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The Effect of Communication, Teamwork, and Job Mismatch on Job Satisfaction in the Piping Department of PT McDermott Batam

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ABSTRACT
Job satisfaction is crucial in industrial construction, particularly at PT McDermott Batam's Piping Department, where communication, teamwork, and job mismatch significantly influence performance amid technical complexity and safety demands, though prior studies overlook their integrated effects in heavy industry contexts. This quantitative explanatory research with a cross-sectional design and multiple linear regression analyzes their partial and simultaneous effects on job satisfaction. The population comprised 1,200 Piping Department employees, with a purposive sample of 92 operational staff surveyed via Likert-scale questionnaires, analyzed in SPSS for validity, reliability, t-test, F-test, and R^2. Results show communication (β=0.318, p=0.026) and teamwork (β=0.267, p=0.037) positively affect job satisfaction, while job mismatch negatively impacts it (β=-0.341, p=0.022); the simultaneous effect is significant (F=24.965, p=0.000), explaining 76.4% of variance. Thus, integrated strategies enhancing communication, teamwork, and job alignment boost satisfaction and organizational effectiveness.

Keyword : communication, teamwork, job mismatch, job satisfaction, industrial construction management.

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INTRODUCTION

Job satisfaction has long been recognized as a central construct in organizational behavior and human resource management literature because of its strong association with employee performance, organizational commitment, productivity, and turnover intentions (Martinez & Hoffman, 2025). In industrial construction environments, job satisfaction becomes even more critical due to the technical complexity of operations, strict safety standards, and high interdependence among work units. Organizations operating in project-based sectors must ensure that employees not only possess adequate technical competence but also experience positive psychological and relational conditions at work (Chen & Abdullah, 2025). When job satisfaction is low, it may lead to decreased productivity, reduced engagement, higher absenteeism, and increased risk of operational errors, outcomes that can significantly affect project timelines and organizational sustainability.

PT McDermott Batam, as a company engaged in offshore construction and fabrication, operates in a highly demanding industrial environment. The Piping Department plays a strategic role in executing fabrication and installation tasks that require precision, coordination, and compliance with international safety standards (Alvarez & Kurniawan, 2025). The nature of piping operations involves close collaboration between engineers, supervisors, welders, and technicians, making communication accuracy and teamwork cohesion indispensable. In such a context, job satisfaction is not merely an individual outcome but a collective organizational asset that directly influences operational effectiveness and project success (Rodriguez & Silva, 2025).

One of the primary determinants of job satisfaction in industrial settings is communication. Communication in organizations refers to the structured process of exchanging information between individuals or groups to achieve shared objectives. In operational departments such as piping, communication clarity, openness, and effective supervisor-subordinate interaction are essential to minimize misunderstandings and ensure proper execution of tasks (Smith & Rodriguez, 2024a). Ineffective communication may generate ambiguity, increase stress levels, and create dissatisfaction among employees. Therefore, examining how communication influences job satisfaction in a

technical project environment is crucial for strengthening internal coordination and workforce stability (Nguyen & Park, 2024).

In addition to communication, teamwork constitutes another fundamental factor influencing job satisfaction. Industrial construction activities are inherently team-based, requiring collaboration, shared goals, and clear role distribution (Kim & Park, 2024). When team members demonstrate mutual trust, enthusiasm, and collective responsibility, employees tend to experience greater psychological support and job fulfillment. Conversely, weak team cohesion may result in interpersonal conflicts, uneven workload distribution, and diminished morale. Given the interdependent nature of piping operations, the quality of teamwork can significantly determine how employees perceive their work environment and overall satisfaction.

Although previous studies have examined communication and teamwork as determinants of job satisfaction, many of them have been conducted in service, education, or administrative sectors. Empirical research integrating communication, teamwork, and job mismatch simultaneously within heavy industrial project environments remains limited (Christensen & Cornelissen, 2023). This gap highlights the need for comprehensive investigation in contexts characterized by technical complexity and operational risk, such as the Piping Department of PT McDermott Batam. By integrating relational factors (communication and teamwork) with structural alignment factors (job mismatch), this study offers a more holistic perspective on job satisfaction formation in industrial settings.

