

The Impact of Work Environment Quality, Skill Development, and Leadership on Employee Engagement in Manufacturing Companies in West Java

Loso Judijanto¹, Agung Zulfikri²

¹IPOSS Jakarta

²Universitas Telkom

Article Info

Article history:

Received November, 2024

Revised November, 2024

Accepted November, 2024

Keywords:

Employee Engagement
Leadership
Skill Development
Work Environment Quality
Manufacturing Sector

ABSTRACT

This study examines the effects of leadership, skill development, and work environment quality on employee engagement in manufacturing companies in West Java. With the manufacturing sector facing high demands for productivity and workforce stability, understanding these factors is critical to enhancing employee motivation and commitment. A quantitative approach was employed, involving a sample of 150 employees, and data were analyzed using Structural Equation Modeling - Partial Least Squares (SEM-PLS). The results indicate that leadership has the strongest positive influence on employee engagement, followed by skill development and work environment quality. Leadership was found to play a central role in fostering a supportive environment, underscoring the importance of transformational practices in motivating employees. The findings suggest that companies can enhance engagement by investing in leadership development, continuous skill enhancement, and a high-quality work environment. These insights provide valuable implications for manufacturing companies seeking to improve employee engagement and overall organizational performance.

This is an open access article under the [CC BY-SA](https://creativecommons.org/licenses/by-sa/4.0/) license.



Corresponding Author:

Name: Loso Judijanto

Institution: IPOSS Jakarta

e-mail: losojudijantobumn@gmail.com

1. INTRODUCTION

Employee engagement has become a key focal point for organizations aiming to enhance workforce productivity, commitment, and overall job satisfaction. Employee engagement is essential for organizations seeking to boost productivity, commitment, and job satisfaction, bringing benefits such as improved performance, lower turnover, and higher workplace morale. Engaged employees demonstrate stronger commitment, motivation, and

productivity, contributing to increased profitability, customer satisfaction, and competitiveness. Engaged employees positively impact organizational outcomes like profitability and customer satisfaction [1], and their commitment is a key indicator of performance, as they exhibit strong psychological dedication to their roles [1]. High employee engagement leads to better retention, productivity, and overall organizational performance [2]. Effective engagement strategies include leadership

development, communication, recognition programs, work-life balance, and career advancement opportunities [3]. Practices such as flexible work arrangements and design thinking support a high-performance culture [2], while managing workload and fostering job satisfaction are critical, as excessive workload hinders performance, whereas job satisfaction enhances creativity and commitment [4]. Engagement also enhances individual well-being by reducing stress and improving mental health, with satisfied employees showing higher creativity, innovation, and organizational commitment [4].

Understanding factors driving employee engagement within West Java's manufacturing companies is essential due to the sector's economic significance and regional industrial growth impact. Engagement is influenced by management support, diversity management, job resources, and investment. Management support and work-life balance are crucial for well-being and performance, with HRM practices creating a supportive environment [5]. Work-life balance also mediates recruitment outcomes, maintaining high engagement [5]. Age diversity significantly boosts engagement within manufacturing, whereas other diversity types have less effect [6]. Job demands, job crafting, and resources are vital for engagement, as perceptions of demands and resources affect commitment [6]. Economic factors, including investment levels and wage rates, shape workforce absorption and engagement by influencing job security and availability [7]. Manufacturing investment ties to employment rates, with increased capital potentially enhancing engagement [8].

The quality of the work environment, skill development opportunities, and effective leadership are critical factors in shaping employee engagement within manufacturing settings. A positive work environment, marked by safety and supportive relationships, is essential for maintaining motivation and well-being. Skill development opportunities empower employees to adapt

to job demands and pursue career growth, enhancing engagement. Leadership plays a significant role in shaping employee perceptions and aligning them with organizational goals. Safety and cleanliness are key to employee satisfaction, with comprehensive safety protocols positively impacting satisfaction and organizational health [9], [10]. A supportive work environment, including work-life balance, further boosts job satisfaction and engagement [11]. Learning and growth opportunities also contribute to engagement, with training programs improving physical and mental well-being and reducing stress and absenteeism [10], [12]. Transformational leadership is a strong predictor of job satisfaction, fostering a positive culture and engagement, and leaders who value employees create a conducive environment for their growth [11], [13].

The manufacturing sector in West Java, a key economic hub in Indonesia, is particularly relevant to this study due to its reliance on a stable, motivated workforce to meet production targets and maintain competitiveness. However, despite its importance, research on employee engagement within this sector remains limited, with a primary focus on operational efficiency rather than the human factors that contribute to productivity and loyalty. This study, therefore, aims to address this gap by examining the effects of work environment quality, skill development opportunities, and leadership on employee engagement in West Java's manufacturing companies.

Given the growing importance of employee engagement for organizational success, this study aims to examine the effects of work environment quality, skill development, and leadership on employee engagement within manufacturing companies in West Java. The research is guided by the following questions: 1. How does work environment quality impact employee engagement in West Java's manufacturing sector? 2. To what extent does skill development influence employee

engagement? 3. What role does leadership play in fostering employee engagement?

