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Research Article

The Impact of Internal Communication and Work Environment on Employee Performance in Manufacturing Companies in Semarang

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Abstract: This study analyzes the effect of internal communication and work environment on employee performance in manufacturing companies in Semarang, Indonesia. Using a quantitative survey method with 103 respondents, data were collected via Likert-scale questionnaire and analyzed using multiple linear regression. Results show that both internal communication and work environment significantly influence employee performance. Work environment has a more dominant effect (β = 0.779) than internal communication (β = 0.168). The model explains 86.8% of performance variance (R^2 = 0.868), demonstrating strong predictive power. This study provides practical recommendations for manufacturing managers to prioritize work environment improvements while maintaining effective communication systems. It contributes to human resource management literature by establishing the relative importance of environmental versus communication factors in manufacturing contexts.

Keywords: Internal Communication; Work Environment; Employee Performance; Manufacturing Industry; Human Resource Management

1. Introduction

The manufacturing industry plays a vital role in Indonesia's economic development, contributing significantly to GDP and employment. In Semarang, as one of Indonesia's major industrial centers, manufacturing companies face increasing challenges in maintaining competitive advantage through optimal human resource management. Employee performance in manufacturing settings is particularly crucial as it directly affects productivity, quality control, and operational efficiency.

Human Resource Management, according to Mary Parker Follett, is an art of achieving organizational goals through coordinating people to perform various necessary tasks. In manufacturing companies, employees are the most critical factor determining organizational success. The driver and determinant of company operations are determined by human resources. Therefore, companies should provide positive direction to achieve organizational objectives.

Employee performance is defined as the overall result of an individual during a certain period in carrying out tasks that have predetermined work standards, targets, goals, or criteria that have been agreed upon. In manufacturing contexts, employee performance directly impacts production output, quality standards, and safety compliance. Performance can be measured and evaluated when individuals or groups of employees have established criteria or success standards set by the company.

Internal communication serves as a critical mechanism for coordinating activities in manufacturing environments. According to, communication is a dynamic transactional process that influences the behavior of sources and recipients by consciously recognizing their behavior to produce messages they transmit to stimulate or obtain certain attitudes or

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behaviors. Effective internal communication facilitates information flow between management and employees, enabling better coordination and decision-making processes.

Work environment in manufacturing companies significantly influences employee performance. A pleasant work environment makes employees feel more comfortable at work, thereby improving their performance. Work environment conditions are considered good or appropriate when employees can carry out activities optimally, safely, and efficiently.

Based on preliminary research at manufacturing companies in Semarang, there is a tendency for declining employee performance. This decline is attributed to less harmonious communication between employees and management, and inadequate work environment comfort due to non-compliance with company regulations, resulting in employees not performing their tasks properly.

Therefore, this study aims to investigate the impact of internal communication and work environment on employee performance in manufacturing companies in Semarang. The findings are expected to provide both theoretical contributions to human resource management literature and practical implications for manufacturing managers seeking to optimize workforce productivity.

2. Literature Review

2.1. Human Resource Management

Human resource management (HRM) is essential for organizational success, particularly in manufacturing where operational efficiency depends on employee performance. According t, organizations function as social systems where communication patterns significantly influence performance outcomes. The manufacturing sector requires employees to be skilled, disciplined, and safety-conscious to meet production targets and quality standards. Recent studies by demonstrate that effective HRM practices in manufacturing help companies retain talented employees, enhance productivity, and achieve strategic objectives.

2.2. Internal Communication

Internal communication refers to the exchange of information within an organization between management and employees, and among employees themselve. The theoretical foundation for organizational communication, emphasizing three critical dimensions: information clarity, communication openness, and interpersonal relationships.

Information Clarity encompasses timely and relevant task-related information, complete technical specifications, and high accuracy in work instruction delivery. In manufacturing contexts, clear communication prevents errors and ensures consistent quality output.

