

## Antecedent Factors of Organizational Performance in Manufacturing Firms

Yuswardi<sup>1</sup>, Ridhayati Farid<sup>2</sup>, Debora Oktaviani<sup>3</sup>

Department of Management, Faculty of Business and Management, Universitas Internasional Batam, Indonesia<sup>1,2,3</sup>

Corresponding Author: Yuswardi (yuswardi003@gmail.com)

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### ABSTRACT

This study examines the influence of work-life balance and training on organizational performance within manufacturing firms in Batam, Indonesia. With a focus on human resource dynamics, it highlights how these factors contribute to workplace harmony and employee engagement. A total of 365 employees participated in the research, utilizing a survey-based approach segmented into key areas such as leadership, recognition, work-life balance, training and development, organizational culture, and work engagement. Findings reveal that work-life balance and training significantly enhance employee engagement, which in turn positively affects organizational performance. Conversely, leadership and recognition did not show a direct impact on work engagement, suggesting that organizations must prioritize initiatives that foster work-life balance and invest in employee training for optimal outcomes. The study emphasizes the critical role of employee engagement as a mediator and suggests practical implications for manufacturing firms aiming to enhance their performance through improved human resource management strategies.

Keywords: Leadership; Recognition; Work-Life Balance; Organizational Performance; Human Resources



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## INTRODUCTION

Human Resources is an asset that plays an important role in an industry or company. The importance of human resources is the creation of value for the organization in its workplace. To realize the value of human resources, or human resources must agree on a basis that has been planned before running the organization in achieving a goal (Rustiawan et al., 2023). An organization has a culture that can reflect the appearance or how the organization is seen from the outside. If an organization has a good reflection, it can be concluded that the organization has a good image (Juni et al., 2024). Vice versa, those with a bad reflection will not run smoothly. The success of an organization can be measured in terms of the performance produced or displayed by its industrial workers. With that, the performance of an employee can be measured from the results of work, the results of tasks, or the results of activities carried out within a short period of time (Juni et al., 2024; Triansyah et al., 2023). All organizations or companies must care for and maximize the quality of their human resources so that they can achieve their goals optimally. Companies must also ensure that their employees enjoy their work so that they can complete their tasks well (Inaya et al., 2024; Tambunan, 2020).

Performance is a form of work that can be assessed from the quality and amount that can be obtained from an employee when carrying out their role in line with the responsibilities that have been delegated to them. In an organization, it is important to conduct performance appraisals with the aim of becoming the basis for planning and research analysis in the employment sector, especially in efforts to improve programs and create healthy reciprocal relationships between superiors and subordinates (Muna & Isnawati, 2022). The performance of employees can be reflected through the level of employee productivity and the role of employees in obtaining organizational goals. Good performance can be influenced by the level of competence and motivation possessed by an employee.

When employees in the organization do not have superior performance, the company will experience difficulties in achieving company goals (Darmawan & Anggelina, 2022). This reflects that the availability of an adequate number of employees in a company, if it is not balanced with the quality of these employees, will become a burden on the company and result in non-optimization of company performance. Conversely, when employees in a company feel full of superior quality related to expertise, both physical and non-physical, it will create competitiveness and make it easier for the company to achieve its goals. So that the quality of human resources related to physical and non-physical aspects, related to the ability to work, thinking, and other competencies, can affect the performance conditions possessed by these employees (Idrus et al., 2022). A factor that is closely related to employee performance is the condition of the leader in the company. Leadership style is a method used in the leadership process that implements a person's leadership behavior to influence others to act in accordance with what they want (Pramudya et al., 2023). Regarding the phenomenon that affects leadership style, there is often miscommunication between leaders and subordinates. This can occur for various reasons, such as the leader's unclear communication style, differences in perception or understanding between the leader and the team, because effective communication is an important part of leadership style. Therefore, an effective leadership style must be able to balance the active involvement of team members and clear communication to ensure optimal understanding and cooperation (Marbun et al., 2023).

In addition to leadership, the progress of today's companies can be achieved when the organization can perform better profit management and increase its competitiveness and business development compared to competing companies. To achieve this goal, organizations must carry out training and development for employees. Employees who are trained and can develop are able to create higher employee performance to open opportunities for the creation of higher quality work results and encourage better employee performance (Wicaksono S, 2019). In addition, with the training and development provided by the company's human resources, it can improve HR expertise and skills in carrying out their work activities. Through training and development provided to employees, the aim is to encourage the effective use of employee energy and time at work. Job training becomes all activities aimed at obtaining, encouraging, and developing productivity, work skills, discipline, and work loyalty in employee attitudes at a certain level, in line with the level and qualifications of positions and responsibilities (Idrus et al., 2022). In the training program carried out by the company, it is necessary to include a learning experience that becomes an organizational activity that has been planned and compiled as an effective company design, which includes identifying actions according to needs, implementing training, and evaluating training. The training provided by the company is an effort to encourage employee performance so that the work gets more focused on its responsibilities. Through job training, it becomes an effort to create improvements in employee productivity when carrying out work in accordance with their role (Dewi & Rahmawati, 2021).

