

Implementation of UI/UX the Design Thinking Approach Method In Inventory Information System

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Abstract. *CV. Smart Motecare Mandiri (SMM) is a provider of information technology devices and services in the Karawang area. SMM often experiences difficulties in collecting inventory data and integrating it with sales data. To overcome this problem, making an inventory information system is considered the right solution. This article uses the Design Thinking method in designing the UX and UI of an inventory information system. This method involves the Empathize, Define, Ideate, Prototype, and Testing stages. At the Empathize stage, observations and interviews are carried out to understand user needs. The Define stage involves gathering ideas and creating a user persona. The Ideate stage involves brainstorming to generate creative ideas. The Prototype Stage involves building a prototype using the Figma software. The Testing phase involves testing the prototype with users to get feedback. The results show that the SMM inventory information system gets positive ratings from users. The results of the System Usability Scale (SUS) show an average score of 82.5 which has an excellent adjective rating.*

1 INTRODUCTION

CV. Smart Motecare Mandiri (abbreviated SMM) is a provider of information technology needs in the form of information technology devices such as computers, laptops, CCTV, printers, etc. as well as services such as installation of information technology devices, maintenance of information technology equipment etc.

Based on these problems, creating an inventory information system is considered to be the most appropriate solution (Siregar & Efendi, 2015). The SMM Inventory Information System is a system that provides inventory data to assist in the decision-making process (Siregar, 2020). Designing User Experience and User Interface is an important part of developing an inventory system. Because the interface display is an important factor so that the system can be comfortable and easy for the company

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admin to use (Averushyd Juliansyah & Paputungan, 2022). The design thinking method is used to develop UI/UX design prototypes which consist of 5 stages, namely empathize, define, ideate, prototype, and test. At the testing stage, the author uses the System Usability Scale (SUS) method which focuses on the level of effectiveness, efficiency, and user satisfaction with UI/UX design prototypes (Nasution & Nusa, 2021).

Design Thinking is an approach that pays attention to user needs for innovation derived from design tools, which is then applied to meet user needs or relevant uses with suitable technology. This results in a strong product because it is able to provide effective solutions to existing problems (Pradana & Idris, 2021). design thinking (DT) “is a great tool for teaching 21st century skills, because participants have to solve problems by finding and sorting out information, collaborating with others, and iterating on their solutions based on real-world, authentic experiences, and feedback (Sándorová et al., 2020). The Design Thinking method has five stages that need to be carried out, namely empathize, define, ideate, prototype and testing (Ilham et al., 2021). The design thinking method is used so that the system created will have a UI/UX that matches the experience and needs of the user (Susanti et al., 2019).

2 METHODS

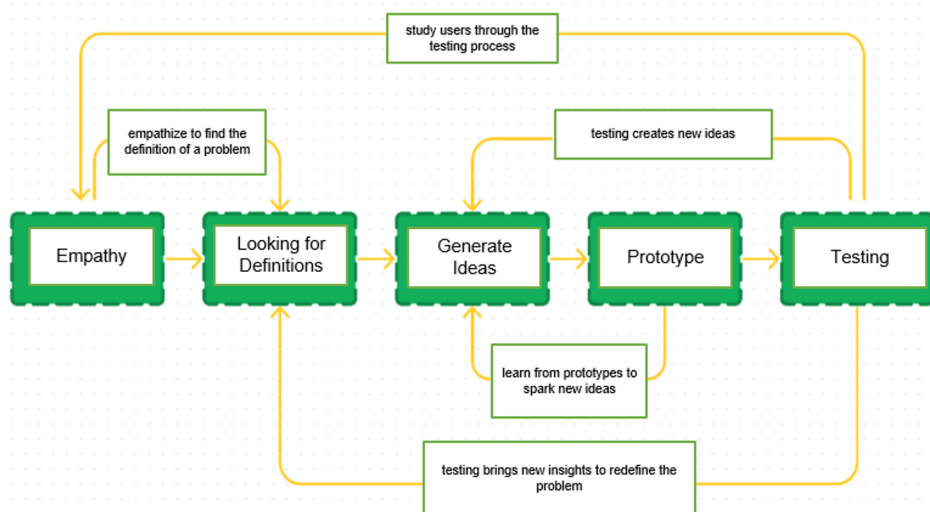


Fig. 1. System Development Stages

One of the methods used to design User Experience is Design Thinking. Design Thinking involves collaboration between developers and potential users in identifying and understanding a problem, with the aim of generating innovative ideas. The stages of the process can be seen in Figure 1 (Krisnanda et al., 2022). Design Thinking has five stages, viz.

