

The Effect of Inclusive Leadership on Work Engagement: The Mediating Roles of Psychological Safety and Workplace Stress in an Electronics Manufacturing Industry

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Abstract

The research investigated the effect of Inclusive Leadership (IL) on Work Engagement (WE) in electronics manufacturing company, focusing on the mediating roles of Psychological Safety (PS) and Perceived Workplace Stress (PWS). Findings revealed that inclusive leadership has a strong positive effect on engagement, both directly and indirectly by reducing stress in the workplace. While inclusive leaders were effective in improving psychological safety, this factor did not significantly contribute to engagement in the studied environment, suggesting that stress reduction plays a more critical role than psychological openness in structured, high-pressure industries. The final model demonstrated high explanatory strength, showing that a large portion of engagement outcomes can be attributed to leadership behaviors and stress levels. These results reinforce the Conservation of Resources (COR) Theory, emphasizing that preserving employee energy through stress mitigation is key to sustaining motivation. The study offers practical insights for improving employee performance and well-being through leadership strategies that target workplace stress, contributing to global goals on decent work and mental health.

Keywords: Inclusive Leadership, Work Engagement, Psychological Safety, Workplace Stress, Structural Equation Modeling, Electronics Manufacturing

1. Introduction

1.1 Background of the Study

The Employee engagement is widely recognized as a crucial factor that drives productivity, innovation, and organizational commitment. In performance-critical industries like electronics manufacturing, engaged employees contribute to improved efficiency, quality, and responsiveness to market demands (Vakira et al., 2023; Mao & Tian, 2022). High engagement levels have been linked with reduced absenteeism, stronger work ethic, and better organizational citizenship behavior (Budriene & Diskiene, 2020, as cited in Mao & Tian, 2022). Moreover, Johnson (2021) highlights that engaged employees are more psychologically invested in their roles and are more likely to exhibit adaptive performance in complex work environments. Conversely, disengagement is associated with higher turnover, workplace tension, and diminished morale, undermining organizational goals (Shoko & Zinyemba, 2014, as cited in Vakira et al., 2023). These outcomes affirm the growing strategic imperative for organizations to foster employee engagement as a pathway to sustainable success.

Leadership plays a pivotal role in shaping employee attitudes and behaviors. Among emerging leadership paradigms, inclusive leadership—characterized by openness, availability, and support—has shown

strong potential in building trust and fostering participation among employees (Vakira et al., 2023). Inclusive leaders actively seek input, value diverse perspectives, and encourage employee involvement in decision-making, thereby enhancing engagement and morale (Johnson, 2021; Jaimes-Colina, 2023). According to Donaldson (2024), inclusive leadership bridges the gap between leader and follower by emphasizing relational transparency and psychological safety. These behaviors have been observed to create an environment of mutual respect and psychological empowerment, especially in hierarchical or high-demand workplaces like manufacturing (Thanh et al., 2022). Shereni et al. (2023) add that inclusive leaders also act as buffers against organizational stressors by modeling supportive and human-centered leadership behaviors.

Work engagement is defined as a positive, fulfilling psychological state characterized by vigor, dedication, and absorption in work (Mao & Tian, 2022). Engaged employees demonstrate enthusiasm, mental resilience, and a strong identification with their roles, which promotes both individual performance and organizational effectiveness (Johnson, 2021; Thanh et al., 2022). Jaimes-Colina (2023) notes that leadership styles—especially those anchored in empowerment and inclusion—have a strong influence on engagement levels by creating meaning and emotional alignment with work. Johnson (2021) further elaborates that engagement is enhanced when employees perceive that their leaders support their growth and align with their values. Studies on leadership-engagement dynamics within manufacturing and service sectors have consistently shown that inclusive, servant, and authentic leadership styles enhance employee engagement, particularly when mediated by interpersonal or psychological factors (Vakira et al., 2023; Godby, 2023).

Psychological safety refers to an individual's perception that the workplace is safe for interpersonal risk-taking—where one can express ideas, ask questions, or report problems without fear of negative consequences (Edmondson as cited in Donaldson, 2024). This construct is increasingly regarded as a key mechanism that links leadership behaviors to team performance and employee engagement (Mao & Tian, 2022; Johnson, 2021). Vakira et al. (2023) demonstrate that inclusive leadership behaviors—such as listening, fairness, and accessibility—are predictive of psychological safety, which in turn supports proactive work behavior. Donaldson (2024) emphasizes that psychological safety promotes knowledge-sharing and voice behavior, especially in operational environments where error-reporting and collaboration are vital. Moreover, Johnson (2021) found that psychological safety partially mediates the relationship between leadership and engagement by enabling employees to feel respected, protected, and emotionally secure in their roles.

Perceived workplace stress is the experience of psychological strain arising from excessive demands, role conflict, or a lack of autonomy at work (Thanh et al., 2022). High levels of stress are known to impair focus, reduce motivation, and negatively impact engagement and productivity (Miller, 2022; Donaldson, 2024). In manufacturing, stress often stems from time pressure, rigid work cycles, and strict quality standards. Jaimes-Colina (2023) observed that when employees perceive leadership as unsupportive or detached, stress levels increase and engagement deteriorates. However, supportive leadership can act as a buffer—reducing stress and preserving engagement by promoting fairness, consistency, and emotional support (Vakira et al., 2023; Johnson, 2021). Shereni et al. (2023) confirm that inclusive leaders are particularly effective in reducing perceived stress through clear communication, empathy, and inclusive decision-making practices.

This study aims to investigate the dual mediating roles of psychological safety (positive mediator) and perceived workplace stress (negative mediator) in the relationship between inclusive leadership and work engagement within the electronics manufacturing industry. While past research has independently shown that psychological safety facilitates engagement and that stress undermines it (Johnson, 2021; Mao & Tian, 2022), few studies have examined how these two mechanisms interact simultaneously under inclusive leadership. This

is especially underexplored in high-pressure manufacturing contexts where leadership style can either mitigate or magnify engagement-related outcomes (Shereni et al., 2023; Donaldson, 2024). The conceptual foundation for this study is primarily based on the integrative leadership-engagement model of Burr-Verros (2024) and the dual-path mediation model of Vakira et al. (2023), both of which emphasize leadership's power to activate (or hinder) key psychological processes. By exploring both mediators in one framework, the study addresses a critical gap and aims to offer practical insights for engagement strategies in complex industrial environments.

