Neuro Leadership and Human Capital: Mediation Role of Training and Development

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Abstract:

The human brain is a combination of strong and complex neurosystems. It can perform the most difficult quantum theories and, at the same time, show kindness towards a little insect. Our brain is wired through a set of networks that make us feel all the positive and negative emotions. Leadership is one of the brain's activities that influences people to act accordingly. Neuro Leadership is an advancement in the field of business that applies the behavioral model of the brain in leadership. One such model developed by David Rock, one of the pioneers in neuro leadership, is the SCARF model, which comprises five aspects: Status, Certainty, Autonomy, Relatedness, and Fairness. Human capital investment is developing an organization's human resources in all aspects to achieve both employee and organizational goals. This study aims to connect the neuro-leadership model with human capital investment aspects, i.e., physical capital, intellectual capital, and value system, taking training and development as a mediator to see the impact on employee performance. The methodology used is the general theory-building method, taking the conceptual development phase. The study's main finding is that human capital training and development can strengthen the SCARF model, resulting in increased employee satisfaction and well-being.

Keywords: *Neuro Leadership, Human Capital Investment, Employee well-being, Employee Satisfaction, Training and Development*

Introduction:

Leadership has been a much-discussed topic since its evolution. Table 1 presents the evolution of different leadership theories retrieved from *(Raza & Sikandar, 2018; Rock D. 2006)*, showing the evolution of leadership work and the contributors of different leadership theories.

S.no.	Leadership Work	Developers	Year
Trait Leadership Era			
1	The Great Man Theory Model of Leadership	Thomas Carlyle	1841
2	Trait Theory Model of Leadership	Francis Galton	1869
		Luther Lee Bernard	1926
3	Charismatic Model of Leadership	Max Webber	1922
		Robert House	1977
Behavioral Leadership Era			
4	Transactional Model of Leadership	Max Webber	1947
		James MacGregor Burns	1978
5	Iowa Studies Model of Leadership	Lewin, Lippitt, and White	1939
6	Group Leadership	Stogdill	1948

7	University of Michigan Studies Model of Leadership	Katz and Kahn	1952
8	Ohio State University Studies Model of Leadership	Halpin and Winer	1957
9	Managerial Grid Model of Leadership	Blake and Mouton	1964
Situational Leadership Era			
10	Fiedler Contingency Theory Model of Leadership	Fred Fiedler	1964
11	Servant Leadership Model	Robert K. Greenleaf	1970
12	Path-Goal Theory Model of Leadership	Robert House	1971
13	Transformational Model of Leadership	James V. Downton	1973
		James MacGregor Burns	1978
14	Situational Leadership Model	Hersey and Blanchard	1969
New Leadership Era			
15	Visionary Leadership	Marshall Sashkin	1988
16	Neuro Leadership	Daniel Goleman David Rock	2002 2006

(Table 1: Evolution of different leadership theories).

The study of the neural connections of the brain in the field of leadership gives birth to neuro leadership. According to *Lieberman et al. (2007)*, research on the brain in cognitive, social, and emotional neuroscience can provide some basic understanding of the brain that is valuable for everyday life. *Rock (2008)* labelled Neuro Leadership as "the point where management and/or leadership with neuroscience intersects." David Rock founded the brain behavior model of neuro leadership based on the approaching reward avoid threat premise. The reward approach says that when employees' efforts are recognized and rewarded, it releases Dopamine, 'The Happy Hormone.' In this way, the reward system boosts creativity and increases employee performance. The threat mechanism releases Cortisol, 'The Stress Hormone,' that reduces creativity and focus, resulting in lower employee performance.

The 'approach reward avoid threat' model, SCARF stands for *Status, Certainty, Autonomy, Relatedness, and Fairness. Status* is the position that one holds in a significant community, like a social club or professional organization, in relation to what is valued. *(David Rock, 2008). Certainty* is having an assurance of job safety and future in the organization. *Autonomy* is the freedom to do tasks without any micromanagement. *Relatedness* is a sense of belonging in the organization. The connection with coworkers and leaders is associated with Oxytocin, 'The Love Hormone'. *Fairness* can be seen in the way employees are treated in the organization. The appraisal policies, team discussion, and performance assessment parameters have a significantly favorable impact on the employees' brains, resulting in increased employee performance.