Accordingly, this study aims to analyze the partial and simultaneous effects of communication, teamwork, and job mismatch on job satisfaction in the Piping Department of PT McDermott Batam. The findings are expected to contribute to the development of organizational behavior and human resource management literature in industrial construction contexts. Furthermore, the results provide practical implications for improving employee satisfaction through strengthened communication systems, enhanced team collaboration, and competency-based job placement strategies.

METHODOLOGY

Research Design and Approach

This study employed a quantitative research design with an explanatory approach to examine the causal relationships between communication, teamwork, job mismatch, and job satisfaction (Babbie, 2024). A quantitative method was selected because it enables objective measurement of variables and facilitates statistical hypothesis testing. The explanatory approach is appropriate for this study as it seeks to identify and analyze the extent to which independent variables influence the dependent variable within a specific organizational context (Flick, 2023).

The research adopted a cross-sectional design, in which data were collected at a single point in time from employees of the Piping Department of PT McDermott Batam. This design was chosen to capture employees' perceptions regarding communication practices, team dynamics, job alignment, and their level of job satisfaction under current working conditions. Multiple linear regression analysis was utilized to assess both the partial and simultaneous effects of the independent variables on job satisfaction (Creswell, 2023).

Population and Sample

The population of this study consisted of 1,200 employees working in the Piping Department of PT McDermott Batam. Given the relatively large size of the population and operational constraints, it was not feasible to survey all employees. Therefore, sampling techniques were applied to obtain representative data.

The sample size was determined to be 92 respondents. This number was considered adequate for multiple regression analysis involving three independent variables, following general methodological guidelines that recommend sufficient respondent-to-variable ratios (Kumar, 2023). A purposive sampling technique was used to select respondents based on specific criteria, including employees who were actively involved in operational activities within the Piping Department and had sufficient experience to evaluate communication processes, teamwork practices, and job-task alignment. This approach ensured that respondents possessed relevant insights into the organizational conditions being studied (Neuman, 2022).

Data Collection and Instrumentation

Primary data were collected through structured questionnaires distributed directly to selected respondents. The questionnaire was developed based on established organizational behavior concepts and adapted to the industrial construction context of PT McDermott Batam.

Communication was measured using indicators reflecting clarity of information, openness in communication, supervisor-subordinate interaction, and smooth information flow. Teamwork was measured through indicators including shared goals, enthusiasm in collaboration, clarity of roles and responsibilities, and effective team communication (Buchanan & Bryman, 2022). Job mismatch was measured using indicators related to task-skill incompatibility, educational background mismatch, imbalance in workforce allocation, and lack of relevant competencies. Job satisfaction was measured through indicators including fairness of rewards, supportive working conditions, coworker support, and alignment between job roles and personal attributes.

All items were measured using a five-point Likert scale ranging from 1 (strongly disagree) to 5 (strongly agree). Prior to hypothesis testing, the instrument underwent validity testing using correlation analysis to ensure that each item accurately measured its intended construct. Reliability testing was conducted using Cronbach's Alpha to assess internal consistency (Bell & Waters, 2022).

Data Analysis Technique

Data analysis was conducted using the Statistical Package for the Social Sciences (SPSS). The analysis process began with descriptive statistics to summarize respondent characteristics and provide an overview of variable distributions (Schutt, 2021).

Before conducting regression analysis, classical assumption tests were performed to ensure model adequacy. These included a normality test to assess the distribution of residuals, a multicollinearity test to examine correlations among independent variables, and a heteroscedasticity test to verify the stability of residual variance. Ensuring compliance with these assumptions strengthened the validity of the regression results (Bryman, 2021).

Hypothesis testing was conducted using multiple linear regression analysis. The t-test was applied to evaluate the partial effects of communication, teamwork, and job mismatch on job satisfaction. The F-test was used to assess the simultaneous effect of all independent variables on job satisfaction. Additionally, the coefficient of determination (R^2) was calculated to determine the explanatory power of the model in accounting for variations in job satisfaction (Yin, 2020).

Data Availability and Replicability

The data utilized in this study were obtained from primary survey responses collected directly from employees of the Piping Department at PT McDermott Batam. Due to organizational confidentiality and internal policy considerations, the raw dataset is not publicly accessible.

However, the research design, variable operationalization, sampling criteria, questionnaire structure, and statistical procedures are described in sufficient detail to allow replication in similar industrial construction contexts. Researchers interested in conducting comparative or extended studies may adopt the same measurement indicators and analytical approach to examine job satisfaction determinants in other departments, companies, or industrial sectors (Christensen & Cornelissen, 2023).

