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The Moderating Role of Neuroleadership on the Effect of Emotional Intelligence and Transformational Leadership on Employee Performance at Mutiara Sukma Psychiatric Hospital, West Nusa Tenggara, Indonesia

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Abstract. This study examines the moderating role of neuroleadership on the effect of emotional intelligence and transformational leadership on employee performance. This type of research is a causal associative research with a quantitative approach. The researchers used the quota sampling technique to select 112 respondents from the total population of 448 employees at the Mutiara Sukma Psychiatric Hospital in West Nusa Tenggara. Data analysis used the PLS-SEM technique with Smart PLS 4 software. The results showed that:

- 1) Emotional intelligence had a significant positive effect on employee performance;
- 2) transformational leadership had a significant positive effect on employee performance;
- 3) Neuroleadership can strengthen the effect of emotional intelligence on employee performance;
- 4) Neuroleadership strengthens the effect of transformational leadership on employee performance.

The results of this study can be a reference and consideration for companies in applying applied neuroscience in the context of effective leadership for organisations.

Keywords: Neuroleadership; Emotional Intelligence; Transformational Leadership; Employee Performance.

INTRODUCTION

Human resources are an essential part of an organisation. The quality and ability of human resources are the factors driving the company's running authors [1]. Employees are the principal capital for organisations to achieve their goals, so organisational leaders should consider employee performance by the authors [1]. Employee performance is the level of success in carrying out tasks and the ability to achieve predetermined goals [2]. Several factors can influence employee performance, including individual ability, motivation, organisational support, effort expended, and opportunities held by authors [3–6]. Further stated by the authors [6], other factors that are also important to employee performance are individual factors such as abilities, skills, background, and demographics, psychological factors such as perception, attitude, personality,

and learning, as well as organisational factors such as leadership, rewards, organisational structure, job design.

Critical abilities that human resources must possess in a company are internal abilities such as intellectual Intelligence, creativity, emotional Intelligence, and spiritual intelligence [7]. Emotional intelligence is one of the abilities that has the most significant influence on success in doing work [8]. However, a study said that the emotional intelligence of most human resources in Indonesia is feeble and is one of the causes of the poor quality of human resources [9].

Emotional intelligence is a person's ability to regulate emotions and maintain emotional harmony and expression through self-awareness, self-control, self-motivation, self-empathy, and fostering relationships (cooperation) with others [8]. Individuals who have a good level of

emotional intelligence have more experience in solving a problem on their own [10]. Research by [11] shows that emotional intelligence positively and significantly affects employee performance. At the same time, the research results conducted by [12] show that the influence obtained from Emotional intelligence affects employee performance indirectly through the mediating variable of transformational leadership. However, different results obtained in research by authors [13, 14] showed that emotional intelligence did not significantly affect employee performance.

In addition, transformational leadership is another factor that affects employee performance, which pays more attention to charismatic and affective elements of leadership [15]. With transformational leadership, leadership can motivate, mobilise, and realise the capacity to always be agile in every situation [16]. Leaders are tasked with managing organisational resources and developing and implementing essential strategies for a brighter future for their organisations, thus leading to improved performance and results.

A recent study shows that transformational leadership substantially positively impacts organisations, work engagement, organisational commitment, work performance, and job satisfaction. Previous research shows a significant favourable influence between transformational leadership and employee performance. Their research [17] found that transformational leadership negatively influences performance.

Previous studies show inconsistencies in research results on the influence of emotional intelligence and transformational leadership on employee performance; this indicates that other variables contribute to the relationship, including neuroleadership. Advances in neuroscience techniques and methodologies may serve to revolutionise the field of leadership by helping to answer new and more complex questions about effective leadership processes [18].

Neuroleadership refers to applying neuroscience findings to leadership by analysing how the brain can influence leadership abilities. It specifically focuses on how individuals make decisions, solve problems, regulate their emotions, collaborate with and influence others, and facilitate change in social environments. By better understanding the mechanisms of neuroscience in controlling our actions and how we think, leaders can use this to

improve employee productivity. A survey by authors [19] highlights studies on the implications of neuroleadership in leadership. The study explains that neuroleadership generally conceptualises the application of neuroscience to leadership.

