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Technical Literacy and Standardization of Indonesian Electrical Terms Based on SNI (Indonesian National Standard)

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Keywords: *Technical literacy, electrical terminology, SNI standardization, electrical installation, occupational safety.*

Abstract: *The development of electrical systems in Indonesia requires not only technological advancement but also the standardization of technical terminology to improve communication accuracy and occupational safety. This study aimed to analyze the level of technical literacy and the implementation of Indonesian National Standard (SNI)-based electrical terminology among students, workers, and the general public. The research employed a quantitative descriptive method with a survey approach. The population consisted of individuals involved in educational and technical environments, with 53 respondents selected through purposive sampling. Data were collected using an online questionnaire covering understanding of SNI, perceptions of standard terminology, and frequency of using PUIL/SNI documents. The data were analyzed using descriptive statistical techniques through frequency and percentage distribution. The findings revealed that most respondents understood the importance of standardized electrical terminology, particularly regarding cable color uniformity and the replacement of non-standard market terms. However, the use of PUIL/SNI documents was still inconsistent, indicating a gap between awareness and practical implementation. The study concludes that strengthening technical literacy through education, training, and consistent application of SNI terminology is essential to improve technical communication, installation quality, and occupational safety in the electrical sector in Indonesia.*

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Introduction

The development of the electricity system in Indonesia not only requires improvement in the quality of technology, but also uniformity in the use of technical terms used in the planning, installation, and operation of electric power systems. Standards such as the General Requirements for Electrical Installations (PUIL) regulate comprehensively, ranging from the basic principles of installation, safety protection, to safety in electrical installations (SNI PUIL, 2020).

However, in reality, there are still many differences in the use of terms in the field. Some of the terms used by technicians or the public do not always correspond to the terms in the official standards. This can be a misunderstanding that has the potential to cause errors at work and increase the risk of work mistakes to accidents (CDJ Journal, 2023).

In addition, the level of understanding of engineering terms also affects a person's ability to learn and apply electrical science. If one does not understand the term well, then it will be difficult to understand the concept further. Therefore, it is important to improve technical literacy so that the use of terms becomes more appropriate and in accordance with applicable standards (JICN, 2023).

Based on this, this study was conducted to find out how the level of understanding is carried out to find out how the level of understanding and use of the term electricity in Indonesia is based on the Indonesian National Standard (SNI). It is hoped that the research will help improve the use of correct terms so that communication becomes better and work can be done more safely and effectively.

Research Methods

This study employed a quantitative descriptive method with a survey approach to objectively describe population characteristics and phenomena through statistical data processing (Sugiyono, 2021). The research focused on measuring the level of technical literacy and respondents' perceptions regarding the standardization of electrical terminology based on SNI 0225:2020 (PUIL). The study involved 53 respondents selected through purposive sampling, with participants consisting of students, employees, and members of the general public to obtain diverse perspectives related to technical understanding (Siyoto & Sodik, 2022). Primary data were collected using a structured online questionnaire designed as a valid instrument for gathering information on respondents' knowledge and opinions (Arikunto, 2021). The questionnaire covered three main variables: the basic level of understanding of SNI, perceptions of the urgency of using standard technical terms, and the frequency of referring to standard documents (PUIL) in electrical practice. The collected data were analyzed using descriptive statistical techniques through frequency and percentage distributions to facilitate interpretation of the findings and to map the knowledge-action gap in electrical technical literacy in Indonesia (Ghozali, 2021).

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Result and Discussion

Research Results

This research was carried out by distributing questionnaires to the public and students/students to find out the level of understanding of the Indonesian National Standard (SNI) in the field of electricity and the importance of using standard technical terms. Based on the results of data collection, 53 respondents were obtained with the following characteristics:

1. **Respondent Characteristics**

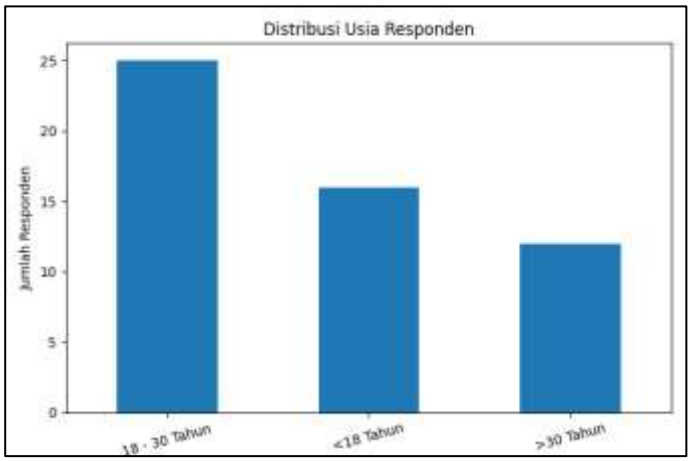

Figure 1. Age distribution of study respondents

Based on respondent age:

- 25 respondents aged 18-30 years,
- 16 respondents aged under 18 years,
- 12 respondents were over 30 years old.

