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THE ROLE OF HUMAN RESOURCE COMPETENCY IN THE SUCCESS OF CIVIL AND ARCHITECTURAL CONSULTING PROJECTS

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ABSTRACT

We examine how the success of construction projects is greatly influenced by human resource (HR) competencies, which include technical, managerial, and behavioral skills. These competencies are key factors in facing the challenges of innovative architectural design in construction projects, especially high-rise buildings with futuristic concepts. This study aims to analyze the role of HR competencies in determining the success of construction projects. The method used in this study is a qualitative approach with literature analysis. Data were obtained from various academic sources, including scientific journals, research reports, and related institutional publications. This study compares successful projects and those that face obstacles in implementing futuristic architectural designs. The results show that HR technical competencies play an important role in understanding design, construction techniques, and regulations to reduce the risk of errors and project delays. Managerial competencies support resource management and strategic decision-making, while behavioral competencies such as communication, leadership, and teamwork strengthen coordination and collaboration between stakeholders. In addition, the adoption of digital technologies such as Building Information Modeling (BIM) and cloud-based project management systems also increase the effectiveness of project management. The conclusion of this study confirms that improving HR competencies through training, certification, and the application of digital technology in project management is a strategic step in increasing the efficiency and success of construction projects. Key recommendations include increasing workforce capacity, optimizing project management systems, and strengthening communication and leadership in the construction sector.

Keywords: HR Competence, Civil Construction Projects, Futuristic Architecture, Project Management, Digital Technology.

INTRODUCTION

The success of a construction project is influenced by various factors, one of which is the competence of human resources (HR), IEP innovation and quality of service to project management in building project performance (Estungkorodewi & Sihite, 2021). The performance of construction consultants is very important in ensuring the smooth progress of construction consultant projects in accordance with established standards (Heston et al., 2024). Human resource development plays a crucial role in the success of construction consulting projects (Saengchai et al., 2020). Sustainability of human resource planning for effective construction consultant projects can improve

workforce performance, motivation and productivity, which in turn affects project quality and efficiency (Ashiru & Ashiru, 2019). Construction consulting firms are considered one of the most labor-intensive industries, human resource management receives less attention (Ghattas et al., 2022). Sustainable HR management is a futuristic, innovative and potential field to be practiced in the field of HR management (Rajhans & Bhavsar, 2023).

HR has been considered as a major source of sustainable competitive advantage for organizations that helps create workforce contribution, but there has been no extensive research to sufficiently bleak picture of employment practices and industrial relations particularly in the construction consultancy sector. Extensive literature has established the HR performance relationship, what is lacking is empirical research examining the mechanisms through which the relationship works (Muneer et al., 2017).

HR competencies in construction projects not only include technical skills, but also include aspects of leadership, motivation, and the ability to adapt to innovative technology and design. This study aims to analyze the impact of HR competencies on the success of construction projects, especially in high-rise building projects that apply futuristic architectural designs.

The method used in this study is a qualitative approach with a literature review method. Data were collected from various sources, including academic journals, research reports, and relevant institutional publications. This study also includes an in-depth analysis of projects that have succeeded and those that have faced challenges in implementing futuristic architectural designs. Thus, this study is expected to provide a more comprehensive understanding of the role of HR competencies in supporting the success of construction projects.

LITERATURE REVIEW

Several previous studies have highlighted the importance of human resource (HR) competency in construction consultancy projects, (Willy & Sekarsari, 2020) found that project worker performance was greatly influenced by aspects of competence, motivation, loyalty, and work discipline. Meanwhile, research by (Zaenal Arifin et al., 2022) confirms that HR competency has the greatest influence on project success compared to leadership and motivation factors. However, this study has not specifically discussed how HR competency plays a role in high-rise building projects with futuristic designs. Research by (Zahra, 2022) also highlights contractor character and performance factors as key aspects in project success, although focusing more on project management aspects than individual competencies in dealing with innovative architectural design challenges. Research by (Mjakuškina et al., 2019) states the theoretical framework of the concept of sustainability in construction and in HR supervision process activities are analyzed based on a literature survey.

