

# Design and Evaluation of UI/UX of Siwi Village in West Papua Province Using Cognitive Walkthrough

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**Abstract-** This research aims to design the User Interface (UI) of the Siwi Village website, located in South Manokwari Regency, West Papua Province, and to evaluate its User Experience (UX). This is due to the numerous tourism potentials in the area that remain largely unknown to the public and hold significant economic potential. The UI/UX evaluation process was conducted using the Cognitive Walkthrough method. Figma was employed as a tool in the design process. During the evaluation phase, a questionnaire was constructed and tested by 35 respondents to assess user satisfaction with the UI. Although the overall evaluation results at this stage were quite satisfactory, the information regarding the village's tourism potential was found to be insufficiently highlighted. Therefore, a subsequent user experience evaluation was conducted involving 5 new users, utilizing the Cognitive Walkthrough method. The evaluation results using this method indicated high satisfaction levels in terms of Learnability (94%), Effectiveness (Quality rate 96%, Error rate 4%), and Efficiency (Time-Based Efficiency 0.016 goals/second or 1.6%), with an average task completion time of 8.74 seconds. Recommendations include the use of more attractive color combinations, the addition of feedback or suggestion boxes, and a click-to-enlarge image feature. This research is expected to contribute positively to the development of the Siwi Village website UI, resulting in higher user satisfaction levels.

**Keywords:** Cognitive Walkthrough, Design, Evaluation, Usability Testing, UI/UX, Website

**Abstrak-** Penelitian ini bertujuan untuk mendesain antara muka (*User Interface/UI*) *website* Kampung Siwi, Kabupaten Manokwari Selatan Provinsi Papua Barat dan mengevaluasi (*User Experience/UX*) nya. Hal ini karena begitu banyak potensi wisata di daerah tersebut yang belum diketahui oleh khalayak ramai dan berpotensi ekonomi. Proses evaluasi UI/UX dilakukan dengan memanfaatkan metode *Cognitive Walkthrough*. Figma digunakan sebagai alat bantu dalam proses desain. Pada tahapan evaluasi, sebuah kuesioner dibangun dan diuji oleh 35 responden untuk melihat tingkat kepuasan pengguna UI tersebut. Walaupun secara keseluruhan hasil evaluasi pada tahap ini cukup memuaskan namun informasi terkait potensi pariwisata kampung tersebut ternyata kurang dimunculkan. Oleh karena itu, evaluasi pengalaman pengguna selanjutnya dilakukan dengan melibatkan 5 pengguna baru dan memanfaatkan metode *Cognitive Walkthrough*. Hasil evaluasi dengan metode ini menunjukkan tingkat kepuasan tinggi dalam aspek *Learnability* (94%), *Effectiveness* (*Quality rate* 96%, *Error rate* 4%), dan *Efficiency* (*Time-Based Efficiency* 0,016 *goal/second* atau 1,6%), dengan rata-rata waktu penyelesaian tugas 8,74 detik. Rekomendasi mencakup penggunaan kombinasi warna yang lebih menarik, penambahan fitur umpan balik atau kotak saran, dan fitur klik untuk memperbesar gambar. Penelitian ini diharapkan memberikan kontribusi positif pada pengembangan UI situs *website* Kampung Siwi yang mendatangkan tingkat kepuasan pengguna yang lebih baik.

**Kata Kunci:** *Cognitive Walkthrough, Design, Evaluation, Usability Testing, UI/UX, Website*

## 1. Introduction

In the current era of globalization, technological advancements have had a profound impact on human life, particularly in the dissemination of information in rural areas. Many villages have now adopted mobile platforms or websites as tools to facilitate information exchange. This brings significant benefits by enhancing efficiency and simplifying the implementation of various activities with greater speed, precision, and accuracy.

Consequently, overall productivity can be significantly enhanced [1].

Websites have become one of the primary means of disseminating information, particularly within governmental institutions. This holds true for the case of Siwi Village, which previously lacked information that can be accessed online and easily. Consequently, researchers are motivated to design a user interface (UI) for the website that facilitates access to information, particularly

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for individuals outside the village who are interested in Siwi Village. The primary focus of the design process lies in ensuring that the UI delivers a comfortable and intuitive user experience, catering to both external visitors and locals seeking information about Siwi Village [2].

