

Evaluation of Information System Quality on Electronic Memorandum (NDE) System at PT Telkom Indonesia Tbk. Based on ISO/IEC 25010 Standard Dimension Quality in Use (Characteristics: Efficiency, Satisfaction, and Context Coverage)

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ABSTRACT

The role of information technology greatly influences the performance and results obtained by companies and organizations. At the company there is a written official assignment which is usually called a disposition with an official letter called an official memorandum. Official memorandum are made by authorized officials in the context of carrying out duties, functions and responsibilities of official positions addressed to other officials within the internal scope of the organizational unit. PT Telkom Indonesia has a system for digital office note management under the name Electronic Office memorandum (NDE) System. The NDE system has not been evaluated in terms of system quality with ISO/IEC 25010 standards. ISO/IEC 25010:2011 The Quality in Use dimension was chosen because it has characteristics that can be assessed from the user's perspective. The results showed that the quality of the system has a very high value, in terms of efficiency characteristics of 87.05%, satisfaction characteristics of 83.6%, and context coverage characteristics of 85.9%. With the acquisition of values that have been obtained from users, the authors found several features that users still complained about for improvement in the future. Therefore, the authors through this research provide recommendations for future systems.

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1. INTRODUCTION

Information systems are essential to the successful administration of businesses of all sizes because they provide the kind of data-driven decision-making that increases productivity and profitability [1]. The Company's income and performance are likely to benefit greatly from the availability of information systems that have been broadly adopted across the organization. An information system is defined as "a collection of interconnected computerized resources that together allow for the storage, retrieval, processing, and dissemination of data in response to user requests" [2]. There is no denying that the information system is linked to every activity running in the background of a company's activities and has an impact on many routine tasks. The ability to gather, store, view, and disperse data is essential to the success of any enterprise [3]. It's a shift brought on by the widespread use of digital technology, which has an impact on every facet of our lives as clients, shoppers, and workers. Successful and competitive businesses, increase income, worldwide company management, value addition, and customer service all rely heavily on information systems [4]. Having the right gear and software to back up a task may assist and simplify the process, thanks to advancements in IT [5].

However, a thorough analysis of the system is required to identify problem areas and inform future enhancements. The evaluation of information retrieval methods and systems is a driving factor in the fields of study and practice. [6]. Capwell writes that evaluation can be used to determine achievement of goals, improve program delivery, provide accountability, increase community support, contribute to scientific foundations, and inform policy making. It can be said that if we want to obtain improvement results, an evaluation stage is needed to seek improvement targets from the results of the evaluation carried out.

To carry out the continuity of tasks within the company, both in terms of operations and coordination, a system is needed that supports the continuity of operational activities. In a technical disposition or assigning tasks to the intended party, an official memorandum is required which contains the division of tasks from the managerial party to a party. Currently, information has been managed with computer technology, where previously it was still using conventional methods as well as with the incoming and outgoing mail archive management system [7]. PT Telkom Indonesia has implemented an Electronic Office Memorandum to carry out dispositions, make official notes, and receive warrants. This system can be said to be quite important because it is this system that provides task dispositions among stakeholders. However, it turns out that this system has not been tested for the quality of the ISO/IEC 25010:2011 standard system, so there are still complaints from employees of PT Telkom Indonesia as users who use this system.

The ISO/IEC 25010:2011 standard was chosen because of its characteristics which are very suitable for measuring system quality and can even identify system deficiencies from the user's point of view. This ISO standard is widely used in system development. The NDE

system, which is the main system for task disposition and formal correspondence, has not conducted a system quality assessment based on ISO/IEC 25010:2011, so the quality of the system still does not meet the standards, so many users complain about several features that should help a lot in official correspondence activities. The Quality in Use dimension was chosen because you want to make improvements that make users feel directly the benefits of system improvements because this dimension assesses from the user's point of view. It is necessary to evaluate existing websites so that the content, appearance, and performance of the website can match user needs. Evaluation of the website involves active users who are expected to be able to provide their views on the system which will become research material to produce system evaluations and recommendations.

