

UI/UX Design of Vendor Ordering Information System Using Design Thinking Method: Case Study CV. MOVED4

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ABSTRACT

Moved4 is an event organiser (EO) service that aims to help people across Jakarta organise events such as weddings, graduations, concerts, and seminars. They use marketing methods that are done manually, such as distributing brochures and broadcast messages. Moved4's target market is business owners aged 18-55 who need EO assistance to organise their events. The main focus in user interface (UI) and user experience (UX) design is user comfort. This is achieved through a design thinking approach consisting of four phases: empathise, define, ideate, prototype and test. MOVED4's UI/UX design received a SUS (System Convenience Scale) score of 79.25%, which indicates a high level of excellence. This indicates that users find it comfortable and easy to use the dashboard, which is crucial for successful technology adoption among target users.

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1. Introduction

With the entry of the globalization era, information technology has become increasingly important to achieve information goals. Generating more useful and significant information is the goal. This goal is to help the process of making quick and precise decisions. The changes and dynamics that occur in a rapidly developing society, in line with the times and technological advances, make the application of information technology a must. The presence of technology has a central role in facilitating the lives of Indonesian people, with one example occurring in the tourism sector [1].

For example, people living in the Special Capital Region of Jakarta know that there are many entertainment events in the city, such as concerts, weddings, and student graduations[2]. However, CV MOVED4 still relies on a manual approach in its marketing efforts and dissemination of information regarding the Event Organiser packages offered to the people in the capital city. This approach involves the use of pamphlets and advertisements in print media. Consequently, there are limitations in marketing reach, so the activities offered by MOVED4 lack widespread knowledge among the public[3]. Users often have difficulty finding event venues that suit their needs and preferences, especially in areas they are new to. Information technology is essential to find an effective solution to the problem [4].

To improve people's access to information, the creation of a web application for booking and information about event venue locations is necessary. Users need a tool that helps them find venues that suit their preferences and needs, taking into account price, location, and reviews. Designing a UI/UX prototype of the venue finder application is expected to improve user experience. The Design Thinking method is used to produce a functional application design that takes into account the psychological and emotional aspects of the user, thus providing a satisfying and effective experience. This approach focuses on a deep understanding of user needs and integration of technology and business needs [5].

Users of the venue application are the main focus of the design process in this research. The design thinking method will be used to understand the needs and difficulties that users face when searching for venue locations. Stages including empathy, definition, ideation, prototyping, and testing will be applied systematically to ensure that the application created is not only effective in providing venue location information. Thus, the application of the Design Thinking method is key to creating a satisfying user experience through this web-based venue locator application. The design thinking method is an effective approach to addressing this problem by encouraging team collaboration and innovation of solutions. In addition, this research shows the importance of updating the features of the application to improve the user experience in the future [6].

In this situation, it is expected that the development of a simple design and web-based application will provide support to CV. MOVED4 to promote the activity packages offered, such as Weddings, Graduations and Concerts, as well as simplify the management of order data to the creation of order and sales reports on Event Organizers [7]. Therefore, the application of strong design principles is very important to ensure that the internship registration system in the Batu City Government provides a positive and efficient experience for users. One approach that can be used in the UI/UX design process is the 'Design Thinking.' method. Design thinking is used as a method of analysis through the process of understanding user needs and focusing on forms, relationships, behaviour, interactions and human emotions to produce an optimal solution [8]. There are five stages in the design thinking method, which are empathise, define, ideation, prototype, and test [9].

This method emphasises an in-depth understanding of user needs and perspectives before designing a suitable solution. In this article, we will talk about how this method can be applied in the context of the design of the booking information system at MOVED4. With this approach, it is expected that the internship registration system will become more intuitive and efficient and will fulfil the needs of all stakeholders. In this article, we will discuss each stage of the design thinking method and how to practically apply it to optimise the user experience in the booking process at MOVED4.

