

Software Usability Measurement Inventory for Student Information Academic System at Politeknik Negeri Media Kreatif

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Abstract

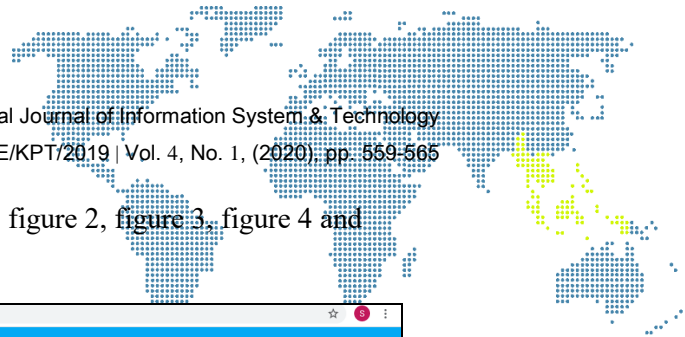
Academic information system is a system that is urgently needed by universities to manage academic business processes. State Polytechnic of Creative Media implements SIAM as Student Information Academic System. SIAM being developed has the advantage of being able to convey more detailed information. In addition, SIAM has implemented the SSO (Single Sign On) system where this technology is in great demand, especially in very large and heterogeneous networks. In this research Software Usability Measurement Inventory (SUMI) methods used to conduct usability test. SUMI is a rigorously tested and proven method of measuring software quality from the end user's point of view. The analysis results from SUMI will be used to improve the development of the academic system life cycle.

Keywords: Software Usability Measurement Inventory, Academic Information System, System Development Life Cycle, Usability Experience, Usability Testing

1. Introduction

Sistem Informasi Akademik Mahasiswa (SIAM) is an academic services information system developed by State Polytechnic of Creative Media to supports students academic information needs. Using SIAM students can find out academic information such as study result, study plan, lecture info such as class schedule and exam schedule, student information, bills and student account settings. Students can easily access SIAM via Uniform Resource Locator (URL) addressed at <https://siam.polimedia.ac.id>. SIAM was developed to improve the previous academic system. SIAM being developed has the advantage of being able to convey more detailed information. And also SIAM has implemented the SSO (Single Sign On) system. SIAM provides a variety of menus or main navigation, namely as follows :

- a) Home menu ,
Home menu is the main page menu that provides the latest information that students should pay attention to.
- b) Profil Menu
The profile menu contains student's biodata, such as photos, place of birth date, contact info, home address and others. Students can fill in and also edit their biodatas.
- c) Perkuliahan Menu
Perkuliahan's menu provide information about lecture activities, including course code, course name and lecture.
- d) KRS Menu
KRS menu provides information about Satuan Kredit Semester (SKS) and students semester scores.
- e) Tagihan Menu
Tagihan menu provide information about student tuition bill.



SIAM menu's user interface is displayed on figure 1, figure 2, figure 3, figure 4 and figure 5

