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Usability analysis using webuse method in Bisma Informatika certification registration system

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ABSTRAK

Bisma Informatika is one of the educational institutions with Diploma education level in Denpasar that serves certification services for people who want to take certification expertise, especially those engaged in Information and Computer Technology. In order to serve optimally, Bisma Informatika applies registration which can be done by the computerized system so that the participant's data can be stored properly. After observing the use of the system at the time of participant registration, an initial conclusion can be drawn that many data fields cannot be understood by the user so they must ask the officer on duty. The data fields in question such as the choice of certification class are not clear because it does not include the implementation time, the unaccompanied participants who come from the common line (so can not include the student identification numbers), telephone numbers that cannot be entered if they exceed the capacity of the permitted number, and inconsistent field filling instructions. This shows that the usability aspect of the registration system is not being considered properly. This study evaluates the interface design and features of the Bisma Informatika certification registration system by considering the context and user needs. In an effort to find out the context and user needs, a Website Usability Evaluation (WEBUSE) questionnaire was used. The results of the WEBUSE questionnaire showed that the four categories which have a good usability level, only content, organization and readability categories are obtained.

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1. INTRODUCTION

Bisma Informatika is one of the educational institutions with Diploma education level in Denpasar. In addition, Bisma Informatika also serves certification services for people who want to take certification expertise, especially those engaged in information and computer technology. The types of certifications managed by Bisma Informatika include programmer schemes, network administrators, multimedia, audio and video editing, digital marketing, project management, supply chain, mikrotik, 3D animation, and others.

The types of certifications managed by Bisma Informatika include programmer schemes, network administrators, multimedia, audio and video editing, digital marketing, project management, supply chain, mikrotik, 3D animation, and others. The use of this system helps employees in charge to serve the participant registration process. The registration procedure is done independently by the participant through the computer box available, when it has finished filling in the participant's data then the participant can directly

print the form and take it to the employee on duty. After making observations for the use of the system when registration participants can be drawn some preliminary conclusions as follows.

1. The level of convenience and users' convenience when using the Bisma Informatika Certification Registration System. Users have difficulty when using the system especially when filling in the data. Many data fields are not able to be understood by the user so they must ask the officer first.
2. The diversity of registration categories in the Bisma Informatika Certification Registration System is not accommodated. Currently many parties require competency certification, so Bisma Informatika certification body has a lot of participants to follow this certification. However, the existing system still does not provide a choice of participants from the common path.
3. The instructions for filling in the columns are inconsistent, so there is a discrepancy between the instructions for filling the fields with the required data.

This indicates that the usability aspect of the registration system is not well considered. This certification registration system attaches more importance to the functional needs of the system and overrides its usability aspect. Interaction between users and the system becomes the main focus of attention in the implementation of a system. Users cannot accept the easy implementation of a system directly because there are many factors which are considered to be able to state that the implementation of the website is successful. The factors in question are the level of interest, easy, and convenience for users in utilizing the system [1].

According to Neilsen, usability is a barometer which is able to describe the quality of a system from the user's point of view. Achieving usability in a website requires a combination of planning in understanding the context of using the system as the basis for identifying and evaluating the system through testing conducted by users [2]. Website evaluation can be done with the aim of knowing if a website can be used by users effectively, efficiently and to the extent of user satisfaction level.

One of the evaluation methods of websites that can be used is the WEBUSE (*Website Usability Evaluation*) method. WEBUSE focuses on developing a web-based usability evaluation system with a subjective action approach that involves the participation of users to provide assessments on a website. Development of WEBUSE approach as a standard measurement of usability, with web-based questionnaire evaluation method that allows users to assess the usability of the website to be evaluated [3] [4].

Some of the researches which has been done related to WEBUSE and usability are as follows. Research conducted by Andiputra, et al. conducted an evaluation of the website of Kitabisa.com as the largest humanity fund channel website in Indonesia. This research wanted to know how the usability aspect of this website, so that users are not confused when using the website. The results showed that in all four categories obtained *"Good"* grades where the highest variable acquisition on content, organization, and readability variables with a score 0.77, while for the lowest variable obtained by the variable User Interface Design with a value 0.70 [5].