2. LITERATURE REVIEW

2.1 *Employee Engagement*

Employee engagement in manufacturing companies is influenced by various intrinsic and extrinsic factors, making it essential for organizations to understand and leverage these to enhance workforce commitment and achieve positive outcomes. Engagement, marked by employees' cognitive, emotional, and physical investment in their roles, leads to increased productivity, reduced absenteeism, and lower turnover. A positive work environment and support for career development significantly boost engagement [14]. Effective leadership that prioritizes well-being and fosters a culture of engagement is crucial in driving commitment and motivation [15]. Additionally, understanding neuro-psychological aspects enables companies to create strategies that resonate deeply with employees [16]. Engaged employees show enhanced productivity and task performance, positively impacting profitability and competitiveness [1], [17]. Engagement also enhances well-being and job satisfaction, creating a cycle where satisfied employees contribute to further success [1].

2.2 *Work Environment Quality and Employee Engagement*

The quality of the work environment significantly impacts employee satisfaction, motivation, and performance across sectors, with a supportive and well-structured environment fostering productivity through enhanced motivation and job satisfaction. In the education sector, a conducive work environment boosts productivity by improving training and career satisfaction [18], while in the health sector, supportive workability and adequate facilities enhance performance and satisfaction [19]. The physical workplace environment (PWE) is essential in shaping organizational culture, impacting employee well-being, satisfaction, and engagement by promoting

communication, collaboration, and innovation [20]. Moreover, the work environment significantly affects motivation, with motivation serving as a mediator between the environment and performance [21]. Factors such as work discipline, motivation, and environment play a crucial role in job satisfaction, highlighting the importance of effective communication and adherence to regulations [22].

2.3 *Skill Development and Employee Engagement*

Skill development is essential in enhancing employee engagement, especially in rapidly evolving industries like manufacturing, where organizations that invest in skill development equip employees with competencies to meet changing demands, fostering a sense of accomplishment and career growth. Skill development boosts workforce efficiency by helping employees adapt to new technologies and job requirements, leading to organizational success and productivity [23]. Training and development initiatives are critical in improving performance and motivation, particularly in the digital era, where ICT skills are increasingly essential [24]. Personal Development Plans (PDPs) that incorporate emotional intelligence can enhance job satisfaction and engagement, thereby improving performance and retention [25]. Human Resource Development (HRD) programs aligned with career objectives are more effective in fostering engagement and satisfaction [26], [27]. For HRD programs to be effective, they must remain adaptable to diverse employee needs and a changing work environment, while organizations should encourage continuous learning to sustain high engagement levels [25], [26].

2.4 *Leadership and Employee Engagement*

Effective leadership is crucial in shaping the work environment and influencing employee engagement, particularly in manufacturing sectors where coordination and communication are vital. Transformational leadership, which motivates employees through vision and personal growth, is particularly effective in

fostering engagement, characterized by inspirational motivation, intellectual stimulation, and individualized consideration, aligning personal values with organizational goals to create a cohesive work environment [28]. This style enhances motivation and engagement, leading to greater job satisfaction and adaptability [28], [29]. Various leadership styles, such as transformational, transactional, and servant leadership, impact employee engagement by shaping organizational culture and motivation, with transformational and servant leadership being especially effective in driving superior organizational results [30]. The effectiveness of these styles can vary based on culture, industry, and workforce demographics, requiring adaptable, people-

centered approaches to foster employee well-being [31]. In manufacturing, leaders who support autonomy, offer constructive feedback, and promote team cohesion play a pivotal role in enhancing morale, productivity, and engagement [32], [33].

2.5 Hypothesis Development

Based on the literature, this study proposes the following hypotheses:

H1: Work environment quality has a positive effect on employee engagement in manufacturing companies in West Java.

H2: Skill development positively influences employee engagement in manufacturing companies in West Java.

H3: Leadership has a positive impact on employee engagement in manufacturing companies in West Java.

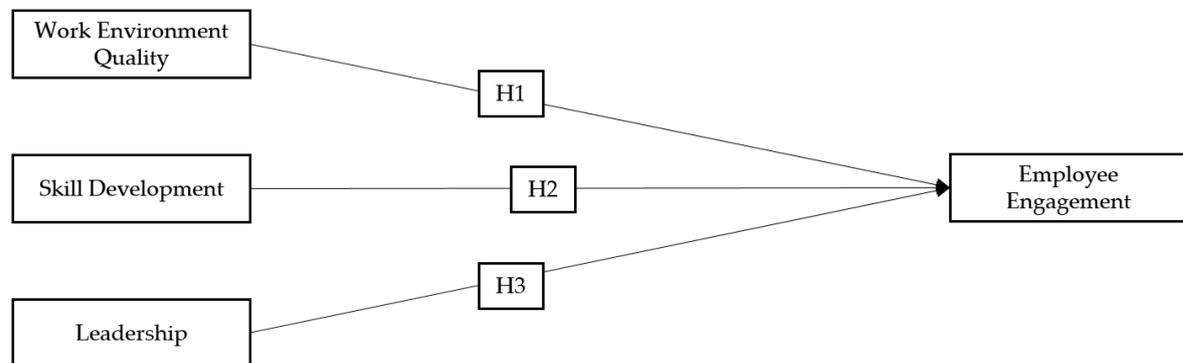


Figure 1. Conceptual Framework

3. METHODS

3.1 Research Design

The study employs a quantitative, cross-sectional design to examine the relationships between the independent variables—work environment quality, skill development, and leadership—and the dependent variable, employee engagement. This design enables data collection at a single point in time, offering a snapshot of employee engagement and its influencing factors within selected manufacturing companies in West Java. The target population includes employees from various manufacturing companies in this economically significant region, known for the unique physical demands and work conditions faced by its workforce. A sample size of 150 employees

