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NEUROSCIENCES IN HUMAN RESOURCES MANAGEMENT AND THE DEVELOPMENT OF NEW SKILLS

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ABSTRACT

The contribution of neuroscience has transcended the scientific field and has become increasingly relevant in human resource management. This development considers, among other aspects, the critical importance of talent retention within organizations and acknowledges that the human being, referred to in business terminology as an employee, possesses an emotional filter associated with the limbic system, which can affect decision-making processes. Additionally, individuals are capable of overcoming obstacles by demonstrating resilience and even developing what is known as neuroplasticity.

Furthermore, the employee exhibits a level of social desirability, as recognition is integral to their needs. However, they may have a supervisor whose cognitive biases impair effective decision-making, potentially impacting productivity. In this context, this article aims to identify, based on contributions from 27 current bibliographic sources and through a hermeneutic analysis, key aspects and their relation to specific actions that need to be implemented in an organization focused on continuous improvement and adaptation to the rapid technological advancements.

Keyword: Neurosciences; competences; Human Resources.

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INTRODUCTION

The incorporation of neuroscience in human resources constitutes a real change of paradigm within organizations, especially among those that despite having invested high budgets and efforts to strengthen their brand, achieve even more challenging objectives, implementing policies and working systems based on mandatory fulfillment of functions, have produced a higher level of job rotation and disagreement among employees instead of their integration.

According to this, it is important to understand how the human brain works by analyzing theories such as MacLean's (1998) triune brain theory and its three functional development zones. The first zone is the reptilian zone, which is related to automatic actions and reactions. The second zone is the limbic zone, related to emotions; finally, the neocortex, consists of both right and left hemispheres related to superior abilities that humans apply (Velásquez et al., 2006).

The limbic system, constituted by the thalamus, hypothalamus, septal region, hippocampus, and amygdala, is the zone responsible for emotional response regulation (Mejía et al., 2009), especially in situations perceived as threats causing episodes of stress and fear that may affect cognition.

Niño et al. (2019) explain that animal and human experimentations have demonstrated how the increase of the stress hormone, cortisol, has an impact on memory, the learning process, information processing, and inhibitory control.

Consequently, it causes fatigue, a decrease in work performance, and a decline in the ability to maintain focus and make good decisions.
Finally, this significantly affects employee confidence and performance, as they frequently perceive their boss as a predator, similar to primitive survival periods (Falco, 2022).

Therefore, a working relationship based on fear and avoidance may result in the loss of human talent and may even trigger emotional problems in the employee, which is the complete opposite of a tolerant and mutually understanding culture. Fortunately, neuroscience has also identified that, following the amygdala's automatic response, a more comprehensive cognitive evaluation occurs, allowing a better analysis of the situation (Torras et al., 2001). It is inferred that such processes should be encouraged in the workplace to ensure that decisions reflect an improved quality.

However, it is important to clarify that the amygdala is not the only brain region involved in the fear response. This is because the assessment of what is perceived as a threat is also determined by the prefrontal cortex and the hippocampus through the ability to regulate the generated emotion and storing memories associated with the experienced emotion (Institute of Applied Neurosciences INA, 2024).

Accordingly, it is consistent to analyze the resilience capacity that employees may exhibit, which, from a neuroscience perspective, is significantly related to genetic factors and their interaction with environmental factors during critical moments of brain development.
These factors can influence how a person responds to challenging situations, which are common in human resource management. In this context, the concept of neuroplasticity arises, understood as the brain's ability to reorganize itself in terms of structure and function (neuronal connections and functional areas). Taking into account that personal experience and the learning derived from it enables adaptation under various conditions (Sanjuan, 2023).

On the other hand, employees are part of a group (or team) and require recognition from it, as proposed by Maslow (1954) in his well-known hierarchy of needs. From this, the concept of social desirability emerges, understood as the adoption of a form of response or behavior aimed at maintaining or generating a positive perception from others toward the worker. This can either serve as a reward or result in a sanction if expectations are not met (Mateu-Mollá, 2019).

In this regard, there is evidence linking social desirability to the distortion of various tests used in the workplace. As noted by Salgado (2005), he identified increases or decreases in scores by approximately 0.38 standard deviation units under selection conditions. However, a similar effect was not replicated in personality measures or job performance.

Another notable aspect of this human being, who interacts with others and requires motivation to guide them toward a goal, is the pursuit of recognition and social reward from an immediate supervisor whose decisions may not reflect the expected objectivity. Thus, Kahneman and Tversky (1973) identified that when judgments are made under conditions of uncertainty, individuals do not seem to prioritize calculations; rather, they rely on limited representations that can sometimes lead to reasonable judgments, but carry a significant risk of error. This phenomenon is known as

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cognitive bias, which influences our perception of reality and can be determined by social, cultural, ethical, or emotional motivations, among others (Braininvestigations, 2020).

