LITERACY : International Scientific Journals of Social, Education, Humanities

E-ISSN: 2829-3649
P-ISSN: 2829-3908

Research Article

The Relationship between Workload and Work Environment on Employee Performance: A Study at PT MOD

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Abstract: This study examines the relationship between workload and work environment on employee performance in Indonesia's garment manufacturing sector. Given the labor-intensive nature and competitive pressures in this industry, understanding these relationships is crucial for sustainable business practices. Using a quantitative cross-sectional design, data were collected from 104 employees at PT MOD, through validated questionnaires. Multiple regression analysis revealed that both workload (β=0.235, p=0.022) and work environment (β=0.633, p<0.001) significantly influence employee performance, explaining 70.8% of the variance (R^2=0.708, F=122.352, p<0.001). Work environment demonstrated a stronger effect than workload, suggesting that investments in workplace conditions yield greater performance returns than workload optimization alone. These findings provide evidence that garment manufacturers can achieve competitive performance while maintaining employee well-being through strategic work environment improvements and balanced workload management.

Keywords: workload, work environment, employee performance, garment industry, organizational behavior

1. Introduction

The global garment industry faces mounting pressures from fast fashion demands, cost competition, and sustainability concerns, making employee performance optimization critical for organizational survival. In Indonesia, the world's fourth-largest textile and apparel exporter, manufacturing companies must balance productivity demands with worker welfare amid increasing international scrutiny of working conditions (International Labour Organization, 2019).

Employee performance in manufacturing contexts is influenced by multiple organizational factors, with workload and work environment emerging as primary determinants. Workload encompasses the quantitative and qualitative demands placed on employees, while work environment includes both physical and psychosocial workplace conditions Understanding these relationships is particularly critical in garment manufacturing, where labor-intensive processes, repetitive tasks, and quality demands create unique workplace challenges.

The garment manufacturing sector in Indonesia employs approximately 1.3 million workers and contributes significantly to national exports (Indonesian Textile Association, 2023). However, the industry faces challenges related to working conditions, productivity pressures, and international compliance standards. Companies like PT MOD must navigate these complexities while maintaining competitiveness in global markets.

Despite extensive research on employee performance factors, limited studies have examined the specific context of Indonesian garment manufacturing, where cultural, economic, and industry-specific factors may influence these relationships differently than in Western contexts. This study addresses this gap by investigating how workload and work environment jointly influence employee performance at PT MOD, providing insights relevant to similar manufacturing contexts in emerging economies. The research objectives are to: (1) examine the relationship between workload and employee performance, (2) analyze the impact of

Received: May 09, 2025
Revised: May 25, 2025
Accepted: June 06, 2025
Published: June 09, 2025
Curr. Ver.: June 09, 2025

work environment on employee performance, and (3) assess the simultaneous effects of both factors on performance outcomes in garment manufacturing.

2. Literature Review

This study draws on two primary theoretical frameworks. The Job Demands-Resources (JD-R) model posits that job demands (including workload) can have both positive and negative effects on performance, depending on available resources and individual capacity. When demands are challenging but manageable, they can stimulate engagement and performance; when excessive, they lead to strain and decreased performance.

Social Exchange Theory suggests that employees reciprocate favorable working conditions with enhanced performance. A supportive work environment represents organizational investment in employee welfare, creating obligations for employees to respond with increased effort and productivity.

2.1 Workload

Workload represents the amount of work assigned to employees within specific timeframes, encompassing both quantitative (volume) and qualitative (complexity) dimensions. Research suggests a curvilinear relationship between workload and performance, where moderate levels optimize outcomes while extremes impair performance.

Workload theory suggests that there is an optimal level of work demands that maximizes performance. The Job Demands-Resources (JD-R) model posits that job demands, including workload, can have both positive and negative effects on performance depending on available resources.

Previous studies have shown mixed results regarding the workload-performance relationship. Some studies found negative effects of high workload on performance (Bowling et al., 2015), while others identified positive relationships when workload is challenging but manageable. This suggests a potential curvilinear relationship, where moderate workload optimizes performance.

