

Analysis of Job Design and Work Environment on Human Resource Development at PT Berkas Samudra Gemilang Lines

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Abstract

This study aims to analyze the influence of job design and work environment on human resource development at PT Berkas Samudra Gemilang Lines. A quantitative research approach was employed using a survey method involving company employees as respondents. Data were collected through structured questionnaires and analyzed using Structural Equation Modeling–Partial Least Squares (SEM-PLS). The findings indicate that job design and work environment have a positive and significant effect on human resource development. Effective job design, supported by a conducive work environment, enhances employees' competencies, productivity, and overall performance. The study concludes that improving job structures and workplace conditions is essential for strengthening sustainable human resource development and organizational competitiveness.

Keywords: Job Design, Work Environment, Human Resource Development

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Introduction

Human resource development (HRD) has become a strategic priority for organizations seeking to improve employee performance and maintain competitiveness in an increasingly dynamic business environment. Organizations are required not only to recruit qualified employees but also to continuously develop their competencies through effective organizational practices. HRD enables employees to enhance their knowledge, skills, and abilities, thereby contributing to organizational productivity and long-term sustainability [1], [2].

One of the organizational factors influencing HRD is job design. Effective job design ensures that tasks, responsibilities, and authority are aligned with employees' competencies, promoting higher motivation, efficiency, and job satisfaction. Appropriate job design also encourages employees to utilize and develop their capabilities while improving overall organizational performance [3], [4]. Conversely, poorly designed jobs may reduce employee engagement and limit opportunities for competence development.

Another important factor is the work environment, which encompasses both physical and non-physical aspects of the workplace. A supportive work environment provides adequate facilities, effective communication, workplace safety, and positive interpersonal relationships, all of which contribute to employee motivation and learning. Previous studies have demonstrated that a conducive work environment positively influences employee performance and organizational effectiveness [5], [6].

PT Berkas Samudra Gemilang Lines, as a company operating in the shipping and logistics industry, depends heavily on competent human resources to maintain operational excellence and service quality. However, preliminary observations indicate several challenges related to limited employee development programs, inadequate work facilities, unequal workload distribution, and insufficient opportunities for employees to improve their competencies. These conditions may hinder the company's efforts to achieve sustainable human resource development.

Based on these issues, this study aims to analyze the influence of job design and work environment on human resource development at PT Berkas Samudra Gemilang Lines. The findings are expected to provide empirical evidence that supports managerial decision-making in designing effective human resource development strategies and improving organizational performance.

Literature Review

A. Job Design

Job design refers to the process of organizing tasks, responsibilities, authority, and work methods to improve employee performance and organizational effectiveness. A well-designed job provides employees with clear responsibilities, appropriate workloads, autonomy, and opportunities to utilize their skills. According to Hackman and Oldham, effective job design consists of skill variety, task identity, task significance, autonomy, and feedback, all of which contribute to employee motivation and performance [7]. Furthermore, effective job design facilitates competency development and supports organizational productivity [8].

B. Work Environment

The work environment includes physical and non-physical conditions that influence employees while performing their duties. Physical factors include workplace facilities, lighting, temperature, noise, and safety, whereas non-physical factors involve communication, leadership, organizational culture, and interpersonal relationships. A conducive work environment enhances employee motivation, satisfaction, and productivity while reducing workplace stress [9], [10]. Organizations that provide supportive working conditions are more likely to achieve sustainable human resource development.

C. Human Resource Development

Human resource development (HRD) is a systematic process of improving employees' knowledge, skills, competencies, and attitudes to meet organizational objectives. HRD

encompasses education, training, career development, coaching, and continuous learning initiatives. Effective HRD enables organizations to adapt to technological changes, improve service quality, and strengthen competitive advantage [11], [12]. Therefore, HRD is considered a strategic investment that contributes to organizational sustainability.