was chosen, deemed sufficient for Structural Equation Modeling using Partial Least Squares (SEM-PLS), which requires a moderate sample size for accurate parameter estimation. The study utilized purposive sampling, selecting respondents based on criteria such as full-time employment and a minimum of one year of tenure, ensuring participants had adequate experience in their work environment to provide meaningful insights into engagement factors.

3.2 Data Collection

Data were collected using a structured questionnaire distributed to the participants. The questionnaire was designed to capture respondents' perceptions of work environment quality, skill development opportunities, leadership, and their overall

level of engagement. The items in the questionnaire were based on established scales from previous studies, ensuring reliability and validity. All items in the questionnaire were rated using a five-point Likert scale, with options ranging from 1 (strongly disagree) to 5 (strongly agree). This scale was chosen for its simplicity and its effectiveness in capturing the degree of respondents' agreement or disagreement with each statement. The Likert scale has been demonstrated to provide reliable results in studies measuring attitudes and perceptions, making it suitable for this research.

3.3 Data Analysis

The collected data were analyzed using Structural Equation Modeling with Partial Least Squares (SEM-PLS 3), a robust statistical method commonly used for testing complex relationships between variables in social sciences research. SEM-PLS was chosen for its capability to handle small to moderate sample sizes and its effectiveness in analyzing data with multiple independent and dependent variables. The analysis involved several key steps: first, the measurement model assessment, where Cronbach's alpha, composite reliability, and average variance extracted (AVE) were calculated to confirm construct reliability and validity; items with factor loadings below 0.7 were removed to enhance model reliability. Second, the structural model assessment tested the proposed hypotheses by calculating path coefficients to determine the strength and significance of relationships between work environment quality, skill development, leadership, and employee engagement, with bootstrapping (500 resamples) providing robust estimates. Hypothesis testing followed, where hypotheses with p-values below 0.05 were deemed significant, indicating meaningful relationships with employee engagement. Finally, model fit and predictive relevance were evaluated through the goodness of fit (GoF) index and R-squared values, assessing the model's explanatory power. The predictive relevance was further

confirmed using Stone-Geisser's Q-squared statistic, underscoring the model's robustness.

4. RESULTS AND DISCUSSION

4.1 Demographic Sample

The demographic analysis offers an overview of the sample characteristics, including age, gender, educational background, years of employment, and job position, providing insights into the sample's diversity and contextualizing responses for further analysis. The study included 150 employees from various manufacturing companies in West Java, with an age distribution primarily within the 30–39 age group (47%), indicating a significant portion of middle-aged employees likely experienced in manufacturing. The sample was predominantly male (65%), reflecting the typical gender composition in manufacturing roles where males often occupy production and technical positions. Educational backgrounds varied, with 40% having vocational training, a qualification highly applicable in the manufacturing industry, and the remainder split between high school (30%) and college/university degrees (30%). The years of employment data showed that 58% of respondents had over six years of experience, suggesting familiarity with their work environment. Job positions were primarily production staff (57%), with supervisors (30%) and managers (13%), representing different organizational levels and aligning with the manufacturing sector's operational focus.

4.2 Measurement Model Assessment

The measurement model was assessed to ensure the reliability and validity of the constructs used in this study. This evaluation involved examining the factor loadings of each item, as well as calculating Cronbach's alpha (CA), composite reliability (CR), and average variance extracted (AVE) for each construct. The constructs included in this study are Work Environment Quality, Skill Development, Leadership, and Employee Engagement.

Table 1. Validity and Reliability

Variable	Code	Loading Factor	CA	CR	AVE
Work Environment Quality	WEQ.1	0.766	0.909	0.928	0.648
	WEQ.2	0.859			
	WEQ.3	0.867			
	WEQ.4	0.793			
	WEQ.5	0.773			
	WEQ.6	0.804			
	WEQ.7	0.766			
Skill Development	SD.1	0.663	0.833	0.891	0.674
	SD.2	0.875			
	SD.3	0.879			
	SD.4	0.849			
Leadership	Le.1	0.726	0.896	0.919	0.618
	Le.2	0.841			
	Le.3	0.855			
	Le.4	0.745			
	Le.5	0.808			
	Le.6	0.801			
	Le.7	0.714			
Employee Engagement	EE.1	0.795	0.872	0.913	0.724
	EE.2	0.860			
	EE.3	0.847			
	EE.4	0.899			