Optimal workload management involves balancing production targets with employee capacity to prevent burnout while maintaining engagement. Studies in similar industries show that well-managed workload can enhance performance by providing clear goals and sufficient challenge.

H1: Workload has a significant positive effect on employee performance.

2.2 Work Environment

Work environment encompasses physical conditions (lighting, temperature, noise, ergonomics) and psychosocial factors (relationships, support, culture) that shape employee experiences. Research consistently demonstrates strong relationships between work environment quality and performance outcomes.

The work environment significantly influences employee attitudes, behaviors, and performance outcomes. Social Exchange Theory suggests that employees reciprocate positive treatment from their organization with enhanced performance.

Physical work environment factors such as lighting, temperature, noise, and spatial layout affect employee comfort and productivity. Psychosocial factors including supervisor support, peer relationships, and organizational culture create the social context that shapes employee behavior and performance.

H2: Work environment has a significant positive effect on employee performance.

2.3 Employee Performance

Employee performance is typically measured by the quality, quantity, and timeliness of work completed in accordance with organizational goals. In the hospitality industry, employee performance directly affects guest satisfaction, customer loyalty, and hotel reputation. Factors such as motivation, leadership, and organizational support are significantly correlated with performance outcomes.

Studies show that performance appraisal and disciplinary actions can influence employee behavior both positively and negatively depending on how they are implemented. High-performing hotels often create a balanced system where performance expectations are

clearly communicated, and both rewards and consequences are perceived as fair by employees.

The JD-R model suggests that job demands and resources interact to influence performance outcomes. Supportive work environments may buffer negative effects of high workload, while poor environments may exacerbate workload-related stress. This interaction suggests that considering both factors simultaneously provides more accurate performance predictions than examining them independently. Based on the Job Demands-Resources model and Social Exchange Theory, this study proposes that both workload and work environment significantly influence employee performance.

H3: Workload and work environment simultaneously have significant effects on employee performance.

3. Proposed Method

3.1 Research Design

This study employed a quantitative approach with a cross-sectional survey design. The research aimed to examine the causal relationships between workload, work environment, and employee performance using multiple regression analysis.

3.2 Population and Sample

The population comprised all employees of PT MOD, a garment manufacturing company in Semarang, Central Java, Indonesia. The company specializes in ready-made clothing production with approximately 150 employees across various departments including cutting, sewing, finishing, quality control, and administration. Using purposive sampling, 104 employees were selected based on the following criteria: (1) permanent employees, (2) minimum one year of employment, (3) direct involvement in production or production support activities, and (4) willingness to participate. The sample included production workers (sewing operators, cutters, quality inspectors) and support staff.

3.3 Research Instruments

Data was collected using structured questionnaires with Likert scales (1=strongly disagree to 5=strongly agree). The instruments were:

- Workload Scale (X1): 9 items adapted from NASA-TLX [4], measuring mental demands, physical demands, temporal demands, and effort requirements.
- Work Environment Scale (X2): 10 items adapted from [14], assessing physical environment (lighting, temperature, noise, workspace) and psychosocial environment (relationships, support, culture).
- Employee Performance Scale (Y): 12 items adapted from [15], measuring task performance, contextual performance, and adaptive performance.

3.4 Data Collection Procedure

Data collection was conducted at PT MOD's manufacturing. Questionnaires were distributed electronically via Google Forms. Participants were assured of confidentiality and voluntary participation. Questionnaire completion was allowed during break times or after work hours. Follow-up reminders were sent via WhatsApp groups to increase response rate, achieving an 86.7% response rate (104 out of 120 distributed questionnaires).

3.5 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 α=0.05.

