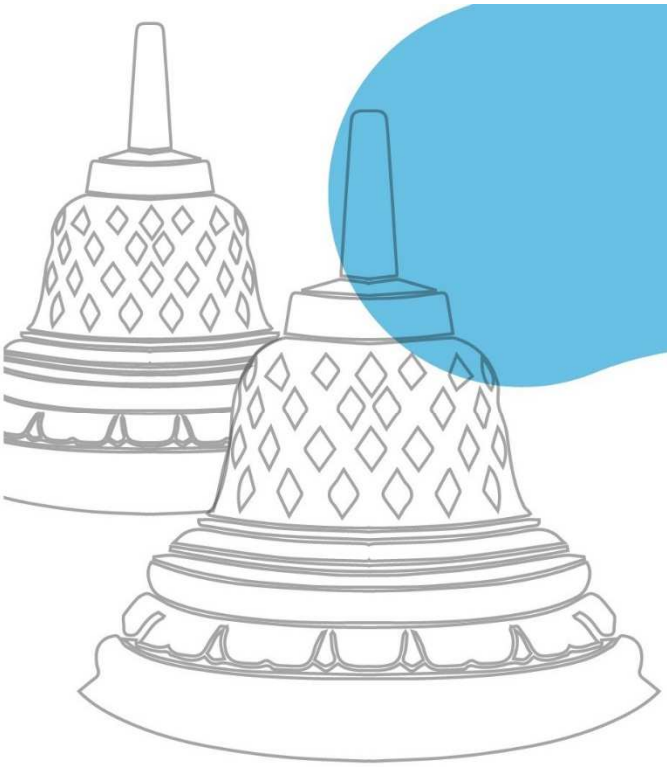

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IMPLEMENTATION OF THE BENEFIT MODEL (USABILITY) IN IMPROVING USER SATISFACTION OF UT ACADEMIC INFORMATION SYSTEM SERVICES

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Abstract

The management of technology-based information at the Open University (UT) today has become an important and urgent need in order to support the successful vision and mission of the institution. This is because information technology has proven to be very effective as a key facilitator in improving and leveling education services through distance learning capabilities that are inseparable by space, distance and time so that everything that is needed will be available online and can be accessed anytime and anywhere. In connection with that and in an effort to improve the quality of service to students, UT provides online registrars facility for students in the form of UT Academic Information System (SIA) application which has been officially utilized starting January 2017. In order for this application can be effective to give satisfaction for its user hence required research about student satisfaction in terms of satisfaction of service user to a website (USABILITY) as the purpose of this research. Using the sample of 50 respondents of active students in UPBJJ - UT Makassar randomly, the results obtained are usability dimensions measured based on Ease of Use, Customization, Download delay and web content (information) significant effect on service user satisfaction either simultaneously or partially. The dominant variable that influences successively is Ease of Use then followed by web content (information), Customization and the last is the Download delay. Based on these results, it can be concluded that to increase student satisfaction of SIA service users continuously can be done by giving full attention to the Ease of Use variables in USABILITY dimension, by maintaining the structure of web presentation, easy access and clarity of information presentation.

Keywords: usability, satisfaction, academic, infomation, system,

1. INTRODUCTION

The pace of change led by information technology has challenged the traditional method of teaching and learning, and the way education is executed. Today, Internet does not only serve as a learning resource but also facilitates online-learning experience which does not require on-campus attendance. UT (Universitas Terbuka) embraces this recent shift in education paradigm. The development of technology-based information fosters innovation that increases value, enhances quality and boosts productivity at UT. Information technology (IT) aids plenty of resources that enable long-distance students to have online-learning experience without space-time obstacles. As a response to IT development in terms of student satisfaction, UT has developed an application called SIA that allows for online registration since its inception in January 2017. Web-based information such as E-Registration within academic setting is intended to eliminate the constraint of distance and time and facilitates information integration in a teaching-learning setting as a central matter in ensuring the education experience. The ease of designing and implementing E-Registration is highly necessary for higher-education administrators to improve their work performance in monitoring each educational activity. E-Registration enables both students and registration staff to access registration procedures online without the restriction of a traditional queuing line. In addition to course registration, E-Registration allows for online teaching consultation. While there are a number of purposes SIA UT can serve, web-related issues are common among users. These issues are log-in failures, outdated information, and, ultimately, slow-loading page, given that too many users are logged in during particular period of time, particularly the approaching closing date. This study settles on a usability model for the

improvement of SIA in the context of student satisfaction to eliminate such issues and, at the same time, to utilize the application to its full extent.

