

Analysis of the Influence of Training and Development and Career Opportunities on the Work Motivation of Human Resources in the Manufacturing Sector

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ABSTRACT

The manufacturing sector in Indonesia faces increasing challenges related to technological transformation, global competition, and the need for highly competent and motivated human resources. Employee motivation has become an essential factor in maintaining organizational productivity and competitiveness, particularly in industries that rely heavily on workforce effectiveness. This study aims to analyze the influence of training and development and career opportunities on employee work motivation in the manufacturing sector in Indonesia. This research employs a quantitative approach using survey data collected from 180 employees working in manufacturing companies. Data were obtained through a structured questionnaire measured using a five-point Likert scale and analyzed using Statistical Package for the Social Sciences (SPSS) version 25. The analytical methods included validity testing, reliability testing, classical assumption testing, multiple linear regression analysis, t-test, F-test, and coefficient of determination analysis. The results indicate that training and development have a positive and significant effect on employee work motivation. Career opportunities also have a positive and significant influence on work motivation. Furthermore, both variables simultaneously explain 52.4% of the variation in employee motivation. These findings demonstrate that effective employee development programs and clear career advancement pathways are important factors in strengthening workforce motivation in the manufacturing sector. This study contributes to human resource management literature by providing empirical evidence regarding the role of organizational development practices in enhancing employee motivation and offers practical implications for manufacturing organizations in Indonesia to design more effective workforce management strategies.

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1. INTRODUCTION

The manufacturing sector occupies a strategic position in Indonesia's economic

development because of its substantial contribution to gross domestic product,

employment creation, industrial productivity, export performance, and national competitiveness. The sector is currently undergoing considerable transformation driven by technological advancement, production automation, digitalization, intensifying global competition, and rapidly changing market expectations [1], [2]. These developments have increased the demand for employees who are technically competent, adaptive, innovative, and capable of operating in increasingly complex work environments. Human resources are no longer perceived merely as operational resources but as strategic assets that determine organizational resilience and sustainable competitive advantage [3], [4]. Therefore, manufacturing organizations must implement effective human resource management practices to enhance employee competence, commitment, adaptability, and motivation in responding to dynamic industrial changes.

Employee motivation represents a fundamental factor influencing organizational performance, particularly in manufacturing industries that depend heavily on operational efficiency, product quality, production consistency, and continuous improvement [5], [6]. Employees with high levels of motivation tend to demonstrate stronger productivity, greater work engagement, improved performance quality, and higher commitment toward achieving organizational objectives. Conversely, inadequate motivation may contribute to declining productivity, increased absenteeism, employee turnover, and operational inefficiencies [7], [8]. In manufacturing environments characterized by strict production targets and technological complexity, maintaining employee motivation has become an essential managerial challenge [9], [10]. Understanding the determinants of employee motivation is therefore crucial for organizations seeking to optimize workforce performance and maintain competitiveness in an increasingly competitive industrial landscape.

One important factor influencing employee motivation is training and

development. Training and development represent systematic organizational efforts aimed at improving employees' knowledge, technical skills, competencies, and professional capabilities. From the perspective of human capital theory, investment in employee development enhances individual capabilities while simultaneously generating organizational value through improved productivity and performance [11], [12]. In manufacturing organizations, continuous training is increasingly important due to technological advancement, automation, and changing production systems that require employees to continuously update their competencies. Effective training programs enable employees to adapt to new technologies, improve problem-solving capabilities, increase confidence in performing job responsibilities, and develop a stronger sense of organizational support [13], [14]. Consequently, employees who perceive meaningful development opportunities are more likely to demonstrate higher motivation and stronger commitment to their organization.

However, the effectiveness of training and development initiatives depends on the extent to which these programs align with employee needs and organizational objectives. Many manufacturing organizations continue to face challenges related to limited training accessibility, insufficient evaluation processes, and discrepancies between training content and actual workplace requirements [15], [16]. Training programs that fail to provide relevant knowledge or practical improvements may have limited influence on employee motivation. Furthermore, employee development is often closely associated with perceptions of future career prospects. When employees acquire new competencies but lack opportunities for advancement, promotion, or increased responsibility, the motivational impact of training programs may be reduced [17], [18]. Therefore, training and development should be integrated with broader career

management practices to maximize their contribution to employee motivation.