Employee engagement is increasingly under threat in high-demand industries such as manufacturing, where repetitive tasks, rigid schedules, and operational pressures contribute to rising levels of psychological strain and disengagement (Shereni et al., 2023; Jaimes-Colina, 2023). In such structured environments, traditional leadership approaches may fall short of addressing employees' psychological needs, especially when job stressors remain unresolved. Donaldson (2024) notes that even when psychological safety is present, engagement may not improve unless leaders also manage workload expectations and emotional demands. This mismatch between leadership behaviors and employee experience is further complicated by the fact that many organizational strategies prioritize productivity over well-being. The result is a growing concern over how to effectively balance employee engagement with operational performance in environments where stress is normalized and voice behaviors are constrained (Thanh et al., 2022). These recurring challenges raise important questions about which leadership mechanisms—stress reduction or psychological safety—are more effective in sustaining engagement in task-intensive work settings.

On a broader scale, employee engagement remains a global organizational challenge. According to Gallup (2023), only 20% of employees are actively engaged at work, while 63% are disengaged and 24% are actively disengaged—leading to an estimated \$7.8 trillion in lost productivity annually. Disengagement is linked to absenteeism, reduced output, and higher turnover, all of which erode operational effectiveness and increase business costs. Leadership has consistently been identified as a key determinant of engagement, with inclusive and transformational leadership styles demonstrating strong positive effects on motivation, commitment, and team cohesion (Miller, 2022; Davis, 2023; Thanh et al., 2022). Additionally, psychological safety has emerged as a pivotal factor in sustaining engagement. When employees feel safe to voice opinions, raise concerns, and take risks without fear of negative repercussions, they are more likely to be proactive, resilient, and engaged (Edmondson as cited in Donaldson, 2024; Mao & Tian, 2022; Johnson, 2021). By exploring these leadership and psychological mechanisms, this study contributes to the growing body of research that seeks to bridge the engagement gap in modern organizations.

Furthermore, the study supports the goals of the United Nations' Sustainable Development Goals (SDGs)—particularly SDG 8: Decent Work and Economic Growth and SDG 3: Good Health and Well-being. By examining how inclusive leadership influences work engagement through psychological safety and perceived workplace stress, this research promotes the development of work environments that prioritize employee well-being, autonomy, and productivity. A psychologically safe workplace cultivates a culture where employees feel respected, involved, and emotionally secure—leading to lower stress levels, reduced burnout, and improved mental health outcomes. These factors are integral to SDG 3. At the same time, engaged employees contribute more sustainably and creatively to their organizations, fulfilling the objectives of SDG 8. As industries increasingly seek to balance business performance with employee welfare, this study offers timely and actionable insights into leadership strategies that support both organizational growth and workforce sustainability.

Inclusive Leadership and Psychological Safety. Inclusive leadership is characterized by openness, availability, and accessibility, which significantly enhance psychological safety in the workplace (Vakira et al., 2023). Leaders who practice inclusivity create a sense of belonging among employees, allowing them to share ideas and express concerns without fear of negative consequences (Edmondson as cited in Donaldson, 2024). Psychological safety is a critical factor in workplace engagement, as it fosters open communication and collaboration (Mao & Tian, 2022). Studies have shown that inclusive leadership positively influences psychological safety, leading to higher levels of employee confidence and job satisfaction. Mao and Tian (2022) emphasize that employees who feel psychologically safe are more likely to take initiative and contribute to workplace innovation. Furthermore, Johnson (2021) found that psychological safety mediates the relationship between inclusive leadership and employee well-being, suggesting that leaders who encourage participation and diversity create environments where employees thrive. In the hospitality industry, leaders who actively engage employees and provide support enhance psychological safety, which in turn fosters higher engagement and productivity (Vakira et al., 2023). This trend is also observed in the electronics manufacturing industry, where inclusive leadership contributes to a psychologically safe environment, reducing job-related stress and turnover (Jaimes-Colina, 2023).

Psychological Safety and Work Engagement. Psychological safety is a key determinant of employee engagement, influencing motivation, commitment, and job performance (Davis, 2023). When employees perceive their workplace as psychologically safe, they are more willing to take risks, voice concerns, and actively participate in organizational initiatives (Mao & Tian, 2022). Edmondson as cited in Donaldson (2024) first introduced psychological safety as an essential component of team learning and innovation, emphasizing that employees who feel secure are more engaged in their roles. A study by Jaimes-Colina (2023) found that psychological safety mediates the relationship between leadership styles and engagement, particularly in high-pressure industries where employees face performance-related stress. Similarly, Thanh et al. (2022) demonstrated that in the public sector, psychological safety is a crucial factor in sustaining employee engagement, as it allows employees to contribute freely to decision-making processes. Furthermore, empirical research highlights that psychological safety fosters higher levels of engagement by encouraging open communication and reducing workplace anxiety (Miller, 2022). Employees who feel safe at work exhibit greater enthusiasm and job dedication, leading to improved performance outcomes (Jaimes-Colina, 2023). This finding is particularly relevant in manufacturing settings, where repetitive tasks and high work pressures can negatively impact engagement levels.

Inclusive Leadership and Workplace Stress. Inclusive leadership helps create a work environment where employees feel valued and supported, reducing workplace stress. Leaders who promote inclusivity encourage open communication, fairness, and psychological safety, which minimizes job-related anxiety (Vakira et al., 2023). Employees under inclusive leadership experience lower stress levels as they are empowered and given a sense of autonomy (Busse & Regenberg, 2019). Schwepker and Dimitriou (2021) found that inclusive leadership reduces stress by enhancing employee well-being and job satisfaction. Similarly, Burr-Verros (2024) demonstrated that inclusive leadership significantly lowers workplace stress by fostering a supportive work environment and strengthening psychological safety. This leadership approach ultimately enhances employee engagement and retention (Zhao et al., 2020).

Workplace Stress and Work Engagement. Workplace stress is a major factor influencing employee engagement. Employees experiencing high stress often exhibit lower motivation and job satisfaction, negatively impacting their engagement levels (Olugbade et al., 2019, as cited in Thanh et al., 2022). The Conservation of Resources (COR) Theory, proposed by Hobfoll as cited in Johnson, 2021, suggests that employees experiencing

prolonged stress lose valuable psychological resources, resulting in disengagement. Organizations that implement stress management programs report higher engagement levels, as employees feel more valued and supported (Kaya & Karatepe, 2020, as cited in Vakira et al., 2023). Davis (2023) found that companies with strong leadership and well-being initiatives successfully mitigate workplace stress and boost engagement. Burr-Verros (2024) also confirmed that workplace stress negatively correlates with employee engagement, with prolonged stress leading to performance declines and higher absenteeism. Addressing stress through workload management, leadership support, and employee well-being programs is essential for sustaining engagement (American Psychological Association, as cited in Donaldson, 2024).

