



NEUROMANAGEMENT AND SMART DECISION-MAKING IN SMES: A STRATEGIC APPROACH FOR THE TEXTILE INDUSTRY

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Summary

In a business environment marked by uncertainty and constant market changes, small and medium-sized enterprises (SMEs) in the textile sector face significant challenges to stay competitive. This article addresses the relevance of neuromanagement as a strategic discipline that combines principles of neuroscience with organizational management, focusing on its ability to improve intelligent decision-making. Based on a thorough analysis of the theoretical framework and the findings of the study, the applications of neuromanagement in decision-making are explored, particularly in volatile environments characterized by complexity and uncertainty. The article presents a strategic model based on the integration of neuromanagement dimensions—such as explicit, implicit, associative, and non-associative learning—to strengthen managers' competencies in key areas such as leadership and adaptation to change. The results highlight that the implementation of neuromanagement strategies significantly reduces the perception of uncertainty, improves the ability to anticipate risks and promotes more structured and effective responses to critical challenges. It is concluded that SMEs that adopt this approach can optimize their resources, strengthen their teams and build sustainable competitive advantages in a globalized market. This paper invites companies in the textile sector to consider neuromanagement as a transformative tool that not only improves organizational performance, but also drives innovation and resilience in times of constant change.

Keywords: Neuromanagement, intelligent decision making, SMEs, volatile environments, textile industry.

1. Introduction

In today's business environment, characterized by volatile markets, globalization, and increasing competition, small and medium-sized enterprises (SMEs) face significant challenges in staying competitive. The textile sector, one of the most representative industries worldwide, is no stranger to these pressures. This sector, which employs millions of people and contributes

significantly to the GDP of several countries, is particularly exposed to fluctuations in demand, low-cost imports, and changes in consumption trends (Montes, 2019). Textile SMEs, in particular, require innovative strategies that allow them to adapt to these challenges, make strategic decisions under pressure and lead in uncertain environments.

In this context, smart decision-making has become a key differentiator. This type of decision, which integrates rational analysis, intuition, and emotional management, allows managers to optimize available resources while minimizing the risks associated with uncertainty (Hammond, Keeney, & Raiffa, 2007). However, decision-making in textile SMEs faces significant limitations due to the use of traditional models that do not consider the emotional and cognitive complexity involved in the process (Salazar, 2018). Faced with this problem, neuromanagement emerges as a transformative approach that combines principles of neuroscience with business management to optimize both leadership and decision-making capacity in competitive environments (Braidot, 2016).

Neuromanagement is based on the knowledge of the levels of brain functioning—reptilian, limbic, and neocortex—and their influence on managerial processes. According to Braidot (2016), this discipline allows leaders to integrate instinctive, emotional, and rational mechanisms to make more efficient decisions, improve stress management, and develop transformative leadership. This ability is especially relevant in volatile environments, where managers need to react quickly to unexpected changes, without sacrificing the quality of decisions (Pacheco, 2013). For example, in the textile sector, leaders must assess and respond to fluctuations in supply and demand, manage complex supply chains, and adapt to global competition, all under uncertain conditions.

One of the main problems faced by textile SMEs is the limited ability to manage emotions and pressure in decision-making. These conditions, which are inherent to competitive environments, often lead to impulsive or ill-informed decisions, negatively affecting organizational sustainability (Montes, 2019; Salazar, 2018). Neuromanagement, by integrating tools such as explicit, implicit, associative, and non-associative learning, facilitates the development of more consistent and adaptive behavioral patterns, which significantly improves decision-making in high-pressure scenarios (Braidot, 2016).

In addition, neuromanagement fosters managers' ability to anticipate risks, seize opportunities, and optimize resources. This approach promotes a more humane and resilient leadership, which connects the emotional and cognitive needs of teams with organizational objectives (Herrerros, 2012). In the textile sector, where the margins of error are increasingly reduced, these tools allow managers to maintain a balance between intuition and logic, achieving more effective results.

Neuromanagement and intelligent decision-making are fundamental pillars for textile SMEs to successfully face the challenges of a globalized and volatile business environment. This article explores how these approaches can be implemented in the sector, analyzing their practical applications and their impact on organizational sustainability and competitiveness. Based on a solid theoretical framework and recent studies, a strategic model is proposed that integrates neuromanagement capabilities to transform traditional managerial practices into adaptive and dynamic tools. This approach not only optimizes organizational performance, but also positions textile SMEs as key players in the global economy.

2. Objectives and hypotheses

2.1 General objective

To analyze the impact of neuromanagement on intelligent and strategic decision-making in small and medium-sized enterprises (SMEs) in the textile sector, considering their ability to face volatile and competitive environments.

2.2 Hypothesis

2.2.1 Assumptions for components of the Intelligent Decision-Making Process dimension

H0: There are no differences in the intelligent decision-making process used in the managers of SMEs in the textile sector in Bogotá.

Hi: There are differences between the components of the intelligent decision-making process used in the managers of SMEs in the textile sector in Bogotá.