This research introduces new ideas and perspectives by combining leadership, recognition, work-life balance, training and development, and organizational culture into a detailed framework. This framework highlights work engagement as a key factor that affects how well organizations perform, specifically in the Muka Kuning Industrial Area of Batam, which is known for its labor-intensive operations and significant production demands, a topic often overlooked in studies of human resource management in Indonesia. Unlike earlier research that mainly looks at direct connections

or limited causes of engagement, this study creates a combined model based on the Job Demands–Resources (JD-R) theory, viewing organizational practices as important resources that influence workers’ energy, commitment, and focus. Additionally, the study evaluates both direct and indirect impacts using Partial Least Squares Structural Equation Modeling (PLS-SEM), allowing for thorough estimation of underlying variables across diverse companies. A unique contribution of this study is the critical reassessment of the common belief that leadership and recognition are always the top influences on engagement, presenting empirical evidence that their impact can change based on different industrial settings. By placing the study in a strategically important manufacturing area, this research adds valuable regional insights to the global conversation about engagement. The comprehensive approach to understanding human resource factors in one analytical framework helps identify the key organizational aspects that can drive performance through engaging employees. From a methodological standpoint, the research enhances the reliability and precision of findings through thorough checks of construct reliability and validity.

Apart from training, another aspect that affects the creation of employee performance in a company is development. Development is an action in creating employee abilities needed by the organization in the future, so that through this development, it can become an activity in helping employees to plan activities based on efforts to develop themselves optimally (Ummah, 2019). Employee development is a company action that aims to encourage the progress and development of employees so that it can make changes in employee behavior for their work and responsibilities, both in terms of attitude, understanding, and skills (Yolinza & Marlius, 2023). This condition causes employees who have undergone development to be able to encourage their performance because they can overcome various challenges and obstacles they face. This statement is in accordance with Snow’s research (2023), namely, the development variable has a positive and significant effect on employee performance. Different results were shown by Darmawan et al. (2022), who explained that employee career development has no significant effect on employee performance. Human resources in a company are also closely related to organizational culture. Organizational culture is a form of patterns, values, principles, traditions, and habits that are created over the long journey of the organization and developed in the company over a long period of time, and become the basis and beliefs of all employees to create the emergence of attitudes and behaviors of employees in the company (Nuriyah et al., 2022). Organizational culture provides a reflection of the appearance of the company, which is related to how the company is seen by people outside the organization. Companies that have a strong culture will show a positive image that can be seen by other parties, while when the work culture is bad, the public’s assessment of the company will also be bad. A strong organizational culture can be seen from the obedience of all company employees to the rules in the company, where generally a strong work culture will reflect the knowledge of all company employees related to company goals and understand the behavior that is considered good and not good for the company (Virgians, 2023).

In addition to these factors, employees are now more concerned about the work environment and work-life balance. Work-life balance (WLB) is a condition in which employees can balance work and personal life. Work-life balance is a condition when employees can manage their time well and adjust their work needs and personal and Family life needs (Badrianto & Ekhsan, 2021). An employee who applies work-life balance optimally can increase their productivity and have higher performance. In fact, by applying this work concept, employees can feel satisfied or happy and more creative because the environment outside the company, both at friends’ homes and the office environment, namely the Company’s management, provides support for employee activities. Balance focuses on the goal of balancing individual employee participation in work and other non-work participation. Therefore, increasing work-life balance will create job satisfaction and encourage higher employee performance due to the achievement of a more optimal balance between church life (Fatmawati Dwi, 2019). The companies taken are companies that have been established for 5 years or more in Batam, Muka Kuning. PT OSI Electronics has operated since 2004, PT TEC Indonesia has operated since 1992, PT Infineon Technologies Batam has operated since 1996, PT

Schneider Electric Batam has operated since 1991, and PT Dynacast Indonesia has operated since 2010.

**Table 1. Employee Distribution Across Selected Companies**

Company Name	No. of Employees
PT OSI Electronics	2415
PT TEC Indonesia	1500
PT Infineon Technologies Batam	2300
PT Schneider Electric Batam	4000
PT Dynacast Indonesia	1800

Source: BP Batam, JobStreet, Itenas CDC

This data was collected by different platforms, which provide information about the number of employees, such as BP Batam, Itenas CDC, and JobStreet, that provide information about the companies briefly. According to the results above, PT OSI Electronics has 2415 employees, PT TEC Indonesia has 1500 employees, PT Infineon Technologies Batam has 2300 employees, PT Schneider Electric Batam has 4000 employees, and PT Dynacast has 1800 employees. This data is obtained for the year 2022. The problem faced by manufacturing companies want to know more about whether the companies' human resource management is sufficient or needs to be strengthened. So that company management can inhibit employee turnover and optimize internal communication, HR initiatives, and be more transparent on productivity between workers. Through this phenomenon, the effect on organizational performance will continue to be applied to maintain companies' status and impact on their employees. This company can be found in Muka Kuning, Batam, located in a city where manufacturers operate.

Drawing from the contextual background and the recognized research gap, this research seeks to examine the impact of leadership, acknowledgment, work-life balance, training and development, and organizational culture on the performance of organizations within manufacturing firms in Muka Kuning, Batam. Additionally, this study aims to investigate the function of work engagement as a mediating factor that clarifies how these human resource management practices lead to enhanced organizational performance. This research aims to offer empirical evidence on the primary organizational factors that improve performance results through psychological engagement processes in a labor-intensive manufacturing setting by incorporating these variables into a detailed structural framework.

## LITERATURE REVIEW

### Leadership

Research examining the effect of leadership on organizational performance concluded that organizational performance is associated with leadership styles, and they provide positive and negative results on performance (Basit et al., 2018). However, the drawback is that it only uses quantitative data, so there is a lack of in-depth research and a lack of direct application by researchers. Based on other research, leadership is the process of directing, mobilizing, and influencing activities related to organizational tasks to achieve predetermined goals (Christina Yeo & Mon, 2025; Rahmisyari, 2015). The understanding of leadership is sometimes misinterpreted as management. Even though leadership is part of management, management can help leadership to determine the leadership style that is suitable for use in the company (Harris & Nelson, 2019; Yuswardi et al., 2024).

