

The Influence of Employee Voice Mechanism and Organizational Climate on Employee Engagement and Innovation Culture in the Karawang Manufacturing Industry

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ABSTRACT

This study investigates the influence of employee voice mechanisms and organizational climate on employee engagement and innovation culture in the manufacturing industry in Karawang, Indonesia. Employing a quantitative research design, data were collected from 120 employees using a structured questionnaire measured on a five-point Likert scale. The data were analyzed using Structural Equation Modeling–Partial Least Squares (SEM-PLS 3) to examine both the measurement and structural models. The results indicate that employee voice mechanisms and organizational climate have significant positive effects on employee engagement. Organizational climate demonstrates a stronger influence, highlighting the importance of a supportive and open work environment in enhancing employee involvement. Furthermore, both employee voice mechanisms and organizational climate significantly affect innovation culture. Employee engagement is also found to have a significant positive impact on innovation culture and plays a partial mediating role in the relationship between the independent variables and innovation culture. These findings suggest that organizations in the manufacturing sector should prioritize the development of effective communication channels and foster a positive organizational climate to enhance employee engagement and promote innovation. This study contributes to the literature by integrating key organizational behavior variables into a comprehensive model and provides practical implications for improving organizational competitiveness through human resource strategies.

Keywords: Employee Voice Mechanisms, Organizational Climate, Employee Engagement, Innovation Culture, Karawang

1. INTRODUCTION

In the era of industrial transformation and intensifying global competition, organizations are increasingly required to strengthen their internal capabilities to remain competitive and sustainable. The manufacturing sector, in particular, plays a pivotal role in driving economic growth, especially in emerging economies such as Indonesia [1], [2]. The industrial region of Karawang, recognized as one of the largest manufacturing hubs in Southeast Asia [3], has significantly contributed to national productivity and industrial expansion. However, alongside this rapid development, manufacturing firms face complex challenges related to workforce management, organizational adaptability, and the need to sustain continuous innovation. These dynamics highlight the importance of understanding how internal organizational mechanisms can be optimized to enhance both employee-related outcomes and innovation performance.

Employee engagement has been widely acknowledged as a critical determinant of organizational effectiveness and long-term performance [4]–[6]. It reflects the extent to which employees are emotionally, cognitively, and behaviorally invested in their work roles. Highly engaged employees tend to demonstrate superior productivity, stronger commitment, and greater creativity, all of which are essential in dynamic and competitive industrial environments. In

manufacturing contexts, where efficiency, quality, and continuous improvement are paramount, fostering employee engagement becomes even more crucial [7], [8]. Nevertheless, many organizations continue to struggle in maintaining optimal levels of engagement due to structural rigidity, limited communication channels, and hierarchical organizational systems that restrict employee participation.

One of the key organizational mechanisms that has gained increasing scholarly attention in enhancing employee engagement is employee voice. Employee voice refers to the opportunities and formal or informal channels through which employees can express their ideas, concerns, and suggestions regarding organizational practices [9], [10]. From a theoretical perspective, employee voice is not merely a communication tool but a strategic resource that fosters participation, empowerment, and organizational learning. When employees perceive that their voices are acknowledged and valued, they are more likely to develop a sense of ownership and actively contribute to organizational goals [11], [12]. Conversely, the absence of effective voice mechanisms may lead to disengagement, reduced morale, and underutilization of employee potential, ultimately hindering innovation and organizational performance.

In addition to employee voice, organizational climate represents another fundamental factor influencing employee attitudes and behaviors. Organizational climate encompasses employees' shared perceptions of policies, practices, and procedures within the workplace. A supportive and positive climate—characterized by trust, openness, collaboration, and psychological safety—can significantly enhance employee engagement and stimulate innovative behavior [13], [14]. On the other hand, a negative or restrictive climate may suppress creativity, limit communication, and reduce employees' willingness to contribute beyond their formal roles. Therefore, examining the role of organizational climate is essential in understanding how organizations can create environments that facilitate both engagement and innovation.