2. Methods

The method used in this research is the Design Thinking method. Design Thinking is a problem-solving method that focuses on the user. This method is used as a solution-based approach to overcoming challenges or problems, as well as promoting creative thinking and active participation in innovation [10]. The stages in this method, starting from empathise, define, ideate, prototyping, and testing, are shown in Figure 1, along with an explanation of each stage.

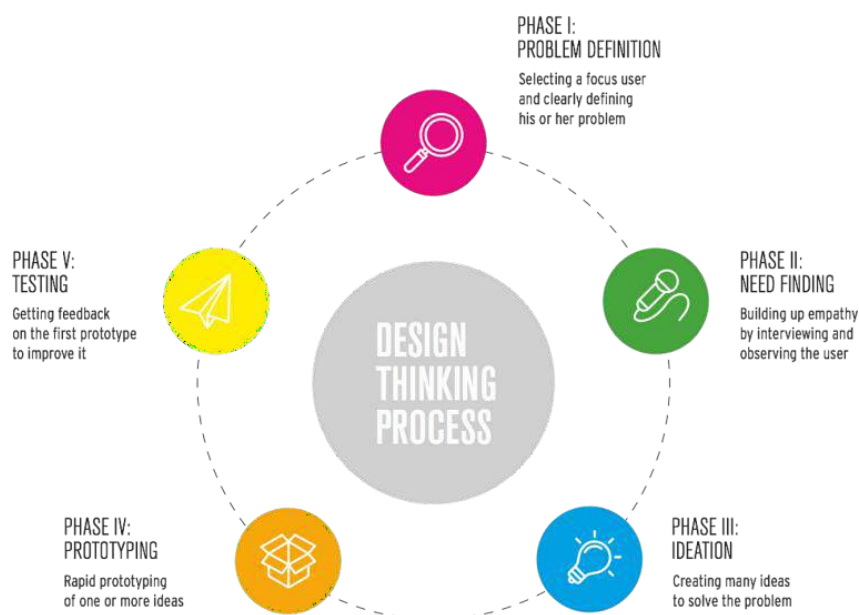


Figure 1. Design Thinking Methods

2.1. Problem Definition (Empathise)

Figure 1 has the first circle in pink, indicating the first stage of Design Thinking, where the researcher attempts to understand and get a sense of the user's wants, problems, and needs through observation, interviews, or case studies. Further analysis and understanding of the data and information gathered from the user empathy process, which includes the designed user group criteria [11].

2.2. Need Finding (Define)

Figure 1 has a second circle coloured green, indicating the next stage and definition. This stage is conducted after understanding the user's needs and problems and determining which areas need improvement or enhancement. The current researchers are trying to find new solutions using the HMW (How Might We) approach. This method creates questions that open minds and encourage innovative ideas, which help researchers find more effective solutions[12].

2.3. Ideate

Figure 1 has a second circle in green indicating the next stage, definition. This stage is done after understanding user needs and problems and determining which areas need improvement or enhancement. The current researcher tried to find a new solution by using the HMW (How Might We) approach. This method creates questions that open the mind and encourage innovative ideas, which helps researchers find more effective solutions [13].

2.4. Prototype

Figure 1 shows the fourth orange coloured circle indicating the prototype stage. This stage comes after collecting potential ideas and is used to create a model or prototype of the suggested solution. Sketches, wireframes, or simple application models are some examples of this protocol [14]. At this stage, the team can further visualise and test the previously created ideas to gain a better understanding of how the solution will be implemented in real life. The main focus of this phase is to build a solution to overcome the constraints in the product and solve the previously identified problems.

2.5. Testing

Figure 1 shows the fourth orange circle indicating the prototype stage. This stage follows the collection of potential ideas and is used to create models or prototypes of the proposed solution. Sketches, wireframes, or simple application models are examples of this stage. At this stage, the team can better visualize and test the ideas previously generated, gaining a better understanding of how the solution will be implemented in real life [15]. The main focus of this phase is to build solutions to address constraints in the product and solve the previously identified problems. In this testing stage, the researchers used the System Usability Scale (SUS) method, which follows the rules as follows [16]:

- a. Each question uses a value of 1-5 to facilitate the assessment in the testing phase
- b. For each odd-numbered question, the score obtained from the user is reduced by 1.
- c. For each even-numbered question, the final score is obtained by subtracting the user's score from 5.
- d. The SUS score is obtained by summing the scores for each question and then multiplying by 2.5.