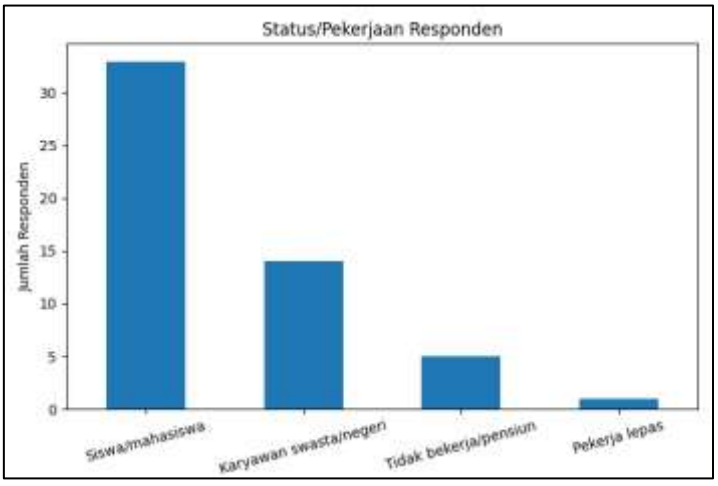

Figure 2. Respondent's employment status

Based on job status:

- 33 Respondents are students,

- 14 respondents are private/public employees,

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- 5 respondents are not working/retired,

- 1 respondent is a freelancer.

b. Level of Understanding of SNI

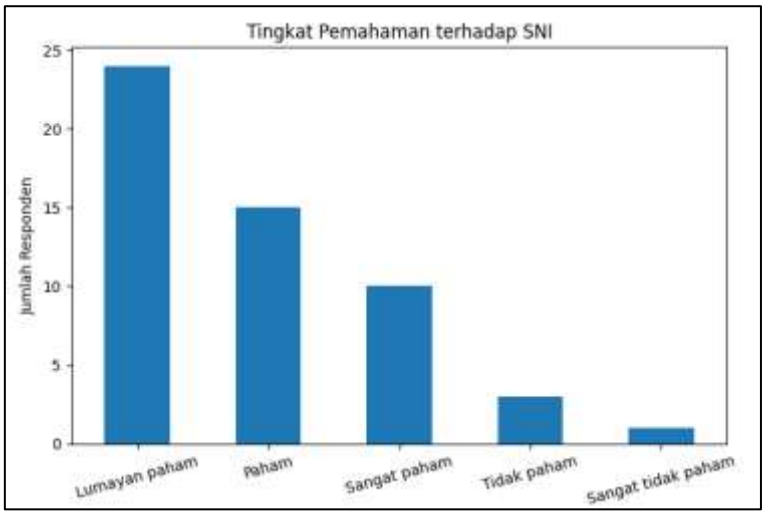

Figure 3. Respondents' level of understanding of SNI

The survey results show that:

- 24 respondents stated that they "understand quite well" about SNI,

- 15 respondents stated "understand".

- 10 respondents said "very understanding"

- 3 respondents stated "don't understand",

- 1 respondent stated "very unintelligible".

The data shows that most of the respondents already have a basic understanding of SNI, but there is still a need to improve technical literacy so that understanding becomes better and more even.

c. **The Importance of Using SNI Standard Terms**

Figure 4. Respondents' assessment of the importance of SNI standard terms

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Ask questions about the importance of using SNI standard terms in engineering reports:

- 20 respondents answered "very important",

- 18 respondents answered "quite important",

- 15 respondents answered "important".

These results show that the majority of respondents are aware of the importance of using standard terms in technical communication.

d. Cable Color Uniformity According to SNI

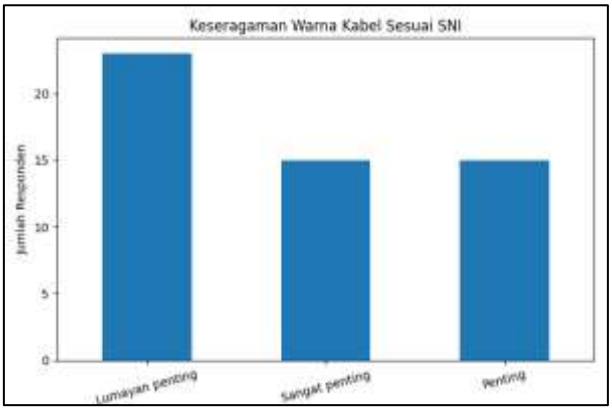

Figure 5. Respondents' assessment of the color uniformity of the cable

On the question of the importance of color uniformity of cables:

- 23 respondents answered "quite important",

- 15 respondents answered "important",

- 15 respondents answered "very important".