Career opportunities represent another critical determinant of employee motivation because they provide employees with expectations regarding professional growth, advancement, recognition, and long-term organizational commitment. Employees who perceive clear career pathways are more likely to demonstrate higher motivation because they believe that their efforts, competencies, and performance will generate future benefits [19], [20]. Career advancement opportunities, competency-based promotion systems, mentoring programs, and succession planning mechanisms can strengthen employees' sense of direction and encourage continuous performance improvement. This issue has become increasingly relevant in the manufacturing sector, where changing workforce expectations require organizations to provide not only financial compensation but also opportunities for professional development and career progression [21], [22]. Organizations that fail to establish transparent career systems may experience difficulties in retaining skilled employees and maintaining workforce stability.

Despite extensive research examining training, career development, and employee motivation, several research gaps remain. First, previous studies have frequently focused on sectors such as education, healthcare, and services, while empirical investigations within Indonesia's manufacturing sector remain relatively limited despite its significant economic contribution. Second, many studies examine training and career opportunities independently, whereas the simultaneous effects of these two human resource management practices on employee motivation require further investigation. Third, ongoing industrial transformation caused by digitalization, automation, and global competition highlights the need for updated empirical evidence regarding strategies for strengthening employee motivation. Therefore, this study aims to analyze the influence of training and development and career opportunities on

employee motivation within Indonesia's manufacturing sector. The findings are expected to contribute theoretically to human resource management literature and provide practical implications for manufacturing organizations in designing effective workforce development strategies that enhance employee motivation, productivity, and long-term organizational sustainability.

2. LITERATURE REVIEW

2.1 *Human Resource Management and Employee Motivation*

Human resource management (HRM) is a strategic approach that focuses on developing employee knowledge, skills, abilities, and behaviors to achieve organizational objectives. In modern organizations, employees are considered strategic assets because organizational success depends not only on technology and resources but also on workforce competence and motivation [23], [24]. Employee motivation, as a key HRM concept, influences employees' effort, persistence, engagement, productivity, and commitment toward organizational goals. Based on Herzberg's Two-Factor Theory and Self-Determination Theory, motivation is strengthened through factors such as achievement, recognition, competence development, autonomy, and career growth [6], [23], [25], [26]. Therefore, training and development programs, along with career opportunities, play important roles in enhancing employee motivation by supporting personal growth, professional advancement, and organizational commitment.

2.2 Training and Development

Training and development are essential strategic human resource practices that improve employees' current competencies while preparing them for future responsibilities. Based on human capital theory, investment in employee knowledge and skills creates value by enhancing performance, adaptability, and innovation [27], [28]. This is particularly important in the manufacturing sector, where employees must continuously adapt to technological changes and modern production systems. Effective programs should include competency needs assessment, relevant training design [29], [30], implementation, and evaluation. Training and development also strengthen employee motivation by increasing perceived organizational support, confidence, and readiness to handle workplace challenges. Therefore, the following hypothesis is proposed:

H1: Training and development has a positive and significant influence on employee work motivation in the manufacturing sector in Indonesia.

2.3 Career Opportunities

Career opportunities refer to employees' perceptions of professional growth, promotion, and future advancement within an organization. Based on career development theory, employees are more motivated when they believe their current work supports their future career achievements. Transparent career paths, competency-based promotions, mentoring, and professional development can

encourage employees to improve their performance [19], [20]. These opportunities are particularly important in the manufacturing industry, where career advancement often requires specialized technical skills and extensive operational experience [31], [32]. From the perspective of organizational support theory, career development opportunities indicate that the organization values employees and is willing to invest in their future, thereby increasing job satisfaction, commitment, motivation, and retention. Based on this explanation, the following hypothesis is formulated:

H2: Career opportunities have a positive and significant influence on employee work motivation in the manufacturing sector in Indonesia.

2.4 Relationship Between Training, Career Opportunities and Development and Employee Motivation

Training and development enhance employee motivation by strengthening competence, confidence, adaptability, and perceptions of organizational support. Employees who receive relevant training are more capable of performing their duties, managing workplace challenges, acquiring new knowledge, and preparing for future responsibilities [5], [6]. In the manufacturing sector, continuous training is particularly important because technological change and production complexity require regular skill improvement [19], [31]. Career opportunities also increase motivation by providing clear goals, promotion prospects, recognition, and

professional growth. Fair and transparent career systems encourage employees to invest greater effort because they believe strong performance will support advancement. Therefore, training and development, together with career opportunities, are expected to significantly improve employee motivation while supporting retention, succession planning, and long-term workforce sustainability.