For further calculations, the SUS score of each respondent is averaged by summing all the scores and dividing by the number of respondents using the following formula:

$$\bar{x} = \frac{\sum x}{n} \quad (1)$$

where:

\bar{x} = Average Score;

$\sum x$ = Amount SUS Score;

n = Number of Respondents.

With this formula, it is expected to help determine the average needs of the respondents to assist in testing.

3. Results and Discussions

3.1. Problem Definition (Empathize)

To develop the criteria for user groups during the 'Empathy' stage, researchers refer to relevant literature reviews and practical knowledge. These criteria are formulated by considering the important characteristics of users of the web-based venue search application. Additionally, feedback and input from potential users are taken into account when forming user group criteria. The first step is data collection through questionnaires to test whether the website to be developed is indeed less relevant and needs improvement. To test this, researchers also use the System Usability Scale (SUS) method because all the questions created for development and testing are displayed, and the results of these questions can be used as data or information for the research. The questions from the System Usability Scale can be seen in the SUS Questionnaire table [17].

Tabel 1. System Usability Scale Questionnaire

No	Questionnaire
1.	I think I will use this system again.
2.	I find the system unnecessarily complex.
3.	I find the system easy to use.
4.	I need assistance from others or technicians to use this system.
5.	I feel that the system's features are functioning properly.
6.	I find many inconsistencies in the system.
7.	I find the system confusing.
8.	I think others will quickly understand how to use this system.
9.	I encounter no obstacles when using this system.
10.	I need to familiarize myself with the system before using it.

By using the user group criteria, the researcher can ensure that interviews are conducted with relevant and representative individuals or groups. After collecting data for each question answered by respondents, the next step is to apply the System Usability Scale rules. The results from applying these rules can be seen in the following table.

Table 2. Questionnaire Calculation from Previous Website

From Result Score										Result	Score (Result x 2.5)
L1	L2	L3	L4	L5	L6	L7	L8	L9	L10		
1	3	1	1	3	4	2	1	2	2	28	70
1	1	1	3	1	3	1	2	2	1	16	40
3	1	2	2	2	2	3	1	2	3	21	52.5
1	3	1	3	2	4	1	3	3	2	23	57.5
1	3	3	2	2	1	2	1	2	2	19	47.5
3	1	2	1	3	2	3	2	2	4	23	57.5
1	3	1	3	5	3	1	3	3	1	24	60
1	1	4	1	1	2	2	1	4	5	22	55
3	2	3	2	4	4	3	2	2	2	27	67.5
1	1	2	1	2	1	1	3	1	3	16	40
Score Rate SUS											54.75

After applying the rules in the System Usability Scale, the final score or average score is determined to be 54.75. Once the final score is known, the next step is to input this final score into the acceptability range, as shown in the following image.

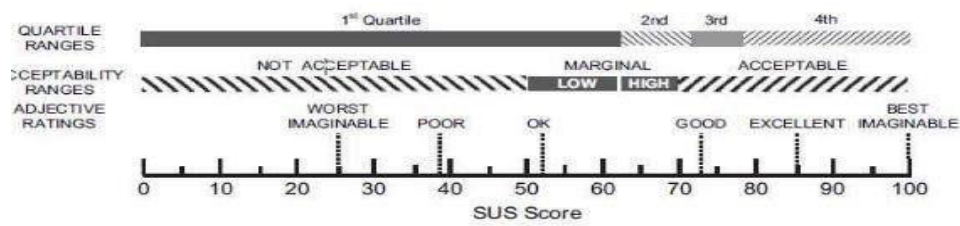


Figure 2. System Usability Scale Score

Based on Figure 2, it can be concluded that the average score from the SUS questionnaire falls under the "Marginal Low" category in the Acceptability Ranges and "OK" in the Adjective Ratings category. This helps in collecting more specific and relevant data. The purpose of this questionnaire is to understand more deeply the needs, problems, and preferences of users. The researcher conducted a questionnaire to 10 respondents according to the user group criteria through a questionnaire question on Google Forms. The information obtained from these interviews is very important in answering key questions, such as what users desire and need, what problems they often face, and what they expect from the solution or application to be developed.

