Design Website for the Laboratory of Communication Science Department, University of Mataram

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ABSTRACT. The website is an information technology system that makes transactions easier for us nowadays. Utilization of the website at the Multimedia Laboratory in the Communication Science Study Program at Mataram University to replace the manual system in the process of borrowing equipment, calculating equipment stock, and creating reports. Systems that are still manual often cause problems in data accuracy and transparency. So a website-based information system is needed to overcome this problem. The aim of this research is to design a User Interface and User Experience for the Multimedia Laboratory website at the Communication Science Study Program, University of Mataram. This research method uses the User Cantered Design (UCD) model which consists of four stages, namely: (1) specify the context of use; (2) specify user and organizational requirements; (3) produce design solution; and 4) evaluate design against user requirements. Based on interviews with five informants, they produced a solution for displaying the user interface of the Multimedia Laboratory website, Communication Science Study Program, Mataram University. The UI design was designed based on user concerns about renting tools and items manually. The solution offered is in the form of data availability for laboratory equipment, updated item data, and responsive customer service.

KEYWORDS: laboratory, website, information system, UI/UX

1. INTRODUCTION

The increasingly rapid development of information technology is transforming traditional jobs into computerized systems. Computer systems make it easier to complete tasks more easily, quickly and well managed. The use of this technology has been widely applied in all fields, one of which is education. Learning needs to be supported by the use of information technology to make it easier for lecturers to transfer knowledge and students to explore learning resources (Dwiningsih et al., 2018). The learning achievements of higher education are a benchmark for success, in order to produce quality graduates. In order to create graduates who have qualified skills, universities need adequate and standardized facilities and infrastructure, one of which is a laboratory (ASPIKOM, 2018).

The Communication Science Study Program (PS IKOM) at the University of Mataram was established on June 3 2014 based on DIKTI Decree NO 132/E/O/2014 (Faculty of Psychology, Padjadjaran University, 2016). This study program is relatively young compared to other study programs at Mataram University. As a new study program, PS IKOM is required to improve the quality of its education so that its graduates are able to compete on a national and international scale. This study program has the responsibility to provide adequate and standardized facilities and infrastructure to hone the soft skills and hard skills of students and female students, to produce graduates who are globally competitive. As we know, most of the IKOM PS in Indonesia have laboratories as a forum for conducting research for lecturers and students.

The laboratory, as a support for the teaching process, of course has many items that students and lecturers need to carry out the teaching and learning process. Students and lecturers are allowed to borrow items from the laboratory to carry out teaching and learning activities. For example: borrowing cameras, camcorders, speakers, or borrowing/renting other equipment. However, in the lending process, data collection is still carried out manually, starting from borrowing goods, collecting data on outgoing goods, calculating the number of tools, and making reports. The obstacle in recording manually is in

storing and searching for the data that comes out. During the loan process, officers still use manual methods to search for the availability of goods and their location, so the search process takes quite a long time. In addition, the manual storage system can cause some items to be tucked away in other rooms. Therefore, a series of online-based information system designs are needed to overcome this problem, to provide effectiveness and efficiency in borrowing goods in the laboratory.

The solution we offer is in the following stages: (1) prospective customers can directly search for information on the status of goods online first and if there is availability of goods the customer can immediately request the goods, if the availability of goods is empty, the customer can see when the goods will be available. returned and on the same page several choices of goods that have the same specifications appear as alternatives. (2) Next, the laboratory staff will input requests from borrower customers into the laboratory system, then the system will automatically update the laboratory status. The laboratory staff page is an admin page which makes it easy to report data easily in the system. So managing, storing and collecting data is easier and less time consuming.

Based on the above background, it is necessary to develop a laboratory lending or rental information system in the form of a computerized website so that recording is not done manually which is not practical. This is done to maximize the process of borrowing and renting tools and goods to support the learning process, especially practicum. It is hoped that learning activities will no longer be hindered in the process of borrowing facilities and infrastructure.