2.1 Empathize

This stage aims to get values from existing problems (Ikhlas & Zuhri, n.d.). At this empathize stage, observations and interviews were carried out. Observations are made by paying attention to the behavior of the user (admin) when carrying out business processes and also looking at complaints that arise. Furthermore, interviews were conducted by asking questions to the SMM admin. The use of an empathy map aims to gain a deeper understanding of user characteristics and assist in solving problems related to user needs (Ilham et al., 2021).

2.2 Define

In this stage, ideas are collected that are useful for solving problems (Averushyd Juliansyah & Papatungan, 2022). The result obtained from this process is the user persona. User persona is a fictitious representation that describes the target user of the product to be made. The user persona focuses on the character's personal data, such as demographic data, attitudes/behavior, motivation, influence, goals, and difficulties encountered (Khairy, 2022).

2.3 Ideate

Ideate is the stage where ideas are developed or often referred to as a brainstorming session. Brainstorming involves a group of people voicing various ideas without restrictions, and these ideas are collected to find creative solutions to solve a particular problem (Shirvanadi, 2021). At this stage the ideas will be made in the form of a Site Map and Userflow. At this stage UI/UX designers are forced to be creative by providing ideas from the empathize stage.

2.4 Prototype

Prototype, which is also known as prototype or archetype in Indonesian, refers to the initial shape or standard size of a model. Prototype is an initial version of a product that has not reached the final stage, but is used as an illustration to build the desired final product (Ridwansyah, 2018). Preferably, a prototype is made before carrying out further development or making the final design that will be used by the user (Kummara, 2022).

2.5 Testing

Testing is the stage that is carried out after completing the prototype stage with the aim of getting feedback from users (Syabana & Saputra, 2020). The System Usability Scale (SUS) consists of 10 statements that are assessed using a Likert scale with 5 points, starting from Strongly disagree" to "Strongly agree" (Setiawan & Wicaksono, 2020). Table 1 shows a list of questions that will be used.

Table 1. List of System Usability Scale Questions

No	Question	Strongly Disagree					Strongly agree
1	I feel like using the CV inventory information system. Smart Motecare Mandiri regularly.	1	2	3	4	5	
2	I feel that the CV inventory information system. Smart Motecare Mandiri is too complex.	1	2	3	4	5	
3	I feel that the CV inventory information system. Smart Motecare Mandiri is easy to use.	1	2	3	4	5	
4	I feel I need help from technical personnel to be able to use the CV inventory information system. Smart Motecare Mandiri.	1	2	3	4	5	
5	I feel that the functions in the CV inventory information system. Smart Motecare Mandiri is well integrated.	1	2	3	4	5	

The SUS Score weighting is divided into 5 Letter Grades from A, B, C, D, and F with a choice of Excellent, Good, OK, Poor, and Awful ratings (Setiawan & Wicaksono, 2020). Here are the details:

Table 2. SUS Score Bottling

SUS Score	Letter Grade	Adjective Rating
Over 80.3	A	Excellent
69 s.d. 80.3	B	Good
68	C	Ok
51 s.d. 67	D	Poor
Less than 51	E	Awful

The SUS Score calculation has rules. The following is the calculation of the score in the questionnaire:

1. Odd numbered questions: The user's score (x) is deducted by 1
2. Even numbered questions: 5 minus the user's score (x)Score SUS: Jumlah keseluruhan penguna (x) dikali 2.5

3 RESULTS AND DISCUSSIONS

At this stage, the research steps that have been carried out to design the UI/UX for the SMM inventory information system will be explained. The following is a discussion and analysis results by going through the stages of design thinking.

3.1 Emphatize

Interviews were conducted using an unstructured interview approach with CV employees. Smart Motecare Mandiri. In unstructured interviews, interactions are

carried out involving two or more people as speakers and co-speakers, either in the form of one-way or two-way communication. After conducting interviews with informants in accordance with the results of observations that have been made, an emotional map is obtained as follows.

