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] :

| 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 |
|   |                              | X46 | Effective human resource planning |
| 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]:

\[ \text{RII} = \text{Rating} \times \text{Influence} \]
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:

| No. | Respondent characteristics | Frequency | 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          |
|     | Scaffold                    | 3         | 7,50           |
|     | Carpenter                   | 8         | 20,00          |
|     | Assistant 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:

| 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 | Commitment of members of organization                                  | 91,00     |
| 8.  | X37 | Implementation of occupational health and safety programs             | 90,50     |
| 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 Table 4.

| 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.

References
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