Furthermore, the growing demand for innovation in the manufacturing sector necessitates the development of a strong innovation culture within organizations. Innovation culture refers to a set of shared values, norms, and practices that encourage experimentation, knowledge sharing, and the generation of new ideas [15], [16]. In highly competitive industrial regions such as Karawang, innovation is no longer optional but a strategic imperative for survival and growth. However, fostering an innovation culture requires more than structural support; it demands active employee involvement, engagement, and a conducive organizational environment. Thus, understanding how employee engagement mediates the relationship between organizational factors and innovation outcomes becomes increasingly important.

Despite the growing body of literature on employee engagement, employee voice, and organizational climate, there remains a significant research gap, particularly in the context of the Indonesian manufacturing industry. Previous studies have predominantly examined these variables in isolation, focusing on direct relationships without integrating them into a comprehensive framework that links organizational mechanisms to innovation culture. Moreover, limited empirical research has explored the mediating role of employee engagement using advanced analytical approaches such as Structural Equation Modeling–Partial Least Squares (SEM-PLS). Therefore, this study aims to address this gap by investigating the influence of employee voice and organizational climate on employee engagement and innovation culture within manufacturing firms in Karawang, providing both theoretical enrichment and practical implications for enhancing organizational competitiveness.

2. LITERATURE REVIEW

2.1 *Theoretical Foundation*

This study is grounded in several key theoretical perspectives that explain the relationships between employee voice mechanisms, organizational climate, employee engagement, and innovation culture. First, Social Exchange Theory (SET) posits that relationships between employees and organizations are built upon reciprocal exchanges, where supportive organizational practices are responded to with positive employee attitudes and behaviors [17], [18]. When organizations provide open communication channels and foster a positive organizational climate, employees are more likely to reciprocate through higher levels of engagement and proactive contributions, including innovative behavior. In parallel, Organizational Support Theory (OST) suggests that employees develop generalized beliefs regarding the extent to which the organization values their contributions and cares about their well-being [14], [19]. In this regard, employee voice mechanisms and a supportive organizational climate function as important signals of perceived organizational support, which subsequently enhances employee engagement and encourages discretionary efforts beyond formal job requirements.

Furthermore, the Resource-Based View (RBV) provides a strategic lens by emphasizing that intangible organizational resources—such as human capital, employee engagement, and innovation culture—constitute critical drivers of sustainable competitive advantage. Within this framework, employee engagement is not merely an attitudinal outcome but a valuable organizational asset that can enhance performance and innovation capacity [20], [21]. Similarly, innovation culture represents a strategic capability shaped by internal organizational practices, including the provision of voice mechanisms and the establishment of a conducive organizational climate. Therefore, integrating these theoretical perspectives offers a comprehensive foundation for understanding how organizational factors can be leveraged to strengthen engagement and foster a sustainable innovation culture.

2.2 **Employee Voice Mechanisms**

Employee voice mechanisms refer to both formal and informal channels through which employees can express their ideas, opinions, suggestions, and concerns regarding organizational processes and decision-making, including suggestion systems, team meetings, feedback platforms, grievance procedures, and participatory practices [22]. Prior research identifies employee voice as a critical component of participative management, as it contributes to improved decision quality, enhanced problem-solving, and increased employee satisfaction [23]. When employees are encouraged to speak up, they tend to feel more valued and respected, thereby strengthening their psychological attachment and commitment to the organization. Furthermore, employee voice plays a strategic role in fostering innovation by facilitating idea generation and knowledge sharing, enabling organizations to leverage employee insights for improving processes, products, and services. This is particularly important in manufacturing environments, where continuous improvement and

operational efficiency are essential, positioning employee voice mechanisms as a key driver of innovation and sustainable organizational performance.

2.3 Organizational Climate

Organizational climate refers to employees' shared perceptions of the policies, practices, and procedures that are rewarded, supported, and expected within an organization, reflecting the overall "feel" of the workplace and influencing how individuals interpret their work environment. A positive organizational climate is typically characterized by trust, openness, fairness, support, and collaboration, which encourages employees to take initiative, share ideas, and actively engage in their roles [13], [14]. In contrast, a negative climate—marked by rigid structures, limited support, and ineffective communication—can result in disengagement and resistance to change. Within the context of innovation, organizational climate plays a particularly crucial role, as an environment that supports risk-taking, continuous learning, and experimentation can significantly enhance an organization's capacity to innovate [24], [25]; therefore, organizational climate not only shapes employee attitudes and behaviors but also serves as a key determinant of broader organizational outcomes, including the development of a strong innovation culture.

