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Strategy to improve human resource performance in construction services companies

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Abstract
Purpose: This study aims to identify factors that influence human resource performance, analyze factors that should be considered most in improving human resource performance, and analyze strategies that can be implemented to improve human resource performance in construction service companies.
Methodology/approach: This study uses a descriptive approach. In general, the methodology used is to combine qualitative research with quantitative research using a case study and a survey approach. The fixed respondent design chosen in this study was the cluster sampling method. The analysis method used in this study is the Analytical Hierarchy Process (AHP)
Results/findings: This study produced three conclusions: 1. The results of the identification process based on the literature review obtained several factors that were grouped into four criteria: competence, motivation, loyalty aspects, and work discipline, 2. The competency factor must be considered most in improving the performance of human resources in the construction project of high-rise buildings in Bojonegoro is the competency factor, 3. Strategies that can be carried out to improve performance based on competency include adding staff/workers, providing compensation, providing facilities, providing training, and carrying out control.
Limitations: This research was conducted at a construction services company that handles the construction of high-rise buildings in Bojonegoro District, East Java, Indonesia; therefore, the research results need to be developed for larger projects.
Contribution: Academically, the benefit of this research is that it can serve as a reference for managing human resources effectively.
Novelty: This research can provide new insights into strategies to improve human resource performance so that activities can run more smoothly and provide maximum results.
Keywords: *Analythical Hierarchy Process (AHP), Human Resources, Management, Strategy*
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1. Introduction

A construction service company is a business entity engaged in the construction and management of infrastructure including buildings, roads, bridges, and other public facilities. Construction service companies are responsible for the planning, design, and implementation stages of projects (Rodhi, 2024). One of the factors that support the success of a project is good project management and the availability of adequate human resources according to needs. Human resources play a very important role in their interaction with capital, material, method, and machine factors. If human resources are adequate, the project will run smoothly, and the company will continue to grow and gain a good profit orientation (Anwar & Abdullah, 2021).

Effective human resource (HR) management is pivotal for construction service companies, where projects are time-sensitive, cost-intensive, and often dangerous (Adula, Kant, & Ayenew Birbirsa, 2023). Strategic HR practices help maintain a skilled workforce, reduce delays, and ensure compliance with safety standards. Recent literature highlights the essential role of HR strategies in enhancing worker performance within the Architecture, Engineering, and Construction (AEC) sector (Sitohang, Mohamed, & Ismail, 2022). Continuous training and fair performance appraisal are critical for maintaining high HR performance. Investing in training, improved working conditions, and employee engagement significantly reduce turnover and increase productivity in small construction firms. Furthermore, case studies on HR optimization in Indonesian firms emphasize that consistent policy enforcement, effective training, and communication enhance project outcomes and job satisfaction (Yusana & Helmi, 2024).

Construction work is inherently hazardous, making health, safety, and employee well-being essential components of HR strategies. Establishing a strong psychosocial safety climate where workers feel that their mental health is valued reduces absenteeism and boosts productivity. Integrating safety training with e-HRM systems enabled by digital tools also supports consistent monitoring and promotes safer work environments (Susanto, Sawitri, Ali, & Rony, 2023). Technology-driven HR solutions such as e-HRM platforms, AI-enabled analytics, and Building Information Modeling (BIM) are revolutionizing workforce management in construction. A 2023 study on BIM-driven human–robot collaboration demonstrated how digital twins and real-time interaction can enhance efficiency and safety on-site. Aligning an HR strategy with such digital innovations ensures that human capital supports project performance and sustainable growth (Wang, Yu, McGee, Menassa, & Kamat, 2024).

There are many things that need to be considered for each workforce to support and meet the achievement of organizational goals. These aspects include competence, motivation, loyalty, and work discipline. If these four aspects are achieved, If these are met, then performance will increase and productivity will also increase (Petre & Tudor, 2022; Sewang, Umar, Yusuf, & Kasim, 2024). Performance is a measure or evaluation of the results or achievements of an individual, group, or organization in achieving certain goals or targets (Gabčanová, 2012; Muriuki & Wanyoike, 2021; Thuy & Trinh, 2020; Villegas, Yamamoto, & Ellestad, 2022). Performance can be measured if an individual can perform their duties well. However, in project implementation, service providers sometimes pay less attention to this aspect because they want to gain more profit and minimize operational costs. With quality resources, it is hoped that all project management performance activities can be conducted as planned (Bilal, Muhammad, Mahesar, & Sabir, 2024; Panjaitan, Rupianti, Sukomardojo, Astuti, & Sutardjo, 2023).