Research on employee performance and the factors that influence it is essential because employees' ability reflects their performance, and employee performance is the principal capital for the organisation to achieve its goals. So, the researchers conducted research at the Mutiara Sukma Psychiatric Hospital, which is the only Psychiatric hospital in West Nusa Tenggara and is the primary referral place for the people of West Nusa Tenggara so that the hospital needs to improve the quality and satisfaction of its human resources to be able to provide the best service to its patients.

Based on the phenomenon and research gap above, researchers are interested in researching the influence of emotional intelligence and transformational leadership on employee performance moderated by Neuroleadership on employees at Mutiara Sukma Psychiatric Hospital in West Nusa Tenggara.

METHODS

This study used a quantitative approach. The type of research used in this study is Causal Research, which intends to determine the influence between independent variables. The researchers surveyed 112 Mutiara Sukma Psychiatric Hospital employees, selecting them with a simple random sampling technique. The researchers distributed the questionnaire to all respondents and then analysed the collected data using the SEM PLS method.

The characteristics of respondents in this study were 48 male employees (42.86%) and 64 female employees (57.14%). The number of respondents under the age of 30 years was 15 people (13.39%), the age range of 30–40 years was 45 people (40.18%), and the age of more than 40 years was 52 people (46.43%). Meanwhile, the respondent's educational background varies from a Diploma (D3) to a master's degree. The number of respondents with D3 education was 36 people (32.14%), a bachelor was 62 people (55.36%), and master's degree education was 14 people (12.50%). Meanwhile, the working period varies from less than one year of service to more than ten

years. Respondents with a working period of 1–5 years for as many as 19 people (16.96%), 6–10 years of work for as many as 40 people (35.71%), and a working period of more than 10 years as many as 53 people (47.32%). Most of the respondents in this study had a working period of more than ten years.

RESULTS AND DISCUSSION

The data in this study was analysed using the PLS-SEM method, which consisted of measurement models and structural model tests. The outer model is measured by evaluating the values of loading factor, composite reliability, Cronbach's alpha, AVE value, and discriminant validity. The cut-off value for the loading factor commonly used to measure convergent validity is ≥ 0.5 , with an average variance extracted (AVE) value of about 0.5 or above authors [20].

Table 1 – Correlation value (outer loading) and AVE

	Outer Loading	AVE
Emotional Intelligence (X1)		
x1.1	0,849	0,645
x1.2	0,840	
x1.3	0,885	
x1.4	0,746	
x1.5	0,713	
x1.6	0,709	
x1.7	0,737	
x1.8	0,802	
x1.9	0,767	
x1.10	0,820	
x1.11	0,771	
x1.12	0,832	
x1.13	0,773	
x1.14	0,879	
x1.15	0,888	
Transformational Leadership (X2)		
x2.1	0,830	0,642
x2.2	0,812	
x2.3	0,755	
x2.4	0,826	
x2.5	0,769	
x2.6	0,778	
x2.7	0,829	
x2.8	0,799	
x2.9	0,795	
x2.10	0,798	
x2.11	0,805	

	Outer Loading	AVE
x2.12	0,819	
Neuroleadership (Z)		
z1	0,813	0,639
z2	0,820	
z3	0,750	
z4	0,775	
z5	0,727	
z6	0,776	
z7	0,722	
z8	0,724	
z9	0,795	
z10	0,789	
z11	0,780	
z12	0,837	
z13	0,773	
z14	0,811	
z15	0,856	
z16	0,875	
z17	0,859	
z18	0,881	
Employee Performance (Y)		
y1	0,730	0,541
y2	0,742	
y3	0,796	
y4	0,819	
y5	0,712	
y6	0,724	
y7	0,748	
y8	0,691	
y9	0,673	
y10	0,728	
y11	0,763	
y12	0,689	

Based on the table, it can be seen that all measurement items on each variable are emotional intelligence (X1), transformational leadership (X2), and neuroscience of leadership. (Z) and Performance (Y) variables show an outer loading value of > 0.5 , so this shows that all indicators are valid. In addition, the AVE value of all research variables is more than 0.5, which means that the magnitude of variation in all items contained by this research variable meets the requirements of good convergent validity. In addition, the researchers conducted reliability tests and presented the results in Table 2.

