



Review Article

Relationship Between Work Competencies and Construction Expert Performance: A Review of Literature

Fikri Rezkyansyah Sasmita Nugraha ¹ and Muhammad Ikhsan Setiawan ^{2,*}

¹ Master of Civil Engineering, Faculty of Engineering, Narotama University, 60117 Sukolilo Surabaya, Indonesia; (F.R.S.N.)

² Department of Civil Engineering, Faculty of Engineering, Narotama University, 60117, Sukolilo Surabaya, Indonesia.

* Correspondence: ikhsan.setiawan@narotama.ac.id (M.I.S.)

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Abstract: Construction engineering experts' competency is a major factor in the construction services sector. It is because competency factors become the dominant factor that causes both failure and success for a project. Construction engineering experts need to be kept competent; this is intended to ensure that a project can succeed and run smoothly. Integrating skills, knowledge, and attitudes will produce individual competencies to help them carry out their work. Individual's performance measures competency assessment. Performance is the result of competence. In many construction projects, the performance of construction engineering experts is the most required in the construction process cycle. A qualitative research design was adopted for this study, specifically focusing on a systematic literature review. This approach allows for an in-depth analysis of existing literature, enabling the identification of key themes, patterns, and relationships between work competencies and expert performance in construction. Then, micro performance and macro performance influence the performance of a construction engineering expert. The proposed conceptual model is used to identify the relationships and interactions. This research is expected to show and explain the relationships and interactions between competencies and construction engineering expert performance.

Keywords: Work competencies; Expert performance; Construction services sector.



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1. Introduction

The construction services sector is a community activity that creates buildings that function as support or infrastructure for social, economic, and community activities to support the realization of national development. The construction services sector is the leading sector that implements the national development program in Indonesia. The construction services sector is a major contributor to a country's Gross Domestic Product because it has significant value in economic indicators, such as national added value and employment (Testa, Iraldo & Frey, 2011). Therefore, the development of construction services

has become an important and strategic national program if we look at developments that are occurring rapidly in the context of globalization, increasing employment opportunities and regional autonomy.

The construction services sector, which includes the planning process and construction work projects, is the most complex and difficult industrial sector because it requires a high level of skills and an understanding of human behavior (Al-Momani, 2000). Therefore, competent construction workers are needed. A competent workforce is demonstrated by high job performance. Skorková, (2016) in his research stated that every high-performing organization is connected to high-performing people. Therefore, the competency of the construction workforce is a most important factor.

In the midst of the era of globalization, the Indonesian construction services sector is facing various very complex challenges, such as the competitiveness of national and international construction, especially the ASEAN region, the development of the strategic environment, and the implementation of Mutual Recognition Agreement (MRA) regulations in the ASEAN region. This is an agreement between ASEAN countries to mutually recognize the professional competence of the workforce, including the engineering profession. MRA aims to help Indonesian professional workers compete with other ASEAN professional workers. This opens up opportunities for Indonesian construction services workers to obtain new large-scale projects but also brings other challenges, such as the emergence of new competitors and demand for high quality (Maqsoom et al., 2014). Globalization of trade has made quality factors the main factor in the market segment of developing countries (Auriol & Schilizzi, 2015).

Fang et al. (2018) explain that the construction services sector has high risks. Project failures occur frequently, and some are closely related to workers who are not competent to carry out a particular job. Ramazani & Jergeas (2015) stated in their research that 68% of all construction projects experienced project failure. Research shows that errors in project management cause construction project failure, so new approaches are needed, such as developing a construction services workforce. This is in line with research conducted by Iyer & Jha (2005), which states that the factors that cause a project to fail are a lack of knowledge and skills of construction workers, conflict between project stakeholders, weak monitoring and testing of the project, social conditions, politics and unfavourable weather and initial mistakes in conducting tenders. The percentage of these factors can be seen in Figure 1.