Inclusive Leadership and Work Engagement. Inclusive leadership has been identified as a key driver of employee engagement, as it fosters a culture of trust, respect, and collaboration (Vakira et al., 2023). Engaged employees exhibit higher levels of vigor, dedication, and absorption in their work, which directly impacts overall job satisfaction and productivity (Delmonte, 2023). Leaders who demonstrate inclusivity create an environment where employees feel valued and empowered, leading to increased commitment and reduced turnover rates (Davis, 2023). A study by Miller (2022) found that organizations that implement inclusive leadership strategies experience higher employee engagement levels, as employees are more motivated to contribute to their roles when they feel supported. Similarly, Vakira et al. (2023) observed that inclusive leadership enhances work engagement through psychological safety, reinforcing the idea that a supportive work environment fosters stronger employee commitment. In high-pressure industries, such as electronics manufacturing, inclusive leadership is crucial for maintaining employee engagement. Studies suggest that workplaces that prioritize inclusivity and employee well-being see significant improvements in engagement, as employees feel valued and motivated to perform at their best (Jaimes-Colina, 2023). Additionally, Thanh et al. (2022) emphasize that inclusive leadership contributes to sustainable work engagement, as it promotes fairness, diversity, and equal opportunities for employees.

1.2 Research Frameworks

This study is based on the frameworks of Burr-Verros (2024) and Vakira et al. (2023) to examine how Inclusive Leadership (IL) affects Work Engagement (WE) through psychological factors. Burr-Verros highlights how IL helps reduce workplace stress, allowing employees to stay focused and motivated. Vakira et al., on the other hand, emphasize that IL promotes psychological safety, which encourages employees to express themselves and participate actively. By combining these models, the study explores how both reduced stress and increased psychological safety may lead to higher engagement. These concepts are further supported by Kahn's Employee Engagement Theory, Hobfoll's Conservation of Resources (COR) Theory, and the Inclusive Leadership framework by Carmeli et al. Together, these foundations provide a clear understanding of how leadership influences employee behavior in high-pressure manufacturing environments.

Burr-Verros (2024) conducted a quantitative correlational study to explore how perceived workplace stress mediates the relationship between inclusive leadership and employee engagement in the U.S. hotel industry. The study was framed using Kahn's (1990) Employee Engagement Theory, Carmeli et al.'s (2010) Inclusive Leadership Concept, and Hobfoll's (1989) Conservation of Resources (COR) Theory. Using a convenience sample of 105 U.S. hotel managers, data were collected via SurveyMonkey® through LinkedIn groups and email invitations. Statistical analysis followed Baron and Kenny's (1986) mediation model, testing three research questions. The results showed a significant relationship between inclusive leadership and employee engagement ($\beta = .645$, $p < .001$), while workplace stress was found to partially mediate this relationship. Notably, the mediation effect was confirmed for workplace stress variables such as demands, control, support, relationships, and rewards ($p < .001$), whereas the role-related stress factor had an insignificant effect ($p = .075$).

These findings highlight that inclusive leadership reduces workplace stress and enhances engagement, reinforcing the importance of leadership strategies that mitigate stressors in high-pressure industries (Burr-Verros, 2024). This is illustrated in Figure 1.

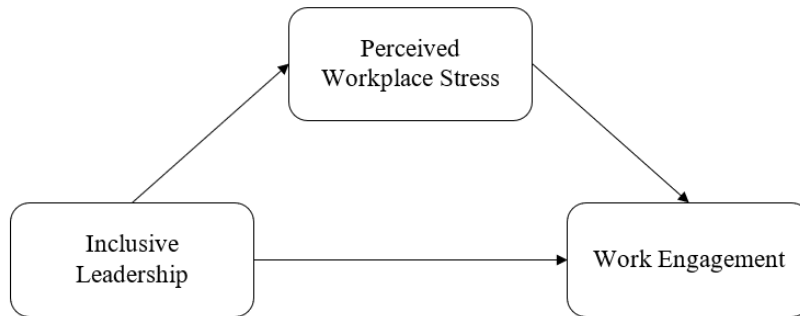


Figure 1. Research framework of Burr-Verros (2024)

Vakira et al. (2023) examined the effect of inclusive leadership on employee engagement, mediated by psychological safety, in the Zimbabwean hospitality industry. This study used a quantitative survey design with a sample of 247 hospitality employees, employing a self-administered questionnaire. Data were analyzed using descriptive statistics, regression analysis, and SPSS version 23. The results demonstrated that inclusive leadership significantly predicts employee engagement, even in the presence of psychological safety as a mediator. The indirect mediation effect was partially significant, indicating that psychological safety does not fully account for the leadership-engagement relationship. The study emphasized that leaders who are accessible, open, and supportive create psychologically safe environments, which, in turn, foster higher employee commitment, reduced turnover, and improved productivity. However, generalizing the findings beyond the Zimbabwean hospitality sector remains a limitation, and future studies should conduct comparative research across developed and developing economies (Vakira et al., 2023). This study underscores the critical role of psychological safety as a mediator, reinforcing that inclusive leadership must prioritize employee trust, risk-taking, and open communication to drive engagement. This is illustrated in Figure 2.

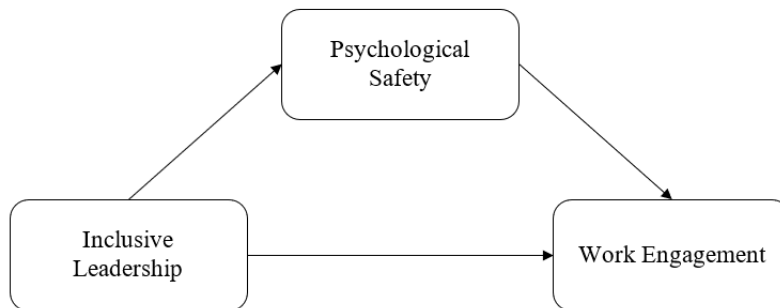


Figure 2. Research framework of Vakira et al. (2023)

This study integrates the insights of Burr-Verros (2024) and Vakira et al. (2023) to develop an operational framework that examines how inclusive leadership influences employee engagement, with workplace stress and psychological safety as mediators. Burr-Verros (2024) demonstrated that inclusive leadership significantly reduces workplace stress, thereby improving employee engagement, based on a quantitative correlational study

of 105 hotel managers in the U.S. Meanwhile, Vakira et al. (2023) found that psychological safety serves as a partial mediator, meaning that while it enhances engagement, it does not fully account for leadership's impact. Using a survey of 247 hospitality employees in Zimbabwe, their study concluded that leaders who foster trust and openness encourage higher employee commitment and productivity. By combining these two mediators, this study presents a dual-mediation framework to explain how leadership behaviors shape engagement in high-stress environments like electronics manufacturing, where both occupational safety and stress management are critical. The framework is grounded in Kahn's (1990) Employee Engagement Theory, Hobfoll's (1989) Conservation of Resources (COR) Theory, and Carmeli et al.'s (2010) Inclusive Leadership Concept, creating a multi-dimensional model for leadership effectiveness. This integration is shown in Figure 3.