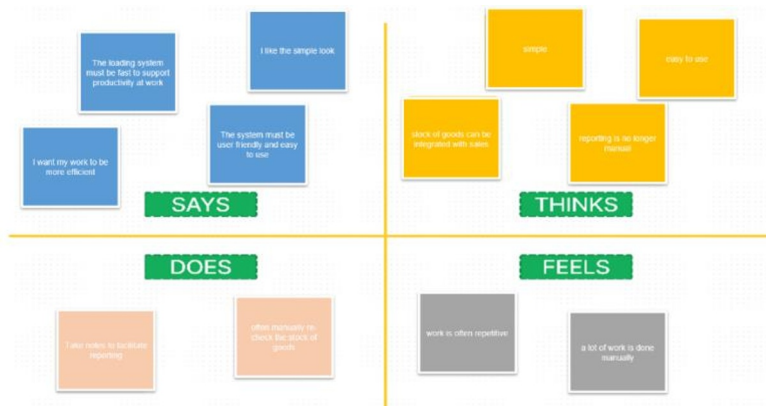


Fig.2. Empathy Map

3.2 Define

At this stage, a user persona will be created. User Persona is created using a point of view that is tailored to the needs of the user. User Persona was created for four sources, where each source has a different background. This will help in designing the application interface. The results of each stage that has been carried out will be considered by the researcher to be adjusted at the next stage, namely the ideate stage. The following is a User Persona from one of the sources.

Oka Muhamad Nurfauzi

"Sistem tersebut harus memberikan kenyamanan dan kemudahan bagi penggunaan serta harus cepat"

- **Age** : 21 Tahun
- **Activity** : Admin CV, Smart Motecare Mandiri & Mahasiswa Program Studi Sistem Informasi

Goals

- Tampilannya simple, clear, dan mudah digunakan
- Produk yang stoknya menipis bisa diketahui
- Stok produk secara otomatis terupdate ketika ada penjualan
- Pembuatan laporan tidak lagi manual

Frustrations

- Sering melakukan check & re-check stok produk secara manual
- Kehabisan produk ketika ada yang membutuhkan
- Membuat laporan penjualan diakhir bulan secara manual

Features

- Dashboard interaktif
- Information alert stok produk yang akan habis
- Integrasi data penjualan dan stok
- Report sales and profit

Fig.3. User Personas

3.3 Ideate

At this stage, brainstorming is carried out to find and determine solutions that can solve the problems of users by creating a feature according to the needs of prospective users.

Site Map

Site Map is a representation of what needs are needed when users enter the system, and Site Map creation is done using the Figma.com tool.

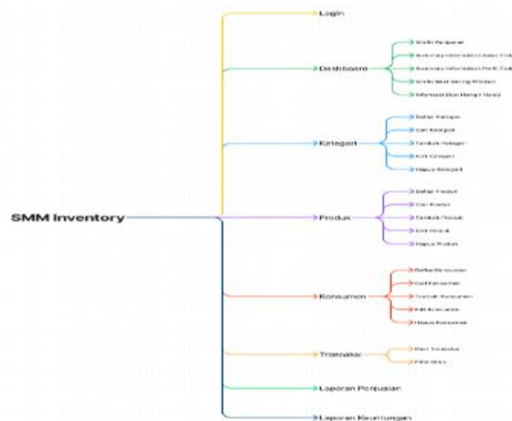


Fig.4. *Site Map*

User Flow

To meet the needs of potential users who have difficulty checking stock, it is necessary to create an appropriate user flow so that potential users can easily achieve their goals. Creating a User Flow is done using the Figma.com tool. The following Figure 5 shows the User Flow when the user wants to change stock.