### Recognition

Recognition can help increase an employee's confidence so that it can affect employee performance (Abdullah et al., 2016). A journal discusses more about the theory of rewards and recognition using complementary relationships. According to researchers, effective recognition can affect the internal quality of the company, where this good quality contributes more to employee interaction and

employee job satisfaction (Madhani, 2021). Employees need recognition for the results of their hard work, which can increase company profits, so that recognition plays an important role (Mutisya et al., 2017). There is one type of recognition that can be used by companies to maintain company and employee performance, namely, entrepreneurial opportunity recognition. Opportunity recognition is a concept, a type that exists in strategic management (Lousie & Dorian, 2017).

### **Work-life Balance**

Work-life balance plays an important role not only in the company but in the lives of employees. A study that focuses on the work-life balance of hospital employees in Malaysia. The work environment in hospitals tends to have high levels of stress and low work flexibility, which has an impact on life outside of working hours and the mental health of workers. In conclusion, it is necessary to make improvements to the work-life balance in hospitals and the medical workforce in general (Dini et al., 2024; Dousin et al., 2019). Companies must provide opportunities for employees to divide work time and personal life to be in harmony (Alrowwad et al., 2018). There is a balance between personal life and work, which will provide a sense of satisfaction. As well as reducing conflict and frustration due to conflicts of workload and social life (Anggoro, 2018; Issa, 2019). Other studies revealed that there are several stages or domains that can increase one's job satisfaction, especially in one's personal life (Herachwati, 2018; Yuswardi et al., 2023).

### **Training and Development**

Training aims to improve employees' ability to complete work, while development aims to improve employee skills in preparation for developing more responsibilities in the future (Gustiana, 2022). Training and development need to be carried out fairly, transparently, and evaluated to improve employee abilities and competencies, and affect employee performance. Organizations must ensure that training and development programs are well-designed and planned to meet business needs and organizational growth to achieve program objectives, as operational efficiency and effectiveness are key to increasing profitability (Inwaeke & Obiekwe, 2017). An interesting study showed how training and development have occurred over the last 100 years through past journals. The researcher then breaks it down into four main research themes: training criteria, trainee characteristics, training design and delivery, and training context, to examine in more detail. In each area, the researcher explained how the focus of research has shifted over time and highlighted essential developments. The researchers conclude by offering some ideas for future training and development research (Bell et al., 2017). Training is used to develop employee skills, which is therefore important for the organization to preserve.

### **Organizational Culture**

Research shows the relationship between organizational culture and organizational performance (Maharani, 2019; Martinez et al., 2015). The effect of organizational culture on company performance states that the sample collected is small and the lack of diversity between respondents, so that the perspective cannot be maximized during this research process (Donal Mon et al., 2024; Nguyen & Watanabe, 2017). So, it can be said that organizational culture must provide encouragement to employees and instill work norms. Organizational culture is an important component for company performance; a lack of adjustment between practiced cultural values will hinder company performance. Organizational culture is part of the unique nature that exists within the organization among employees. It may impact the organization's habits, of course, with the diverse changes of globalization, companies must be able to adapt well to maintain or improve their organizational culture (Setyawan & Nelson, 2021; Umrani et al., 2018).

### **Work Engagement**

Work Engagement has shown that this concept has a broad and complex definition. The definition of work engagement is a state of positive motivation and self-actualization at work, which is characterized by vitality, dedication, and absorption (Pri & Zamralita, 2018). Some factors that affect work engagement, such as organizational characteristics, such as integrity, good internal communication, or habits of innovation, can affect work engagement (Aziz & Raharso, 2019). Work

engagement is a concept that makes employees feel involved, or connected, with their work, and more enthusiastic about their work (Hazrati, 2017). Work engagement is a positive state characterized by vigor, dedication, and absorption in one's work. Research has shown that job crafting, which involves proactive behaviors to alter work environments, has a positive association with work engagement (Sentoso & Muchsinati, 2024). The concept of work engagement has been studied from various perspectives, with dedication emerging as the most dominant dimension (Evitha et al., 2021; Frederick & VanderWeele, 2020). It involves employees giving all and being present for each other during challenging times, understanding that work engagement is crucial for organizations seeking to manage personnel and maximize value effectively (Febriyanti & Mon, 2025; Rai & Yadav, 2022).

### **Organizational Performance**

For an organization, performance is a measure of its effectiveness. The need for the ability to set goals to achieve performance and improve the overall performance of an organization is undoubtedly the most important goal and objective of an organization (Febiola et al., 2024; Pang & Lu, 2018). A strong organizational culture can significantly enhance an organization's performance. Strategic management initiatives, including organizational culture, work environment, learning, and innovation, contribute to improved performance when people are at the center of focus (Tolici, 2021). Effective coordination between internal departments and external entities is crucial for mitigating complexity and enhancing performance (Xinyu, 2023). Individual performance has a significant impact on organizational performance, necessitating the development of effective HR systems and performance evaluation methods. The definition and measurement of organizational performance indicators, including both qualitative and quantitative metrics, are essential for effective operation and evaluation. Ultimately, organizational performance depends on the organization's ability to position itself effectively in the market using its available resources (Conçu, 2020; Fekete, 2021).