2. Literature review

2.1. Construction services company

Construction service companies are business actors engaged in the field of infrastructure development and management. According to Asnudin (2008), construction services are businesses that have certain and unique characteristics, where they have limitations (constraints) that must be met, namely, time related to the project implementation period, costs related to the project budget, quality related to specifications, and occupational safety and health for workers and the community around the project. The classification of Construction Service Businesses includes architecture, civil, mechanical, electrical, and environmental planning. Construction Service Businesses that have the ability to carry out work in accordance with the business classification are associated with the nature of the construction implementation business. The classification of construction service business qualifications is based on the criteria for the level/depth of competence and potential business capabilities, which are then divided into competency levels in grades according to the ability to carry out work based on risk criteria, criteria for the use of technology, and/or criteria for the amount of costs (Sudarto, 2011; Tumelap, Sumajouw, & Waney, 2014). One of the factors that support the success of a project is the availability of adequate human resources and experts in their fields. Thus, construction service companies continue to advance, develop, and achieve good profit orientation (Rodhi, 2024).

2.2. Human resource management

According to Husen (2009), resource management is fairly large, and human resources are objects even though subjects. This is because decision making regarding quantity and quality must be considered carefully so that resources remain of adequate quality. In determining resource allocation, the following factors must be considered:

1. Amount of resources available for project needs.
2. The financial condition that will be used to pay for resources.
3. Resource productivity.
4. Resource capabilities and capacities
5. Effectiveness of resource efficiency

For this reason, human resources in a project are categorized as labor. Human Resource Management (human resources) is a method of managing human resources in an organization to achieve the goals of the organization optimally through the development of human resources themselves (Winarti, 2018). Human resource management focuses on human production factors with all their activities to achieve company goals. Human resources are an investment that plays an important role in a company (Muchsinati, Oktalia, & Priscilla, 2024). Without human resources, other production factors cannot be run optimally to achieve company goals. The role of humans in achieving these goals is important for achieving organizational goals (Dewi, Sudipta, & Setyowati, 2016).

The management of a company's human resources is essentially its activity in managing its employees, often called human resources. Human resources management starts with recruitment, which includes human resources planning, job analysis that determines appropriate jobs and positions, selection, training and development, work performance assessment, compensation, and renewals related to retirement and termination of employment. Managing human resources to improve the quality of a company can be done by improving the performance of human resources themselves, so it is necessary to know more about improving human resources (Artini, 2015; Fassa, Wibowo, & Soekiman, 2021; Rani, 2016; Sanjaya, 2019; Willy, 2020).

2.3. Multi Attribute Utility Theory (MAUT)

Multi-attribute utility theory (MAUT) is a multiple-attribute utility analysis that can explicitly identify the measures used to evaluate existing alternatives by considering alternatives that are considered relatively more important (Wallenius et al., 2008). In this study, AHP (Analytical Hierarchy Process) was used, which is one of the various types of decision-making methods (Decision Support Systems). The consistency ratio is measured in AHP by examining the consistency index. The expected consistency is close to perfect to produce decisions that are close to valid. Although it is difficult to achieve perfection, the consistency ratio is expected to be less than or equal to 10%.

Multi-Attribute Utility Theory (MAUT) is a decision-making framework used to evaluate alternatives based on multiple attributes or criteria. It assigns utility value to each alternative, allowing for the comparison of diverse options in a structured and rational manner. In HR management within construction firms, MAUT helps prioritize strategies, such as workforce training, safety programs, or recruitment plans, based on stakeholder preferences and project needs. This theory supports transparent and justifiable HR decisions in complex environments (Bonaccolto, Caporin, & Maillet, 2022).

2.4. Strategic Human Resource Management (SHRM)

Strategic Human Resource Management (SHRM) emphasizes aligning HR practices with organizational strategy to improve performance outcomes. It integrates human capital policies, such as recruitment, training, compensation, and development, with business goals to enhance competitive advantage. Fundamental to SHRM is the notion that the coherent alignment of HR systems strengthens employee commitment, flexibility, and innovation. In construction services, SHRM guides firms in planning workforce competencies that support project delivery, quality, and safety standards. By adopting an SHRM lens, companies anticipate labor needs, respond to market shifts, and optimize resource deployment. This results in a proactive HR function that fosters organizational agility (Pinto & Soekiman, 2022).