H3: Training and development and career opportunities simultaneously have a positive and significant effect on employee work motivation in the manufacturing sector in Indonesia.

3. METHODS

3.1 Research Design

This study employs a quantitative explanatory approach [33], to examine the effects of training and development (X1) and career opportunities (X2) on employee work motivation (Y) in Indonesia's manufacturing sector. This approach enables the objective measurement of causal relationships among variables using numerical data. Data were collected through a structured questionnaire distributed to manufacturing employees, with indicators adapted from previous studies and measured using a five-point Likert scale. The collected data were analyzed using Statistical Package for the Social Sciences (SPSS) version 25 to test the proposed hypotheses and determine whether training and development practices and career advancement opportunities significantly improve employee work motivation.

3.2 Population and Sample

The population of this study consists of employees working in Indonesia's

manufacturing sector, which was selected because technological changes, production demands, and competitive pressures require continuous improvement in employee competence, adaptability, and motivation. Respondents were selected using purposive sampling based on several criteria: currently employed by a manufacturing company in Indonesia, having at least six months of work experience, having participated in organizational training or career development activities, and being willing to participate voluntarily. The final sample comprised 180 respondents, which was considered adequate for quantitative analysis using multiple regression to examine the relationships among the research variables.

3.3 Data Collection Procedure

Data were collected through a survey using a structured questionnaire distributed electronically and directly to employees of manufacturing companies in Indonesia. Respondents were informed about the research purpose and assured that their responses would be used solely for academic purposes. The questionnaire consisted of three sections covering demographic characteristics, perceptions of organizational training and development and career opportunities, and employee work motivation. All items were measured using a five-point Likert scale ranging from 1 (strongly disagree) to 5 (strongly agree), as this scale effectively captures respondents' attitudes and perceptions regarding organizational practices and work motivation.

3.4 Research Variables and Measurement

This study includes three main variables: training and development, career opportunities, and employee work motivation. Each variable was measured using several indicators adapted from previous human resource management literature.

Table 1. Research Variables and Indicators

Variable	Indicators
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Training and Development (X1) Organizational efforts to improve employee knowledge, skills, competencies, and professional abilities through systematic learning activities [17], [28].	1. Training relevance to job requirements 2. Improvement of employee skills 3. Training frequency and availability 4. Opportunity to develop competencies 5. Training effectiveness
Career Opportunities (X2) Employees' perceptions regarding opportunities for professional growth, promotion, and future career advancement within the organization [19], [31], [34].	1. Availability of promotion opportunities 2. Career advancement clarity 3. Equal career development opportunities 4. Organizational support for career growth 5. Opportunities for professional development
Work Motivation (Y) Internal and external factors that encourage employees to perform their duties effectively and achieve organizational goals [35]–[37].	1. Willingness to achieve work targets 2. Commitment to organizational goals 3. Enthusiasm toward work responsibilities 4. Persistence in completing tasks 5. Desire to improve performance

3.5 Data Analysis Technique

The collected data were analyzed using SPSS version 25 through validity, reliability, classical assumption, multiple linear regression, and hypothesis tests [38]. Item validity was assessed using Pearson Product Moment correlation, with items considered valid when the *r*-count exceeded the *r*-table and the significance value was below 0.05, while reliability was evaluated using Cronbach's Alpha, with values above 0.70 indicating reliable instruments. Classical assumption tests included the Kolmogorov–Smirnov normality test with a significance value above 0.05, the multicollinearity test with tolerance values above 0.10 and VIF values below 10, and the Glejser heteroscedasticity test with significance

values above 0.05. Multiple linear regression, expressed as $Y = \alpha + \beta_1 X_1 + \beta_2 X_2 + e$, was used to examine the effects of training and development and career opportunities on employee work motivation. Partial effects were evaluated using the *t*-test, simultaneous effects using the *F*-test, and the model's explanatory power using the coefficient of determination (R^2), with hypotheses accepted when the significance value was below 0.05.

4. RESULTS AND DISCUSSION

4.1 Respondent Characteristics

This study involved 180 manufacturing employees in Indonesia whose characteristics were analyzed by gender, age, education, work experience, and job position.

