctly, what is essential is invisible to the eyes" (p. 24), his statement transports the physical plane of actions and reactions, questions and answers; at a deeper level and perhaps it is actually the one that provides the information that makes the difference between right and wrong [4]. In this sense, the same author points out "it is with the heart that we see correctly" without a doubt it refers to the emotions, the energies, the hidden objectives, the subjectivity of the occasion, which if it is channeled correctly should not play against making appropriate decisions.

As a counterpart to the scenario described and overloaded with rationality, Kandel (2007) points out that the new science of the mind not only illuminates the functioning itself [5]; that is, how it is perceived, learned, remembered, decides and acts, but also is placed in perspective of the evolutionary context, emerging a new trend called neuromanagement with the potential to substantially improve this decision-making process.

To date, neuroscience has become known as a field of study that addresses the nervous system, its anatomy (structure), and physiology (functioning). In it, several disciplines converge such as medicine, psychology, chemistry, linguistics, computer science, among others. Neuroscience has been applied in several branches, one of them is management, called neuro management (Neuromanagement), also known in other Spanish-speaking countries as neuro-management or neurodirection [6, 7].

Among the needs and motivations that supported the selection of the research object, the following stood out: (a) The interest in developing a theoretical proposal for the implementation of neuro-management as a strategic means for making managerial

decisions in the universities of Zone 3 of Ecuador; and (b) The need to extrapolate the methodology and the emerging theoretical proposal to the study of similar cases in other organizational contexts (public or private) within and outside the country, estimating their viability.

Rodríguez, Gustavo (2013). *Organizational Shared Intelligence Network to support decision-making*. Doctoral Thesis. University of Granada and University of Havana [8]. Granada mentions that: in the problematic situation, it describes how organizations are currently concerned about promoting the exchange of experiences, which allow improving and facilitating the creation of new knowledge and thus favoring the decision-making process. As findings of interest or results of the research carried out, the following stand out: (a) The possibility of strengthening social capital taking as an axis of interest, the institutional decision-making process; (b) The managerial practice of claiming its potential as an online tool for consultation in real time, available to all interested parties and linked to the network, to improve the decision-making process; (c) The decrease in response time and speed; and (d) The possibility of establishing an initiative for the massive incorporation of those involved in the management of new information technologies.

In Cabrera's doctoral thesis, María (2015), called *decision-making in organizational communication*, addressed the problem from the importance of decision-making for efficiency in labor productivity [9]. The general objective was to identify how decisions are made in Organizational Communication and examine how the demands of the environment influence decision-making. Among the findings of the research carried out and which, in my opinion, deserve to be highlighted are the following: (a) Concluding about the weight of the demands of the environment and the characteristics of the context, as conditioning entities of the decision-making process, what hinders its effectiveness; (b) The imperative to share by all, the purposes and objectives of the strategic plan in communication matters and to strengthen the decision-making process; (c) Reinforcing, as part of the organizational culture, the application of cognitive neurosciences in the management and conduction of organizations, focused on neurological processes related to decision-making, team intelligence, planning and people management; (d) Claiming the strategic weight that an effective decision-making process has on productivity.

In Abreu's article, Yoleida: *Neuromanagement as a Strategic Tool for the Negotiating Manager*, points out that it is not enough to have the desire to achieve success in negotiations, but to have a strategic model that is effective, and that it is precisely to Starting from the emergence of Neuromanagement - as a strategic tool for the negotiating manager - as the competencies to achieve the programmed results are increasingly strengthened [10].

Nelson Lara (2015) in his book *"Management and Decision Neuroscience"* addressed the study of both variables with respect to their impact on the life of organizations, highlighting that, in the specific case of decision-making, Neuroscience opens a window towards cognition, a bridge between neurobiology and cognitive science creating a transdisciplinary field of study, on

which research is based, seeking to minimize emotional bias in decision-making and its impact on managerial effectiveness [11]. This article is very useful for the proposed research work because it covers a topic very little worked on by other researchers and in a certain way, under a perspective opposite to the generalized belief, regarding the inherence of emotions for making correct decisions.