4. Results and Discussion

Characteristic	Category	Frequency (n)	Percentage (%)
Gender	Male	33	31,7
	Female	71	68,3
Age	< 25 years	89	85,6
	25 - 34 years	11	10,6
	35 - 44 years	1	1
	> 45 years	3	2,9
Education Level	High School/Vocational School	86	82,6
	Diploma	2	1,9
	Bachelor's Degree (S1)	16	15,4
Length of Service	< 1 year	43	41,3
	1 - 3 years	52	50
	4 - 6 years	6	5,8
	>7 years	3	2,9
Monthly Income	Rp.2.000.000 – Rp.3.000.000	5	4,8
	Rp.3.000.001 – Rp.5.000.000	94	90.4
	Rp 5.000.001 – Rp.7.000.000	1	1
	>Rp.7.000.001	4	3,8

Source : Output SPSS (2025)

4.1 Respondent Characteristics

The sample (N=104) consisted of 68.3% female and 31.7% male employees, reflecting the gender distribution typical in garment manufacturing. Age distribution showed 85.6% under 25 years, indicating a young workforce. Education levels were 82.6% high school/vocational, 15.4% bachelor's degree, and 1.9% diploma. Service length showed 41.3% with less than one year, 50% with 1-3 years, indicating relatively high turnover typical in the industry. Monthly income ranged from Rp.2,000,000-7,000,000, with 90.4% earning Rp.3,000,001-5,000,000.

4.2 Reliability Analysis

The reliability analysis results show excellent internal consistency for all measurement scales:

Workload (X1): Cronbach's α = 0.909

Work Environment (X2): Cronbach's α = 0.960

Employee Performance (Y): Cronbach's α = 0.971

All scales exceed the recommended threshold of 0.7, indicating highly reliable measurements [16].

4.3 Correlation Analysis

Pearson correlation analysis showed significant relationships between variables:

Workload and Employee Performance: $r = 0.418$, $p < 0.01$

Work Environment and Employee Performance: $r = 0.778$, $p < 0.01$

Workload and Work Environment: $r = 0.402$, $p < 0.01$

4.4 Regression Analysis

Multiple regression analysis yielded the following results:

Table 2. Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of Estimate
	0.841	0.708	0.702	7.922

Source : Output SPSS (2025)

The model explained 70.8% of the variance in employee performance ($R^2 = 0.708$, Adjusted $R^2 = 0.702$).

Table 3. ANOVA Results

Model	Sum of Squares	df	Mean Square	F	Sig.
Regression	15356.576	2	7678.288	122.352	0.000
Residual	6338.309	101	62.756		
Total	21694.885	103			

Source : Output SPSS (2025)

The F-test indicated that the model was statistically significant ($F(2,101) = 122.352$, $p < 0.001$).

Table 4. Coefficients

Variable	B	Std. Error	Beta	t	Sig.
(Constant)	6.551	2.354		2.783	0.006
Internal Communication (X_1)	0.327	0.140	0.235	2.331	0.022
Work Environment (X_2)	0.730	0.116	0.633	6.276	0.000

Source : Output SPSS (2025)

The regression equation: $Y = 6.551 + 0.327\ X_1 + 0.730\ X_2$

Both workload ($\beta = 0.235$, $t = 2.331$, $p = 0.022$) and work environment ($\beta = 0.633$, $t = 6.276$, $p < 0.001$) significantly predicted employee performance, supporting H_1 and H_2. The simultaneous effect was also significant ($p < 0.001$), supporting H_3.

5. Discussion

5.1 Workload on Employee Performance

The findings revealed that workload positively and significantly affects employee performance ($\beta = 0.235$, $p = 0.022$), supporting H1. This positive relationship in the garment manufacturing context suggests that the current workload levels at PT MOD are within the optimal range that stimulates performance without causing excessive stress. This finding is particularly noteworthy given the labor-intensive nature of garment production, where

workers often face repetitive tasks and production targets. JD-R model's proposition that moderate job demands can stimulate performance when accompanied by adequate resources

The moderate effect size indicates that while workload is important, it is not the primary driver of performance at PT MOD. This may reflect effective production planning and workload distribution systems that balance daily production targets with employee capacity. In the garment industry context, this could mean that PT MOD has successfully implemented production scheduling that avoids the extreme peaks and valleys common in the industry due to seasonal demands and rush orders.