Responding to the aforementioned issue, this research is conducted to implement the concepts and methods of UI/UX into interface design utilizing software such as Figma as the primary tool. Figma will be utilized from the initial design stage in the form of sketches or wireframes, also known as low-fidelity, to the prototyping stage or high-fidelity [3]. In website development, User Interface (UI) and User Experience (UX) play pivotal roles. UI involves how users interact with a device, while UX refers to the user's experience when using an application or website. Optimal UI and UX designs can engage visitors, encouraging prolonged engagement with the site, whereas subpar designs may prompt them to leave. UI is considered a key element in computer-based systems or products, and the quality of UI and UX designs significantly impacts the success of a website [4].

Based on the background and issues outlined above, this research aims to design the User Interface for the website to address the absence of an official Siwi Village site to introduce its potential, especially in tourism, and to enhance online information access. Here is the link to the prototype of the Siwi Village User Interface design (<https://shorturl.at/bdepQ>). Subsequently, usability testing was conducted on the UI design of the Siwi Village website. Usability Testing is a key factor in the development of applications or websites. Usability encompasses how effectively users can utilize a product or service to achieve their goals and how easily the application or website interface is understood by users to create satisfaction when using it [5]. The method chosen for this research is a cognitive walkthrough, as it is deemed suitable for evaluating user responses to the newly developed website. The testing primarily focuses on learnability, effectiveness, and efficiency. The results of the testing will be used to make improvements to the website that has been created [6].

Several previous studies related to the current research have applied usability evaluation techniques using the Cognitive Walkthrough (CWT) approach. The following are some studies that have utilized the Cognitive Walkthrough method to test system usability.

The study conducted by Priyo Raharjo, Wisnu Ananta Kusuma, and Heru Sukoco, titled "**Usability Test Using Cognitive Walkthrough Method on the Library Website of Mercu Buana University Jakarta**", aims to identify user problems and provide interface improvement recommendations for the website. Usability testing was performed on the library website of Mercu Buana University using the cognitive walkthrough method. The results indicate a task completion rate of 90% among respondents, with an average time of 680 seconds. Issues involved book search, thesis downloading, finding journal titles, and articles from

ProQuest. Necessary improvements include implementing new search filters, placing a search box on every page, displaying availability status without clicking, and using appropriate terminology [7].

The following study, conducted by Muhamad Arrofi Arga Kusumah, Retno Indah Rokhmawati, and Faizatul Amalia, titled "**Usability Evaluation on XYZ E-commerce Website Using Cognitive Walkthrough and System Usability Scale (SUS) Method**", is aimed at assessing the usability aspects and identifying issues on the XYZ website to maintain and enhance its e-commerce performance. The evaluated usability aspects include learnability, effectiveness, efficiency, and satisfaction. The research methodology involves cognitive walkthrough, usability testing, and the System Usability Scale (SUS). Cognitive walkthrough and usability testing were performed by five users who had not previously used the XYZ e-commerce website, with the objective of identifying issues and assessing learnability, effectiveness, and efficiency. A total of 58 usability issues were identified through a cognitive walkthrough, encompassing 21 distinct problems. The results of usability testing indicated a learnability score of 86%, an effectiveness score of 24%, and an efficiency score of 0.02 seconds. The satisfaction aspect was evaluated using SUS with the participation of 20 respondents who had prior experience with the XYZ e-commerce website, yielding a score of 57.625. Recommendations for usability improvement involve enhancements to both user interface design and system functionality as solutions to the evaluation findings [8].

The subsequent study conducted by Aang Subiyakto, Nurul Shifa, Ahmad Sulhi, and Rumi Kamal, titled "**Evaluation of Website Usability Using Cognitive Walkthrough Method**", aims to assess the usability aspects of a website through the utilization of the cognitive walkthrough method involving its users. Out of the five participants involved, only three managed to complete two scenarios, while the remaining two participants failed to complete any scenario. The success rates were 0.00% for ST1, 60.00% for ST2, and 60% for ST3. Additionally, it is noted that the users encountered significant difficulties, particularly during the process of registering for freelance vacancies on the DOT Partner website, followed by registering for internship positions, and lastly, when registering for vendor ship opportunities. From the entirety of the testing outcomes, it can be inferred that numerous challenges persist for users navigating the DOT Partner website, specifically in the realms of registering for freelance, partnership, and internship vacancies [9].

## 2. Theoretical Framework

### 2.1. Figma

Figma is a prominent design tool frequently utilized for crafting layouts of mobile applications, desktop interfaces, websites, and more. Accessible across Windows, Linux, or Mac operating systems with an



internet connection, Figma stands out for its capability to facilitate concurrent collaboration among multiple individuals, irrespective of their geographical locations. This feature fosters efficient teamwork, rendering Figma a popular choice among UI/UX designers for swiftly and effectively prototyping websites or applications [10].