People are motivated to minimize threats and maximize rewards in these five domains. When people perceive a threat, they experience negative emotions, reduced cognitive performance, and lower engagement. When they perceive a reward, they experience positive emotions, enhanced cognitive performance, and higher engagement. SCARF model postulates that by taking SCARF assessment, people can identify their domain of threat. The leaders can work with managers to create a more productive and collaborative work environment by sending positive signals of rewards and reducing the negative signals of threats.

The evolutionary foundation of human capital was propounded by *Becker (1996)* in the literature related to economics. *Becker (2002)* defined human capital as an individual's

intellectual ability, wisdom, inventiveness, mental and physical health. "Human capital displays an intrinsic talent, which can both change or moderate itself and other inputs. This characteristic leads to the perpetual dynamism of economy" *(Menzies, 2003).* Organizations develop their human resources through different training and development programs. The investment in physical health, mental health, and moral values contributes to overall employee well-being. Human capital training and development can strengthen the leader-follower behavior and becoming an essential part of organizations. The human capital investment in all three aspects can help the organization increase employee productivity, creativity, and performance through training and development programs. The different aspects of human capital in our study are intellectual capital, physical capital, and value systems. Intellectual capital is knowledge, innovation, and creativity of human resources. Physical capital is related to external factors like health, hygiene, and well-being of employees. Value systems are the internal beliefs and morals that create ethically strong human resources.

This study will work to connect the human capital investment aspects with the neuro leadership model SCARF, showing the mediation effect of training and development programs. The principal objective of this study is to present the conceptual framework connecting neuro leadership and human capital investment with the help of theoretical background. The methodology used for the study is The General Method of Theory-Building *(Lynham, 2002; Nielsen, 2010)*, a systematic method of theory-building in the applied field. The study focused on the conceptual development phase, which is the first stage of the methodology. The findings indicate that the neuro leadership model SCARF becomes activated through the human capital investment training and development. The impact of these activated neural responses is on employee satisfaction and employee well-being.

Literature Review:

The study of neural responses of employees towards the various leadership strategies gives birth to the neuro leadership theory.

Neuro leadership uses knowledge of brain science in leadership to better understand human reaction in the areas of change management, worker engagement, and motivation and influence. *(Ghadiri et al., 2012).* The director of the Neuro Leadership Institute, David Rock first, laid out the notion of neuro leadership in his work “The neuroscience of leadership” in 2006 *(Rock &Schwartz 2006, 2010)*. *Rock (2009)* developed the concept further in his study *your brain at work*. The findings of the neuroscientific research applied to the study of leadership, Rock's main theses offer an initial foundation for creating methods and strategies to enhance management practices.

Kuhlmann & Kadgien (2018) in their work "Neuro leadership: Themes and limitations of an emerging interdisciplinary field," showed the brain and behavior relationship using transcranial magnetic stimulation (TMS) or transcranial direct-current stimulation (TDCs). The result shows that combining the brain with behavior can be useful for the organizations. *Rock (2008)* in his work “SCARF: A brain-based model for collaborating with and influencing others”, described the SCARF model as a useful leadership tool for influencing employees. *Zwaan et al., (2019)* examined the role of neuro leadership in the engagement of employees at the workplace.

Issac & Issac (2019) carried out a bibliometric study in conjunction with the morphological approach, offering a summary of the knowledge regarding the relationship between leadership research and neuroscience. The study identified 174 research gaps

existing in the area of neuro leadership with different dimensions*. Pasamar et al., (2019)* attempted to establish the relationship of leadership and organizational training, taking human capital as a mediator. *Bapna et al. (2020)* found a favorable effect of employee training and development on employee performance by using the panel data. *Imran & Atiya (2020)* analyzed the relationship between job performance and human resource capital. Additionally, they determined how human capital functions as a mediator in high-performance work contexts. *Nguyen & Duong, (2020)* found that training and development, job performance, and job satisfaction have a favorable influence on the young employee retention percentage. *Rowden & Conine (2005)* proposed that training and development can enhance job performance. *Wright & Bonett (2007)* training can result in satisfied employees who become committed to the organization, perform their duties sincerely, stay loyal and arrive at the workplace on time, engage and perform well in ethical behaviors to contribute maximum to the organization. *Yimam (2022)* conducted a case study to investigate the effect of training on employee performance in a technologically oriented educational institution.