2.4 Employee Engagement

Employee engagement is defined as a positive and fulfilling work-related psychological state characterized by vigor, dedication, and absorption, in which employees demonstrate high levels of energy, enthusiasm, and deep involvement in their work, often exceeding formal job requirements to contribute to organizational success. It has been widely recognized as a key predictor of both individual and organizational performance, as higher engagement levels are associated with increased productivity, lower turnover rates, improved customer satisfaction, and enhanced innovation [4], [26], [27]. In manufacturing industries, where efficiency and quality are critical, engaged employees are more likely not only to comply with established standards but also to proactively seek process improvements. Furthermore, prior research indicates that employee engagement is significantly influenced by organizational factors such as employee voice mechanisms and organizational climate; when employees feel that their voices are heard and operate within a supportive and conducive environment [28], [29], they are more likely to develop strong emotional attachment and commitment to the organization.

2.5 Innovation Culture

Innovation culture refers to the shared values, beliefs, and practices within an organization that support and encourage creativity, experimentation, and the implementation of new ideas, reflecting a mindset that embraces change and continuous improvement. Organizations with a strong innovation culture typically foster open communication, collaboration, knowledge sharing, and a tolerance for failure, enabling employees to explore and develop new ideas without fear of negative consequences, thereby enhancing overall innovative capacity [30], [31]. In the manufacturing sector, innovation culture plays a crucial role in maintaining

competitiveness, improving operational efficiency, and responding effectively to dynamic market demands, as organizations that successfully cultivate such a culture are better positioned to adapt to technological advancements and evolving customer needs [32], [33].

2.6 Conceptual Framework

Based on the literature review, this study proposes a conceptual framework in which employee voice mechanisms and organizational climate function as independent variables, employee engagement acts as a mediating variable, and innovation culture serves as the dependent variable. This framework is built on the assumption that organizational practices influence innovation outcomes both directly and indirectly through the level of employee engagement. Employee voice mechanisms provide opportunities for participation that enhance employees' sense of autonomy and belonging, thereby increasing engagement. Similarly, a supportive organizational climate characterized by trust, fairness, and collaboration fosters a conducive environment in which employees are more likely to be actively involved in their work.

Furthermore, both employee voice mechanisms and organizational climate are expected to have a direct impact on innovation culture by facilitating idea exchange, encouraging risk-taking, and promoting learning and creativity within the organization. Engaged employees, in turn, are more likely to demonstrate proactive behaviors, including innovation and continuous improvement, driven by their enthusiasm and commitment to organizational goals. Therefore, employee engagement is proposed to play a mediating role in strengthening the relationship between organizational factors and innovation culture, suggesting that the effectiveness of voice mechanisms and organizational climate in fostering innovation is partly dependent on their ability to enhance employee engagement. Based on these theoretical and empirical considerations, a set of hypotheses is developed to empirically test the proposed relationships.

- H1: Employee voice mechanisms have a positive and significant effect on employee engagement.
- H2: Organizational climate has a positive and significant effect on employee engagement.
- H3: Employee voice mechanisms have a positive and significant effect on innovation culture.
- H4: Organizational climate has a positive and significant effect on innovation culture.
- H5: Employee engagement has a positive and significant effect on innovation culture.
- H6: Employee engagement mediates the relationship between employee voice mechanisms and innovation culture.
- H7: Employee engagement mediates the relationship between organizational climate and innovation culture.

3. METHODS

3.1 Research Design

This study employs a quantitative research approach with an explanatory design to examine the causal relationships between employee voice mechanisms, organizational climate, employee engagement, and innovation culture. The quantitative approach is considered appropriate as it enables the measurement of variables through numerical data and the application of statistical analysis to test the proposed hypotheses. Furthermore, the study adopts a cross-sectional survey design, in which data are collected at a single point in time from respondents within the manufacturing industry in Karawang. This design is suitable for capturing employees' perceptions of organizational practices and assessing their influence on employee engagement and innovation culture.