### **Research Model Based on Grand Theoretical Foundations**

The proposed research model is grounded in two major theoretical perspectives, namely the Job Demands–Resources Theory and the Social Exchange Theory, to establish a coherent and theoretically anchored explanation of the relationships among human resource practices, work engagement, and organizational performance. Within the Job Demands–Resources (JD-R) framework, every work environment is conceptualized as a configuration of job demands and job resources that interact in shaping employees' psychological states and behavioral outcomes (Galanakis & Tsitouri, 2022). In this study, work-life balance, training and development, and organizational culture are positioned as strategic job resources that not only buffer the strain generated by high job demands but also stimulate intrinsic motivation, psychological safety, and sustained work-related energy. The JD-R model explains that the availability of meaningful resources activates a motivational process that enhances vigor, dedication, and absorption, collectively conceptualized as work engagement, which subsequently translates into improved individual and organizational performance (Anastasia A. Katou, Michael Koupkas, 2021; Ijaz et al., 2021). Social Exchange Theory (SET) provides the relational mechanism that explains how organizational practices are transformed into performance outcomes through norms of reciprocity.

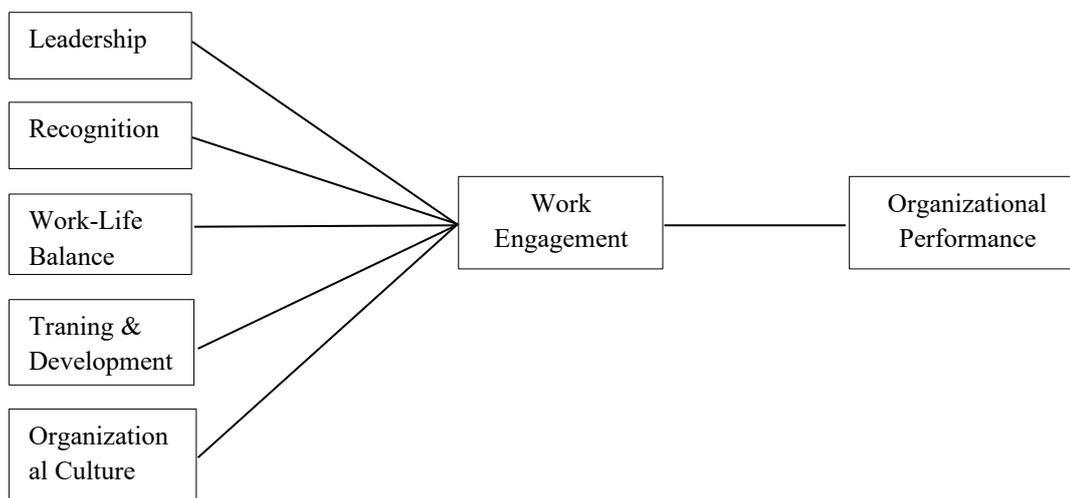
When employees perceive that the organization invests in their well-being through balanced work arrangements, competency development opportunities, and a supportive cultural climate, they interpret these practices as signals of organizational support and long-term commitment. Such perceptions generate an internalized obligation to reciprocate through heightened engagement, discretionary effort, and performance-enhancing behaviors. In this framework, work engagement represents the psychological manifestation of reciprocal exchange, functioning as the mediating pathway through which positive HR practices are converted into measurable organizational performance outcomes (Sulistiyanı et al., 2022; Tensay & Singh, 2020). By blending JD-R and SET theories, the research model goes beyond simply combining common variables to offer a holistic explanation of how strategic HR practices function dually as energizing resources and relational

cues in organizations. JD-R accounts for how these resources fuel and maintain work engagement, whereas SET explains employees’ reciprocal performance boosts in response. As a result, hypothesized links among work-life balance, training and development, organizational culture, work engagement, and performance gain a cohesive theoretical foundation, enhancing the study’s impact on modern HRM scholarship.

**Hypothesis Development**

This study uses 5 independent variables: Leadership, Recognition, Work-life Balance, Training and Development, and Organizational Culture. The mediating variable contained in this study is Work Engagement, and the dependent variable is Organizational Performance. The following is a research framework and research hypothesis.

- H1 : There is a significant influence of leadership on work engagement
- H2 : There is a significant influence of recognition on work engagement
- H3 : There is a significant influence of work-life balance on work engagement
- H4 : There is a significant effect of training and development on work engagement
- H5 : There is a significant influence of organizational culture on work engagement
- H6 : There is a significant influence of work engagement and organizational performance
- H7 : There is an influence of leadership on organizational performance, with work engagement as a mediator
- H8 : There is an influence of recognition on organizational performance, with work engagement as a mediator
- H9 : There is an effect of work-life balance on organizational performance, with work engagement as a mediator
- H10 : There is an effect of training and development on organizational performance, with work engagement as a mediator
- H11 : There is an effect of organizational culture on organizational performance, with work engagement as a mediator



**Figure 1. Research Model**  
Source: Data Processed (2026)

**METHOD**

**Data and sample**

In this study, the target population was manufacturing workers, particularly those employed by the largest manufacturing companies, who were randomly selected. Data for this study were obtained through a survey-based questionnaire. Respondents were asked to rate the company’s Human

Resource Management using a five-point Likert Scale. (1) Strongly Disagree, (2) Disagree, (3) Neutral, (4) Agree, and (5) Strongly Agree. The target sample was 350 respondents, of whom 465 were deemed eligible; however, the researcher will use only 365 for the study. All questionnaires were distributed using Bahasa Indonesia as the language of communication. The questionnaire consists of two parts. The first part, called section 1, was demographic information, and the second part was the survey questionnaire. The survey questionnaire was divided into 7 sections. Section 2 questions about leadership (L), section 3 questions about recognition (R), section 4 questions about work-life balance (WLB), section 5 questions about training and development (TD), section 6 questions about organizational culture (OC), section 7 questions about work engagement (WE), and section 8 questions about organizational performance (OP).