Quality in Use Dimension in ISO/IEC 25010:2011 divided into 5 characteristics, they are effectiveness, efficiency, satisfaction, freedom from risk, and context coverage. According to Laudon, an efficient system will bring many benefits, namely increased productivity, reduced operational costs, and lower impact on the environment. This is in line with the meaning of an efficient system itself, namely the ability to achieve goals with minimal resources with maximum results. In addition, Laudon also stated that fulfilling user satisfaction in using the system has several benefits, namely increased productivity, increased business effectiveness, reduced training costs, and higher usage. This certainly brings positive things to the continuity of the Company's business. In evaluating system quality, ISO/IEC 25010:2011 lists efficiency, satisfaction, and context coverage in the characteristics that measure system quality. The author decided to conduct research on the NDE system with the characteristics of efficiency, satisfaction, and context coverage because these characteristics, if they have high quality, will have a positive impact on the company as already mentioned.

2. RESEARCH METHOD

2.1. Development of a Conceptual Model

The conceptual model used in scientific research is a visual representation that includes ideas, concepts, or hypotheses proposed by researchers as a basis or frame of reference in explaining certain phenomena or problems. Conceptual models can be in the form of graphs, diagrams, or images that show the relationship between variables, factors, or important elements in a phenomenon or system being studied. These models are schematic descriptions of a system, theory, or phenomenon originating from a source to form a model [8]. More clearly, conceptual models are used to clarify understanding of the problem object being studied, facilitate analytical thinking, and possibly develop hypotheses or theories to be tested during research. In scientific research, a conceptual model is an important element that helps design research well and can support researchers in developing a strong framework for understanding the phenomenon being studied. In the concept of information

systems, a conceptual model is an arrangement that forms a framework used to understand, implement, and evaluate Information Systems with research that combines aspects of behavioral science and design science paradigm by Alan Hevner. The reference used for the description of this conceptual model is found in the book Design Research in Information Systems. The following is an image of the conceptual model used in this study:

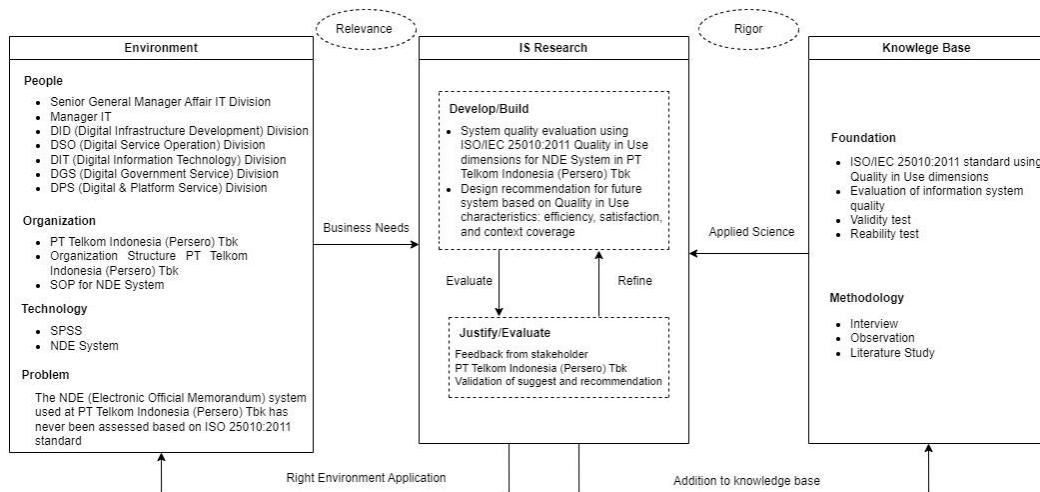


Figure 1. Conceptual Model

2.2 Preparation Phase

In the preparatory phase which is the initial stage in conducting previous research with exploring study literature in order to have a strong foundation regarding theory. Next determine the object to be analysed. Furthermore, the researchers conducted a discussion about the system used in the company that needs to be evaluated and what standards have been used by the company to evaluate the system. It was found that the NDE system had never been evaluated from the user's point of view and the researchers proposed a study of the NDE system which would be evaluated using ISO/IEC 25010:2011 on the Quality in Use dimension which focuses on the quality of the system from the user's point of view.

