



## **Towards Intelligent Management: Neuromanagement in SMEs in the Textile Sector**

**Ricardo Javier Aragón Gómez**

Fundación Universitaria los Libertadores, Bogotá, Colombia

*Email:* [ricardo.aragon@libertadores.edu.co](mailto:ricardo.aragon@libertadores.edu.co)

*ORCID:* <https://orcid.org/0000-0003-4668-6370>

**Moises Edgardo Meriño Polo**

Fundación Universitaria los Libertadores, Bogotá, Colombia

*Email:* [moises.merino@libertadores.edu.co](mailto:moises.merino@libertadores.edu.co)

**Álvaro Luis Mercado Suárez**

Fundación Universitaria los Libertadores, Bogotá, Colombia

*Email:* [alvaro.mercado@libertadores.edu.co](mailto:alvaro.mercado@libertadores.edu.co)

### **Summary**

This article presents an analysis of the impact of neuromanagement on intelligent decision-making within small and medium-sized enterprises (SMEs) in the textile sector in Bogotá. Neuromanagement, understood as the application of principles of cognitive neurosciences to organizational management, is studied as a strategic tool to improve the decision-making capacity of managers. Through an approach based on the multineurosensory profile, sensory perceptions (visual, auditory, tactile, olfactory and gustatory) and their influence on decision-making are explored, especially in volatile and highly uncertain contexts. The research was carried out through a non-experimental design, with a questionnaire applied to managers of SMEs in the textile sector of Chapinero, Bogotá, allowing to identify how neuromanagement contributes to the improvement of organizational efficiency, the optimization of customer service and the strengthening of leadership in environments of constant change. The results suggest that a neuromanagement approach favors the creation of an adaptive and resilient organizational environment, aligned with the demands of the current market.

**Keywords:** Neuromanagement, Decision Making, SMEs, Textile Industry.

### **1. Introduction**

In the contemporary business environment, the ability to adapt and respond to market changes is essential to the sustainability and success of small and medium-sized enterprises (SMEs). This reality is particularly visible in the textile sector, where constant innovation, variability in

consumer preferences and global competitiveness require agile and effective management. In this context, neuromanagement has established itself as a valuable tool, integrating knowledge from applied neurosciences to enhance the effectiveness of management processes. Neuromanagement is defined as the application of principles and discoveries of neuroscience to the field of business management, with the aim of optimizing the performance of leaders and improving their ability to make informed and conscious decisions in complex environments.(de la Sancha Herrera & Reyes, 2024)(Soto-Ortigoza & Espinosa-Fernández, 2022)

Neuromanagement, at its core, seeks to understand how neurocognitive processes—including perception, memory, and emotion—affect the way managers perceive their environment and make decisions. In the case of the textile sector, this understanding is especially relevant, as changes in fashion trends and variations in consumer demand may require rapid adjustments in production, design, and merchandising strategies. By applying neuromanagement concepts, managers of SMEs in the textile sector can develop skills that allow them to better process information, identify opportunities in the market and adapt more efficiently to the changing dynamics of the business environment. In this way, neuromanagement becomes a key competitive advantage, facilitating the alignment of the organizational strategy with the needs of the market.(Marulanda Grisales, 2025)

Smart decision-making, on the other hand, refers to the ability to choose the best available alternative from a detailed and systematic analysis of the options, consequences, and associated risks. In practice, these types of decisions combine both rationality and intuition, integrating quantitative and qualitative data with the experience and judgment of the decision-maker. In the context of the textile industry, smart decision-making is critical to optimizing production, efficiently managing the supply chain, and responding proactively to changes in consumer preferences. Decision-making in this industry involves not only the selection of materials and designs, but also cost management, distribution logistics, and adaptation to fluctuations in input prices and international competition.(Ortega Sánchez, 2016)

The integration of neuromanagement with intelligent decision-making allows managers of SMEs in the textile sector to address the challenges of the environment with a more holistic and adaptive perspective. Neuromanagement offers a deeper understanding of how emotional states and cognitive biases can influence business decisions, helping leaders manage their own emotions and those of their teams effectively. This is especially relevant in high-pressure situations, where the ability to remain calm and analyze the situation clearly can make the difference between a successful decision and a costly mistake. In a sector as dynamic as textiles, where uncertainty is a constant, the ability to make intelligent and neuromanaged decisions becomes a determining factor for organizational success.

In addition, neuromanagement provides tools that allow managers to improve their communication and leadership skills, critical aspects in the textile industry, where coordination between design, production, and sales teams is essential for the development of new products and the implementation of business strategies. By understanding how sensory perceptions and cognition affect interaction with their employees, managers can create a more collaborative and motivating work environment. For example, the implementation of leadership strategies based on neuroscience can help reduce work stress, improve decision-making in crisis situations, and increase team motivation and commitment, which directly impacts the company's productivity.

