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Development of A Vocational Skills Training Model for Construction Workers

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ABSTRACT

The development of culture and technology in responding to human needs in architecture and physical infrastructure development requires an acceleration in the skills of construction workers. Many factors become obstacles for construction workers to be able to compete and improve their skills. One of them is access to education and skills training because of the lack of information and opportunities they can get. This study aims to develop a vocational skills training model oriented to the certification of skilled workers in the construction industry. The development of the training model is made through stages that refer to research and development of Logic Model Development. The process carried out includes the planning, implementation, analysis, testing and finalization of the training model. Data collection was carried out through surveys of construction worker service users, FGD with training model development experts, FGD with construction industry stakeholders, theoretical analysis, and policies as materials for model development. The findings of this study are in the form of a training model that develops networks and collaborations between institutions related to skilled workers in the construction industry. Vocational universities have the potential to strengthen and facilitate construction workers in improving job skills and certifying skilled workers. In the long term, this model is expected to become a prototype for a sustainable vocational skills training system for construction workers.

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1. INTRODUCTION

Vocational education has a broad spectrum, not only in formal education but also growing and developing traditionally through cultural inheritance in various groups of people with different traditions (Lilis Widaningsih et al., 2018). Products such as culinary delights, clothing from various regions, various types of handicraft tools, agricultural techniques, to unique skills in carpentry shown by the diversity of traditional village architecture are examples of vocational skills born from the culture of Indonesian society.

The development of culture and technology in responding to human needs in architecture and other physical infrastructure development requires an acceleration in the skills abilities of construction workers. In many aspects, the skills inherited by tradition cannot respond to construction work needs with new materials and technology. Certified skill standards inevitably must be possessed by construction workers who are involved in various construction projects.

As a vulnerable group of workers, construction workers face various obstacles in improving work skills following today's demands, such as new technology and the need to have skilled worker certification. Their self-taught skills and traditional learning from their predecessors have implications for forming work attitudes and limited knowledge and skills in building. On the other hand, their access to education and skills training is limited because there is no information and opportunities that they can get.

Another problem is related to the lack of information about certification and the benefits obtained from it. Until now, the socialization from the government has not yet reached many workers. Also, the ambiguous attitude of the construction industry, which has not consistently applied the requirements for certified workers, has made this condition even more challenging (L. Widaningsih et al., 2020). This condition is one of the reasons for the difficulty in structuring the construction workforce in an employment pattern that can guarantee their rights, standardize wages, and secure their access to education and training to improve work skills (Rothenberg dkk., 2016).

This paper aims to design a vocational education and training model for construction workers oriented toward the construction industry's needs and skills certification. The model developed is the result of research on construction workers, which is carried out in stages starting from ethnographic and ethno-andragogic studies on the inheritance of job skills. From these findings, a follow-up study was carried out involving relevant stakeholders from the government, construction industry, associations, and other construction worker service users with surveys and focus group discussions (FGD) on obtaining factual data for the needs of model development formulations. The results of this model development are expected to become a prototype or guide in implementing vocational skills training for construction workers in Indonesia.

2. RESEARCH METHOD

Model development is carried out by adopting Logic Models (W. K. Kellogg Foundation, 1998) to produce a relatively simple picture that reflects how and why this program is essential and serves as a guide in implementing it. In general, Logic Models are systematic visual representations that inform how a program can work. Logic Models connect operational resources, planned activities, and changes or results to be achieved both short and long-term.

Data and information collection techniques are carried out by surveying construction workers, policy analysis, and focus group discussions (FGD) with relevant stakeholders from the government, associations, the construction industry, and

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academia. Data from surveys, policy studies, and FGDs are input data on situations and problems used as the basis for developing models and programs.

3. RESULTS AND DISCUSSION

Skilled Workers in the Construction Industry

Skilled workers in the construction industry in Indonesia consist of several classifications of expertise, including construction competence in architecture, construction competence in the civil sector, construction competence in the mechanical sector, competence in construction in the electrical industry, competence in construction in the field of environmental management, and competence in construction in the field of executive management (Direktorat Jenderal Bina Konstruksi, 2016). Each competency has a specific range of skill standards for each job. The form of recognition of the skills possessed is a Skills Certificate (SC). The regulations regarding SC are contained in the Construction Services Development Agency (LPJK No. 6 Tahun 2017). The number of SCs per Field Classification in 2020 amounted to 705,302 certified skilled workers, including 223,699 competent in the Architecture field, 343,952 Civil Sector competence, 54,557 Mechanical Competence, 28,378 Electrical Competency, and 31,311 Environmental Management Competency, and others 23,402 (Binakonstruksi.pu.go.id, 2020). However, this number is still far from the total construction workers recorded of 8.3 million people (BPS, 2018).