2.3 Collecting Data Phase

In research, there is generally data that is processed in order to produce a result from the stages of the research carried out. In the process, the authors use two types of data, namely primary data and secondary data according to the two divisions of data according to how to obtain them [9].

2.3.1 Primary data

Primary sources include corporate records, yearly reports found on the firm's website, data collected through questionnaires, and interviews with key stakeholders. In this case, the information comes straight from the item to the investigator. Sources that supply information to data collectors directly are called primary sources [10]. Researchers used a number of strategies, including those listed below, to acquire primary data from which to draw the conclusions presented here. Both quantitative and qualitative methods were employed by the researchers. To gather data for analysis, quantitative approaches rely on numerical values derived from the subject's observations of things. The goal of quantitative research is to gather data that can be used to either confirm or deny a hypothesis via the use of numerical and statistical analysis [11]. The last step in getting the required result is to use mathematical techniques to examine the acquired numerical data. Quantitative techniques are approaches to studying society by asking targeted questions designed to elicit numerical data [12]. In order to gather information, this research employs the quantitative strategy of using a questionnaire. When gathering extensive information, a questionnaire is the tool of choice. The key is to provide respondents a set of written questions to answer on their experiences with the several factors under study [14];[15]. Because the questionnaire is a series of written questions or comments directed at the responder and filled out by the respondent based on his or her own viewpoint and replies, it is also referred to as a written interview. According to Creswell [15], before a questionnaire is issued, various elements must be taken into account, including the goal of the questionnaire study; the target, population, and sample of respondents. Users of the NDE system at PT Telkom Indonesia Bandung's Graha Merah Putih Jalan Japati are the intended respondents for this survey, as measured against the criteria of the Quality in Use Dimension. The researcher, at the outset of a quantitative research procedure, must define both the population and the sample size [16]. The sample is representative of the whole [17]. A study's population is a way to characterize its massive and detailed data set [18]. The selection of a study's sample is made by the researchers themselves. The data is collected using a systematic random sampling method. The odds of being picked out of the population are the same for every individual. When the highlighted population is consistent, this sampling technique is helpful [19]. For this study's population, the minimal number of samples needed to achieve statistical significance was calculated using the Slovin formula, as shown in Equation 1.

$$n = \frac{N}{1+N(e)^2} \quad (1)$$

Information:

n = Sample

N = Sample Size

e = Error rate (using 10% so the value 0.10)

The following is a calculation of the sample data collection technique in this study:

$$n = \frac{255}{1 + 255 (0.1)^2}$$

$$n = \frac{255}{3,55}$$

$$n = 71, 899$$

This study's sample size has been rounded up to 72 to be on the safe side. This study's total population (N) included 255 full-time workers at PT Telkom Indonesia Bandung's Graha Merah Putih office on Jalan Japati. A 10% margin of error is used. The questionnaire contains assertions about the NDE system, and responders will rate how true each statement is using a Likert scale. The Likert scale is used as the metric of choice. The Likert scale is a tool for statistical analysis that may be used to assess how people feel about various issues. Sugiyono proposes a 5-point scale, from "strongly disagree" to "neither agree nor disagree" This study used a strategy for conducting in-depth interviews known as semi-structured interviews. When doing qualitative research, semi-structured interviews far outperform other interview formats because they let the researcher to get detailed information and evidence from the respondent without distracting from the study's central question or purpose [20]. Numerous possibilities for researchers to benefit from adaptability and versatility.

1) Secondary Data

Secondary data is taken from additional references published by other people in the form of journals or books that enrich knowledge and strengthen data.