Based on the table, the value of Cronbach's alpha and Composite Reliability of all research variables is more than 0.7, indicating that the reliability

level is accepted. So overall, the variables in this study, namely Emotional Intelligence, Transformational Leadership, NeuroLeadership, and Employee Performance, are reliable.

Table 2 – Results of the Reliability Test

Variable	Cronbach's alpha	Composite reliability
X1	0,961	0,972
Z	0,967	0,969
Y	0,923	0,928
X2	0,949	0,952

Meanwhile, researchers test the structural model to determine the coefficient of determination (R^2), which measures how well the model explains variations of independent variables and tests the study's hypotheses. According to [21], the R^2 value of 0.67 is in the strong category, 0.33 in the moderate category, and 0.19 in the weak category. Here, the R^2 value of this study is 0.387.

This shows that the magnitude of the influence of Emotional Intelligence and Transformational Leadership on Performance is 38.7%, which is included in the moderate category. Hypothesis testing is then done through a bootstrapping process (percentile method) to see if the independent variable influences the dependent variable by comparing the t count with the t table. If t counts / statistics > t table, the independent variables affect the non-free variables individually. Or, based on the probability of significance more minor than 0.05 (α) seen from the p-value, the independent variable individually affects the dependent variable. The test results are shown in Figure 1 and Table 4.

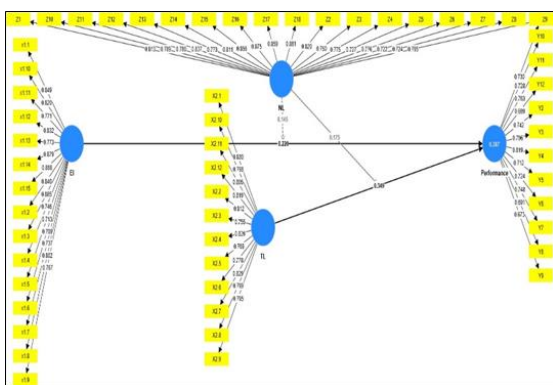


Figure 1 – Path Coefficient

Table 3 – Path Coefficient (Inner Model)

Relationship between variables	Original sample (O)	T-statistics	P-values
EI -> Performance	0,220	2,406	0,016
TL -> Performance	0,349	4,027	0,000
NL x EI -> Performance	0,145	2,011	0,044
NL x TL -> Performance	0,175	2,091	0,037

Based on the figure and table above, the relationship between variables can be explained as follows:

1) Emotional intelligence significantly positively affects employee performance with a coefficient value of 0.220, a statistical t value of 2.406 > 1.96, and a P value of 0.016 < 0.05. So, hypothesis 1 (H1) is accepted. Based on the respondents' answers, the Emotional Intelligence at Mutiara Sukma Psychiatric Hospital is classified as good. High emotional intelligence possessed by employees will provide comfort at work and increase productivity in Mutiara Sukma Psychiatric Hospital; this is because the respondents' answers show high emotional intelligence, while the answers from self-awareness, self-regulation, motivation, empathy, and social skills are high; this is in line with the theory of mixed model of emotional intelligence according to the authors [8]; this theory emphasises that emotional intelligence can significantly affect employee productivity. The ability to manage emotions and respond appropriately to the feelings of others can help employees cope with stress and deal with challenges on the job. In addition, the ability to interact and communicate with others effectively can improve collaboration and cooperation in the team and will ultimately improve employee performance at Mutiara Sukma Psychiatric Hospital.