### Object of Research

The research object in this article is employees who are still actively working and domiciled in Batam City, particularly in the manufacturing sector. In determining the minimum sample size for a study, the researcher may use up to 10 respondents per question, resulting in a total of 10 times the number of questions (Hair et al., 2021; Ketchen, 2013). In this study, there are 7 (seven) variables, and each variable has 5 (five) questions, so there are 35 questions. Therefore, the minimum sample size is 350 respondents. However, in anticipation of invalid or unreturned questionnaires, 465 questionnaires were distributed to workers in Batam City, specifically those employed at a manufacturing company in Muka Kuning; 365 were returned.

## RESULTS AND DISCUSSION

The table presents an overview of several key variables that influence organizational performance, detailing their items, outer loadings, Average Variance Extracted (AVE), and Composite Reliability. Outer Loadings are measures in confirmatory factor analysis that assess the strength of the relationship between a latent variable and its indicators. Cross-loading values above 0.60 indicate that indicators are appropriately aligned with their respective factors, confirming adequate discriminant validity in the model. Any indicators that failed to meet the outer loading criteria were excluded from further analysis as invalid. The composite reliability values above indicate that each construct exceeds 0.8, supporting the conclusion that the data are reliable with respect to composite reliability (Hair et al., 2021).

**Table 2. Correlations, Measures of Reliability, and Validity**

Variable	Items	Loadings	AVE	Composite Reliability
Leadership	L_1	0.935	0.767	0.932
	L_2	0.887		
	L_3	0.877		
	L_4	0.929		
	L_5	0.736		
Recognition	R_1	0.904	0.746	0.920
	R_2	0.886		
	R_3	0.750		
	R_4	0.868		
	R_5	0.900		
Work-life Balance	WLB_1	0.914	0.799	0.937
	WLB_2	0.877		
	WLB_3	0.881		
	WLB_4	0.895		
	WLB_5	0.901		
Training & Development	TD_1	0.907	0.815	0.944
	TD_2	0.899		

	TD_3	0.901		
	TD_4	0.903		
	TD_5	0.904		
Organizational Culture	OC_1	0.930	0.823	0.946
	OC_2	0.868		
	OC_3	0.902		
	OC_4	0.901		
	OC_5	0.933		
Work Engagement	WE_1	0.824	0.779	0.931
	WE_2	0.908		
	WE_3	0.873		
	WE_4	0.894		
	WE_5	0.910		
Organizational Performance	OP_1	0.894	0.809	0.941
	OP_2	0.897		
	OP_3	0.900		
	OP_4	0.896		
	OP_5	0.910		

Source: Data Processed (2025)

### Direct Effect

When testing hypotheses, bootstrap structural testing takes three factors into account, including the original sample, t-statistic, and p-value, as explained by Hair et al. (2021). Each point has a different function. The original sample size is used to understand the effect of the relationship between constructs, the t-statistic is used to measure the significance level of the hypothesis, and finally, the p-value is used. This is used to measure the level of significance of a hypothesis at various levels of significance. The internal or structural model of this study is shown in the following table:

**Table 3. Direct Effect**

Hypothesis	Original Sample	t-statistics (STDEV)	P-values	Results
Leadership -> Work Engagement	-0.005	0.150	0.880	Rejected
Recognition -> Work Engagement	0.073	1.168	0.243	Rejected
Work-Life Balance -> Work Engagement	0.417	8.247	0.000	Accepted
Training and Development -> Work Engagement	0.263	5.361	0.000	Accepted
Organizational Culture -> Work Engagement	0.245	5.372	0.000	Accepted
Work Engagement -> Organizational Performance	0.417	8.247	0.000	Accepted

Source: Data Processed (2025)

### Hypothesis 1: The effect of Leadership on Work Engagement

The statistical results indicate that Leadership does not significantly influence Work Engagement, as reflected in a t-statistic value of 0.150 ( $< 1.96$ ) and a p-value of 0.880 ( $> 0.05$ ), leading to the rejection of the first hypothesis. This finding contrasts with the results of Ariyani & Hidayati (2018), who identified a positive relationship between leadership and employee engagement. Yet, it is consistent with the findings of (Bismoko et al., 2023), which reported an insignificant effect within a comparable industrial context. Rather than attributing the insignificance solely to leadership style

incompatibility, this outcome can be more accurately interpreted through the structural characteristics of the manufacturing sector, particularly in labor-intensive environments characterized by shift-based systems, rigid production targets, standardized operating procedures (SOPs), and hierarchical chains of command. In such operational settings, employee tasks are typically routine, highly procedural, and tightly regulated, which limits the discretionary space through which leadership behaviors, whether transformational or transactional, can meaningfully shape daily work experiences. The dominance of standardized workflows and performance metrics may reduce direct interpersonal interaction between supervisors and employees, thereby weakening the psychological salience of leadership as a motivational driver of engagement.