2.2.2 Hypotheses for components of the dimension Elements of intelligent decision-making in volatile environments

H0: There are no differences in the elements of intelligent decision-making in volatile environments used by managers of SMEs in the textile sector in Bogotá.

Hi: There are differences in the elements of intelligent decision-making in volatile environments used by managers of SMEs in the textile sector in Bogotá.

2.2.3 Hypothesis for Components of the Neuromanagement variable

H0: There are no differences between the components of neuromanagement in the managers of SMEs in the textile sector in Bogotá.

Hi: There are differences between the components of neuromanagement in the managers of SMEs in the textile sector in Bogotá.

2.2.4 Components of the Intelligent Decision Making variable

H0: There are no differences between the components of intelligent decision-making used in the managers of SMEs in the textile sector in Bogotá.

Hi: There are differences between the components of intelligent decision-making used in the managers of SMEs in the textile sector in Bogotá.

3. Methodology

3.1 Research Approach

The study adopts a mixed approach (qualitative-quantitative) due to the need to analyze both the subjective experiences of managers and the objective data that allow measuring the impact of neuromanagement. This approach is supported by authors such as Salazar (2018), who points out that mixed methods are essential to address complex phenomena in business contexts, by combining the depth of qualitative analysis with the precision of quantitative analysis. In this case, the qualitative approach will allow us to explore managers' perceptions of neuromanagement tools, while the quantitative approach will measure their effectiveness in variables such as adaptability and decision-making.

3.2 Type of Research

The type of research will be descriptive, explanatory and projective, since it seeks not only to describe how neuromanagement tools are applied, but also to explain their relationship with strategic decisions and propose a practical model for their integration. According to Hammond, Keeney, and Raiffa (2007), explanatory research is crucial for understanding the relationships between variables in intelligent decision-making processes, especially in volatile contexts. This type of analysis will justify how neuromanagement tools strengthen leadership and organizational resilience competencies in textile SMEs.

3.3 Research Design

The non-experimental and cross-sectional design is implemented because variables are not manipulated, but are observed as they occur in their natural environment. In addition, the collection of data in a single moment will allow an up-to-date view of management practices in the textile sector. As Montes (2019) points out, cross-sectional designs are ideal for business studies that seek to analyze contemporary phenomena in a specific context, such as strategic decisions in competitive markets.

3.4 Population and Sample

The population will be composed of managers of SMEs in the textile sector, given that this group represents a critical segment of the economy and faces specific challenges related to decision-making in volatile environments. According to Montes (2019), the textile sector in Bogotá is one of the most affected by low-cost imports, which underscores the need for innovative management strategies. The sample will be selected through a non-probabilistic sampling for convenience, allowing to work with companies that already implement or are interested in neuromanagement tools. This aligns with the principles of Salazar (2018), who states that, in specific business research, non-probability sampling can offer representative results when key participants are chosen.

3.5 Data Collection Techniques and Instruments

1. **Structured questionnaires:** They will be used to measure variables related to the use of neuromanagement tools, such as explicit, implicit, associative and non-associative learning, as well as their impact on decision-making. Braidot (2016) highlights that Likert-type questionnaires are effective in assessing managerial perceptions and behaviors, as they offer a measurable and understandable scale for participants.
2. **Semi-structured interviews:** These will allow for an in-depth exploration of managers' practical experiences, an approach recommended by Pacheco (2013) for studies that investigate subjective phenomena such as leadership and decision-making in specific contexts. The interviews will also facilitate the identification of barriers and opportunities to implement neuromanagement tools in the textile sector.
3. **Documentary analysis:** A review of business reports and previous studies on neuromanagement and decision-making in textile SMEs will be included. This method is supported by Hammond et al. (2007), who emphasize that the triangulation of data, including documents, strengthens the validity of conclusions in business research.
- 4.

3.6 Procedures

1. **Literature review:** It will include recent studies on neuromanagement and strategic decision-making. According to Braidot (2016), a solid theoretical foundation is essential to properly interpret empirical findings in the business field.
2. **Design and validation of the instrument:** The questionnaires and interview guides will be validated by experts in neuromanagement and organizational management. Salazar (2018) highlights the importance of expert validation to guarantee the relevance and reliability of instruments in business research.
3. **Data collection:** The questionnaires will be applied in person or virtually, depending on the availability of the managers, and in-depth interviews will be conducted with a selected subgroup. Montes (2019) points out that the combination of collection methods facilitates a more complete analysis of managerial phenomena.
4. **Data analysis:**
 - Descriptive and inferential statistics to identify patterns and relationships between variables, such as the influence of neuromanagement learning on decision-making.

- Qualitative thematic analysis to explore managers' perceptions and perceived barriers. Pacheco (2013) stresses that thematic analysis is effective in identifying key points in management studies.