Communication Openness involves good participation in team discussions, two-way communication between employees and supervisors, and freedom to provide input for process improvements. This dimension is particularly crucial in manufacturing where employee feedback can lead to significant operational improvements.

Interpersonal Relationships include team closeness, trust in working relationships, and ability to manage conflicts effectively. Strong interpersonal relationships facilitate collaboration and problem-solving in manufacturing teams.

2.3. Work Environment

Work environment encompasses both physical and psychological conditions in which employees perform their duties. two-factor theory provides the theoretical foundation, distinguishing between hygiene factors (work environment) and motivators that influence employee satisfaction and performance.

Physical Environment includes workstation ergonomics, air quality and ventilation, and adequate lighting for precision work. In manufacturing settings, physical conditions directly affect employee comfort, safety, and productivity.

Psychological Environment encompasses freedom to express improvement ideas, comfort and security levels during work, and absence of excessive pressure or intimidation. A supportive psychological environment encourages innovation and reduces stress-related performance issues.

Social Environment involves teamwork cooperation, work culture supporting quality and productivity, and support for employee welfare. Social aspects of work environment significantly influence employee engagement and retention in manufacturing companies.

Studies by on organizational change and development confirm that work environment improvements lead to measurable performance enhancements in manufacturing contexts.

2.4. Employee Performance

Employee performance represents the overall achievement of individuals in fulfilling their job responsibilities according to established standards. Goal-Setting Theory provides the theoretical framework, emphasizing that clear, challenging goals improve performance outcomes.

Task Performance includes meeting quantitative production targets, maintaining consistency in work quality, and demonstrating efficient time and resource management. This dimension directly relates to core job responsibilities and measurable outcomes.

Contextual Performance encompasses helping colleagues in production teams, effective communication across departments, and active contribution to process improvements. These behaviors support overall organizational effectiveness beyond individual task completion.

Adaptive Performance involves adapting to changes in models or techniques, maintaining job and work environment satisfaction, and understanding contributions within the production chain. This dimension is increasingly important in dynamic manufacturing environments. Recent meta-analysis by confirms that performance management systems integrating multiple performance dimensions yield superior results in manufacturing organizations.

3. Proposed Method

This study employs a quantitative research approach using survey methodology. The research design is explanatory, aiming to analyze the causal relationships between internal communication, work environment, and employee performance.

3.1 Population and Sample

The research population consists of employees from manufacturing companies in Semarang. Using purposive sampling technique, 103 respondents were selected from various manufacturing companies representing different organizational levels and departments.

3.2 Data Analysis

Data analysis was performed using SPSS 26.0 with the following steps:

- Descriptive Statistics: Mean, standard deviation, and frequency distributions were calculated for demographic variables and main constructs.
- Reliability Analysis: Cronbach's alpha was computed to assess internal consistency of scales.
- Validity Testing: Convergent and discriminant validity were assessed through correlation analysis.
- Assumption Testing: Tests for normality, multicollinearity, heteroscedasticity, and autocorrelation were conducted.
- Hypothesis Testing: Multiple regression analysis was used to test the hypotheses with significance level $\alpha=0.05$.

4. Results and Discussion

Table 1. Respondent Characterictic

Characteristic	Category	Frequency (n)	Percentage (%)
Gender	Male	58	56.3
	Female	45	43.7
Age	< 25 years	90	87.4
	25 - 34 years	10	9.7
	35 - 44 years	3	2.9
Education Level	High School/Vocational School	44	42.7
	Diploma	38	36.9
	Bachelor's Degree (S1)	18	17.5
	Postgraduate (Master's and above)	3	2.9
Length of Service	< 1 year	32	31.1
	1 - 3 years	57	55.3
	4 - 6 years	11	10.7
	>7 years	3	2.9
Monthly Income	Rp.2000000 – Rp.3000001	98	95.1
	Rp.3000000 – Rp.4000001	5	4.9

Source : Output SPSS (2025)

4.1 Respondent Characteristics

This study involved 103 respondents, predominantly composed of young workers aged 17–24 years, totaling 90 individuals (87.4%). The gender composition was relatively balanced, with 58 male respondents (56.3%) and 45 female respondents (43.7%). In terms of educational background, the majority of respondents held secondary or vocational education qualifications, with 44 individuals (42.7%) having graduated from high school or vocational school, and 38 individuals (36.9%) holding a diploma. Meanwhile, 18 respondents (17.5%) held a bachelor's degree (S1), and only 3 individuals (2.9%) had postgraduate qualifications.