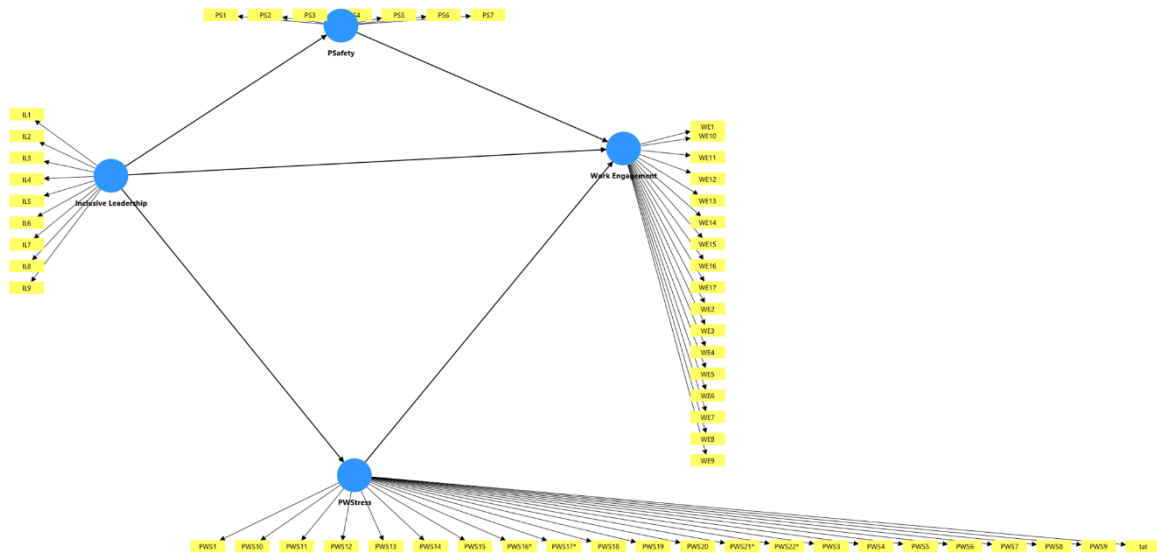


Figure 3. Research hypothesized framework

Understanding the dominant driver of engagement in high-pressure work environments will provide organizations with clear leadership strategies. If psychological safety exerts a stronger effect than workplace stress, leadership approaches should prioritize creating a supportive and open culture where employees feel secure and valued. Conversely, if workplace stress is the primary determinant of engagement, leadership efforts must focus on stress-reduction strategies such as workload balancing, role clarity, and mental health support. If both factors have a significant impact, an integrated leadership approach that simultaneously reduces stressors while fostering psychological safety will be essential in sustaining employee engagement. The outcomes of this study will offer valuable insights into how leadership practices influence employee engagement under demanding conditions, ensuring that organizations can implement targeted interventions that enhance workforce commitment, productivity, and long-term retention. By identifying the most influential mediator, this study aims to refine existing engagement models and contribute to the development of leadership strategies tailored to high-stress, performance-driven industries.

1.3 Objectives of the Study

This study aims to examine the effect of Inclusive Leadership (IL) on Work Engagement (WE), with a particular focus on the mediating roles of Psychological Safety (PS) and Perceived Workplace Stress (PWS). Specifically, the objectives of this research are:

1. To evaluate the effect of Inclusive Leadership (IL) on Work Engagement (WE)
2. To evaluate the effect of Inclusive Leadership (IL) on Psychological Safety (PS)
3. To evaluate the effect of Inclusive Leadership (IL) on Perceived Workplace Stress (PWS)
4. To evaluate the effect of Perceived Workplace Stress (PWS) on Work Engagement (WE)
5. To evaluate the effect of Psychological Safety (PS) on Work Engagement (WE)
6. To evaluate the mediating effect of Psychological Safety (PS) between Inclusive Leadership (IL) and Work Engagement (WE)
7. To evaluate the mediating effect of Perceived Workplace Stress (PWS) between Inclusive Leadership (IL) and Work Engagement (WE)
8. Develop the final model of the research

1.4 Hypotheses

Building on the works of Burr-Veros (2024) and Vakira et al. (2023), this study aims to further examine the effect of Inclusive Leadership (IL) on Work Engagement (WE), with Psychological Safety (PS) and Perceived Workplace Stress (PWS) as mediating factors. The research hypotheses are as follows:

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- H₀₁: Inclusive Leadership (IL) has no significant effect on Work Engagement (WE)
- H₀₂: Inclusive Leadership (IL) has no significant effect on Psychological Safety (PS)
- H₀₃: Psychological Safety (PS) has no significant effect on Work Engagement (WE)
- H₀₄: Inclusive Leadership (IL) has no significant effect on Perceived Workplace Stress (PWS)
- H₀₅: Perceived Workplace Stress (PWS) has no significant effect on Work Engagement (WE)

2. Methods

2.1 Research Design

This study utilized a quantitative research design to examine the effect of inclusive leadership on work engagement, with psychological safety and workplace stress as mediating variables in an electronics manufacturing industry setting. A descriptive-causal approach was employed to quantify the influence of the independent variable on the dependent variable and to evaluate the mediating effects. Data were collected through an online survey administered via Google Forms, using standardized instruments. Responses were analyzed through statistical techniques, including regression analysis and mediation modeling. The study adopted a cross-sectional research design, wherein data were gathered at a single point in time to provide insights into the prevailing organizational conditions.

2.2 Locale of the Study

The locale of this study was an Electronics Manufacturing company located in the Lima Technology Center, Malvar, Batangas. The Electronics Business Unit in Malvar focused on the manufacturing and testing of electronic products such as fuses and switches, making it a key facility in the company's global supply chain. This high-tech manufacturing environment presented a fast-paced and high-pressure setting, where employee

engagement was critical for maintaining productivity, quality, and operational efficiency. Given the industry's reliance on precision, safety, and continuous innovation, leadership played a crucial role in fostering a work environment that balanced performance expectations with employee well-being. By studying this facility, the research sought to assess how inclusive leadership influenced employee engagement, particularly through the mediating roles of psychological safety and workplace stress in a demanding electronics manufacturing setting.

