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Original Article

The Use of UCD Method in Designing SIPI (the Indonesian Translator Information System) User Interface

Kurnia Gusti Ayu[1], Dwi Wulandari Sari[2]

Faculty of Computer Science, Mercu Buana University, Jakarta, Indonesia.

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Abstract *- Many languages exist from all over the world. But not everyone can master all these languages. For that, we need the services of someone who translates and is known as a translator. Problem analysis was carried out in previous research using the Soft System Methodology, and problem-solving was obtained. Based on this research, the researcher continues the research by designing the interface of SIPI (the Indonesian Translator Information System) that focuses on user needs using the UCD (User-Centered Design) method. This research aims to obtain an appropriate design result for a visual depiction of SIPI that focuses on user needs to facilitate users in using SIPI. The result of this study is a website-based SIPI user interface design that users need based on the results of the user experience evaluation of the SIPI prototype design that was carried out using the USE Questionnaire.*

Keywords *- User Interface, User Experience, User-Centered Design (UCD), USE Questionnaire, Translator.*

1. Introduction

Language serves as an important communication tool that affects people's daily lives. With language, humans can interact with each other, either directly or indirectly (through the media). Many languages exist from all over the world. But not everyone can master all these languages. For that, we need the services of someone who translates and is known as a translator.

Translators are divided into sworn and non-sworn[1]. The competence a translator must have besides speaking a foreign language is understanding the context and meaning of each word or sentence, details, good communication, editing sentences, understanding language rules, and being creative and neutral. With all these things, users of translation services must be selective in choosing a translator who helps translate.

A previous study entitled "The Implementation of SSM in Developing an Indonesian Translator Information System" was conducted to obtain the results of the analysis of the current system as the basis for the description of designing an Indonesian Translator Information System to facilitate translators in carrying out their work and to design a system to help users of translation services. Based on the analysis results, this research is conducted to design a SIPI UI/UX that focuses on the users' needs using the UCD (User-Centered Design) method.

The User-Centered Design concept involves prospective users in the early stages of development to provide researchers with input regarding the application interface[2]. User interface design is essential, considering making information display more effective for users[3]. This research aims to obtain an effective design result as the basis for a visual depiction of SIPI that focuses on users' needs to assist them when using SIPI later. Based on the results of the interface design prototype, usability testing is carried out using the USE Questionnaire to find out whether the SIPI design prototype meets the needs and expectations of users

2. Literature Review

2.1. Translation

According to Catford (1965:20), the minimum translation includes two languages. Catford further stated that translation is the transfer of textual material in one language (source language) with equivalent textual material in another language (target language). Newmark describes a dynamic translation diagram involving two texts, namely the SL(Source Language) and the TL(Target Language), as seen in fig.1 below: [4]

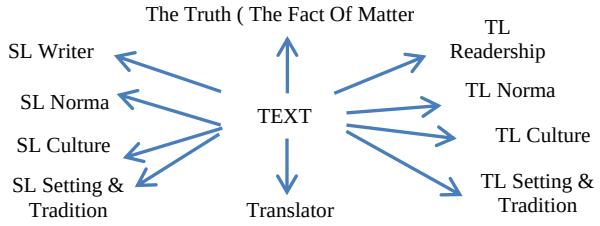

Fig. 1 Two-Text Dynamic Translation Diagram[4]

2.2. User-Centered Design

UCD is a term and method in which designers focus on the users in each phase of the design process of application[17]. Next, the researcher will determine the user work model that the system will support.

UCD method consists of the following steps:

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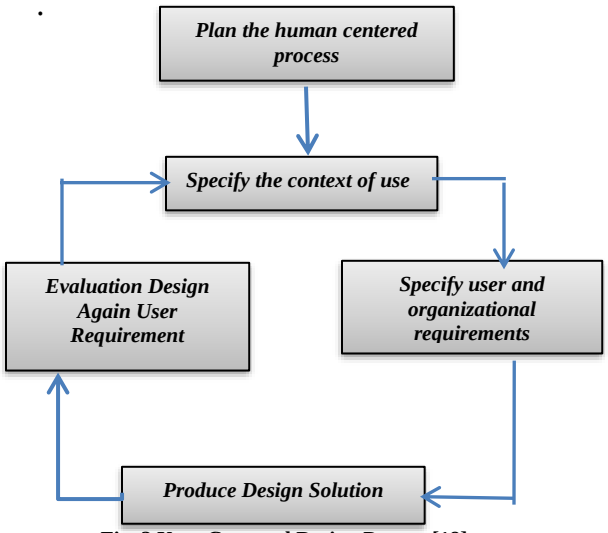

Fig. 2 User-Centered Design Process[18]

The following is an explanation of Fig.2 (User-Centered Design Process) :

1. *Plan The Human-Centered Process*
   During the process, there are times and tasks in which this research needs to include users, both at the beginning and end of the process or at whatever stage they are necessary. Furthermore, it is important for those who work on the project to fully understand the User-Centered Design (UCD) method, which they can learn through literature studies, training, or seminars.