Dewi, et al conducted similar research using WEBUSE and Heuristic Evaluation methods to analyze the usability of the mobile application booking the inaugural taxi service. This research was conducted with the aim of knowing the usability of the application and knowing if there are difficulties experienced by users when using the application. In order to be able to know the usability problems faced by users, analysis is conducted based on test results with scenarios and questionnaires using WEBUSE questionnaires. While heuristic evaluation is used to support testing with WEBUSE in digging usability errors in applications using Nielsen heuristics conducted by selected evaluators. The results showed the usability level of this application is "*Good*", but there are usability issues related to the content, buttons and navigation of the application and there is a violation of heuristic principles related to error prevention. This problem is then given a recommendation of improvement so that it can be fixed and increase its usability level [6].

Aini H, et al conducted research for the evaluation of prabumulih city government website through website usability evaluation (WEBUSE) approach. WEBUSE is used to evaluate usability on the Prabumulih City Government website with Content, Organization & Readibility, Navigation & Link, User Interface Design and Performance & Effeciveness dimensions. This research aimed to determine the level of usability of the Prabumulih City Government website so that the Prabumulih City Government can provide optimal service to users. The results obtained show that performance and effectiveness are dimension of usability which plays an important role in a website, of course this can spur agencies both educational and government agencies to be able to further develop the website owned by making performance and effectiveness as the first benchmark. In other words, the higher of the level of performance and effectiveness, the better a website is[2].

This study will evaluate usability of Bisma Informatika Certification Registration Information System with Content, Organization & Readibility, Navigation & Links, User Interface Design, and Performance & Effectiveness based on WEBUSE method.

2. RESEARCH METHOD

Evaluation of the website of Bisma Informatika Certification Registration Information System was conducted using WEBUSE method approach. WEBUSE evaluated the website based on a website-based usability evaluation questionnaire that allowed users to assess the usefulness of the Bisma Informatics Certification Registration Information System to be evaluated. This questionnaire was divided into four categories namely Content, Organization & Readability, Navigation & Links, Design User Interface, and Performance & Effectiveness.

A. Content, Organization & Readability

Good content is content which is easy to be understood by users, clear, and well organized. A well-organized website can provide a quick understanding for users. Meanwhile, the readability of a website is measured through whether the system is functioning correctly and provides accurate information.

B. Navigation & Links

The method used to search and access information in the website effectively and efficiently to help website users is called Navigation. Meanwhile, links function to connect users by selecting and clicking links on the hypertext page (homepage), which causes the opening of new pages. Good links should use text rather than graphics so that it is easy to understand by the user.

C. Design User Interface

User interface design is a method and procedure that requires careful consideration when designing and developing a website. Important things in designing a user interface design include setting goals, determining users and providing useful content. To ensure the best results need to consider a variety of user interface design issues and good performance for users.

D. Performance & Effectiveness

Website performance can be measured by how quickly a website performs in certain processes or transactions resulting in fast and efficient user performance. Meanwhile, effectiveness is the success of a website to produce the right information for users.

The evaluation process using WEBUSE method can be seen in Figure 1. The steps which are taken in the evaluation of Bisma Informatika certification registration system using WEBUSE method approach are as follows.