2.3 Respondents of the Study

The respondents of this study comprised Associates, Technicians, Engineers/Supervisors, and Managers from an Electronics Manufacturing company in Lima Technology Center, Malvar, Batangas. These individuals were directly engaged in critical manufacturing operations, including the production, assembly, testing, and quality assurance of semiconductor and electronic components. Their involvement in these core processes positioned them to offer meaningful insights on work engagement, workplace stress, psychological safety, and leadership effectiveness. A total of 328 employees participated in the study, with the majority being Associates (n = 166; 51%), followed by Technicians (n = 101; 31%), Engineers/Supervisors (n = 57; 17%), and Managers (n = 4; 1%).

2.4 Sampling Design

The research followed the recommendations of Kock and Hadaya (2018), who proposed using the inverse square root method (SEM), suggesting a minimum sample size of 160 participants when the path coefficient was unknown in advance. Alternatively, the gamma-exponential method suggested a sample size of 146 participants, ensuring that the study maintained sufficient statistical power while yielding reliable and valid results. Lastly, the research used a proportionate sampling method among the employees of LFPI-EBU.

2.5 Research Tools and Instruments

The research employed four standardized survey instruments to measure the key variables: Inclusive Leadership, Work Engagement, Workplace Stress, and Psychological Safety. Each instrument had been validated in previous research and provided reliable data to analyze the effect of inclusive leadership on work engagement, with psychological safety and workplace stress as mediators.

Inclusive Leadership Scale (ILS). The Inclusive Leadership Scale (ILS), developed by Carmeli et al. (2010), was used to assess the degree to which leaders exhibited openness, availability, and accessibility in their interactions with employees. This scale consisted of nine items, each rated on a five-point Likert scale (1 = Not at all, 5 = To a large extent). Sample items included: "My manager is available for consultation on problems" and "My manager encourages diverse perspectives." This instrument had been widely used in studies analyzing the role of inclusive leadership in fostering psychological safety and engagement.

Utrecht Work Engagement Scale (UWES). The Utrecht Work Engagement Scale (UWES), developed by Schaufeli et al. (2002), was used to measure the level of work engagement among employees. The scale consisted of nine items, each rated on a six-point Likert scale (1 = Never, 6 = Always). The three core dimensions assessed were: Vigor (e.g., "At my work, I feel bursting with energy"), Dedication (e.g., "I am enthusiastic about my job"), and Absorption (e.g., "I am immersed in my work").

Workplace Stressors Assessment Questionnaire (WSAQ). The Workplace Stressors Assessment Questionnaire (WSAQ) was used to measure perceived workplace stress. This tool consisted of 22 items rated on a five-point Likert scale (1 = Strongly disagree, 5 = Strongly agree). The WSAQ assessed six key workplace

stressors: Demands (e.g., “I have too much work to complete within the given time”), Control (e.g., “I have little control over how I perform my job”), Support (e.g., “My manager provides me with adequate support”), Role clarity (e.g., “I understand what is expected of me in my role”), Relationships (e.g., “I experience conflict with my colleagues”), and Rewards (e.g., “I feel recognized and valued for my contributions”). Seven items were negatively worded and were reverse-coded before analysis to ensure consistency in interpretation. These items included: PWS1, PWS2, PWS3, PWS16, PWS17, PWS21, and PWS22. Reverse scoring was applied so that higher scores uniformly reflected lower perceived stress.

Edmondson Psychological Safety Scale. The Psychological Safety Scale, developed by Edmondson (1999), was used to measure the extent to which employees felt safe expressing their thoughts, concerns, and ideas without fear of negative consequences. This scale consisted of seven items, rated on a five-point Likert scale (1 = Strongly disagree, 5 = Strongly agree). Sample items included: “It is safe to take a risk in this organization” and “If I make a mistake, it is not held against me.” Three items were reverse-coded due to their negative phrasing: PS1, PS3, and PS5. This adjustment ensured that higher scores consistently reflected greater psychological safety.

Table 1 shows the reliability scores (Cronbach’s alpha) for the survey instruments used in this study. All values were above 0.90, which indicates a very high level of consistency among the items in each scale. The Inclusive Leadership Scale (ILS) had an alpha of 0.932, while Psychological Safety and Work Engagement scales scored 0.918 and 0.950, respectively. The highest reliability was observed in the Workplace Stressors Assessment Questionnaire (WSAQ) at 0.966, showing that the items strongly measured how employees perceived stress at work. These results confirm that all four instruments were highly reliable and well-suited for use in the context of an electronics manufacturing environment.

Table 1. Research Questionnaires’ Reliability test

Variable	Instrument	Cronbach’s alpha	Interpretation
Inclusive Leadership (IL)	Inclusive Leadership Scale (ILS)	0.932	Excellent
Psychological Safety (PS)	Edmondson Psychological Safety Scale	0.918	Excellent
Perceived Workplace Stress (PWS)	Workplace Stressors Assessment Questionnaire (WSAQ)	0.966	Excellent
Work Engagement (WE)	Utrecht Work Engagement Scale (UWES)	0.950	Excellent

2.6 Data Analysis and Interpretation

The research utilized Structural Equation Modeling (SEM) to analyze the effect of inclusive leadership on work engagement, with psychological safety and workplace stress as mediating variables. SEM was applied as a multivariate statistical technique that allowed for the simultaneous examination of multiple relationships among variables while accounting for measurement error and latent constructs. The direct, indirect, and total effects of inclusive leadership on engagement were examined, along with the mediating effects of psychological safety and workplace stress, to provide a comprehensive understanding of the mechanisms through which leadership behaviors influenced employee engagement in the electronics manufacturing industry. Additionally, Table 2 below outlines the interpretation ranges used to categorize participants’ responses across the four key variables in this study. Each response scale was converted into descriptive categories (e.g., “Very Low” to “Extremely High”) based on the computed mean scores, allowing for more meaningful analysis of results in

inclusive leadership, work engagement, workplace stress, and psychological safety. This rating scheme supported consistent and objective interpretation of participants' perceptions across the dataset.