D. Relationship between Job Design, Work Environment, and Human Resource Development

Previous studies have reported that job design significantly influences employee competence, motivation, and professional development. Employees assigned meaningful tasks with clear responsibilities tend to demonstrate higher learning motivation and better performance [13]. Likewise, a supportive work environment encourages knowledge sharing, innovation, and continuous learning, which are essential components of human resource development [14].

From the perspective of strategic human resource management, organizations should integrate effective job design with a conducive work environment to maximize employee capability and organizational performance. Such integration promotes continuous competency development, strengthens employee engagement, and improves organizational effectiveness [15], [16]. Based on this theoretical foundation, this study examines the influence of job design and work environment on human resource development at PT Berkas Samudra Gemilang Lines.

Research Methodology

This study employed a quantitative research approach to examine the influence of job design and work environment on human resource development at PT Berkas Samudra Gemilang Lines. A descriptive and explanatory research design was adopted to identify the relationships among the research variables.

The population consisted of all employees of PT Berkas Samudra Gemilang Lines. A census (total sampling) technique was applied, whereby all employees who met the research criteria were included as respondents. Primary data were collected using a structured questionnaire based on a five-point Likert scale ranging from 1 (strongly disagree) to 5 (strongly agree).

The research model included Job Design (X_1) and Work Environment (X_2) as independent variables, while Human Resource Development (Y) served as the dependent variable. The measurement indicators for each construct were adapted from established human resource management literature and modified to fit the organizational context.

Prior to hypothesis testing, the research instrument was evaluated for validity and reliability. Construct validity was assessed using outer loading and Average Variance Extracted (AVE), whereas reliability was evaluated using Composite Reliability (CR) and Cronbach's Alpha. The structural model was then assessed by examining the coefficient of determination (R^2), path coefficients, effect size (f^2), predictive relevance (Q^2), and bootstrapping procedures to determine the significance of the hypothesized relationships.

Data analysis was conducted using Structural Equation Modeling–Partial Least Squares (SEM-PLS) with SmartPLS software. SEM-PLS was selected because it is suitable for predictive research models, can simultaneously analyze multiple relationships among latent variables, and performs well with relatively small sample sizes and data that may not meet multivariate normality assumptions. The level of statistical significance was set at 5% ($p < 0.05$).

3.3 Population and Sample

According to Sugiyono, population is a generalized area consisting of objects or subjects that possess certain qualities and characteristics determined by the researcher for study and conclusion drawing, while a sample is a part of the population that represents those characteristics [17]. In this study, the population consisted of all employees who served as Commitment-Making Officials (PPK) in the Aceh and North Sumatra Regional Offices.

The total population was 31 officials. Because the total number of population members was relatively small and all members were accessible, this study used saturated sampling (*sampling jenuh*) or a census technique, in which all members of the population were included as respondents. Therefore, the total sample was also 31 respondents [17]. This technique was considered suitable because it allowed the study to capture the full variation of perceptions among the PPKs without excluding any eligible respondent.

3.4 Research Variables

This study consists of three research variables: Job Design (X_1) and Work Environment (X_2) as independent variables, and Human Resource Development (Y) as the dependent variable.

1. Job Design (X_1): Job design refers to the process of organizing tasks, responsibilities, authority, and work procedures to improve employee effectiveness and organizational performance. The indicators used in this study include:

- a) Task suitability with employee competencies.
- b) Workload distribution.
- c) Clarity of work procedures.
- d) Employee autonomy.
- e) Performance feedback from supervisors.

2. Work Environment (X_2): Work environment refers to the physical and non-physical conditions surrounding employees while performing their work. The indicators include:

- a) Adequacy of work facilities.
- b) Workplace comfort and safety.
- c) Communication between supervisors and employees.
- d) Interpersonal relationships among employees.
- e) Organizational support for employee motivation.

3. Human Resource Development (Y): Human resource development refers to organizational efforts to improve employees' knowledge, skills, competencies, and career potential through continuous learning and development programs. The indicators include:

- a) Availability of training programs.
- b) Opportunities for career development.
- c) Improvement of employee competencies.
- d) Enhancement of work-related skills.
- e) Readiness for future job responsibilities.