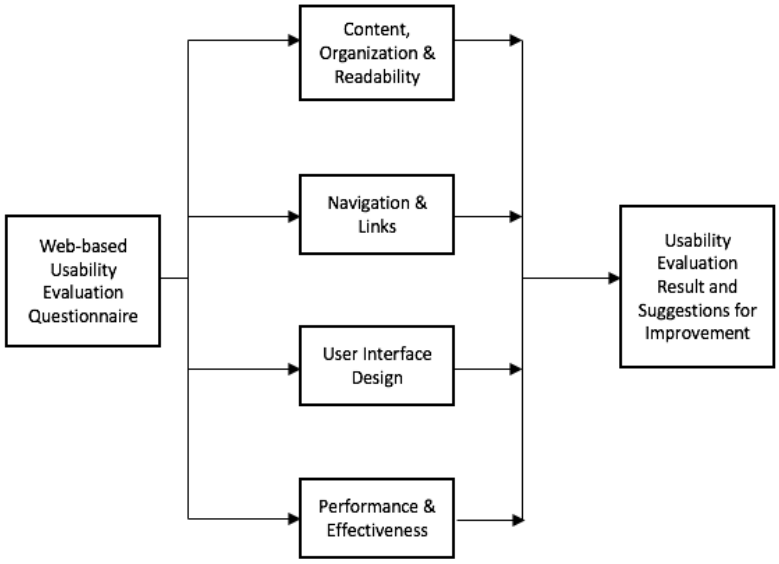

Figure 1. WEBUSE Evaluation Process [7][8]

a. Disseminating questionnaires to respondents. The number of respondents used in this study was 30 people who were participants or certifiers in Bisma Informatika.
b. Respondents fill out questionnaires according to the indicators of existing questions.
c. Merit is used based on the user's answer to each question, then it will be accumulated for each category.
d. Category points are the average values of each category.
e. Usability points are the mean value of each usability.

The usability level is determined by the usability points earned by each category [9][10]. Questionnaires will be prepared with several questions where there are five answer options ranging from strongly disagreeing to strongly agreeing. Each answer has its own merit value as in Table 1.

Table 1. Merit Value

Answer Option	Merit value
Strongly Disagree	0,00
Disagree	0,25
Netral	0,50
Agree	0,75
Strongly agree	1,00

The merit value obtained for each question indicator is accumulated per category and then the average value is sought. This average value for each of these categories will be considered a usability point. This usability point will then be summed up into the usability level. The relationship between usability points and usability levels can be seen in Table 2.

$$X = \frac{[\sum Merit\ for\ each\ question\ in\ the\ category]}{[Number\ of\ question]} \quad (1)$$

Table 2. *Usability Level*

Poin X	Usability Level
$0,0 \leq x \leq 0,2$	*Bad*
$0,2 \leq x \leq 0,4$	*Poor*
$0,4 \leq x \leq 0,6$	*Moderate*
$0,6 \leq x \leq 0,8$	*Good*
$0,8 \leq x \leq 1,0$	*Excellent*

Referencing Table 2, the usability levels for each point are as follows.

1. If the *X* point is greater than 0, and the smaller *X* is equal to 0.2 then the usability level is classified as the "Bad" level.
2. If the *X* point is greater than 0.2 and the *X* is less than 0.4 then the usability level is classified as the "Poor" level.
3. If the *X* point is greater than 0.4 and the *X* is greater and the *X* is smaller than 0.6 then the usability level is classified as the "Moderate" level.
4. If the *X* point is greater than 0.6 and *X* is greater and the *X* is smaller equal to 0.8 then the usability level is classified as the "Good" level.
5. If the *X* point is greater than 0.8 and *X* is greater and *X* is smaller than 1.0 then the usability level is classified as "Excellent".

The questionnaire instruments given to respondents can be seen in Table 3 as follows.

Tabel 3. WEBUSE Questionnaire

No	Question	Value				
		1	2	3	4	5
Content, Organization and Readability						
COR1	The system contains interesting information and is always up to date.					
COR2	I find it easy to find what I want in the system.					
COR3	The content contained in the system is well organized / organized.					
COR4	I find it easy to read the content / content of the system.					
COR5	I feel comfortable and used to the language used.					
COR6	I don't need to use scroll left and right when reading System content.					
Navigation and Links						
NAL1	I find it easy to know the position of existence					

	when exploring the System
NAL2	The system has hints and links that make it easier for me to get the information I want.
NAL3	I find it easy to browse the system using existing links or back buttons on the browser.
NAL4	Links in the system are well maintained.
NAL5	The system does not open too many new windows browsers when I browse the system.
NAL6	The placement of links or menus is standardized and easy to recognize.
User Interface Design	
UID1	Attractive system interface design.
UID2	I am comfortable with the colors used in the system.
UID3	The system does not contain annoying features such as scrolling or binking text and repetitive animations.
UID4	The system has a consistent look.
UID5	The system does not contain too much web advertisement.
UID6	System design generates interest and is easy to learn how to use
Performance and Effectiveness	
PAE1	I don't have to wait too long to download a file or open a page
PAE2	I find it easy to distinguish links that have been and have not been visited
PAE3	I can easily access this system at all times
PAE4	The system responds according to expectations for all actions performed
PAE5	I feel efficient when using the system
PAE6	The system always gives a clear and useful message when I feel I don't know how to process something