3.2 Population and Sample

The population of this study consists of employees working in manufacturing companies located in the Karawang industrial area, Indonesia. This region is selected due to its strategic role as a major industrial hub, accommodating a wide range of national and multinational manufacturing firms. The diverse industrial landscape in Karawang provides a relevant context for examining organizational practices, employee engagement, and innovation culture within a highly competitive and dynamic environment.

The sampling technique employed in this research is purposive sampling, in which respondents are selected based on specific criteria, including being full-time employees in manufacturing companies in Karawang, having a minimum of one year of work experience to ensure sufficient understanding of organizational practices, and being involved in operational, administrative, or managerial functions. A total of 120 respondents were included in this study, meeting the minimum sample requirement for analysis using Structural Equation Modeling–Partial Least Squares (SEM-PLS). This sample size is considered adequate for PLS-SEM, as the method is well-suited for small to medium sample sizes and complex research models.

3.3 Data Collection Technique

Primary data were collected using a structured questionnaire distributed both directly and online to respondents, designed to capture their perceptions of the study variables. All measurement items were assessed using a five-point Likert scale ranging from 1 = Strongly Disagree to 5 = Strongly Agree. Prior to full-scale distribution, the questionnaire underwent a pilot test to ensure the clarity, validity, and reliability of the measurement items, thereby enhancing the overall quality and accuracy of the data collected.

3.4 Measurement of Variables

This study includes four main variables: Employee Voice Mechanisms (X1), Organizational Climate (X2), Employee Engagement (Z), and Innovation Culture (Y). Employee Voice Mechanisms refer to the extent to which organizations provide opportunities for employees to express ideas, suggestions, and concerns, measured through indicators such as the availability of communication channels, participation in decision-making, freedom to express opinions, and management responsiveness to feedback. Organizational Climate reflects employees' perceptions of the work environment, including trust and openness, support from management, fairness and transparency, and collaboration among employees. Employee Engagement represents the level of emotional and cognitive involvement in work, captured through vigor (energy and enthusiasm), dedication (sense of significance and pride), and absorption (full concentration in work). Meanwhile, Innovation Culture refers to organizational values and practices that support creativity and innovation, indicated by encouragement of new ideas, support for experimentation, tolerance for failure, and a continuous improvement orientation. All measurement items were adapted from established literature and adjusted to suit the context of the manufacturing industry.

3.5 Data Analysis Technique

The data analysis in this study was conducted using Structural Equation Modeling–Partial Least Squares (SEM-PLS) with the assistance of SmartPLS 3 software [34]. This method was selected due to its capability to analyze complex relationships among variables and its suitability for small sample sizes and non-normal data distributions. The analysis was carried out in two main stages, beginning with the evaluation of the measurement model (outer model), which aims to assess the validity and reliability of the constructs. Convergent validity was evaluated using factor loadings greater than 0.70 and Average Variance Extracted (AVE) exceeding 0.50, while discriminant validity was assessed through the Fornell-Larcker criterion and the Heterotrait-Monotrait Ratio (HTMT) with a threshold below 0.90. Reliability was measured using Cronbach's Alpha and Composite Reliability, both of which were required to exceed 0.70 to ensure internal consistency.

The second stage involved the evaluation of the structural model (inner model), which examines the relationships between variables and tests the proposed hypotheses. This evaluation included the analysis of path coefficients to determine the strength and direction of relationships, the coefficient of determination (R^2) to assess the model's explanatory power, and the effect size (f^2) to measure the influence of exogenous variables on endogenous variables. Additionally, predictive relevance (Q^2) was used to evaluate the model's predictive capability, while bootstrapping analysis was conducted to test the significance of the relationships using t-statistics and p-values. Based on this approach, the study proposes a structural model in which Employee Voice Mechanisms (X1) and Organizational Climate (X2) function as independent variables, Employee Engagement (Z) serves as a mediating variable, and Innovation Culture (Y) acts as the dependent variable, with both direct and indirect relationships examined through the mediating role of employee engagement.