Most respondents had 1–3 years of work experience, accounting for 57 individuals (55.3%), followed by 32 respondents (31.1%) with less than one year of experience. Only 11 respondents (10.7%) had 4–6 years of service, and a mere 3 individuals (2.9%) had more than 7 years of experience. Regarding income level, almost all respondents—98 individuals (95.1%)—reported earning a monthly salary within the range of IDR 2,000,000 to IDR 3,000,000. Only 5 respondents (4.9%) reported earning between IDR 4,000,000 and IDR 5,000,000, indicating that the majority of participants were entry-level workers or individuals in the early stages of their careers.

4.2 Reliability Analysis

The reliability analysis demonstrated excellent internal consistency across all measurement scales used in this study. The Cronbach's Alpha values substantially exceeded the conventional threshold of 0.7, with Internal Communication achieving $\alpha = 0.946$, Work Environment reaching $\alpha = 0.968$, and Employee Performance attaining $\alpha = 0.975$. These high reliability coefficients confirm the consistency and dependability of the measurement instruments, providing confidence in the validity of the collected data and the robustness of subsequent analyses.

4.3 Correlation Analysis

The correlation matrix reveals strong positive relationships between all variables examined in this study. Internal Communication demonstrates a strong correlation with Employee Performance at $r = 0.814$ with statistical significance at $p < 0.001$. Similarly, Work Environment shows comparable strength in its relationship with Employee Performance at $r = 0.797$, also significant at $p < 0.001$. The correlation between Internal Communication and Work Environment stands at $r = 0.696$ with $p < 0.001$, indicating significant interdependence

between these organizational factors. These strong correlations provide initial evidence supporting the hypothesized relationships while also suggesting potential multicollinearity considerations in the regression analysis.

4.4 Multiple Regression Analysis

Table 2. Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of Estimate
	0.932	**0.868**	**0.865**	**4.04146**

Source : Output SPSS (2025)

Table 3. ANOVA Results

Model	Sum of Squares	df	Mean Square	F	Sig.
Regression	10612.011	2	5306.005	324.856	0.000
Residual	1617.009	99	16.333		
Total	12229.020	101			

Source : Output SPSS (2025)

Table 4. Coefficients

Variable	B	Std. Error	Beta	t	Sig.
(Constant)	1.707	1.817		0.940	0.350
Internal Communication (X1)	0.210	0.101	0.168	2.081	0.040
Work Environment (X2)	0.864	0.089	0.779	9.678	0.000

Source : Output SPSS (2025)

The multiple regression analysis provides robust empirical support for all research hypotheses formulated in this study. The regression model demonstrates exceptional explanatory power with an R-squared value of 0.868, indicating that Internal Communication and Work Environment collectively explain 86.8% of the variance in Employee Performance among manufacturing workers in Semarang. The F-statistic of 324.856 with statistical significance at $p < 0.001$ confirms the overall significance of the regression model, providing strong evidence for the combined influence of both independent variables on the dependent variable.

The analysis of individual variable effects reveals that both Internal Communication and Work Environment significantly influence Employee Performance, though with different magnitudes of impact. Internal Communication demonstrates a significant positive effect with a standardized beta coefficient of 0.168, t-value of 2.081, and statistical significance at $p = 0.040$, thereby supporting Hypothesis 1. Work Environment shows a substantially stronger effect with a standardized beta coefficient of 0.779, t-value of 9.678, and statistical significance at $p < 0.001$, confirming Hypothesis 2. The simultaneous influence of both variables on Employee Performance, as evidenced by the significant F-statistic, provides support for Hypothesis 3.