The results of this study are the results of research conducted by [11], which shows that emotional intelligence has a positive and significant effect on employee performance, likewise with the research of [12], which shows that the influence obtained from Emotional Intelligence on employee performance is not obtained directly but is influenced by mediating variables, namely Transformational leadership. The results of this study show that it is essential for management to pay attention to employees' emotional

intelligence to improve employee performance, which will ultimately improve the organisation's overall performance. However, the results of this study do not match the research conducted by [13, 14], which shows that emotional intelligence does not significantly affect employee performance.

2) Transformational leadership has a significant positive effect on employee performance with a coefficient value of 0.349, a statistical t value of $4.027 > 1.96$, and a P value of $0.000 < 0.05$. So, hypothesis 2 (H2) is accepted. The high transformational leadership possessed by employees will cause comfort in working and improve employee performance at Mutiara Sukma Psychiatric Hospital; this is because respondents' answers show effective transformational leadership, whereas answers from Idealised Influence, Inspirational Motivation, Intellectual Stimulation, and Individual Consideration show high value; this is about the theory of social exchange by George Homans (1958). This theory states that employees who feel treated fairly and respected by leaders are likelier to improve their performance. In exchange for good employee performance, transformational leaders can reward them in many forms, such as recognition, rewards, promotions, or financial incentives. Employees who receive those awards or benefits feel cared for, valued, and recognised for their contributions, thus increasing their motivation and performance.

However, social exchange theory also emphasises that social relations will continue if there is a mutually beneficial exchange between parties. Therefore, transformational leaders also need to consider the balance between rewarding and obtaining the results expected of employees. Suppose employees feel that leaders are not fulfilling promises or providing rewards that are not proportional to their performance. According to Homans' theory, damaged social relations can threaten the organisation's activities.

The results of this study are the results of research conducted by [22], which shows a positive and significant influence between transformational leadership and employee performance. [23] shows that transformational leadership has a positive and insignificant effect on employee performance but has a considerable positive impact with motivational intervening variables.

However, this study's results are not from the research conducted by [17], which shows that transformational leadership negatively influences performance. At the same time, the research results by [24] found that transformational leadership does not affect performance.

3) NeuroLeadership moderates the influence of Emotional Intelligence on Employee Performance with a coefficient value of 0.145, a statistical t-value of $2.011 > 1.96$, and a P value of $0.044 < 0.05$. So, hypothesis 3 (H3) is accepted. Studies on neuroleadership and emotional intelligence show that neuroleadership can moderate the influence of emotional intelligence on employee performance. Respondents' answers indicate effective neuroleadership, as evidenced by their responses to items such as status, certainty, autonomy, relatedness, and fairness.

Status is about relative importance to others. One's sense of status increases when one feels 'better than' another person. In this instance, the primary reward circuitry is activated, particularly the striatum, which increases dopamine levels. One study showed that an increase in status was similar in strength to a financial windfall [25]. Also, a reduced status resulting from being left out of an activity lit up the same brain regions as physical pain [26]. Before an emotional event occurs, SCARF enables leaders to predict an action's impact on employees. Increasing certainty is perceived as rewarding and increases activation in reward neural circuitry (e.g., ventral striatum). Although previous research has shown that unexpected rewards increase activation in reward-related brain regions more than expected rewards, receiving information about an upcoming reward also activates these regions. Dopamine neurons in monkeys have been shown to fire during the expectation of a reward and the expectation of details about that reward [27]. Conversely, increased ambiguity or uncertainty decreases the activation of reward circuits and threat neural circuitry (e.g., the amygdala) [28].

Autonomy. The neural correlates of being motivated to do something because of intrinsic motivation and choosing to do it (autonomy), compared with being motivated by extrinsic factors such as incentives. Intrinsically, instead of extrinsically, motivated behaviours activate the anterior insula, which integrates information about internal bodily states and emotional evaluations. This insula activation was highly correlated with perceived autonomy and

satisfaction people reported experiencing [29]. Extrinsic motivations, such as performance-based monetary incentives, have been shown to reduce intrinsic motivation to perform a task, which is associated with decreased activation in the striatum and prefrontal cortex [30]. These findings have specific implications for the workplace; leaders should be able to increase the satisfaction of individuals with a relatively powerless or low-level job by giving them a more excellent perception of choice, thereby increasing autonomy. Employees with greater autonomy reported greater job satisfaction and reduced anxiety [31].

