Measurement of user satisfaction for web-base academic information system using end-user computing satisfaction method

Purwanto* and Deden Hedin P.B.
Al-Kamal Institute of Science and Technology
Jl. Raya Alkamal No. Kedoya Selatan, Kebon Jeruk
Jakarta Barat, Indonesia

*Email: pungpurwanto@gmail.com

Abstract. Academic Information System is a system that collects and processes data into useful information for users. This research aims to determine the level of user satisfaction of Web-Based Academic Information Systems at Al-Kamal Institute of Science and Technology. The research model uses quantitative by using a descriptive approach. The measuring of user satisfaction uses an End-User Computing Satisfaction (EUCS) method. The variables in this research are accuracy, content, format, timeliness, and ease of use. Data collection uses a questionnaire by 12 questions with the sum of data samples are 135 respondents. The results show that the overall level of user satisfaction averaged 2.99 at level 3 (neutral). The variables considered good are timeliness and ease of use, while for content, format, and accuracy still need improvement and redevelopment. The results of this research can be used as an evaluation material to develop the academic information systems in the future.

1. Introduction
Information Technology (IT) is one of the supporting tools for college activities. The use of IT is usually seen as a positive step to improve the business processes of a college. Therefore, the success of implementing IT is very dependent on human resources (HR). This factor is very important because the readiness of implementing IT has a big influence in determining the satisfaction of the users and the success of it [5].

Academic Information System at the college is a system that collects and processes data to be useful information for users [5]. The success of this system application depends on how much satisfaction the users have. So it needs to be analyzed.

The Al-Kamal Institute of Science and Technology (ISTA) located in West Jakarta is one of the tertiary institutions that has implemented one of the benefits of IT, i.e. the Web-based Academic Information System since 2010 [5]. This system is designed with several facilities to provide benefits and satisfaction to users. The End-User Computing Satisfaction (EUCS) model, develop by Doll et al, is used to measure user satisfaction with information systems. Thus, user satisfaction is a success indicator of information systems development. The EUCS has five component model. There are accuracy, content, format, timeliness, and ease of use for information systems applications. A questionnaire consisting of 12 questions was used as data collection [1].

In previous studies, there were several studies on the measurement of information system user satisfaction with the End-User Computing Satisfaction (EUCS) model, measuring the end-user computing satisfaction,
including in End-User Computing: Concepts, Methodologies, Tools, and Applications [2]; Promoting radical innovation through the end-user computing satisfaction [3]; Determining User Satisfaction Factor in University Tuition Fee Systems Using End-User Computing Satisfaction (EUCS) [4]; Analysis of Acceptance and Satisfaction of Academic Information System Users Using Structural Equation Modeling [5]; User Satisfaction Factors in the Use of Learning Management Systems [6]; Testing User Satisfaction Using End-User Computing Satisfaction Method (EUCS) in Hospital Management Information System (SIMRS) (Case Study at Dr. Dadi Tjokrodipo’s Regional General Hospital) [7]. These studies have adopted the EUCS model from Doll et al.

Based on the aforementioned background of the study, this research is conducted with five variables measured content, format, ease of use, timeliness, and accuracy.

2. Research method

This research aims to determine the user satisfaction level of Web-Based Academic Information Systems at Al-Kamal Institute of Science and Technology. The research model uses quantitative by a descriptive approach. Data of the research is primary data, obtained by distributing questionnaires to users of Web-Based Academic Information Systems as many as 135 respondents consisting of students, lecturers, and academic staff. Data processing was performed using SPSS 23.

The variables in this research use instrument of the EUCS formulated by Doll et al [1] There are content, format, ease of use, timeliness, and accuracy.

![EUCSmodel by doll & torkzadeh](image)

**Figure 1.** EUCS model by doll & torkzadeh

Doll et al [1] have compiled 12 items of the question for EUCS research and these questions were adopted and used as guidelines for making questionnaires for respondents [8,12].

| Variable | Question ID | Question Item                                      |
|----------|-------------|----------------------------------------------------|
| Accuracy | A1          | Does the system be accurate?                       |
|          | A2          | Do you be satisfied with the accuracy of the system? |
| Content  | C1          | Does the system produce information you need?      |
3. Results and discussion
The research data was obtained by distributing questionnaires to the use of web-basic academic information systems, which are lecturers, staff academic and students of ISTA with a research sample of 135 people. Then do the validity test and reliability test. Validity measurement is done by analyzing Product Moment correlation with decision-making criteria. If $r$-count > $r$-table, then the instrument is stated valid, and vice versa if $r$-count < $r$-table, then the instrument is stated invalid. If the probability (sig.2 tailed) < 0.05 then the instrument is stated valid, and vice versa if the probability (sig.2 tailed) > 0.05 then the instrument is stated invalid. While Reliability is a degree of consistency and stability of data or findings. To measure reliability using the CronbachAlpha statistical test, the variable can be said to be reliable if it gives a value $\alpha$ > 0.60.

| Table 2. Result of validity test |
|----------------------------------|
| Variable          | Question ID | r-count | r-table | Criteria |
| Accuracy          | A1          | 0.904   | 0.142   | Valid    |
|                   | A2          | 0.918   | 0.142   | Valid    |
| Content           | C1          | 0.791   | 0.142   | Valid    |
|                   | C2          | 0.469   | 0.142   | Valid    |
|                   | C3          | 0.810   | 0.142   | Valid    |
|                   | C4          | 0.411   | 0.142   | Valid    |
| Ease of use       | E1          | 0.752   | 0.142   | Valid    |
|                   | E2          | 0.750   | 0.142   | Valid    |
| Format            | F1          | 0.921   | 0.142   | Valid    |
|                   | F2          | 0.925   | 0.142   | Valid    |
| Timeliness        | T1          | 0.774   | 0.142   | Valid    |
|                   | T2          | 0.716   | 0.142   | Valid    |