The construction industry's need for certified skilled workers has not met expectations. The number of skilled workers increases every year, but the increase is not proportional to the number of construction workers involved in various projects. Therefore, skills certification is fundamental to provide opportunities for skilled workers (builders) to gain recognition for their skills. However, the increase in the achievement of certified skilled workers is still constrained by various factors, including traditional work culture, lack of certification knowledge and information, an institutional certification system that has not been well integrated, difficulty in accessing workers to education and training, and lack of recognition indicated by an increase in welfare related to the minimum wage (L. Widaningsih et al., 2020). The background of construction workers from traditional communities with education, knowledge, and skills passed down from their parents forms a mindset that is still far from understanding certification (Rivelino, 2017).

One of the main problems in the work pattern of construction workers is the attitude and behavior of implementing Occupational Safety and Health (OHS), which is a prerequisite for working performance in the construction industry (Murtinugraha dan Anisah, 2019). OHS is an important aspect of vocational skills that need to be trained for construction workers. Many studies on construction workers have raised the K-3 issue as a priority in training (Endroyo et al., 2015; Demirkesen and Arditi, 2015; Lingard, 2002).

Needs in the Construction Industry

This research aims to develop a vocational training model that is oriented toward the certification needs of skilled workers. Conceptually, developing a training model for job skills involves various aspects that are studied comprehensively concerning empirical, theoretical studies, and related policy studies to produce models that can be applied practically. For this reason, a survey was conducted on a sample of workers in construction implementation. Respondents selected are those who use the services of construction workers (builders). They work as architectural consultants, implementing

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contractors, or supervising consultants which are currently working on ongoing projects with various project values. They are on different project lines, both in the private sector, in government, and as independent consultants.

From a total of 53 respondents, most of them felt that training construction workers to strengthen their skills was important. However, not many construction workers have attended the training. According to the survey, the number of workers who have attended training is only around 50%.

According to construction worker service users, "Not Knowing Information on Job Training" is the leading cause of not obtaining specific skills training. The second reason for not getting particular skills training for workers is "The Builders' Skills Are Enough Without Training." The third cause for not obtaining specific skills training for workers is "There is no Specific Institution that Provides Skills Training." Meanwhile, "Training Costs (which are) Expensive for Builders" is the last cause.

When it is related to the need for construction worker certification in the present, training is a fundamental aspect that workers must obtain. By following thorough training, a worker will get recognition of his skills. A certification is a legal form of credit. There should be more benefits for workers if they already have a skills certificate.

This is in line with the survey results stating that certified workers have a higher income than workers without certificates (69.8%). Some noted that the workers' income level after certification had not changed (26.4%). When examined further, this situation tends to be influenced by conditions and regulations in the local country. Having skills certificates for workers is not yet fundamental in Indonesia. Both certified and uncertified workers still tend to get the same position as long as they have qualified skills. Often the seniority of workers is also a determining factor. As a real example in the field, ownership of certification will be prioritized by respondents (worker users) in recruiting workers if it is included in the procurement requirements. Respondents tend not to prioritize ownership of skills certificates for construction workers when there is no demand, and few respondents require their workers to have skills certificates