Thus, the literature on neuroleadership, human capital, training, and development suggests that employee performance is dependent on various external and internal factors. This study tries to address some of them by applying the neuro leadership theory in an organizational setup.

Objectives of the Study:

The two most valuable resources in the world are the human brain and behavior. If both are put together to great use, it can serve humankind to a great extent. This study focuses mainly on the following objective:

1. To examine the relationship of the SCARF model and employee performance, taking human capital training and development as a mediator.
2. To build the theoretical background connecting human capital investment with the SCARF model.
3. To present the conceptual framework for further research

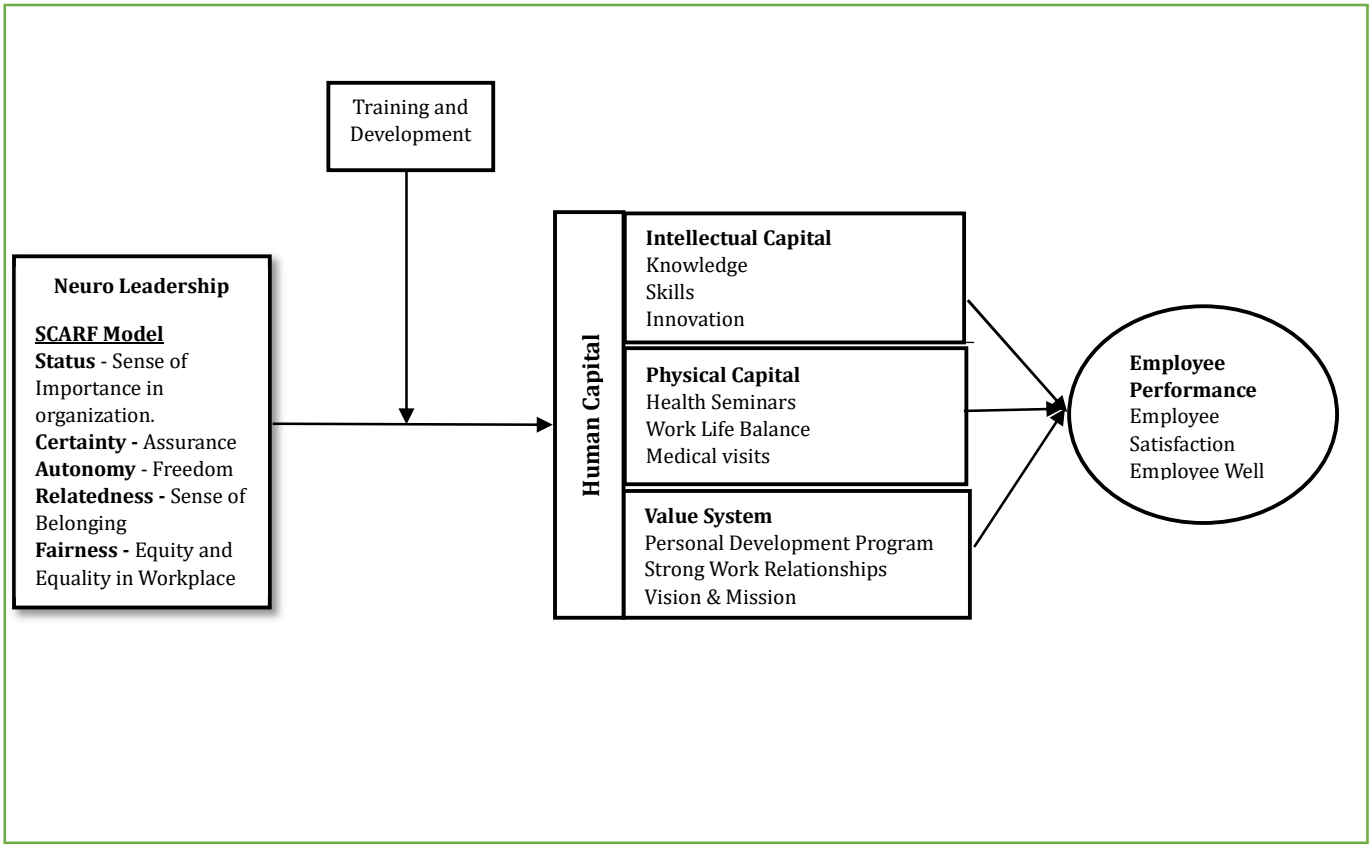
Methodology:

