

Design and Finance of Al-Husna School Canteen Web Design Using Prototype Method

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Abstract

Designing a simple financial system that will be used by Al-Husna School canteen members to deposit how much food goes into the canteen and how much profit the food sold requires a prototype method in building Web Design for an initial overview when a simple financial system is created. used. The problem that occurred in this research was that the financial balance sheet for canteen income and expenditure was not effective, resulting in data not being recorded accurately and not being transparent between members of the Al-Husna canteen, so that after the system was created via Web Design as a prototype, it was also included in the assessment for further research. strong use of the Variable User Centered Design Indicator with a Likert scale formula to add up and produce an understanding of the position of Canteen Member Users with information according to the predetermined weight values. This Web Design design uses HTML, CSS and Java Script languages in its creation which are still very limited when Web Design is used. The results of this research were assessed by 10 canteen member respondents that the Al-Husna Canteen Financial Web Design indicator value for Learnability was 83, Efficiency was 84, Satisfaction was 86, Error Prevention was 86, and Memorability was 84, the average value was 84.6 which This means that the appearance of Al-Husna Canteen Financial Web Design is attractive in terms of use and display content.

I. INTRODUCTION

Technological developments follow the needs of world users in facilitating access to information searches using the internet. By connecting to the internet, information can be viewed in real time, stored, sent and can be changed at any time so that the information adapts to conditions, whether it needs to be developed or not. In this digital era, the information presented can be used for specific purposes according to the user's wishes through several information technology tools to support operational activities and relevant information is not left behind, through these tools users can access as far as they can. need. want the information side of any category. One way of access is through information technology devices connected to the internet network, namely accessing the school food information menu called the school canteen for convenience and practicality. Food and drinks in the canteen can be managed via the web [1]. So that currently internet activities have penetrated the world of education, this is carried out in Al-Husna Islamic education, where currently the food business in the canteen is sold in educational institutions to meet the needs of students and teachers when they are there. thirst and hunger still go smoothly. The processing of food and drink menus available in canteens has several problems with the recording of income and expenditure being less effective so that reports from a canteen contain several errors and result in confusion because there are often discrepancies between sellers and food parties. stock of drinks issued by the seller to the buyer.[2] With this problem there are less effective actions such as selling food and drink stocks secretly. When the seller ran out of stock, he then restocked the food and drinks without the knowledge of the head of the school canteen.

From there, a process flow was created using a canteen web prototype, which will produce a web display used by canteen sellers (canteen members) to see how easy it is for canteen members to understand how to use the website. which contains information on how many canteen members sell food, and records of food and beverage input and output stocks. Changes to notes are generally made verbally and there is a change in trust between

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canteen members and the canteen head. All food and beverage stocks are accessed via the web using the prototype method. At the same time, steps for designing a prototype using additional User Centered methods are also presented. The design that will be the result of designing with a prototype will be fulfilled through the support of User Centered Design Steps with data processing of the final results using a Likert scale. [3]. The design of this canteen web prototype involves several hardware devices such as computers and other accessories using the HTML and CSS programming languages so that the visualization of the web prototype is easier for canteen users to understand with a simple appearance but a lot of knowledge about how it works. canteen members stock food and drinks. with a simple appearance through a capable design for canteen members.[4] The collaborative prototype method uses additional methods to support the canteen website. This User Centered Design is the basis for the display steps that are formed through a prototype using User Centered Design including 1. Specify the context of use, 2. Specify User and Organizational Requirements, 3. Produce Design Solutions and 4. Evaluate design, these steps become a series in creating a web, how the design that will be used can be understood more quickly by canteen members and of course not only the User Centered Design process side but also the user learnability aspect in their ability to learn to use the web. , efficiency related to menu integration with other menus, satisfaction for canteen members and canteen heads. When everything is changed using the web, Error Prevention reduces the level of user error. When pressing 1 button with other buttons can be executed more quickly. The next step is what happens when the user presses the button menu and when the user makes a mistake what decision he has made then there is a menu that will still help if the user makes a mistake until the canteen users really understand it thoroughly and can carry out the menu activities easily and remember, then there is memorability that a system flow is embedded. When the page is finished, a page display will appear which will make it easy for canteen members to remember which pages have menu structure differences between one page and another [5].

