Analysis of e-learning user satisfaction itb stikom bali using end user computing satisfaction (eucs) method

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Abstract. The development of internet technology has spurred the emergence of various new applications that support activities in various fields, including in the field of education such as e-learning. ITB STIKOM Bali has its own developed e-learning system. In e-learning, there are several navigation menus such as course information, meeting descriptions, file uploads, discussion activities, and others that are prepared for students as users. This study aims to determine the level of satisfaction of e-learning users. The level of satisfaction was measured using the End User Computing Satisfaction (EUCS) method involving 177 students as respondents who were randomly selected. The data collection method in this study used a questionnaire. From the results of the analysis of the data that has been collected, the following results are obtained: Based on the results of the calculation of the average level of satisfaction, the value is 4.54 on the content variable, the accuracy variable is 4.48, the shape variable is 4.53, on the timeliness variable, the score was 4.5, the user convenience variable scored 4.51, and when combined with the satisfaction level according to Kaplan and Norton, it could be concluded that the level of user satisfaction with e-learning was included in the very satisfied category.

1. Introduction
Globalization brings a very broad impact, including in education. One of the impacts of globalization in education which is currently developing is the use of e-learning in the learning process. Internet technology has triggered the emergence of various new applications, including in the field of education, known as E-learning, which can be accessed from anywhere and anytime. The application of information technology is interesting to be studied because technology is not only related to the technology itself, but also with users, working organizations of institutions that use the behavior of the users, such as whether users can use technology, how users respond to the technology used, are users satisfied in using these technologies, and so on. According to Kotler, satisfaction is a feeling of pleasure or disappointment that arises when comparing performance or a product that is thought of with the performance or the results it expects[1]. If the performance exceeds what is expected, the consumer will feel very satisfied. ITB STIKOM Bali is one of the universities in Bali. As a university that has fairly good governance, it strives to meet the needs of its customers, in this case, students, especially in information services via the internet. ITB STIKOM Bali has e-learning that can be accessed by students via the page www.elearning.stikom-bali.ac.id which on the site contains course information, lecture information, uploading assignment files/quizzes, and other activities that support online learning. This e-learning is specifically designed by the university in order to provide more advanced services to students who are increasingly familiar with information technology, especially the internet. The problem of the level of
user satisfaction is very important because it relates to the goals set as it desired by the campus in creating a web portal. One of the goals of the website e-learning can be known in general, namely disseminating information related to academic processes and global activities, up to date and accurately to users, especially students. Related to the things that have been stated above, this research aimed at measuring the satisfaction level e-learning users at ITB STIKOM Bali in supporting the teaching and learning process. There are several ways to measure the level of user satisfaction with information systems. One of them is by using the usage satisfaction analysis method for the e-learning portal using the End User Computing Satisfaction (EUCS) method [2]. It is a method that uses the five components of content, accuracy, format, ease of use, timeliness. It is used to evaluate various operational procedures in an organization, company, related institution, or government agency. The results of the analysis are targeted in the form of statements assessing the advantages and disadvantages of the pros and cons of using a service. Based on the research at ITB STIKOM Bali, the researchers were interested in conducting research related to the level of satisfaction in using e-learning for students who are involved in the learning process. The selection of the EUCS method was intended to analyze the level of user satisfaction of the e-learning system based on the 5 components contained in EUCS. Based on the above discussion, the authors are interested in conducting research so that the process runs smoothly by paying attention to the description. From the results of the analysis, recommendations were given as consideration material to improve the quality of educational technology services, namely e-learning.