2. METHOD

Penelitian ini menggunakan metodologi User Centered Design (UCD) untuk membuat situs web Lab Multimedia PS IKOM. Karena UI dan UX saling berhubungan, UI harus didukung oleh UX yang konkret (Dwi Priyatmoko, 2017). Oleh karena itu, metode berpusat pada pengguna (UCD) dipilih untuk membuat UI dan UX yang sesuai dengan kebutuhan calon pengguna karena melibatkan pengguna atau calon pengguna secara langsung dan menggunakannya sebagai acuan saat membuat rancangan. Pengguna saat ini mengumpulkan informasi melalui wawancara, membuat user persona, membuat solusi masalah, membuat flow user, membuat wireframe, membuat antarmuka, dan membuat prototype. Karena keterbatasan waktu, proses evaluasi design tidak dilakukan dalam penelitian ini. Sebaliknya, proses tersebut akan dilakukan pada penelitian selanjutnya. Meskipun metode UCD terdiri dari empat tahapan, penelitian ini hanya melakukan tahap ketiga, yaitu perancangan prototype. Gambar 3.1 menunjukkan proses dan tujuan UCD.

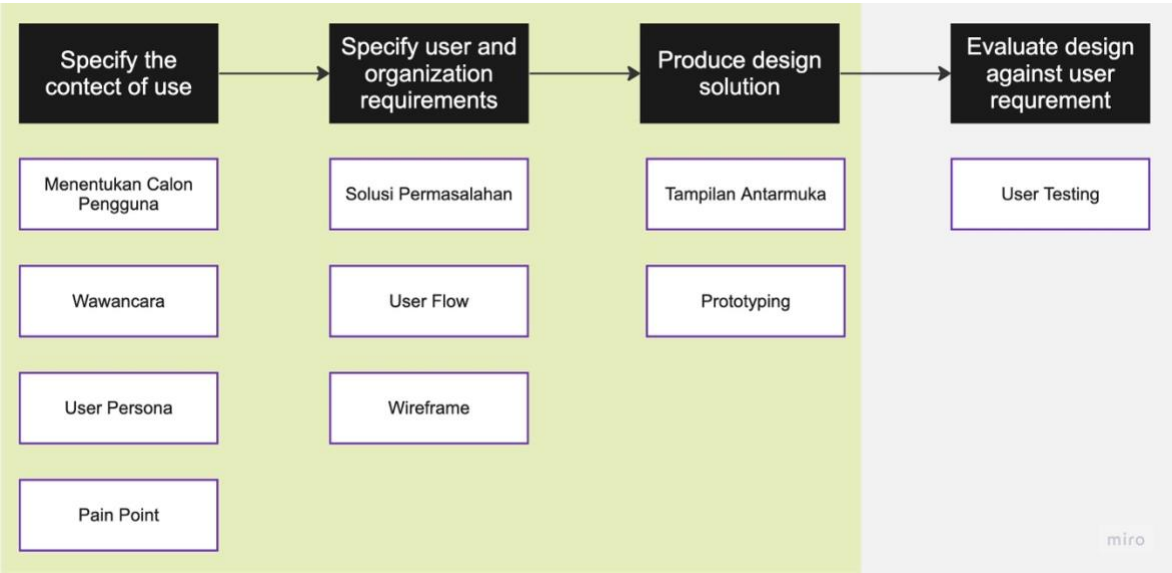

Figure 1: UCD stages and work points

3. THEORETICAL FRAMEWORK

3.1 Information System

In general, an information system is defined as an integrated system that can provide useful information for its users. Information systems have basic components: computer hardware, computer software, databases, networks, procedures, users for managing operations. Information system managers have structured management levels. The following is the definition of an information system according to Mulyanto as a component consisting of humans, information technology and work procedures that process, store, analyze and disseminate information to achieve a goal (Sarosa, 2017). It can be concluded that an information system is an organized combination of modules originating from components related to hardware, software, people and networks based on a set of computers that are interconnected or interact to process data into information to achieve goals.

3.2 Information System Development

When creating a system that will be used, each application developer is required to create a design for the system they want to create. This design aims to provide a general overview of the system that will run later to each stakeholder. System design is a complement to system analysis into a complete system with the aim of getting a better system. According to Kenneth and Jane (2003), system design is the activity of designing and determining how to process an information system from the results of system analysis so that the system meets requirements (Sarosa, 2017).