4. RESULT AND DISCUSSION

4.1 Respondent Profile

This study involved 120 respondents from various manufacturing companies located in the Karawang industrial area, selected based on predetermined criteria such as employment status, work experience, and involvement in organizational activities. The demographic profile shows that the majority of respondents are male (61.7%), reflecting the typical workforce composition in the manufacturing sector, where operational roles are predominantly occupied by men. In terms of age distribution, most respondents (55.0%) fall within the 26–35 years age group, indicating that the workforce is largely composed of individuals in their productive years, which is particularly relevant for studies related to employee engagement and innovation.

From an educational perspective, the majority of respondents hold a bachelor's degree (40.0%), suggesting a relatively strong academic background that may support higher engagement levels and innovation capabilities. Regarding work experience, most respondents (68.3%) have between 1–5 years of experience, indicating that the sample is dominated by early-career employees who are still in the process of developing their competencies, engagement, and innovative behaviors within the organization. Overall, this demographic composition provides a meaningful context for analyzing the relationships between organizational practices, employee engagement, and innovation culture.

4.2 Measurement Model Evaluation (Outer Model)

The evaluation of the measurement model (outer model) aims to assess the validity and reliability of the constructs used in this study. This process ensures that the indicators accurately measure their respective latent variables. The evaluation includes convergent validity, discriminant validity, and reliability testing, using the SEM-PLS approach with SmartPLS 3.

4.2.1 Convergent Validity

Convergent validity is assessed based on outer loadings and Average Variance Extracted (AVE). A construct is considered valid if the loading factor is greater than 0.70 and the AVE value exceeds 0.50.

Table 1. Outer Loadings and AVE

Variable	Indicator	Loading	AVE
Employee Voice (X1)	X1.1	0.821	0.673
	X1.2	0.847	
	X1.3	0.803	
	X1.4	0.829	
Organizational Climate (X2)	X2.1	0.835	0.691
	X2.2	0.862	
	X2.3	0.844	
	X2.4	0.817	
Employee Engagement (Z)	Z1	0.881	0.724
	Z2	0.868	
	Z3	0.846	
Innovation Culture (Y)	Y1	0.859	0.708
	Y2	0.874	
	Y3	0.836	
	Y4	0.848	

The results presented in Table 1 demonstrate that all measurement indicators exhibit strong outer loadings, with values ranging from 0.803 to 0.881, exceeding the recommended threshold of 0.70, thereby confirming good indicator reliability. Furthermore, the Average Variance Extracted (AVE) values for all constructs—Employee Voice (0.673), Organizational Climate (0.691), Employee Engagement (0.724), and Innovation Culture (0.708)—are above the minimum criterion of 0.50, indicating adequate convergent validity. These findings suggest that each construct is able to explain more than 50% of the variance of its indicators, reflecting that the measurement model is well-established and capable of capturing the intended latent variables. Overall, the results confirm that the constructs used in this study are both valid and reliable, supporting the robustness of the measurement model for further structural analysis.

4.2.2 Reliability Test

Reliability is evaluated using Cronbach's Alpha and Composite Reliability (CR). A construct is considered reliable if both values exceed 0.70.

Table 2. Reliability Results

Variable	Cronbach's Alpha	Composite Reliability
Employee Voice (X1)	0.876	0.912
Organizational Climate (X2)	0.885	0.917
Employee Engagement (Z)	0.871	0.907
Innovation Culture (Y)	0.892	0.921

The reliability results in Table 2 indicate that all constructs demonstrate high internal consistency, as evidenced by Cronbach's Alpha values ranging from 0.871 to 0.892, all of which exceed the recommended threshold of 0.70. Similarly, the Composite Reliability values for all variables—Employee Voice (0.912), Organizational Climate (0.917), Employee Engagement (0.907), and Innovation Culture (0.921)—are well above the acceptable level of 0.70, further confirming the robustness of the measurement model. These findings suggest that the indicators used for each construct are consistently measuring the same underlying concept, ensuring the reliability of the

data. Overall, the results affirm that all variables in this study possess strong reliability and are suitable for subsequent structural model analysis.

4.2.3 Discriminant Validity

Discriminant validity ensures that each construct is distinct from other constructs. This study evaluates discriminant validity using the Fornell-Larcker criterion and Heterotrait-Monotrait Ratio (HTMT).