Table 2. Characteristics of Respondents

Characteristics	Category	Frequency	Percentage (%)
Gender	Male	108	60%
	Female	72	40%
Age	< 25 years	32	18%

	25–35 years	78	43%
	36–45 years	51	28%
	>45 years	19	11%
Education Level	High School	41	23%
	Diploma	35	19%
	Bachelor's Degree	86	48%
	Postgraduate Degree	18	10%
Working Experience	< 2 years	38	21%
	2–5 years	69	38%
	6–10 years	48	27%
	>10 years	25	14%
Position	Operator/Staff	96	53%
	Supervisor	49	27%
	Manager	35	20%

Table 2 presents the demographic characteristics of 180 respondents working in the manufacturing sector in Indonesia. Based on gender, the majority of respondents were male, totaling 108 employees or 60.0%, while female respondents accounted for 72 employees or 40.0%. In terms of age, most respondents were between 25 and 35 years old, representing 43% of the sample, followed by those aged 36–45 years at 28%, respondents under 25 years at 18%, and those over 45 years at 11%. Regarding educational background, bachelor's degree holders formed the largest group at 48%, followed by high school graduates at 23%, diploma holders at 19%, and postgraduate degree holders at 10%. Based on working experience, 38% of respondents had worked for 2–5 years, 27% had 6–10 years of experience, 21% had less

than two years of experience, and 14% had worked for more than ten years. In terms of job position, most respondents were operators or staff members at 53%, followed by supervisors at 27% and managers at 20%. These findings indicate that the respondent profile was dominated by male employees of productive age, with bachelor's degree qualifications, moderate work experience, and operational-level positions.

4.2 Descriptive Statistics Analysis

Descriptive statistical analysis was conducted to determine the general perceptions of respondents regarding training and development, career opportunities, and work motivation. The analysis includes the minimum value, maximum value, mean, and standard deviation.

Table 3. Descriptive Statistics of Research Variables

Variable	N	Min	Max	Mean	Standard Deviation
Training and Development (X1)	180	2.40	5.00	4.12	0.58
Career Opportunities (X2)	180	2.20	5.00	4.05	0.61
Work Motivation (Y)	180	2.60	5.00	4.18	0.55

Table 3 presents the descriptive statistics of the research variables based on responses from 180 employees. Training and Development (X1) recorded a mean value of 4.12 with a standard deviation of 0.58, indicating that respondents generally perceived the organization's training and development practices positively and that their responses were relatively consistent. Career Opportunities (X2) obtained a mean of 4.05 and a standard deviation of 0.61, showing

that employees generally agreed that career growth and promotion opportunities were available, although this variable had the highest variation in responses. Meanwhile, Work Motivation (Y) achieved the highest mean value of 4.18 with a standard deviation of 0.55, suggesting that respondents had a high level of work motivation and relatively similar perceptions. Overall, all variables had mean scores above 4.00, indicating positive assessments of training and development,

career opportunities, and employee work motivation within the manufacturing companies studied.

4.3 Validity Test

The validity test was performed using Pearson correlation analysis. An indicator is

considered valid when the correlation coefficient is greater than the critical value (r-table) and the significance value is below 0.05. With a sample size of 180 respondents, the r-table value at a 5% significance level is approximately 0.146.

Table 4. Validity Test Results

Variable	Item	Correlation Value (r)	Sig	Result
Training and Development	X1.1	0.742	0.000	Valid
	X1.2	0.785	0.000	Valid
	X1.3	0.801	0.000	Valid
	X1.4	0.764	0.000	Valid
	X1.5	0.738	0.000	Valid
Career Opportunities	X2.1	0.756	0.000	Valid
	X2.2	0.812	0.000	Valid
	X2.3	0.783	0.000	Valid
	X2.4	0.769	0.000	Valid
	X2.5	0.741	0.000	Valid
Work Motivation	Y1	0.798	0.000	Valid
	Y2	0.824	0.000	Valid
	Y3	0.786	0.000	Valid
	Y4	0.812	0.000	Valid
	Y5	0.775	0.000	Valid

Table 4 shows that all questionnaire items for Training and Development, Career Opportunities, and Work Motivation were valid. The correlation values ranged from 0.738 to 0.824, indicating strong relationships between each item and its respective variable. The highest correlation was recorded for item Y2 at 0.824, while the lowest was found for item X1.5 at 0.738. In addition, all items had significance values of 0.000, which were below the 0.05 threshold. Therefore, all measurement items accurately represented the constructs examined and were suitable for further statistical analysis.