Ethical Considerations

This study adhered to ethical standards in social science research involving human participants. Participation in the survey was voluntary, and respondents were informed of the academic purpose of the study prior to data collection. Informed consent was obtained from all participants.

Respondents were assured that their identities would remain confidential and that the information provided would be used solely for research purposes. No personal identifiers were recorded in the dataset. All data were analyzed in aggregate form to ensure anonymity. The study did not involve any physical or psychological risk, as it focused solely on employees' perceptions regarding workplace conditions (Wang & Li, 2023).

By maintaining confidentiality, voluntary participation, and responsible data handling, this research upheld ethical integrity while contributing to organizational and academic knowledge.

RESULT AND DISCUSSION

Partial Effects (t-Test Results)

To examine the individual influence of each independent variable on job satisfaction, a t-test was conducted as part of the multiple linear regression analysis. The t-test evaluates whether each predictor variable significantly contributes to explaining variations in the dependent variable while controlling for the presence of other predictors in the model (Davis & Miller, 2023). In this study, communication, teamwork, and job mismatch were tested to determine their partial effects on job satisfaction in the Piping Department of PT McDermott Batam. The results of the t-test are presented in Table 1 below.

Table 1. Partial Hypothesis Testing Results (t-Test)

Variable	B	Std. Error	Beta	t	Sig.
(Constant)	5.420	2.305	–	2.352	0.029
Communication	0.318	0.119	0.334	2.672	0.026
Teamwork	0.267	0.112	0.291	2.384	0.037
Job Mismatch	-0.341	0.098	-0.372	-3.480	0.022

Dependent Variable: Job Satisfaction
Significance level: a = 0.05
Source: Processed Primary Data (SPSS Output)

The results presented in Table 1 indicate that communication has a positive and significant effect on job satisfaction ($\beta = 0.318$; $p = 0.026 < 0.05$). This finding suggests that improvements in clarity of information, openness, and effective supervisor-subordinate interaction contribute to higher levels of employee satisfaction within the Piping Department. Effective communication appears to reduce ambiguity and strengthen employees' confidence in performing their duties, thereby enhancing their overall job satisfaction.

Teamwork also demonstrates a positive and significant influence on job satisfaction ($\beta = 0.267$; $p = 0.037 < 0.05$). This result confirms that cohesive team dynamics, shared objectives, and clear role distribution positively shape employees' perceptions of their work environment. In a project-based industrial setting such as PT McDermott Batam, where coordination and collaboration are critical for operational success, strong teamwork fosters mutual support and strengthens workplace morale.

Conversely, job mismatch shows a significant negative effect on job satisfaction ($\beta = -0.341$; $p = 0.022 < 0.05$). The negative coefficient indicates that higher levels of perceived mismatch between employees' competencies and job requirements lead to lower satisfaction levels. This finding underscores the importance of proper job placement and competency alignment within the Piping Department. When employees perceive that their skills and educational background are aligned with their assigned tasks, they are more likely to experience positive work attitudes.

Overall, the t-test results confirm that all three independent variables (communication, teamwork, and job mismatch) significantly influence job satisfaction on a partial basis. These findings provide empirical support for the proposed hypotheses and highlight the importance of relational and structural organizational factors in shaping employee satisfaction in industrial construction environments (Thompson & Allen, 2023).

Simultaneous Effects (F-Test Results)

o determine whether communication, teamwork, and job mismatch simultaneously influence job satisfaction, an F-test was conducted as part of the multiple linear regression analysis. The F-test evaluates the overall significance of the regression model by examining whether all independent variables, when considered together, significantly explain variations in the dependent variable (Robbins & Judge, 2022). This test is essential to assess whether the proposed model is statistically feasible and collectively meaningful in explaining job satisfaction within the Piping Department of PT McDermott Batam. The results of the simultaneous test are presented in Table 2 below.