1. Fornell-Larcker Criterion

A construct is considered valid if the square root of its AVE is higher than its correlations with other constructs.

Table 3. Fornell-Larcker Criterion

Variable	X1	X2	Z	Y
X1	0.820			
X2	0.615	0.831		
Z	0.648	0.705	0.851	
Y	0.602	0.678	0.735	0.842

The results of the Fornell-Larcker criterion in Table 3 indicate that all constructs meet the requirements for discriminant validity, as the square root of the Average Variance Extracted (AVE) for each variable (X1 = 0.820, X2 = 0.831, Z = 0.851, Y = 0.842) is greater than the corresponding inter-construct correlations. This demonstrates that each construct shares more variance with its own indicators than with other constructs in the model, confirming that the variables are empirically distinct from one another. Although there are moderate correlations between variables—particularly between Organizational Climate (X2) and Employee Engagement (Z), as well as Employee Engagement (Z) and Innovation Culture (Y)—these values remain below the diagonal elements, indicating no issues of multicollinearity or construct overlap. Overall, the findings confirm that the measurement model has satisfactory discriminant validity and that each construct is uniquely captured within the model.

2. Heterotrait-Monotrait Ratio (HTMT)

HTMT values should be below 0.90 to confirm discriminant validity.

Table 4. HTMT Results

Variable	X1	X2	Z	Y
X1	-	0.712	0.734	0.701
X2		-	0.789	0.756
Z			-	0.812
Y				-

The HTMT results presented in Table 4 indicate that all construct correlations are below the recommended threshold of 0.90, with values ranging from 0.701 to 0.812, thereby confirming satisfactory discriminant validity across all variables. The highest HTMT value is observed between Employee Engagement (Z) and Innovation Culture (Y) at 0.812, which, although relatively strong, remains within acceptable limits and reflects a meaningful yet distinct relationship between the constructs. Similarly, the relationships between Organizational Climate (X2) and Employee Engagement (Z), as well as Employee Voice (X1) with other variables, also fall within acceptable ranges, indicating that each construct is empirically distinguishable. Overall, these findings reinforce the robustness of the measurement model and confirm that there are no issues related to multicollinearity or construct redundancy.

4.3 Structural Model Evaluation (Inner Model)

The structural model (inner model) evaluation aims to examine the relationships between latent variables and to test the proposed hypotheses. This evaluation includes the assessment of coefficient of determination (R^2), effect size (f^2), predictive relevance (Q^2), path coefficients, and mediation effects using the bootstrapping procedure in SEM-PLS.

4.3.1 Coefficient of Determination (R^2)

The R^2 values indicate the proportion of variance in endogenous variables explained by the exogenous variables, where Employee Engagement (Z) has an R^2 value of 0.586, categorized as moderate, and Innovation Culture (Y) has an R^2 value of 0.674, categorized as substantial. These results suggest that employee voice mechanisms and organizational climate are able to explain 58.6% of the variance in employee engagement, while the combination of employee voice mechanisms, organizational climate, and employee engagement explains 67.4% of the variance in innovation culture. Overall, these findings demonstrate that the proposed model possesses strong explanatory power in capturing the relationships among the studied variables.

4.3.2 Effect Size (f^2)

Effect size (f^2) measures the impact of each exogenous variable on endogenous variables.

Table 5. Effect Size (f^2)

Relationship	f^2 Value	Effect Size
X1 → Z	0.142	Medium
X2 → Z	0.318	Large
X1 → Y	0.087	Small
X2 → Y	0.129	Medium
Z → Y	0.276	Medium

The effect size (f^2) results in Table 5 indicate varying levels of influence among the relationships in the model. Organizational Climate (X2) has a large effect on Employee Engagement (Z) ($f^2 = 0.318$), suggesting that it is the most influential predictor of engagement compared to Employee Voice (X1), which shows a medium effect ($f^2 = 0.142$). In relation to Innovation Culture (Y), Employee Voice (X1) demonstrates a small effect ($f^2 = 0.087$), while Organizational Climate (X2) exhibits a medium effect ($f^2 = 0.129$), indicating a stronger contribution. Additionally, Employee Engagement (Z) has a medium effect on Innovation Culture ($f^2 = 0.276$), highlighting its important role as a key driver of innovation. Overall, these findings suggest that organizational climate is the most dominant factor influencing engagement, while employee engagement plays a substantial role in shaping innovation culture, reinforcing its mediating importance in the model.