5. Discussion

The most significant finding emerging from this analysis is the dominant effect of Work Environment compared to Internal Communication on Employee Performance in manufacturing settings. The standardized beta coefficient for Work Environment (0.779) is nearly four times larger than that of Internal Communication (0.168), suggesting that manufacturing employees' performance is primarily influenced by their physical and psychological work conditions rather than communication processes. This finding aligns with the inherent characteristics of manufacturing work, where employees depend heavily on physical infrastructure, equipment quality, environmental conditions, and workplace safety to perform their duties effectively.

The dominance of Work Environment in manufacturing contexts can be attributed to several industry-specific factors that distinguish manufacturing from service or knowledge-intensive industries. Manufacturing employees typically spend extended periods in specific physical locations, interacting directly with machinery, tools, and production systems that require optimal environmental conditions for safe and efficient operation. Factors such as adequate lighting, proper ventilation, ergonomic workstation design, noise control, and temperature regulation directly impact employees' ability to concentrate, maintain precision, and sustain productivity throughout their work shifts. Furthermore, the availability and condition of machinery and equipment directly determine employees' capacity to meet production targets while maintaining quality standards, making environmental conditions a primary constraint or enabler of performance outcomes[14], [15].

While Internal Communication shows a smaller effect size, its statistical significance and positive coefficient indicate that communication improvements yield measurable performance gains in manufacturing environments. The standardized beta coefficient of 0.168 with statistical significance at $p = 0.040$ demonstrates that effective internal communication serves critical functions in manufacturing operations, including coordination of workflow between production stages and departments, communication of safety protocols and hazard information, transmission of quality specifications and standards, and facilitation of rapid response to production issues and problems.

The moderate effect size of Internal Communication may reflect the standardized and routine nature of many manufacturing processes, where established procedures and protocols govern much of the daily work activities [16]. However, the statistical significance confirms that communication quality remains essential for optimal performance, particularly in situations requiring coordination between different production areas, adaptation to changing requirements, or resolution of unexpected challenges. The finding suggests that while environmental factors provide the foundation for performance, effective communication systems are necessary to optimize and coordinate human activities within those environments [17].

The strong correlation between Internal Communication and Work Environment ($r = 0.696$, $p < 0.001$) reveals important systemic interdependencies that merit careful consideration in both theoretical understanding and practical application. This relationship suggests that these factors function as complementary components of an integrated organizational system rather than independent variables operating in isolation. The interdependency manifests through several mechanisms whereby effective communication often facilitates improvements in work environment conditions by enabling employees to report concerns, suggest improvements, and receive timely responses to workplace issues. Conversely, a conducive work environment may enhance communication effectiveness by reducing stress levels and creating psychological safety that encourages open dialogue and information sharing [18].

This synergistic relationship implies that interventions addressing both factors simultaneously may produce multiplicative rather than additive benefits, suggesting that integrated approaches to organizational improvement may be more effective than focusing on individual factors in isolation. The high explained variance of 86.8% achieved by combining these two factors indicates that they capture the majority of controllable organizational influences on employee performance in manufacturing settings, providing managers with a focused framework for performance enhancement initiatives [19].

The findings contribute to theoretical understanding in several important ways. The dominant effect of Work Environment supports environmental psychology theories that

emphasize the influence of physical spaces and conditions on human behavior and performance outcomes. This theoretical validation is particularly relevant in manufacturing settings where the physical environment plays a more direct role in enabling or constraining performance compared to other organizational contexts. The significant role of Internal Communication extends organizational communication theory to manufacturing environments, demonstrating that information flow quality affects organizational effectiveness even in highly structured and proceduralized work settings.

The integrated model developed in this study provides a parsimonious yet comprehensive framework for understanding performance determinants in manufacturing contexts. The high explanatory power suggests that other factors commonly discussed in performance literature, such as individual motivation, leadership styles, or compensation systems, may have less direct impact in manufacturing environments compared to the fundamental conditions of communication and work environment. This finding has important implications for both theoretical development and practical resource allocation in manufacturing organizations.