II. RELATED WORKS/LITERATURE REVIEW

A. Web

Information media facilities that can be searched in real time to view text, images, videos increase insight and knowledge through the process of viewing information, deleting information, changing information, and storing information for consumption by readers or users [6].

B. WWW

The World Wide Web connects information documents via the internet with personal location portals that function for many people to access these information documents. With the World Wide Web, access to information can be searched through search engines with predetermined location names [7].

C. System

A collection of relational objects that interact with each other in one field with other fields to obtain implicit information in a parallel structured manner and can design Web Design menus that can be understood by users [8]

D. Web Design

Focus on designing with models, methods for building the web, and targeting users and needs according to the design process and design structure. until the design concept can be accepted in its entirety with its structure.[9]

E. Prototype

The formation of Web Design can be explained in graphic form, thoughts and ideas through the data collection process, prototyping process, prototyping evaluation, system code, system testing, system evaluation, system use [10]

F. Supporting Journal

The first research was on the Application of the Principles of Transparency and Accountability in Financial Management to Stakeholders at SD Islam Binakher, namely that decisions are made in writing and are available to parties who need them and there is a mechanism to ensure that standards have been set. fulfilled, namely the aim is to apply the principles of transparency and accountability in financial management, the conclusion is the creation of healthy finances that are known by various parties.[11] The second research is a food order management application in the Telkom University canteen, designing a canteen order management application using a system, which can make accurate reports, monitor finances and orders, simplify transactions, make reports and see the financial condition of the Telkom University canteen. canteen.[12] The third research applies the User Centered Design Method in Designing the User Experience of the I-Star Application, the web display attracts the user's attention, provides memory that is easy to understand, makes it easy to register via the web easily and can reduce costs. happen. risk of payment fraud.[13] Fourth Research Analysis User Experience and Online News Portal Website Redesign User Centered Design (UCD) Method Case Study: Cakrawala.co in this type of research

the information display presents several news items. a place that provides news content that is easy to understand, by using the UCD method to understand the web, users can more quickly select news according to category.[14] This fifth research is Heuristic Evaluation of Web-Based Learning to Improve Aspects of System Usability, overall web page display using 10 heuristic method principles and web page assessment using the heuristic method with the Likert scale calculation formula [15]

III. METHODS

This Web Design design took the form of a Prototype Model which was driven through the User Centered Design method instrument and supported by 10 respondents who processed the data using a Likert scale.

A. UCD (User Centered Design)

This method determines user needs, analyzes web measurements until the design is acceptable when the web is used, one of which is user characteristics, workflow in design, the iterative process carried out in this method runs continuously following the User Centered principle. Design method 1. Focus on the user, Through this step, the design display is based on an interview and survey process so that user understanding does not fail. 2. channeled planning. mutually supporting systems include user interface, help, and application configuration installation support for web use that can be used in one web page window. 3 user testing, in this principle it is necessary to test the web display that is first used by new users through several respondents for use and assessment. 4 interactive design, integrated systems need to be used repeatedly to ensure all systems communicate smoothly in terms of interaction design, [16] here is the process of the User Centered Design method:

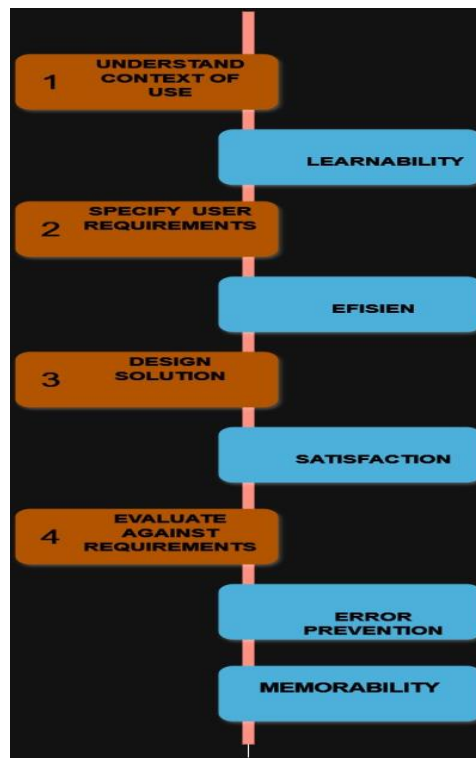


Figure 1. User-Centered Design Flow

In the picture above is the flow of implementing the User Centered Design Method with several additional uses such as Learnability, Efficiency, Satisfaction, Error Prevention, Memorability to focus on web prototypes, here are the steps for using the User Centered Design method:

1. Understand the Context of Use
Preparation for designing a school canteen web focuses on who the users will be on the web, so here there is an additional formula called Learnability to find out which users can use information technology tools to what extent so that the size of the web display is created. as simple as possible.
2. Define User Requirements
Observe canteen members at any point where they find it difficult when carrying out activities selling food and drinks which will later be included in the web design so that the appearance meets their needs efficiently.

3. Design Solutions
Create a web design prototype from input from several canteen members and canteen leaders, then the level of satisfaction needs to be explored so that the design can be used by canteen members.
4. Evaluate Requirements
Web designs that have been created through prototyping need to be evaluated to prevent Error Prevention errors and maintain memory when the web prototype is completed. So the user's memory of all web pages is the key to the success of the prototype display that can be presented to the user

B. Likert Scale

The Likert scale connects Web Design assessment measurements with prototype interface experience based on indicator variables in the User Centered Design method and is assessed using the Likert scale formula to provide information on the average value included in the description [17].

TABLE 1
ASSESSMENT STANDARDS

Value weight	Range	Scale
1	20	Very Uninteresting
2	40	Not attractive
3	60	Neutral
4	80	Interesting
5	100	Very interesting

In the table 1 above, respondents will assess the number range from 1 to 5, where the contents of the number provide information from value 1 is very unattractive, value 2 is not attractive, value 3 is neutral, value 4 is attractive, and value 5 is very attractive.

Calculation formula using a Likert scale:

T = Total number of respondents who voted

Pn = Choice of Likert score numbers

Y = Highest Likert score x number of

respondents X = Lowest Likert score x number of respondents

$$Percentage = \frac{Indicator\ Value\ Results}{Maximum\ Value\ Results} \times 100\% \quad (1)$$

IV. RESULTS

A. User-Centered Design Steps

In the table below are the steps for combining the method between prototype and User Centered Design and is fully supported by usability consisting of Learnability, Efficiency, Satisfaction, Error Prevention and Memorability with the explanation below:

TABLE 2
USER CENTERED DESIGN AND USABILITY

No	Learnability	Understand user context
1	The Food and Beverage Stock Menu is understandable	The canteen head ensures that all food and drink stock data is entered into the website
2	The profit stock and leftover food and drink menus are easy to understand	Canteen members can ensure all food and drinks enter and exit the web correctly.
3	Understandable Report Menu	The canteen chairman can make good financial reports on canteen income and expenditure
4	Menu for each member's account	
5	The function of the flowchart web button is easy to understand	Programmers analyze who will later design the system through a web prototype
6	Writing web menus is easy to understand	
No	Efisiensi	Specify User Requirements
1	Each account menu is integrated with each other	The web page display can create an account for each canteen member