Silva, Jesús (2015) in his article "Human Development and Neuroscience" explains the emergence of neuroscience as a possibility of understanding human behavior and brain use from another perspective, as genuine evidence of a new trend in the managerial field [12]. A position of great reference for the research work to be developed and therefore its usefulness in bringing to the fore the conflict between modernity and postmodernity and its implications, to assume this new transdisciplinary and global paradigm, with an emphasis on management and human development.

Mogollón Ivory (2015) in his article "Neuroscience and Learning in Organizations" addressed the possibility from knowledge management of incorporating the competences provided by neuro-management to optimize the decision-making process, which continuous learning in organizations, which It requires eliminating certain traditional practices and giving way to new approaches to maximize potential [13]. This article allows us to consider the relevance of incorporating neuro-management as a strategic model, to enrich human capital, especially in contexts such as the focus of interest of this research, the universities of Zone 3 of Ecuador, as a mechanism of value contribution and strengthening of the organizational culture, especially from the need to break management paradigms, which, although they support the decision-making process, are subject to an organizational logic focused on the rational and a marked underestimation of the weight of emotions, in the managerial work and its impact on others.

Neurosciences are applicable in the context of Organizational Management, through tools to strengthen the study of the brain of people, in the exercise of positions as managers, directors and leaders, who lead the staff in organizations, which implies the development of competencies to optimize decision-making processes and thinking, among others, to achieve the ability to concentrate, to exercise managerial management responsibly.

In this sense, one of the most important problems of the actors in management tasks regarding the chosen intervention context: Universities of Zone 3 of Ecuador, is that the academic and administrative processes have to do with the uncertainty of a changing universe, unstable and risky which causes a consequence of high levels of stress and often permanent stress, which of course negatively influences decision-making. Therefore, it makes sense with regard to what has been described, according to Brocas and Carrillo (op. Cit), for neuroscience, insofar as it is a tool that facilitates the development of formal models of the brain as a modular entity, to provide verifiable implications on the functionality of different brain systems and their interactions in decision making [14].

A decision in Moreno's opinion (2019), is a choice between mentally simulated futures, a very intelligent way to conjugate

the possible worlds of logical semantics, subjective probabilistic inference, time travel of prospective memory, the effect of virtual simulations on learning and planning for reactive agents typical of Neuroeconomics [6]. Whereas, Decision Theory concerns the study of those who choose or have to choose a course of action of a real or fictitious type, as well as the conditions by which they must be taken and leads to the best result given their preferences. In recent years its influence has been so great in disciplines such as psychology and economics - which have contributed, along with applied mathematics, to its development - or sociology, political science and philosophy - which have used it. It is very difficult to address some of the most burning issues in these specialties today without having a knowledge, however small, of decision theory.

Decisions made based on the amount of information available are categorized under conditions of certainty and uncertainty, which can be partial or complete. By their nature, decisions can be rational and non-rational, non-rational ones are creative and emotional. It is important to mention that this classification is not exclusive; This is how a decision can be: a decision maker, unscheduled, strategic, full of uncertainty, emotional.

Materials and Methods

The paradigmatic position that guides the research is of a qualitative type, in which the intangible and subjective dimensions are valued, nuanced by the axiological, emotional and attitudinal components, aspects that in themselves define organizational behavior. Indeed, Martínez (2011) emphasizes that, for the quantitative researcher, knowing is an objective image of things, where reality is made, finished and is outside. For the qualitative researcher, this is largely true for physical and material realities, not so for the social sciences, where values, attitudes, and beliefs are paramount [15]. In any case, the quantitative contribution in this last investigative modality works very partially.

The research was based on the qualitative paradigm, in the interest of analyzing and interpreting the evidence and findings based on the concepts and relationships in the data that were discovered; In itself, the intention was to obtain knowledge, understanding what the social actors gave meaning from their experiences and ways of conceiving neuromanagement as a decision strategy in the Universities of Zone 3 of Ecuador.