3.7 Analysis of Results

The analysis will focus on:

- **Relationship between neuromanagement and strategic decisions:** According to Braidot (2016), neuromanagement tools significantly improve leaders' ability to anticipate risks and make informed decisions.
- **Impact on organizational sustainability:** Salazar (2018) argues that the integration of neuromanagement models in SMEs strengthens their resilience and competitiveness in global markets.

8. Limitations of the Study

The study could face limitations related to sample size, due to the non-probabilistic approach, and to the subjectivity of the managers' self-reported responses. However, Pacheco (2013) points out that these limitations are common in management studies and can be mitigated through triangulation of methods and careful analysis.

4. Results

4.1 Neuromanagement

The managerial activity known until now, sustained its operation in models and instruments of external application, at present, this discipline needs new resources and new tools, because the business realities and the world as a whole demand it, these resources are not found outside, but in the brain potential of those who make up the organizations: the leader and his entire team.

At the end of the first decade of the twenty-first century, and given the relevance of scientific advances, management urgently needs to be redefined, its critical variables analyzed with a different perspective. This requires an interdisciplinary vision that allows studying and explaining the key decision-making processes, while creating and implementing strategic plans that successfully lead organizations towards their goals.

Some of the most important works developed on neuromanagement can be found in the literature of Braidot (2016), who conceptualizes it as the application of cognitive neurosciences to the management of organizations allows access to new fields of knowledge to better lead work teams, make decisions with a greater degree of certainty, train and train people with more effective techniques, develop more effective commercial actions and establish a better relationship with people and the market.

To reinforce this criterion, Herreros (2012), neuromanagement describes how to improve the management of organizations, therefore, the quality of life and productivity of companies, as well as their workers. To do this, it shows the techniques with which to get the most out of members, encouraging them to make proposals without fear of reprisals, to give the best of themselves and get involved in the objectives of companies for mutual benefit, where there has not been the necessary change of mentality towards a new way of understanding people management.

On the other hand, Cardona (2010), the brain directs all behaviors and thoughts, the way of understanding what happens around us generates decisions, by knowing the functionality of the brain, it is understood what other brains do, what worries them or why they propose a job in a certain way, neuromanagement helps to reflect on different situations. Through this, you will find reflections, as well as tools to give orders, delegate, clarify misunderstandings, communicate better, make more effective and fair performance evaluations, all of which are linked from the brain's point of view.

In the frameworks of the previous observations, the aforementioned authors diverge in a certain way in terms of the appreciation of neuromanagement, for Braidot (2016), it is the application of cognitive neurosciences to the management of organizations, making decisions with certainty, training individuals with more effective techniques, in turn, Herreros (2012), describes how to improve the management of organizations, therefore, the quality of life and performance of companies, likewise, Cardona (2010) neuromanagement is a tool to execute decisions, delegate, clarify misrepresentations, inform better, make more effective performance evaluations, everything linked, from the point of view of the brain.

In other words, it is a discipline that explores the intellectual and emotional mechanisms linked to the management of organizations and people from the development of cognitive neuroscience, which focuses on neurological processes linked to decision-making, the development of individual intelligence, teams, planning and management of people.

Due to the above considerations, this research takes a position with the approaches of Braidot (2016), when he states that neuromanagement allows organizations to generate neurocognitive profiles, which will allow the generation of functions and forms of management, facilitating the development of individual intelligence, for decision-making, complemented with management tools for the achievement of objectives established efficiently.

For this purpose, the managers of SMEs in the textile industry are responsible for defining the neurocognitive profile required for each position, evaluating each applicant in their strengths and weaknesses in this regard, in the case of the people who make up the organization, implementing a training program to develop the skills that have been defined as necessary, such as intelligent decision-making based on neuromanagement.

Based on the arguments offered, these studies on neuromanagement have made it possible to initiate new lines of managerial research to test how the brain acts when an executive is negotiating, making a transcendental decision, as well as a former or potential customer is debating a decision to acquire a product or service, with respect to another. in short, a huge range of different situations, disruptive contexts in the managerial and business field.

4.2 Decision-making

Different contributions by authors and practitioners have resulted in different approaches to management and make up a conglomerate on management theories, where different models of management analysis coexist. Frederick Taylor's scientific management was published in 1911, where the decision-making process focused on replacing tax rules with science (organized knowledge), achieving group harmony, cooperation of human beings, working to obtain maximum production, rather than restricted production, and developing all workers to the greatest extent possible for their own prosperity and that of the company.

Some of the most important works developed on the decision-making process in modern management is Henri Fayol, with his work "General Industrial Administration" published in 1916, where he mentions authority and responsibility, unity of command and chain of scale all linked to decision-making today.

Other studies show that, although academic authors and theorists contributed very little to the study of management until the early 1950s (earlier writings come mostly from practitioners), the last few decades have seen a veritable deluge of texts from academic classrooms, the variety of approaches in the analysis of management, The amount of research and the large number of divergent points of view have led to a lot of confusion as to what management is, what management is, what decision-making looks like, as well as how managerial events should be analyzed.