2. *Specify The Context Of Use*
   The researcher identifies the users of the resulting product and explains what users will use the product for and under what conditions.

3. *Specify user and Organizational Requirements*
   Identify the needs of users and organizations.

4. *Product Design Solutions*
   The researcher develops a design as a solution for the product being analyzed.

5. *Evaluate Design Against User Requirements*
   The researcher evaluates the design to find out whether the goals of the users and organizations have been achieved[10]

2.3. User Interface

A user interface (UI) is a visual display of a computer or application with which users interact directly. It is essential to pay attention to the design and layout of the interface to create a good appearance. The components that affect the design of an application are consistency, hierarchy, personality, layout, type, color, imagery, control, and affordances [13]

2.4. Usability Testing & USE Questionnaire

Usability testing determines how effective, efficient, and satisfying a website is according to its users[15]. Battleson states that in improving usability, the interface should be easy to learn, use, and remember some errors experienced by users. Adinsheh also explained the usability factors that affect the system's user interface: satisfaction, usefulness, and ease of use [3].

USE Questionnaire is a questionnaire commonly used in Computer System Usability. Each question of the USE questionnaire is conveyed positively, meaning that the results respond in a biased manner. Questionnaires that avoid this source of bias often occur in other sources of bias. One example is the reliability test. In this case, the same questionnaire may lead to different results at different times (it can be checked by measuring the reliability of the retest of the questionnaire test). The usability of the questionnaire with less content is even assessed for its validity. The questionnaire is not guaranteed to measure user satisfaction[5] precisely.

According to ISO 9241-11(2018), there are three criteria of usability, namely:

a) Effectiveness
The feature completeness of an application will affect the process of meeting users' needs in using the application (usefulness).

b) Efficiency
The ease of use of the application will affect the users' interest in using the application (ease of use and learning).

c) Satisfaction
The effectiveness and efficiency of the application will affect the users' satisfaction with using the application

The usability value is calculated using the following average formula:

$$\text{Usability} = \frac{\Sigma \text{ total score for each question}}{\Sigma \text{ ideal total value per factor}} \times 100\%$$

The following table shows the results of the usability percentage qualification to be used after getting the calculated score for each question[6].

Table 1. Result Of Usability Percentage Qualification

Percentage (%)	Qualification	Results
85-100	Excellent	Successful
69-84	Good	Successful
53-68	Fair	Unsuccessful
37-52	Poor	Unsuccessful
20-36	Bad	Unsuccessful

2.5. Website

A website contains information and a collection of pages called the homepage[8]. The home page on the website consists of a header, footer, and hyperlinks to other pages. The types of websites are based on their characteristic consisting of dynamic websites and static websites.

3. Research Methods

The following are the stages of research based on the stages in the User-Centered Design Method, which can be seen in figure 3 below:

Berikut merupakan gambar dari tahapan dari penelitian yang terkait adalah sebagai berikut :

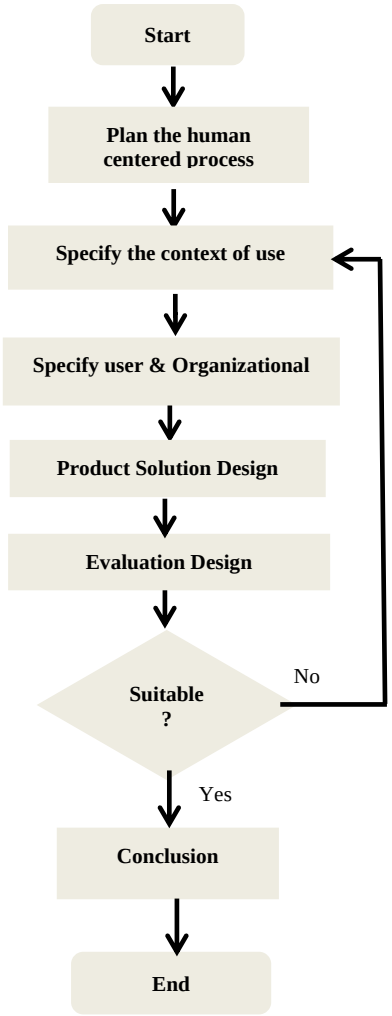

Fig. 3 The Stages Of Research

4. Results and Discussion

The following is the implementation of the UCD stages to obtain an interface design according to the needs of the Indonesian Translator Information System :

4.1. Plan The Human-Centered Process

At this stage, the researcher read previous research and journals related to the User-Centered Design (UCD) methods

4.2. Problem Situation Expressed

At this stage, an analysis of the current system process is carried out to understand what and under what conditions the user will use the application and find out who the system users are [10]. Based on a previous study entitled "The Implementation of SSM in Designing SIPI," the classifications of SIPI users are as follows:

a) A translator is a person who receives translation orders and gives translation services
b) A user of translation services is a person who looks for a translation services provider and uses the translation service[7]

To better understand the context of SIPI users, researchers also created user persona to make it easier to find design solutions that meet user expectations and create user-friendly application experiences. The following are the user persona of each SIPI application's target user :