This shows that uniformity of installation standards is considered to help the maintenance and repair process of electrical installations in the future.

e. The Importance of Using Standard Terms

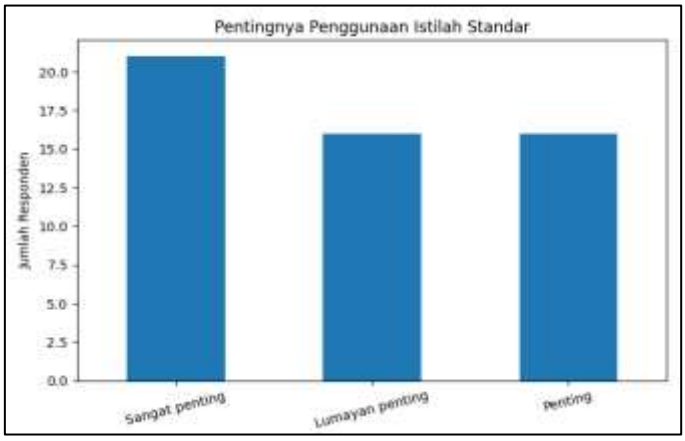

Figure 6. Respondents' assessment of the importance of the term SNI

The results of the survey related to the replacement of market terms with SNI standard terms showed:

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- 21 respondents answered "very important",

- 16 respondents answered "important",

- 16 respondents answered "quite important".

This data shows that there is public awareness about the importance of using the correct terms to improve the security and quality of technical communication.

f. Use of PUIL/SNI Documents

On the question about the frequency of use of PUIL/SNI documents:

- 27 respondents answered "sometimes",

- 11 respondents answered "often",

- 10 respondents answered "very often",

- 5 respondents answered "never".

These results show that the use of standard documents is still not carried out consistently by all respondents.

Discussion

Based on the results of the research that has been presented, there are several crucial points that need to be analyzed more deeply related to technical literacy and standardization of electrical terms in Indonesia.

1. Analysis of Respondents' Technical Awareness and Literacy The survey results show a positive correlation between public awareness and the importance of standardization. The majority of respondents (more than 70%) stated that the use of the standard term SNI is important to very important (Figure 4). This indicates that theoretically, the research subjects understand that a uniform engineering language is the foundation of security. However, if you look at the data on the frequency of use of PUIL/SNI documents, there are still 27 respondents who answered "sometimes" and 5 respondents who "never" (Figure 6). This gap shows the existence of a Knowledge-Action Gap, where respondents know the importance of standards but have not made them the main reference in daily practical activities. Technical literacy includes not only knowledge of terms, but also the habit of referring to valid standard documents.
2. Standardization of Cable Color as Risk Mitigation Data on the importance of cable color uniformity (Figure 5) shows a high level of urgency. In PUIL 2020, the standardization of cable colors (such as the use of blue for neutral, yellow-green for ground, and black/brown/gray for phases) aims to facilitate the identification process during maintenance. The majority of respondents considered this to be "quite important" to "very important" in line with the goal of electricity safety. Inconsistencies in this aspect in the field are often the main cause of work accidents due to misidentification of cables during repairs.

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3. The Urgency of Shifting Market Terms to Standard Terms One of the biggest challenges in electrical technical literacy in Indonesia is the dominance of "market terms" that are not in accordance with SNI. For example, the use of the term "fuse" for MCBs, or "plugs" for sockets/plugs. The survey results in Figure 6 show strong support for replacing the term with standard terms. The use of standard terms as stipulated in SNI 0225:2020 (PUIL) is very important in the preparation of Audit Results Reports (LHP) and other technical documents. Ambiguous communication between technicians and planners can be fatal to the specifications of the materials ordered or installed, ultimately affecting the overall quality of the installation.
4. The Role of Education in Harmonization of Terminology Given that the respondent profile is dominated by students/students (33 people), educational institutions play a vital role as agents of change. Results that show the level of understanding of "moderately understood" (Figure 3) must be improved to "very understanding" through the integration of SNI terms into the curriculum. Technical literacy formed since the education period will create a work culture that complies with standards (compliance) when they enter the industrial world.

Conclusion

Based on the study results, it can be concluded that the standardization of electrical terms based on SNI plays an important role in improving technical communication, academic understanding, work implementation, and occupational safety in the field of electricity. The use of standard terms helps reduce misinterpretation in learning, technical documentation, and electrical operations, while also supporting the development of human resource competence in understanding advancing electrical technology. However, the use of non-standard and foreign terms remains dominant, indicating that the understanding and application of SNI-based terminology in Indonesia still need improvement in both educational and industrial sectors. Therefore, continuous efforts through socialization, education, training, and consistent implementation of SNI standards are necessary to strengthen technical literacy and encourage the use of standardized electrical terminology in Indonesia.

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