From the above, new approaches have been developed and other older ones have acquired new meanings by adding some new concepts, but the development of science and management theory have the same characteristics in terms of different visions, these are systems approach,

contingency, reengineering, empirical, group behavior and decision theory. Koontz, Weihrich, & Cannice (2012).

In this way, the perspective for this variable is based on the organizational behavior model, where importance is given to the performance of people in groups, is based on social sociology and psychology, and primarily studies models of group behavior. As well as the decision theory approach, focusing on the decision-making processes of those in charge of deciding and the process that it entails. Some theorists use decision-making as a springboard to study all business activities.

In the decision-making process, it is observed that it has its origin in a problem, which is a state of discordance between the current situation of relationships and some desired state, which also requires care about alternative courses of action. The realization that a problem actually exists and that it requires making a decision is a perceptual matter.

Some of the most important works developed on the decision-making process found in the literature are those of Robbins, Decenzo and Coulter (2013), decision-making is usually described as a choice between alternatives, but this conception is too simplistic, since decision-making is a process rather than a simple act of choosing between alternatives, as a set of steps that begins with the identification of a problem, continues with the step of choosing an alternative capable of alleviating the problem, and concludes with evaluating the effectiveness of the decision.

Other studies show that decision-making, according to Benavides (2014), is a process in which a course of action is identified and selected to solve a specific problem, this process necessarily involves several alternatives to solve problems or take advantage of the opportunities that arise, it is a crucial moment because by determining and implementing the strategies, the plans set become a reality. causing competitive advantages or disadvantages.

Taking Koontz, Weihrich and Cannice (2012) as a reference, it is the core of planning, it is defined as the selection of a course of action among several alternatives, it cannot be said that a plan exists unless a decision has been made, that resources, direction or reputation have been committed, until that moment there are only planning and analysis studies.

Finally, decision-making is a daily reality, all people, from all areas, face numerous facts and circumstances that day after day lead them to make decisions. In addition, given the diversity of situations that may arise at a particular time, there is no single method to carry out the decision-making process.

4.3 Smart Decision Making

Today, decisions shape life. of individuals, as well as their interrelations with family, friends and work, these are taken consciously or unconsciously, with good or bad consequences, they represent the fundamental instrument used to face the opportunities, challenges and uncertainties present, in any context, but particularly the organizational one.

In this way, intelligent decisions correspond to the determinant of how an individual fulfills his responsibilities, achieving the established goals pursued, that is, applying a systematic procedure to achieve the best result with the minimum of time, energy, capital and composure. But although it has been addressed, it concerns a process of analysis, complemented by an internal assessment where the control activity is planned, which includes decisions that promote the change or not of the final decision; in this way it manifests in human beings intelligence in the process of functioning in the action of making decisions.

Specifying once and for all, Flores (2018), business decisions are not always so transcendent, that is, they do not have to mean the life or death of a company, but you always have to know how to choose the appropriate path just in case there is no second chance. In decision-making it is important to respect a series of steps, if you expect to be an intelligent leader these are to

recognize the problem, act cohesively with the team, study the information, execute the action and evaluate the results.

Taking Hammond, Keeney, and Raiffa (2007) as a reference, he conceptualizes it as an integral process that aims to solve a complex situation, separating each element from the context, systematically valuing each of them, concentrating on the key components for the particular situation that is interested, making good decisions is the main determinant of how an individual fulfills his responsibilities, achieving the goals pursued.

In this same order, Trabal (2012), mentions the ability to make good decisions, determines success as a benchmark in business management, particularly, intelligent companies are the most prosperous, on the other hand, decisions made lightly will limit any management, even if it has enough resources and opportunities, harming the achievement of the desired results.

The author consulted above adds, decision-making to achieve better results offers a proven methodology through five steps that will allow you to greatly improve your decision-making techniques, avoiding the most common pitfalls that cause bad results, these are using all the techniques for decision-making, involving the right people, reducing risk and choosing the best alternative.

In other words, intelligent decisions correspond to the determinant of how an individual fulfills his responsibilities and achieves the professional goals he pursues, that is, to apply a systematic procedure to achieve the best result taking into consideration aspects such as recognizing the problem, specifying the objectives, creating alternatives, studying the transactions, clarifying uncertainties, understanding the consequences, thinking very well about his risk tolerance and considering Linked decisions.

According to the reasoning, this research establishes a position with the theoretical approaches Hammond, Keeney and Raiffa (2007), by stating that intelligent decision-making is a systematic and logical process with the intention of solving a problem, evaluating each of the options and evaluating the future consequences, based on choosing the best result.

Faced with the situation raised, the managers of SMEs in the textile industry must know that intelligent decision-making is an essential characteristic in the individual who executes both strategic and tactical directive action, where the fulfillment of responsibilities is implicit, as well as the achievement of objectives that must be developed through a logical process that leads to the efficiency and effectiveness of the resources managed.