The research context of manufacturing companies in Semarang provides additional insights into the relative importance of environmental versus communication factors. As an industrial center in Indonesia, Semarang's manufacturing companies operate in competitive environments where efficiency and quality are paramount for survival and growth. The strong emphasis on work environment may reflect the reality that manufacturing competitiveness increasingly depends on creating optimal conditions that enable employees to perform at their highest capacity while maintaining safety and quality standards [20].

Furthermore, the cultural context of Indonesian manufacturing, where hierarchical communication patterns are traditionally common, may influence the relative importance of structured work environments versus communication processes. The findings suggest that while communication remains important for coordination and information sharing, tangible environmental improvements may yield more immediate and substantial performance gains in this cultural and industrial context. This observation has implications for multinational manufacturing companies operating in similar cultural environments, suggesting that adaptation of management approaches to local contexts may enhance effectiveness.

The practical implications of these findings for manufacturing management are substantial and actionable. The dominant effect of Work Environment suggests that capital investments in facility improvements, equipment upgrades, safety enhancements, and workplace design modifications should be prioritized as high-leverage interventions for performance enhancement. These investments are likely to yield the highest returns in terms of measurable performance improvements, making them attractive options for evidence-based management decision-making in resource-constrained environments.

However, the significant role of Internal Communication indicates that organizations should not neglect communication system improvements, particularly given the synergistic relationship between environmental and communication factors. The research suggests that integrated approaches addressing both environmental and communication aspects simultaneously may produce superior results compared to focusing on either factor in isolation. This finding supports the development of comprehensive organizational improvement strategies that consider the interdependencies between different organizational systems and processes.

The high predictive power of the model also provides confidence that performance improvement initiatives focusing on these two areas are likely to produce measurable and substantial results. This predictive capability enables managers to justify investments in environmental and communication improvements based on expected performance outcomes, facilitating data-driven decision-making and resource allocation processes.

6. Conclusions

This empirical investigation of manufacturing companies in Semarang provides compelling evidence for the significant influence of internal communication and work environment on employee performance. The research establishes a robust predictive framework that explains 86.8% of employee performance variance, demonstrating exceptional explanatory power for social science research.

The most significant finding is the dominant influence of work environment on employee performance (β = 0.779) compared to internal communication (β = 0.168). This finding highlights the critical importance of physical and psychological work conditions in manufacturing environments, where employees depend heavily on infrastructure quality, equipment conditions, and safety measures to perform effectively. Despite its smaller effect size, internal communication maintains statistical significance (p = 0.040), confirming its essential role through enhanced coordination, safety compliance, and problem resolution processes.

The strong correlation between internal communication and work environment (r = 0.696, p < 0.001) reveals that these factors function as complementary components of an integrated organizational system, suggesting that interventions addressing both factors simultaneously may produce multiplicative benefits.

From a theoretical perspective, this research validates environmental psychology theories in manufacturing contexts and extends organizational communication theory to highly structured operational settings. The integrated model contributes to performance theory by establishing that environmental factors may predominate over communication factors in specific manufacturing contexts.

The practical implications suggest that manufacturing organizations should prioritize work environment improvements as their primary strategy while maintaining robust internal communication systems. The research provides clear guidance for resource allocation, emphasizing capital investments in physical infrastructure, equipment maintenance, and safety improvements, complemented by communication system development.

This study acknowledges limitations including geographic focus on Semarang, cross-sectional design, and manufacturing industry specificity. Future research should include longitudinal studies, cross-industry validation, and investigation of mediating variables to enhance understanding of these relationships.

The research establishes a foundation for understanding performance drivers in manufacturing contexts and provides evidence-based guidance for optimizing human resource productivity. Organizations that systematically address both physical infrastructure and communication systems will be best positioned for sustained competitive advantage in increasingly competitive manufacturing environments.

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