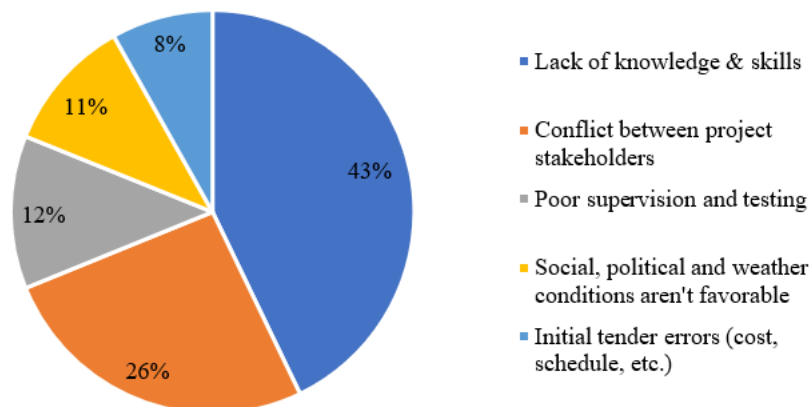


Figure 1. Factors that cause a failure project

Basically, work competency is demonstrated by the skills and knowledge required to carry out work effectively (Sturm, Vera & Crossan, 2017) and the appropriate individual attitude to achieve optimal performance and success (Ahsan, Ho & Khan, 2013). From Figure 1, the causes of project failure are dominated by weak work competence. With a total percentage of 68%, of which 43% is divided due to a lack of knowledge and skills of the workforce and 26% due to conflicts between project stakeholders, exemplified by an attitude that is too stiff and unable to adapt to the field, between external and internal project teams themselves.

This problem is often found in developing countries, including Indonesia. Based on the Directorate General of Construction Development (2016), the problem of competence of the national construction workforce in 2015-2016 is still dominated by the scarcity of skilled and experienced construction workers, and low performance because education programs in schools are not yet in line with the world of work. A construction services expert needs to maintain his competence, and this aims to ensure that a project can be successful and run smoothly. On the other hand, to participate in carrying out Long-Term Sustainable Development according to the plans of the government of the Republic of Indonesia. In order to solve various problems in projects and face the challenges of construction services in the era of globalization, the competence of construction workers is really needed.

Research conducted by Hameed & Waheed (2011) states that the combination of a worker's skills, knowledge and attitudes will result in the worker's performance in terms of the effectiveness of their work. From this it can be seen that integrating skills, knowledge and attitude will produce individual competence in carrying out their work. Competency results are measured in the individual's performance. The performance of a worker in research conducted by Sturm, Vera & Crossan (2017), is divided into two (2) types, namely, micro-based (individually) and macro-based (group). As previously explained, the construction sector is complex, so there is both micro-based and macro-based performance because it combines various multi-disciplines.

2. Literature Review

2.1. Competence

Takey and De Carvalho (2015) define individual competency as the ability to mobilize, integrate and transfer knowledge, skills and resources to achieve or exceed standardized performance in work assignments, adding economic and social value to organizations and individuals. Meanwhile, Skorková (2016) defines competency as a collection of qualities, abilities, skills and other capacities of an individual that are needed for successful performance in that job position. So, the competency describes a specific combination of skills, knowledge and individual attitudes needed to implement tasks in organizations and individuals effectively. Increasing skills is one very important way to improve the quality of the workforce so that it is flexible and can adapt to changes in the technological and business environment (Suhairom et al., 2014). The skill itself is an individual's ability to carry out and complete a given task. Knowledge reflects the amount of individual information regarding the processes, tools and techniques needed to carry out and complete the tasks given in their work (Ahsan, Ho & Khan, 2013). Attitude is an individual's social representation of responding to an object positively or negatively (Schultes et al., 2018).

2.2. Performance

Performance is demonstrated by assessing actions and results related to work and the ability to project plans and produce results in completing work (Ahsan, Ho & Khan, 2013). Performance is a result defined as a product/service resulting from certain specified activities or in a certain position (Tutu & Constantin, 2012). Performance is a positive correlation between the skills and knowledge of employees with job requirements. As previously explained, competency is integrating individual skills, knowledge, and attitude to produce individual performance. Increasing individual competence is, of course, also expected to improve individual performance. Performance is the final result of competence. In many construction projects, the performance of the construction services workforce is the most expected in the construction process cycle (starting from feasibility studies, planning, preparation, construction work, and maintenance to completion). The performance of the construction services workforce plays an important role in the construction services sector in the modern era (Ramazani & Jergeas, 2015). In research conducted by Hameed & Waheed (2011), employee/workforce performance is a valuable resource (asset) for the company. The success or failure of a company depends on employee performance. So, when employee performance is high, this will lead to company effectiveness. The performance cycle is shown in Figure 2.