It is important to note that within the diverse group of employees who require motivation, there are key individuals in the organization whose skills are crucial for its success. Consequently, one of the skills most frequently recognized is creativity. In this regard, Rendón (2012) emphasizes that attention, concentration, motivation, and memory are fundamental to creative processes. The neuropsychological perspective highlights that the prefrontal cortex is responsible for the ability to project actions aimed at achieving set objectives. In other words, this brain area brings ideas into actions.

In this context, it is evident that the employee, often deemed nearly indispensable, must manage their personal life alongside the high standards imposed by a competitive work environment. According to the consulting firm Willis Tower Watson (2021), this situation can lead to episodes of stress, which, if prolonged, would result in the release of elevated levels of cortisol. Therefore, stress tends to cause an increase in blood pressure and/or heart rate, as well as the potential reduction of the hippocampus. Ultimately, this can lead to difficulties in both memory and emotional responses that are incongruent with the environment. This is reflected in the data published by the World Health Organization (2022), which estimates that each year, 12 billion workdays are lost due to anxiety and depression among employees. This represents approximately one trillion dollars annually in lost productivity. As a result, organizations are starting to implement programs focused on mindfulness, yoga, and meditation to help the management of periods with high demands of emotional regulation within the busy work environment.

Based on the above, this literature review aims to detail some of the human characteristics linked to the neuroscience field which may be important to understand their behavior as a part of an organization. This implies that the employers would have to prepare to increase motivation strategies in a generation such as "Z" (people born between 1997 and 2012), which has implemented strategies such as job-hopping, oriented to change jobs in short periods of time, motivated mainly by the desire for new experiences (Rugerio, 2019).
Employers would also have to take into account that an employment relationship implies the acceptance of both parties. They also will have to be more demanding for the coverage of job positions in their organization, so developing new skills (or at least, influencing the continuous improvement of several key skills) will be essential to become an employable person in an increasingly competitive environment

METHODOLOGY

The aim of this research is to list some aspects properly studied by neurosciences that show a direct relationship with employee retention in organizations, considering that managing human talent and its diversity is becoming increasingly difficult and challenging.
As it was stated above, this study was conducted under a symbolic interpretive approach, using a qualitative, descriptive and non-experimental design methodology, based mainly on a documentary analysis of primary and tertiary sources that has allowed the selection of 8 articles published in open access scientific periodicals, oriented to the proper understanding of the characteristics of the triune brain, the role of the amygdala, personality and social desirability, as well as human functioning in decision-making processes. Likewise, we have identified 4 books that gather and complement information on human behavior from the neurosciences perspective, addressing Abraham Maslow's psychological model of hierarchy of needs, which is still used today.
On the other hand, considering that the search for information is oriented to relate neurosciences to human talent management, valuing the necessary skills in this increasingly competitive context. We resorted to the review of 15 bibliographic sources of internationally recognized consulting firms, as well as statistical data concerning institutions corresponding to the United Nations Organization. This data allows understanding the labor situation worldwide, serving as a reference framework to interpret what can be expected in this field in the coming years.

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DEVELOPMENT AND DISCUSSION

The neuroscientific characteristics that have been summarized in this article immediately pose several challenges in the field of human talent management, considering that one of the most important is found, no less than in the construction of trust. Therefore, Sigman (2015), highlights that although the trust system of the human being constitutes a personal act that can be conceived as a thought trace where past experiences play an important role, it is also relevant what happens in the brain's anatomical structure of the one who trusts. In this regard, he points out that accuracy of the trust system will be directly related to the number of connections in the lateral frontal cortex region known as Brodmann's area 10. Moreover, he appreciates in these cases a better organization of brain activity with structures such as the angular gyrus and the lateral frontal cortex, observing that the results indicated are linked to the relationship of the person with their internal world.

According to this, it is possible to indicate that the development of trust in the employees supposes reaching that inner world with new experiences; which should, at least, question those that do not allow them to take the risk. This also means, for the employer, an organizational development based on values and congruent leaderships between "what they say and do". The need for today's manager to have new skills arises especially in highly changing times such as these, when the leaders are faced with the development of technology and, particularly, artificial intelligence. Lukacs (2024) points out the importance of creating leadership for efficiently managing team members in a continuous learning environment. This leadership should fight against fears and/or resistance towards the new technologies and create a new culture based on ethical and transparent practices, given that the battle within organizations for hiring top-tier employees will increase. Unify Consulting (2023) highlights that this leads to developing singular human skills, such as creativity, critical thinking, emotional intelligence, and empathy, transformed valuable when moving forward in an environment of great uncertainty.