4.4 Reliability Test

The reliability analysis using Cronbach's Alpha shows that all research variables are reliable, as their values exceed the minimum threshold of 0.70. Training and Development recorded a Cronbach's Alpha of

0.871, Career Opportunities obtained 0.884, and Work Motivation achieved the highest value of 0.902. These results indicate that all measurement instruments have high internal consistency and that the items used consistently represent their respective constructs, making them suitable for further statistical analysis.

4.5 Classical Assumption Test

4.5.1 Normality Test

The Kolmogorov-Smirnov normality test produced a Z value of 0.842 and an Asymp. Sig. (2-tailed) value of 0.478. Since the significance value is greater than 0.05, the residuals are normally distributed, indicating that the regression model satisfies the normality assumption and is suitable for further analysis.

4.5.2 Multicollinearity Test

Table 5. Multicollinearity Test Results

Independent Variable	Tolerance	VIF	Result
Training and Development	0.684	1.462	No Multicollinearity
Career Opportunities	0.684	1.462	No Multicollinearity

Table 5 shows that Training and Development and Career Opportunities each had a tolerance value of 0.684 and a VIF value of 1.462. Since the tolerance values were greater than 0.10 and the VIF values were below 10, no multicollinearity was detected between the independent variables.

Therefore, both variables can be included simultaneously in the regression model without causing strong correlations that could affect the accuracy of the estimation results.

4.5.3 Heteroscedasticity Test

Table 6. Glejser Test Results

Variable	Sig. Value	Result
Training and Development	0.326	No Heteroscedasticity
Career Opportunities	0.417	No Heteroscedasticity

Table 6 shows that Training and Development had a significance value of 0.326, while Career Opportunities recorded a significance value of 0.417. Since both values were greater than 0.05, neither independent variable indicated a heteroscedasticity problem. Therefore, the residual variance in the regression model was considered constant, confirming that the model satisfies the homoscedasticity assumption and is

suitable for further regression and hypothesis testing.

4.6 Multiple Linear Regression Analysis

Multiple regression analysis was conducted to examine the influence of training and development and career opportunities on employee work motivation.

Table 7. Multiple Regression Results

Variable	Regression Coefficient (β)	t-value	Sig.
Constant	0.842	3.126	0.002
Training and Development (X1)	0.426	7.214	0.000
Career Opportunities (X2)	0.351	5.986	0.000

The regression equation, $Y = 0.842 + 0.426X_1 + 0.351X_2 + e$, indicates that a one-unit increase in Training and Development increases Work Motivation by 0.426 units, while a one-unit increase in Career Opportunities increases Work Motivation by 0.351 units, assuming other variables remain constant. Training and Development has the larger regression coefficient, suggesting that it is the more dominant predictor of employee motivation. The t-test results further show that Training and Development significantly affects Work Motivation, with a t-value of 7.214 and a significance value of 0.000, thereby supporting H1. Career Opportunities also significantly affects Work Motivation, with a t-value of 5.986 and a significance value of 0.000, supporting H2. These findings indicate that effective training programs and clear

career advancement opportunities strengthen employee motivation by improving competence, confidence, perceived organizational support, and expectations of future professional growth.

The F-test results show that Training and Development and Career Opportunities simultaneously have a significant effect on Employee Work Motivation, with an F-value of 96.842 and a significance value of 0.000, which is below 0.05. Therefore, H3 is supported, indicating that improvements in training and development programs combined with clear career advancement opportunities can collectively increase employee motivation in manufacturing organizations.