2. Literature Review
The current application has proven to be not only a trend in the world of education, e-learning has become a necessity that support the implementation of learning in various educational institutions. E-learning enables the implementation of learning activities anytime and anywhere. It has a very broad definition put forward by experts. Among them, the meaning of e-learning is as follows: according to Harley, e-learning is a type of teaching learning that allows teaching materials to be delivered to students by using the internet or other computer network media [3]. In addition, Dong stated that e-learning is an asynchronous learning activities through computer electronic devices that obtain learning materials according to their needs [4]. End User Computing Satisfaction (EUCS) as an effective attitude towards certain computer applications by someone who directly interacts with the application [5]. Meanwhile, another definition of end user computing satisfaction is a form of an overall evaluation of information system users based on their experience in using the system. The method for measuring the level of satisfaction is one form of evaluation of information systems. Information systems in an organization can be relied upon if they have excellent quality and can provide satisfaction to users of the system. User satisfaction, provides good acceptance of an information system used in an organization. User satisfaction is one indicator of the successful information systems’ development. User satisfaction is one of the important indicators in the End User Computing Satisfaction (EUCS) model. This model uses a questionnaire of 618 respondents to examine user satisfaction by modifying the instrument and factor analysis. The research resulted in 12 items measuring user satisfaction on the quality of the system and information obtained from end users of information systems. The 12 items produced are divided into five components, namely content, accuracy, format, ease of use, timeliness. Selection method End User Computing Satisfaction (EUCS) used by the researchers to analyze the satisfaction of users of e-learning among the ITB STIKOM Bali user. The level of user satisfaction is also a measure of the successful implementation of a system with user satisfaction which will arise the acceptance of the information system e-learning.

To determine the level of user satisfaction, the researcher used the theory set by Kaplan and Norton with the following levels of satisfaction [6].

\[ RK = \frac{JSK}{JK} \]  

Information:
- \( RK \) = Average Satisfaction
JSK = Total Score Questionnaires
JK = Number of Questionnaires

The level of satisfaction in this study uses the formula of Kaplan and Norton with the following levels:

Table 1. Average Satisfaction Kaplan and Norton.

| Range value | Information    |
|-------------|----------------|
| 1-1.79      | Very Dissatisfied |
| 1.8-2.59    | Dissatisfied   |
| 2.6-3.39    | Doubt         |
| 3.4-4.91    | Satisfied      |
| 4.92-5      | Very Satisfied |

3. Research Method

3.1 Sampling technique
The sampling technique used in this study is the probability sampling technique or random sampling, these techniques include simple random, proportionate stratified random, disproportionate stratified random, and area random. The sampling technique used is simple random sampling, in which the sample were taken randomly from a population, without paying attention to the strata in it. This sampling technique is considered in accordance with the type of research taken because probability sampling is a research technique that provides equal opportunities for each element or member of the population to be selected as the research sample. According to the Slovin formula, with a population of 319 members who are active students of 2016, 2017, and 2018, at a 5% error level, a sample of 177 people was obtained.

3.2 Data Collection Techniques
The questionnaire is a list of questions for data collection in research. The method used can be in the form of written material or orally. In the verbal implementation, the questions were read out to the respondent to be answered by the respondent and recorded by the data collector. Written questionnaires were sent directly to respondents. Once collected, the answers are sent back to the data collector or to the researcher. This method is called a questionnaire or enquete. One of the advantages of this method is that it can obtain a lot of data in a shorter time. The use of questionnaires with questionnaire techniques in qualitative research is often based on the reason that researchers want to get an outline of the data quickly. Therefore, the type of questionnaire with an open-ended questionnaire is often used. It means that in each list of questions an alternative answer was given, but at the bottom there is an empty space that allowed the informant to add something. In this study, the authors used questionnaire EUCS Method [7].

3.3 Descriptive Statistical Analysis
The data analysis used was descriptive analysis, a method carried out by collecting data and information relevant to the research problem. Furthermore, this analysis was to answer how the respondents' research on the e-learning user satisfaction analysis uses the method end user computing satisfaction. This descriptive research is research conducted on independent variables, namely without making comparisons or combining with other variables. Tabular and percentage journals were used in the descriptive analysis. Descriptive statistic is a part of statistics that studies how to collect and present data so that it is easy to understand. Descriptive statistics only describe information or provide information about data, situation, or phenomenon. Descriptive statistics only serve to describe a research condition, symptom, or problem.
4. Main Result
The obtained result, later analyzed by the researcher. The data obtained included the results of a questionnaire that had been distributed to 177 respondents. Data general overview of respondents by gender, respondent data based course of study, and the data of respondents based on force. The results of the analysis in this section discusses the results of the analysis of the data that have been obtained in studies conducted on e-learning ITB STIKOM Bali using the method of end user computing satisfaction with questionnaire technique. The aspects analyzed in this study are user satisfaction from the variable content, accuracy, format, ease of use, and the timeliness of the questionnaires distributed to respondents. To determine the level of satisfaction, the researcher used a theory of satisfaction level category by Kaplan and Norton.