4.3.3 Predictive Relevance (Q^2)

Predictive relevance (Q^2) is used to evaluate the model's predictive capability through the blindfolding procedure, where a Q^2 value greater than zero indicates that the model possesses predictive relevance. The results show that Employee Engagement (Z) has a Q^2 value of 0.401 and Innovation Culture (Y) has a Q^2 value of 0.462, both of which are categorized as high predictive relevance. These findings indicate that the model not only explains the relationships among variables effectively but also demonstrates strong capability in predicting the endogenous constructs, thereby confirming the robustness and predictive accuracy of the proposed research model.

4.3.4 Path Coefficients and Hypothesis Testing

Hypothesis testing was conducted using the bootstrapping method. The significance of relationships is determined by t-statistics (>1.96) and p-values (<0.05).

Table 6. Path Coefficients and Hypothesis Testing

Hypothesis	Relationship	Coefficient (β)	t-Statistic	p-Value	Decision
H1	$X1 \rightarrow Z$	0.325	3.912	0.000	Supported
H2	$X2 \rightarrow Z$	0.492	6.105	0.000	Supported
H3	$X1 \rightarrow Y$	0.229	2.843	0.005	Supported
H4	$X2 \rightarrow Y$	0.305	3.556	0.001	Supported
H5	$Z \rightarrow Y$	0.417	5.134	0.000	Supported

The results of the path coefficients and hypothesis testing in Table 6 indicate that all proposed hypotheses are supported, as evidenced by significant t-statistics (greater than 1.96) and p-values below 0.05. Employee Voice Mechanisms (X1) have a positive and significant effect on Employee Engagement (Z) ($\beta = 0.325$, $t = 3.912$, $p = 0.000$), while Organizational Climate (X2) shows a stronger influence on Employee Engagement ($\beta = 0.492$, $t = 6.105$, $p = 0.000$), highlighting it as the dominant predictor of engagement. Furthermore, both Employee Voice ($\beta = 0.229$, $p = 0.005$) and Organizational Climate ($\beta = 0.305$, $p = 0.001$) significantly influence Innovation Culture (Y), indicating that organizational practices directly contribute to innovation outcomes. Notably, Employee Engagement (Z) has the strongest effect on Innovation Culture ($\beta = 0.417$, $t = 5.134$, $p = 0.000$), emphasizing its critical role as a key driver of innovation. Overall, these findings confirm the robustness of the proposed model and underscore the importance of both organizational factors and employee engagement in fostering innovation culture.

4.3.5 Mediation Analysis

The mediating role of employee engagement was tested using indirect effects through bootstrapping.

Table 7. Indirect Effects (Mediation Test)

Hypothesis	Relationship	Indirect Effect	t-Statistic	p-Value	Mediation Type
H6	$X1 \rightarrow Z \rightarrow Y$	0.136	3.021	0.003	Partial Mediation
H7	$X2 \rightarrow Z \rightarrow Y$	0.205	4.112	0.000	Partial Mediation

The results of the indirect effects (mediation test) in Table 7 indicate that employee engagement (Z) significantly mediates the relationships between employee voice mechanisms (X1) and innovation culture (Y), as well as between organizational climate (X2) and innovation culture. Specifically, the indirect effect of $X1 \rightarrow Z \rightarrow Y$ is significant ($\beta = 0.136$, $t = 3.021$, $p = 0.003$), while the indirect effect of $X2 \rightarrow Z \rightarrow Y$ is also significant and stronger ($\beta = 0.205$, $t = 4.112$, $p = 0.000$). Both relationships are categorized as partial mediation, indicating that employee voice mechanisms and organizational climate influence innovation culture both directly and indirectly through employee engagement. These findings highlight the critical role of employee engagement as a mechanism through which organizational practices are translated into innovation outcomes, reinforcing its strategic importance in enhancing organizational performance.