Figure 2. Cycle of performance

2.3. Construction Engineering Expert

An expert/professional has a higher educational background and/or ability and has studied and mastered the application of knowledge, science, technology, and/or certain fields. Meanwhile, a skilled worker could operate something due to practice/training or carrying out activities/activities continuously/continuously. The difference between experts and skilled workers is in the level of problems faced, and experts solve problems based on analysis and testing of knowledge and application of technology. The level of problems can be complicated/complex. Meanwhile, skilled staff solve problems based on applicable Standard Operating Procedures (SOP), the problem level is light to moderate. The recognition of experts and skilled workers is measured based on their level of experience in the field. In

other words, expert and skilled abilities are obtained from complex mechanisms that emerge through involvement in the continuous application of knowledge, science, technology, and practice or activities (Ericsson and Roring, 2007).

3. Materials and Methods

This section outlines the methodological approach to exploring the relationship between work competencies and construction expert performance through a comprehensive literature review. The goal is to synthesize existing research findings, identify gaps in the literature, and provide insights into the implications of work competencies on performance in the construction industry. A qualitative research design was adopted for this study, specifically focusing on a systematic literature review. This approach allows for an in-depth analysis of existing literature, enabling the identification of key themes, patterns, and relationships between work competencies and expert performance in construction. A structured literature search was conducted using academic databases such as Google Scholar, Scopus, Web of Science, and JSTOR. The search terms included combinations of "work competencies," "construction expert performance," "construction industry," "competency models," and "performance metrics." The search was limited to peer-reviewed articles published in the last 20 years to ensure relevance.

4. Results

The formation of the research model at this stage is to establish the relationship between the variables and indicators used in the research. The variables and indicators were obtained through scientific explorations from literature studies. Therefore, it is necessary to establish a research model to determine the relationship and interaction between competency variables. It was previously known that competence is a specific combination of skills, knowledge and individual attitudes needed to implement tasks in organizations and individuals effectively. The specific combination is shown in Figure 3.

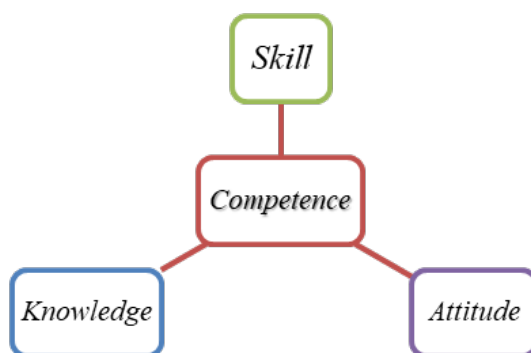


Figure 3. Integration of skills, knowledge and attitude to enhance the workforce competency

The integration of skills, knowledge and attitude will produce workforce competency. Therefore, competency is an important aspect of measuring individual performance. The integration of competencies is shown in Figure 4.

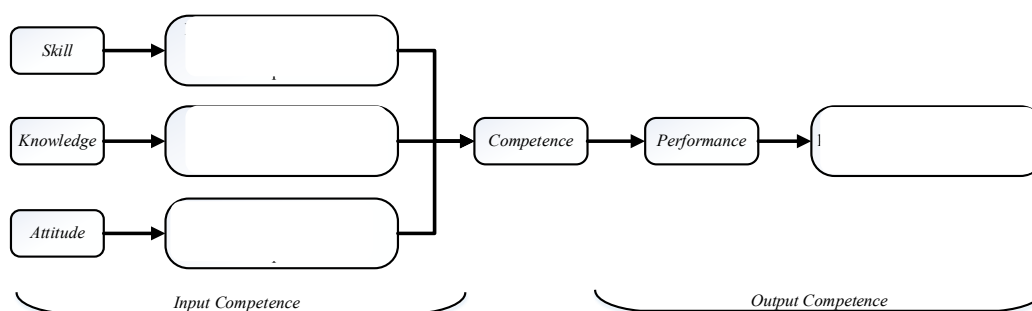


Figure 4. The Integration of Competencies

Figure 4 explains that to obtain competence, synergy is needed between skills, knowledge and attitude. In other words, the input of individual competence is these three variables. Then, the measuring value of competence or output competence is individual performance..