Based on table 2 shows that all instrument questions of this variables (format, ease of use, content, timeliness, and accuracy) have Pearson Product Moment correlation value greater than 0.142 ($r$ table), so it can be concluded that the respondent's perception of the research instrument question is VALID.

| Table 3. Result of reliability test |
|------------------------------------|
| Variable          | Cronbach’s Alpha (r count) | Alpha Cronbach | Result |
| Accuracy          | 0.83                       | 0.60           | Reliable |
| Content           | 0.87                       | 0.60           | Reliable |
Based on table 3 shows that all instrument questions of this variables (format, ease of use, content, timeliness, and accuracy) have Cronbach’s Alpha value greater than 0.60 (Alpha Cronbach), so it can be concluded that the respondent's perception of the research instrument question is RELIABLE.

Determination of user satisfaction level for Web-Based Academic Information Systems, the researcher converts the statement of satisfaction and dissatisfaction on the user questionnaire into the following.

Table 4. Scale of user satisfaction level

| Level | Score (0 - 5) | Satisfaction Level |
|-------|--------------|--------------------|
| 1     | 0 - 1.5      | Very Dissatisfied  |
| 2     | 1.6 - 2.5    | Not Satisfied      |
| 3     | 2.6 - 3.0    | Neutral            |
| 4     | 3.1 - 3.5    | Satisfied          |
| 5     | 3.6 - 4.0    | Very Strong        |

The score was obtained from the average value (mean) of the respondents' answers following the existing rating scale with a positive measurement scale.

The results of user satisfaction level with instrument questions of the variables (accuracy, format, ease of use, content, and timeliness) are presented in the descriptive statistics which can look in the following table.

Table 5. Measure result of user satisfaction level

| Variable   | N  | Min | Max | Mean | Std Dev | Level | Predicate |
|------------|----|-----|-----|------|---------|-------|-----------|
| Accuracy   | 135| 1.00| 5.00| 2.81 | 0.91    | 3     | Neutral   |
| Content    | 135| 1.25| 4.00| 2.90 | 0.58    | 3     | Neutral   |
| Ease of use| 135| 2.00| 5.00| 3.38 | 0.70    | 4     | Satisfied |
| Format     | 135| 1.00| 5.00| 2.81 | 0.92    | 3     | Neutral   |
| Timeliness | 135| 1.50| 4.50| 3.07 | 0.71    | 4     | Satisfied |

Perception of respondents to the questions was raised for the accuracy variable to indicate the answer results: very dissatisfied (score 1) 10%, not satisfied (score 2) 26%, neutral (score 3) 41%, satisfied (score 4) 19% and very strong (score 5) 4%. The mean of the overall question is 2.81 which can be concluded that the satisfaction level of respondents to the Web-Based Academic Information System for the accuracy variable is at level 3 (Neutral).

Perception of respondents to the questions was raised for the content variable to indicate the answer results: very dissatisfied (score 1) 6%, not satisfied (score 2) 27%, neutral (score 3) 42%, satisfied (score 4) 21% and very strong (score 5) 4%. The mean of the overall question is 2.90 which can be concluded that the satisfaction level of respondents to the Web-Based Academic Information System for the content variable is at Level 3 (Neutral).

Perception of respondents to the questions was raised for the ease of use variable to indicate the answer results: very dissatisfied (score 1) 2%, not satisfied (score 2) 21%, neutral (score 3) 27%, satisfied (score 4) 37% and very strong (score 5) 13%. The mean of the overall question is 3.38 which can be concluded that the satisfaction level of respondents to the Web-Based Academic Information System for the ease of use variable is at Level 4 (Satisfied).
Perception of respondents to the questions was raised for the format variable to indicate the answer results: very dissatisfied (score 1) 10%, not satisfied (score 2) 28%, neutral (score 3) 37%, satisfied (score 4) 22% and very strong (score 5) 3%. The mean of the overall question is 2.81 which can be concluded that the satisfaction level of respondents to the Web-Based Academic Information System for the format variable is at Level 3 (Neutral).

Perception of respondents to the questions was raised for the timeliness variable to indicate the answer results: very dissatisfied (score 1) 5%, not satisfied (score 2) 21%, neutral (score 3) 42%, satisfied (score 4) 26% and very strong (score 5) 6%. The mean of the overall question is 3.07 which can be concluded that the satisfaction level of respondents to the Web-Based Academic Information System for the timeliness variable is at level 4 (Satisfied).

4. Conclusions
Based on the result and discussion of the user satisfaction level of Web-based Academic Information System were obtained perception of respondents from the variables of EUCS methods can be concluded, that:

1) The user satisfaction level of Web-Based Academic Information Systems is an average value of 2.99 at level 3 (Neutral). That means, the perception of respondents assume to the Web-Based Academic Information Systems has not been satisfactory for users. The accuracy variable is an average value 2.81 at level 3 (Neutral), the content variable is an average value 2.90 at level 3 (Neutral), the ease of use variable is an average value 3.38 at level 4 (Satisfied), the format variable is an average value 2.81 at level 3 (Neutral) and the timeliness variable is an average value 3.07 at level 4 (Satisfied).

2) The dominant factor of user satisfaction in the EUCS method on Web-Based Academic Information System is variable which has the highest average value as the ease of using a variable with a value of 3.38, while the variable which has lowest average value as the accuracy variable and the format variable which only reaches 2.81.

3) The variables that are considered good are timeliness and ease of use, while for accuracy, content, and format still need improvement and redevelopment.

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