Table 2. Mean Interpretation Table

Variable	Mean Range	Interpretation
Inclusive Leadership (IL)	1.00 - 1.80	Very Low
	1.81 - 2.60	Low
	2.61 - 3.40	Moderate
	3.41 - 4.20	High
	4.21 - 5.00	Very High
Work Engagement (WE)	1.00 - 1.83	Extremely Low
	1.83 - 2.67	Very Low
	2.68 - 3.50	Low
	3.51 - 4.33	Highs
	4.34 - 5.17	Very High
Perceived Workplace Stress (PWS)	5.18 - 6.00	Extremely High
	1.00 - 1.80	Very Low
	1.81 - 2.60	Low
	2.61 - 3.40	Moderate
	3.41 - 4.20	High
Psychological Safety (PS)	4.21 - 5.00	Very High
	1.00 - 1.80	Very Low
	1.81 - 2.60	Low
	2.61 - 3.40	Moderate
	3.41 - 4.20	High
	4.21 - 5.00	Very High

2.7 Ethical Considerations

This study strictly complied with the ethical standards and guidelines set forth in the De La Salle Lipa Graduate School Research Ethics Policy. Surveys were administered via Google Forms with the respondents' prior consent to participate. As the Principal Investigator, the researcher ensured that all respondents were fully informed about the research through a clear and comprehensive explanation of its objectives, procedures, and potential implications. Each participant received an informed consent sheet outlining the study's purpose, the researchers involved, and how the findings would be utilized and shared. The study upheld respondents' dignity, autonomy, and rights, with informed consent obtained before participation. To maintain privacy and confidentiality, company names were not disclosed, and all collected data were anonymized and securely stored, ensuring that participants were not exposed to any risks or harm due to their involvement.

3. Results and Discussion

3.1 Research Questionnaires

Table 3 presents the descriptive statistics for the four variables examined in this study: Inclusive Leadership (IL), Work Engagement (WE), Perceived Workplace Stress (PWS), and Psychological Safety (PS). Among these, Work Engagement yielded the highest mean score ($M = 5.54$, $SD = 0.60$), falling within the “Extremely High” interpretation range (5.18–6.00). This suggests that employees exhibit consistently high levels of energy, dedication, and absorption in their work—an outcome aligned with prior findings that underscore the importance of leadership in cultivating engagement, particularly in high-performance environments (Mao & Tian, 2022; Burr-Verros, 2024).

Inclusive Leadership was also rated highly by respondents ($M = 4.56$, $SD = 0.55$), corresponding to a “Very High” level of agreement (4.21–5.00). This indicates that employees perceive their immediate supervisors as accessible, supportive, and inclusive in their leadership approach. Such findings reinforce the conceptualization of inclusive leadership as a key driver of positive employee outcomes, as highlighted in the work of Carmeli et al. (2010, as cited in Donaldson, 2024) and supported by more recent studies (Vakira et al., 2023; Thanh et al., 2022).

Perceived Workplace Stress registered a mean of 4.37 ($SD = 0.58$), which falls within the “Very High” interpretation range (4.21–5.00). However, due to the reversely encoded items in the scale—where higher scores indicate lower stress—this score suggests that most employees feel confident in managing workload demands and stressors. This supports the view that inclusive leadership can function as a protective buffer against occupational stress, consistent with Burr-Verros’ (2024) mediation model and the theoretical lens of Conservation of Resources Theory (Hobfoll, 1989, as cited in Johnson, 2021).

Lastly, Psychological Safety received a mean score of 4.45 ($SD = 0.63$), interpreted as “High” (3.41–4.20 and above), suggesting that employees generally feel safe expressing themselves and sharing concerns. Although this indicates a positive climate, opportunities remain to further promote openness, especially in hierarchical or production-driven settings. This observation aligns with Edmondson’s (1999, as cited in Donaldson, 2024) framework, which posits that psychological safety is essential for learning, innovation, and engagement—particularly where mistake reporting and collaboration are critical to success. of the 191 valid participants, 58.1% were male, while 41.9% were female. This distribution aligns with the gender composition often observed in manufacturing operations, where production and technical roles tend to be male dominated. In terms of age, most respondents (47.1%) were between 30 and 45 years old, followed by those aged 20 to 30 (41.9%). A smaller proportion were over 45 years old (6.8%) or under 20 (4.2%), suggesting a workforce that is generally mature and experienced, contributing positively to workplace stability and engagement.

Table 3. Descriptive Statistics of Research Questionnaires

Variable	Mean	Std. Deviation	Interpretation
Inclusive Leadership (IL)	4.56	0.55	Very High
Work Engagement (WE)	5.54	0.60	Extremely High
Perceived Workplace Stress (PWS)	4.37	0.58	Very High
Psychological Safety (PS)	4.45	0.63	Very High

3.2 Path Coefficients

Table 4 shows that Inclusive Leadership (IL) has a significant and positive effect on Work Engagement (WE), with a path coefficient of $B = 0.37$ ($p < 0.001$). This suggests that when leaders are open, fair, and approachable, employees are more likely to feel enthusiastic, committed, and focused on their work. The result supports earlier studies by Burr-Verros (2024) and Vakira et al. (2023), which found that inclusive leadership improves engagement by creating a supportive work environment. In a manufacturing setting, this highlights the importance of leadership in encouraging employee motivation and active participation. This relationship also reflects the assumptions of Kahn's engagement theory, which proposes that psychological conditions shaped by leadership directly influence employee involvement. Therefore, inclusive leadership may serve as a foundational strategy for sustaining engagement in high-performance industries like electronics manufacturing.

Table 4. Path Coefficient : IL → WE

	Unstandardized path coefficient (B)	p-value	Interpretation
IL → WE	0.37	0.00	Significant

Table 5 indicates that Inclusive Leadership (IL) significantly influences Psychological Safety (PS), with a path coefficient of $B = 0.78$ ($p < 0.001$). This means that employees are more likely to feel safe expressing their thoughts and concerns when their leaders are inclusive. The finding is consistent with Carmeli et al. (2010) and Donaldson (2024), who emphasized that inclusive behaviors such as listening, fairness, and accessibility help build a workplace where employees can speak openly without fear. In structured work environments, such as manufacturing, this is particularly valuable because it can counteract the communication barriers often caused by hierarchical structures. This result confirms that inclusive leadership fosters interpersonal trust, allowing employees to engage more meaningfully in team discussions, error reporting, and collaborative decision-making. While the pathway to engagement through psychological safety may be limited, the role of leadership in shaping a safe environment remains essential for long-term organizational health.