System design is determining the processes and data required by a new system. If the system is computer-based, the design can include specifications for the equipment to be used. System design stage (1) Prepare a detailed system design, (2) Identify various system alternatives, (3) Evaluate various system alternatives, (3) Evaluate various alternative system configurations, (4) Select the best configuration, (5) Prepare implementation proposals , and (6) Approve or reject the implementation of the system. It can be concluded that information system design is a process of translating the needs of information users into a design to meet user needs and provide a clearer picture for consideration (Sarosa, 2017).

3.3 Website

Websites are web pages that contain digital information such as text, images, audio, video, animation, or a combination of these elements. Everyone who has an internet connection can access the website using a browser such as Mozilla Firefox, Google Chrome, or others. Websites consist of three parts: words, photos, and code. Words are words used to make web content into understandable information. Images are photos that decorate information in the form of images guided by words so that the meaning can be understood. Lines of commands in the form of code, such as HTML (HyperText Markup Languge) code, CSS (Cascading Style Sheet) code, and so on, are known as code.

3.4 User Experience (UX)

According to ISO 9241-11 (1998), UX is the response and perception of users as their response to a product, service or system. How users feel happy and satisfied when consuming, holding, or seeing a product is also called user experience. Although designers cannot create UX, designers can turn user desires into good UX. According to Frank Guo (2012), user experience consists of four components:

a. Usability or usability
   This product allows users to perform their desired tasks with ease.
b. Valuable or valuable

Product features are a representation of user needs. Even though the product is easy to use, if the user's needs for the product are not met, it will be worthless.

c. Ease of access or adoptability
   The product must be easy to get, easy to download, easy to buy, and easy to reach for users so that it is easy to start using it. If the product has value and is valuable, then it cannot be considered to have good UX.
d. d. Likeability or disrability
   Appeal to the user's emotions determines desirability. Customers or users can experience a pleasant experience when using the product. A product is considered to have a good user experience or UX if it meets the four elements above.

3.5 User Interface (UI)

How a program interacts with users is known as the user interface, or UI (Ardy Setyawan, 2016). Everything displayed on the screen, reading documents, and manipulating with a mouse or keyboard are part of the user interface, which is often used to replace the term Human-Computer Interaction (HCI). The user interface (UI) functions to connect and translate information from the system to the user or vice versa. Therefore, UI can be described as an inter-relationship mechanism between software and hardware that forms the computer experience. Software user interfaces have two forms: GUI or Graphical User Interface and CLI or Command Line Interface. From the hardware side, there are several forms, such as USB, Fire Wire, and ADB or Application Desktop Bus.

3.6 User Centered Design (UCD)

Focus on users is a system design philosophy that places the user or users as the focal point. ISO 13407 states that the UCD method places the user at the center of development and serves as a reference for the design of the application to be created. User experience will shape the design. Applications that are closer to user needs will be more accepted in the market.

a. UCD Stages

UCD has four stages which can be seen in Figure 2.1 and the explanation for each stage is as follows:

1) Specify the context of use
   The first stage in this research is identifying potential users of the application or product to be created. This aims to obtain information from potential users under what circumstances they will use the application.
2) Specify user and organizational requirements
   The second stage in this research is determining the needs of users. User needs are obtained when identifying problems.
3) Produce design solutions
   The third stage in this research is designing the product according to the analysis of the problems that have been obtained and the needs of the users.
4) Evaluate design against user requirements
   The final stage in this research is to validate or test the product design that has been created. Testing can be repeated if the product design does not match the desires and needs of the user.

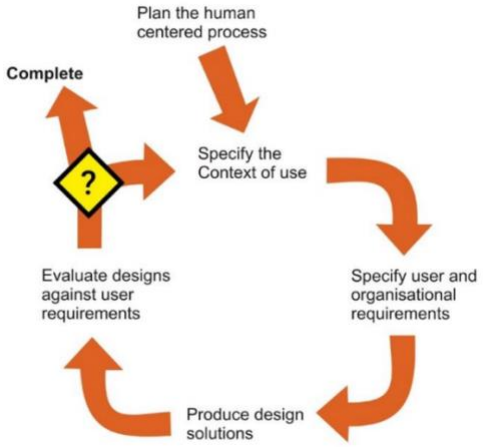

Figure 2: UCD stages

b. UCD Principles

UCD also has principles that must be considered. The following are several principles of UCD according to Meidian in (Widhiarso et al, 2007):

1) Focus on the user

To understand the characteristics of users, design can involve users by means of surveys, interviews and users can participate in making the design.