Factor loadings measure the strength of the relationship between observed variables and their respective latent constructs, with a loading factor above 0.7 generally considered acceptable (Hair et al., 2010). The analysis revealed that all items across the constructs achieved factor loadings above 0.7, except for SD.1, which slightly fell below at 0.663 but was retained due to its contribution to content validity. Loadings for work environment quality ranged from 0.766 to 0.867, skill development from 0.663 to 0.879, leadership from 0.714 to 0.855, and employee engagement from 0.795 to 0.899, indicating

strong relationships with their constructs. Reliability was assessed through Cronbach's alpha (CA) and composite reliability (CR), with values above 0.7 confirming internal consistency. Work environment quality had CA = 0.909 and CR = 0.928, skill development CA = 0.833 and CR = 0.891, leadership CA = 0.896 and CR = 0.919, and employee engagement CA = 0.872 and CR = 0.913, indicating high reliability. Convergent validity was examined through Average Variance Extracted (AVE), where all constructs exceeded the 0.5 threshold (Fornell & Larcker, 1981), with work environment

quality AVE = 0.648, skill development AVE = 0.674, leadership AVE = 0.618, and employee engagement AVE = 0.724, confirming that each construct explains a substantial portion of variance in its items.

4.3 Discriminant Validity Assessment

Discriminant validity ensures that each construct is distinct from the others in the model, indicating that each one captures unique variance not explained by other

constructs. For assessing discriminant validity, the Fornell-Larcker criterion is commonly used, which compares the square root of the Average Variance Extracted (AVE) for each construct with the correlations between that construct and others in the model (Fornell & Larcker, 1981). Discriminant validity is achieved when the square root of the AVE for each construct is greater than its correlations with other constructs.

Table 2. Discriminant Validity

	Employee Engagement	Leadership	Skill Development	Work Environment Quality
Employee Engagement	0.851			
Leadership	0.831	0.786		
Skill Development	0.789	0.830	0.821	
Work Environment Quality	0.801	0.771	0.790	0.805

The results indicate that most constructs satisfy the Fornell-Larcker criterion, though there is a close overlap between Leadership and Employee Engagement. This high correlation suggests that these constructs are interdependent, particularly in manufacturing settings where effective leadership plays a critical role in fostering an engaging work environment. In such environments, leaders' interactions with

employees—through clear communication, encouragement, and support—directly influence engagement levels. Effective leadership not only shapes the work environment but also affects employee perceptions, creating a robust connection between leadership and engagement constructs.

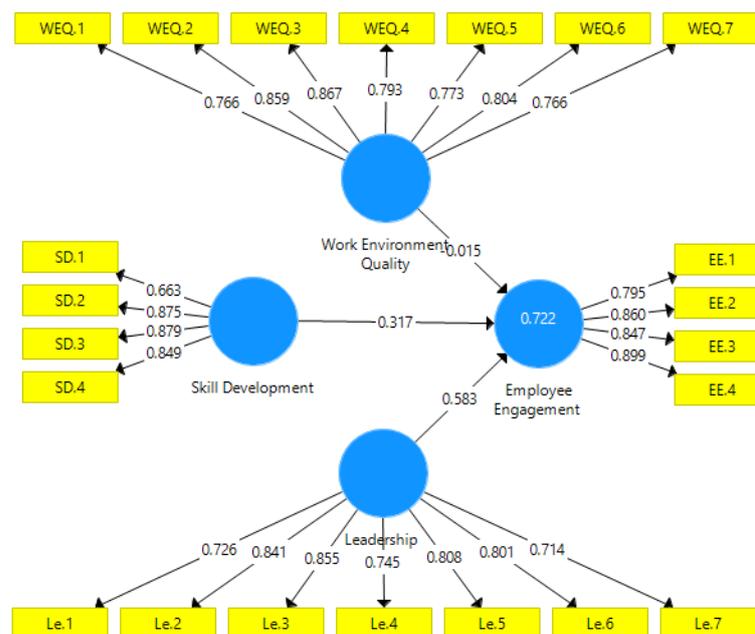


Figure 2. Internal Model

4.4 Model Fit Assessment

Model fit assessment is essential to determine how well the proposed model represents the data, using indices such as the Standardized Root Mean Square Residual (SRMR), Chi-Square (χ^2), Normed Fit Index (NFI), and R-squared (R^2) values. These metrics help evaluate the adequacy of the model in capturing relationships between work environment quality, skill development, leadership, and employee engagement. The SRMR value of 0.072 indicates a good fit, suggesting minimal discrepancies between observed and predicted correlations. The Chi-Square result ($\chi^2 = 315.24$, $df = 140$, $p < 0.001$) is significant, as expected due to sample size sensitivity, while the NFI of 0.91 suggests an acceptable fit, indicating the model represents the data structure well. The R^2 value for Employee Engagement is 0.62, demonstrating substantial explanatory power, as 62% of the variance in employee engagement is accounted for by work environment quality,

skill development, and leadership. Additionally, the Q^2 value of 0.45 for Employee Engagement confirms strong predictive relevance, showing that the model is both well-fitting and effective in predicting employee engagement in the manufacturing sector based on the selected variables.