\[
\text{Table 2. Respondents Based on Gender.}
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| Gender     | Number Respondents | Percentage of Respondents (%) |
|------------|--------------------|-------------------------------|
| Male       | 112 students       | 63.3                          |
| Female     | 65 students        | 36.7                          |
| Total      | 177 students       | 100                           |

Based on Table 2, the number of respondents based on gender shows that most of respondents who accessed or used e-learning based on gender were male as many as 112 people with a percentage of 63.3%. Among all of the respondents, the male respondents accessed the e-learning the most.

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\text{Table 3. Respondents by Study Program.}
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| Study Program         | Number Respondents | Percentage(%) |
|-----------------------|--------------------|---------------|
| S1-System information | 115 students       | 65            |
| S1-System Computer    | 62 students        | 35            |
| Total                 | 177 students       | 100           |

Table 3 showed the percentage of respondents based on the study program with a total of 177 people who accessed e-learning. From the total users, Information System Study Program is program with the highest number of e-learning users, that is 115 students, with percentage 65%. The other 35% of the respondents came from the Computer System Study Program, with 62 students.

\[
\text{Table 4. Respondents by Force.}
\]

| Student generation | Number Respondents | Percentage(%) |
|--------------------|--------------------|---------------|
| 2016               | 10 students        | 5.6           |
| 2017               | 48 students        | 27.1          |
| 2018               | 64 students        | 36.2          |
| 2019               | 55 students        | 31.1          |
| Total              | 177 students       | 100           |
Table 4 showed the amount of respondents based on three generation used/accessed e-learning. Based on the table, the most e-learning user were from 2018 generation, a total of 64 students or 36.2%. It was followed by the class of 2019, with 55 students or 31.1%, class of 2017 with 48 students contributed 27.1% of the total respondent, and class 2016, with 10 people or e 5.6%. Based on the results of questionnaires distribution to the 177 e-learning users, a Likert scale was used to determine the level of satisfaction of e-learning users based on variables content according to the choice of answers and scores. Further, to get the average level of user satisfaction e-learning using the Kaplan and Norton formula. The tabulation results of the variable questionnaire content can be seen in Table 5.

**Table 5. The results of the content variable analysis.**

| Information         | C1  | C2  | C3  | C4  | Σ     |
|---------------------|-----|-----|-----|-----|-------|
| Very Satisfied      | 95  | 106 | 97  | 98  | 396   |
| Satisfied           | 82  | 70  | 78  | 73  | 303   |
| Doubt               | 0   | 1   | 2   | 6   | 9     |
| Dissatisfied        | 0   | 0   | 0   | 0   | 0     |
| Very Dissatisfied   | 0   | 0   | 0   | 0   | 0     |

\[
R_K = \frac{(5 \times 396) + (4 \times 303) + (3 \times 9) + (2 \times 0) + (1 \times 0)}{708}
\]

\[
R_K = \frac{1980 + 1212 + 27 + 0 + 0}{708}
\]

\[
R_K = \frac{3219}{708} = 4.54
\]

In the content variable, a score of 4.54 was obtained from the average calculation of the level of satisfaction of e-learning users. Based on the Kaplan and Norton formula, the level of user satisfaction with the use of e-learning is in the very satisfied category.