Discussion

This study provides important insights into the role of organizational factors in shaping employee engagement and innovation culture within the manufacturing industry in Karawang. The findings reveal that employee voice mechanisms significantly influence employee engagement, supporting the core premise of Social Exchange Theory, which posits that employees reciprocate positive organizational treatment with higher levels of involvement and commitment. In manufacturing environments characterized by hierarchical structures, the presence of effective voice

mechanisms becomes particularly critical. Employees who are given the opportunity to express their ideas and concerns tend to develop a stronger psychological attachment to their work, thereby enhancing engagement levels. This finding reinforces prior research emphasizing participative communication as a key driver of employee motivation and involvement [35], [36].

In addition, organizational climate emerges as the most dominant factor influencing employee engagement, indicating that a supportive and positive work environment plays a central role in shaping employee attitudes. This finding aligns with Organizational Support Theory, which suggests that employees who perceive high levels of organizational support are more likely to respond with increased engagement [13], [37]. In the context of the Karawang manufacturing sector, where operational pressure and performance targets are often high, a climate characterized by trust, fairness, and collaboration acts as a crucial buffer that enhances employee resilience and commitment. Therefore, beyond structural mechanisms such as voice, the overall organizational environment becomes a fundamental determinant of sustained engagement.

Furthermore, the study confirms that both employee voice mechanisms and organizational climate significantly contribute to the development of innovation culture. Employee voice facilitates knowledge sharing and idea generation, which are essential elements of innovation processes, particularly in manufacturing settings that rely on continuous improvement. At the same time, a positive organizational climate fosters psychological safety, enabling employees to take risks and experiment with new ideas without fear of negative consequences. These findings suggest that innovation is not solely dependent on individual creativity but is deeply embedded within organizational systems and environments that encourage openness and learning.

Another key finding of this study is the strong influence of employee engagement on innovation culture, highlighting its role as a critical driver of innovative behavior. Engaged employees are more likely to demonstrate proactive attitudes, invest additional effort, and actively contribute to organizational improvement initiatives. This result supports the Resource-Based View, which positions human capital—particularly engaged employees—as a strategic asset that enhances organizational competitiveness [38], [39]. In this context, employee engagement serves not only as an outcome of organizational practices but also as a mechanism through which innovation culture is strengthened.

Finally, the mediation analysis reveals that employee engagement partially mediates the relationship between employee voice mechanisms, organizational climate, and innovation culture. This indicates that while organizational practices have a direct impact on innovation, their effectiveness is significantly enhanced when they successfully foster employee engagement. In other words, employee engagement acts as a critical pathway that translates supportive organizational conditions into tangible innovation outcomes. These findings contribute to the literature by offering an integrated framework that links organizational mechanisms, employee engagement, and innovation culture, while also providing practical implications for organizations to prioritize employee-centered strategies in building sustainable competitive advantage.

CONCLUSION

This study aims to examine the influence of employee voice mechanisms and organizational climate on employee engagement and innovation culture in the manufacturing industry in Karawang, with employee engagement serving as a mediating variable. Based on the SEM-PLS analysis, several key conclusions can be drawn. Employee voice mechanisms are found to have a positive and significant effect on employee engagement, indicating that organizations that provide opportunities for employees to express their ideas and opinions can enhance their involvement and commitment. Moreover, organizational climate demonstrates a stronger and more significant influence on employee engagement, emphasizing the critical role of a supportive, fair, and open work environment in fostering employees' emotional attachment to the organization. In addition, both employee voice mechanisms and organizational climate are proven to significantly influence

innovation culture, suggesting that open communication and a conducive organizational environment are essential drivers of innovation.

Furthermore, employee engagement is shown to have a significant positive effect on innovation culture, highlighting that engaged employees are more likely to actively contribute to creative and innovative activities within the organization. The findings also confirm that employee engagement partially mediates the relationship between employee voice mechanisms, organizational climate, and innovation culture, indicating that organizational practices not only have direct effects on innovation but also indirectly enhance it through increased engagement. Overall, this study underscores the strategic importance of human resource practices in shaping organizational outcomes. Therefore, manufacturing companies in Karawang are encouraged to strengthen employee voice systems and cultivate a positive organizational climate to enhance engagement and build a sustainable innovation culture, ultimately improving organizational performance and competitiveness.

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