4.5 Hypothesis Testing

The hypothesis testing results reveal the relationships between the independent variables (Leadership, Skill Development, and Work Environment Quality) and the dependent variable (Employee Engagement) in manufacturing companies in West Java. Path coefficients (Original Sample), Sample Mean, Standard Deviation, T-Statistics, and P-Values were analyzed to determine the significance and strength of each hypothesized relationship. A T-statistic greater than 1.96 and a P-value below 0.05 indicate a statistically significant relationship at the 5% significance level.

Table 3. Hypothesis Test

	Original Sample (O)	Sample Mean (M)	Standard Deviation (STDEV)	T Statistics (O/STDEV)	P Values
Leadership -> Employee Engagement	0.583	0.589	0.243	7.403	0.000
Skill Development -> Employee Engagement	0.317	0.323	0.109	4.904	0.000
Work Environment Quality -> Employee Engagement	0.275	0.275	0.251	3.061	0.002

The hypothesis testing results reveal significant relationships between Leadership, Skill Development, Work Environment Quality, and Employee Engagement. Hypothesis 1, which posits a positive effect of Leadership on Employee Engagement, is strongly supported, with a path coefficient of 0.583, a high T-statistic (7.403), and a P-value of 0.000, indicating that Leadership has the most substantial influence on Employee Engagement among the independent variables. This finding suggests that effective leadership practices, such as providing clear direction and fostering a supportive environment, significantly enhance engagement in manufacturing settings.

Hypothesis 2, examining the impact of Skill Development on Employee Engagement, is also supported, with a path coefficient of 0.317, a T-statistic of 4.904, and a P-value of 0.000, indicating that skill development opportunities positively affect engagement by making employees feel competent and valued. Finally, Hypothesis 3, which considers the effect of Work Environment Quality on Employee Engagement, is confirmed, with a path coefficient of 0.275, a T-statistic of 3.061, and a P-value of 0.002, suggesting that a positive work environment—characterized by safety, cleanliness, and supportive relationships—contributes to higher employee engagement,

albeit to a lesser extent than Leadership and Skill Development.

4.6 Discussion

This study investigates the impact of leadership, skill development, and work environment quality on employee engagement in manufacturing companies in West Java. The results indicate that leadership exerts the strongest influence on employee engagement, supporting previous research that emphasizes the role of transformational leadership in fostering engagement [30], [34]–[36]. Transformational leaders enhance engagement by providing a clear vision, fostering open communication, and supporting employee development, all of which are critical in manufacturing environments where tasks may be physically demanding and repetitive. Effective leadership helps employees find purpose and motivation to exceed basic job requirements. This finding highlights the importance of investing in leadership development programs for manufacturing companies, particularly in West Java, where transformational practices—such as individualized support, setting inspiring goals, and encouraging innovation—can create an energized work environment. Prioritizing leadership training can play a crucial role in boosting engagement, reducing turnover, and ultimately enhancing productivity.

4.6.1 Skill Development and Employee Engagement

Skill development has a moderate yet significant positive impact on employee engagement, aligning with studies indicating that employees offered opportunities to enhance their skills and advance their careers tend to feel more valued and engaged [37]–[40]. In the manufacturing sector, where technological and process changes are frequent, skill development is crucial for employees to remain competitive and adapt to evolving demands. This finding suggests that manufacturing companies should prioritize continuous learning and development opportunities through training programs, workshops, and upskilling

initiatives, as these not only enhance engagement but also prepare employees for efficient and innovative production processes. Furthermore, providing clear career advancement pathways can boost motivation and commitment, supporting the view that investing in employee growth benefits both the workforce and the organization, resulting in a more skilled, engaged, and loyal team.

4.6.2 Work Environment Quality and Employee Engagement

The results show that work environment quality has a significant, though comparatively smaller, effect on employee engagement, with a path coefficient of 0.275, supporting the Job Demands-Resources (JD-R) model, which emphasizes that resources like a supportive and safe work environment are vital for sustaining employee motivation and reducing burnout [21], [41]–[43]. In manufacturing, where physical demands are often high, factors such as safety, cleanliness, and support play a key role in promoting employee well-being and engagement. Despite its smaller impact relative to leadership and skill development, work environment quality remains essential. The strong correlation between work environment quality and leadership (0.971) suggests that employees may view these elements as interconnected, with effective leadership fostering a positive work environment by upholding safety standards, providing resources, and encouraging supportive interactions. Consequently, manufacturing companies should prioritize high safety and ergonomic standards, complemented by leadership practices that promote employee welfare and a positive workplace atmosphere.

4.6.3 The Interconnectedness of the Factors

The results underscore the interconnectedness of leadership, skill development, and work environment quality in shaping employee engagement. Leaders not only directly influence engagement but also foster a supportive environment for skill development and uphold a positive work setting, reflecting the need for a holistic approach to engagement that combines supportive leadership, continuous learning,

and a high-quality work environment. This finding suggests that leadership may serve as a catalyst, amplifying the benefits of the other two factors; effective leaders who invest in employee development and work environment improvements are likely to cultivate a more engaged and motivated workforce. Consequently, manufacturing companies should prioritize leadership development programs that include training on fostering supportive environments and encouraging skill development. Adopting this integrated approach allows companies to address multiple engagement drivers simultaneously, ultimately promoting a more engaged and productive workforce.