### 2.2. Design

Design is a step that follows analysis in the system development life cycle. It involves the process of depiction, planning, and sketching or arranging separate elements into a cohesive and functional whole. This process encompasses the configuration of software and hardware components of a system. In the context of UI/UX design, this stage commences with the creation of user interfaces to facilitate interaction between users and the system. The quality of the user experience produced will influence the ease or difficulty of system usage [11].

### 2.3. Prototype

A prototype is an initial working model of a program or software development. In English, the term "prototype" is also known as "purwarupa." Generally, a prototype is created as an example or model for demonstration purposes, or as part of the development or creation process of software. The word "prototype" originates from Latin, where "proto" means original, and "typus" means form or model. In non-technical terms, a prototype is a specific example representing a particular category [10].

## 3. Research Method

### 3.1 The Research Flow

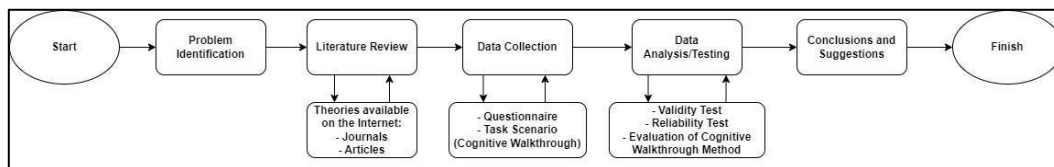


Figure 1. The Research Flow

Figure 1 illustrates the sequential stages of the research flow, commencing from problem identification, literature review, method selection, and culminating in issue resolution. Subsequently, UI/UX design and user testing are conducted to evaluate system usability. The research is concentrated on UI/UX design utilizing usability testing methods and designs that consider user needs.

### 2.4. User Interface

User Interface (UI) is the graphical layout science within websites or applications, encompassing interactive elements such as buttons, text, images, and others. Its purpose is to create an effective interface for software systems. The quality of UI often determines the usability of the system; poor interfaces can lead to fatal errors and decrease user satisfaction. Therefore, UI design should consider user needs and preferences and involve them in the design process [12].

### 2.5. User Experience

User Experience (UX) is a field of study that examines what users feel when using a system, ensuring they experience satisfaction afterward. User Experience (UX) encompasses the perceptions and responses of users towards a system, product, or service. UX is designed to facilitate users in achieving their goals when interacting with a product, supported by a well-designed user interface (UI) [13].

### 2.6. Website

The World Wide Web (WWW) or websites serve as informational platforms utilized by companies, organizations, or institutions to introduce their products and services to the public. These websites function as applications containing various multimedia documents such as text, audio, images, animations, and videos. Access to websites is facilitated through the *Hypertext Transfer Protocol* (HTTP) protocol and can be achieved using software known as a browser [14].

The stages of the research process undertaken in designing the UI/UX of the Siwi Village website using the Cognitive Walkthrough method can be seen in Figure 1.

### 3.2 Use Case Diagram

In this study, the Use Case Diagram is utilized to identify the various functions present on the website and to determine the parties entitled to use these functions. This can be seen in Figure.



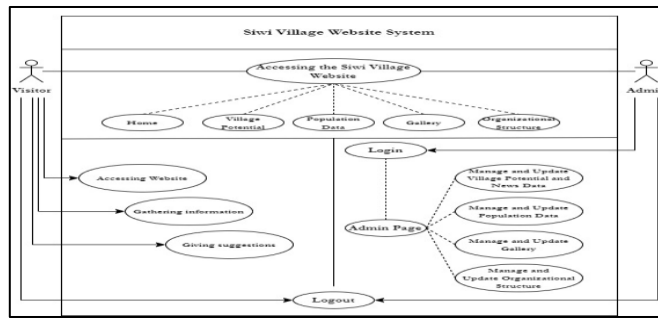


Figure 2. Use Case Diagram

In Figure 2, the features accessible by both administrators and visitors within the Siwi Village website system are delineated. Administrators possess the capability to manage various aspects including village potentials, news updates, demographic data, gallery content, governmental structure, and incident reports. Conversely, visitors are afforded limited access, primarily for obtaining information and offering suggestions. This system is meticulously crafted to facilitate interaction and cater to user needs.