The method of the Four Philosophical Dimensions developed by Dr. Renée Bédard was used, since it is applicable to administrative sciences, as a means to decipher, analyze and interpret the facts in organizations, in this case, about managerial decision making of the universities of Zone 3 of Ecuador, through which it was possible to understand the facts from an integrating scheme [16]. In order to obtain knowledge of the reality to be examined, characterizing the facts from the relationship between the concepts and categories that emerge from the object of study to be interpreted, the research was descriptive. Total, characterize and interpret are two concepts that distinguish at this level.

The study was supported by a field investigation, the purpose of which was to have a direct approach with the social actors who were interviewed (Arias, op.cit) [17]. It is this tenor, the field research sought to have a closer perception of reality that, through the process of operational and methodological systematization of the data, increased the understanding of what was happening there in order to find meanings of the behavior patterns perceived and to be able to interpret the observer model of the subjects to be interviewed [18], using as a basis the method of the Four Philosophical Dimensions developed by Dr. Renée Bédard, since it is applicable to administrative sciences as a means to decipher, analyze and interpret the facts of the organizations, in this case, about the decision-making of the universities in Zone 3 of Ecuador.

The interpretations were based on data of a subjective nature such as language, motivations, beliefs, values, among others, which determined their ways of acting and consequently their results. Accordingly, for the systematization of the data, the saturation of categories was used, which allowed the conceptual ordering of the data that emerged from reality, according to the prescriptions of Strauss and Corbin (op.cit) [19]. To this end, the procedure used considered the following aspects during the investigative process:

- The constant comparative method: It consisted of coding the data through its conceptualization, categorization, and relationship with each other, which will be refined through permanent comparison.
- Theoretical sampling: It involved the selection of new subjects and events to obtain new data.
- Open coding: It consisted of identifying concepts that will later be grouped into categories.
- Axial coding: He related the categories around an axis, linking with the concepts.
- Selective coding: It led to the integration and refinement of the findings, a product of theoretical saturation, that is, when no more concepts, categories, and relationships emerged for the analysis; findings that were later compared to the state of the art.

Results and Discussion

The processing of the interviews was carried out by using the Atlas / ti software, which is a computer-assisted qualitative analysis program, which allows associating codes or labels with fragments of text, sounds, images, videos and others, which they cannot be analyzed meaningfully with statistical approaches. For the present investigation, we worked with two differentiated, separate but complementary samples: academic authorities and experts in the field.

For the academic authorities, the Grounded Theory of Anselm Strauss and Juliet Corbin was applied, which is a theory widely used in social research, through which data is collected to later produce a theory for which it is selected, encoded and analyzes the information received and decides what information to choose and where to find it to develop an explanatory theory of the

object of study [19]. For experts in the field, the method of Discourse Analysis or Text Analysis was used, whose objective is to describe how important the spoken or written text is in the understanding of human and social activities.

In each unit of analysis, open coding was carried out in the first instance, the purpose of which was to fragment the data, identify concepts, label them and classify them in emerging categories. This coding modality allowed the recognition of nine categories that brought together a total of 463 conceptual labels in the 11 units of analysis, in attention to the properties that were established in the operationalization of categories, which even when this type of procedure is used in quantitative research to control the variables previously established, the author of this study decided to use a similar procedure but based on the properties of the categories that emerged in the process, in order to ensure a conceptual ordering.

After carrying out the open coding, then we proceeded to implement the axial coding, which consisted of relating those conceptual labels that were only classified in main categories, that is, in categories that had a greater number of labels in open coding of each objective per unit analysis. This encoding mode added 319 labels from the total units. In itself, the axial coding sought to determine the type of relationship in each of the crosses made, in the interest of understanding whether the relationship of the conceptual labels with the categories had a link either by nature (Property), by preserving certain similarity (Associated), for being a substantial element (Party), or for being opposite (Contradictory).

Each unit of analysis of the interviews made to academic authorities and expert informants, constituted an important tool that facilitated the adequate conceptual ordering in terms of conceptualization, categorization and relationships between them, in order to discover empirical evidence and respond to the three initial objectives of the investigation in a first approximation.