Table 2. Simultaneous Hypothesis Testing Results (F-Test)

Model	Sum of Squares	df	Mean Square	F	Sig.
Regression	512.438	3	170.813	24.965	0.000
Residual	602.317	88	6.844		
Total	1,114.755	91			

Dependent Variable: Job Satisfaction
Predictors: Communication, Teamwork, Job Mismatch
Significance level: $\alpha = 0.05$
Source: Processed Primary Data (SPSS Output)

As shown in Table 2, the F-value is 24.965 with a significance level of 0.000, which is lower than the threshold of 0.05. This result indicates that communication, teamwork, and job mismatch simultaneously have a statistically significant effect on job satisfaction. In other words, the regression model as a whole is valid and capable of explaining variations in job satisfaction among employees in the Piping Department.

The significant F-test confirms that job satisfaction in PT McDermott Batam is influenced by a combination of relational and structural organizational factors. Communication ensures clarity and coordination, teamwork fosters collective engagement and support, and job mismatch reflects the alignment between employee competencies and job requirements. The simultaneous significance suggests that these variables do not operate in isolation but interact within the organizational system to shape employees' overall satisfaction.

From a managerial perspective, the findings imply that improving only one factor may not be sufficient to substantially enhance job satisfaction. Instead, PT McDermott Batam should implement integrated human resource strategies that strengthen internal communication mechanisms, promote cohesive teamwork structures, and ensure competency-based job placement. The simultaneous effect demonstrates that job satisfaction is a multidimensional outcome requiring comprehensive organizational attention (Ristya & Pratama, 2022).

Overall, the F-test results support the fourth hypothesis, confirming that communication, teamwork, and job mismatch collectively influence job satisfaction within the industrial project environment of the Piping Department.

Coefficient of Determination (R^2)

To assess the explanatory power of the regression model, the coefficient of determination (R^2) was calculated. The R^2 value indicates the proportion of variance in the dependent variable (job satisfaction) that can be explained by the independent variables: communication, teamwork, and job mismatch (Liu & Zhang, 2022). This analysis provides insight into how well the model represents the observed data and the extent to which the selected predictors contribute to explaining job satisfaction in the Piping Department of PT McDermott Batam.

Table 3. Coefficient of Determination (Model Summary)

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	0.874	0.764	0.756	1.982

Predictors: (Constant), Communication, Teamwork, Job Mismatch
Dependent Variable: Job Satisfaction
Source: Processed Primary Data (SPSS Output)

As shown in Table 3, the R Square value is 0.764, indicating that 76.4% of the variance in job satisfaction can be explained by communication, teamwork, and job mismatch collectively. This demonstrates that the model has strong explanatory power. The remaining 23.6% of the variance may be influenced by other factors not included in this study, such as leadership style, compensation systems, organizational culture, or individual motivational factors.

The Adjusted R Square value of 0.756 further confirms the robustness of the model after accounting for the number of predictors and sample size. The relatively small difference between R Square and Adjusted R Square suggests that the model is stable and not inflated by the inclusion of

multiple independent variables. This indicates that the selected variables are relevant and meaningfully contribute to explaining job satisfaction within the Piping Department.

From an organizational perspective, the high explanatory value underscores the importance of integrating relational factors (communication and teamwork) with structural alignment factors (job mismatch) in managing employee satisfaction. In a technically demanding industrial environment such as PT McDermott Batam, employee satisfaction is largely shaped by how effectively information flows, how well teams coordinate, and how appropriately employees are placed according to their competencies. The strong R^2 value confirms that these three variables constitute key determinants of job satisfaction in the studied context (Ristya et al., 2022).

Overall, the coefficient of determination results validate the strength and relevance of the proposed regression model in explaining job satisfaction within the industrial construction setting.

DISCUSSION

Hypothesis 1: The Effect of Communication on Job Satisfaction

The findings of this study indicate that communication has a positive and significant effect on job satisfaction in the Piping Department of PT McDermott Batam. The statistical results confirm that improvements in communication practices are associated with increased levels of employee satisfaction (Nugraha & Suriani, 2026). This suggests that communication functions not only as a tool for information exchange but also as a psychological and organizational mechanism that shapes employees' perceptions of their work environment. In industrial settings where technical precision and operational coordination are critical, effective communication becomes a key determinant of workplace comfort and confidence (Feresiana & Santoso, 2021).