### 3.3 Usability Testing

Usability Testing is one of the evaluative methods in usability that involves observing users interacting with a design, followed by the analysis of collected data. Throughout the testing process, participants endeavor to complete specific tasks, while observers meticulously observe, listen, and document their actions and behaviors [15].

In this stage, Usability Testing is employed to identify usability issues by gathering both qualitative and quantitative data, as well as assessing the level of user satisfaction with the Siwi Village website.

### 3.4 Cognitive Walkthrough

Cognitive Walkthrough is an evaluative technique utilized to estimate the ease with which an individual can comprehend and execute tasks within a web system. In this method, the evaluator (researcher) observes the steps taken by users while performing specific task scenarios devised by the evaluator. Consequently, the researcher can assess the comprehensibility of the web system by users [12].

In usability testing utilizing Cognitive Walkthrough, there are two distinct stages: preparation and execution.

### 3.5 Preparation Phase

This includes literature review, respondent selection, scenario preparation, and questionnaire compilation to evaluate the quality of the user interface of the Siwi Village website:

### 3.5.1 Literature Review

At this stage, a literature review is conducted to gather references from various sources such as scholarly journals, books, theses, and other relevant information related to the issue at hand. By meticulously analyzing and synthesizing the literature, the author can obtain a profound understanding of the research topic and construct a robust conceptual framework. Through this approach, these references serve not only as guides but also enrich the theoretical and methodological foundation of the ongoing research.

### 3.5.2 Selecting Respondents

In this phase, the researcher chooses to conduct a usability trial using the cognitive walkthrough method on the user interface of the Siwi Village website involving 5 respondents. The selected respondents are drawn from the demographics of students and working individuals who lack prior experience in using the website. The criteria for respondent selection include proficiency in computer and internet operations, while also considering the levels of knowledge, skills, and frequency of internet, web browser, website, and search engine usage. Meanwhile, to assess the quality of the user interface of the Siwi Village website through a questionnaire, the participation of 35 respondents is required. The process of selecting respondents for the questionnaire trial also takes into account similar aspects as the preceding usability trial.

### 3.5.3 Task Scenario

At this stage, the cognitive walkthrough testing process commences with the meticulous design of 10 (ten) task scenarios to be executed by the participants. These scenarios are carefully crafted in accordance with the menus available on the Siwi Village website [7]. Table 1 presents the arrangement of task scenarios that respondents are required to execute.

Table 1 Task Scenario

No	Task
1	Log in to the Siwi Village website.
2	View the brief information available on the "Homepage".



- 3 Watch a village profile video on the 'Homepage'.
- 4 Select and examine the information in the "Village Potential" section.
- 5 Choose and read one of the news items in the "Brief News" section.
- 6 Select and review the information in the "Population Data" section.
- 7 Choose and view the photo documentation in the "Gallery" section.
- 8 Select and examine the organizational structure in the "Organizational Structure" section.
- 9 Check one of the local 'Social Media' accounts.
- 10 Log out from the Siwi Village website.

Source (Mubarrak et al., 2023) [16].

### 3.5.4 Questionnaire on the Quality of User Interface (UI) Siwi Village Website

At this stage, a total of 35 respondents will be requested to fill out ten (10) questionnaires related to the quality of the user interface (UI) on the Siwi Village website. The purpose of filling out these questionnaires is to enable the researcher to gather in-depth information regarding user experience and to understand various

relevant and detailed aspects of user interaction with the UI of the Siwi Village website [17]. The questionnaires used in this study are sourced from previous related and validated research. Specifically, the questionnaires in this study are derived from (Pasha et al., 2023) [18]. Table 2 presents the arrangement of the questionnaire regarding the quality of the Siwi Village website.

**Table 2. Questionnaire**

No	Questionnaire	Category
1	The website's navigation was straightforward and intuitive.	Learnability
2	I swiftly identified the site's main features.	Learnability
3	The guidance and assistance provided on the website aided me in understanding its usage.	Learnability
4	I received relevant and prompt information on this website.	Learnability
5	The website offers shortcuts or features that enhance efficiency in usage.	Efficiency
6	I rarely encountered delays or technical issues while using this website.	Efficiency
7	The interaction process with the website proceeded smoothly and efficiently.	Efficiency
8	The website assisted me in achieving my objectives effectively.	Efficiency
9	I am satisfied with the outcomes derived from my use of this website.	Effectiveness
10	Top of Form	Effectiveness

Source (Pasha et al., 2023) [18].