2) Mixed Method Research

Mixed methods research takes into account the evidence of both the researchers and the people being studied in order to provide a more complete picture of the treatments and their effects. [21]. Due to the need for quantitative and qualitative information to obtain data and produce an appropriate evaluation, it is necessary in this study to apply a method that combines quantitative methods and qualitative methods. Mixed methods were chosen because they fit the needs of the implementation of quantitative methods and qualitative methods. The chosen type of mixed methods is a sequential explanatory strategy. The sequential explanatory strategy was chosen because the stages are in accordance with the needs of data collection for this study.

2.4 Data Processing

The next phase in the research process is data processing, during which the researcher analyzes the data gathered (both primary and secondary data) to assess the system's quality from the user's point of view in accordance with the ISO 25010 standard's Quality in Use dimensions. Data analysis is performed using the user's completed questionnaire. Research tools may be put through a battery of tests. A questionnaire's credibility may be evaluated

with the use of a validity test [22]. The reliability of the questionnaire was evaluated by means of this procedure [23]. If the research instrument produces reliable results, we may infer that the instrument is legitimate. A validity value is used to assess the reliability of a testing instrument. The statistical software package SPSS may be used to calculate the Pearson Product Moment Coefficient of Correlation, which provides a measure of validity. The processed outcomes of the computations will be compared to Rtable. There are factors to consider while making a call. A legitimate questionnaire has an r-count greater than an r-table. However, if the r-count does not match the r-table, then the survey cannot be used. The purpose of the reliability test is to establish the dependability of a particular question in estimating a target variable [24]. The reliability of a research instrument increases as the consistency of its numerical findings increases. The Alpha Cronbach method was employed to check the steadiness of the survey. Analyzing the variables, dimensions, and items utilized in the items used, descriptive analysis describes the frequency with which certain responses were given. Statistical analysis and inference rely on descriptive data, which is defined as "data that is interpreted to provide general and specific information" [25].

The following are the steps used in conducting descriptive analysis:

- 1) Total Score: Is the total number of respondents' answers multiplied by the weight of each answer choice (Likert scale score) with the following calculation on equation 2:

$$TS = (\sum STS \times 1) + (\sum TS \times 2) + (\sum N \times 3) + (\sum S \times 4) + (\sum SS \times 5) \quad (2)$$

- 2) Absolute Score: Is the result of multiplying the maximum score weight 5 multiplied by the number of respondents [26] with the following calculation on equation 3:

$$\text{Absolute Score} = (5 \times N) \quad (3)$$

- 3) Respondent's answer range percentage calculation as follows:

- a. The range of answers (in percentage form) is as follows on equation 4:

$$\text{Answer Range} = \frac{\text{Highest Percentage} - \text{Lowest Percentage}}{5} \quad (4)$$

$$\begin{aligned} \text{Answer Range} &= \frac{(100\% - 0\%)}{5} \\ &= 20.0\% \end{aligned}$$

It can be concluded that the range of respondents' answers will be divided every 20.0%.

- 4) There is a formula for calculating respondents' answers by dividing the total score by the absolute score multiplied by one hundred percent, which is as follows on equation 5:

$$\text{Index} = \frac{\text{Total Score}}{\text{Absolute Score}} \times 100\% \quad (5)$$

3. RESULTS AND DISCUSSION

3.1. Validity Testing

Testing the instrument's validity in a given data set is what the validity test is all about [27]. Researchers may gauge the effectiveness of their questionnaire to obtain data from respondents by conducting a validity test. Using SPSS, we may determine whether the questionnaire's Pearson correlation value (R count) is higher or lower than the corresponding number in the R table. Adjusting the df value in the r table in accordance with the significance utilized is how we determine the r table's value in our study. If there are 72 people in the sample, the df value is 70 since $n-2$ is the number of samples minus 2. The r table value is 0.231 at a 5% 2-tailed significance level and a $df = 70$. The instrument in this research questionnaire is considered legitimate if and only if $R \text{ count} > R \text{ table}$. If, however, $R \text{ count} < R \text{ table}$, then this research questionnaire cannot be considered a reliable instrument.