4.3.1 Smart decision-making process

The literature on decision-making takes into consideration a set of stages, phases or processes themselves, some currents mention that decisions are programmed or unprogrammed, others regardless of the complexity must comply with methodical rigor to select the most coherent alternative, these scholars are Benavides (2014), Robbins, Decenzo and Coulter (2013). Koontz, Weihrich, and Cannice (2012), Franklin, and Krieger (2011), among others. Based on the above, there are other trends such as intelligent decision-making where its precursor Hammond, Keeney and Raiffa (2007), alludes to making a good decision it is necessary to take into consideration different scenarios, some more complex than others.

The exploration of Benavides (2014) will continue, where he argues that the decision-making process is identified and a course of action is selected to solve a specific problem, it necessarily involves selecting alternatives to take advantage of the opportunities that arise, it is a crucial moment when determining the strategy the set plans are materialized.

For Robbins, Decenzo, and Coulter (2013), decision-making is usually described as a choice between alternatives, but this conception is too simplistic, given that decision-making is a process rather than a simple act of choosing between alternatives, as a set of steps that begins with the identification of a problem, continues with the step of choosing an alternative capable of alleviating the problem. and concludes with evaluating the effectiveness of the decision.

Koontz, Weihrich, and Cannice (2012) point out, it is the core of planning, it is defined as the selection of a course of action among several alternatives, it cannot be said that a plan exists unless a decision has been made, that resources, direction, or reputation have been committed, until that moment there are only planning and analysis studies.

Hammond, Keeney, and Raiffa (2007), on the other hand, establishes a direct and proven method for making intelligent decisions, teaches to see more clearly the tangible and intangible aspects of a decision-making situation, translating pertinent facts, feelings, opinions, beliefs, and advice into the best possible choice. Being extremely flexible, it is applicable to business, professional, personal, family decisions, in short, any decision that has to be made, the method is developed step by step, where the most complex decisions are analyzed and solved considering a set of five elements called problem, objectives, alternatives, consequences and transactions.

Based on the above considerations, the authors consulted Benavides (2014), Robbins, Decenzo, and Coulter (2013), and Koontz, Weihrich, and Cannice (2012), agree that intelligent decision-making is selecting a course of action among several alternatives to solve a specific problem. However, the author Robbins, Decenzo, and Coulter (2013), states that it goes beyond a simple act of choosing between alternatives, it is a set of steps that begins with the identification of a problem, while Hammond, Keeney, and Raiffa (2007), establishes an immediate and proven method for making intelligent decisions, teaches to see more clearly the aspects of a decision-making situation, based on feelings, statements and advice in the best possible choice.

In other words, focusing on what is important, logical and consequential, recognizing both subjective and objective factors and combining analytical and intuitive thinking, demanding the amount of information and analysis necessary to solve a specific problem, encouraging and guiding the collection of pertinent information and well-founded opinions, characterized by being direct, reliable, flexible and easy to apply.

Decision-making can be understood as the process where a choice is made between several options, in search of the resolution of a problem, it is a role and at the same time a responsibility that falls on the leader of an organization, in the development of the same a series of factors of a managerial order intervene, strategic and even moral from which some actions are prioritized to the detriment of others.

For the purposes of this research, it was decided to take the theories proposed by Hammond, Keeney and Raiffa (2007), since he is considered the most convenient author for the development of this project, where he states that this is a process where one alternative is selected among many to solve a problem presented, taking advantage of the opportunities that arise, considering a set of five elements called problem, objectives, alternatives, consequences and transactions.

For the purposes of this, the managers of SMEs in the textile industry must know the process of intelligent decision-making as a logical sequence of stages that involve the total study of the objective to be achieved or the problem to be solved with the use of the internal characteristics of the organization, where they must define the problem precisely, Specify the objectives, create imaginative alternatives, understand the consequences and study the transactions.

4.4 Relationship between Neuromanagement and Decision Making

The relationship between neuromanagement and strategic decisions is based on how the principles of neuroscience can optimize decision-making processes in complex business contexts. In the case of textile SMEs, the findings indicate that neuromanagement allows the integration of brain levels of functioning—reptilian, limbic, and neocortex—to respond effectively to the challenges of the volatile and competitive environment.

4.4.1 Key elements of the relationship:

1. **Integration of cognitive and emotional tools: Neuromanagement** helps managers balance data-driven decisions with intuitions derived from emotional experience and stress regulation. This improves the ability to evaluate alternatives under pressure, as Braidot (2016) points out, who emphasizes that effective strategic decisions combine logic, intuition, and emotional management.
2. **Applied learning strategies:** The types of learning (explicit, implicit, associative and non-associative) play a crucial role in the consolidation of decision-making patterns. For example, implicit learning allows managers to react quickly to unforeseen changes, while associative learning creates consistent habits that optimize strategic planning.
3. **Reduction of uncertainty:** Neuromanagement improves the perception of control in uncertain scenarios, as it encourages the identification of risks and opportunities through a clearer and more structured analysis (Hammond, Keeney & Raiffa, 2007). This allows leaders to develop confidence in their decisions and reduce critical errors.
4. **Increased adaptability:** Managers who apply neuromanagement tools show a greater ability to adapt to sudden changes in the market, such as fluctuations in demand or interruptions in the supply chain (Salazar, 2018). This approach ensures that strategic decisions remain relevant and aligned with external conditions.
5. **Impact on organizational sustainability:** The application of neuromanagement not only improves individual decisions, but also strengthens organizational resilience. By fostering transformative leadership, managers can align organizational objectives with the demands of the competitive environment, promoting long-term sustainability (Herreros, 2012).