2. LITERATURE REVIEW AND HYPOTHESIS DEVELOPMENT

2.1. Usability

Usability refers to the process of interaction optimization between users and an interactive system in a way that users gain appropriate information or accomplish a task on an application in a better manner (Jetter and Gerken, 2006 in Prayoga and Senuse, 2010). The principal benefit to users is that the application allows users to perform tasks easily and efficiently, which, in turn, leads to user satisfaction. According to Laundauer (1995) in Prayoga and Sensuse (2010), maintenance makes the bulk of software development costs in terms of usability problems, rather than technical problems. The importance of usability analysis and testing prior to, during and subsequent to the software development is thus widely emphasized (Gonzalez, Lozano, and Montero, 2004 in Prayoga and Sensuse, 2010). Nielsen (1994) in Prayoga and Sensuse (2010) refers to usability as practical and meaningful experience of human-computer interaction that deals with easy and fast operation. Nielsen (1994) in Prayoga and Sensuse (2010) further formulates the factors that underlie the importance of website usability, among which is user behavior pattern in terms of web access. Most users do not stay long on a web page that requires instructions, particularly when they come across a poor web design. They need instant process as they rush through a web page. When they encounter access problems, some will linger for several minutes; some will leave immediately. In addition to general conceptions of usability, it is necessary to view the measurement of usability on website development. The general criterion that defines a usable website is a user-centric website that aligns with users' needs and expectations (U.S. Department of Health & Human Services, 2009 in Prayoga and Sensuse, 2010). Nielsen (1994) in Prayoga and Sensuse (2010) classifies five key principles of ideal website usability, which include learnability, efficiency, memorability, error handling and satisfaction. Learnability measures the degree to which users understand website access on the first attempt, reasons for access and the ability to identify what they are looking for. Efficiency deals with the ability of a website to generate information with a minimum expenditure of time and effort. Memorability measures how easy a website is to remember after a number of visits. A website that constantly changes leads to users' confusion, frustration and hardly impressionable. Error handling avoids broken links or under-construction web pages. Satisfaction is the extent to which users are satisfied when they use a website to accomplish a task. Users generally prefer fast and easy-to-use web designs. Accordingly, they know what to find, where to find it and how to find it. In another study, Dix, J. Finlay, G. Abowd, R. & Beale (1993) in Prayoga and Sensuse (2010) classify four criteria of usability analysis: effectiveness, efficiency, satisfaction and learnability. International Standar Organization (ISO) conducts consolidation of usability measurements based on usability measurement by Nielsen (1994), Dix, J. Finlay, G. Abowd, R. & Beale (1993), ISO standard 9126 & ISO standard 14598 (product-oriented usability) and ISO standard 9241 & ISO standard 13407 (*process-oriented usability*) in Prayoga and Sensuse (2010). The result generates a consolidation model of 5-parameter usability: effectiveness, efficiency, satisfaction, learnability and security (Abran, A. Khelifi, W. Suryn, & A. Seffah, 2003 in Prayoga and Sensuse 2010). Among the usability models, ISO, Nielsen (1994) and Dix et al. (1993) propose and highlight the importance of usability measurement on user satisfaction as part of the usability parameters. These user-oriented models are the primary focus of this study. The notion of user satisfacion within the context of usability model is further emphasized by further studies on website-visitor satisfaction. Palmer (2002) in Prayoga and Sensuse (2010), later known as an expert in human-computer interaction, develops a construct of website usability into download delay, webpage navigation or organization, interactivity, responsiveness, website content or information and user satisfaction. The parameters for download delay are early-access speed and access speed between pages. The parameters for page navigation or organization are web page arrangement, links, layout and web navigation order. The parameters for interactivity are custom web pages and interactivity. The parameters for responsiveness are feedback and FAQ facilities. The parameters for website content or information are the amount of information, variety of information, number of words and quality of website content. The parameters for user satisfaction are user visit and web-access frequency. Agarwal and Venkatesh (2002) in Prayoga and Sensuse (2010) describe usability measurement model based on the approach by Microsoft Usability Guideline. The model arranges categories and breaks them into sub-categories based on weights and ratings. The model has been commonly used as a reference to other measurements of usability. Green and Pearson (2002) in Prayoga and Sensuse (2010) compare the model with Palmer's model through Confirmatory Factor Analysis (CFA). The result shows that Palmer's model meets the required standards over Agarwal and Venkatesh's. In a further study, Green and Pearson (2004) in