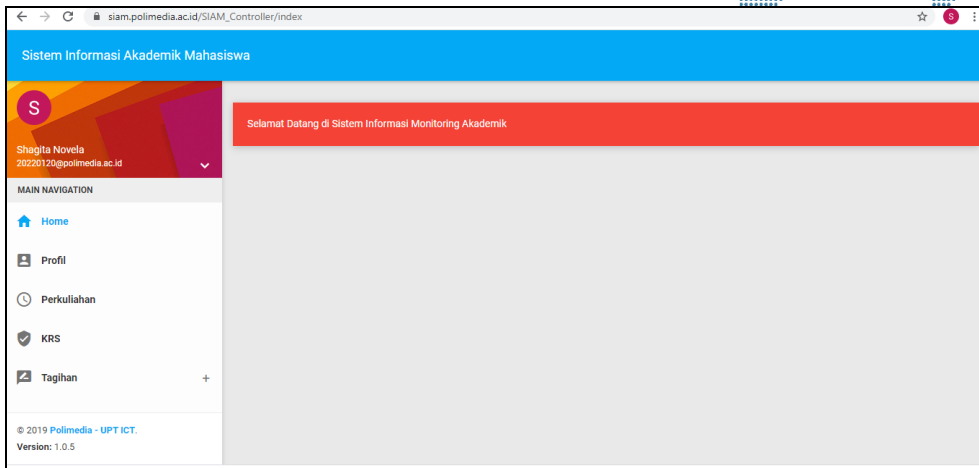


Figure 1. Home menu

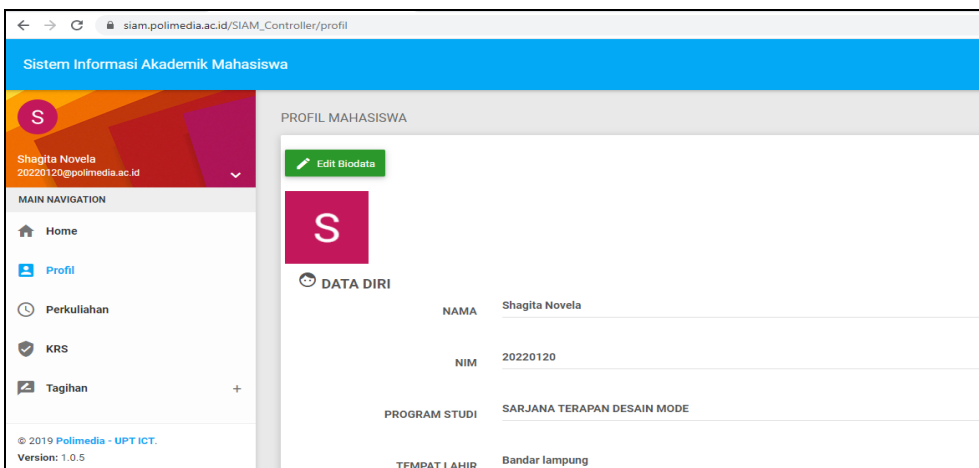


Figure 2. Profile menu

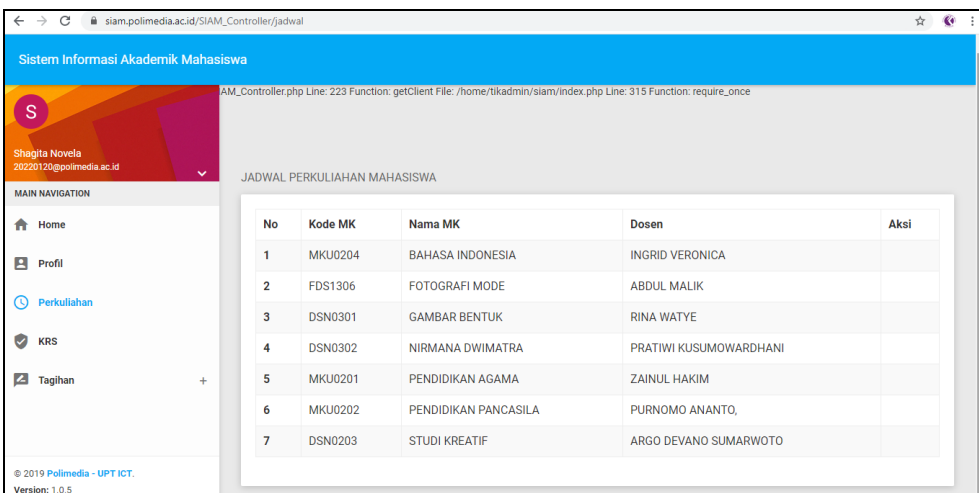


Figure 3. Perkuliahan menu

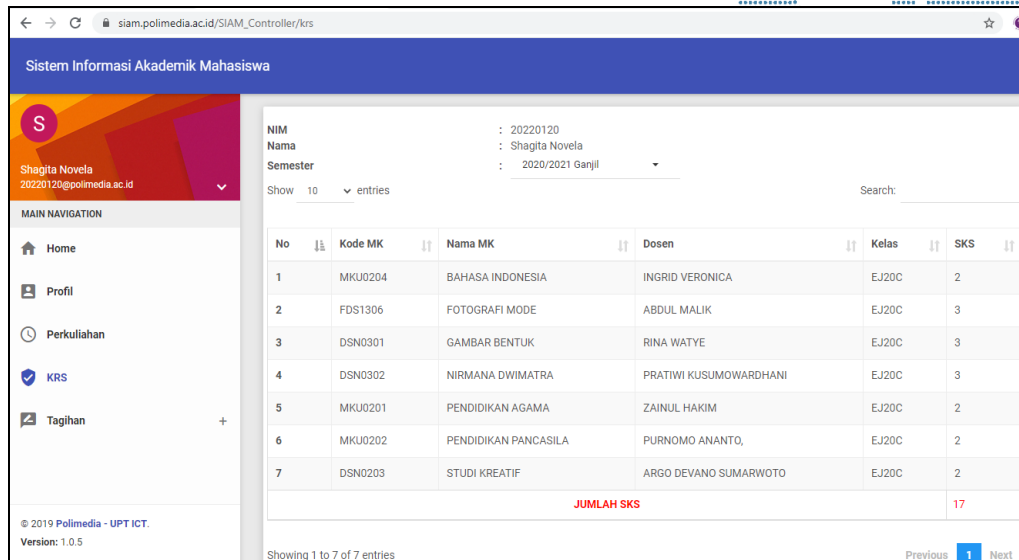
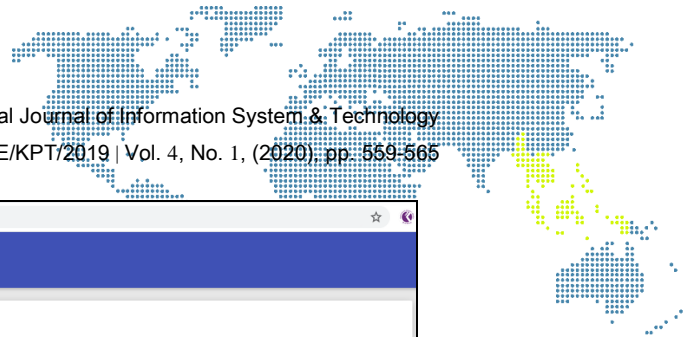