The positive relationship also suggests that employees view their workload as meaningful and manageable. This is crucial in garment manufacturing where monotonous tasks can lead to disengagement. PT MOD may have implemented job rotation, skill development, or team-based production systems that make workload more varied and engaging.

5.2 Work Environment on Employee Performance

Work environment showed a stronger effect on employee performance ($\beta = 0.633$, $p < 0.001$), supporting H2. This finding is particularly significant in the garment manufacturing context where physical working conditions directly impact productivity and quality. The large effect size suggests that PT MOD's investments in work environment improvements yield substantial performance gains.

In garment manufacturing, work environment encompasses critical factors such as:

- Physical conditions: Adequate lighting for detailed sewing work, proper ventilation to manage heat from machinery and fabric dust, ergonomic workstations to prevent musculoskeletal disorders, and noise control from sewing machines
- Safety measures: Proper handling of cutting equipment, needle guards on machines, and clear emergency procedures
- Social environment: Team cohesion in production lines, supervisor support for meeting targets, and collaborative problem-solving for quality issues

The strong effect of work environment at PT MOD may reflect successful implementation of modern garment factory standards, moving away from traditional sweatshop conditions. This could include air-conditioned production floors, ergonomic seating, adequate rest areas, and systematic maintenance of equipment. The psychosocial aspects, such as supportive supervision and team-based production systems, appear to be particularly effective in enhancing performance in this labor-intensive industry.

5.3 Simultaneous Effects and Practical Implications

The regression model explained 70.8% of variance in employee performance, indicating that workload and work environment are indeed critical factors. The simultaneous significant effect ($F = 122.352$, $p < 0.001$) supports H3 and suggests that organizations should adopt a holistic approach to performance management.

The stronger effect of work environment ($\beta = 0.633$) compared to workload ($\beta = 0.235$) has important practical implications. While maintaining optimal workload levels is important, investing in work environment improvements may yield greater returns. This could include

enhancing physical workspace design, fostering positive organizational culture, strengthening supervisor support systems, and promoting collaborative team dynamics.

These findings have significant implications for the Indonesian garment industry and similar manufacturing contexts in emerging economies. The positive relationships between both workload and work environment with performance challenge traditional assumptions that cost competitiveness requires compromising worker welfare.

From a theoretical perspective, the results support both JD-R model predictions about optimal demand levels and Social Exchange Theory's emphasis on reciprocity in employment relationships. The stronger effect of work environment suggests that resource provision (supportive conditions) may be more impactful than demand management (workload optimization) in manufacturing contexts.

6. Conclusions

This study examined the relationship between workload, work environment, and employee performance at PT MOD, a garment manufacturing company in Semarang, Indonesia. The key findings are Workload has a significant positive effect on employee performance ($\beta = 0.235$, $p = 0.022$), indicating that current production planning and workload distribution at PT MOD are effectively balanced. Work environment has a significant positive effect on employee performance ($\beta = 0.633$, $p < 0.001$), demonstrating the critical importance of physical and psychosocial conditions in garment manufacturing settings. Work environment shows a stronger effect compared to workload, suggesting that investments in factory conditions, ergonomics, and workplace culture yield greater performance benefits. Both factors simultaneously explain 70.8% of variance in employee performance, confirming their importance in the labor-intensive garment industry.

These findings have important implications for the Indonesian garment industry, which employs millions of workers and faces increasing competition from other manufacturing countries. PT MOD's success in achieving positive relationships between both workload and work environment with performance suggests that it is possible to maintain competitiveness while ensuring employee well-being. This challenges the traditional view that garment manufacturing must rely on excessive workload and poor working conditions to remain profitable.

6.1 Limitations and Future Research:

This study is limited to manufacturing companies in Semarang and uses cross-sectional data. Future research could expand to other industries and locations, employ longitudinal designs, and explore mediating variables in the communication-environment-performance relationship.

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