3.2. Need Finding (Define)

After conducting interviews, the information obtained was in the form of answers from previous interviews. The researcher then compiled the problems experienced by users along with the solutions offered to overcome these problems. After compiling the problem definition, the researcher used Figma Jam to classify the problems faced by users and identify things that must be followed up immediately. In addition, to formulate the solutions offered to solve the problems experienced by users, researchers used the How-Might-We approach.

Table 3. How-Might We Problem Users

No	Criteria User
1.	How can we provide personalised recommendations to users based on previous events and their preferences?
2.	How can we ensure that users can quickly access and compare different event venues?
3.	How can we integrate user reviews and ratings to help users make better decisions?
4.	How can we offer virtual tours and interactive maps to give users a better understanding of the venue?
5.	How can we integrate booking and payment functionality to simplify the event planning process?

3.3. Ideate

In the Ideate stage, the researcher summarised the problems identified in the previous stage into creative ideas and solutions that could be implemented in the venue finder app design. Each idea and solution was explored in depth to ensure that the app design covers various aspects of user needs well.

Table 4. Solution Idea

No	Criteria User
1.	Create a 'Review & Rating' feature that allows users to leave reviews and ratings about their experience at the venue.
2.	Create a 'Review & Rating' feature that allows users to leave reviews and ratings about their experience at the venue.
3.	Provide a profile view for each venue, including detailed information about facilities, operating hours, and user reviews.
4.	Provides a filter-based search feature that allows users to filter search results according to their preferences.
5.	Integrate a Chat feature so that users can ask the event organiser for more information directly.
6.	Provides a display of price information and facilities offered by each venue.

3.4. Prototype

After exploring the ideate stage to find solutions in the solution ideation process, the next step is the prototype stage. This process starts with creating a wireframe or a rough picture of the design of the new application to be developed. The wireframe serves as a basic framework that includes the structure and layout of the main elements of the application. Then, the wireframe will be gradually detailed and enhanced into a more detailed and accurate high-fidelity view as the prototype progresses. This process allows the team to build systematically and refine the app design with attention to every detail, resulting in a prototype closer to the desired final version.



is an event organizer company that specializes in creating unforgettable experiences. With a passion for innovation and creativity, MOVED 4 aims to deliver exceptional events tailored to their clients' needs. From corporate conferences to social gatherings, MOVED 4 brings ideas to life through meticulous planning, seamless execution, and attention to detail.

Figure 3. Dashboard View

The dashboard is the first view that appears when a user opens a website. Usually, this dashboard contains a logo, name, or image that introduces the app to the user while taking them to the main view. In other words, the dashboard is the initial page that displays the identity or brand of the application, allowing users to easily access all content or features of the application.