Table 1. Validity Test Result

Characteristics	Variable Code	R Count Value	R Count Table	Information
Efficiency	B1	0.718	0.231	Valid
	B2	0.852	0.231	Valid
	B3	0.749	0.231	Valid
	B4	0.641	0.231	Valid
	B5	0.614	0.231	Valid
Satisfaction	C1	0.852	0.231	Valid
	C2	0.799	0.231	Valid
	C3	0.826	0.231	Valid
	C4	0.734	0.231	Valid
	C5	0.759	0.231	Valid
	C6	0.770	0.231	Valid
	C7	0.846	0.231	Valid
	C8	0.908	0.231	Valid
	C9	0.887	0.231	Valid
	C10	0.835	0.231	Valid
	C11	0.872	0.231	Valid
	C12	0.246	0.231	Valid
	C13	0.838	0.231	Valid
	C14	0.799	0.231	Valid
Context Coverage	E1	0.901	0.231	Valid
	E2	0.905	0.231	Valid
	E3	0.858	0.231	Valid
Valid				

It was concluded that the results of the R count of each instrument on the characteristics of the context coverage were at a higher number than the r table. It can be said that for all instruments are considered valid.

3.2 Reliability Testing

Researchers undertake reliability tests to make sure their findings are accurate. The instrument employed is reliable for its intended use and yields comparable results. Cronbach's alpha is the reliability test used. If the value of Cronbach's Alpha (α) is more than 0.60 [28], we may say that the statement is credible.

Table 2. Reliability Test Result

Characteristics	Variable Code	Cronbach's Alpha Reliability Statistics	Cronbach's Alpha Value	Information
Efficiency	B1	0.747	0.690	Reliable
	B2	0.747	0.615	Reliable
	B3	0.747	0.725	Reliable
	B4	0.747	0.717	Reliable
	B5	0.747	0.753	Reliable
Satisfaction	C1	0.940	0.933	Reliable
	C2	0.940	0.934	Reliable
	C3	0.940	0.933	Reliable
	C4	0.940	0.937	Reliable
	C5	0.940	0.935	Reliable
	C6	0.940	0.935	Reliable
	C7	0.940	0.932	Reliable
	C8	0.940	0.931	Reliable
	C9	0.940	0.932	Reliable
	C10	0.940	0.933	Reliable
	C11	0.940	0.932	Reliable
	C12	0.940	0.961	Reliable
	C13	0.940	0.933	Reliable
	C14	0.940	0.934	Reliable
Context Coverage	E1	0.857	0.764	Reliable
	E2	0.857	0.751	Reliable
	E3	0.857	0.893	Reliable
Reliable				

Based on the table above, Cronbach's alpha value of each instrument is greater than 0.600 which means that each questionnaire instrument has good reliability in terms of context coverage characteristics.

3.3 Descriptive Analysis

Descriptive analysis is an explanation of the analysis of the description of the frequency of respondents' answers discussed from the variables, dimensions, and items used in the

items used. Descriptive data is data that is interpreted to provide general and specific information to facilitate statistical analysis and inference to get the percentage value from the data.

1) Efficiency

Based on the results of the questionnaire for the efficiency instrument, a total score of 1567 was obtained and an absolute score of 1800, and for calculating the percentage is 87.05% or in a very high range where PT Telkom Indonesia's NDE system according to the user's perspective is already efficient so that it can be said to be able to provide the results requested by users quickly, efficiently, and save resources.

2) Satisfaction

Based on the results of the questionnaire for instrument satisfaction, a total score of 4217 was obtained and an absolute score of 5040, and for calculating the percentage is were 83.6% or in a very high range where PT Telkom Indonesia's NDE system according to the user's perspective already provides comfort in using the system so that users feel satisfied with the performance to the results produced by NDE system.

3) Context Coverage

Based on the results of the questionnaire for instrument satisfaction, a total score of 928 was obtained and an absolute score of 1080, and for calculating the percentage is were 85.9% or in a very high range where PT Telkom Indonesia's NDE system according to the user's perspective was able to support carrying out mailing operations even in different conditions.