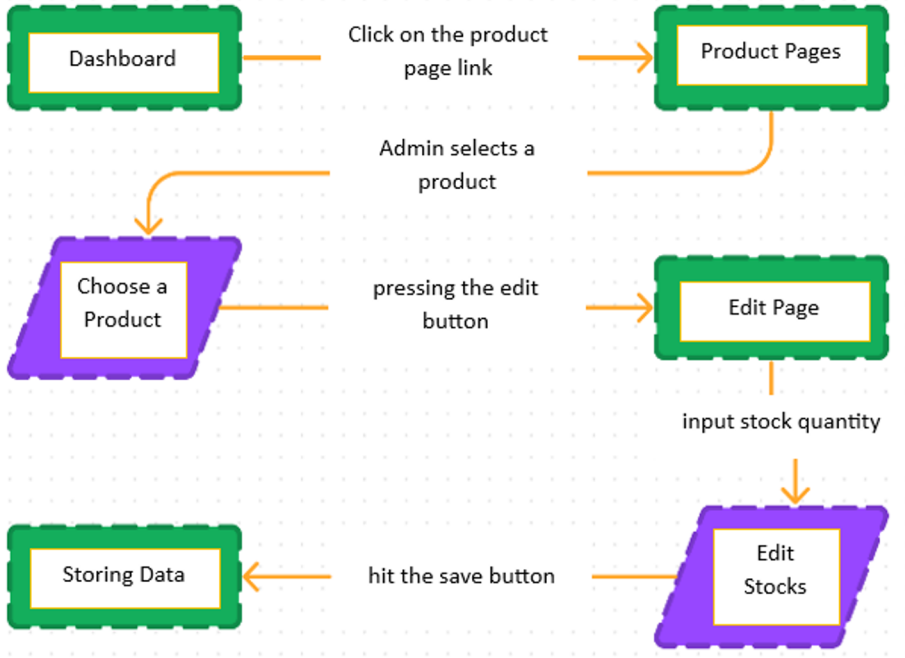


Fig.5. *User Flow* Edit Stok Barang

3.4 Prototype

At this stage a prototype or prototype will be made. The tools used are Figma.com. Here are some displays of the SMM inventory information system prototype. Figure 6 displays the dashboard page.

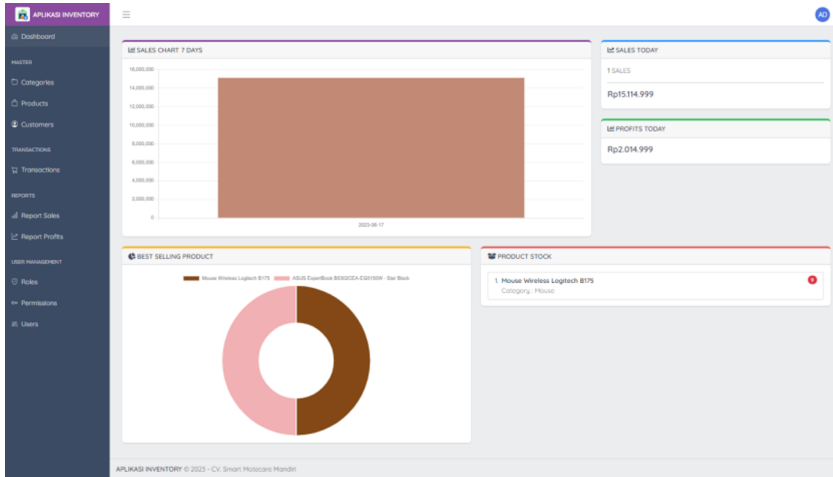


Fig.6. Dashboard page

Figure 7 shows the product page. Through this page product management can be carried out, such as adding products, editing products, editing stock, and deleting products.

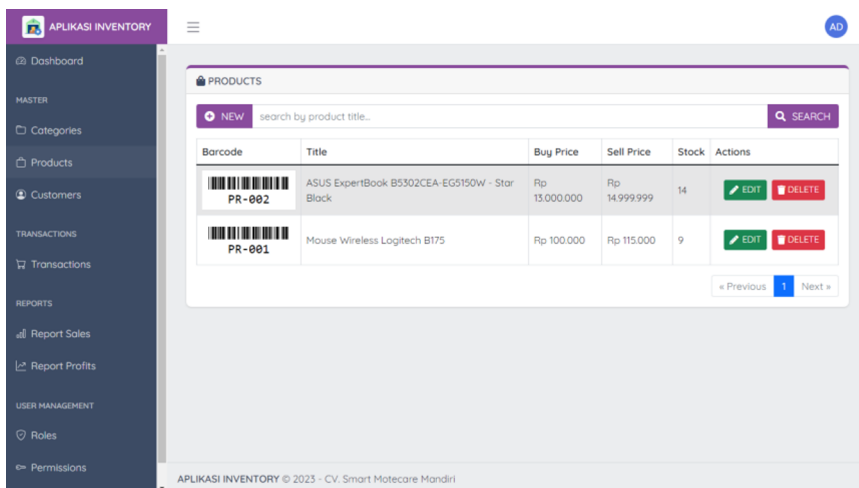


Fig.7. Product Page

Figure 8 shows the transaction page. When this page is opened, the sidebar automatically closes to widen the workspace and to make it more friendly if the admin uses a touch screen device. Figure 9 shows transactions with less payment nominal.