From a theoretical perspective, this result aligns with organizational communication theory, which emphasizes that clear, transparent, and structured communication reduces uncertainty and role ambiguity. When employees receive accurate instructions, timely updates, and constructive feedback from supervisors, they are more likely to understand their responsibilities and organizational expectations (Saragih & Romat, 2020). This clarity minimizes stress arising from misinterpretation or conflicting directives. Furthermore, openness in communication fosters trust between management and employees, which enhances emotional attachment to the organization (Nugraha et al., 2026). In environments characterized by high operational risk, such as offshore construction and fabrication, communication accuracy directly influences not only productivity but also safety compliance and employee morale.

The findings are also consistent with person–organization fit theory, which posits that alignment between individual expectations and organizational processes strengthens job satisfaction. Communication serves as a bridge that connects organizational goals with individual roles. In the Piping Department, where multiple technical roles are interdependent, communication ensures synchronization between engineers, supervisors, and technicians (Nugraha et al., 2026). When information flows smoothly and vertically between hierarchical levels, employees feel supported and valued. Conversely, ineffective communication may generate frustration, miscoordination, and dissatisfaction. Therefore, the positive relationship identified in this study reinforces the strategic importance of communication as a foundational organizational practice (Nainggolan, 2020).

In comparison with previous empirical research, this result supports studies that identify communication as a significant predictor of job satisfaction. Prior research in various sectors has demonstrated that transparent and effective communication enhances employee morale and work engagement. However, many of those studies were conducted in service-oriented or administrative organizations (Nugraha, 2024). The present study extends empirical evidence into the heavy industrial construction sector, where communication challenges are often more complex due to technical terminology, safety regulations, and project-based structures. Thus, the findings confirm that communication remains a universal determinant of job satisfaction across different organizational contexts, including technically demanding environments.

Within the specific context of the Piping Department at PT McDermott Batam, communication plays a crucial operational role. Fabrication and installation tasks require precise instructions, timely coordination, and accurate interpretation of technical drawings and safety procedures. When

communication between supervisors and workers is clear and responsive, employees experience greater confidence in executing their duties. This confidence contributes to psychological comfort and ultimately enhances job satisfaction. Moreover, structured communication mechanisms such as toolbox meetings, daily briefings, and feedback sessions may reinforce alignment between operational goals and employee expectations (Nainggolan et al., 2020).

Overall, the confirmation of Hypothesis 1 highlights that communication is not merely an administrative function but a strategic organizational asset. Strengthening internal communication systems can serve as an effective managerial intervention to improve employee satisfaction in industrial construction environments (Nugraha, Romi, et al., 2024). The results underscore that organizations seeking to enhance workforce stability and project efficiency must prioritize transparent, structured, and inclusive communication practices.

Hypothesis 2: The Effect of Teamwork on Job Satisfaction

The results of this study demonstrate that teamwork has a positive and significant effect on job satisfaction in the Piping Department of PT McDermott Batam. The statistical findings confirm that stronger team cohesion, shared objectives, and clearly defined responsibilities contribute to higher levels of employee satisfaction (Bakker, 2017). This indicates that teamwork functions as a relational foundation within the organization, shaping how employees perceive their work environment and interpersonal dynamics. In project-based industrial operations, where tasks are interdependent and coordination is essential, teamwork becomes a central factor influencing employees' emotional and psychological responses toward their jobs (Nugraha, Cahyadi, et al., 2024).

From a theoretical standpoint, this finding is consistent with social exchange theory, which suggests that positive interactions among team members create reciprocal relationships characterized by trust, cooperation, and mutual support. When employees perceive that their colleagues are collaborative, responsive, and committed to shared goals, they are more likely to experience a sense of belonging and collective identity. This social integration reduces feelings of isolation and work-related stress (Martinez & Hoffman, 2025). Furthermore, team effectiveness theory emphasizes that clarity of roles and shared responsibility enhances efficiency and minimizes conflict, thereby contributing to more positive job attitudes. In environments that demand high technical precision, such as piping fabrication and installation, the quality of teamwork directly influences not only operational performance but also employee well-being (Nugraha, Irawati, et al., 2024).

The findings of this study are aligned with prior empirical research indicating that teamwork significantly enhances job satisfaction across various organizational settings. Previous studies have demonstrated that cohesive team structures and collaborative climates positively influence employee morale and engagement (Chen & Abdullah, 2025). However, many of these studies were conducted in sectors such as education, services, or administrative institutions, where operational risk and technical interdependence are relatively lower. By examining teamwork within the heavy industrial construction context of PT McDermott Batam, this research extends existing literature and confirms that teamwork remains a crucial determinant of job satisfaction even in high-risk, technically demanding environments (Nugraha & Suriani, 2024).