2) Integrated design

Planning must. covers. help system, user interface, configuration and technical support and installation procedures.

3) User testing

To get an optimal design in user-focused design, what must be done is observation of the user's own behavior, processing data after receiving fast feedback, insight into solving existing problems and not hesitating in changing the design.

4) Interactive design

The design must go through several validations to get the results that users expect.

c. UCD Rules

UCD also has rules, UCD rules are as follows (Amborowati, 2008):

1) Perspective

The user is always right. If there is an error in using the system, the problem is the system, not the user.

2) Installation

Users have the right to install and uninstall the system without any negative consequences.

3) Fulfilment

Users get the system that is promised.

4) Instructions

Users have the right to easy system installation such as instructions that are easy to carry out.

5) Control

Users have the right to control the system.

6) Feedback

Users have the right to get feedback from the system that is easy for users to understand.

7) Relatedness
   Users have the right to know the requirements clearly.
8) Boundaries
   Users have the right to know system limitations.
9) Assistance
   Users have the right to be able to communicate with technology providers.
10) Usability
   Users have the right to use it intuitively and naturally.

4. CONCLUSION

4.1. Product Design Solution

Based on the results of interviews conducted previously with five informants. So the next step is to design the UI which includes: designing the User Interface.

4.1.1 User Interface Design

The following is a design for the Lab website application interface. Multimedia PS IKOM using Figma software with a screen size of 1080px X 1920px. The color used in the interface is predominantly blue with a clean design theme. The language used is Indonesian to make it easier for users in the process of renting equipment and goods. An initial view of the design can be seen below:

1. Home interface display

The Home view on the website displays the tools and items owned by the Lab. PS IKOM Multimedia and these items are still available in the lab. In the banner section there is information on the latest items and mini workshops related to multimedia and an introduction to multimedia tools and items. It can be seen in Figure 3.