2.5. Resource-Based View (RBV)

The Resource-Based View (RBV) posits that firms gain a sustained competitive advantage by effectively leveraging valuable, rare, inimitable, and non-substitutable (VRIN) resources. Human resources, as a form of intangible asset, are especially critical under the RBV, since skilled labor and expertise are challenging for competitors to replicate. In construction service firms, investment in workforce development, such as training for safety, technical skills, and project management, serves as a core competence that drives productivity and lowers project risk. The RBV encourages firms to view HR practices as strategic assets rather than cost centers. When aligned with organizational goals, HR systems become mechanisms for building enduring advantages in contractor selection and execution (Yusana & Helmi, 2024).

2.6. Dynamic Capabilities Theory

Dynamic Capabilities Theory emphasizes a firm's ability to integrate, build, and reconfigure internal and external competencies to respond to rapidly changing environments. For construction service companies, this theory supports the idea that HR must be flexible and responsive to evolving project demands, safety standards, and technologies. Through continuous learning and adaptive practices, HR can help organizations remain competitive and innovative. This involves creating mechanisms for rapid skill acquisition and knowledge transfer across projects (Boubaker, Chourou, Haddar, & Hamza, 2019).

3. Methodology

3.1. Types and Approaches to Research

This study employed a descriptive approach by combining both qualitative and quantitative research methods to provide a comprehensive understanding of the issues examined. The methodology integrates a case study approach, which allows for an in-depth analysis of specific construction service companies, with a survey approach, which gathers broader quantitative data from a larger population. This mixed-methods strategy enables the researcher to explore contextual details through qualitative insights while also measuring patterns and relationships statistically, ensuring a more robust and balanced interpretation of human resource performance strategies in the construction sector.

3.2. Population, Sample and Sampling Techniques

The respondent design used in this study is a fixed respondent design because the respondents follow certain rules and do not change during the respondent withdrawal process. The fixed respondent design chosen in this study was the cluster sampling method (group respondents), which is a technique for selecting a respondent from a group of small units or clusters.

3.3. Types of Data and Data Collection Techniques

The data used in this research are sourced from two types: secondary data and primary data. Secondary data refer to information obtained indirectly through literature reviews, including findings from previous studies and relevant data sourced from academic journals, reports, or institutional publications. This type of data helps provide context, support theoretical frameworks, and inform the development of the research instruments used in the study.

Primary data were obtained directly from respondents through a structured questionnaire. The process of compiling this questionnaire involves several key steps: (a) operationalizing research variables into measurable indicators, (b) identifying relevant sub-indicators for each variable, (c) translating these indicators into clear and concise questions, (d) evaluating the content and language for clarity and relevance, and (e) testing the questionnaire on a trial group that shares characteristics with the target respondents or directly involving the actual respondents for validation. This ensures that the questionnaire is both reliable and aligned with the research objectives.

3.4. Data Analysis

The analysis method employed in this study is the Analytical Hierarchy Process (AHP), a structured decision-making technique that is particularly useful for handling complex problems involving multiple criteria. AHP works by breaking down a decision problem into a hierarchy of more easily

comprehended subproblems, each of which can be analyzed independently. Through pairwise comparisons, respondents evaluated the relative importance of various factors, which were then quantified using a consistent mathematical scale. The results were synthesized to determine the priority of each factor, allowing researchers to identify the most strategic elements for improving human resource performance in construction services companies. This method ensures a systematic and objective evaluation, combining both qualitative judgments and quantitative analysis.

4. Results and discussions

4.1. Identification results

The process of identifying factors that influence human resource performance in high-rise building construction projects in Bojonegoro in this study was carried out in two stages: the first based on literature review and the second based on respondent validation.

The results of the identification process based on the literature review obtained several factors that were grouped into four criteria, as stated in Table 1.

Table 1. Results of identification of factors influencing human resource performance in high-rise building construction companies in Bojonegoro

No.	Criteria	Sub Criteria
1	Competence	Knowledge Skills Attitude Interest
2	Motivation	Physiological Needs Social Needs The Need for Appreciation Self-Actualization
3	Loyalty Aspect	Obedience and Compliance Responsibility Devotion Honesty
4	Work Discipline	Compliance Habit Agreement Standard operating procedure

4.2. The most influential factors

The next step is to analyze using the Analytic Hierarchy Process (AHP) method.

Next, a pairwise comparison analysis was carried out between each factor, with the results listed in Table 2.