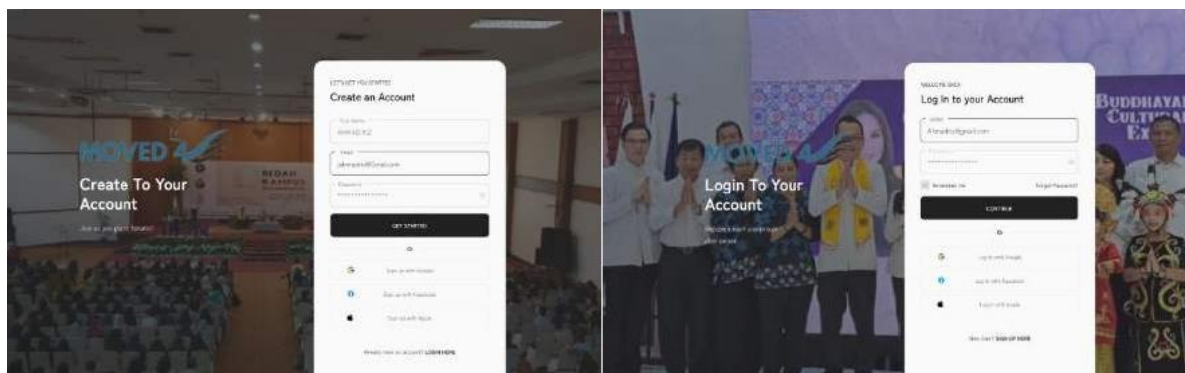


Figure 4. Sign Up and Log In View

The login page prompts users to enter identification information such as username and password to access certain accounts or features within the app. This serves as the entry point for users who already have a registered account. If users do not yet have an account, they can select the 'Register Now' option

to go to the registration page, where users are asked to create a new account by entering the required personal information, such as full name, email address, and password.

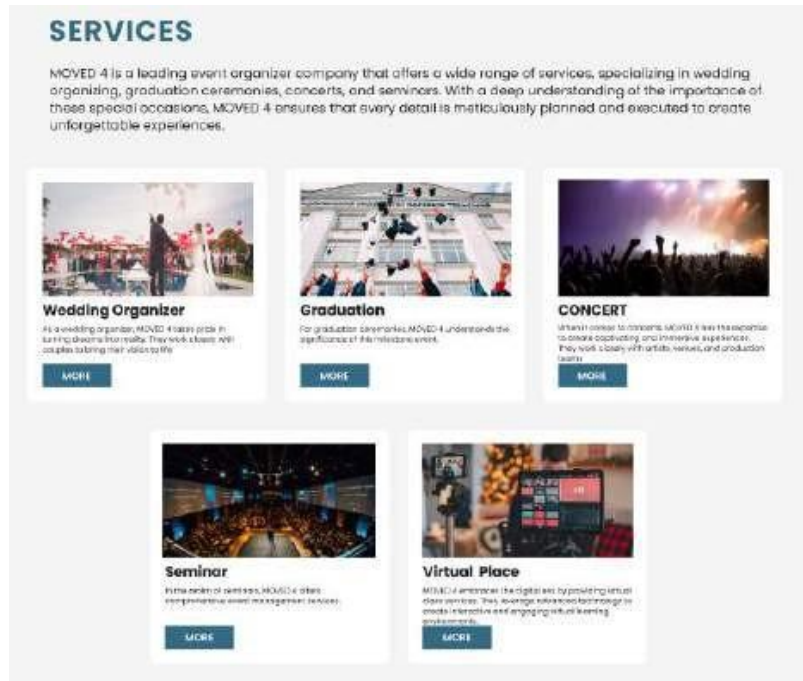


Figure 5. Display of Services Available

An available services page is a section of a website that provides detailed information about a particular entity, product, service, or content. It allows users to gain a more in-depth understanding of the subject they are searching for or want to learn more about. On this page, users can find details such as a full description, facilities, reviews, location map, and also venue provider contacts.