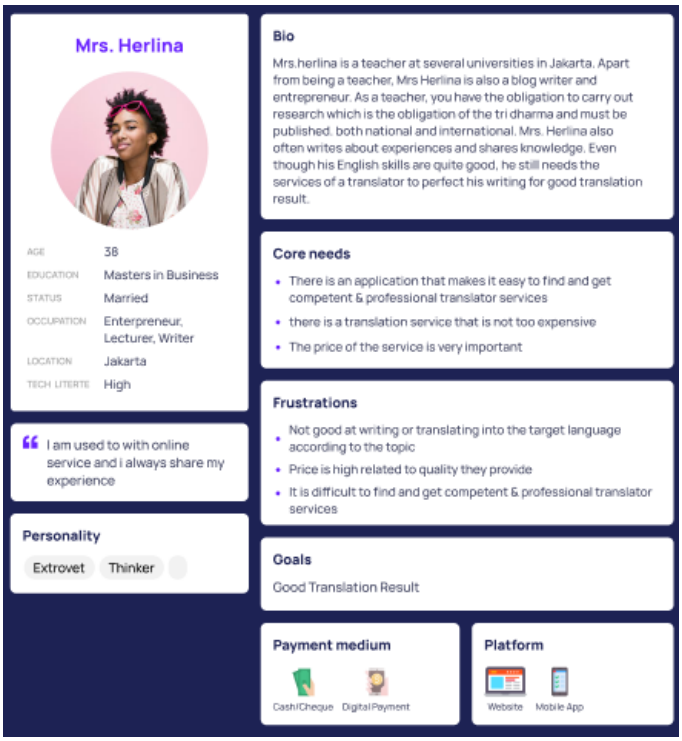

Fig. 4 User Persona of the User of Translation Services

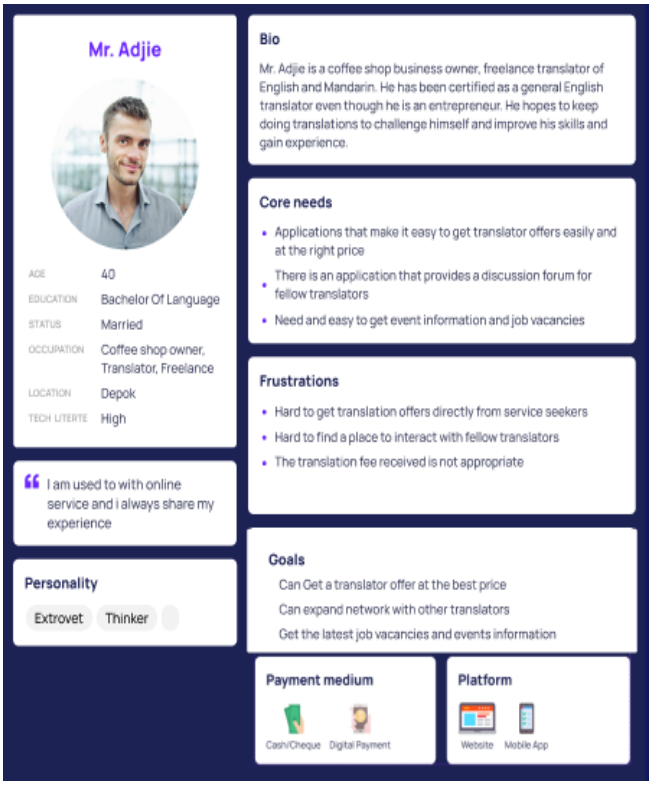

Fig. 5 User Persona of the Translator

Based on this stage, it can be concluded that the target users of the SIPI application are professional freelance translators, practitioners, non-practitioners, and the general public at the age above 18 years - 55 years, especially workers or students who often deal with translation.

4.3. Specify User and Organizational Requirements

Based on the user persona, the researcher then lists the user and organizational requirements of SIPI, such as determining what features or pages to put in this application and the form of services available. The following features are the functional requirements of the Indonesian Translator Information System:

a. Registration feature for the registration process for translators and users of translation services
b. Log-in feature for the user
c. Information about SIPI
d. Information about the standard rates for translation services and rules for users
e. Information about translator members of SIPI
f. Translator search feature to help the user to find a translator
g. Feature where the users offer projects to translators
h. Feature to manage the translation project offers
i. Communication feature between translator and user
j. Transaction feature of translation projects
k. Feature to rate and give comments from users after using the translation services
l. Discussion forum feature for translators
m. FAQ feature for users

Non-Functional Requirement:

a. The system can be accessed via mobile devices or PC
b. The system can be accessed 1 x 24 hours
c. The system can be opened in various types of browsers

4.4. Product Design Solutions

At this stage, researchers continue to create the information architecture for SIPI (Indonesian Translator Information System). The following is the information architecture of the SIPI application:

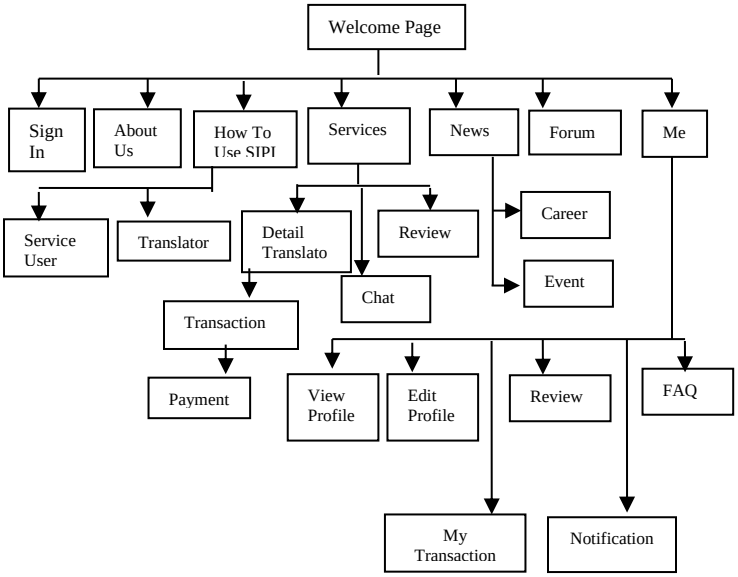

Fig. 6 Information Architecture of SIPI (Indonesian Translator Information System)

Next, researchers create a wireframe low fidelity design (Lo-fi) as a preliminary design. The wireframe is a framework of application pages that will be designed into a high-fidelity prototype to facilitate application development when changes are necessary[11]. The following are examples of several wireframes (Lo-fi) from SIPI:

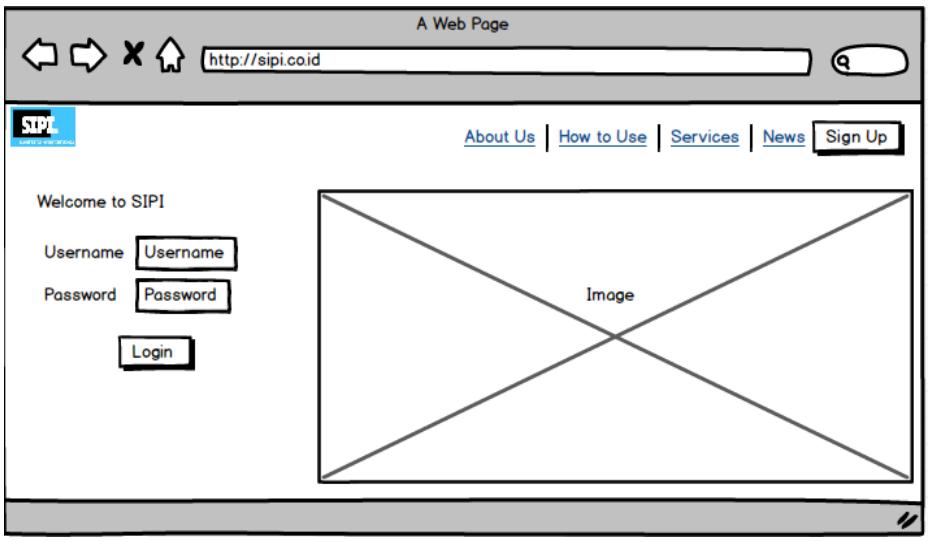

Fig. 7 Wireframe Homepage

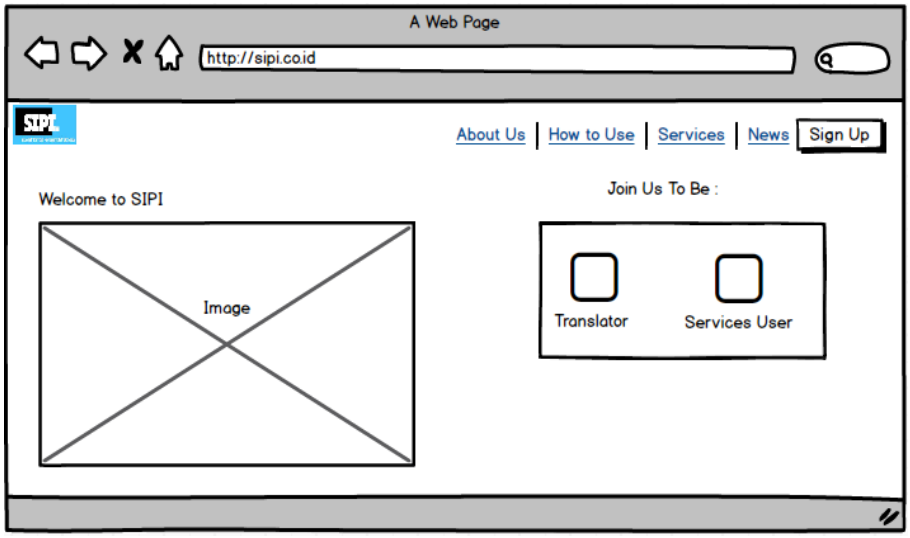

Fig. 8 Sign-Up View of Wireframe

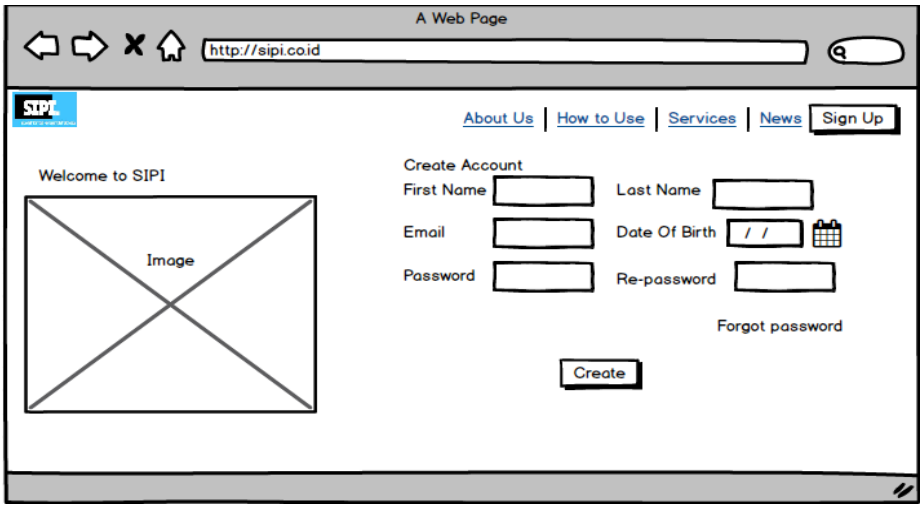

Fig. 9 Sign Up Service User View of Wireframe

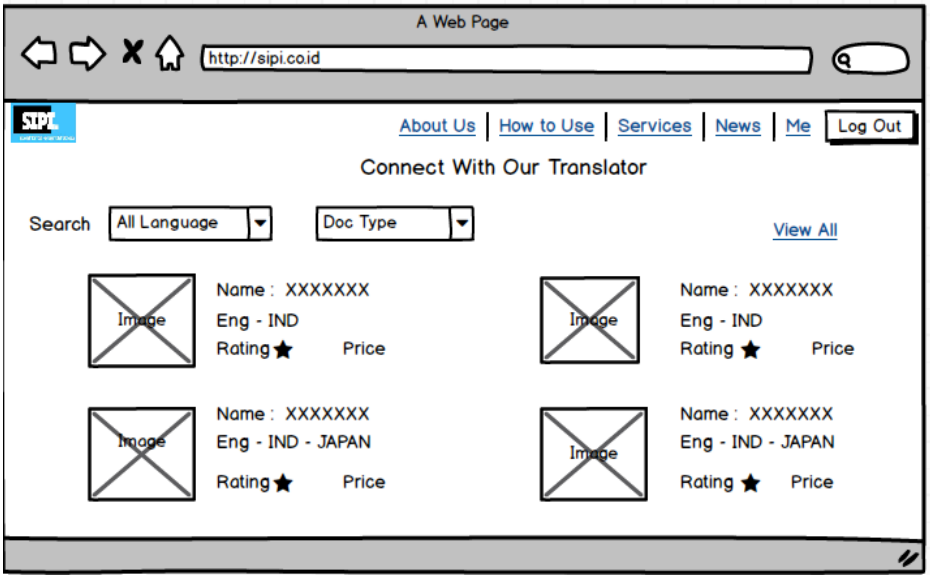

Fig. 10 Services View of Wireframe

To find out the shortcomings of the design and get feedback on the design of the Indonesian Translator Information System, from the initial design (wireframe), the researchers then made Hi-fi (high-fidelity). Hi-Fi is very good for finding and getting more feedback and data on specific sections, which aims to facilitate application development when changes are needed[11]. The following are Hi-fi of SIPI (Indonesian Translator Information System).

Fig. 11 Hi-fi Design of SIPI Home Screen

Fig. 12 Hi-Fi Design of Sign-Up View

In Fig. 12 above, there is an option to sign up (registration) to join SIPI as a translator or a user of translator services.