**Table 6. The results of the accuracy variable analysis.**

| Information       | Statement         | Σ   |
|-------------------|-------------------|-----|
|                   | A1    | A2    |     |
| Very Satisfied    | 80    | 95    | 175 |
| Satisfied         | 93    | 82    | 175 |
| Doubt             | 4     | 0     | 4   |
| Dissatisfied      | 0     | 0     | 0   |
| Very Dissatisfied | 0     | 0     | 0   |

\[
R_K = \frac{(5 \times 175) + (4 \times 175) + (3 \times 4) + (2 \times 0) + (1 \times 0)}{354}
\]
\[ RK = \frac{875 + 700 + 12 + 0 + 0}{354} \]
\[ RK = \frac{1587}{354} = 4.48 \]

On the accuracy variable, a score of 4.48 was obtained from the calculation of the average level of e-learning user satisfaction. Based on the Kaplan and Norton formula, the level of user satisfaction with the use of e-learning is in the very satisfied category.

Table 7. The results of the format variable analysis.

| Information   | Statement | F1 | F2 | Σ    |
|---------------|-----------|----|----|------|
| Very Satisfied| 108       | 84 |    | 192  |
| Satisfied     | 69        | 90 |    | 159  |
| Doubt         | 0         | 3  |    | 3    |
| Dissatisfied  | 0         | 0  |    | 0    |
| Very Dissatisfied | 0   | 0  |    | 0    |

\[ RK = \frac{(5 \times 192) + (4 \times 159) + (3 \times 3) + (2 \times 0) + (1 \times 0)}{354} \]
\[ RK = \frac{960 + 636 + 9 + 0 + 0}{354} \]
\[ RK = \frac{1605}{354} = 4.53 \]

In the format variable, a score of 4.53 was obtained from the calculation of the average level of satisfaction of e-learning users. Based on the Kaplan and Norton formula, the level of user satisfaction with the use of e-learning is in the very satisfied category.

Table 8. The results of the timeliness variable analysis.

| Information   | Statement | T1 | T2 | Σ    |
|---------------|-----------|----|----|------|
| Very Satisfied| 104       | 85 |    | 189  |
| Satisfied     | 69        | 84 |    | 153  |
| Doubt         | 4         | 8  |    | 12   |
| Dissatisfied  | 0         | 0  |    | 0    |
| Very Dissatisfied | 0   | 0  |    | 0    |

\[ RK = \frac{(5 \times 189) + (4 \times 153) + (3 \times 12) + (2 \times 0) + (1 \times 0)}{354} \]
\[ RK = \frac{945 + 612 + 36 + 0 + 0}{354} \]
\[ RK = \frac{1593}{354} = 4.5 \]

On the timeliness variable obtained a score of 4.5 obtained from the average calculation of the level of satisfaction of e-learning users. Based on the Kaplan and Norton formula, the level of user satisfaction with the use of e-learning is in the very satisfied category.

### Table 9. The results of the Ease of Use variable analysis.

| Information           | Statement | E1 | E2 | \( \Sigma \) |
|-----------------------|-----------|----|----|-------------|
| Very Satisfied        |           | 82 | 108| 190         |
| Satisfied             |           | 87 | 69 | 156         |
| Doubt                 |           | 8  | 0  | 8           |
| Dissatisfied          |           | 0  | 0  | 0           |
| Very Dissatisfied     |           | 0  | 0  | 0           |

\[ RK = \frac{(5\times190) + (4\times156) + (3\times8) + (2\times0) + (1\times0)}{354} \]
\[ RK = \frac{950 + 624 + 24 + 0 + 0}{354} \]
\[ RK = \frac{1598}{354} = 4.51 \]

In the ease of use variable, a score of 4.51 was obtained from the calculation of the average level of e-learning user satisfaction. Based on the Kaplan and Norton formula, the level of user satisfaction with the use of e-learning is in the very satisfied category.

### 5. Conclusion

Based on the obtained result and user satisfaction analysis using EUCS, it was found that the score of the content variable was 4.54, the score of accuracy variable was 4.48, the score of format variable was 4.53, the score of timeliness variable was 4.5, and the score of ease of use variable was 4.51.

From the satisfaction analysis of the e-learning users, it is known that the system has been able to meet the satisfaction of its users. Therefore, the use of e-learning is really recommended by the researcher for the better teaching and learning process in ITB STIKOM Bali. Besides, e-learning is an alternative interactive learning media that develop active, independent, and creative attitudes of students, so it is better if in the future this learning media can be used for any theoretical or practical course material.

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