Another key aspect of neuromanagement is its focus on developing a multineurosensory profile, which allows managers to understand and leverage how different senses influence product perception and customer experience. In the textile industry, where the visual perception of colors, the texture of materials, and the quality of design play a fundamental role, a manager with a multineurosensory profile can design more effective marketing strategies, improve the customer's shopping experience, and develop products that better respond to market expectations. This not only optimizes the relationship with customers, but also strengthens the brand and allows SMEs to position themselves more competitively in a saturated market.

Smart decision-making, informed by neuromanagement principles, also helps managers meet the challenges of globalization and digitalization in the textile sector. Globalization has opened up new opportunities for SMEs, but it has also increased competition with firms in countries with lower production costs. Neuromanagement allows managers to develop a more strategic vision, identifying market niches and competitive differentiators that allow them to stand out in an international context. Similarly, digitalization has transformed the way textile companies manage production and logistics, requiring agile and data-driven decision-making. Neuromanagement, by facilitating more efficient processing of information, helps managers to take advantage of digital tools to optimize their processes and improve operational efficiency.

Finally, it is important to highlight that adopting a neuromanagement approach to smart decision-making not only benefits managers, but also positively impacts the organization as a whole. By incorporating a neuromanagement model, SMEs can develop an organizational culture that values innovation, flexibility, and emotional intelligence. This, in turn, contributes to a more positive work environment and greater talent retention, which is crucial in an industry like textiles, which depends on the creativity and experience of its workers. Neuromanagement allows decisions to be made not only based on logic and analysis, but also with a deep understanding of the human factors that influence organizational performance.

In conclusion, the combination of neuromanagement and smart decision-making offers SMEs in the textile sector a significant advantage in their ability to adapt to market challenges. By integrating neuroscience principles into business management, managers can develop a more complete and strategic vision, optimizing decision-making in an environment characterized by volatility and global competition. The present study seeks to explore these dynamics, analyzing how the implementation of a neuromanagement model can improve the ability of managers to make informed, adaptive, and success-oriented decisions in a sector that demands constant evolution and an unwavering ability to innovate and grow.

## **2. General objective**

To generate a neuromanagement model as a strategic tool to optimize intelligent decision-making in managers of SMEs in the textile sector, contributing to the development of managerial skills that improve organizational efficiency and adaptability in volatile environments.

## **3. Methodology**

**3.1 Research Approach:** The research is framed within the positivist approach, employing a quantitative, non-experimental, cross-sectional and field design. This approach seeks a

systematic and objective understanding of the phenomena studied, allowing the measured and analyzed data collected in an accurate manner.

**3.2 Type of Research:** The research is projective, aimed at generating a practical model of neuromanagement. This implies a detailed analysis of the variables related to neuromanagement and intelligent decision-making, with the purpose of proposing a model applicable to the management of SMEs in the textile sector.

**3.3 Population and Sample:** The target population of the research is made up of managers of SMEs in the textile sector located in the town of Chapinero, Bogotá. A population census was used due to the finite size of the population, which facilitates the collection of data from all relevant subjects for the study.

**3.4 Data Collection Instrument:** A questionnaire was designed with a Likert scale, composed of 60 items that evaluate different dimensions of neuromanagement and intelligent decision-making. The questionnaire was validated by a panel of experts and its reliability was verified using Cronbach's alpha coefficient, reaching a value of 0.84, which indicates a high level of internal consistency of the instrument.

**3.5 Data Analysis:** The data collected were analyzed using inferential statistical techniques, such as analysis of variance (ANOVA), which allowed evaluating the relationship between the dimensions of neuromanagement and their influence on managers' decision-making in volatile and changing environments

## **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 sector 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 Application of neuromanagement in intelligent decision-making**

The results of the research show that the managers of SMEs in the textile sector in Bogotá have a multineurosensory profile that contributes significantly to improving the quality of their

decisions. In particular, visual and auditory perception stand out as key tools in identifying business opportunities and improving interaction with customers and work teams. Research shows that these managers are able to use visual information to optimize product design and improve the customer experience, while auditory perception helps them identify market needs through effective communication. However, tactile perception, which could be fundamental in the textile industry to evaluate the quality of materials and products, is presented as a less developed skill, which partly limits the ability of managers to make decisions based on the direct sensory experience of products.

Another relevant result is related to the application of neuromanagement in organizational learning. Research identifies that managers tend to use non-associative learning as a strategy to adapt to constant market changes. This type of learning allows them to acquire knowledge and adapt quickly to new contexts, which is crucial in a sector as dynamic as textiles. However, it was observed that, in situations where stimuli from the environment are irrelevant, managers may have difficulty discerning what information is crucial to the decision-making process. This difficulty could lead to missed opportunities for improvement or decisions that are not optimally aligned with market needs, affecting the competitiveness of SMEs.