3.4 Evaluation Results

- 1) The features in the text editor are still inadequate so that it cannot maximize the preparation of neat official notes.
- 2) There is no letter template according to the type of letter so the user must first view the letter archive so that they can find out the appropriate letter arrangement.
- 3) There are no notifications to personal contacts such as the WhatsApp or Telegram application if there is an incoming official note or letter that needs approval.
- 4) The system is down due to many factors and there is a possibility that it comes from external factors.
- 5) The FAQ feature is located on a separate menu, namely the FAQ menu.
- 6) When you are drafting a letter and then opening the FAQ menu, the draft letter is not saved and will immediately display the FAQ menu.
- 7) When you encounter a problem with a menu on the NDE system and open the FAQ to find a solution, the currently open menu will close and be replaced by the FAQ menu opening.

- 8) Users feel that the NDE system does not yet have many of the features or functions they want, but in fact there are several features that are already available but are not known to users.
- 9) The autosave feature already exists but the time interval is once every 20 minutes for automatic mail storage. This feature is only known by the IT division. In addition, there is no marker that the letter is automatically saved.
- 10) Text editors on NDE systems only have simple editing tools. At the beginning of the development of a text editor, editing tools were only conceptualized for writing letters.
- 11) The NDE system does not provide guidelines or templates for making certain types of letters.

3.5 Recommendations

- 1) System checks are routinely carried out.
- 2) The FAQ feature should be placed in a place that is easily accessible from any menu so that when users experience problems they can access it immediately without having to go to another menu.
- 3) The FAQ feature is made into a pop-up when clicked. So it doesn't make the previously open menu have to be closed and even makes the draft letter not saved.
- 4) In the system display, when the user is drafting a letter, it is necessary to make a sign or write information that the draft letter is saved automatically so that there is interaction from the system which makes the user know that he draft letter has been saved automatically.
- 5) It is necessary to hold a thorough outreach to all divisions that use the NDE system to minimize user ignorance of the existence of a feature in the NDE system.
- 6) The autosave time interval on the system needs to be accelerated because in the existing conditions where the 20 minute time interval is too long and it is very likely that problems will occur before the time interval is finished.
- 7) The features in the text editor are enriched with other editing tools so that writing letters can be neater and in accordance with writing rules.
- 8) A feature was created to select a letter template and be able to make letters directly on the template so as to minimize formatting errors for certain types of letters and minimize the time for making letters.

4. CONCLUSION

Based on the results of research conducted by researchers regarding the evaluation of the quality of the NDE system using the ISO 25010 standard at PT Telkom Indonesia (Persero) Tbk, several conclusions were found that Based on the results of the descriptive analysis, the assessment of the quality of the NDE system is based on the three

characteristics of the Quality in Use dimension, namely the characteristics of efficiency, satisfaction, and context coverage. Efficiency has the highest percentage, namely 87.05%, then the percentage of context coverage is 86.90%, and the lowest percentage of the three is satisfaction, namely 83.60%. On the calculation scale, the percentages of the three are in the very high category, which means that the system is running well as it should and sufficiently meets the needs and expectations of users. However, in some features there are evaluation results which need to be improved and need to be added. This is based on the low value of these features and functions which are reflected in the low value of the instrument that describes these features. From the evaluation results obtained from both quantitative and qualitative data, it shows that there is a need for additional functions for several features, namely the text editor feature, FAQ, and the notification feature. In addition, the evaluation results also indicate the need for additional features, namely the letter template feature. The NDE system does not meet the ISO/IEC 25010 standard on the characteristics of efficiency, effectiveness, and scope of context because there are still deficiencies that are felt by users so that there is a need for improvements to the system. Recommendations related to improving the quality of the system in the future are made based on the results of analysis of quantitative and qualitative data which are mapped according to the characteristics of efficiency, satisfaction, and context coverage contained in ISO/IEC 250101, the dimension of Quality in Use.

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