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To cite this article: Jegoteluko and Wahyu Indra Sakti 2020 *IOP Conf. Ser.: Mater. Sci. Eng.* **852** 012028

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Development of unskilled labour into skilled labour at the jetty project of PLTU Tanjung Jati B Units 5 and 6

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Abstract. The construction of electric power plants is needed to meet national electricity needs and as far as possible is planned optimally with the principles of the lowest cost. The construction of power plants prioritizes the utilization of local energy sources. One of the power plant construction projects is PLTU Tanjung Jati- B units 5 and 6, Tubanan Village, Kembang Sub-District, Jepara Regency, Central Java Province. This project carries out community empowerment/unskilled labor in the construction phase. This study analyzes critical success factors (CSFs) and data collection is conducted through a questionnaire survey of respondents from community/unskilled labor. Research results show 10 critical success factors, which include the development of skills and quality of human resources through training; cost, quality and time control; the functioning and benefit of the constructed infrastructure, where infrastructure construction affects economic and social systems in the surrounding environment; human resource development through case studies; financial compensation received (direct payment); commitment of members of organizations; identification and allocation of risks; accuracy of the choice of technology used; timeliness in completing work; implementation of occupational health and safety programs.

1. Introduction

The development and construction of power plants are needed to meet national electricity needs and as far as possible is planned optimally with the principle of the lowest cost. The construction of power plants prioritizes the utilization of local energy sources. The projection of electricity demand (demand forecast) is prepared to estimate the amount of electrical energy needed to support economic growth targeted by the government with regard to population growth.

PLTU construction project for Java-Bali electricity is located in Tanjung Jati-B, Tubanan Village, Kembang Sub-District, Jepara Regency, Central Java Province with capacity of 2x1,000 Mega Watt (MW) equipped with ultra-supercritical ("USC") technology to get better efficiency and lower CO₂ emissions.

PLTU Tanjung Jati Jetty Project Units 5 and 6 carries out community empowerment in the construction phase. PT. Bam Decorient Indonesia collaborates with Local Community Organizations to empower the communities for unskilled labor.

In general, this research starts with a grouping of categories of factors that influence the jetty construction project of PLTU Tanjung Jati B Units 5 and 6 through the community empowerment/unskilled labor approach based on literature study, then an analysis is conducted on the factors that influence the success of project implementation, then the critical success factors are identified.



2. Research Methodology

2.1. Sample preparation Research Population and Sample

Primary data collection is conducted by questionnaire survey. Secondary data collection is conducted by the researcher not directly to the research object but through documents relating to the research object. Secondary data collection is conducted through the official website of PLTU Tanjung Jati B, Central Bureau of Statistics (Badan Pusat Statistik/BPS), and the official elements involved.

2.2. Method Research Variables

The variables that influence the jetty construction project of PLTU Tanjung Jati B Units 5 and 6 through community empowerment approach that have been validated by the experts can be seen in table 1 below [1], [2], [3], [5], [6] :

Table 1 Research Variables

No.	Category	Variable	Factor
1	Community Participation	X1	Information on job vacancy to the community through socialization
		X2	sense of ownership to the construction
		X3	Implementation of Equal Employment Opportunity
		X4	Implementation of direct and indirect anti-discrimination attitudes towards a certain group
		X5	Compensation in the form of the received finance (direct payment)
		X6	The need for self-actualization
2	Community Resource Skills	X7	Cognitive ability (analysis and conceptual)
		X8	Ability to efficiently utilize the workforce
		X9	Ability to interact and communicate
		X10	Ability to express opinions
		X11	Courage in taking risks and challenges
		X12	Ability to be creative
		X13	Experience and organizational culture
		X14	Ability to elaborate ideas
		X15	Application of science and technology
		X16	Ability to work together
		X17	Ability to work under pressure
		X18	Ability to follow work instructions
		X19	Punctuality in completing work
		X20	Attendance level in performing work
3	Training and Development of Human Resources	X21	HR skill and quality development through training
		X22	Human resource training (on-the job training)
		X23	Human resource development through case studies
		X24	Improvement of knowledge and skills
		X25	Development of the ability to interact and communicate
		X26	Development of occupational health and safety programs
		X27	Leadership development

4	Local Community Organization	X28	Ability to solve problems
		X29	Precision in decision making
		X30	Organizational development
		X31	Communication system in organization
		X32	Effectiveness in making decisions
		X33	Commitment of members of organization
		X34	Transparency and openness in organization
		X35	Ability to resolve disputes in organization
		X36	Organizational credibility and accountability
5	Infrastructure Management	X37	Implementation of occupational health and safety programs
		X38	Risk identification and allocation
		X39	Suitability of work plan with the activity implementation
		X40	Monitoring and control mechanism
		X41	Constructability program
		X42	Effective quality assurance
		X43	Availability of materials
		X44	Availability of machines and equipment used
		X45	Cost, quality and time control
6	Motivation and Job Satisfaction	X47	Motivation in obtaining continuous compensation (direct payment)
		X48	Career goals based on skills and abilities
		X49	Motivation in meeting social needs to feel useful and more important
		X50	Motivation to affiliate with fellow workers
		X51	Motivation in increasing satisfaction and performance.
		X52	Satisfaction of the difference in the amount of work contributions to what is received
		X53	Satisfaction of the sense of secure
7	Sustainability of Development Program	X54	Accuracy of the choice of technology used
		X55	Organized operational and maintenance management system
		X56	Commitment of Local Community Organization in the sustainability of the program
		X57	Demand for products/jobs produced
		X58	The functioning and benefit of the infrastructure built
		X59	Affordability and ease of access
		X60	Continuous service