Regarding the decision-making process in volatile environments, the research reveals that SME managers apply a systematic approach to face high uncertainty scenarios. This approach includes a careful evaluation of alternatives and a risk assessment before making a decision, which contributes to a more conscious and controlled management of complex situations. However, one of the challenges identified is anticipating critical scenarios, as managers tend to focus on immediate solutions without projecting potential long-term changes. This lack of anticipation can limit the ability of SMEs to adapt quickly to market fluctuations, which is critical in an industry exposed to demand variations and international competition.

The research also highlights the importance of the proposed neuromanagement model for the improvement of intelligent decision-making in the textile sector. The model facilitates the integration of rational and intuitive elements, allowing managers to visualize a wider range of alternatives in their decisions. Through neuromanagement, managers strike a balance between intuition and rationality, which translates into more adaptive and effective decisions in an environment of constant change. In addition, the model helps to develop a deeper understanding of how emotions and neurocognitive processes influence decision-making, providing a valuable tool to optimize organizational efficiency and improve responsiveness to market challenges.

The data obtained through the Likert questionnaire applied to managers of SMEs in the textile sector show that the implementation of neuromanagement contributes significantly to the creation of a more adaptive and resilient organizational environment. The results reflect that neuromanagement not only impacts the quality of decisions, but also strengthens leadership and team management, fundamental aspects for competitiveness in the textile industry. In particular, managers who adopt neuromanagement practices show a greater willingness to innovate and explore new business strategies, which allows them to adapt more quickly to changes in consumer trends and global market dynamics.

Overall, the research findings underscore that neuromanagement can become a strategic differentiator for SMEs in the textile sector in Bogotá. The ability to integrate knowledge of

neural processes into business management not only improves decision-making, but also promotes a more holistic approach to management, where adaptability, creativity, and strategic vision play a central role. This allows SMEs not only to survive in a highly competitive market, but also to position themselves as key players in the textile sector, improving their ability to create value and ensure long-term sustainability.

#### **4.3 Neuromanagement model as a strategic tool to optimize intelligent decision-making in managers of SMEs in the textile sector.**

The neuromanagement model proposed as a strategic tool to optimize intelligent decision-making in managers of SMEs in the textile sector is based on the integration of neurocognitive principles with adaptive management practices. This model is structured in several stages and components that seek to develop key managerial skills, improving organizational efficiency and the ability to adapt to volatile environments. Below is an outline of the model suggested for this purpose.

##### **A) Multisensory Profile Development**

**Objective:** To enhance the ability of managers to perceive and process sensory information relevant to decision-making.

##### **Components:**

- **Visual and Auditory Perception:** Train managers in interpreting market signals through visual stimuli (designs, fashion trends) and auditory stimuli (customer feedback, internal communications).
- **Tactile and Sensory Perception:** Focusing on improving sensitivity to the quality of textile materials, which helps to better evaluate products and make informed decisions about production and design.
- **Practical Application:** Conduct sensory immersion workshops so that managers can better identify product qualities and customer reactions, thus improving the new product development process.

##### **B) Integration of Intelligent Decision Making Based on Neuroscience:**

**Objective:** To improve the ability of managers to carry out an in-depth analysis of possible alternatives and scenarios in changing contexts.

##### **Components:**

- **Rational and Emotional Analysis:** Integrate decision-making methods that combine data analysis with an understanding of the influence of emotions and cognitive biases. This helps managers make more balanced and adaptive decisions.
- **Uncertainty and Risk Management:** Develop workshops to simulate volatile scenarios, where managers practice making quick and accurate decisions under pressure, minimizing the influence of uncertainty and improving risk tolerance.
- **Practical Application:** Use of technological tools such as data analysis software and market simulators to facilitate informed decision-making in real time.

### **C) Strengthening Emotional Intelligence and Adaptive Leadership**

**Objective:** To develop in managers the ability to manage their own emotions and those of their team, improving the organizational climate and productivity.

#### **Components:**

- **Emotional Self-Assessment:** Implement self-assessment programs that allow managers to identify and manage their emotions, which is crucial in decision-making under stress.
- **Empathetic and Communicative Leadership:** Train managers to understand the emotional needs of their teams, improving communication and fostering a collaborative environment. This is critical in the textile sector, where coordination between areas is essential for efficiency.
- **Practical Application:** Coaching and mentoring sessions, where managers practice leadership skills based on empathy and emotional intelligence.

### **D) Application of Neuromanagement Organizational Learning**

**Objective:** To facilitate the acquisition of new knowledge and continuous adaptation in the organization, using principles of neuroscience applied to learning.