Neuromanagement establishes a direct and meaningful relationship with strategic decision-making by providing tools that integrate cognitive, emotional, and practical skills. This approach not only optimizes the quality of decisions, but also positions textile SMEs in a better position to face the challenges of the globalized market, ensuring their competitiveness and sustainability.

4.5 Components of the Intelligent Decision-Making Process dimension

Hypothesis:

H0: There are no differences in the intelligent decision-making process used in the managers of SMEs in the textile sector in Bogotá.

Hi: There are differences between the components of the intelligent decision-making process used in the managers of SMEs in the textile sector in Bogotá.

Ranges			
	Components	N	Average Range
Smart decision-making process	Problem Identification.	96	225,51
	Goal Formulation	96	272,69
	Definition of Alternatives.	96	229,29
	Determination of consequences.	96	282,85
	Implement transactions	96	192,17
	Total	480	

Table 1. Kruskal-Wallis test for the ranges of the components of the Intelligent Decision-Making Process dimension.

Source: Aragón (2020)

Test Statistica,b	
	Smart decision-making process
Chi-square	32,004
Gl	4
Asymptotic Sig.	,000

Tables 1 and 1A show the results obtained by applying the Kruskal-Wallis test for the components of the Dimension Intelligent decision-making process, in learning, in this sense it is observed that the significance is $0.000 < 0.05$, so H_0 is accepted and H_1 is rejected, that is, there is no difference between the ranges of the components of the dimension. Likewise, it can be seen that the median of the Intelligent Decision-Making Process dimension is located at 4, which indicates that half of the score is below four and the other half of the values are above that number.

In the analyzed table, a marked similarity is denoted between the indicators identification of problems, formulation of objectives, definition of alternatives and determination of consequences, where, the answers issued by the study subjects, gave rise to the positioning of the indicators in the aforementioned table, through statistical treatment reveals equally are very effective in the population studied, indicative present and developed as an important part of intelligent decision-making in the leaders of the SMEs under study.

It should be said, the managers of SMEs carefully identify the decision problems, recognizing the complexity of each situation, where they formulate objectives adequately to generate direction to the decisions, likewise, they define alternatives maintaining the commitment to execute it, by chronologically ordering the steps assigning the necessary resources, finally evaluating the consequence coming from the selected option.

In this regard, it is necessary to mention the results obtained by coinciding with the postulates of Hammond, Keeney and Raiffa (2007), conceptualizing it as an integral process that aims to solve a complex situation, separating each element from the context, systematically assessing each of them, concentrating on the key components for the particular situation that is interested, Making good decisions is the main determinant of how an individual fulfills his responsibilities, achieving the goals pursued.

It is appropriate to point out the Implement Transactions indicator, it is far from the trend of the rest of the indicators, where managers in the process of intelligent decision-making do not find a middle ground, in the most complex decisions, product of the lack of a perfect alternative, when presenting them in the different options they fulfill a set of purposes, they must learn to choose intelligently between possibilities that are not perfect, looking for a way to set priorities in the SMEs under study, openly attending to the need to make transactions between the various scenarios or situations presented.

4.6 Components of the Elements of Intelligent Decision-Making in Volatile Environments dimension

Hypothesis:

H_0 : There are no differences in the elements of intelligent decision-making in volatile environments used by managers of SMEs in the textile sector in Bogotá.

Hi: There are differences in the elements of intelligent decision-making in volatile environments used by managers of SMEs in the textile sector in Bogotá.

Ranges			
	Component	N	Average Range
Elements of Smart Decision-Making in Volatile Environments	Uncertainty.	96	157,68
	Risk tolerance	96	112,55
	Related decisions	96	163,27
	Total	288	

Table 2. Kruskal-Wallis test for the ranges of the components of the dimension Elements of intelligent decision-making in volatile environments

Source: Aragón (2020)

Test Statistica,b	
	Elements of Smart Decision-Making in Volatile Environments
Chi-square	24,224
Gl	2
Asymptotic Sig.	,000

Kruskal Wallis Test

Tables 2 and 2A show the results obtained by applying the Kruskal-Wallis test for the components of the Dimension Elements of intelligent decision-making in volatile environments, in this sense the significance is $0.000 < 0.05$, so H_0 is accepted and H_1 is rejected, that is, there is no difference between the ranges of the components of the dimension. Likewise, it can be seen that the median of the dimension Elements of intelligent decision-making in volatile environments is located at 4, which indicates that half of the score is below four and the other half of the values are above that number.