### 3.6 Execution Phase

The sequence encompasses the Implementation Test of Prototype Design, Distribution of Questionnaires, Questionnaire Testing (Validity and Reliability Testing), and Usability Testing Evaluation (Cognitive Walkthrough):

#### 3.6.1 Implementation Test of Prototype Design

At this stage, the implementation of the prototype design involves the presentation of the Admin page, Home, Village Potential, Population Data, Gallery, and Organizational Structure. The objective is to evaluate the prototype that has been formulated by gathering feedback from users regarding the planned website design. Testing is conducted by involving users to ensure that they can interact with the prototype seamlessly and to validate the effectiveness of the design. Usability testing is carried out on the Figma application prototype section with the aim of evaluating the user experience of the interface that has been created. Below are the URLs for the design of the

Siwi Village website prototype, Visitors: (<https://shorturl.at/bdepQ>).

#### 3.6.2 Distribution Questionnaire

At this stage, the dissemination of the questionnaire is conducted, with the object of testing being the UI design of the Siwi Village website, distributed online using Google Forms. The focus respondents in this research are several members of the general public. Table 3 shows the quantity of respondent data categorized by gender. The following is a summary of the data collected from a total of 35 respondents:

**Table 3. Number of Respondents**

Variable	Total
Gender	Man 16 (45,7%)
	Women 19 (54,3%)

#### 3.6.3 Questionnaire Testing



At this stage, the questionnaire undergoes validity and reliability testing to assess the quality and reliability of the measurement instrument. The questionnaire testing process utilizes the SPSS software. The scale of values utilized in the questionnaire includes options such as: (1) strongly disagree, (2) disagree, (3) neutral, (4) agree, and (5) strongly agree. The results of the questionnaire testing can be observed in Table 5 for Validity Testing and Table 6 for Reliability Testing.

### 3.6.4 Validity and Reliability Testing

At this stage, the validity and reliability of the obtained respondent data will be examined using IBM SPSS Statistics 25. Item validity can be confirmed if the calculated correlation value ( $r$ ) exceeds the predetermined table correlation value ( $r$  table), indicating the validity of the question item. Meanwhile, reliability is assessed based on Cronbach's Alpha analysis. If Cronbach's Alpha value is 0.7 or greater for a variable, it is concluded that the variable can be considered reliable or consistent in measuring the intended phenomenon [19].

### 3.6.5 Evaluation of Usability and Cognitive Walkthrough

At this stage, usability evaluation is conducted concurrently with cognitive walkthrough assessment. The primary focus lies on the aspect of learnability, assessing users' success in navigating the user interface prototype on the website. This involves the percentage of tasks completed accurately, the time taken to accomplish tasks,

and the number of errors made by users. Effectiveness pertains to users' ability to achieve their goals while using the website prototype. Efficiency, on the other hand, encompasses the time taken and the number of errors occurring throughout the process. Error rates are crucial in identifying issues and assessing the level of difficulty associated with each task. The outcomes provide insights into the challenges encountered by users during their interaction with the user interface prototype on the Siwi Village website [20].

## 4. Result and Discussion

### 4.1 Implementation of Prototype Design

#### 4.1.1 Admin Page Display

Figure 3, the "Admin" page of the website, which provides information related to the administration of Siwi Village from an administrative standpoint. Here, a dedicated login menu is exclusively provided for administrators, along with access to various crucial features such as village profiles, potentialities, demographic data, galleries, and organizational structures. Administrators have the capability to edit, update, and delete the information contained within these pages. This enables administrators to manage village information effectively and responsively in accordance with the needs and developments occurring within Siwi Village. Meanwhile, home, village potential, population data, gallery, and organizational structures can be accessed by the general public.

