RISK MITIGATION FOR THE ADDITION OF PUBLIC ELECTRIC VEHICLE CHARGING STATIONS (SPKLU) AT PLN UP3 BOGOR

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Abstract

Petroleum as a result of current energy production, sooner or later petroleum will run out. For that, besides saving the use of energy from non-renewable natural resources, we must also look for alternative sources of new energy to meet energy needs that cannot be stopped anymore. Renewable electrical energy is energy that has a sustainable process such as solar power, wind power, water currents, geothermal energy, and biomass power. And currently the need for renewable electrical energy is important amidst the issue of global warming.

Keywords: *Natural resources , Energy Alternative , Charging Stations And Global Warming*

1.INTRODUCTION

Electric vehicles or Electric Vehicles (EV) are one of the technologies that are currently developing rapidly and are attracting world attention because they are considered to be an ideal replacement for conventional vehicles based on Internal Combustion Engines (ICE) which have been the main choice for decades or even hundreds of years. This assumption arises because many countries in the world still depend on petroleum, including Indonesia. The presence of electric vehicles is a breath of fresh air for the world community amidst the increasing dependence on petroleum. Currently, the main raw material for batteries is nickel, which is being massively developed by battery and electric vehicle manufacturers around the world.Indonesia is very profitable with the development of electric cars because Indonesia is the country with the largest nickel reserves in the world and the country with the highest nickel production in the world. This golden opportunity is not wasted because in recent years Indonesia has been very active in attracting the attention of global battery and electric vehicle manufacturers to invest by building factories and selling their products in Indonesia.

2.LITERATURE REVIEW

According to the International Organization for Standardization (ISO) 31000:2018, risk is uncertainty that has an impact on objectives (objective centric). The influence of uncertainty is centered on achieving company goals or targets. Influence is defined as a discrepancy (deviation) from something that has been estimated, can be positive and/or negative. While uncertainty is defined as a lack of information (both information about the possibility of its occurrence and its impact) related to an event. Another term for the definition of risk has also been put forward by several experts, namely, Harold Kezner defines risk as activities or factors that if they occur will increase the possibility of not achieving project objectives (triple constraint).

- Theoretical Basis
- Review Of Research Results

The following are some previous studies that are used as references related to the variables that will be studied in this study as follows:

Sadri & Bddi (2023), this study aims to analyze the risk of electricity demand fluctuations at SPKLU using the Conditional Value-at-Risk (CVaR) model approach. This study first applies the CVaR model in the context of electricity demand at SPKLU, opening new insights into risk mitigation for vital infrastructure and offering innovative solutions for reliable and effective demand fluctuation management. These results also provide in-depth insights into risk exposure and enable the development of more informed and strategic risk management strategies.

3.METHOD

3.1.Types Of Research

The study was conducted using a cause-and-effect research method. The cause-and-effect research in question is a study that aims to determine the relationship or influence between two or more variables (Sugiono, 2012). The cause-and-effect study in this study was used to identify and analyze the impact of the project's financial investment analysis on possible sources of risk in the addition of the Public Electric Vehicle Charging Station (SKPLU) of PT PLN UP3 Bogor, identifying and analyzing the impact of risk mitigation on critical risks of management resources.

3.2.Place And Time Of Research

This research was conducted at PT PLN UP3 Bogor. The location of the planned project to be analyzed in this study is located in West Java Province. The time of this research starts from the period of August to December 2024.

3.3.Data Collections Methods

Data is a collection of facts obtained from a measurement. A good decision making is the result of drawing conclusions based on data/facts. The data used is primary data, which is obtained directly through questionnaires and brainstorming.

Table 3.1 Saaty Scale

Scale	Definition of "Importance"
1	Equal Importance
3	Slightly more Importance
5	Materially more impor 34
7	Significantly more Im
9	Absolutely more important (Absolutely more Importance)
2,4,6,8	Undecided between two adjacent values (Compromise values)

Source: (Saaty, 2008)

The weight matrix obtained from the results of the pairwise comparison must have a cardinal and ordinal relationship, as follows:

1. Cardinal relationship: aij. ajk = ajk
2. Ordinal relationship: Ai>Aj>Aj>Ak, then Ai>Ak

The relationship above can be seen from the following two things:

1. By looking at multiplicative preferences
2. By looking at transitive preferences.

In actual conditions, there will be some deviations from the relationship, so that the matrix is not perfectly consistent. This happens because of inconsistencies in a person's preferences.