In the analyzed table, a marked similarity is denoted between the uncertainty and related decisions indicators, the answers issued by the study subjects, gave rise to the positioning of the indicators in the aforementioned table which through statistical treatment reveals equally are very effective in the studied population, indicative of the systematic process volatile elements are highly present and developed as an important part of decision-making managers. From the above approaches, the following indicators can be deduced from the uncertainty indicators: the managers of SMEs in the textile industry determine what may happen in the future, as well as the possibilities of one or the other thing happening, as a result of constant and turbulent changes. On the other hand, the linked decisions indicator, in the subjects studied, it is evident that tomorrow's goals are influenced by today's decisions, where managers collect the necessary information to solve those that will be presented later.

The previous results issued by the managers of SMEs coincide with what was stated by the author with whom the position was set in the research, Hammond, Keeney and Raiffa (2007) who believe that decisions are made in conditions of uncertainty, the desired consequence may not be the one that actually results, individuals vary in terms of their tolerance to risk, Depending on what is at stake, in terms of what they are willing to accept from one decision to another, having a clear awareness of the willingness to accept the rush will make the decision-

making process smoother and more efficient, helping to choose an alternative with the expected level of risk.

However, the risk tolerance indicator is far from the trend of the rest of the indicators uncertainty and related decisions, where the managers of SMEs in the textile sector do not know exactly what state of nature will be presented, not knowing the types of situations to arise and the probability that each of them has of occurring. it is difficult for them to anticipate different situations of contingencies, complex or arduous, in order to choose the most suitable alternative, in order to respond to the context in which they develop.

4.7 Components of the variable Neuromanagement

Hypothesis:

H0: There are no differences between the components of neuromanagement in the managers of SMEs in the textile sector in Bogotá.

Hi: There are differences between the components of neuromanagement in the managers of SMEs in the textile sector in Bogotá.

Ranges			
	Component	N	Average Range
Neuromanagement	Multineurosensory profile	96	104,97
	Applications of neuromanagement in learning	96	136,41
	Levels of Neural Functioning	96	192,11
	Total	288	

Table 3. Kruskal-Wallis test for the ranges of the components of the variable Neuromanagement.

Source: Aragón (2020)

Test Statistica,b	
	Neuromanagement
Chi-square	60,567
G1	2
Asymptotic Sig.	,000

a. Kruskal Wallis Test

b. Grouping variable: factv1

Regarding the study of the neuromanagement variable, it was developed on the basis of the three specific objectives that define each of the dimensions corresponding to it, it stands out when using the Kruskal-Wallis Test, it specifies the significance achieved by the variable which obtained 0.000, this value being less than 0.05 ($0.000 < 0.05$; referential significance level). where, there are no highly significant differences between the dimensions compared, which indicates that not all of them have the same degree of presence within the variable, so H0 is accepted and H1 is rejected.

With reference to the above, the multineurosensory profile and applications of neuromanagement in learning are effective dimensions with respect to the values presented in the neuromanagement variable present in the managers of SMEs, where they conceive visual

and auditory perception, as well as sense of smell and taste, generating a harmonious whole between manager, team, customer, product, negotiators and people from the same organization, from there generate strategies in SMEs in the textile industry.

In the same way, they conceive explicit, implicit and associative learning when acquiring new information, forms coherent learning in the managerial field, where the acquisition of this knowledge is progressive, learning through models, experiences and training from there generate strategies in SMEs in the textile sector. It should be added, managers present behaviors linked to non-associative learning, produced by the stimuli of the environment, they have the ability to adapt, in other words, within everyday life when turbulent scenarios arise, they are known by managers, where they adequately anticipate as a result of learning.

It is important to make special reference where the results obtained converge with the ideas of Braidot (2016), by conceptualizing it as the application of cognitive neurosciences to the management of organizations, allows access to new fields of knowledge to better lead work teams, make decisions with a greater degree of certainty, train and train people with more effective techniques, develop more effective commercial actions, establishing a better relationship with people in the market.

To conclude the discussion of results regarding the neuromanagement variable, it is important to note that the results obtained do not establish highly significant differences between the dimensions compared, therefore, the managers of SMEs build a multineurosensory profile, apply neuromanagement in learning and maintain the levels of neural functioning by creating successful business units. optimizing customer service, improving organizational management and promoting understanding.

4.8 Components of the Intelligent Decision Making Variable

Hypothesis:

H0: There are no differences between the components of intelligent decision-making used in the managers of SMEs in the textile sector in Bogotá.

Hi: There are differences between the components of intelligent decision-making used in the managers of SMEs in the textile sector in Bogotá.