#### **Components:**

- **Implicit and Explicit Learning:** Develop an approach that allows managers to acquire practical skills in a natural (implicit) way and technical knowledge in a deliberate (explicit) way, optimizing their ability to respond to new challenges.
- **Neuroscience-Based Continuing Education:** Create training programs that are aligned with the principles of how the brain learns, such as spaced repetition, multisensory learning, and immediate feedback.
- **Practical Application:** Continuous training programs that use virtual reality or immersive experiences for managers to learn and adapt to new management methods and market strategies.

### **E) Implementation of Neuromanagement Technology Tools**

**Objective:** To integrate technologies that support decision-making and knowledge management from a neuroscientific approach.

#### **Components:**

- **Big Data and AI Analysis:** Use artificial intelligence to analyze consumption patterns and customer preferences, allowing better prediction of trends and adjustments in textile production.

- **Collaboration and Communication Platforms:** Implement digital tools that facilitate multisensory communication between teams, allowing a more effective flow of information.
- **Practical Application:** Use of neurofeedback software to train managers in stress management and concentration during the decision-making process.

#### **F) Evaluation and Continuous Feedback of the Model**

**Objective:** To ensure that the neuromanagement model is continuously adapted to changes in the environment and to the specific needs of each SME.

##### **Components:**

- **Neuromanagement Performance Evaluation:** Establish key performance indicators (KPIs) that measure the impact of the model on decision-making and the adaptability of the company.
- **Team Feedback:** Regular meetings with the management team to discuss results and make adjustments to neuromanagement practices.
- **Practical Application:** Performance review workshops where specific cases of decision-making are analyzed and areas of improvement in the application of the model are identified.

This neuromanagement model is designed to equip managers of SMEs in the textile sector with the necessary tools to face the complexity of the modern business environment. By focusing on multineurosensory perception, balancing rationality and intuition, strengthening emotional intelligence, and integrating advanced technologies, the model seeks to improve the quality of decisions and foster an adaptable and resilient organizational culture. In this way, SMEs will not only be able to survive market challenges, but also take advantage of opportunities to grow and consolidate themselves as leaders in the sector.

#### **5. Conclusions**

The analysis of the neuromanagement model proposed for SMEs in the textile sector highlights the relevance of integrating neuroscience knowledge into decision-making and business management processes. Neuromanagement, by focusing on the neurocognitive mechanisms underlying the perception and processing of information, allows managers to develop a more complete and adaptive profile. This is especially important in the textile industry, where consumer trends change rapidly and companies must adapt to global competition and fluctuating market demands. By adopting an approach that combines rationality with intuition, managers can make more informed and balanced decisions, improving organizational effectiveness and the company's ability to respond in a timely manner to environmental challenges.

One of the main contributions of the model is its focus on the development of the multineurosensory profile, which allows managers to improve their ability to capture and process visual, auditory and tactile stimuli, essential elements in the textile industry to evaluate

the quality of materials and design products that respond to consumer expectations. This multi-sensory approach not only optimizes decision-making in product and service management, but also facilitates a better understanding of market needs and preferences. The capabilities developed through this sensory profile translate into greater precision in strategic decision-making, strengthening the competitiveness of SMEs in a sector where differentiation is key to survive and grow.

The model also highlights the importance of emotional intelligence and adaptive leadership as fundamental pillars to improve the organizational climate and the cohesion of the work team. Neuromanagement provides managers with the necessary tools to manage their own emotions and those of their employees, which contributes to better communication and a more collaborative work environment. This is crucial in the textile industry, where the interaction between the design, production and sales teams is decisive for the success of the company. Leadership based on empathy and understanding of emotional states facilitates more efficient decision-making, minimizing stress and conflicts, and generating a work environment that enhances creativity and innovation.

In addition, the integration of advanced technologies and data analysis methods into the neuromanagement model provides SMEs in the textile sector with the ability to leverage digitalization and artificial intelligence to improve operational efficiency and real-time decision-making. This technological approach allows managers to identify consumption patterns and proactively adapt to market trends, optimizing inventory management and distribution logistics. The ability to use technological tools in conjunction with a neuromanagement approach gives SMEs a significant competitive advantage, by allowing them to anticipate changes in the environment and adjust their strategies with agility, thus ensuring greater resilience in a highly competitive market.

In summary, the proposed neuromanagement model not only improves managers' ability to make smart decisions, but also promotes an organizational culture focused on adaptability and innovation. SMEs in the textile sector that adopt this approach will be better prepared to meet the challenges of the global market, benefiting from more effective management of their human and technological resources. This model provides a comprehensive framework that balances human development and technical efficiency, allowing SMEs not only to adapt to changing circumstances, but also to take advantage of opportunities to grow and consolidate their presence in the textile industry. In this way, neuromanagement is emerging as an indispensable tool for strategic leadership in an increasingly complex and challenging world.

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