Within many Southeast Asian manufacturing organizations, including Indonesian industrial zones, supervisory roles often emphasize compliance, coordination, and output monitoring rather than inspirational or developmental leadership functions, which may explain why leadership does not emerge as a strong predictor of engagement in this context (Supriatna, 2018). This contextual explanation aligns with sector-specific evidence suggesting that in highly standardized production environments, structural job resources such as training clarity, procedural support, and work-life stability may exert a more immediate influence on engagement than leadership charisma or relational orientation. Consequently, while leadership theory generally posits that transformational behaviors such as vision articulation, individualized consideration, and motivational support enhance employee engagement, the present findings suggest that their effect may be contingent upon organizational structure, task autonomy, and industry characteristics. Therefore, the absence of a significant relationship in this study does not negate the theoretical importance of leadership, but instead indicates that its influence on work engagement may be context-bound and mediated by the institutional and operational realities of manufacturing organizations (Syahputra & Susanti, 2025).

### **Hypothesis 2: The effect of Recognition on Work Engagement**

Testing shows that Recognition does not affect Work Engagement. Based on the t-statistic value of 1.168, which is smaller than 1.96, with a coefficient value of p-values of 0.243 ( $> 0.05$ ), it means that there is no significant relationship between recognition and work engagement. Thus, the second hypothesis in this study is 'rejected'. This result is not in line with the research of (Abdullah et al., 2016) but in line with the research of (Shadiq et al., 2022). A study showed that many employees feel the recognition they receive is not sufficient to enhance their sense of attachment to the company. This could be because the type of recognition is not clear, and in general, more targeted and specific recognition tends to be more effective (Jaya Agitza et al., 2024). Recognition is believed to be a key driver of work engagement. Data for this hypothesis will examine the impact of recognition practices, such as acknowledgment of achievements and rewards for outstanding performance, on employees' engagement levels. The hypothesis proposes that when employees feel their efforts are recognized, they are more likely to be motivated, show higher involvement in their work, and have an increased sense of value within the organization.

### **Hypothesis 3: The effect of Work-life balance on Work Engagement**

The test shows that Work-Life Balance affects Work Engagement, with a p-value of 0.000 ( $< 0.05$ ). So, the third hypothesis in this study is 'accepted'. Work-life balance significantly influences work engagement. The results are consistent with (Alrowwad et al., 2018). This indicates that improving work-life balance contributes to improving corporate human resource outcomes. Work-life Balance also plays an important role in an employee's ability and capability to achieve their goals. Work-life balance and work engagement can vary across cultural and socioeconomic contexts. Overall, work-life balance plays a critical role in enhancing work engagement. This hypothesis addresses the role of work-life balance in influencing employee engagement. Data should be collected on employees' ability to manage their professional and personal lives, including flexible working hours, time-off policies, and supportive workplace environments. It is expected that employees who achieve a balance between work and life will experience reduced stress, enhanced well-being, and increased work engagement, as they can dedicate more focus and energy to their work when not overwhelmed by personal challenges.

#### **Hypothesis 4: The effect of Training and Development on Work Engagement**

The test results show that Training and Development affects Work Engagement, with a p-value of 0.000 ( $<0.05$ ). Thus, the fourth hypothesis in this study is 'accepted'. Training and development have a significant Influence on Work Engagement. When an employee receives training and development, it gives them a boost of confidence in their career and job. When employees engage in teamwork activities, it gives them a boost of confidence in their careers and jobs. With organizations prioritizing employee training and development, it prepares employees for future challenges and adaptive changing demands. Perceived organizational support plays a crucial role in this dynamic. Employees who feel supported through training programs are more likely to engage actively in their work (Dwiputri & Wanasida, 2024). Training and development are essential factors in enhancing employees' skills and competencies. This hypothesis suggests that organizations investing in continuous training opportunities will see higher levels of work engagement from their employees. Data analysis for this hypothesis should explore how access to training programs, professional development opportunities, and career advancement prospects affects employees' job commitment and involvement in their tasks.

#### **Hypothesis 5: The effect of Organizational Culture on Work Engagement**

The test shows that Organizational Culture affects Work Engagement, with a p-value of 0.000 ( $<0.05$ ). Therefore, the fifth hypothesis in this study is 'accepted'. Organizational Culture has a significant role in Work Engagement. Culture in an organization affects the employees' work performance as well. It shapes the work engagement among employees. Therefore, organizations aiming to improve employee engagement focus on fostering a supportive and inclusive culture that aligns with their employees' values and needs. A strong alignment between an organization's culture and its employees' values can enhance their emotional commitment to the organization, thereby increasing work engagement (Rahmah et al., 2023). Organizational culture is a set of shared values, beliefs, and norms within an organization that guides behavior and decision-making. This hypothesis posits that a positive organizational culture can influence work engagement by fostering a supportive, collaborative, and motivating environment. The data examines organizational values, communication styles, and employee trust in leadership, and how these cultural factors contribute to higher employee engagement.

#### **Hypothesis 6: The effect of Work Engagement on Organizational Performance**

The test shows that Work Engagement affects Organizational Performance, with a p-value of 0.000 ( $<0.05$ ). Thus, the sixth hypothesis in this study is 'accepted'. Work Engagement has a significant role in Organizational Performance. Work engagement is an important driver of organizational success, with beneficial benefits seen across industries and organizational contexts. Organizations can increase productivity and performance by fostering an environment that enhances employee engagement. Other factors, such as organizational support, may be perceived to enhance organizational performance. This suggests that supportive work environments can amplify the positive effects of engagement (Apriani et al., 2023). This hypothesis links employee work engagement directly to organizational performance, suggesting that greater employee engagement is associated with better organizational performance. Data would focus on measuring employee engagement levels (e.g., through surveys or performance metrics) and correlating these with key organizational performance indicators, including productivity, profitability, customer satisfaction, and overall success.