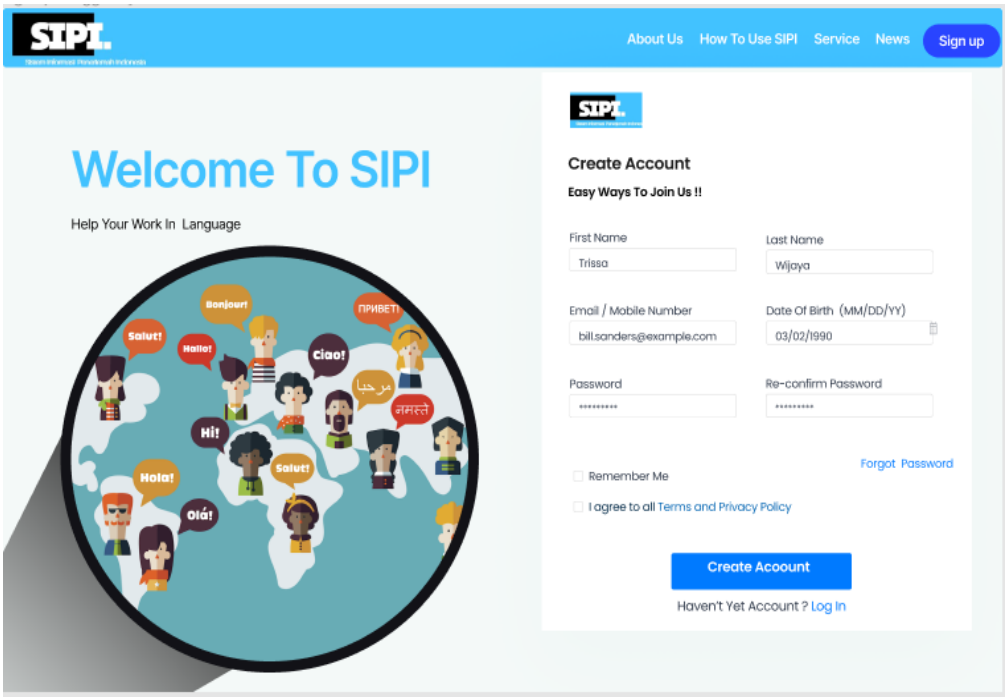

Fig. 13 Hi-Fi Design of Sign-Up View for Users of Translation Services

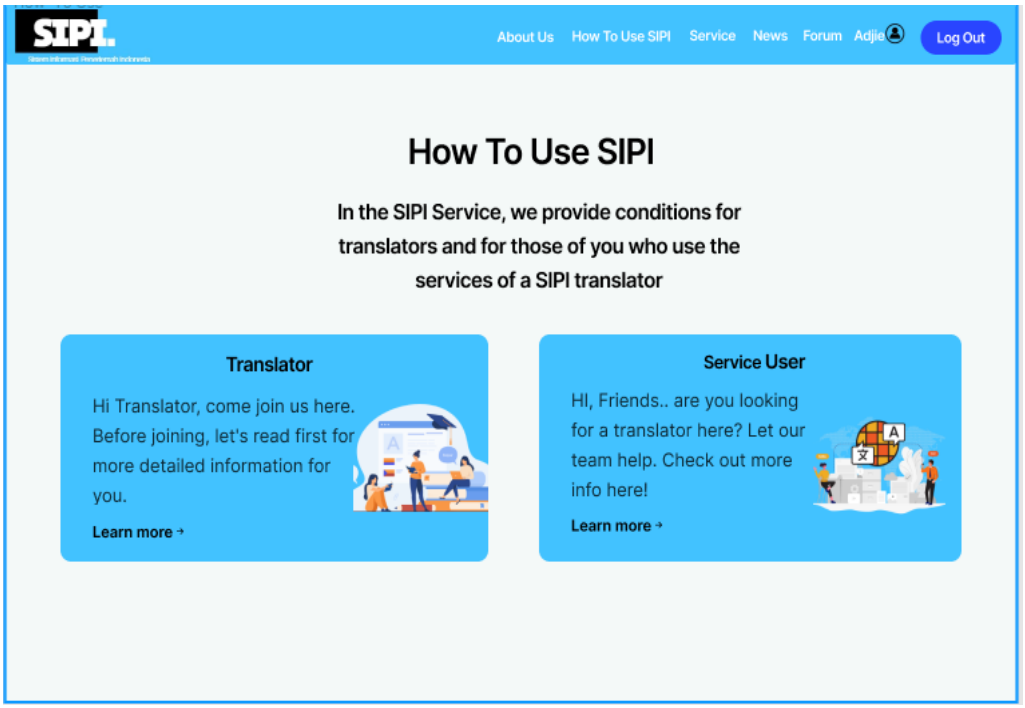

Fig. 14 Hi-Fi Design of How to Use SIPI View

Fig. 14 shows the rules page in SIPI for translator service users and translator members.