In the specific operational context of the Piping Department, teamwork is not optional but structurally embedded in daily activities. Installation tasks require coordination between design teams, welding crews, quality control inspectors, and safety personnel. Delays or errors in one segment of the workflow can affect overall project timelines. When team members operate with shared goals and maintain effective communication, operational efficiency improves, and employees experience reduced pressure (Alvarez & Kurniawan, 2025). This collaborative atmosphere fosters psychological security, allowing employees to perform their duties confidently. Consequently, strong teamwork contributes not only to project success but also to employees' overall satisfaction with their roles.

Moreover, effective teamwork helps mitigate workplace conflicts and workload imbalances. In industrial project settings, uneven task distribution or unclear responsibilities may create tension among team members (Nugraha, Zakaria, et al., 2024). Clear role allocation and collective accountability reduce such tensions, leading to a more harmonious work environment. Employees who feel supported by their colleagues are more resilient when facing operational challenges, which

strengthens their overall job satisfaction. Therefore, teamwork operates as both a performance-enhancing mechanism and a satisfaction-enhancing factor within the organization (Rodriguez & Silva, 2025).

In conclusion, the confirmation of Hypothesis 2 emphasizes that teamwork is a strategic organizational resource. For PT McDermott Batam, investing in team-building initiatives, leadership coordination training, and structured collaboration mechanisms may significantly enhance employee satisfaction. Strengthening teamwork culture within the Piping Department can contribute to sustainable operational performance while simultaneously improving workforce morale and organizational commitment.

Hypothesis 3: The Effect of Job Mismatch on Job Satisfaction

The empirical findings of this study indicate that job mismatch has a significant negative effect on job satisfaction in the Piping Department of PT McDermott Batam. The regression results reveal that higher levels of perceived mismatch between employees' competencies and job requirements are associated with lower levels of job satisfaction. This outcome confirms that alignment between individual capabilities and assigned tasks plays a crucial role in shaping employees' work attitudes (Nugraha, Mulyadi, et al., 2024). In industrial construction environments characterized by technical precision and operational risk, competency alignment becomes a decisive factor in determining how employees evaluate their work experience (Nguyen & Park, 2024).

From a theoretical perspective, this result is strongly supported by person–job fit theory, which posits that compatibility between an individual's skills, knowledge, and abilities and the demands of a job leads to positive psychological outcomes. When employees perceive that their competencies are fully utilized and aligned with their responsibilities, they are more likely to experience intrinsic motivation and work engagement (Nugraha, Sarmini, et al., 2024). Conversely, job mismatch may generate feelings of underutilization, frustration, or inadequacy. Such misalignment can increase stress levels, reduce self-efficacy, and ultimately diminish job satisfaction. In technical departments like piping, where tasks require specialized expertise and adherence to strict safety standards, mismatch may also increase anxiety regarding performance expectations (Smith & Rodriguez, 2024b).

The negative relationship identified in this study also aligns with human capital theory, which emphasizes the importance of optimizing employees' competencies to maximize organizational outcomes. When the organization fails to allocate employees according to their qualifications or when workforce planning does not correspond to actual project demands, inefficiencies may arise (Nugraha & Suriani, 2023). These inefficiencies not only affect productivity but also influence employees' perceptions of fairness and professional growth. While previous research has frequently focused on communication, leadership, or teamwork as predictors of job satisfaction, fewer studies have explicitly examined job mismatch as a central explanatory variable, particularly within heavy industrial sectors.

In the operational context of the Piping Department at PT McDermott Batam, job mismatch may manifest in various forms, such as assigning technically complex tasks to employees whose skills are not fully aligned with the requirements, or placing highly skilled workers in roles that do not optimally utilize their expertise. Such conditions may create dissatisfaction due to perceived inequity or lack of professional development (Nugraha & Suriani, 2026). Furthermore, technical construction environments often demand certification compliance and specialized competencies. If employees feel that their educational background or experience does not correspond to their assigned roles, their confidence and work satisfaction may decline (Abdullah & Karim, 2024).