Table 5. Path Coefficient : IL → PS

	Unstandardized path coefficient (B)	p-value	Interpretation
IL → PS	0.78	0.00	Significant

Table 6 presents the relationship between Inclusive Leadership (IL) and Perceived Workplace Stress (PWS), showing a significant path coefficient of $B = 0.75$ ($p < 0.001$). Since higher PWS scores reflect lower levels of stress, the result shows that inclusive leadership helps reduce stress at work. This supports Burr-Verros (2024) and the Conservation of Resources (COR) Theory, which explain that leaders who communicate clearly, treat employees fairly, and provide emotional support can help lessen work-related stress. In fast-paced manufacturing environments, reducing stress is especially critical because of the continuous operational demands placed on employees. Inclusive leaders, by providing clarity and consistency, may help employees feel more in control and less overwhelmed by their tasks. This reduction in stress can lead to more stable performance and greater long-term engagement, as employees are less likely to experience burnout or disengagement.

Table 6. Path Coefficient : IL → PWS

	Unstandardized path coefficient (B)	p-value	Interpretation
IL → PWS	0.75	0.00	Significant

Table 7 shows that Perceived Workplace Stress (PWS) has a significant effect on Work Engagement (WE), with a path coefficient of $B = 0.42$ ($p < 0.001$). This means that employees who experience less stress are more likely to be engaged in their work. The result supports the COR Theory and the findings of Burr-Verros (2024), suggesting that managing stress is important for maintaining employee energy, focus, and commitment. When stress is minimized, employees are better able to allocate their psychological resources toward productive work behaviors. This highlights the practical value of stress-reduction strategies, such as role clarity and support systems, especially in labor-intensive sectors. It also reinforces the idea that engagement can be strengthened not only by increasing positive conditions but also by actively minimizing negative ones.

Table 7. Path Coefficient : PWS → WE

	Unstandardized path coefficient (B)	p-value	Interpretation
PWS → WE	0.42	0.00	Significant

Table 8 shows that Psychological Safety (PS) does not have a significant effect on Work Engagement (WE), with a path coefficient of $B = -0.08$ ($p = 0.29$). Although Inclusive Leadership improves psychological safety, this result suggests that feeling safe to speak up does not necessarily lead to higher engagement in this setting. This may be because in structured environments like manufacturing, reducing stress is more important for engagement than promoting open expression. The suppressor effect observed here supports the claim by Vakira et al. (2023) that psychological safety has a stronger role in collaborative and innovative contexts where interpersonal communication and experimentation are more central. In contrast, electronics manufacturing may emphasize routine, precision, and compliance, making psychological safety less immediately relevant to performance or engagement. This result does not negate the value of psychological safety but suggests its limited impact under certain organizational conditions.

Table 8. Path Coefficient : PS → WE

	Unstandardized path coefficient (B)	p-value	Interpretation
PS → WE	-0.08	0.29	Not Significant

Table 8 shows that Psychological Safety (PS) does not have a significant effect on Work Engagement (WE), with a path coefficient of $B = -0.08$ ($p = 0.29$). Although Inclusive Leadership improves psychological safety, this result suggests that feeling safe to speak up does not necessarily lead to higher engagement in this setting. This may be because in structured environments like manufacturing, reducing stress is more important for engagement than promoting open expression. The suppressor effect observed here supports the claim by Vakira et al. (2023) that psychological safety has a stronger role in collaborative and innovative contexts where interpersonal communication and experimentation are more central. In contrast, electronics manufacturing may emphasize routine, precision, and compliance, making psychological safety less immediately relevant to

performance or engagement. This result does not negate the value of psychological safety but suggests its limited impact under certain organizational conditions.

3.3 Special Indirect Effects – Mediation

Table 9 summarizes the indirect effects of the mediating variables. The path from Inclusive Leadership (IL) through Perceived Workplace Stress (PWS) to Work Engagement (WE) shows a positive indirect effect of 0.41, which accounts for 60% of the total effect. This indicates partial mediation and suggests that inclusive leadership improves engagement in part by lowering stress levels. This finding supports Burr-Verros (2024) and the COR Theory, which emphasize the role of leadership in reducing strain and helping employees conserve their energy.

Conversely, the path through Psychological Safety (PS) has a negative indirect effect of -0.10 , indicating a suppressor effect. Although inclusive leadership increases psychological safety, this did not lead to greater engagement. Vakira et al. (2023) observed a similar pattern, noting that psychological safety has stronger relevance in dynamic, team-based environments than in process-focused operations. This suggests that in production-oriented industries, stress management is a more effective mechanism for sustaining engagement than psychological openness alone.

Table 9. Special Indirect Effects - Mediation

	Special Indirect Effects	Percent Mediation	Interpretation
IL → PWS → WE	0.41	60%	Partial Mediation
IL → PS → WE	-0.10	-15%	Suppressor Effect (No Mediation)

3.4 Comparative Mediation Analysis and Model Optimization

The hypothesized research framework tested the mediating roles of both Psychological Safety (PS) and Perceived Workplace Stress (PWS) in the relationship between Inclusive Leadership (IL) and Work Engagement (WE). Results showed that while IL significantly influenced both PS and PWS, only PWS had a significant effect on WE, while PS did not ($B = -0.08$, $p = 0.29$), indicating a suppressor effect. This suggests that although employees may feel psychologically safe under inclusive leaders, such safety does not necessarily lead to higher engagement in routine-driven manufacturing environments. Instead, engagement appears to be more strongly associated with the reduction of workplace stress. These findings support Vakira et al. (2023), who argued that psychological safety plays a more critical role in collaborative or innovation-focused settings than in production-oriented industries. As shown in Table 10, the model's goodness-of-fit indices support this interpretation, with SRMR at 0.08 and Chi-Square above 0.05, both indicating a good model fit. However, the NFI value of 0.662 fell below the acceptable threshold of 0.90, confirming that the inclusion of Psychological Safety in the model weakened its ability to fully account for the variance in Work Engagement.

Table 10. Goodness-Of-Fit summary of Research hypothesized model

Model Fit Indices	Saturated Model	Standard	Interpretation
SRMR	0.08	<0.10	Good Fit
Chi-Square	6812.11	>0.05	Good Fit
NFI	0.662	>0.90	Not a good fit

Based on the results from the full model analysis, a revised model was developed focusing solely on the IL → PWS → WE pathway, following the finding that Psychological Safety (PS) did not significantly influence Work Engagement (WE). In this final SEM model, Inclusive Leadership (IL) has a strong and significant direct effect on WE, as well as an indirect effect through Perceived Workplace Stress (PWS), confirming partial mediation. The path from IL to PWS is positive and significant ($B = 1.035$, $p < 0.001$), indicating that inclusive leadership plays a key role in lowering perceived stress in the manufacturing environment. In turn, reduced stress significantly predicts higher work engagement, as shown by the path from PWS to WE ($B = 0.429$, $p < 0.001$). The direct effect of IL on WE also remains significant ($B = 0.631$, $p < 0.001$), and the total effect is $B = 1.041$, with the indirect path accounting for approximately 60% of the total effect. The model also explains 59.3% of the variance in PWS ($R^2 = 0.593$) and 80.7% in WE ($R^2 = 0.807$), demonstrating robust predictive capability. As shown in Table 10, model fit indices indicate a robust fit: the SRMR value of 0.08 and Chi-Square of 5407.34 both meet accepted thresholds, while the NFI value of 0.94 exceeds the 0.90 standard—confirming that the final model has substantially improved fit compared to the initial framework. These findings align with the Conservation of Resources (COR) Theory, highlighting that inclusive leadership fosters engagement not only through direct relational influence but also by protecting employees' psychological resources through effective stress reduction. This is illustrated in Figure 4 and further supported by the goodness-of-fit results in Table 10.