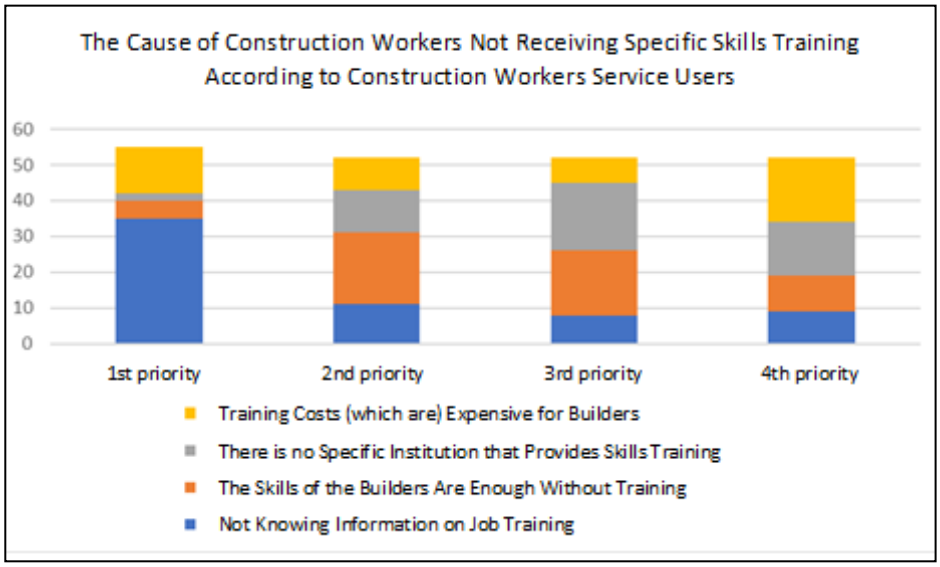

Figure 1: Causes of Construction Workers Not Receiving Specific Skills Training, 2022, barchart. Source: Authors, 2023

Vocational Skills Training

Training is a part of education that concerns the learning process to acquire and improve skills outside the prevailing education system, in a relatively short time, and by

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prioritizing practice rather than theory (Rae, 2005). In general, training is a part of education that describes a process in organizational and community development.

The fundamental problem of the construction sector workforce is low job skills if it is related to the demands of the current development needs of building technology and the demands for skills certification with national and international standards. Both hard skills and soft skills tend to be lower than workers in other countries who have certificates. Hard skills concern technical skills in construction work, while soft skills concern work attitudes, values, work norms, discipline, and the application of occupational health and safety.

The limited skills of construction workers have become an obstacle to the transformation and innovation of the construction industry (Jide et al., 2017). The research on construction workers in China analyzed how the government and companies were involved or participated in providing skills training for construction workers. Improving workers' skills and increasing welfare through the provision of wages and government subsidies in skills training are needed to meet the interests of all parties. Worker-related institutions should pursue various skills improvement programs. The findings of this study illustrate that the weak skills of construction workers who come from rural areas are the responsibility of industry and government to provide skills training before they work and when they work (pre and on-the-job).

The development of a modern industry that is currently entering the "fourth industrial revolution" emphasizes the magnitude of the challenges each country must face in preparing its human resources. The advancement of construction industry technology which continues to increase, requires an acceleration in fulfilling workers with vocational education and training in a sustainable manner. Research by Gann, D., and Senker, in the UK, found that training in formal institutions failed to adapt to the needs arising from industrial modernization. Proper training is deemed contextually inappropriate, many of which are out of date. This research is an evaluation that aims to provide a framework for analyzing the need for skills in modern performance by providing policy recommendations in decision-making in government, companies, and training institutions (Gann & Senker, 1998). Meanwhile, the role of education and training in encouraging the development of efforts to improve the performance of national construction workers can be done through capacity building, which is focused on the micro-level (Djatnika et al., 2005).

Training for construction workers, especially workers in Indonesia, has become the government's main focus and the private sector. Through the Ministry of Public Works and Public Housing, the government has made various efforts to increase the competence of construction workers, with the hope that it will have an impact on accelerating the equalization of net income received by Indonesian construction workers at the ASEAN level. Training has always been an essential method for meeting the needs of workers in the Industry. Based on the phenomena and strategic issues that Indonesian construction workers face, the Ministry of Public Works and Public Housing has made a policy direction for education in the construction services sector. In the short term, the policy direction and strategy for productivity and competitiveness are realized, one of which is the emphasis on vocational education and training based on industrial cooperation. They have developed more than 40 training modules and competency tests for skilled workers and developed a remote training and competency test mechanism, namely SIBIMA (Independent Learning Information System). To date, six optional packages have been

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designed, including four training packages and two competency test packages that workers can access easily via smartphones.