In addition, research by (Septiansyah & Martana, 2023) regarding futuristic architecture in the design of Bandung E-sports Center emphasizes that understanding technology trends and user needs is a key factor in the success of the project. The rapid advancement of construction technology requires human resources to have a high level of adaptation to innovation, such as digital design technology, sustainable construction materials, and the integration of futuristic architectural elements. Therefore, human resource competencies are not only limited to technical skills, but also include the ability to understand technological developments and integrate them into construction projects.

Furthermore, HR development in business architecture is also an important strategy in optimizing work productivity. (Maisari & Nur Fajrillah, 2020) in his research using the TOGAF ADM approach, which includes the preliminary phase, architecture vision, and business architecture, in designing enterprise architecture (EA). The results of this study indicate that the business architecture blueprint can be the foundation for designing a more comprehensive EA to improve HR management. In the context of construction, this approach can help develop a more systematic HR development strategy that is oriented towards improving competence, so that it can support the success of construction projects, especially those with high architectural design complexity.

METHODOLOGY

This study uses a qualitative approach with a literature review method. Data were obtained from various sources such as academic journals, research reports, and institutional publications that are relevant to HR competencies in construction projects.

As a case study, this research focuses on high-rise building projects in Indonesia that adopt futuristic architectural designs. These projects were chosen because they require a higher level of human resource competency in understanding the needs of innovative design and implementing modern technology. This study analyzes projects that have succeeded and those that face challenges in implementing futuristic designs.

The analysis was conducted by reviewing previous research findings and comparing them with real conditions in the construction industry. This literature review aims to provide broader insight into the relationship between HR competency and the success of construction projects using futuristic architectural concepts.

DISCUSSION

The research findings show that human resource (HR) competency plays an important role in the success of construction and architectural projects. Several key factors contribute to project success, including technical competency, managerial competency, and behavioral competency.

In the discussion of construction consulting projects, technical competence can be considered as one of the fundamental elements that are very necessary. A deep understanding of architectural design, construction techniques, and applicable regulations is the main key to ensuring that the project can meet the established standards. Solid technical expertise not only serves to avoid mistakes in planning and implementation, but also plays an important role in reducing the risk of cost overruns and delays that often arise unexpectedly. So, good mastery of technical competence greatly influences the success of the construction project as a whole.

Figure 1. Verification of Technical Competency Certificates of Experts.
Source: Author Documentation (2025)

In addition, managerial competencies are essential to ensure efficient and timely project implementation. Effective resource management including manpower, budget, and project scheduling is required to achieve optimal results. The ability to plan, organize, and control various aspects of a project has a significant impact on project effectiveness.

Behavioral competencies also play a critical role in project success. Strong communication skills, effective leadership, and solid teamwork enhance collaboration among stakeholders. Clear and open communication between architects, engineers, field workers, and other stakeholders helps prevent misunderstandings that can hinder project progress.

1. Human Resources Competence in Civil and Architectural Construction Consultancy Projects

Technical competence refers to the skills and understanding possessed by the workforce in various aspects related to architectural design, construction techniques, and the rules and regulations applicable in the construction industry. Mastery of these technical aspects is a key factor in ensuring the quality and sustainability of a development project.

Research conducted by (Handayani & Dirgantara, 2023) emphasized that the existence of the Expertise Certificate (SKA) and Skills Certificate (SKT) has a very important role in ensuring that the workforce involved in construction projects has competencies that are in accordance with industry standards. The certification is not only proof of a person's professional ability, but also functions as an instrument to increase the credibility of the workforce and ensure that the work carried out meets the established safety and quality standards.

Table 1. Technical Competence Aspects.

TECHNICAL COMPETENCE ASPECTS	DESCRIPTION	IMPACT ON THE PROJECT
Understanding of architectural design	Ability to understand concepts and technical details in building design.	Reduce the risk of design errors
Construction engineering skills	Expertise in implementing construction based on work plans.	Increase construction efficiency
Understanding of regulations	Knowledge of construction standards, codes of ethics, and regulations.	Ensure compliance with standard

Managerial skills are closely related to expertise in designing planning strategies, organizing various operational aspects, controlling and managing available resources, and making appropriate decisions to achieve organizational goals. According to research conducted by (Supriyadi et al., 2020) the implementation of an effective human resource management system has a significant role in improving the performance of construction companies, with a contribution of 56.3% to increasing the productivity and operational efficiency of companies in the sector.