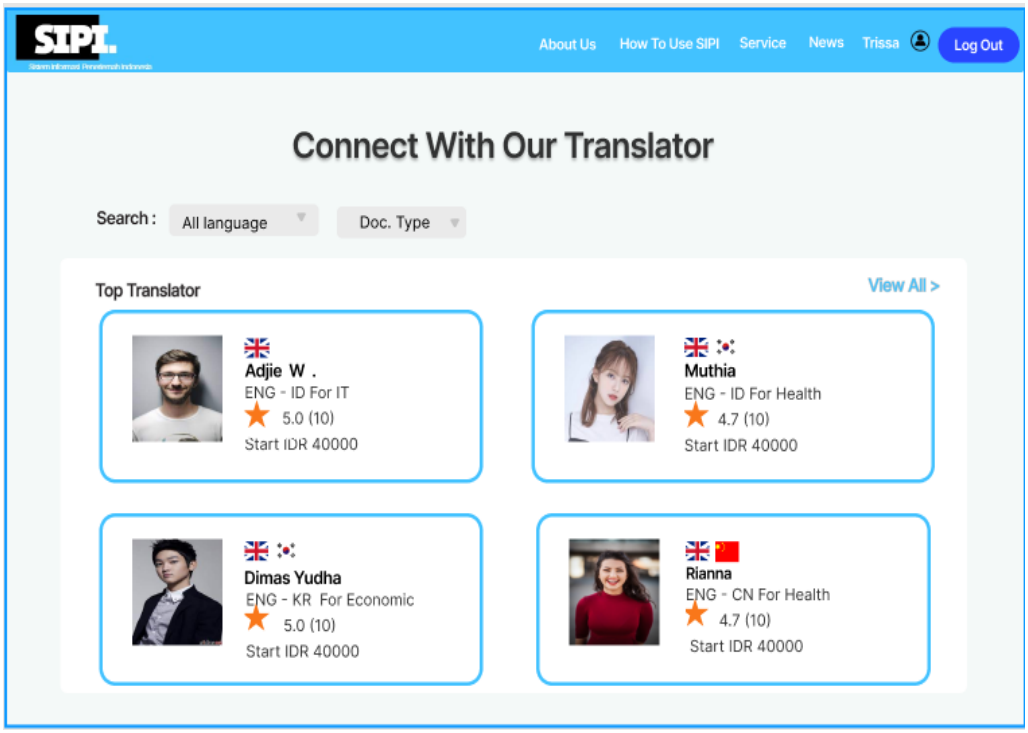

Fig. 15 Hi-fi Design of Services View

On this page, service users can search for a translator.

4.5. Evaluate Design Against User Requirements

This stage evaluates the prototype design testing that has been made by involving prospective SIPI users who have been previously determined. The evaluation process is carried out by giving a questionnaire to score the usability of the prototype that has been made. Researchers used the USE Questionnaire (Usefulness, Satisfaction, Ease of Use). USE Questionnaire is often used to measure the system's feasibility, which is carried out by measuring the usability of User Experience [12]. This research used 15 respondents of 10 users (aged 22-50 years) and 5 translators (aged 20-45 years) selected based on their educational background and current job criteria. The following table shows respondents' criteria based on their educational background and current job.

Table 2. Respondent Criteria Based on Educational Background

No	Educational Background	Number of people	(%)
1	High School / Equivalent	5	33.33
2	Bachelor	7	46.67
3	Magister	3	20
Total		15	100

Table 3. Respondent Criteria Based on Job

No	Current Job	Number of people	(%)
1	College Student	5	33,33
2	Employee	3	20
3	Teacher	3	20
4	Freelance Translator	4	26,67
Total		15	100

Questionnaires have been filled out by respondents, calculated, and analyzed to get the results of each usability factor and the final result of the overall usability score. Usability scores are calculated based on observations compared to the expected scores[12]. The results of the recap of usability testing values and the average results of the percentage of usability testing values are shown in table 4 below.

Table 4. Usability Score Test Recapitulation

Usability Factor	Total Score	Ideal Score	%	Qualification	Result
Usefullness	504	600	84%	Good	Successful
Ease Of Use	692	825	83,87 %	Good	Successful
Ease Of Learning	239	300	79,67 %	Good	Successful
Satisfaction	250	300	83.33 %	Good	Successful
Avg. Percentage			83,20 %	Good	Successful

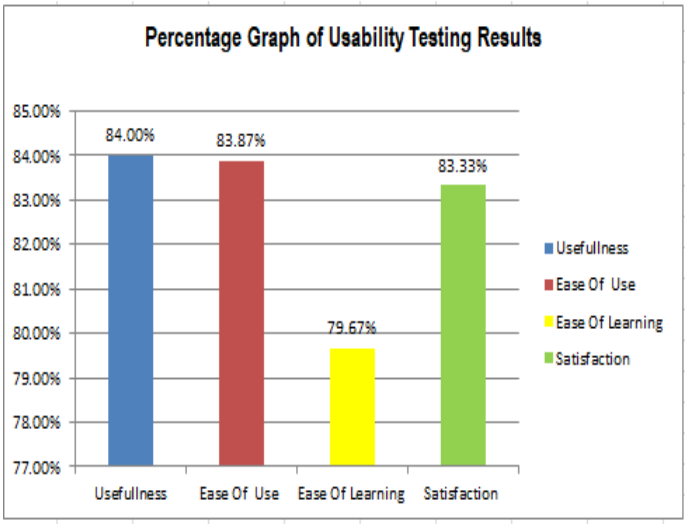

Fig. 16 Percentage Graph of Usability Testing Results

Based on the results of usability scoring in table 4 and the graph above (fig.16), the following are the results of the analysis of each usability factor:

1) The Usefulness factor scored 84% with good qualifications and successful results. It is because, in the prototype design of the SIPI (the Indonesian Translator Information System) website, the information needed by users is easy to obtain, is clear, and meets their needs.
2) The Ease Of Use factor scored 83.87%, with good qualifications and successful results. The SIPI (the Indonesian Translator Information System) prototype design looks like other common service websites.
3) The Ease Of Learning factor scored 79.67%, with good qualifications and successful results. The menu (label on the menu) on the prototype design of the SIPI (the Indonesian Translator Information System) website is so clear that it is easy to complete user tasks.
4) The Satisfaction factor scored 83.33%, with good qualifications and successful results. This is because the appearance of the prototype design of the SIPI (the Indonesian Translator Information System) website is made according to the theme and purpose, and it looks simple

5. Conclusion

The conclusion of this research is:

a) Implementing all stages of the User-Centered Design method is very helpful. It makes it easier to focus on application design as needed because this method involves application users (SIPI application) at each stage before the application is made.
b) Based on usability testing using the USE Questionnaire, the usability score on the prototype is 83.20%. This show that respondents are satisfied with the prototype design of the SIPI (the Indonesian Translator Information System) website.

Reference

[1] Sinaga, E. J, "Sworn Translator: Regulation and Practice," *Scientific Journal of Legal Policy*, vol.4, no.1 19 – 42, 2020.

[2] Maliha.Z, "User Experience Design (Ux for Smart Campus Uisi Applications using the User Centered Design (Ucd Approach," *Uisi*, 2020.

[3] Danang Junaedi,, A., Darwiyanto, E., & Junaedi, D, "Redesign of the Makassar Health Polytechnic Website User Interface," *e-Proceeding of Engineering*, 2019.

[4] Kardiman, "Variety of Translators," *E-journal of UIN*, vol.2, no. 1, 2017.

[5] Firmansyah, R, "Usability Testing with Use Questionnaire in the West Java Province Sipoline Application", *SWABUMI Journal*, vol. 6, no.1, pp. 1-7, 2018.

[6] Al Ghiffari, U., Darwiyanto, S. E., & Junaedi, S. M, "Redesigning the Makassar Health Polytechnic Website User Interface using the User-Centered Design Method," *E-Proceeding of Engineering*, 2019.

[7] Ayu, K. G., & Sari, D. W, "an Application of Soft System Methodology for Developing SIPI (the Indonesian Translators Information System ," *International Journal of Computer Trends and Technology*, Pp.21-25, 2021.

[8] Setiawan, R., & Suhendra, "Web Based Application for Borrowing Inventory Items (Case Study at English Course Institution for Adults in Jakarta ," *International Journal of Computer Science and Mobile Computing*, 2018.

[9] Nursyanti, R., Alamsyah, R. R., & Perdana, S, "Design of Web-Based Applications to Help Test the Quality of Automotive Textile Fabrics (Case Study at PT. Ateja Multi Industri ," Explore – *Journal of Information Systems and Telematics*, 2021.

[10] Ali, E, "User Centered Design (UCD Methods in Building Managerial Service Applications in Higher Education," *SATIN - Information Science and Technology*, 2016.

[11] Ramadhan, S. L., Fitri, I., & Rubhasy, A., "User Experience Design for E-KTP Application using the UCD Method in Tanah Baru Village," *Journal of Informatics and Information Systems*, 2021.

[12] Sasangko, A., Jayanti, W. E., & Risdiansyah, D., "Use Questionnaire to Measure the Usefulness of the E-Tadkzirah Information System", *Journal of the Informatics Equator*, 2022.

[13] El Ghiffary, M. N., Susanto, T. D., & Herdiyanti, A, "Component Analysis of Layout Design, Color, and Control in Mobile Application User Interfaces Based on Ease of Use Case Study," *Olride Application , Its Engineering Journal*, 2018.

[14] Kusumaningrum, L. A., Dewanto, F. M., & Harjanta, A,"Design of Doremi Applications as an Introduction to Android-Based Musical Instruments using User Center Design Methods," *Journal of Informatics and Software Engineering*, 2020.

[15] Gunawan, M. I., Rokhmawati, R. I., & Wardani, N. H, "Evaluation and Improvement of User Interfaces using User Centered Design (UCD and Card Sorting Approaches Case Study: Website Awake Project Malang ," *Journal of Information Technology Development and Science Computer*, 2019.

[16] Mukti, Y. I., "School Website Design using the User Center Design Method," *Scientific Journal of Betrik*, Vol.9, No.2, 2018.

[17] Hawi, F. N., Ramdani, F., & Rokhmawat, R. I," Evaluation of QGIS and Arcgis Interfaces using A User-Centered Design (UCD Approach: A Case Study of Geoprocessing Tools Functions," *Journal of Information Technology and Computer Science Development*,Vol.2, No.9, 2018.

[18] Setyoningrum, A., Santosa, P. I., & Setiawan, N. A, "UCD-Based Analysis of Building Archive Information Needs," *Procedure of the National Geotics Seminar*, 2017.

[19] Lestari, E. W., & Yani, N, "Online Learning Design SMK PGRI 1 Jakarta, Paradigma," *Journal of Informatics Computers*, 2019.