Prayoga and Sensuse (2010) conduct a study on the similar comparison. The study that applies Palmer's and Agarwal & Venkatesh's models to a website (Green and Pearson, 2004) in Prayoga and Sensuse (2010) conceives the best four dimensions in user-satisfaction measurement on a website by constructing a robust and parsimonious model to identify variables which have the strongest impacts on outcomes. These dimensions include ease of use, personalization, download delay and web content. Those are the four constructs on which this study focuses with respect to a measurement on an application presented later in Methodology. In addition to the four constructs, the usability model settles on the concept of user satisfaction as an endogenous variable that is likely to boost website traffic or visits, which, in turn, potentially provides significant value to the measurement validity.

2.2. Hypotheses Development

The study proposes a number of hypothesized relationships as follows:
H1: Ease of use will positively and significantly affect user satisfaction.
H2: Personalization will positively and significantly affect user satisfaction.
H3: Download delay will positively and significantly affect user satisfaction.
H4: Web content will positively and significantly affect user satisfaction.

3. METHOD

3.1. Research Design

This study was designed as an explanatory analysis that sought to verify the hypothesized relationships by elaborating phenomena based on a scientific examination. The independent variables included in this study are ease of use, personalization, download delay and content, while the dependent variable is user satisfaction of SIA service.

3.2. Participants

Method for data collection in this study is cross-sectional survey. The population comprises the entire registered students at UPBJJ-UT Makassar. The samples were acquired from random sampling and the questionnaires were delivered online. The collected data were gathered from 50 respondents.

3.3. Instrument

Data collection was completed using questionnaires with a 5-point likert scale ranging from 1 (strongly disagree or highly dissatisfied) to 5 (strongly agree or highly satisfied).

Table 1.
Variables and Indicators

Variable	Indicators	Code
Ease of Use (X1)	The menu at SIA UT is simple and easy to use.	X11
	Access to SIA UT is connected to the Internet with no restrictions of locations.	X12
	The language used at SIA UT is comprehensible.	X13
Personalization (X2)	The contents of SIA UT are attractive and useful.	X21
	The webpages at SIA UT are familiar and well-known.	X22

Access Speed (X3)	SIA UT provides easy access to the information I need.	X31
	Navigating to each menu at SIA UT is relatively fast.	X32
Content (X4)	The information provided at SIA UT perfectly suits my needs.	X41
	SIA UT offers various information that supports my educational activities.	X42

3.4. Data Analysis

To gain adequate results, the instrument in this study was measured using validity and reliability test to avoid errors that might affect the accuracy of data collected. Then, multiple linear regression was run to acquire the results of model testing, the effects between the variables and the dominant variables. In terms of validity test, an item was a valid measure only to the extent that it scored above 0.40 at a significance level of 95% within a group of items representative of the variables to be measured. In terms of reliability test, Cronbach's Alpha, coefficient and item-total correlation were applied to examine whether each variable was reliable. Each variable scored above 0.60, which generated reliable variables and indicated internal consistency. To assure the effects between variables, p-value must score ≤ 0,05 to ensure the significant effects of the independent variables on the dependent variable, at a confidence level of 95% and a maximum deviation standard of 5%.