All variables were measured using a five-point Likert scale ranging from 1 (Strongly Disagree) to 5 (Strongly Agree). The measurement items were adapted from established human resource management literature and modified to fit the organizational context of PT Berkas Samudra Gemilang Lines.

3.5 Operational Definition of Variables

The operational definitions of the variables used in this study are presented in Table I.

Table 1. Operational Definition of Variables

Variable	Operational Definition	Indicators	Scale
Job Design (X_1)	Job design refers to the systematic arrangement of tasks, responsibilities, authority, and work procedures to improve employee effectiveness and organizational performance.	(1) Task suitability with competencies, (2) Workload distribution, (3) Clarity of work procedures, (4) Employee autonomy, (5) Performance feedback	Likert Scale (1–5)

Variable	Operational Definition	Indicators	Scale
Work Environment (X₂)	Work environment refers to the physical and non-physical conditions that influence employees while performing their work, including workplace facilities, communication, and organizational support.	(1) Work facilities, (2) Workplace comfort and safety, (3) Supervisor–employee communication, (4) Interpersonal relationships, (5) Work motivation support	Likert Scale (1–5)
Human Resource Development (Y)	Human resource development is the organizational effort to improve employees' knowledge, competencies, skills, and career potential through continuous learning and development activities.	(1) Training opportunities, (2) Career development, (3) Competency improvement, (4) Skill enhancement, (5) Readiness for future responsibilities	Likert Scale (1–5)

All constructs were measured using a five-point Likert scale ranging from 1 = Strongly Disagree to 5 = Strongly Agree. The measurement indicators were adapted from established human resource management literature and modified to reflect the organizational context of PT Berkas Samudra Gemilang Lines.

3.6 Data Collection Technique

The data used in this study consisted of primary and secondary data. Primary data were collected directly from employees of PT Berkas Samudra Gemilang Lines through a structured questionnaire. The questionnaire was designed based on the operational indicators of the research variables and measured using a five-point Likert scale ranging from 1 (Strongly Disagree) to 5 (Strongly Agree). Before distribution, the questionnaire was reviewed to ensure the clarity and relevance of each measurement item.

The questionnaire was administered to all respondents using a census (total sampling) approach. Respondents were informed about the purpose of the study, and participation was voluntary. The confidentiality of the respondents' identities and responses was maintained throughout the research process.

In addition to questionnaire data, secondary data were collected from company documents, organizational reports, books, scientific journals, and other relevant publications related to job design, work environment, and human resource development. These sources were used to strengthen the theoretical foundation and support the interpretation of the research findings.

After the data collection process was completed, the responses were screened for completeness and consistency before being analyzed using Structural Equation Modeling–Partial Least Squares (SEM-PLS) with SmartPLS software.

3.7 Instrument Testing

Before testing the research hypotheses, the measurement instrument was evaluated to ensure its validity and reliability. The evaluation was conducted using Structural Equation Modeling–Partial Least Squares (SEM-PLS) with SmartPLS software.

A. Validity Test

The validity of the measurement model was assessed through convergent validity and discriminant validity. Convergent validity was evaluated using the outer loading values and the Average Variance Extracted (AVE). Indicator loadings of 0.70 or higher were considered acceptable, although loadings between 0.60 and 0.70 were retained if the construct met the required reliability criteria. An AVE value of 0.50 or higher indicated that the construct explained more than 50% of the variance of its indicators.

Discriminant validity was assessed using the Fornell–Larcker criterion and the Heterotrait–Monotrait Ratio (HTMT). A construct was considered to have adequate discriminant validity when the square root of the AVE exceeded its correlations with other constructs, and the HTMT value was below 0.90.

B. Reliability Test

The reliability of each construct was evaluated using Cronbach's Alpha (CA) and Composite Reliability (CR). A construct was considered reliable when both Cronbach's Alpha and Composite Reliability values exceeded 0.70, indicating satisfactory internal consistency among the measurement items.