General Method of Theory-Building, a systematic theory-building approach for practical discipline (Lynham, 2002; Nielsen, 2010) is used here. The method has five phases. *First*, the Conceptual Development phase proposes the idea and develops a conceptual framework. *Second*, the Operationalization phase works on connecting the theory with practical context. *Third*, the Application phase works on applying the theory in an organizational setup. *Fourth*, the Confirmation or Disconfirmation phase works on accepting or rejecting the statement based on application results. In the *end*, the Continuous Refinement and Development phase works for theory adaption, improvement, and development. This study will present the first phase only, presenting the conceptual framework using theoretical background. Further studies can work on the application process to present empirical results. The study used various research articles,

review papers, and journal papers for theory building. The databases used for the research were Scopus, WOS, and Google Scholar.

Conceptual Framework:

The conceptual framework presenting human capital investment aspects with the neuro leadership model taking training and development as mediator to show the impact on employee performance is presented in Figure 1.



(Figure 1: Conceptual framework neuro leadership and employee performance)

Theoretical Explanation:

The neuro leadership model SCARF depends on the neural responses of an organization's human capital. The three broad development areas in human resources are physical capital, intellectual capital, and value system as shown in the proposed model. If the neural reactions of employees are modified through training and development, it will result in improved employee performance.

Findings:

The research paper has focused on the conceptual development phase of theory building. The conceptual framework presents the role of human capital in neuroleadership. The

research mainly focused on the impact of human capital investment on employee performance, using training and development as mediators.

The neural responses of SCARF or approach reward avoid threat model can positively affect employee performance. Neuro leadership is an advancement for organizations to achieve the potential of human capital. Humans have different emotions to fight any situation and show compassion, love, care, and humanity toward others. The feeling of being included and accepted leads us towards the service of mankind. Therefore, it is vital to train and develop the human brain to realize its neural powers and emotional intellect for the betterment of society.
By understanding and influencing the social drivers of their employees, leaders can increase the intrinsic motivation and engagement of their employees. They can reduce threats of low status by giving feedback, recognition, and opportunities for growth, thus adding rewards for existing status. They can reduce threats of low certainty by providing clear expectations, goals, and plans, thus adding reward of certainty. Threats of low autonomy can reduce by allowing choice, flexibility, and ownership, thus adding the reward of autonomy. By building trust, rapport, and belonging threat of low relatedness can reduce thus adding rewards of relatedness. Leaders can reduce threats of low fairness by ensuring transparency, equity, and justice, thus adding the reward of fairness. Similarly, by understanding their needs, followers can effectively regulate their emotions for engagement, communicate their values and make behavioral choices that fit the values they are aspiring for.

The focus of the original SCARF model is on the interventions that modify the normal functioning of the brain as a way to advance leadership. We beg to differ and propose an alternative thesis that by enhancing self-awareness and collective mindfulness about how the brain functions naturally, organizations can strengthen the leadership of each entity. There is no need for the organizations to act as a supernatural mediator in the gifts of Mother Nature.

SCARF model of neuroleadership fails to provide an integrated model and escalates the cost of mediation. We offer an alternative interpretation that connects the different neurological phenomena associated with SCARF to build a process model of SCRAF. We propose that self-awareness of the neurologically grounded model of leadership can be a natural, cost-effective tool for improved performance.

Neurologically, perceived threats to one's status initiate a fear and flight response in the amygdala and exchange and ascertained with (producing endorphin) a sense of uncertainty. To address the motivational salience of (producing dopamine) of certainty in their present experience, individuals set a goal of seeking autonomy in control and choice within social connections, moderated by the prefrontal cortex as a fight response. This process involves exogenous solutions, like brain-derived neurotrophic factors, activated through physical training and development for realizing one’s centrality as a leader who is fairest of all (producing oxytocin). The outcome of positioning oneself in the center is a sense of pleasure conceived as the reward for the subject’s hand as a leader (producing serotonin), with the anterior cingulate cortex managing the alignment of the actualized reality with the expected goal. The emotional processing of this experience by the insula generates a feeling of fairness.