4. RESULTS

4.1. Validity and Reliability

The results of validity and reliability test are presented in table 2:

Tabel 2
The Results of Validity and Reliability

Variable	Indicator		Validity	Cronbach's Alpha	Reliability
	Min.	Max.			
X1	0.911	0.981	Valid	0.771	Reliable
X2	0.324	0.821	Valid	0.825	Reliable
X3	0.439	0.943	Valid	0.834	Reliable
X4	0.569	0.925	Valid	0.856	Reliable
Y	0.781	0.765	Valid	0.755	Reliable

Source: SPSS Output, processed in 2017

Table 2 shows that the minimum value of validity is above 0.2 and the alpha is above 0.6, which indicates that the questionnaires are applicable for the respondents.

4.2. Frequency Distribution

The recapitulation of frequency distribution of respondents on ease of use, personalization, download delay, content and user satisfaction is provided in Table 3:

Table 3. Recapitulation of Ease of Use, Personalization, Download Delay, Content and User Satisfaction

Variable * Crosstabulation of Respondent Answers

Count

		Respondent Answers			
		Low	Moderate	High	Total
Variable	x1	0	37	13	50
	x2	6	16	28	50
	x3	0	21	29	50
	x4	0	17	33	50
	Y	0	0	60	50
Total		6	91	153	250

The table shows that overall the variables – ease of use, personalization, download delay and content – are classified in high category, which leads to high-category user satisfaction of SIA UT.

4.3. Multiple Regression Analysis

Multiple regression was performed to model the relationships between the independent variables and dependent variable. The results are seen below:

Table 4. The Results of Multiple Regression

Independent Variable	Dependent Variable	t	Sig t
Ease of use (X1)	User Satisfaction (Y)	69.483	.000
Personalization (X2)		10.056	.000
Download delay (X3)		14.613	.000
Content (X4)		12.643	.000
R^2			. 971
Adjusted R^2			. 968
F			371.713
Sig F			.000

Source: SPSS Output, processed in 2017

The results are interpreted as follows:

7. R^2 of 0.971 (97.1%) is the rate of the simultaneous effects of ease of use, personalization, download delay and content on user satisfaction. The remaining 2.9% accounts for other factors not included in the model.
8. F_{Cal} of 371.713 with alpha of 0.00 (less than 0.05) indicates that ease of use, personalization, download delay and content simultaneously have positive and significant effects on user satisfaction.
9. T_{Cal} of 69.483 with alpha of 0.000 (less than 0.05) indicates that ease of use has a positive and significant effect on user satisfaction, given that the other factors which may affect the level of user satisfaction remain constant.
   Hypothesis 1, that ease of use will positively and significantly affect user satisfaction, is accepted.
10. T_{Cal} of 10.056 with alpha of 0.000 (less than 0.05) indicates that personalization has a positive and significant effect on user satisfaction, given that the other factors which may affect the level of user satisfaction remain constant.

Hypothesis 2, that personalization will positively and significantly affect user satisfaction, is accepted.

11. T_{Cal} of 14.613 with alpha of 0.000 (less than 0.05) indicates that download delay has a positive and significant effect on user satisfaction, given that the other factors which may affect the level of user satisfaction remain constant.
    Hypothesis 3, that download delay will positively and significantly affect user satisfaction, is accepted.
12. T_{Cal} of 12.643 with alpha of 0.000 (less than 0.05) indicates that web content has a positive and significant effect on user satisfaction, given that the other factors which may affect the level of user satisfaction remain constant.
    Hypothesis 4, that web content will positively and significantly affect user satisfaction, is accepted.

5. CONCLUSION

The following are conclusions based on the results:

a. The level of ease of use, personalization, download delay and web content measures the user experience upon the interaction with SIA UT. In other words, these four dimensions are essential factors that underlie the success rate of SIA UT in terms of meeting the needs of academic information and service for UT students.
b. Easy-to-use application enables users to experience simple access to the facilities, the navigations, and, most importantly, the information provided at SIA UT. The simple procedures increase the likelihood of improved user satisfaction.
c. Personalization delivers contents and functionality that fit users' specific needs or interests. When a specific need has been met, user satisfaction grows significantly.
d. High-speed download is a significant predictor for user satisfaction as most users demand instant results and have no patience policy for waiting.
e. Clear, relevant and accurate web content is the key to user satisfaction as the content targets the users, engage them and persuade them to take action.

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