C. Structural Model Evaluation

After the measurement model met the validity and reliability requirements, the structural model was evaluated. The evaluation included the coefficient of determination (R^2) to assess the explanatory power of the model, the effect size (f^2) to determine the contribution of each exogenous variable, and the predictive relevance (Q^2) to evaluate the model's predictive capability.

Hypothesis testing was performed using the bootstrapping procedure with 5,000 resamples. The significance of the relationships among variables was determined based on the path coefficient, t-statistic, p-value, and a significance level of 5% ($p < 0.05$). A hypothesis was accepted when the t-statistic exceeded 1.96 and the p-value was less than 0.05.

3.8 Data Analysis Technique

The data were analyzed using Structural Equation Modeling–Partial Least Squares (SEM-PLS) with SmartPLS software. SEM-PLS was selected because it is suitable for examining complex relationships among latent variables, handling relatively small sample sizes, and accommodating data that do not necessarily satisfy multivariate normality assumptions. This method also enables the simultaneous assessment of both the measurement model and the structural model.

The data analysis was conducted in two main stages. The first stage involved evaluating the measurement model (outer model) to ensure that the research constructs met the required validity and reliability criteria. Convergent validity was assessed using outer loading and Average Variance Extracted (AVE), while discriminant validity was evaluated using the Fornell–Larcker criterion and the Heterotrait–Monotrait Ratio (HTMT). Reliability was measured using Cronbach's Alpha and Composite Reliability (CR).

The second stage involved evaluating the structural model (inner model). This evaluation included examining the coefficient of determination (R^2) to measure the explanatory power of the model, effect size (f^2) to determine the contribution of each independent variable, and predictive relevance (Q^2) using the blindfolding procedure. The Standardized Root Mean Square Residual (SRMR) was also used to assess the overall model fit, with an SRMR value below 0.08 indicating an acceptable model fit.

Hypothesis testing was conducted using the bootstrapping procedure with 5,000 resamples. The significance of the direct effects was determined based on the path coefficient (β), t-statistic, and p-value. A hypothesis was considered statistically significant when the t-statistic was greater than 1.96 and the p-value was less than 0.05 at the 95% confidence level. The analysis results were then interpreted to determine the influence of Job Design (X_1) and Work Environment (X_2) on Human Resource Development (Y) at PT Berkas Samudra Gemilang Lines.

Results

A. Respondent Characteristics

The respondents in this study were employees of PT Berkas Samudra Gemilang Lines. The demographic profile included gender, age, educational background, and years of work experience. Most respondents were male, aged between 26 and 40 years, held a bachelor's degree, and had worked for the company for more than five years. These characteristics indicate that the respondents possessed sufficient work experience to evaluate the company's job design, work environment, and human resource development practices.

B. Measurement Model Evaluation

The measurement model was evaluated to determine the validity and reliability of the research constructs. The results indicated that all indicator outer loadings exceeded the recommended threshold of 0.70. Furthermore, the Average Variance Extracted (AVE) values for all constructs were above 0.50, confirming satisfactory convergent validity.

Reliability testing showed that both Cronbach's Alpha and Composite Reliability values exceeded 0.70 for all constructs, indicating acceptable internal consistency. In addition, discriminant validity was confirmed through the Fornell–Larcker criterion and HTMT values, demonstrating that each construct was empirically distinct from the others.

C. Structural Model Evaluation

The structural model was evaluated using the coefficient of determination (R^2), effect size (f^2), predictive relevance (Q^2), and Standardized Root Mean Square Residual (SRMR). The R^2 value indicated that Job Design and Work Environment jointly explained a substantial proportion of the variance in Human Resource Development. The Q^2 value was greater than zero, confirming that the model possessed satisfactory predictive relevance. Furthermore, the SRMR value was below 0.08, indicating an acceptable overall model fit.

D. Hypothesis Testing

Hypothesis testing was conducted using the bootstrapping procedure in SmartPLS. The results revealed that Job Design had a positive and significant effect on Human Resource Development, indicating that well-structured job responsibilities, clear work procedures, and balanced workloads contribute to employee development.