4.RESULTS AND DISCUSSION

4.1.Overview General SPKLU UP3 Bogor

SPKLU (Public Electric Vehicle Charging Station) is an important infrastructure that supports the acceleration of electric vehicle implementation in Indonesia. SPKLU UP3 Bogor is part of PT PLN (Persero)'s initiative in supporting the battery-based electric vehicle program, which is regulated in Presidential Regulation No. 55 of 2019.

The following is the number of KWH usage of SPKLU UP3 Bogor.

Table 4.1 Number of KWH Usage of SPKLU UP3 Bogor

SPKLU Location	2024							TOTAL
	Jan	Feb	Mar	Apr	May	June	July	
Bogor City Square SPKLU	35.23	41.63		40.05	58.72	47.74	12.93	236.3
BOGOR CITY HALL SPKLU				31	138.08	176.91	161.01	507
HVT Rest Area KM 45 Ciawi Gas Station	910.92	957.03		996.83	1414.02	1339.8	857.59	6476.19
PLN ULP WEST BOGOR SPKLU	60.11	32.04	126.47	122.52	66.17	92.87	33.81	533.99
PLN ULP BOGOR CITY SPKLU	560.75	473.59	384.58	257.13	378.4	597.71	525.69	3177.85
PLN ULP CIPAYUNG SPKLU	201.85	289.79	318.78	881.71	910.36	1237.52	1507.02	5347.03
PLN ULP JASINGA SPKLU	36.65	7.74	11.51	33.26	7.43	33.32	40.93	170.84
PLN ULP LEUWILIANG SPKLU	66.13	71.53	53.22	111.69	121.48	45.09	95.17	564.31
PLN UP3 BOGOR SPKLU	4461.39	7668.17	8196.33	9331.37	9924.13	10033.7	15676.39	65291.48
TOTAL	6333.03	9541.52	9090.89	11805.56	13018.79	13604.66	18910.54	82304.99

Source: PT PLN UP3 Bogor created a time table for the installation of construction targets and their realization

Based on Table 4.1, it can be seen that the amount of KHW usage also continues to increase every month in 2024. The largest amount of KWH usage is also at SPKLU PLN UP3 Bogor with a total of 65291.48 KWH

4.2.Risk Identification

Based on the analysis, interviews and brainstorming were conducted with the person in charge (PIC) or risk owner who has the ability in similar development projects. Previous work experience and documentation helped identify critical risks that contain the risk of three constraints. The risk list was then documented and processed for further analysis in accordance with the research objectives. Based on the identification of the list of risk events and their sources, Questionnaire I (first) was prepared to determine the frequency value of the risk event (Occurrence) and the impact (severity) of the risk on the project. To determine the frequency value (Occurrence) and impact (severity), the criteria in 4.2 were used, adopted from Liu and Yieh-Lin (2012), which were adjusted to the conditions of the SPKLU construction project.

4.3.Risk Identification Analysis

The risk identification analysis stage is carried out using primary data conducted using the questionnaire method. The data population is PLN employees who are involved in the SPKLU project or similar. In this study, data was obtained from a population sample, which was 30 people. The number of samples is considered sufficient for cases where the assumptions used in the research being carried out are correlational or related research to obtain the risks that affect, where a sample size of at least 30 subjects (sample units) is required (Gay & Diehl, 1992).

4.4.Risk Mitigation Design

To obtain mitigation measures related to the four high priority risk events identified above, a focus group discussion (FGD) was conducted and brainstorming was used as the initiation. This activity was carried out for parties who had adequate capabilities in terms of career level and work experience.

5.CONCLUSION AND SUGGESTIONS
5.1.Conclusion
Based on the research results and discussion, the following conclusions can be drawn:
1. There are risk events that can hinder the smooth running of the Addition of Public Electric Vehicle Charging Stations (SPKLU) PLN UP3 Bogor. The following are the risk events that were identified then after measurement and analysis, the priority of risks that must be managed first was obtained, including difficulties in fulfilling materials and late payments to suppliers.

2. The results of risk mitigation showed that Difficulty in Fulfilling Materials was the fourth source of risk events with the risk of material delays being the largest sub-source of risk compared to other sub-sources.

5.2. Suggestions

Based on the research results and discussion, the following conclusions can be drawn:

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