The government's efforts to increase the capacity of construction workers are carried out based on the mandate of Law No.2 of 2017 concerning construction services that require certified construction workers (Undang Undang No 2 Tahun 2017). The management of training for construction workers is divided into two powers. The first authority rests with the central government, and the second is under the control of local governments. Through the Ministry of Public Works and Public Housing, the central government, the Directorate General of Construction, is tasked with regulating pilot training, national coverage construction service information systems, foreign construction service business licenses, and preparation of competency and training standards. The Provincial Government is tasked with organizing expert training to post-training monitoring and identifying deadlines for expert certification. Meanwhile, the City and District governments are tasked with managing skilled workers' training to monitor post-training and identifying deadlines for certification of skilled workers.

As construction worker service users, construction service entrepreneurs also participate in providing training for their workers. However, several obstacles related to the standard wages of certified workers that are not yet firm, the limitation on the number of skills that can be licensed for each worker, and the continuity of certificates that are only valid for one year are obstacles for employers. Another obstacle is the high costs that must be incurred and the low appreciation of the community for the certification of workers in the construction industry (Dardiri et al., 2017). Therefore, construction entrepreneurs will usually only prioritize their builders to take part in training related to the use of new materials needed in projects under construction that require special skills in their use. Construction entrepreneurs will usually work closely with material providers in the implementation of training. Acceleration of technology and materials is also a factor for entrepreneurs cooperating directly with technology and material providers for training without involving the government. This kind of collaboration has become a global trend to respond to local needs by decision-making at the local level, where action and consequences are faster than waiting for the central government (Fenner et al. 2018). As previously mentioned, construction workers in Indonesia are workers who acquire their skills informally. Therefore, onsite training is also an option for construction entrepreneurs because it is considered to be more effective according to needs. Onsite training is designed for construction workers working in the field to meet needs according to the work they are doing painting, plastering, processing, and laying bricks (Alwi, 2004).

Various efforts to increase the skills capacity of construction workers carried out by the government and the private sector must be implemented to meet the need for certified construction workers. However, training efforts at the micro level carried out by both the government and the private sector also need to be balanced with the validation of skills certification already owned by craftsmen that can be accessed easily through a system that integrates the entire work history of the workers. Employee training is also expected to improve worker performance which will affect the quality of work, working time, work effectiveness and efficiency, security procedures, and awareness of the rules that workers must obey. As it is known, low worker skills will impact poor work quality, weak productivity, and increase the number of work accidents (Riaz, 2015)

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Model, Analysis Result of Logic Model, and Model Stages

Model development is carried out by adopting Logic Models (W. K. Kellogg Foundation, 1998) to produce a relatively simple picture reflecting how and why this program is essential. Logic Models are developed collaboratively in an inclusive, collegial process involving as many key stakeholders as possible. This guide provides a step-by-step approach to assist program planners.

In general, a logic model is a systematic visual image informing how a program can work. The logical model connects operational resources, planned activities, and the changes or results to be achieved, both short and long term. Logic models are practical tools to help ensure the success of a program. Because the logical model takes the form of a visual diagram, planners can see all aspects systematically from planning, management, and evaluation functions. The logical model can show all the potential and obstacles in a program. Planners can flexibly develop various scenarios to determine the best scheme. The basic logic model can be seen in figure. 2.

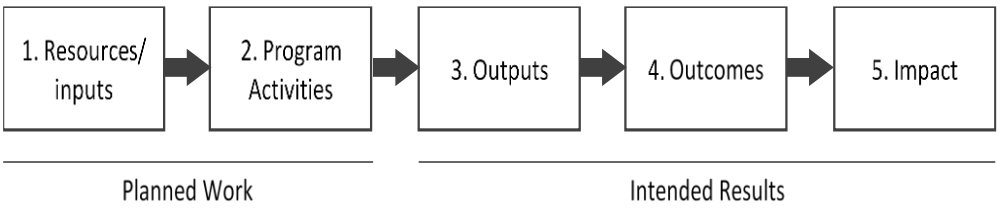

Figure 2: Basic Logic Model, 2022, Schematic chart.
Source: Authors

Planned work explains what inputs must be provided and what will be done with these inputs. Meanwhile, Intended results describe all forms of results to be achieved through the planned program. Here are the components of the planned work and intended outcomes: (1) Resources/inputs are all resources that can support the work of a program. This includes people, organizations, money, and so on; (2) Program Activities are processes or work carried out using resources to achieve the desired results. This stage involves equipment, technology, and action; (3) Outputs are products resulting from processes that have been carried out; (4) Outcomes are specific changes (improvements) in the target participants' behavior, knowledge, abilities, status, or function; (5) The impact is a long-term change that occurs in a community or system due to program activities. This can also be seen as a reflection of the model's success that will happen in the next 7-10 years.