In this model, the need for power is the predominating driver of leadership and reaction to the act of deficit perception in one’s power is the dominating factor. The deciding factor

is the realization that one is being taken for granted by others, leading to a decision to distance oneself as a way to establish a fair recognition for one's contributions to social exchange.

Individuals are propelled into leadership roles primarily by a desire for influence, authority, and control within their social environment. The dominant factor shaping leadership actions is the reaction to the perception of a deficit in one's power. When individuals sense that their contributions are undervalued or overlooked, it triggers a response driven by the realization of being taken for granted by others in the social context.

The pivotal moment is triggered by the perceived deficit in power recognition. Faced with the feeling of being undervalued, individuals strategically choose to distance themselves as a means to establish fair recognition for their contributions to social exchange. This distancing mechanism serves as a proactive strategy to garner acknowledgment and respect, aligning with the overarching goal of fulfilling the need for power. The decision to seek network centrality by activating physical development is a deliberate and calculated effort to regain a sense of control and influence within the social dynamics, thereby fulfilling the leadership need rooted in the pursuit of power and fairness.

The model, emphasizing the need for power and the reaction to perceived deficits in power, can be used by organizations to strengthen inclusion, diversity, engagement, and responsibility.

Inclusive leadership theories, such as the one proposed by Nembhard and Edmondson, focus on leaders actively promoting inclusion by acknowledging diverse perspectives and ensuring equitable contributions. By recognizing and addressing individuals' need for power, organizations can foster inclusive leadership practices. Leaders can actively involve employees in decision-making, acknowledging their contributions and empowering them to have a sense of control and influence.

Social Identity Theory suggests that individuals categorize themselves and others into social groups, and in-group favoritism can lead to biases. Training programs can mitigate these biases and promote a more inclusive environment. Organizations can use the model to tailor diversity and inclusion training programs that address the need for power recognition. By incorporating insights from the model, training can emphasize fair acknowledgment of contributions and provide strategies for empowering diverse voices within the organization.

Engagement theories, such as the Job Demands-Resources Model, highlight the importance of meeting employees' psychological needs for optimal engagement. The model's emphasis on autonomy and recognition aligns with engagement strategies. Organizations can design initiatives that empower employees, involve them in decision-making, and ensure fair recognition, contributing to increased engagement and commitment.

Social Exchange Theory posits that individuals engage in reciprocal relationships based on perceived benefits. When employees feel their contributions are valued, they are more likely to reciprocate with higher levels of commitment and responsibility. Organizations can leverage the model to strengthen social exchange relationships by proactively acknowledging and valuing employees' contributions. This can lead to a sense of responsibility and commitment, contributing to a positive workplace culture.

The Equity Theory emphasizes the importance of perceived fairness in determining individuals' motivation and satisfaction at work. The model's focus on aligning actualized reality with expected goals and the generation of a feeling of fairness by the insula underscores the relevance of fairness. Organizations can use this insight to design policies and practices that ensure fairness in recognition, promotion, and distribution of resources.

The model described encompasses various dimensions of human capital, including intellectual capital, physical capital, and value system.

S. No.	**Training &** Development Aspects	Impact at the Individual Level	Impact at the Organizational Level	Impact at the Community Level
1	The model can be used to provide leadership training that emphasizes understanding and managing the need for power, recognizing and addressing perceived deficits in power, and promoting fair acknowledgment and empowerment. This will have benefits at different levels:	Enhanced leadership effectiveness, improved decision-making, and a stronger sense of personal agency.	More effective leaders who inspire and empower others, contributing to a positive organizational culture.	Leaders equipped with skills to positively impact community dynamics and foster collaboration.
2	The model can also be used to develop emotional intelligence skills, particularly in recognizing and regulating emotions related to perceived threats, autonomy, and fairness. Here are the benefits of such approach	Improved self-awareness, better interpersonal relationships, and increased resilience.	Enhanced team dynamics, improved communication, and a more positive work environment.	Individuals equipped with emotional intelligence contribute to healthier community interactions.
3	The model can facilitate personal development programs that address the physical training and development aspect of the model, emphasizing brain-derived neurotrophic factor activation through physical activities. Here are the expected benefits of such facilitation	Improved physical and mental well-being, increased cognitive function, and a sense of accomplishment.	Healthier and more resilient employees, leading to increased productivity and reduced absenteeism	A community with individuals who prioritize personal development contributes to overall community well-being.
	The model can be used to implement training programs that emphasize the importance of recognizing and	Increased social awareness, improved communication,	A more inclusive workplace, improved team dynamics, and a diverse and engaged workforce.	Individuals with heightened social awareness contribute to the creation of