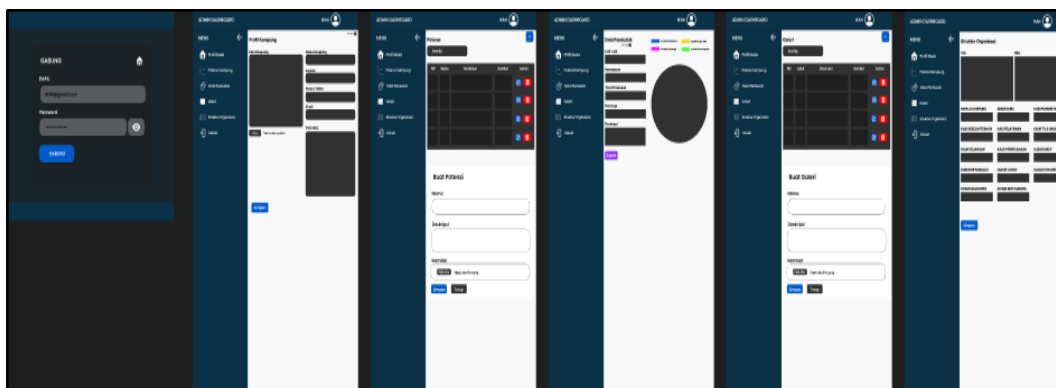


Figure 3. Admin Page Display

#### 4.1.2 Home Page Display

Figure 4 depicts the main or home page of the Siwi Village website. Here, various features, navigation menus, as well as information related to Siwi Village are comprehensively available. The content presented includes a brief description of the village, a video profile

of the village, its potential, population data, photo galleries, and the village's organizational structure. The purpose of providing this content is to facilitate the monitoring of information regarding the village more efficiently for visitors to the website.





Figure 4. Home Page Display

### 4.1.3 Village Potential Page Display

Figure 5, the webpage "Village Potential" is presented, exhibiting various information pertaining to the potentials inherent in Siwi Village. This page not only

presents data regarding the potential possessed by the village but also provides a concise overview of the latest activities underway within the environs of Siwi Village.

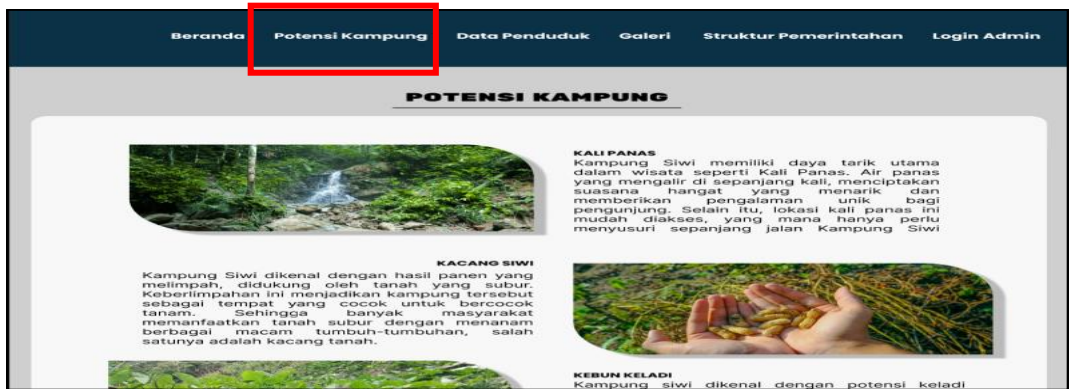


Figure 5. Village Potential Page Display

### 4.1.4 Population Data Page Display

Figure 6 depicts the webpage "Population Data," which visualizes statistical data regarding the population through a pie chart. The presented information includes

the total population count, the number of families, and a breakdown of the population by gender. Additionally, there is a description detailing the data source and the time period during which the data was collected.

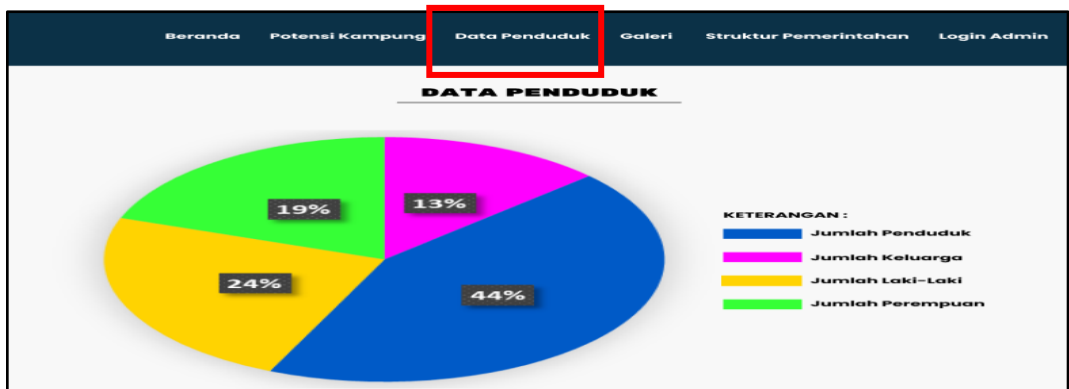


Figure 6. Population Data Page Display

### 4.1.5 Gallery Page Display

Figure 7 illustrates the "Gallery" page on the website, showcasing documentation captured by the students of the Community Service Program with Thematic Approach (KKN Tematik) 2024 (majoring in Informatics Engineering) during the execution of their

community service activities and interactions with the local populace. This encompasses images depicting various moments and engagements occurring throughout the designated period, providing an insightful glimpse into their experiences and contributions within the context of the Community Service Program.