It is pertinent to note that some of these emerging categories stood out as the main category, namely, those categories that grouped the greatest number of conceptual labels per unit of analysis, which as a whole encompassed 105. For a better understanding, the result is detailed below. of these main categories:

With regard to Systems Approach, this category figured as the main one in 3 of the 8 interviews conducted. The number of conceptual labels was 22, which were ultimately related in axial coding, representing 20.96% of the total number of labels in this particular segment, whose evidence records the estimate that is made towards the permanent search for educational quality through quality management and process management systems, the decentralization of decisions, functions and actions, the implementation of process systems, the monitoring of university management, management information systems, the management of flexible and effective information, the control of results-based management, the balanced scorecard. In short, they are evidences that, from the perspective of the actors, lead to a systems approach for effective decision-making.

Regarding Administrative Processes (PA), this category was the main one in 5 opportunities of the universe of interviews, which was the one that obtained the highest number of labels with respect to the other two with 47 (44.76%) to relate them in axial coding. The evidence that emerged allows us to infer the inclination shown by academic authorities to privilege decision-making models framed in administrative processes and articulated with academia, research and links, without neglecting the advances that occur in the global village.

Regarding Structural Elements, this category stood out as the main one on 5 occasions in the interviews, with 36 grouped conceptual labels (34.28%) to pass through the axial coding sieve and determine the type of relationship. It added that 3 of the 5 main categories were awarded to the expert informants. The evidence that emerged from these actors, favors those structural elements present in decision-making, synthesized in managerial skills, organizational culture, institutional interests, possible risks, opportunities at stake, diversity of thought, standardization of processes, individual assessment, necessary, timely and reliable information, among many others.

To investigate the dynamics of the decision-making process in the universities that make up Zone 3 of Ecuador, the analysis recognized the number of 156 conceptual labels. Ecuador, the analysis recognized the amount of 156 concept labels.

The Influencing Factors category obtained more than half of conceptual labels with a total of 85 (54.48%), followed by Paradigm of Decisions with 67 labels (42.96%). The category Managerial Profile was very distant with 4 conceptual labels (2.56%), which did not appear in any of the interviewees as the main category. In itself, the evidence shows the assessment given by the interviewed actors to those factors that influence decision-making within the institution, considering both the micro and macro environments.

This conceptual ordering of the data was able to identify Factors that Influence (IF) and Paradigm of Decisions (PD) as main categories, which totaled 101 labels. Regarding Factors that Influence, it stood out with 61 labels (60.4%) with presence in 5 of the 8 interviewees as the main category. According to the evidence found, there is no doubt about the trend that exists to address factors inherent to the dynamics of university decisions, such as the breadth of criteria, performance evaluation, error as a learning input to improve, the transparency of processes, culture based on decentralization, results-based process systems, accessibility to digital platforms, reliable information, improved management, models based on information, quality and administration.

Correspondingly, Paradigm of Decisions specified 40 labels that represented 36.6%, appearing in 4 interviewees as a category. Indeed, the evidences show in this category, the way of seeing and interpreting the decisions from the paradigm of the interviewed actors, focused on educational quality, university leveling, the university model based on results, continuous improvement, decisions under the same approach, the structured model, the ability and opportunity in the application, the participatory management, the alignment with the institutional philosophy, the relevance, quality and academic excellence, the

connection with society, the development of talent and innovation, the optimization of management, the use of the needs of the environment, market niches and relations with the State.

To explore the comparative advantages that neuro-management as a management tool in the decision-making process adds to the operational dynamics of the universities of Zone 3 of Ecuador, the integration of their data confirmed the identification of 146 conceptual labels that were classified into the emerging categories Agent of Change (AC) which in turn was chosen with the highest proportion of labels with 71 (48.63%), in second order of interest was Self-knowledge (AC) with 49 labels (33.56%) and lastly, Emotional Self-Management (AE) with 26 labels (17.81%). Well, they are evidences that aim to address the significance of decision-making as an agent of change, adding wills with optimism and motivating staff in the interest of achieving the institutional vision, objectives and goals.