5. Discussion

Competence is increasingly recognized as a multifaceted construct that requires a synergy between three essential variables: skills, knowledge, and attitude. This tripartite framework offers a comprehensive understanding of how individuals perform in various contexts, emphasizing that any one factor does not solely determine competence. Instead, the interaction of these three elements leads to effective performance. Skills refer to the practical abilities and techniques individuals acquire through training and experience. They are the tools that enable individuals to perform tasks efficiently. However, their effectiveness can be limited without a solid foundation of knowledge to inform the application of these skills. For example, a skilled technician must also understand the underlying principles of their work to troubleshoot issues effectively. Thus, skills must be complemented by relevant knowledge to produce optimal outcomes. Knowledge is critical in shaping competence providing the context and understanding that inform decision-making. It encompasses both theoretical understanding and practical insights. An individual may possess excellent skills but lack the knowledge to apply them in varied situations, which can hinder performance.

Therefore, organizations must prioritize knowledge acquisition and skill development to foster well-rounded professionals adapting to changing circumstances. Attitude, often overlooked in discussions of competence, is equally important. It encompasses an individual's mindset, motivation, and willingness to engage with challenges. A positive attitude can enhance the application of skills and knowledge, driving individuals to seek solutions rather than shy away from difficulties. Conversely, a negative attitude can undermine even the most skilled and knowledgeable individuals, leading to subpar performance. Therefore, cultivating a positive work environment that encourages constructive attitudes is essential for enhancing overall competence. The synergy among skills, knowledge, and attitude ultimately produces competence. This interdependence suggests that efforts to improve individual performance should not focus on one element in isolation. Instead, a holistic approach that nurtures all three components will yield the best results. For instance, integrating skill training with knowledge enhancement and attitude-building workshops can create a more cohesive developmental experience for employees.

Moreover, the output of this synergy—individual performance—serves as a valuable metric for assessing competence. High workplace performance often indicates an individual's ability to blend their skills, knowledge, and attitude effectively. Performance assessments that take this holistic view can better represent an individual's capabilities more accurately than traditional evaluations that focus solely on technical skills. In practical terms, organizations should implement strategies that promote the development of all three components of competence. This may involve offering comprehensive training programs covering technical skills while emphasizing the importance of knowledge acquisition and fostering a supportive attitude. For example, mentorship programs can facilitate knowledge sharing while reinforcing positive attitudes among participants, enhancing overall performance. Furthermore, recognizing the interconnectedness of these variables encourages a more personalized approach to professional development. Everyone may excel in different areas, necessitating tailored development plans that address specific strengths and weaknesses.

By understanding where an individual stands regarding skills, knowledge, and attitude, organizations can create targeted interventions that lead to more effective competency development. The implications of this holistic view extend beyond individual performance to influence organizational success. Companies that invest in developing competence across their workforce are likely to see improvements in productivity, innovation, and employee satisfaction. As employees become more competent, they are better equipped to contribute to team goals, adapt to changes, and drive organizational growth.

6. Conclusions

In conclusion, competence is a dynamic interplay of skills, knowledge, and attitude. Recognizing the importance of synergy among these elements is crucial for fostering individual performance and, ultimately, organizational success. Future research could further explore specific methodologies for integrating these components in various professional settings, providing a roadmap for organizations seeking to enhance their workforce's capabilities. By embracing a holistic approach to competence, organizations can cultivate a more skilled, knowledgeable, and motivated workforce ready to meet the challenges of today's dynamic environment.

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