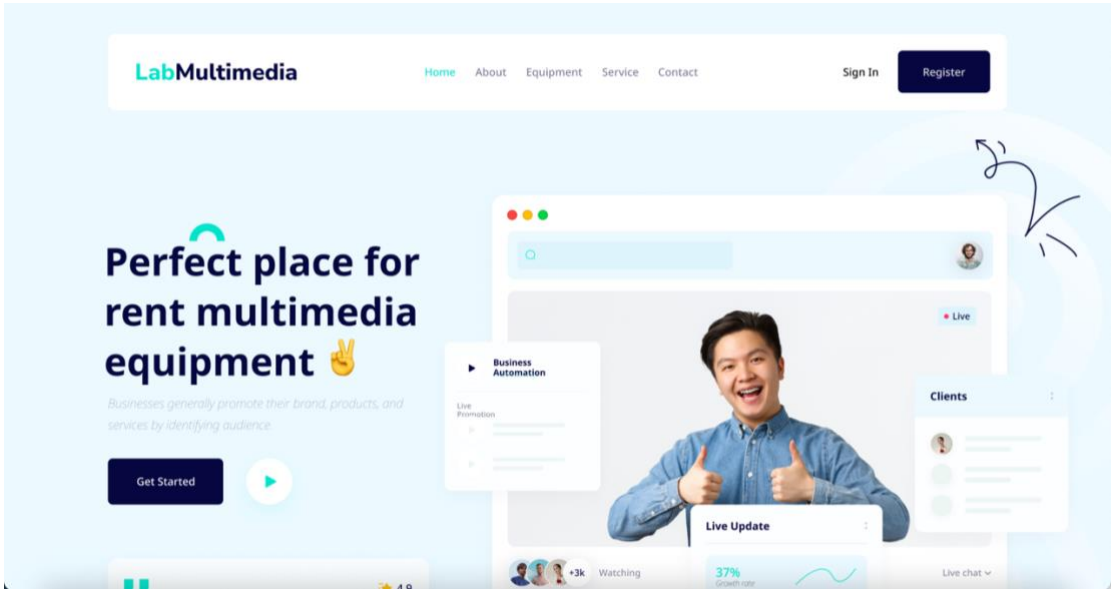

Figure 3 Home Interface

2. Home interface display

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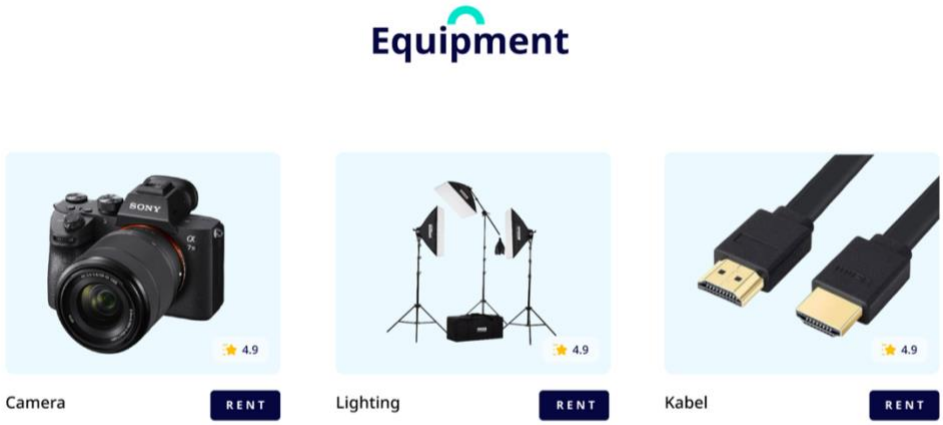

Figure 5 Product Category Interface

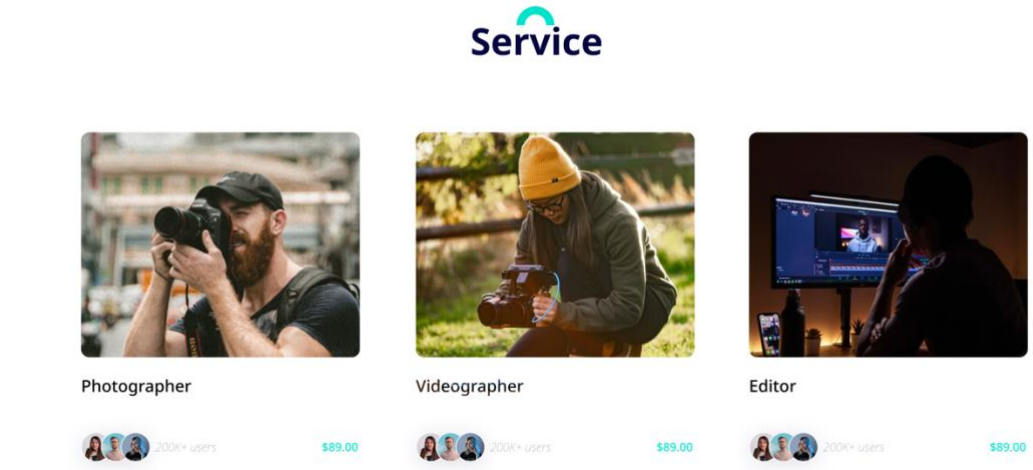

Figure 6 Service Interface

5. CONCLUSION

Based on research from the UI/UX design of the Lab application. Website-based PS IKOM multimedia uses the UCD model of the process of specifying the context of use, specifying user and organization requirements, producing design solutions, and evaluating design against user requirements. This research was carried out up to the produce design solution stage taking into consideration the limited research time. The research stages that have been carried out can be concluded as follows:

1. At the specify the content use stage, after carrying out the interview process, problems were found that required a system for processing transactions, borrowing, updating the goods data base in the Lab. PS IKOM Multimedia.

2. The next stage is specifying user and organization requirements, designing solutions to solve problems experienced by informants, after that designing user flow and designing wireframes, namely the framework of the Lab application website. PS IKOM Multimedia.

3. The final stage in this research is to produce the design solution which has produced the Lab website application design interface. PS IKOM Multimedia.

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