Figure 4. KRS menu

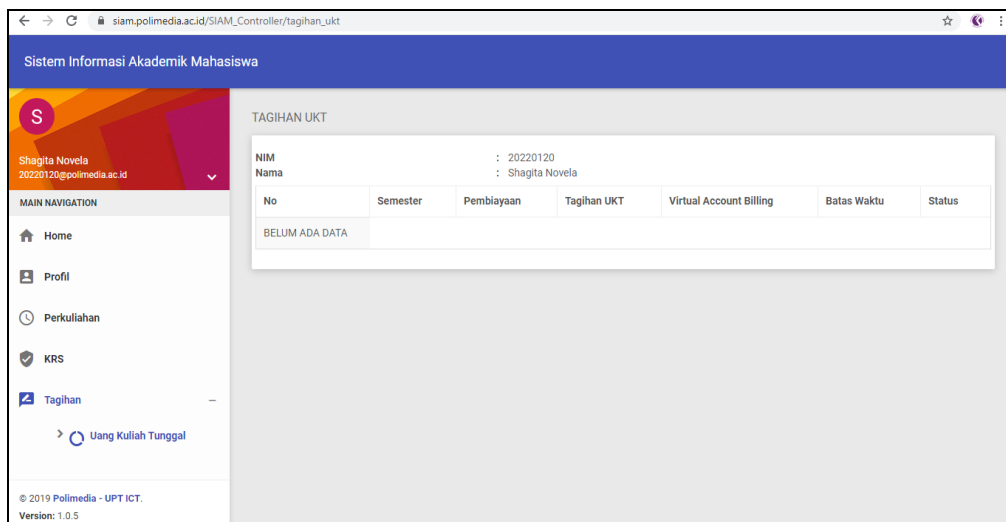
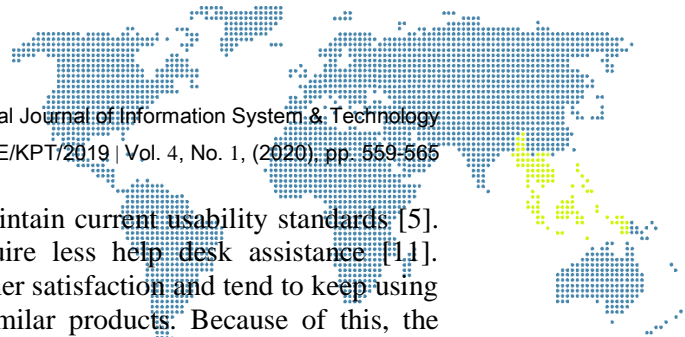


Figure 5. Tagihan Menu

SIAM has been implemented for 2 (two) years, this application was built to support learning process and provide the academic information needs for Polimedia students. Therefore we need testing (usability) which functions to increase the profitability of a system and ensure that the application can be used effectively and efficiently, effectively related to the user's success in achieving the goal of using the software and efficiently with regard to the smoothness of the user to achieve it [4]. Purpose of testing is to collect data as a basis for identifying and correcting deficiencies in a product [2]. The goal is to ensure the manufacture of a product that:

- a) Useful and valuable according to target users
- b) Easy to use
- c) Become more effective and efficient
- d) Satisfying and fun to use

Usability as 'a measure of how easy it is to find, understand and use the information displayed on a web site' [3]. Usability testing was conducted to ensure the improvement made and quantify the differences [1]. The benefits of testing a system for the organization include documenting the test result so that the organization can ensure that



the product is better in the future or at least can maintain current usability standards [5]. Useful products can be more profitable and require less help desk assistance [11]. Products that can be used properly can create customer satisfaction and tend to keep using these products in the future compared to other similar products. Because of this, the authors conducted a usability test on the SIAM (Student Academic Information System) application in order to determine the effectiveness and performance of the application. The author uses a questionnaire to 138 Polimedia students.

2. Research Methodology

2.1. Tools and materials

The measuring instrument was used a questionnaire. The respondents where students of the Multimedia Engineering study program, state polytechnic of creative media who used the student academic information system (SIAM) with a sample of 138 students of State Polytechnic of Creative Media. The descriptions of the respondents where 73% male and 27% are female students.