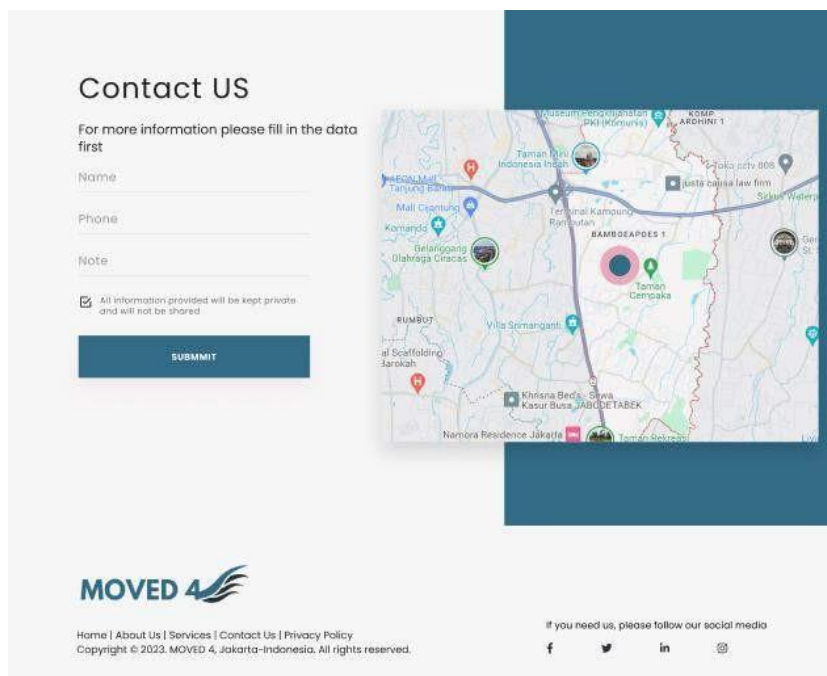


Figure 6. Maps View of MOVED4 Locations

A map/location details feature is part of an app or website that provides users with relevant geographic or location information. This feature allows users to visually see the location on a map, often using digital map services such as Google Maps or OpenStreetMap. With this feature, users can easily find the location of an event venue, view distances, routes, and other information.

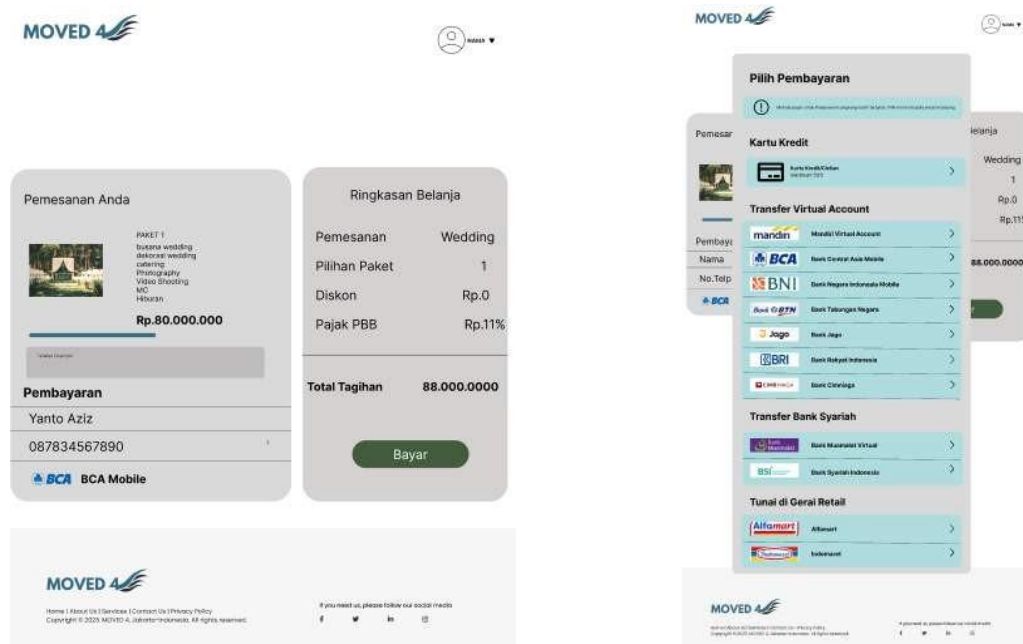


Figure 7. Payment Menu View

The payment menu feature is a part of an app or website that provides multiple payment options relevant to the user. This feature allows users to use payments through various platforms. With this feature, users can easily complete the payment for the event they are about to choose.