Table 2. Managerial Competence Aspects.

MANAGERIAL COMPETENCE ASPECTS	DESCRIPTION	IMPACT ON THE PROJECT
Time management	Ability to create work schedules and ensure tasks are completed on time.	Minimizing project delays
Budget management	Management of project costs to stay in line with planning.	Controlling project costs
Quality control	Supervision of material quality and work results.	Improving the quality of construction results

In addition to technical and managerial factors, competencies related to individual behavior also play a crucial role in determining the level of success of a project. The ability to interact effectively, build harmonious working relationships, and demonstrate a professional attitude are important aspects that can support the smooth running of the project process. Research conducted by (GAPC Dharmayanti, 2020) revealed that lack of effectiveness in communication and weak leadership skills in a work team can be the main triggers for project delays. This is due to the potential for misunderstanding in conveying information, untimely decision making, and minimal coordination among team members that can hinder the progress of the project as a whole.

Table 3. Behavioral Competence Aspects.

BEHAVIORAL COMPETENCE ASPECTS	DESCRIPTION	IMPACT ON THE PROJECT
Communication skills	Skills in conveying and receiving information clearly.	Reducing misunderstandings
Leadership	Ability to direct the team to achieve project goals.	Enhancing team coordination
Teamwork	Willingness to work together in completing project tasks.	Enhancing work efficiency

2. Discussion

Based on the results of the discussions that have been conducted, human resource (HR) competency has been proven to have a dominant influence in determining the success of a construction project. This is supported by a case study of the Patimban Port Development Project which shows that workforce skills and expertise are key factors in improving contractor performance. Research conducted by (Rohmah et al., 2023) revealed that efforts to improve the quality of the workforce through training and certification programs have a direct impact on project efficiency, both in terms of productivity and optimization of work time and costs.

In addition, research conducted by (Tumilantouw, 2024) emphasized the importance of implementing a construction management system (CMS) in preventing various project risks, including delays in completion and unexpected cost overruns. With a well-structured and well-planned management system, construction projects can run more effectively, not only in technical and administrative aspects, but also in improving work safety and strengthening coordination between team members involved.

In the ever-evolving digital era, technology has become a key element in improving the effectiveness of HR management and construction projects as a whole. The use of advanced technologies such as Building Information Modeling (BIM), Enterprise Resource Planning (ERP), and cloud-based project management systems have proven to make significant contributions to improving operational efficiency. These technologies enable real-time data integration, accelerate decision-making processes, and enhance collaboration between project teams, creating a more productive and organized work environment.

Table 4. The Influence of Digital Technology in Construction Consulting Projects.

TECHNOLOGY	FUNCTION	IMPACT ON THE PROJECT
BIM (Building Information Modeling)	3D design visualization and analysis.	Reduce design errors and improve coordination between teams.
ERP (Enterprise Resource Planning)	Project resource, budget, and schedule management.	Increase project management efficiency.
Cloud Based Project Management System	Facilitate access and communication between project teams.	Increase flexibility and productivity.

With the use of digital technology, project management can be more structured and accurate, as well as speeding up the decision-making process.

CONCLUSION AND RECOMMENDATION

The success of civil construction and architectural consulting projects is highly dependent on HR competencies that include technical, managerial and behavioral aspects. Technical competencies ensure compliance with standards, managerial competencies optimize the use of resources and behavioral competencies strengthen coordination between stakeholders. Therefore, improving the quality of HR through training, certification and the application of digital technology in project management is an important step to achieve better project efficiency, effectiveness and quality. The author recommends, increasing training and certification for workers to improve technical competencies, Strengthening the project management system so that resource use is more optimal, optimizing communication and leadership to improve coordination in civil construction and architectural consulting projects and implementing digital technology in HR management and project management.

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