Concerning the human talent protagonism that will lead in this new scenario, Beke (2023) highlights the importance of middle management from its fundamentally operational nature, foreseeing the development of incentives such as bonuses and attractive salaries, a greater scope of their roles, a change of denomination that translates into greater recognition and responsibility, challenging assignments, and flexibility at work.

In addition to this cluster of necessary capabilities in the workplace, there are those highlighted by Rivas (2011), in an exhaustive comparative list applied to the workplace for the purposes of this article, where the following stand out: oral expression, planning, and time management, originality and innovation, perseverance, capacity to improvise, and most importantly, a great environment observation ability —also inherent to the researcher's capacities —, which will be increasingly critical to lead work teams in a reality where each of its members carries a different life story.

It should be mentioned that it will not only be the leaders who will have to develop new skills to interact in this new environment known as Industry 4.0 —which international consulting firms such as Deloitte (2018) propose as a true revolution where formal activities are combined with smart new technologies— But, it will also be fundamental that the modern employee be consistent with this paradigm shift and prepare for the new challenges it entails.

On this matter, it is important to understand that a person's skills do not necessarily endure over time as they did in the past. According to Talin (2024), a skill has an average lifespan of 6 years, and this average lifespan will likely decrease to 2.5 years by 2030, compelling those who would like to continue to be employable, to constantly update their skills, making learning an important habit.

In this context, authors such as Ismail et al. (2016) suggest that organizations will undergo radical changes in their internal dynamics. For example, the current organizational structure, based on the function assignment, will develop as a team and project system, where proactivity will be crucial for being one step ahead of the competition. Likewise, it is also expected that the current allocation of functions by managers will turn into an open and transparent condition, where employees are positioned according to their skills and where they can interact in different parallel projects according to their capabilities.

On the other hand, it is expected that the organizational culture, which is still struggling to be inclusive and sustainable, will develop collective thinking criteria and internalized shared values. Since changing organizations will also require human talent that will have to become familiar with new aspects, such as robotics, artificial intelligence, nanotechnology, and others, it will be fundamental for them to have people with highly developed soft skills, including adaptability to constant change and the capacity for self-reflection in a rapidly evolving environment (Erazo, 2021).

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Furthermore, it will be essential to develop the important concept of digital literacy, defined as a means of comprehension and interpreting in the digital world (UNESCO, 2024). It must emphasize the need for an immersion in the new business models (financial literacy), understanding science and its methodologies (scientific literacy), the capacity to learn and be aware of one's skills while seeking new strategies (learning literacy), and cultural differences related to race, gender, sexual orientation, and politics in a globalized world (cultural literacy). Lastly, proper management regarding the implications of the decisions made, while considering the universality of fundamental values (ethical literacy), is vital for adapting to more demanding conditions (Talin, 2024). In this context, it is not enough to work harder, but smarter.

CONCLUSIONS

In a constantly changing workplace full of uncertainty, it is not enough to have employees with highly specialized knowledge but with developed "soft skills". Neuroscience offers valuable insights into understanding how the brain functions in situations where past experiences play a significant role in decision-making.

Likewise, the challenge for current managers will be to develop the necessary capabilities to lead teams capable of generating synergy between people with diverse life experiences and different ways of perceiving reality. This requires leaders to personally work on certain capabilities that are currently part of scientific research, being the keen observation of the environment, a basic skill for achieving the objectives set by the organization. This being said, it is known that building trust is one of the most important challenges in human talent management. This is relevant not only at the organizational level but also at the personal level since this component is directly related to the lateral frontal cortex neural connections in charge of linking the person with their inner world.

To achieve this, current managers must develop the conditions for the application of new skills, such as providing a permanent learning environment, including a culture based on ethical and transparent practices, and, above all, showing with the example, a true coherence between what they say and do.

It also highlights the importance of middle management's fundamental operational nature, given that with the passing of time and thanks to skills and capabilities such as oral expression, time planning and management, originality, innovation, and observation, as vital for taking leadership among work teams. In this regard, it is important to consider that not only managers should adapt to modern times, but also human talent will need to develop different skills if they aim to still be hired. Strengthening those of everyday life and implementing continuous learning as a routine along with the adaptability to new business models where managing in a context of uncertainty may be needed.

Furthermore, it must be able to understand different cultures, sexual orientations, politics, and religions, as well as the different perceptions of reality in a globalized world. It must also require an ethical vision in which decisions to be made are properly analyzed following a self-reflection methodology in line with personal values but highly respecting the other who also self-develops by recognizing the importance of strategically better contributing rather than producing more, achieving the organization's goals.

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