2	Practical menu display when viewing other food stocks	The food and beverage stock prototype web page section for each member can see each other transparently
3	There is an unfinished stock of food menu boxes	The web page display can see when there are several canteen members whose stock has not run out and can help each other
4	The group selection menu is relatively easy to understand and integrates	
5	The appearance of web forms to other forms is easy to read	Creating a very simple system without many menus makes it easy to integrate pages that are connected to each other
6	The menu content is small, the benefits are many	
No	Satisfaction	Solution Design
1	Make a relevant menu that is easy to understand	Create a CRUD (Create. Read, Update. Delete) display for food and beverage stocks
2	create a modern menu in terms of design	There is a menu page that is easy to read and makes no mistakes
3	Each menu web page is interconnected	The appearance of each web page is integrated with each other
4	Privacy menu about the overall advantages and disadvantages	
5	The security of each web page is verified together	Create total security over all profits from each canteen member account
6	All member data remains safe	
No	Error prevention	Design Evaluation
1	All pages of each web page function according to function	Confirm all web pages can run smoothly
2	All menus contain appropriate writing to avoid errors	All menus can run normally
3	The page provides information if the user chooses the wrong page menu	
4	provide quick notifications if the user makes the wrong menu selection	There are no problems on the web page
5	There is a guide menu for using the web page	
6	There are options that convince users to choose the menu	
No	Memorability	Design Evaluation
1	A modern menu display that is easy to remember	Make sure all web pages can run smoothly
2	Displays menus and web pages according to their functional contents	All menus can run normally
3	Menu contents and descriptions are easy to remember	
4	The order in which you use the menu is easy to remember	There are no problems on the web page
5	Menu colors are easy to understand and remember	
6	The menu form is easy to understand	

In the table above is a web assessment using usability and User Centered Design steps along with an explanation of the meaning of usability variables included in the User Centered Design category which can influence web use and web assessment using several weights from 1 to 5. Later. [18].

1. Design Plan

This design plan describes the overall system flowchart so that it is easy to understand. When the system is running with a prototype description, the following image can be presented:

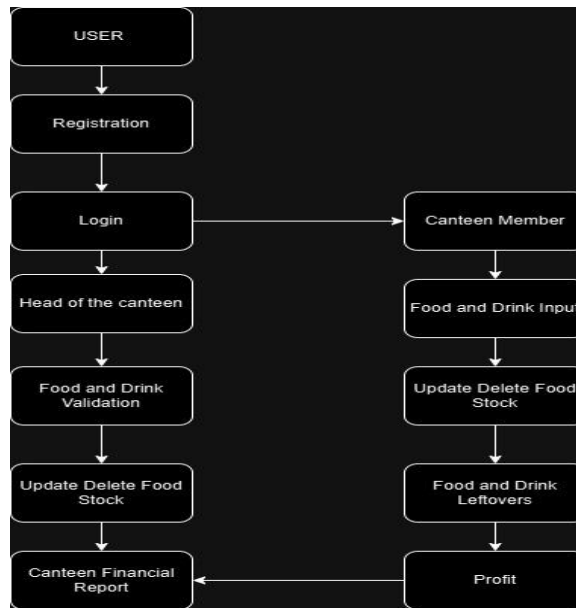


Fig. 2 Design Plan

In the display above the general overview of the design which contains several menus is made simpler and made as short as possible but it feels like the use of functions provided by several interconnected flows, so that in the table display above it is a structural design designed using a prototype. [19]

B. Canteen Web Design Prototype

The prototype depicts when the user will use Web Design in progress with several Web Design pages that need to be used. The following is one of the views of the designed Web Design:



Fig. 3 Home Menu

In the image above is the initial display of the prototype where in this display the user understands the desired menu options according to their needs and this is included in the User Centered Design category Understanding User Context [20].



Fig. 4 Login Home

C. Canteen Web Design Assessment using the User Centered Design

This assessment method, the focus is on the Al-Husna Canteen User Interface which on the web display will be used by several canteen members and canteen owners in monitoring and viewing activities via the web, so it needs to be understood when users use, operate and can be used as a step that the canteen has a system where everything is recorded properly and correctly.