2.2. Design usability measurements

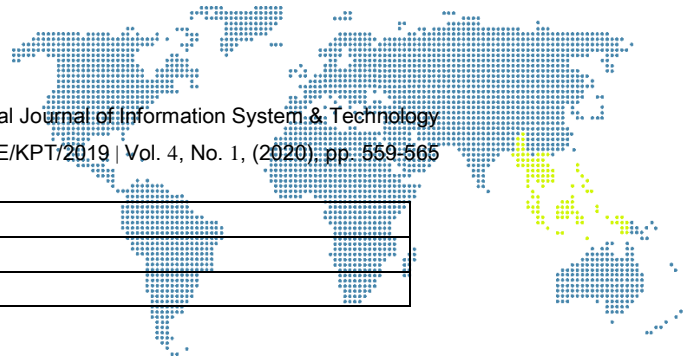
The SUMI (Software Usability Measurement Inventory) method is a survey instrument which is used to measure user perceptions of software usability [14]. Method This is based on a questionnaire that was developed to see experiences and views users towards usability of software products. SUMI can be a solution to a problem repeated in measuring user perceptions of the usefulness of the software. [12] This method is a valid and reliable method for product and version comparisons different from the same product, as well as can provide diagnostic information for future developments [6]. SUMI provides an overview of the software usability being tested is reflected into the following five subscales :

- a) Efficiency
The extent to which the user feels that the software used can help them in their work.
- b) Effect
General feeling (emotional) reaction of users to the software they use.
- c) Helpfulness
The extent of clarity for users in operating / using the software related to the adequacy of supporting documentation.
- d) Control
The extent to which the user feels that he is able to control the software.
- e) Learnability
The ease with which the user feels in learning it so that he feels able to master the system.

Usability testing of SIAM is done by assign tasks to several respondents [7]. The initial step of usability testing is to provide the user with a number of prepared tasks when interacting with the system being tested. These tasks were given to 138 students who used SIAM so they are no longer experience difficulties when doing these tasks. These tasks are used as “means of interaction” in measuring usability [13].

Table 1. Task Usability

No	Task
1	Login into the systems https://siam.polimedia.ac.id as <i>user</i> , and then logout and login again.
2	Add and edit data on the biodata menu
3	Displays her-registration payment bill information



No	Task
4	Displays the summary study scores
5	Search for lecture schedule information.

Each of the above tasks can be explained as follows:

- Task 1. Login into the system as a user, then log out and log in again. The user is asked to log in as a user, starting from finding and filling in the login form to enter the user page, then being asked to look for the logout button then log back in
- Task 2. Add and change data in the biodata menu. Students are able to add NIK data, cellphone numbers, addresses, religions, and other data. The task is considered complete when the user makes data edits in the biodata.
- Task 3. Display billing information and virtual account number to carry out her-registration in the each semester. The task is considered complete when the user makes data edits in the biodata
- Task 4. Displays the value of the semester study result. The task is considered when the user can see the information on the students semester learning outcomes
- Task 5. Find lecture schedule information. The task is considered complete when the user can see the student lecture schedule information

3. Results and Discussion

The results from the SUMI questionnaires are presented in Table 1 in terms of the median, minimum and maximum values. These levels are derived from the global usability scale and each of the five usability sub-scales. The median is the middle score when the scores are arranged in numerical order. It is an indicative sample statistic.

Table 1. The results of SUMI Questionnaires

Scale n = 138	Minimum	Median	Maximum
Global	54	71	78
Efficiency	68	71	74
Affect	74	76	78
Helpfulness	54	68	76
Control	68	70	72
Learnebility	74	74	74

Based on the SUMI assessment data, it is said that the overall score (global score) the standard value is an average of 71 with maximum value 78 in a normal distribution. This means that by definition for a value exceeding 50 the user satisfaction is higher than average [8].

The high value of the efficiency, learnability, affect subscale indicates that the application very helpful job (in this case academic services), easy to learn and use as well makes users comfortable. The value of the control and helpfulness subscales is still acceptable improved by developing applications so that the user feels that he is take control of the application and create better informational messages and documentation.



Figure 6. Comparison of quantitative usability measurements

The higher values/scores were obtained for Effect, Learnability and Efficiency, while the lowest values/score was given to the Control and Learnability. Figure 6 : Comparison of quantitative usability measurements

4. Conclusion

The conclusion that can be drawn from the research that The results of the System Usability Measurements Analysis (MUSI) state that the application made is feasibly to apply. Also based on the assessment results of the SUMI (Software Usability Measurement Inventory) application it can be said that it is feasible to use because it meets the SUMI assessment standards. SUMI's assessment, application developers can find out what they need repaired or developed in the application in the future as desired the users of the application.

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