Table 2. Recapitulation of factor analysis results

Factor	GM	Vp
Competence	0.13	0.39
Motivation	0.08	0.24
Loyalty Aspect	0.08	0.24
Work Discipline	0.09	0.27
∑	0.38	

Table 2 shows that the competence factor has a value of 0.39, motivation has a value of 0.24, Loyalty Aspect has a value of 0.24, and Work Discipline has a value of 0.27. Therefore, in this case, the factor that must be most considered in improving human resource performance in high-rise building construction projects in Bojonegoro is competency.

4.3. Human resource development strategies

Competent human resources do not just come suddenly; therefore, companies need to prepare all efforts to obtain competent human resources. Not only at the beginning but also the development of the company's human resources is needed so that the company has competent people to develop its company. Some activities that may be carried out include

1. Conducting additional staff as needed, such as human resources, marketing, and finance. The researcher saw that the company had not added staff to support its work through human resource management, so there was no overlapping work. Because there were no additional staff, the company did not develop human resources. In fact, human resource management is very important in managing and developing the sustainability of the company today and in the future to compete outside the company. Improving this work system is related to irregular financial reports due to the accumulation of unfinished work. Additional employee personnel are needed so that the grouping of the existing work system can be completed more quickly and regularly.
2. Conducting training for employees. Training is very important to support employees' needs to work better and harder and to add/improve employee skills according to their field of work.
3. Conducting field worker training for product processing so that they are more skilled. Most of the workers used were from groups that did not have a level of education/low level of education. Therefore, training is needed to improve work skills and minimize product defects.

Some policies can be implemented in each business function to achieve long-term and annual goals in human resource development. The policies are as follows:

1. Policy on human resources
   a) Adding human resources staff to support the development of the company's human resources to obtain competent people in their fields so that the company can advance the company for the present and future.
   b) Provide compensation/bonuses for high-performing workers so that they can improve their work standards.
   c) Providing facilities for employees and workers such as social security, employee safety, and welfare.
   d) Improve and enhance the performance and work systems of employees and workers who are still incorrect and irregular by conducting training to improve employee skills and abilities according to their field of work.
2. Policy on production section
   a) Carrying out work control on workers is not only done through work targets but also by looking at how workers work.
   b) Increase the number of employees/workers to support special production activities in technicians and provide machine reserves.

In an effort to improve performance, an analysis was carried out of the indicators that were identified from the competency aspect as follows:

Table 3. Weighting values of human resource performance improvement strategy indicators

No	Unsur	Interval	Conversion Interval	Weight	Criteriaa
1	Add staff/workers	4.9	98	A	SS
2	Providing compensation	4.5	90	A	SS
3	Providing facilities	4.8	97	A	SS
4	Providing training	4.8	97	A	SS
5	Perform control	4.9	99	A	SS

Table 3 above explains that the five elements have a weight value of A with the criteria SS (Strongly agree), which indicates the meaning of very satisfied satisfaction.

5. Conclusion

Factors that affect human resource performance in high-rise building construction projects in Bojonegoro can be concluded that the results of the identification process based on literature review obtained several factors that are grouped into four criteria, namely competence, motivation, loyalty aspects, and work discipline. Furthermore, the factor that must be most considered in improving human resource performance in high-rise building construction projects in Bojonegoro is competency. Strategies that can be implemented to improve performance based on competency aspects include adding staff and workers, providing compensation, providing facilities, providing training, and conducting control.

Limitations and future study

This study was conducted in the context of a construction services company specializing in the development of high-rise buildings in the Bojonegoro Regency, East Java, Indonesia. As such, the findings are inherently limited by the geographic and organizational scope of the research, which may not fully represent the complexity and variability of larger-scale or multi-regional construction projects. The data and strategies identified are most applicable to medium-scale construction environments and may not account for additional factors influencing human resource performance in megaprojects or in urban infrastructure developments with higher degrees of risk, technological involvement, and workforce diversity. Additionally, the study primarily used the AHP method to determine strategic priorities, which, while effective for structured decision-making, may not fully capture the dynamic and contextual nature of human behavior in the field. Therefore, future research should expand the sample to include a wider variety of construction companies in both the public and private sectors, and focus on projects of larger scale and different typologies. Moreover, employing alternative or complementary analytical approaches such as fuzzy AHP, Structural Equation Modeling (SEM), or longitudinal case studies may yield richer insights and allow for more robust comparisons across project environments.

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