The screenshot shows a transaction page with a sidebar on the left and a main content area on the right. The sidebar contains a search bar, a product name input field, and a quantity input field. The main content area displays a success message, a grand total of Rp115,000, a cashier dropdown menu, a customer dropdown menu, a table of items, and a payment section with discount, pay, and buttons for cancel and pay order & print.

#	Product Name	Price	Qty	Sub Total
1	Mouse Wireless Logitech B175	Rp115.000	1	Rp115.000

Fig.8. Transaction Page

The screenshot shows the same transaction page as Figure 8, but with an underpayment of Rp15,000. The grand total remains Rp115,000, and the payment section shows a pay amount of 100000.

#	Product Name	Price	Qty	Sub Total
1	Mouse Wireless Logitech B175	Rp115.000	1	Rp115.000

Fig 9. Transactions with Less Payment Nominal

In the final stage, the design was refined based on the test results at the prototype stage of the CV inventory information system. Smart Motecare Mandiri. Testing was

carried out using the System Usability Scale (SUS). The following is the data from the SUS questionnaire.

Table 3. SUS Questionnaire Results

No	Responden	CALCULATED SCORE									
		Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10
1	R1	4	1	5	1	5	1	5	1	5	1
2	R2	3	3	4	2	5	2	5	3	4	2
3	R3	4	2	4	1	5	1	4	1	5	1
4	R4	4	2	3	1	4	1	5	2	5	1
5	R5	3	1	4	1	5	2	4	1	3	3
6	R6	3	2	4	1	5	1	4	1	5	1
7	R7	5	3	3	1	3	2	4	1	5	1
8	R8	4	2	5	1	4	1	3	1	5	1
9	R9	4	2	3	1	5	3	3	2	3	2
10	R10	4	4	4	3	4	1	4	1	5	1

Table 4. SUS Score Calculation Results

No	Responden	CALCULATED SCORE										SUM	Score
		Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10		
1	R1	3	4	4	4	4	4	4	4	4	4	39	97,5
2	R2	2	2	3	3	4	3	4	2	3	3	29	72,5
3	R3	3	3	3	4	4	4	3	4	4	4	36	90
4	R4	3	3	2	4	3	4	4	3	4	4	34	85
5	R5	2	4	3	4	4	3	3	4	2	2	31	77,5
6	R6	2	3	3	4	4	4	3	4	4	4	35	87,5
7	R7	4	2	2	4	2	3	3	4	4	4	32	80
8	R8	3	3	4	4	3	4	2	4	4	4	35	87,5
9	R9	3	3	2	4	4	2	2	3	2	3	28	70
10	R10	3	1	3	2	3	4	3	4	4	4	31	77,5
Sum Score SUS											825		
Average Score SUS											82,5		

From the calculations in table 4 it shows that the average SUS score is 82.5 which has an excellent adjective rating.

4 CONCLUSIONS

In this article, the UX and UI design of an inventory information system for CV. Smart Motecare Mandiri (SMM) is carried out using the Design Thinking method. The stages in Design Thinking, namely Empathize, Define, Ideate, Prototype, and Testing, are used to understand user needs, generate innovative ideas, create prototypes, and test prototypes with users. The results of the analysis show that users give a positive assessment of the SMM inventory information system. Users find the system easy to use, the functions are well integrated, and they feel confident in

operating it. In testing using the System Usability Scale (SUS), the SMM inventory information system gets a fairly high score, indicating good UX quality. Thus, the design of UX and UI using the Design Thinking method succeeded in creating an inventory information system that suits the needs of CV users. Smart Motecare Mandiri. This system is expected to assist companies in managing inventory and improve the efficiency of business processes.

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