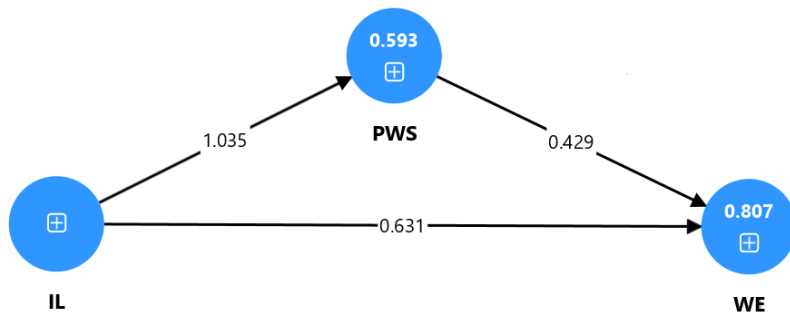


Figure 4. Research Final Mode

1

Table 11. Goodness-Of-Fit summary of Research final model

Model Fit Indices	Saturated Model	Standard	Interpretation
SRMR	0.08	<0.10	Good Fit
Chi-Square	5407.34	>0.05	Good Fit
NFI	0.94	>0.90	Good Fit

4. Conclusion

The research examined the effect of Inclusive Leadership (IL) on Work Engagement (WE) and tested the mediating roles of Psychological Safety (PS) and Perceived Workplace Stress (PWS) within the context of an electronics manufacturing environment. The results confirmed that IL significantly and positively influenced WE, both directly and indirectly through reduced levels of PWS. Specifically, PWS acted as a partial mediator, accounting for 60% of the total effect, suggesting that inclusive leadership enhances engagement by minimizing stress and preserving employee well-being. In contrast, although PS was significantly predicted by IL, it did not significantly affect WE and instead functioned as a suppressor variable. This highlights the influence of

organizational context—particularly in structured, high-pressure environments—on the relevance and effectiveness of psychological mechanisms in fostering engagement.

The hypotheses were partially supported. IL had significant effects on both PS and PWS (Ho2 and Ho4 rejected), and PWS had a significant effect on WE (Ho5 rejected). However, PS did not significantly predict engagement (Ho3 accepted), and its mediating effect was rejected. The direct effect of IL on WE was significant (Ho1 rejected), reaffirming its importance in shaping motivation and commitment in the workplace. Overall, the findings emphasize that engagement in task-intensive industries may be more effectively strengthened through stress-reduction strategies than through psychological safety alone.

5. Recommendations

This Based on the findings of this study, several practical recommendations are proposed to improve employee engagement through inclusive leadership practices. These suggestions are designed to address key stressors and psychological conditions identified during data analysis, particularly in a manufacturing environment. Each recommendation is rooted in evidence gathered from employee responses and grounded in relevant theories such as the Conservation of Resources (COR) Theory. The goal is to help organizational leaders implement targeted strategies that support psychological safety, reduce workplace stress, and foster sustained work engagement.

Strengthen Load and Time Balance. The organization is recommended to implement demand-management strategies such as: adjusting meeting schedules, enforcing protected time blocks for uninterrupted work, introducing workload audits, and expanding shift flexibility. These interventions are essential in preventing cognitive overload and emotional exhaustion, particularly in high-pressure settings like manufacturing. Aligning work demands with available time and capabilities helps conserve employees' psychological resources and can directly enhance engagement.

Foster Autonomy Among Employees Through Inclusive Leadership. It is recommended that team leaders adopt inclusive practices that promote participatory decision-making, transparent communication, and role flexibility. Leaders can start by soliciting subordinates' input on operational improvements, workflow adjustments, and problem-solving strategies. Inclusive leadership strengthens psychological empowerment, which in turn reduces stress and promotes engagement. Promoting a sense of control not only improves technicians' mental well-being but also fosters accountability, innovation, and ownership of results in production environments.

Establish a "Shift Wellness Integration" Program. Introduce structured wellness breaks and micro-interventions during production shifts, particularly for associates and technicians who may have limited control over their schedules. This could include guided stretching routines, mobile-accessible mindfulness audio clips, or even brief group breathing exercises. These can be integrated into shift changeovers or pre-line meetings to promote mental decompression without reducing productivity. Such micro-wellness activities serve as immediate buffers against workplace stress, reinforcing the resource preservation mechanisms of COR Theory while building a culture of care on the line.

Institutionalize Regular On-Site Psychiatric Support for Perceived Workplace Stress and Psychological Safety. The organization is recommended deploying a resident in-plant psychiatrist who can conduct randomly

scheduled consultations and be available for confidential, need-based support. This would serve two strategic purposes: reducing perceived workplace stress and increasing psychological safety. By normalizing mental health conversations in the workplace, employees are more likely to report difficulties, seek help early, and feel that their well-being is a valued part of organizational culture. Regular, anonymous mental health assessments could also help the company identify at-risk teams or departments before stress manifests into turnover or disengagement. Inclusive organizations recognize mental health not as a liability, but as a cornerstone of sustainable performance and engagement.

5.1 Limitations of the Study

The research was conducted within a single electronics manufacturing company, which, while offering depth and industry-specific insights, limits the breadth of generalizability to other sectors with different organizational dynamics, such as creative, service-based, or knowledge-driven industries. The use of non-probability quota sampling may also introduce selection bias, as participants may not fully represent the broader population of electronics manufacturing employees. The cross-sectional design further restricts the ability to draw causal conclusions, capturing only a snapshot of employee perceptions at one point in time. Additionally, the study focused exclusively on two psychological mechanisms—perceived workplace stress and psychological safety—which, although theoretically grounded, may not fully encompass the range of mediators that shape engagement in high-pressure industrial environments.

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