Relatedness. Providing minimal social links to another person or group increases motivation and performance [32]. Oxytocin, a neuropeptide involved in social cognition and behaviour in mammals, increases relatedness. It has been shown to reduce social stress, reduce amygdala activation, improve social and emotional information processing, and increase attachment and empathy toward others [33].

Fairness. Recent research has also shown that the amygdala is activated when rejecting these unfair offers [34]. Even when fair and inequitable offers are made equally valuable (i.e., equating their monetary value), people are happier to receive fair offers than unfair ones, and receiving fair compared to unfair offers activates reward regions in the brain [35].

4) Neuroleadership is a leadership approach that focuses on how the brain works and how decisions are made. Neuroleadership can also help employees develop emotional intelligence, positively affecting their performance. However, the influence of emotional intelligence on employee performance can be influenced by other factors, such as personality, situation, and work environment. Therefore, neuro leadership can amplify emotional intelligence's influence on employee performance by helping employees manage pressure and stress, improve their decision-making abilities, and improve team collaboration and communication.

NeuroLeadership moderates the influence of Transformational Leadership on Employee Performance with a coefficient value of 0.175, a statistical t-value of $2.091 > 1.96$, and a P value of $0.037 < 0.05$. So, hypothesis 4 (H4) is accepted.

Transformational leadership, as explained earlier, is very influential on Employee Performance.

Transformational leadership and neuroleadership are two interrelated leadership concepts. Transformational leadership focuses on developing relationships between leaders and followers to increase employee motivation, performance, and job satisfaction. Meanwhile, neuroleadership is a leadership approach based on understanding brain function and neuroscience principles to improve individual and organisational performance.

The results showed that transformational leadership has a significant favourable influence on employee performance. This can happen because transformational leadership motivates employees to make changes and innovate, increases confidence, and increases organisational engagement and commitment. In this case, transformational leaders can change employees' values, attitudes, and behaviours to make them better and more positive. Meanwhile, neuroleadership can amplify the positive influence of transformational leadership on employee performance. In this case, neuroleadership leaders can use neuroscience principles to improve the effectiveness of their leadership strategies.

Further, neuroleadership leaders can use neuroscience principles to increase employee engagement by providing effective feedback and developing strong social bonds among employees. Neuroleadership leaders can also use neuroscience principles to increase employee motivation by providing appropriate challenges and practical rewards. Using these neuroscience principles, neuroleadership leaders can amplify the positive influence of transformational leadership on employee performance. Thus, employees will be more motivated and engaged, improving their performance.

CONCLUSIONS

The researchers draw several conclusions from this study based on the research results and discussion described above. First, Emotional Intelligence significantly positively affects Employee Performance at Mutiara Sukma Psychiatric Hospital; this means that if higher emotional intelligence occurs at the Mutiara Sukma Psychiatric Hospital, it will further improve employee performance. Second, transformational leadership significantly positively affects employee performance at Mutiara Sukma Psychiatric Hospital; this means

that the more influential the transformational leadership at Mutiara Sukma Psychiatric Hospital is, the higher the performance of employees will be. Third, Neuroleadership strengthens the influence of Emotional Intelligence on Employee Performance at Mutiara Sukma Psychiatric Hospital; this means that leaders with effective neuroleaders will enhance the influence of emotional intelligence on employee performance so that employee performance at Mutiara Sukma

Psychiatric Hospital will increase. Lastly, Neuroleadership strengthens the impact of Transformational Leadership on Employee Performance at Mutiara Sukma Psychiatric Hospital; this means that a leader with effective neuro-leadership will enhance the influence of transformational leadership on employee performance so that employee performance at Mutiara Sukma Psychiatric Hospital will increase.

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