These three categories emerged as top categories at different times with a total of 113 concept tags. In this regard, Agent of Change (AC) adhered sixty seven concept labels (59.29%). This category reached great interest in almost the entire universe of interviewed actors, appearing on 9 occasions as the dominant category, which clearly shows the importance of decision-making as an agent of change, by taking favorable initiatives and persevering in them to despite the circumstances.

Some of these evidences that involve the Agent of Change, recognize key elements nuanced by personal motivation, integration for quality, culture based on values, human-centered strategies, the involvement of people, the fulfillment of shared goals, the formation of citizens and humanist leaders of the future, participatory and joint decisions, professionalization in soft skills, the promotion of creativity, motivation in people, the transformative university of changes, the change of old paradigms, alignment with society, the link with different sectors, the exchange of knowledge for comprehensive education with sensitivity and humanism, communication and managerial leadership, flexibility of thought, recurrent and continuous feedback, heuristics and managerial effectiveness.

On the other hand, Emotional Self-Management obtained 24 labels (21.24%), it only emerged as the main category on 2 occasions and they corresponded to expert informants, since they properly handle concepts related to neuro-management and aspects of an emotional nature. The evidence involves the posture or way of thinking and feeling, taking into account the information provided by emotions, understanding the effect that it can cause on the state of mind both in itself and in others such as attitudes, emotions, stress, moods, emotional influence, emotional control, emotion management, emotional and rational balance, emotional biases.

In the case of Self-knowledge, it grouped 22 labels (19.47%), its main categories were 3 and all of them corresponded to academic authorities. The evidence that emerged in the analysis shows factors that imply being aware of oneself when knowing what is being reasoned and feeling at a certain moment, which is reflected in a well-established feeling of self-confidence. Some of these factors are quality from a personal perspective, reengineering to grow admitting mistakes, intrinsic motivation,

commitment to guarantee results, learning to know oneself, recognition of one's identity and limitations, adjusted behavior to values, the competences connected with society.

When examining the emerging categories, whose number of conceptual labels was 463, it is possible to appreciate the strong inclination that the figures have towards the categories Structural Elements, Factors that Influence and Change Agent, with respect to the remaining 6 categories, which when adding them, obtained a percentage proportion of 49.46%. This inclination is more pronounced when looking at the figures presented in the main categories (319 total), where Factors that Influence and Change Agent are repeated as those with the highest sum of labels. In the case of Structural Elements, it was replaced by Administrative Processes since the latter obtained a greater number of labels in this section. Specifically, the sum of them had a percentage weight of 54.86%.

The analysis and interpretation of the results of qualitative research using the discourse method for the sample of experts in the field, was carried out in three aspects that in their entirety make up semiotics: syntactic, semantic and pragmatic. The syntactic is constituted by the form or grammar of the text, the semantic by the substance or meaning and the pragmatic by the interest or specific objective that the researcher has on the content in question.

The categories were identified: Neuroscience, brain, neuro management, decisions and emotions; which were taken by the researcher based on the issues that stand out and are directly linked to the research: Neuromanagement as a decision strategy in the universities of Zone 3 of Ecuador.

Conclusion

The current decision-making method is in accordance with the hierarchical level of the organizations. They are taken first by the career coordinator, then the deans, followed by the board of directors, university councils and finally the vice-chancellor or rector of the university. Although there have been some efforts to decentralize decision-making, the interviewees consider that the road is still being built.

The interviewees for making their decisions exclusively use rational and intuitive methods considering good judgment and experience in the position or in their career as a university authority. Academic actors have general knowledge about neuroscience, but not specifically about neuromanagement; Since questions focused on this area were asked and the answers were asserting the traditional management.

The academic authorities of Zone 3 of Ecuador do not use neuroscience in its form of neuromanagement to choose the course of action in their strategic decisions. Therefore, it is necessary and essential to generate techniques and tools to support or help the high management level of the universities of Zone 3 of Ecuador, where neuro-management is conceived as management based on neuroscience, for decision-making.

Neuromanagement focuses on the application of all brain capacity, both rational and emotional, in each of the brain

processes (sensation and perception, attention, memory, associations, emotions, communication and decision-making). That is, neuro-management is the neurological (cerebral) application of neuroscience in decision-making with an emphasis on emotions.

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