Figure 7. Gallery Page Display

4.1.6 Organizational Structure in Page Display

Figure 8 on the website, elucidates information pertaining to the vision, mission, and delineation of the members constituting the village's bureaucracy. Through

this page, Siwi Village's direction and commitment to ensuring the welfare of its populace are conveyed unequivocally to website visitors, offering profound insights into the village's governance and operations.



Figure 8. Organizational Structure Page Display

4.2 Result of Questionnaire Distribution

After successfully gathering responses from 35 eligible users in this study, the data from the questionnaire will be analyzed to test the validity and reliability in assessing the quality of the user interface of the Siwi Village website. A complete summary of responses from the 35 respondents is presented.

4.3 Validity and Reliability Test Result

In this examination, the researcher tested the validity and reliability of a 10-item questionnaire with a significance level of 5% using a sample of 35 respondents with an r-table value of 0.334. The results are as follows.

Table 4. Validity Test Result

Questionnaire	r calculated	r tabel (5%)	Description
Q1	0,693	0,334	Valid
Q2	0,652	0,334	Valid
Q3	0,780	0,334	Valid
Q4	0,607	0,334	Valid
Q5	0,826	0,334	Valid
Q6	0,812	0,334	Valid
Q7	0,733	0,334	Valid
Q8	0,835	0,334	Valid
Q9	0,852	0,334	Valid
Q10	0,874	0,334	Valid





In Table 5, the computed correlation coefficient (r) deemed valid. This is due to the Pearson correlation output from the SPSS program, utilizing a critical value values for all questionnaire items exceeding the from the r-table (0.334), indicates that all questions are predetermined critical r value

**Table 5. Reliability Test Result**

Reliability Statistic		
Cronbach's Alpha	N of Items	Description
0,923	10	Reliable

Table 6 presents the results of reliability testing using the SPSS program, indicating a Cronbach's Alpha coefficient of 0.923 for the 10 questionnaire

items, exceeding the threshold of 0.7. Thus, it can be concluded that the questionnaire is reliable and trustworthy.

**4.4 Result of Usability Testing and Cognitive Walkthrough Evaluation**

The result of the Usability Testing evaluation using the Cognitive Walkthrough method with

primary focuses on Learnability, Effectiveness, and Efficiency is as follows:

**4.4.1 Learnability Evaluation Result**

Evaluation of Learnability was conducted by observing the frequency of successful completion rates of predetermined task scenarios. The researcher

categorized the assessments in this evaluation into three categories: "Success" (S), "Partial Success" (PS), and "Failure" (F) [8]. Table 7 presents the data on task scenario completions from each respondent.

**Table 6. Data Success Rate**

Success Rate										
No	Task 1	Task 2	Task 3	Task 4	Task 5	Task 6	Task 7	Task 8	Task 9	Task 10
R1	S	S	S	S	S	S	S	S	S	S
R2	S	S	S	S	S	S	S	S	S	S
R3	S	S	S	S	Ps	S	S	S	S	S
R4	S	S	S	S	Ps	S	Ps	S	Ps	S
R5	S	S	Ps	S	S	S	S	S	Ps	S

$$Success Rate = \frac{(Sukses Task + (Partial Sukses Task \times 0,5))}{Total Task} \times 100\% \quad (1)$$

$$Success Rate = \frac{(44 + (6 \times 0,5))}{50} \times 100\% = 94\%$$

Based on the learnability calculation using the success rate formula (1), a percentage result of 94% was obtained. Consequently, out of a total of 10 task scenarios, on average, each user successfully

completed the designated tasks 94% of the time. This indicates that the learnability level provided in the user interface of the Siwi Village website remains above average.