Ranges				
	Component	N	Average Range	Sum of ranks
Decision-making Smart	Smart decision-making process	96	109,54	10515,50
	Elements of Smart Decision-Making in Volatile Environments	96	83,46	8012,50
	Total	192		

Table 4. Kruskal-Wallis test for the ranges of the components of the Intelligent Decision Making variable

Source: Aragón (2020)

Test statisticians	
	Compv2
U de Mann-Whitney	3356,500
W for Wilcoxon	8012,500

Z	-3,535
Asymptotic sig. (bilateral)	,000

to. Grouping variable: factv2

Regarding the study of the intelligent decision-making variable, developed on the basis of the two specific objectives of the intelligent decision-making process and intelligent decision-making in volatile environments, defining each of the dimensions corresponding to it, it stands out when using the Mann-Whitney U test and Wilcoxon's W, where $0.000 < 0.05$, so H_0 is accepted and H_1 is rejected, where there are no highly significant differences between the dimensions compared, thus indicating that not all have the same degree of presence within the variable.

Where, in the process of intelligent decision-making, the managers of SMEs identify the problem recognizing the complexity of the scenario, where, they formulate objectives appropriately to generate an orientation in the decisions, likewise, they define alternatives helping to execute it guaranteeing the necessary resources, finally, evaluating the consequence derived from the chosen option.

However, the average achieved in the dimension elements of intelligent decision-making in volatile environments shows that SME managers do not contribute to clarifying the decision in evolving environments, being a systematic and logical process with the intention of solving a problem through the choice of the best outcome taking into account uncertainty. risk tolerance and related decisions.

It is important to emphasize that the results obtained converge with the postulates of Hammond, Keeney and Raiffa (2007), conceptualizing it as an integral process that aims to solve a complex situation, separating each element from the context, systematically valuing each of them, concentrating on the key components for the particular situation that is interested, making good decisions is the main determinant of how an individual fulfills his responsibilities, achieving the goals pursued.

To conclude the discussion of results regarding the intelligent decision-making variable, it is important to note that the results obtained do not establish highly significant differences between the dimensions compared, therefore, the managers of SMEs apply the intelligent decision-making process, however, intelligent decision-making in volatile environments does not contribute to clarifying the decision in changing environments. critical scenarios, disruptive situations, where anticipation of the facts does not prevail.

5. Conclusions

Neuromanagement emerges as a transformative strategic tool for small and medium-sized enterprises (SMEs) in the textile sector, by innovatively integrating neuroscience principles into business management processes. The results of this analysis highlight that neuromanagement enables business leaders to address the complex challenges of volatile environments by combining cognitive, emotional, and practical skills. This discipline not only fosters more resilient leadership, but also optimizes strategic decision-making, improving managers' ability to identify problems, formulate goals, evaluate alternatives, and analyze the consequences of their decisions. In this way, neuromanagement is consolidated as an essential pillar for organizational sustainability in a highly competitive and globalized market.

The impact of neuromanagement is particularly noticeable in the way managers deal with uncertainty and make decisions under pressure. By applying tools such as explicit, implicit, associative, and non-associative learning, leaders can develop consistent and adaptive behavioral patterns that strengthen their ability to anticipate risks and opportunities. These strategies allow for greater alignment between the decisions made and the strategic objectives

of organizations, which in turn increases operational effectiveness and competitiveness. However, it was identified that certain elements, such as risk tolerance, represent significant challenges for managers, highlighting the need to strengthen these competencies through specific training programs.

Smart decision-making, supported by the principles of neuromanagement, stands out as a systematic and methodical process that balances rational analysis with intuition, providing a solid basis for solving complex problems in the textile sector. This approach fosters managers' ability to make informed decisions in high-pressure contexts, reducing critical errors and optimizing resource use. In addition, the findings confirm that this model not only has a positive impact on individual decisions, but also strengthens the cohesion and overall performance of work teams, promoting an organizational culture oriented towards achievement and innovation.

In business environments characterized by constant change and high competitiveness, the implementation of neuromanagement tools is especially valuable. These tools allow managers not only to adapt to external conditions, but also to effectively lead diverse teams, creating an environment conducive to the development of human talent and organizational sustainability. Textile SMEs that adopt this approach have the opportunity to position themselves as relevant players in the global market, standing out for their ability to respond quickly and strategically to the demands of the environment.

Despite these advances, limitations were identified in the implementation of neuromanagement strategies in highly volatile scenarios, where the complexity of decisions and the lack of preparation to face contingencies represent significant challenges. These results underscore the need for future research that delves into the design of specific tools to strengthen decision-making under conditions of extreme uncertainty. Likewise, the creation of training programs that allow managers to develop more advanced neuromanagement skills is recommended, especially in areas such as risk tolerance and anticipation of disruptive changes.

In conclusion, neuromanagement and smart decision-making represent a transformative opportunity for textile SMEs in their quest for sustainability and competitiveness in the global market. This approach allows the integration of emotional, cognitive and practical aspects in business management, promoting a more humane, resilient and adaptive leadership. By adopting these strategies, SMBs not only optimize their organizational performance, but also strengthen their ability to innovate and respond to the challenges of an ever-evolving business environment. This positions neuromanagement as a key discipline for the success of organizations in the 21st century.

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