#### **Indirect Effect**

The indirect effect test is a statistical method used in structural equation modeling to evaluate the effect of one variable on another mediated by an intermediary variable. For this test, a t-statistic threshold of 1.96 and a p-value of 0.05 are typically used as criteria.

**Table 4. Indirect Effect**

Hypothesis	Original sample	TStatistics (STDEV)	P Values	Results
Leadership → Work Engagement → Organizational Performance	-0.004	0.151	0.880	Rejected
Recognition → Work Engagement → Organizational Performance	0.070	1.169	0.242	Accepted
Work-Life Balance → Work Engagement → Organizational Performance	0.397	8.218	0.000	Accepted
Training & Development → Work Engagement → Organizational Performance	0.251	5.334	0.000	Accepted
Organizational Culture → Work Engagement → Organizational Performance	0.234	5.396	0.000	Accepted

Source: Data Processed (2025)

**Hypothesis 7: The effect of Leadership on Organizational Performance mediated by Work Engagement**

The empirical findings demonstrate that Leadership does not exert a significant indirect effect on Organizational Performance through Work Engagement, as indicated by a beta coefficient of -0.004, a t-statistic of 0.151 ( $< 1.960$ ), and a p-value of 0.880 ( $> 0.05$ ), resulting in the rejection of the seventh hypothesis. This outcome diverges from (Karakiliç, 2019), who reported a significant mediating role of engagement. Yet, it is consistent with (Bismoko et al., 2023), who found no substantial indirect influence within a comparable industrial setting. To interpret this result more rigorously, the mediating mechanism of work engagement must be examined conceptually rather than assuming a linear leadership–performance pathway. Within motivational frameworks, work engagement represents a psychological state characterized by vigor, dedication, and absorption that emerges when employees experience adequate job resources, psychological safety, and meaningful work. Leadership can theoretically foster engagement by shaping job characteristics, enhancing autonomy, clarifying roles, and fulfilling psychological needs such as competence and relatedness, as suggested by Decuyper & Schaufeli (2020). However, the absence of a significant indirect effect in this study indicates that such psychological activation may not have been sufficiently stimulated in the manufacturing context under investigation. In highly standardized production environments, where operational processes are governed by strict SOPs, hierarchical supervision, and performance metrics centered on output efficiency, leadership behaviors may have limited capacity to alter core job characteristics that drive engagement. Even when transformational leadership increases emotional attachment or enthusiasm, engagement does not automatically translate into measurable organizational performance if performance indicators are predominantly system-driven rather than behavior-driven. This interpretation resonates with Insyra (2022), who demonstrated that transformational leadership can significantly enhance work engagement without yielding a corresponding increase in job performance, suggesting a potential disconnect between psychological involvement and structural productivity outcomes.

In such contexts, engagement may manifest as individual enthusiasm or commitment. Yet, organizational performance may remain contingent upon operational systems, technological infrastructure, and process optimization rather than discretionary employee effort alone. From a mediation perspective, effective indirect influence requires a strong link in both areas: leaders must genuinely enhance engagement, and that engagement should successfully translate into improved performance outcomes. The present findings reveal an issue in the initial section, disrupting the

mediation flow and diminishing the comprehensive understanding of the procedure. Thus, while theoretical models imply that leaders enhance performance indirectly via engagement, the results show that this approach relies on the context and can be affected by elements such as industry structure, autonomy in tasks, and the effectiveness of performance measures in capturing behaviors influenced by engagement. These findings emphasize the necessity to explicitly describe the cognitive processes involved in mediation rather than presuming they function identically across all domains, particularly in manufacturing contexts where structural elements influencing performance may hold greater significance than the impacts of leadership dynamics.

### **Hypothesis 8: The effect of Recognition on Organizational Performance mediated by Work Engagement**

The test results indicate that Recognition does not impact Organizational Performance through Work Engagement, with a beta coefficient of 0.070, a t-statistic value of 1.169 (below 1.960 at a 5% significance level), and a p-value of 0.242 (greater than 0.05). This proves that Recognition through Work Engagement does not influence Organizational Performance, thus rejecting the eighth hypothesis of this study. These findings do not align with (Abdullah et al., 2016), but they are consistent with (Shadiq et al., 2022). Other research indicates that while recognition contributes to employee engagement, many other factors also impact organizational performance. For example, studies show that 71% of the variation in work engagement is influenced by other factors, such as the alignment of rewards with employee needs and consistency in providing recognition (Deepalakshmi et al., 2024; Jaya Agitza et al., 2024). Recognition is posited to affect organizational performance indirectly by increasing work engagement. Data for this hypothesis should analyze the relationship between employee recognition practices and their subsequent impact on work engagement, followed by their effect on key performance indicators such as productivity, quality of work, and innovation within the organization.

### **Hypothesis 9: The effect of Work-Life Balance on Organizational Performance mediated by Work Engagement**

The test results show that Work-Life Balance has a significant positive effect on Organizational Performance through Work Engagement, with a beta coefficient of 0.397, a t-statistic value of 8.218 (above 1.960 at a 5% significance level), and a p-value of 0.000 (less than 0.05). This indicates that Work-Life Balance through Work Engagement has a significant positive influence on Organizational Performance, thus accepting the ninth hypothesis of this study. Work-life Balance can positively influence employee engagement, which in turn can enhance organizational performance. Studies have shown that work-life balance policies can lead to increased job satisfaction, commitment, and engagement, which ultimately boost performance and effectiveness (Badrianto & Ekhsan, 2021). Work-life balance is expected to positively affect organizational performance, with work engagement acting as a mediator. Data should explore how employees' work-life balance influences their engagement levels, and how this engagement translates into higher organizational performance. Metrics to consider could include employee productivity, job satisfaction, and retention rates, linked to work-life balance practices.