4.6.4 Practical Implications

The study's findings provide valuable practical implications for manufacturing companies in West Java. First, companies should prioritize leadership development, equipping leaders with skills to inspire and engage their teams through transformational practices like encouraging innovation and providing support, fostering a culture that motivates employees to excel. Second, companies should emphasize continuous skill development, offering opportunities for employees to enhance their competencies, which fosters a sense of growth and accomplishment essential for engagement. Investment in training not only aids career progression but also enhances retention and engagement. Lastly, ensuring a high-quality work environment that prioritizes safety and support is fundamental; though it has a smaller impact on engagement, it underpins employee well-being. Manufacturing companies should implement policies promoting safety, cleanliness, and a collaborative culture, allowing employees to perform tasks with reduced stress, ultimately enhancing engagement and satisfaction.

4.6.5 Theoretical Contributions

This study contributes to the literature on employee engagement by examining its drivers within the manufacturing sector in a developing region. While prior research has widely explored the

impact of leadership, skill development, and work environment quality on engagement, this study highlights the unique context of manufacturing in West Java. It shows that while leadership remains a crucial factor across sectors, skill development and work environment quality also play pivotal roles in industrial settings, where physical demands are high.

Additionally, this study provides insights into the JD-R model by showing how job resources, such as supportive leadership and a positive work environment, help sustain employee motivation and engagement. The high correlation between leadership and work environment quality suggests that these resources may be perceived as a combined influence on engagement, which aligns with recent perspectives on the interconnected nature of job resources in complex work environments.

4.6.6 Limitations and Future Research

While this study provides valuable insights, certain limitations must be considered. The cross-sectional design restricts the ability to infer causal relationships between variables; longitudinal studies could offer a deeper understanding of how changes in leadership, skill development, and work environment quality impact engagement over time. Additionally, as the study focuses solely on manufacturing companies in West Java, the findings may not be generalizable to other industries or regions. Future research could investigate additional factors influencing engagement, such as organizational culture, compensation, and work-life balance, for a more comprehensive view of engagement drivers. Comparative studies across different industries or regions would further enrich the understanding of how contextual factors shape employee engagement.

5. CONCLUSION

This study highlights the crucial roles of leadership, skill development, and work environment quality in fostering employee engagement within manufacturing

companies in West Java. Leadership proved to be the most influential factor, suggesting that supportive and transformational practices are vital for motivating employees and enhancing their commitment. Skill development also significantly impacts engagement, showing that continuous learning opportunities help employees feel valued and invested in their roles. Although work environment quality had a relatively smaller effect, it remains a foundational element that supports employee well-being and performance. These findings underscore the importance of an integrated approach to employee engagement, where leadership, skill development, and a high-

quality work environment collectively contribute to a motivated workforce. Manufacturing companies can benefit from prioritizing leadership training, offering skill development programs, and ensuring a safe and supportive work environment. Addressing these factors can improve productivity, reduce turnover, and build a more engaged workforce, ultimately supporting sustainable organizational success. Future research could expand on these findings by exploring additional engagement drivers across various industries and regions.