3.5. Testing

At this point, we will test the prototype using the System Usability Scale (SUS). SUS is a tool used to evaluate how well the interaction between the financial information system and the user functions. This method involves only ten questions and does not require a large sample size. In this test, ten respondents will be given a questionnaire to measure their understanding of the concept by using the prototype to record ten transactions at an event. Ten indicators have been designed to be evaluated by the respondents using the above testing method for preference values in the survey.

Table 5. Questionnaire Form

Code	Criteria User	Score
L1.	I will use this website frequently to book event organizer services.	1 – 5
L2.	I find this website too complicated to use.	1 – 5
L3.	I think this website is easy to use to book event organizer services.	1 – 5
L4.	I need help from other people or technicians to use this website.	1 – 5
L5.	I think the features on this website are integrated and work well.	1 – 5
L6.	I think many features on this website are not appropriate.	1 – 5
L7.	Most people will understand how to use this website easily and quickly.	1 – 5
L8.	In my opinion, this website is not practical to use.	1 – 5
L9.	I think there is no problem in using this website to book event organiser services.	1 – 5
L10.	Before using this website, I need to learn and get used to it.	1 – 5

Furthermore, respondents' responses were calculated using the SUS formula. The average score of each participant was calculated by summing up all scores and dividing by the number of participants. The formula for calculating SUS scores is as follows:

Scale Description:

- 1 : Strongly Disagree (SD)
- 2 : Disagree (D)
- 3 : Undecided (U)
- 4 : Agree (A)
- 5 : Strongly Agree (SA)

Furthermore, the response results were assessed using the System Usability Scale (SUS) formula. This formula calculates the average score of each participant by summing up all the scores and dividing by the number of participants. To calculate the SUS score, the following steps are followed:

1. Subtract the user's score by 1 for each question with an odd number.

$$[\text{User score} - 1 = \text{question score}] \quad (2)$$
2. Subtract 5 from the user score for each question with an even number.

$$[5 - \text{User score} = \text{question score}] \quad (3)$$
3. Sum up all the scores from each question given to each participant, then multiply the result by two and a half. The result of $[\text{1st question score}] + [\text{2nd question score}] + \dots + [\text{etc question score}] * 2.5$ is the total score of the respondents.
4. After collecting all the scores from steps 1 to 3, calculate the average value. The SUS score result is calculated from the total score of the respondents divided by the number of participants. After the calculation of the SUS score, the result is as follows:

Table 6. Questionnaire Calculation From

From Result Score										Result	Score (Result x 2.5)
L1	L2	L3	L4	L5	L6	L7	L8	L9	L10		
5	1	5	1	2	3	5	3	5	4	34	85
3	2	3	1	4	2	3	1	4	3	26	65
3	2	3	2	3	1	3	1	4	2	24	60
3	1	4	1	1	4	5	3	2	4	30	75
4	4	4	3	3	3	5	3	5	3	37	92.5
4	1	1	3	4	3	4	3	5	1	29	72.5
4	3	3	2	5	3	4	2	4	4	34	85
3	1	4	2	4	3	5	1	3	4	30	75
3	4	4	3	4	3	5	3	5	3	37	92.5
4	1	4	3	4	2	5	3	4	2	32	80
Score Rate SUS											79.25

According to SUS score data, the test is successful and acceptable if the score range reaches 70 and falls into the GOOD category. The SUS calculation results from 10 respondents with an average value of 79,25 are included in the Best Imaginable category, so it can be concluded that the UI/UX design of the Booking Information System website at CV MOVED4 has met the needs of users to help them place orders, check locations and make payments more efficiently and effectively.

4. Conclusion

The research conducted during the testing of the MOVED4 UI/UX prototype using design thinking showed that the MOVED4 platform received positive feedback from 10 users who participated in the usability testing. According to the System Usability Scale (SUS), a score of 79.25 out of 100 indicates a high level of excellence. Based on Figure 2, it can be concluded that the average SUS score falls under the "High Acceptable" category in the Acceptability Ranges and "Good" in the Adjective Ratings category. This helps in collecting more specific and relevant data. During this process, the approach focused on understanding user needs and generating appropriate solutions has proven to be effective.

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