2.3. Relative Importance Index (RII) Analysis

Relative Importance Index (RII) Analysis is a term that was first published by Meyer, Barnett and Brown (1997). RII is an analysis that enables a relative quantitative, in which the higher the rating, the higher the influence given by the variables owned (Hardjomuljadi, 2009). The formula used is [4]:

$$RII = \frac{\sum W}{N \cdot A} \quad (1)$$

Notes:

RII = Relative Importance Index

W = Weight given to dominant causative factors (1,2,3,4 and 5)

A = The highest weight (in this study is 5)

N = Total number of respondents

3. Results and discussion

3.1. Result of data instrument test

Data instrument tests conducted in this research include validity, reliability and normality of the data. Based on the testing conducted, the following conclusions are drawn:

1. All variable items meet the data validity criteria.
2. All variable items meet the data reliability criteria.
3. The data obtained are data that are not normally distributed, thus non-parametric statistic.

3.2. Respondent characteristics

Characteristics of respondents obtained from the results of respondents 'answers in the information section of the respondents' data from the total number of respondents. Characteristics of respondents are grouped by gender, age group, level of education, occupation. The data are explained in table 2 below:

Table 2 Percentage of respondent characteristics

No.	Respondent characteristics		Frequence	Percentage (%)
1.	Gender	Male	40	100,00
		Female	0	0,00
2.	Age Group	< 20 years	1	2,50
		20-30 years	2	5,00
		30-40 years	20	50,00
		> 40 years	17	42,50
3.	Level of education	SD (elementary)	15	37,50
		SMP (junior high school)	13	32,50
		SMA (senior high school)	12	30,00
4.	Occupation	Finishing	7	17,50
		Rebarman	2	5,00
		Helper	5	12,50
		Scaffolder	3	7,50
		Carpenter	8	20,00
		Assisten Surveyor/Helper	2	5,00
		Concrete Crew	5	12,50
		Concrete Demolition	8	20,00

3.3. Relative Importance Index (RII)

Based on the results of the data processing above, 10 critical success factors have been identified through the top 10 relative importance index (RII) in the Jetty Construction Project of PLTU Tanjung Jati B units 5 and 6. The following will be discussed further about the identified critical success factors, based on expert interviews and literature studies, so critical success factors are obtained as in table 3 below:

Table 3. Critical Success Factors (CSFs)

No.	Var	Factor	RII Value
1.	X21	HR skill and quality development through training	92,00
2.	X45	Cost, quality and time control	92,00
3.	X58	The functioning and benefit of the infrastructure built	92,00
4.	X23	Human resource development through case studies	91,50
5.	X5	Compensation in the form of the received finance (direct payment)	91,00
6.	X33	Commitment of members of organization	91,00
7.	X38	Risk identification and allocation	91,00
8.	X54	Accuracy of the choice of technology used	91,00
9.	X19	Punctuality in completing work	90,50
10.	X37	Implementation of occupational health and safety programs	90,50

Based on the results of the research and discussion that have been conducted, 5 lowest relative importance index (RII) are obtained at the Jetty construction of PLTU Tanjung Jati B units 5 and 6 through the approach of Local Community Organizations, namely in Table 4.

Table 4. lowest relative importance index (RII)

No.	Var	Factor	RII Value
1.	X21	career goals based on skills and abilities	78,50
2.	X45	ability to work under pressure	77,50
3.	X58	ability to express opinions	76,00
4.	X23	suitability of work plan with the activity implementation	73,00
5.	X5	leadership development	71,50

4. Conclusion

Based on the results of data analysis that has been conducted, the following conclusions can be drawn 10 critical success factors are obtained out of 21 success factors at the jetty construction of PLTU Tanjung Jati B units 5 and 6 through the approach of Local Community Organizations, namely HR skill and quality development through training; cost, quality and time control; the functioning and benefit of the infrastructure built; human resource development through case studies; compensation in the form of the received finance (direct payment); commitment of members of organization; risk identification and allocation; accuracy of the choice of technology used; punctuality in completing work; implementation of occupational health and safety programs.

Based on the results of the research and discussion that have been conducted, 5 lowest relative

importance index (RII) are obtained at the jetty construction of PLTU Tanjung Jati B units 5 and 6 through the approach of Local Community Organizations, namely career goals based on skills and abilities, ability to work under pressure, ability to express opinions, suitability of work plan with the activity implementation, leadership development.

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