TABLE 3
RESULT VALUE USABILITY & USER CENTERED DESIGN

Assessment Aspects	Statement	1	2	3	4	5
Learnability	The Food and Beverage Stock Menu is understandable			1	5	4
	The profit stock and leftover food and drink menus are easy to understand			1	4	5
	Understandable Report Menu			1	6	3
	Menu for each member's account			2	6	2
	The function of the flowchart web button is easy to understand			2	5	3
	Writing web menus is easy to understand			1	4	5
Efisiensi	Each account menu is integrated with each other			1	7	2
	Practical menu display when viewing other food stocks			1	5	4
	There is an unfinished stock of food menu boxes			1	6	3
	Each account menu is integrated with each other			1	5	4
	Practical menu display when viewing other food stocks			2	6	2
	There is an unfinished stock of food menu boxes			1	5	4
Satisfaction	Make a relevant menu that is easy to understand			1	5	4
	create a modern menu in terms of design			1	5	4
	Each menu web page is interconnected			1	5	4
	Privacy menu about the overall advantages and disadvantages			2	4	4
	The security of each web page is verified together			1	5	4
	All member data remains safe			1	5	4
Error prevention	All pages of each web page function according to function			1	6	3
	All menus contain appropriate writing to avoid errors			1	5	4
	The page provides information if the user chooses the wrong page menu			1	5	4
	provide quick notifications if the user makes the wrong menu selection			1	3	6
	There is a guide menu for using the web page			1	6	3
	There are options that convince users to choose the menu			1	4	5
Memorability	A modern menu display that is easy to remember			1	6	2
	Displays menus and web pages according to their functional contents			1	3	6
	Menu contents and descriptions are easy to remember			1	7	2
	The order in which you use the menu is easy to remember			1	4	5
	Menu colors are easy to understand and remember			1	7	2
	The menu form is easy to understand			1	5	4

The table above consists of the weights that must be filled in by 10 respondents, which are filled in using Google Form with a value range of 1 to 5, then after filling in all the results will be processed using the Likert scale formula from User Centered Design Indicators, the results are as follows. follow:

TABLE 4
USER-CENTERED DESIGN DATA PROCESSING RESULTS USING LIKERT SCALE

Assessment Aspects	Statement	Total Score	Calculation Results
Learnability	The Food and Beverage Stock Menu is understandable	43	$\frac{43 + 44 + 42 + 40 + 35 + 44}{50} \times 100$ $\frac{248/6}{50} \times 100$ $\frac{41,33}{50} \times 100 = 83$ (Interesting)
	The profit stock and leftover food and drink menus are easy to understand	44	
	Understandable Report Menu	42	
	Menu for each member's account	40	
	The function of the flowchart web button is easy to understand	35	
	Writing web menus is easy to understand	44	
Efisiensi	Each account menu is integrated with each other	41	$\frac{41 + 43 + 42 + 43 + 40 + 43}{50} \times 100$ $\frac{252/6}{50} \times 100$ $\frac{42}{50} \times 100 = 84$ (Interesting)
	Practical menu display when viewing other food stocks	43	
	There is an unfinished stock of food menu boxes	42	
	Each account menu is integrated with each other	43	
	Practical menu display when viewing other food stocks	40	
	There is an unfinished stock of food menu boxes	43	
Satisfaction	Make a relevant menu that is easy to understand	43	$\frac{43 + 43 + 43 + 42 + 43 + 43}{50} \times 100$ $\frac{257/6}{50} \times 100$ $\frac{42,83}{50} \times 100 = 86$ (Interesting)
	create a modern menu in terms of design	43	
	Each menu web page is interconnected	43	
	Privacy menu about the overall advantages and disadvantages	42	
	The security of each web page is verified together	43	
	All member data remains safe	43	
Error prevention	All pages of each web page function according to function	42	$\frac{42 + 43 + 43 + 45 + 42 + 44}{50} \times 100$ $\frac{259/6}{50} \times 100 \dots$ $\frac{43,16}{50} \times 100 = 86$ (Interesting)
	All menus contain appropriate writing to avoid errors	43	
	The page provides information if the user chooses the wrong page menu	43	
	provide quick notifications if the user makes the wrong menu selection	45	
	There is a guide menu for using the web page	42	
	There are options that convince users to choose the menu	44	
Memorability	A modern menu display that is easy to remember	37	$\frac{37 + 45 + 41 + 44 + 41 + 43}{50} \times 100$ $\frac{251/6}{50} \times 100$ $\frac{41,83}{50} \times 100 = 84$ (Interesting)
	Displays menus and web pages according to their functional contents	45	
	Menu contents and descriptions are easy to remember	41	
	The order in which you use the menu is easy to remember	44	
	Menu colors are easy to understand and remember	41	
	The menu form is easy to understand	43	