### **Hypothesis 10: The effect of Training and Development on Organizational Performance mediated by Work Engagement**

The test results show that Training and Development have a significant positive effect on Organizational Performance through Work Engagement, with a beta coefficient of 0.251, a t-statistic value of 5.334 (above 1.960 at a 5% significance level), and a p-value of 0.000 (less than 0.05). This proves that Training and Development through Work Engagement have a significant positive impact on Organizational Performance, thus accepting the tenth hypothesis of this study. Training and development are pivotal in enhancing work engagement, which significantly boosts organizational performance. Training and development, coupled with employee engagement, positively influence employee performance through enhanced organizational commitment. This commitment is essential for adapting to market changes and competition (Sibarani et al., 2023). This hypothesis suggests that training and development lead to improved organizational performance through increased work

engagement. The data will assess how employees' participation in training programs affects their engagement levels and how these, in turn, contribute to enhanced organizational outcomes such as better decision-making, innovation, and overall efficiency.

### **Hypothesis 11: The effect of Organizational Culture on Organizational Performance mediated by Work Engagement**

The empirical results confirm that Organizational Culture exerts a significant positive indirect effect on Organizational Performance through Work Engagement ( $\beta = 0.234$ ;  $t = 5.396$ ;  $p = 0.000$ ), indicating that cultural alignment strengthens employee engagement, which subsequently enhances productivity and overall organizational effectiveness. These findings reinforce the argument that engagement operates as a psychological transmission mechanism through which shared values, norms, and behavioral expectations are translated into measurable performance outcomes. Consistent with Umrani et al. (2018), a supportive culture characterized by open communication, motivational reinforcement, and goal congruence fosters stronger emotional and cognitive attachment among employees, thereby improving discretionary effort and retention. However, translating this insight into managerial practice requires operational specificity, particularly within manufacturing environments where structural systems and production routines shape daily work experiences. Strengthening organizational culture should move beyond abstract value statements and instead be embedded into production systems and supervisory practices.

For example, companies may institutionalize structured daily briefing sessions (morning production talks) that connect operational targets with organizational values, implement transparent performance dashboards on shop floors to reinforce collective accountability, and integrate lean manufacturing principles into cultural messaging so that continuous improvement becomes both a technical and behavioral norm. Engagement can further be reinforced through participatory problem-solving forums such as quality control circles, where employees contribute suggestions for process improvement, thereby enhancing their sense of ownership and competence. Cultural alignment should also be supported by standardized communication channels across shifts to prevent fragmentation between day and night teams, ensuring consistency of expectations and psychological safety across hierarchical levels (Michulek et al., 2023). Managerial consequences concerning the balance between work and personal life, along with training, need to be specifically designed for the practical needs of manufacturing rather than presented as general advice. In production systems with shifts, work-life balance strategies may include adapting shift patterns, creating shorter workweeks, implementing fatigue-management programs, setting limits on overtime, and ensuring required rest periods to help prevent burnout and maintain ongoing commitment.

These measures aim to lessen physical stress and enhance employees' perceptions of their organization's backing, which increases their engagement by encouraging better health and providing greater control over their work schedules. Regarding training, businesses ought to adopt adaptable microlearning strategies that align with their production timelines, hold short skill enhancement sessions at shift transitions, and offer structured practical training that corresponds with lean manufacturing competencies, such as minimizing waste, standardizing procedures, and pinpointing the underlying causes of problems. These training approaches not only enhance technical abilities but also foster confidence and a sense of backing from the organization, which boosts engagement and reinforces its effect on overall organizational achievement. Utilizing these operational strategies, a robust company culture, balanced work systems, and skill development collaborate efficiently to sustain performance fueled by employee engagement in manufacturing firms.

## **CONCLUSION**

This study examined the influence of selected human resource management practices on organizational performance through the mediating role of work engagement within large-scale manufacturing firms in Batam, Indonesia. The findings demonstrate that work-life balance, training

and development, and organizational culture function as significant antecedents of work engagement, which subsequently enhances organizational performance. In contrast, leadership and recognition did not show a statistically significant direct influence on engagement in the observed industrial context. These results reinforce the conceptualization of engagement as a strategic psychological mechanism through which structural and cultural job resources are transformed into measurable performance outcomes. From a managerial perspective, strengthening shift-sensitive work-life balance policies, implementing context-specific training models, and embedding cultural alignment into production systems appear more impactful than relying solely on hierarchical leadership influence within standardized manufacturing environments.

This work has a few limitations that should be carefully considered despite its contributions. First, because both predictor and outcome variables were gathered from the same respondents at one time, the use of self-reported survey data increases the risk of common method bias, which could inflate observed relationships because of social desirability effects or perceptual consistency. Second, the results can only be applied to large manufacturing companies that operate in Batam's industrial zone; they cannot be applied to other industries, smaller businesses, or various cultural and regional contexts. Third, because high-performing organizations may also encourage stronger engagement over time, a bidirectional dynamic that cannot be separated within the current research design, the cross-sectional design limits causal inference and raises the possibility of endogeneity, especially about the reciprocal relationship between work engagement and organizational performance. To improve causal robustness and theoretical generalization, future research is urged to use longitudinal or multi-source data, broaden sampling across sectors and geographical areas, and use analytical methods that can handle endogeneity issues.

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