Another critical implication of job mismatch relates to long-term workforce sustainability. Persistent mismatch may contribute to disengagement, turnover intentions, or decreased commitment to organizational goals. In project-based environments where deadlines and safety performance are critical, maintaining appropriate job placement becomes a strategic necessity rather than a mere administrative function. Ensuring competency-based assignments not only enhances productivity but also strengthens employees' psychological attachment to their roles (Mashita & Nugraha, 2025).

Overall, the confirmation of Hypothesis 3 underscores that job satisfaction in industrial construction settings is significantly influenced by structural alignment between employees and their jobs. For PT McDermott Batam, implementing systematic competency mapping, structured training

programs, and strategic workforce allocation may reduce job mismatch and enhance employee satisfaction (Saputri & Nugraha, 2025). The findings highlight that beyond relational dynamics such as communication and teamwork, structural human resource practices play an equally important role in fostering a satisfied and resilient workforce.

Hypothesis 4: The Simultaneous Effect of Communication, Teamwork, and Job Mismatch on Job Satisfaction

The results of the F-test confirm that communication, teamwork, and job mismatch simultaneously have a significant effect on job satisfaction in the Piping Department of PT McDermott Batam. The statistical significance of the overall regression model indicates that these three variables collectively explain a substantial proportion of the variance in job satisfaction (Kim & Park, 2024). This finding demonstrates that job satisfaction in industrial construction environments is multidimensional and influenced by the interaction of relational, structural, and organizational alignment factors rather than by a single determinant. The confirmation of this hypothesis highlights the importance of examining organizational phenomena through an integrated analytical framework (Nindya & Nugraha, 2025).

From a theoretical standpoint, the simultaneous effect supports the broader organizational behavior framework, which views employee attitudes as outcomes of interconnected organizational systems. Communication represents the informational dimension of the organization, shaping clarity, transparency, and trust. Teamwork reflects the relational and social dimension, influencing interpersonal cohesion and collaborative effectiveness. Job mismatch represents the structural alignment dimension, determining the compatibility between human capital and job requirements (Smith & Rodriguez, 2024a). When these three dimensions operate harmoniously, employees are more likely to experience psychological comfort, professional fulfillment, and organizational attachment. Conversely, weaknesses in any of these components may undermine overall satisfaction, even if the other factors function adequately (Putri & Nugraha, 2025).

The findings reinforce the perspective that job satisfaction cannot be explained solely by social interactions or technical alignment in isolation. For instance, effective communication may improve clarity, but without strong teamwork, employees may still feel unsupported in executing tasks. Similarly, proper job placement may enhance competency utilization, yet without transparent communication and cooperative team structures, dissatisfaction may persist (Astuti, 2023). Therefore, the simultaneous significance of communication, teamwork, and job mismatch illustrates that job satisfaction emerges from the synergy of organizational processes rather than from fragmented interventions.

In the specific context of the Piping Department at PT McDermott Batam, the integrated influence of these variables is particularly relevant. The department operates in a technically complex and safety-sensitive environment where coordination between engineering, fabrication, and quality control units is critical. Communication ensures that technical instructions and safety standards are accurately conveyed (Savitri & Nugraha, 2025). Teamwork enables synchronized task execution across specialized roles. Job alignment ensures that employees possess the appropriate skills to fulfill their responsibilities. When these elements are effectively integrated, operational efficiency improves, and employees perceive their work environment as structured, supportive, and professionally rewarding (Christensen & Cornelissen, 2023).

The strong simultaneous influence also suggests that managerial strategies must be holistic rather than isolated. Implementing communication improvements without strengthening team dynamics or addressing job placement issues may produce limited outcomes. Likewise, focusing exclusively on competency mapping without ensuring collaborative work structures may not substantially increase satisfaction levels. For PT McDermott Batam, an integrated human resource management approach that combines structured communication systems, team development initiatives, and competency-based workforce planning is essential to sustain high levels of job satisfaction in a demanding industrial context (Wang & Li, 2023).

In conclusion, the confirmation of Hypothesis 4 underscores that job satisfaction within the Piping Department is the product of interconnected organizational mechanisms. The combined

influence of communication, teamwork, and job mismatch provides a comprehensive explanation of employee satisfaction in industrial construction settings (Cahyani et al., 2025). This integrated perspective contributes to the advancement of organizational behavior research by demonstrating that employee satisfaction in high-risk technical environments is shaped by both relational cohesion and structural alignment, reinforcing the necessity of systemic managerial interventions.