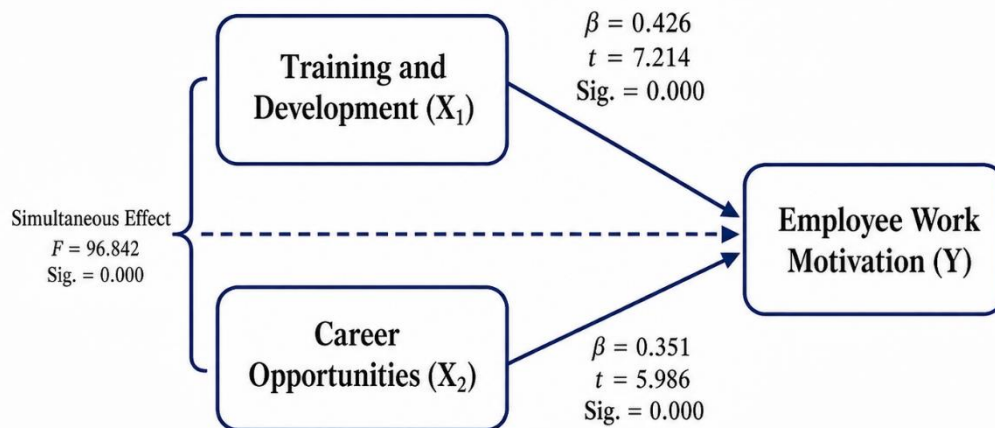


Figure 1. Hypothesis Results

The coefficient of determination results show an R value of 0.724, an R Square value of 0.524, and an Adjusted R Square value of 0.519. The R^2 value indicates that Training and Development and Career Opportunities jointly explain 52.4% of the variation in Employee Work Motivation, while the remaining 47.6% is influenced by other factors outside the model, such as compensation, leadership style, organizational culture, job satisfaction, and the work environment.

Discussion

The findings demonstrate that training and development significantly influence employee work motivation in the Indonesian manufacturing sector. This result is consistent with [36], [39], who found that employee training contributes positively to motivation by improving knowledge, competence, and confidence. It also supports [17], [28], [40], who demonstrated that training and motivational practices are associated with better teamwork and task efficiency. In manufacturing environments characterized by technological change and operational complexity, continuous training equips employees with the technical and professional capabilities required to complete their duties effectively, thereby strengthening their confidence and motivation.

Career opportunities were also found to have a significant positive effect on employee motivation. This finding aligns with

[22], [34], who reported that career growth improves employee engagement through stronger affective commitment, particularly when employees perceive organizational support. Similarly, [22], [32] found that career adaptability positively influences work engagement because it helps employees manage career challenges, align themselves with organizational goals, and develop confidence regarding their professional future. [21], [22] also confirmed that organizational career growth directly and indirectly strengthens work engagement through career resilience. These previous findings support the present result that clear promotion prospects, professional development opportunities, and transparent career pathways provide employees with future-oriented goals that motivate them to invest greater effort in their work.

The simultaneous effect of training and development and career opportunities indicates that employee motivation is shaped by integrated human resource management practices rather than isolated programs. Training strengthens employees' current competence, while career opportunities provide long-term direction, recognition, and expectations of advancement. This finding is consistent with [13], [14], [41], who found that an employee growth climate represented by organizational practices that encourage learning and professional development was positively related to work engagement and several positive job outcomes among workers

in North Sumatra, Indonesia. Therefore, combining competency development with career management can create organizational resources that encourage employees to remain engaged, adaptive, and motivated.

Overall, the present study reinforces previous research while extending the evidence to employees in Indonesia's manufacturing sector. The findings suggest that manufacturing companies should implement structured and needs-based training, establish competency-based career pathways, provide mentoring and professional development, and ensure that promotion mechanisms are transparent and fair. Such integrated practices can strengthen employees' perceptions of organizational support, increase confidence in their future within the organization, and maintain work motivation, which may ultimately contribute to workforce retention and organizational competitiveness.

5. CONCLUSION

This study confirms that training and development and career opportunities have

positive and significant effects on employee work motivation in Indonesia's manufacturing sector, both individually and simultaneously, explaining 52.4% of the variation in motivation. Continuous training, competency development, and relevant learning opportunities improve employees' capabilities, confidence, and perceptions of organizational support, while clear career pathways, fair promotion systems, mentoring, and professional growth opportunities strengthen commitment and encourage better performance. These findings indicate that employee motivation is shaped by integrated human resource management practices; therefore, manufacturing companies should combine structured training with transparent career management to build a more adaptive, motivated, and competitive workforce. However, this study is limited by its cross-sectional design and its focus on only two predictors. Future research should include factors such as leadership, compensation, organizational culture, and work environment, apply longitudinal methods, and examine employees across broader industrial sectors.

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