REFERENCES

- [1] S. L. Albrecht, A. B. Bakker, J. A. Gruman, W. H. Macey, and A. M. Saks, "Employee engagement, human resource management practices and competitive advantage: An integrated approach," *J. Organ. Eff. People Perform.*, vol. 2, no. 1, pp. 7–35, 2015.
- [2] M. Shukla, "Social and Commercial Entrepreneurship," *Soc. Entrep. India Quart. Idealism a Pound Pragmatism*, pp. 77–96, 2021, doi: 10.4135/9789353885892.n4.
- [3] H.-L. Chu, N.-Y. Liu, and S.-C. Chiu, "CEO power and CSR: the moderating role of CEO characteristics," *China Account. Financ. Rev.*, vol. 25, no. 1, pp. 101–121, Feb. 2023, doi: 10.1108/cafr-03-2022-0027.
- [4] C. Salliyuana and M. R. Hidayat, "Employee Engagement, Beban Kerja, dan Kepuasan Kerja terhadap Kinerja Karyawan," *J. Alwatzikhoebillah Kaji. Islam. Pendidikan, Ekon. Hum.*, vol. 10, no. 1, pp. 159–172, 2024.
- [5] B. Safari, A. Fadhlihi, M. Ahyat, and E. Irdhayanti, "The Effect of Employee Recruitment and Selection, Management Support, and Work-Life Balance on Individual Performance and Employee Well-Being in the Manufacturing Industry in West Java," *J. Bisnisman Ris. Bisnis dan Manaj.*, vol. 6, no. 1, pp. 148–162, 2024.
- [6] A. A. Al Afif, "The Effect of Diversity Management on Employee Engagement in the Manufacturing Sector," *Indones. J. Disabil. Stud.*, vol. 10, no. 2, pp. 179–197, 2023.
- [7] I. Maria, "PENGARUH PERTUMBUHAN PENDUDUK DAN PERUBAHAN IKLIM TERHADAP KETERSEDIAAN AIR," *Electron. J. Sci. Environ. Heal. Dis.*, vol. 2, no. 2, pp. 134–140, 2021.
- [8] J. PROVINCE, "THE EFFECTS OF INVESTMENT AMOUNT IN INVESTMENT ACTIVITY REPORT (LAPORAN KEGIATAN PENANAMAN MODAL/LKPM) ON EMPLOYMENT IN WEST," *Comp. Anal. Trade Financ. Emerg. Econ*, p. 191, 2023.
- [9] A. Choudhary, S. Mukherjee, B. Roy, I. Sengupta, K. Maji, and S. Gupta, "Optimizing Employee Satisfaction with Health and Safety Using Computational Models and Machine Learning," in *2024 International Conference on Circuit, Systems and Communication (ICCS-C)*, IEEE, 2024, pp. 1–7.
- [10] T. C. A. Kumar, M. H. Krishna, R. Sobti, B. Ilavarasan, and B. B. Nayak, "Applications of AI to Optimize Operations in the Management of Manufacturing," in *2024 International Conference on Communication, Computer Sciences and Engineering (IC3SE)*, IEEE, 2024, pp. 1520–1525.
- [11] N. Mayasari, A. Suhara, D. Marlita, R. Widowati, and D. Damiyana, "The Influence of Organizational Communication, Participative Leadership, and Work Motivation on Employee Creativity: Case Study in the Creative Industries in Bali," *Eastasouth Manag. Bus.*, vol. 2, no. 03, pp. 298–309, 2024.
- [12] M. Muchlish and M. E. S. Tjahyono, "Influence of TQM on increasing sustainable competitive advantage with transformational leadership as a mediation variable," *Int. J. Res. Bus. Soc. Sci. (2147- 4478)*, vol. 10, no. 8, pp. 100–106, Jan. 2022, doi: 10.20525/ijrbs.v10i8.1473.
- [13] A. Abatan *et al.*, "The role of environmental health and safety practices in the automotive manufacturing industry," *Eng. Sci. Technol. J.*, vol. 5, no. 2, pp. 531–542, 2024.
- [14] M. A. Bin Arshad and P. N. Ming, "An Overview of Employee Engagement and it's Relationship to Employee Performance: In the Background of Human Recourse Development".
- [15] A. Mishra and S. Biswal, "Employee engagement: A key to improve performance," 2024.
- [16] M. Abou Naaj, R. Mehdi, E. A. Mohamed, and M. Nachouki, "Analysis of the factors affecting student performance using a neuro-fuzzy approach," *Educ. Sci.*, vol. 13, no. 3, p. 313, 2023.
- [17] S. W. Akbar, A. U. Rehman, E. Bouri, M. S. Ijaz, and I. Arshad, "Socio-Economic Issues and Bank Stability: The Moderating Role of Competition," *Res. Int. Bus. Financ.*, p. 102449, 2024.
- [18] D. A. Ichdan, "The effect of training, work environment, motivation, job satisfaction, and career satisfaction on