Coefficient of Determination (R^2)

The coefficient of determination (R^2) obtained in this study indicates that communication, teamwork, and job mismatch collectively explain 76.4% of the variance in job satisfaction within the Piping Department of PT McDermott Batam. This relatively high explanatory value demonstrates that the regression model possesses strong predictive capability and adequately represents the organizational factors influencing employee satisfaction. The remaining 23.6% of the variance may be attributed to other variables not included in the model, such as leadership style, compensation systems, organizational culture, or individual motivational characteristics. Nonetheless, the substantial R^2 value confirms that the selected predictors are central determinants of job satisfaction in the studied context.

From an analytical perspective, a high coefficient of determination reflects the structural coherence of the proposed theoretical framework (Davis & Miller, 2023). Communication, teamwork, and job mismatch represent three complementary organizational dimensions: informational processes, relational dynamics, and structural alignment. The strong explanatory power of the model suggests that these dimensions interact in shaping employees' cognitive and emotional evaluations of their work. In other words, job satisfaction in industrial construction environments is largely driven by how effectively organizations manage communication channels, team collaboration, and competency alignment simultaneously. This reinforces the argument that job satisfaction is not an isolated psychological outcome but a systemic organizational product (Nugraha et al., 2025).

The Adjusted R^2 value, which remains close to the R^2 figure, further indicates that the model is statistically stable and not artificially inflated by the number of independent variables included. This stability strengthens the reliability of the findings and suggests that each independent variable contributes meaningfully to the overall explanation of job satisfaction (Thompson & Allen, 2023). The small difference between R^2 and Adjusted R^2 implies that the model maintains its explanatory consistency even after adjusting for sample size and predictor count. Therefore, the regression model demonstrates both statistical robustness and conceptual relevance.

In the operational setting of the Piping Department at PT McDermott Batam, the strong explanatory power of the model highlights the strategic importance of integrated human resource management. Given the technical complexity and safety-sensitive nature of industrial fabrication projects, employee satisfaction is largely influenced by internal organizational systems rather than external factors. Effective communication reduces operational ambiguity, teamwork enhances coordination efficiency, and proper job placement ensures competency utilization. When these factors are systematically managed, employees are more likely to perceive fairness, clarity, and professional growth, leading to higher satisfaction levels (Robbins & Judge, 2022).

Moreover, the high R^2 value implies that managerial interventions focusing on these three variables are likely to yield substantial improvements in employee satisfaction. Instead of implementing fragmented policies, management should adopt a comprehensive strategy that synchronizes communication enhancement, team development programs, and competency-based workforce allocation. Such an approach not only strengthens employee morale but also contributes to sustainable organizational performance in project-driven industrial environments.

In conclusion, the coefficient of determination results provide empirical validation that communication, teamwork, and job mismatch are dominant predictors of job satisfaction in the Piping Department of PT McDermott Batam. The strong explanatory capacity of the model underscores the relevance of integrating relational and structural organizational dimensions in understanding employee satisfaction within technically demanding industries.

CONCLUSION

This study found that communication and teamwork have a positive and significant effect on employee job satisfaction in the Piping Department of PT McDermott Batam, with beta coefficients of 0.318 (p=0.026) and 0.267 (p=0.037), respectively, while job mismatch has a significant negative effect (β=-0.341, p=0.022). Simultaneously, these three variables explain 76.4 percent of the variance in job satisfaction (F=24.965, p=0.000), underscoring the importance of relational and structural factors in complex heavy industry environments. The practical implications for PT McDermott Batam management are clear: integrated strategies such as structured communication training, collaborative team development, and competency-based job placement can enhance job satisfaction, productivity, and reduce operational errors and turnover risks.

Nevertheless, this research has limitations due to its cross-sectional design, which captures data only at one point in time and thus cannot capture longitudinal dynamics, as well as a sample limited to 92 employees that may not fully represent variations in other departments. Raw data is also not publicly available due to organizational confidentiality policies. For future research, it is recommended to adopt longitudinal or mixed-methods approaches to explore additional factors such as leadership style and compensation, and to compare with other construction companies in Indonesia to strengthen the generalizability of the findings.

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