**4.4.2 Effectiveness Evaluation Result**

Evaluation of effectiveness is conducted by observing the frequency of errors, whether they be slips, unintended actions, mistakes, or omissions when

users attempt to complete the given task scenarios [8]. Table 8 represents the data of errors in performing the task scenarios

**Table 7. Data Error Rate**

Error Rate										
No	Task 1	Task 2	Task 3	Task 4	Task 5	Task 6	Task 7	Task 8	Task 9	Task 10
R1	0	2	3	0	0	0	1	2	2	0
R2	0	0	2	1	0	0	0	2	1	0
R3	0	0	0	0	4	0	1	0	1	0
R4	0	0	0	2	3	0	2	0	3	0
R5	0	2	3	0	0	0	0	1	2	0



$$Error\ Rate = \frac{(Total\ Errors\ in\ Completing\ Tasks)}{Total\ Opportunity} \times 100\% \quad (2)$$

$$Error\ Rate = \frac{(40)}{20 \times 5} \times 100\% = 4\%$$

$$Error\ Rate = \frac{(40)}{20 \times 5} \times 100\% = 4\%$$

Based on calculations conducted using Formula (2) on 5 respondents, the average error rate was found to be 0.4 or 4% out of a total of 10 task opportunities for each respondent. Thus, a quality

level of 96% was obtained. This indicates that the effectiveness level of the user interface of the Siwi Village website remains above average.

#### 4.4.3 Efficiency Evaluation Result

Evaluation of efficiency assessment is conducted by considering the time required by respondents to complete the designated task scenarios. Time is calculated from the initiation of task scenario execution until its completion, whether successful or

unsuccessful. The unit of time measured can be in minutes or seconds [8]. Table 9 presents the data on the time taken to complete task scenarios by the respondents.

**Table 8. Data Time-Based Efficiency**

Time-Based Efficiency												
No	Task 1	Task 2	Task 3	Task 4	Task 5	Task 6	Task 7	Task 8	Task 9	Task 10	Total (Second)	Average (Second)
R1	7	17	25	14	12	13	14	19	13	3	137	13.7
R2	10	19	20	18	15	17	19	22	15	6	161	16.1
R3	11	22	44	20	30	20	14	18	10	5	194	19.4
R4	9	12	25	24	19	16	23	27	20	6	181	18.1
R5	11	15	39	18	28	19	20	22	25	4	201	20,1
Average	4,8	8,5	15,3	9,4	10,4	8,5	9	10,8	8,3	2,4	87,4	8,74
Min	7	12	20	14	12	13	14	18	10	3	123	12,3
Max	11	22	44	24	30	20	23	27	25	6	232	23,2

$$Time\ Based\ Efficiency = \sum_{j=1}^R \sum_{i=1}^N \frac{n_{ij}}{t_{ij}} \quad (3)$$

$$= \frac{(\frac{1}{7} + \frac{1}{17} + \frac{1}{11} + \frac{1}{9} \dots + \frac{1}{6})}{50}$$

$$= \frac{3239}{3960} = 0,817 \dots = \frac{0,817 \dots}{50} = 0,016\ goal/second$$

Explanation:

**N** = Total number of tasks or task scenarios.

**R** = Number of users.

**Ni j** = Result of task i performed by user j, if successful Ni j = 1, if failed Ni j = 0.

**Ti j** = Time taken by user j to complete task i.



From the calculation of Time-Based Efficiency using formulas (1) and (3), in Formula (3), an average result was obtained from 10 task scenarios, yielding a value of 0.016 goal/second. From this data, it was

## 5. Conclusion and Recommendations

### 5.1 Conclusion

Based on the research conducted, the researcher successfully designed the user interface (UI) of the Siwi Village website with features and displays tailored to user needs. The evaluation of the Siwi Village website considered the aspect of learnability, where task scenario completion data showed a success rate of 94%. This indicates that users can understand and utilize the website's features quickly and efficiently. Regarding effectiveness, despite some errors in certain tasks, the error rate of 4% resulted in a quality level of 96%. This suggests that users can complete tasks effectively even with some errors. As for efficiency, on average, each respondent could complete 0.016 goals per second, or each task required an average of 8.74 seconds to complete. Therefore, it can be concluded that the Siwi Village website is efficient in terms of time usage for task completion. Overall, this research confirms that the user interface of the Siwi Village website is effective, efficient, and easy for users to learn.

### 5.2 Recommendations

The next developer of the user interface for the Siwi Village website is advised to consider implementing an engaging color scheme, incorporating feedback mechanisms such as a feedback form or suggestion box, and optimizing images with clickable features to enhance the user experience. It is hoped that the implementation of these recommendations can be effectively integrated into the website to be developed.

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