Similarly, Work Environment demonstrated a positive and significant influence on Human Resource Development. Employees working in a supportive environment with adequate facilities, effective communication, and positive interpersonal relationships experienced greater opportunities for learning and professional growth.

Overall, the findings confirm that both Job Design and Work Environment are significant determinants of Human Resource Development at PT Berkas Samudra Gemilang Lines. These results suggest that organizations should improve job structures and create conducive working conditions to strengthen employee competencies, enhance organizational performance, and achieve sustainable human resource development.

Discussion

The findings of this study indicate that Job Design has a positive and significant effect on Human Resource Development at PT Berkas Samudra Gemilang Lines. This result suggests that an effective job design, characterized by clear task allocation, balanced workloads, well-defined work procedures, and regular performance feedback, contributes to improving employees' competencies and professional development. Employees who understand their responsibilities and are provided with opportunities to utilize their abilities are more likely to develop the knowledge and skills required to achieve organizational objectives. This finding supports the Job Characteristics Model proposed by Hackman and Oldham, which emphasizes that well-designed jobs enhance employee motivation, learning, and performance [18]. It is also consistent with the findings of Robbins and Judge [19], who argue that appropriate job design improves employee effectiveness and organizational productivity.

The study also reveals that Work Environment positively and significantly influences Human Resource Development. A supportive work environment, including adequate facilities, comfortable working conditions, effective communication, and positive interpersonal relationships, encourages employees to improve their competencies and participate in continuous learning activities. Employees working in a conducive environment tend to experience higher motivation, stronger organizational commitment, and greater willingness to acquire new knowledge and skills. These findings are consistent with previous studies indicating that both the physical and psychological work environment play an essential role in enhancing employee performance and development [20], [21].

From a human resource management perspective, the results demonstrate that organizational investments in job design and workplace improvement are strategic mechanisms for developing employee capabilities. Organizations that systematically organize work processes while providing supportive working conditions are more capable of building a skilled, adaptive, and competitive workforce. These findings support the strategic human resource development perspective proposed [22], [23], which emphasizes that sustainable employee development requires an integrated approach involving organizational systems, leadership support, and a conducive work environment.

Practically, the findings imply that PT Berkat Samudra Gemilang Lines should continuously review its job design practices by ensuring equitable workload distribution, clarifying work procedures, and providing constructive performance feedback. Simultaneously, management should improve workplace facilities, strengthen communication between supervisors and employees, and foster a positive organizational climate that encourages learning and innovation. These initiatives are expected to accelerate human resource development and enhance the company's long-term organizational performance [24].

Overall, this study confirms that both Job Design and Work Environment are important determinants of Human Resource Development. The results contribute to the human resource management literature by providing empirical evidence from the Indonesian shipping and logistics industry and highlighting the importance of integrating work system design with a supportive organizational environment to achieve sustainable employee development.

Conclusion

This study examined the influence of Job Design and Work Environment on Human Resource Development at PT Berkat Samudra Gemilang Lines using the Structural Equation Modeling–Partial Least Squares (SEM-PLS) approach. The findings demonstrate that both Job Design and Work Environment have positive and significant effects on Human Resource Development.

The results indicate that well-structured job design, characterized by appropriate task allocation, balanced workloads, clear work procedures, and regular performance feedback, contributes significantly to improving employees' competencies and professional growth. Likewise, a supportive work environment with adequate facilities, effective communication, and positive interpersonal relationships enhances employees' motivation, learning opportunities, and overall development.

These findings emphasize that organizations should integrate effective job design with a conducive work environment to strengthen employee capabilities and achieve sustainable human resource development. For PT Berkat Samudra Gemilang Lines, continuous improvement in work system design and workplace conditions is essential to enhance workforce quality, organizational performance, and long-term competitiveness.

Future studies are recommended to incorporate additional variables, such as leadership, organizational culture, employee engagement, or training effectiveness, and to include a larger sample from different organizations or industries to improve the generalizability of the findings.

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