- employee productivity," *Ann. Manag. Organ. Res.*, vol. 6, no. 1, pp. 57–69, 2024.
- [19] N. Laili, I. Geraldina, and M. Gunarto, "Analisis Lingkungan dan Kemampuan Kerja Terhadap Kinerja Pegawai dan Dampaknya Pada Kepuasan Kerja Pegawai (Studi Pada UPTD Puskesmas Muara Komam)," *J. Ilmu Sos. Manajemen, Akunt. dan Bisnis*, vol. 5, no. 3, pp. 473–488, 2024.
- [20] S. A. Hamed, M. R. M. Hussain, H. H. M. Jani, S. S. S. Sabri, and N. Rusli, "The influence of physical workplace environment (PWE) for a healthy culture of employees," *J. Heal. Qual. Life*, vol. 2, no. 1, pp. 12–22, 2024.
- [21] M. Nurudia, "Peran Lingkungan Kerja dan Fasilitas dalam Meningkatkan Motivasi dan Kinerja Karyawan," *PRODUKTIF J. Kepegawai. dan Organ.*, vol. 3, no. 1, pp. 60–69, 2024.
- [22] C. S. Widagdo, R. Octafian, N. Mistriani, and A. Mansur, "Exploring The Influence Of Technology On Travel Experiences: Digital Evolution In Tourism," *Proceeding Int. Glob. Tour. Sci. Vocat. Educ.*, vol. 1, no. 1, pp. 99–108, 2024.
- [23] N. Hikmayah and K. Aswar, "The Impact of Factors on the Audit Quality in Indonesia: The Moderating Effect of Professional Commitments," *Int. J. Acad. Res. Accounting, Financ. Manag. Sci.*, vol. 9, no. 4, Feb. 2020, doi: 10.6007/ijarafms/v9-i4/6916.
- [24] D. Desvianti, M. Safitri, and Z. Hasan, "The Role of Islamic Economics in Overcoming Economic Inequality and Realizing Development in Indonesia," *Al-Fadilah Islam. Econ. J.*, vol. 2, no. 1, pp. 1–9, 2024.
- [25] T. S. Patole, S. Sharma, and K. Sharma, "Personal Development Plans (PDPs) Supporting Employee Learning and Job Satisfaction: Lightening Role of Emotional Intelligence," in *Embracing Transhumanism and Genomics in Human Resources Management*, IGI Global, 2024, pp. 183–210.
- [26] A. D. A. Tasci, "A critical review and reconstruction of perceptual brand equity," *Int. J. Contemp. Hosp. Manag.*, vol. 33, no. 1, pp. 166–198, 2021, doi: 10.1108/IJCHM-03-2020-0186.
- [27] Y. Hole, M. S. Pawar, and E. B. Khedkar, "Omni channel retailing: An opportunity and challenges in the Indian market," in *Journal of Physics: Conference Series*, IOP Publishing, 2019, p. 12121.
- [28] B. Dorjgotov, "Enhancing Organizational Effectiveness Through Knowledge Management and Transformational Leadership," *Springer Books*, 2024.
- [29] Y. B. Kurata *et al.*, "Perceived Behavior Analysis to Boost Physical Fitness and Lifestyle Wellness for Sustainability among Gen Z Filipinos," *Sustainability*, vol. 15, no. 18, p. 13546, 2023.
- [30] O. Al-Kasasbeh, "Exploring the Nexus between Leadership Styles, Employee Engagement, and Organizational Performance a Multidimensional Review," *Hist. J. Hist. Soc. Sci.*, vol. 3, no. 2, pp. 154–168, 2024.
- [31] R. Sharma, "Leadership Styles and Employee Motivation: A Comparative Study in the Modern Workplace," *J. Adv. Manag. Stud.*, vol. 1, no. 2, pp. 1–6, 2024.
- [32] W. Saputra, "Pengaruh Gaya Kepemimpinan dan Budaya Organisasi Terhadap Keterlibatan Karyawan," *Indo-Fintech Intellectuals J. Econ. Bus.*, vol. 4, no. 4, pp. 1559–1567, 2024.
- [33] A. W. Chandra, D. Hantono, A. W. Purwanti, L. Prayogi, Y. Sari, and S. Yandri, "The Identification of Ethnic Architecture Application on the Beringharjo Market Building in Yogyakarta," *Int. J. Archit. Urban.*, vol. 8, no. 1, pp. 131–141, 2024.
- [34] C. B. A. Pratama, B. E. Soetjipto, C. Wardoyo, R. Hardi, A. S. Pribadi, and L. F. Ariyani, "Transformational Leadership in SMEs: Leveraging Initiative Climate and Employee Engagement for Enhanced Proactive Service Performance," *J. Ecohumanism*, vol. 3, no. 4, pp. 511–521, 2024.
- [35] S. M. Baomar and M. K. Islam, "Evaluating the Mediating Role of Transformational Leadership in the Nexus of Employee Motivation, Engagement, Emotional Intelligence, and Performance: A Comprehensive Review," *WSEAS Trans. Bus. Econ.*, vol. 21, pp. 1713–1723, 2024.
- [36] K. Komariyah, N. A. N. Murniati, and N. Egar, "Pengaruh Gaya Kepemimpinan Kepala Sekolah Dan Motivasi Berprestasi Terhadap Produktivitas Kerja Guru Taman Kanak-Kanak Di Kecamatan Patebon Kabupaten Kendal," *J. Manaj. Pendidik.*, vol. 9, no. 2, 2020.
- [37] G. G. Fisher, C. A. Bulger, and C. S. Smith, "Beyond work and family: a measure of work/nonwork interference and enhancement," *J. Occup. Health Psychol.*, vol. 14, no. 4, p. 441, 2009.
- [38] A. H. Istiqlal, "Personal Career Development With Appreciative Inquiry To Increase Employee Engagement," *J. Indones. Sos. Teknol.*, vol. 5, no. 2, pp. 354–362, 2024.
- [39] C. Nguyen, "The impact of training and development, job satisfaction and job performance on young employee retention," *Job Satisf. Job Perform. Young Empl. Retent. (May 1, 2020)*, 2020.
- [40] N. T. P. Sari and A. Kusumawati, "Literature Review : The Efforts To Strengthening of Micro, Small and Medium-Sized Enterprises (MSME) in Indonesia," *Asian J. Manag. Entrep. Soc. Sci.*, vol. 2, no. 01 SE-Articles, pp. 98–115, 2022.
- [41] M. S. Ummah, *No 主観的健康感を中心とした在宅高齢者における健康関連指標に関する共分散構造分析*, vol. 11, no. 1, 2019.
- [42] C. Liu, Y. Chen, S. Huang, X. Chen, and F. Liu, "Assessing the Determinants of Corporate Risk-Taking Using Machine Learning Algorithms," *Systems*, vol. 11, no. 5, May 2023, doi: 10.3390/systems11050263.
- [43] Z. Afdal, M. Kurnia Siwi, and T. Kurniawati, "MSMEs Business Sustainability: A Literature Review," 2021.