	addressing power differentials, and promoting inclusivity and fair recognition. The benefits will be as follows	and a sense of belonging.		inclusive and supportive communities
	The model can be used to design training that highlights the significance of fairness, aligning actualized reality with expected goals, and understanding the role of the insula in generating feelings of fairness. The benefits will be as follows.	Increased perception of fairness, improved satisfaction, and a sense of justice	Enhanced trust, reduced conflicts, and a positive organizational culture	Individuals equipped with a sense of fairness contribute to community cohesion and harmony

The described model, rooted in the perception of threats and rewards, provides a nuanced understanding of human behavior. When threats to one's status trigger fear and flight responses in the amygdala, resulting in decreased certainty, individuals respond by establishing a goal to attain autonomy, controlled by the prefrontal cortex. This dynamic process involves the utilization of exogenous solutions, including brain-derived neurotrophic factor activated through physical training and development, to assert oneself as a leader in the central position.

Conclusion and Implications:

The brain is a great treasure for human beings. The human brain has the power of thoughts that can change the world if used wisely. Proper brain training can help reach the potential heights of success in any organization. The study on neuro leadership leads towards a better and secure future that gives importance to the mental well-being of employees. This study tried to present the conceptual development of neuro leadership with human capital taking training and development as a mediator. The study concludes that human capital training and development can foster the SCARF model, resulting in a significantly positive impact on employee satisfaction and employee well-being.

In this framework, the need for power emerges as the primary driver of leadership. Individuals react strongly to perceived deficits in power, catalyzing a decision-making process centered on the awareness of being undervalued by others in social exchanges. The deciding factor is the recognition that one's contributions are not adequately acknowledged, prompting individuals to distance themselves strategically. This distancing is seen as a means to secure fair recognition for their contributions within social dynamics.

The described model's awareness can help individuals be more productive in creating social, human, ecological, economic, national, and psychological values through self-leadership. Empowering individuals to seek autonomy aligns with the Self-Determination Theory principles, fostering intrinsic motivation and productivity. This autonomy

contributes to the creation of positive social and human values. The model's emphasis on fair recognition resonates with the social exchange principles of the Social Exchange Theory, fostering positive reciprocal relationships and contributing to the creation of social and human values. The interconnectedness emphasized in the model also aligns with ecological systems theory, contributing to the creation of ecological, human, and social values through enhanced awareness and development within these systems.

The model's focus on physical and intellectual capital corresponds with human capital theory, contributing to economic development and the creation of economic values. Enhancing intellectual development and innovation aligns with National Innovation Systems goals, contributing to economic and national values through improved decision-making and leadership capabilities.

Finally, the model's emphasis on well-being, autonomy, and relatedness aligns with positive psychology principles, contributing to positive psychological values such as fulfillment and purpose.

The practical implication of this study will be in designing the training and development programs in such a way that it develops the SCARF model in employees. The managerial implication of the study is to develop the organization's culture in a way that creates positive neural responses in employees. A positive workplace will help achieve both employee and organizational goals. The empirical findings can help validate the theory that will help in applying the brain-based model for achieving employee performance. Implementing neuro leadership can save the cost of employee turnover, strikes, and low performance. Thus, the study will focus on its further phases to achieve the desired outcomes.

Limitations and Future Scope:

The methodology used is the General Method of Theory Building, comprising five phases mentioned in the methodology. This research worked on the first phase of the method. Thus, it is limited by the empirical evidence to validate the theory. Future work should be carried to the other phases of the methodology. The gap of this study can be filled with the empirical testing and application of the theory.

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