From this basic model, the researcher develops a contextual model for research. A vocational training development model for construction workers was formed by collecting various variables and data from various sources as seen in figure 3.

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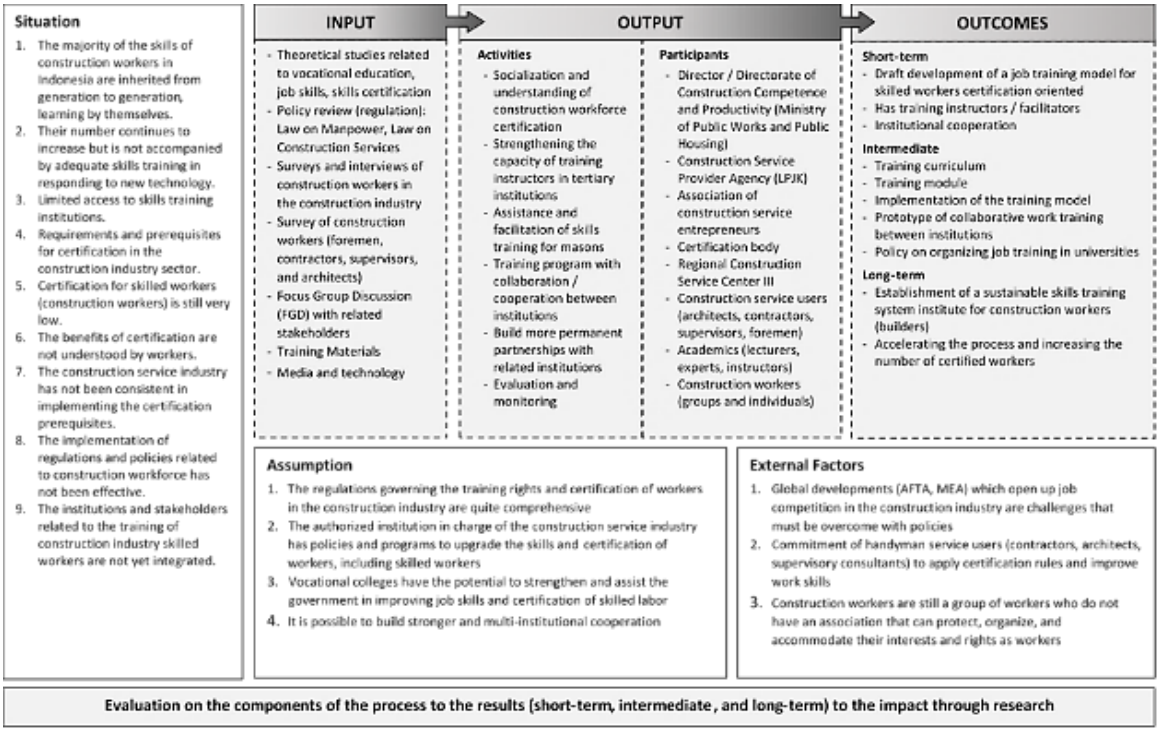

Figure 3: Development of Vocational Training Models for Construction Workers, Skilled Workers Certification Oriented, 2022, Schematic chart.
Source: Authors

4. CONCLUSION

Increasing vocational skills for construction workers in responding to the needs of the construction industry in the modern era must be a significant concern. Based on various studies, its implementation requires cooperation between interested parties. The regulations governing employment, the obligation to improve the quality of work skills, the commitment to attend training and certification are the basis for each stakeholder in providing training for workers, including construction workers in the construction industry. The adaptation of Logic Models in developing a training model can be a systematic and straightforward description of how to map problems, analyze and synthesize issues, design activities to be carried out, and map stakeholder/participant involvement. Furthermore, it is no less important to measure the program's impact in the short, medium, and long term. This model can be optimally implemented through collaboration between institutions with the same goal of improving the quality of vocational skills of construction workers and helping them gain easy access to training.

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