From the calculation above, you can add up the maximum scores for all User Centered Design aspect indicators which consist of the categories learnability, efficiency, satisfaction, error prevention, memorability, then divide again by the maximum score from the respondent, $10 \times 5 \times 30 = 1,500$ questions using runus:

$$\frac{\text{Maximum results obtained}}{\text{Maximum Results}} \times 100 \% \quad (2)$$

$$\begin{aligned} \text{Total score for each indicator } & 43+44+42+40+35+44+41+43+42+43+40+43+ 43+43+43+42+43+43+ \\ & 42+43+43+45 +42 + 4+ 37+45+41+44+41+43 = 1,267 \\ & 1,267 / 1,500 \times 100 = 84.46. \end{aligned}$$

The value of all aspects of learning, efficiency, satisfaction, error prevention and retention are presented through the User Centered Design method with attractive results on the design prototype web page

V. DISCUSSION

On the results of the understanding value, the context of using the learning ability value 84 with interesting information whose contents regarding the Food and Drink Stock Menu can be understood, Profit stock and remaining food and drink menus are easy to understand, Report Menu can be understood, Account menu for each member, Easy web flowchart button function understand, Writing web menus is easy to understand and the resulting value determines user needs in terms of usability efficiency value with a value 84 which contains: Each account menu is integrated with each other, Practical menu display when looking at other food stocks, There is a stock of food menu boxes that has not yet run out, Group selection menus are relatively easy to understand and integrate, The display of web forms to other forms is easy to read. The menu content is small, the benefits are many, The value resulting from the design solution is seen from the satisfaction score with a score of 86 which consists of Creating menus that are relevant and easy to understand, Creating menus that are modern in terms of design, Each menu web page is interconnected, Privacy Menu regarding overall advantages and disadvantages. Overall, the security of each web page is verified together, all member data remains safe.

The evaluation results of the requirements for error prevention are 86, consisting of: All pages on each web page function according to their function, All menus contain appropriate text to avoid errors, The page provides information if the user chooses the wrong page menu, Provides quick notification information if the user makes a mistake. selecting the menu, there is a guide menu in using the web page, there are options that convince the user to choose the menu, and the results of the evaluation of the requirements for memory value are 84, including modern menu displays that are easy to remember, display menus and web pages according to function content, easy to remember menu contents and descriptions, easy to remember order of menu use, menu colors that are easy to understand and remember, Menu form that is easy to understand.

The highest score for the user centered design method is 86 for satisfaction and error prevention and the lowest score is 83 for usability learnability. The total score using the User Centered Design method is 1.267 with interesting information.

VI. CONCLUSION

The results of the User Centered Value in the Understand Context for use field in building food stocks are 83, which means it is interesting. The resulting value of Determine the user needs of canteen members who will use 84 with interesting information. The result of the solution design value from user centered design in terms of the level of satisfaction when using the web display is 86 with interesting information

The results of the evaluation of the requirements which focus on the error prevention value of 86 and memory of 84 with explanations are all interesting. The total score on the prototype web display using the User Centered Design method with the values of Learnability, Efficiency, Satisfaction, Error Prevention and Memorability is 84.46 with the results obtained being interesting.

This canteen web design uses the programming language Hypertext Markup Language, and Cascading Style Sheets, which along with the growth of web usage will be used by several canteen members, are very simple so that users can understand them. In the future, this design will use the Hypertext Preprocessor programming language and use its database so that web development can be more perfect and maximize the use of data that is integrated with each other so that all features can be more complex.

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