3. RESULT AND DISCUSSION

WEBUSE questionnaire was distributed to 31 respondents who used Bisma Informatika Certification Registration System. Questionnaires were conducted online through a link shared with the certification registrant. The results obtained in Table 4.

Table 4 WEBUSE Questionnaire Result

	SS	S	N	TS	STS
COR1	0	13	18	0	0
COR2	0	18	10	2	0
COR3	0	15	11	4	0
COR4	0	17	11	2	0
COR5	0	20	8	2	0
COR6	0	15	15	0	0
NAL1	0	12	15	3	0
NAL2	0	17	11	2	0
NAL3	0	16	11	3	0
NAL4	0	15	11	4	0
NAL5	0	17	12	1	0
NAL6	0	13	13	4	0
UID1	0	16	12	2	0
UID2	0	15	13	2	0
UID3	0	16	12	2	0
UID4	0	16	12	2	0
UID5	0	15	12	3	0

UID6	0	11	17	2	0
PAE1	0	16	12	2	0
PAE2	0	9	20	1	0
PAE3	0	15	13	2	0
PAE4	0	14	15	1	0
PAE5	0	15	15	0	0
PAE6	0	13	12	5	0

Description:

SS : Strongly Agree

S : Agree

N : Neutral

TS : Disagree

STS : Strongly Disagree

The next stage was to process the data of WEBUSE questionnaire results where the results obtained were in Table 5 below.

Table 5. Usability Level Result

Category	Average	Usability Level
COR	0,605	Good
NAL	0,582	Moderate
UID	0,586	Moderate
PAE	0,579	Moderate

From the table, the results of the category Content, Organization & Readablity obtained a value of 0.605 and entered into the Level Usability "*Good*". As for the category of Navigation & Links, User Interface Design, and Performance & Effectiveness obtained a value with the category of Level Usability "*Moderate*". On WEBUSE, a statement was considered a problem when the average merit value of a statement was at the "*Moderate*" usability level. From the results of evaluation and analysis that has been done, problems found in the category Navigations & Links, User Interface Design and Performance & Effectiveness. This means that, in the aforementioned categories, the Bisma Informatika Certification Registration System only provides sufficient services and still has shortcomings that need to be fixed. The point of improvement which must be done were seen in Table 6 below.

Table 6. Improvement Point

Category	Question Code
Content, Organization, and Readability	COR1, COR3, COR4, COR6
Navigation and Links	NAL1, NAL2, NAL3, NAL4, NAL6
User Interface Design	UID1, UID2, UID3, UID4, UID5, UID6
Performance and Effectiveness	PAE1, PAE2, PAE3, PAE4, PAE5, PAE6

From the results obtained, the Bisma Informatika Certification Registration System user interface should be improved. The results of Table 6 can be used as a basis for improving the aspects of the user interface. These points can be fixed using WCAG 2.0 guidelines, so the interface improvements will get optimal results because they already use standard instructions from W3C.

4. CONCLUSION

Conclusions that can be drawn from the research conducted were as follows.

1. The result obtained for the WEBUSE method for the Content, Organization & Readablity category was 0.605 and included in the "Good" Usability Level
2. The Navigation & Links, User Interface Design, and Performance & Effectiveness categories scored with the "Medium" Usability Level category
3. Due to moderate usability for the Navigation & Links, User Interface Design and Performance & Effectiveness categories, there was an interface issue with the system and it should be fixed immediately.
4. One solution for these improvements were to redesign by using wcag 2.0 guidelines

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