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UI/UX design of AlterOmah architect consultation booking application using design thinking

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Abstract

Architectural services have leveraged technological advancements to engage in diverse business practices, notably through social media platforms. Marketing architectural services via social media introduces several challenges for consumers, including difficulties locating local architects, insufficient product information, and concerns regarding transaction security. This research addresses these issues by designing a user interface (UI) and user experience (UX) for a consultation booking application with architects. Employing the design thinking method with stages such as empathizing, defining, ideating, prototyping, and testing, the research culminates in developing the "AlterOmah" applications UI UX design. Usability testing, incorporating task scenarios and the System Usability Scale (SUS), reveals a score of 78.5 out of 100, categorizing the "AlterOmah" application as Grade B, indicating a good rating regarding learnability and user satisfaction. The design of the "AlterOmah" application provides a new alternative for public access to architectural services. It increases awareness of the existence of local architects, with scientific implications for applying Design Thinking methods in developing architectural service-oriented applications.

Keywords

UI/UX design, Booking application, Design thinking

Introduction

APJII survey results show an increase in internet users by 1.17%, from 210 million (2022) to 215 million (2023) [1]. The high prevalence of public online purchasing behavior [2] and internet users is related to the widespread integration of information technology into daily activities. The architecture workforce increased consistently, reaching 58,615 people in 2019 [3]. This surge encourages business adaptation with creative innovation [4]. The implementation of the right information technology system will have an impact on work effectiveness and performance [5]. Marketing architectural services through social media is a challenge for consumers.

These challenges encompass difficulties in finding local architects, a lack of product information, and concerns regarding security guarantees in transactions. Such issues

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contribute significantly to consumer anxieties and foster a sense of distrust toward architects and the services they provide. The absence of clear information can complicate the decision-making process for potential customers. Many people think that using architects is expensive, and there are rarely architects who really understand what people expect in a fairly low-cost [6]. Architectural businesses must utilize technological advancements to attract people to purchase their products and services. Therefore, electronic commerce of services has become a very important strategy. Electronic commerce not only ensures more targeted dissemination of product information, but also improves the efficiency of the transaction process [7].

Faced with these challenges, this research aims to design an architect service booking application using the design thinking method intended for Android or iOS mobile devices. The selection of mobile devices is based on the large number of users and widespread use [8]. This research is expected to increase public awareness of local architects and encourage the growth of the architecture business. The practical and effective design thinking method is applied by observing and paying attention to user problems [9].

Methods

This research starts with problem analysis and data collection through observation and literature study. Understanding and fulfilling user needs and overcoming barriers to user experience are important considerations in designing systems to increase implementation effectiveness [10]. Observing consumers who have used architectural services is carried out to understand the problems when ordering services, making transactions, and project implementation. Literature studies are used to strengthen the use of design thinking methods. Data processing uses the design thinking method as a problem-solving approach because it gives users various perspectives. The design thinking method is expected to meet user needs and effectively overcome user problems using the application [9]. The design thinking process consists of five stages: empathize, define, ideate, prototype, and test.

The empathize stage involves collecting user views and needs through observation and interviews [9]. The define stage elaborates on identified problems using user personas and HMW (How Might We). Ideate is the third stage, where researchers generate ideas and solutions based on data from the define stage, utilizing user flows and mood boards. The prototype stage follows, creating interface designs using low-fidelity and high-fidelity wireframes in Figma, aligned with the ideated solutions [11]. At this stage, researchers will use Figma as the main tool to create an application interface design. The final test stage involves usability testing on the completed "AlterOmah" application prototype, assessing learnability, efficiency, errors, and satisfaction [12] using scenario tasks and the System Usability Scale (SUS) questionnaire for 5 participants.

Results and Discussion

Empathize

The Empathize stage is carried out through observations and interviews to understand the problems faced [11]. Interviews were conducted with consumers who have used architect services to determine user needs based on their experience. The interviews with consumers who have used architectural services revealed several needs, including difficulty finding a trusted architect, lack of product information, slow consultation services, and the desire for more monitored project reporting. From the results of these interviews, an empathy map was created in Table 1, which illustrates the researcher's understanding of potential users based on their words, thoughts, actions, and feelings.

Table 1. Empathy map

SAYS	THINKS	DOES	FEELS
I find it difficult to find architects with designs that I like	I want it to be easy to choose an architect	Ask experienced colleagues	Worried
When I contacted him, his response was less than enthusiastic	Tracking orders anywhere	Observation by reading product descriptions	Interesred
A little information about architectural services around me	Product material specifications will be more helpful	Comparing several architects	Confused
I have little time to find an architect	I would like to see reviews from other consumers	View existing design portfolios on social media	Excited
I don't trust their responsibility	I am confused about the types of products offered	Search for information on social media	Undecided
The architect did not fully understand my wishes	Consult as needed with the architect	Choosing a preferred design concept	Lack of trust

Observation with competitor analysis used as a reference for designing the "AlterOmah" application solution. Competitor analysis was conducted on 3 similar applications: "Dekoruma," "Homify," and "Qanvast." The difference in appearance between the competitor apps provides a reference for developing a better design approach. The result of the competitor analysis is shown in Table 2.

Table 2. Competitor analysis

Competitor Analysis	Dekoruma	homify	QANVAST	ALTEROMAH
Design Portfolio Details	V	X	V	V
Save/like Design	X	V	V	V
Project consumer review	V	X	V	V
Architect Search	X	V	V	V
Order Tracking	X	X	X	V
Scheduled Consultation	X	X	X	V

Define

Data from the empathize stage is processed with user personas and HMW (How Might We). User persona consists of persona data, goals, frustrations, and motivations [13]. Researchers create user personas based on these data and characteristics to deeply understand user behavior and needs. The user persona is illustrated in Figure 1 as a fictional representation that reflects the user's desires and feelings from the previous empathy map.

By using the How Might We(HMW) method, the problems found will be converted into statements that are followed up to develop various scenarios into solutions [14] in designing the “AlterOmah” application. The results of making HMW in this study can be seen in Table 3.

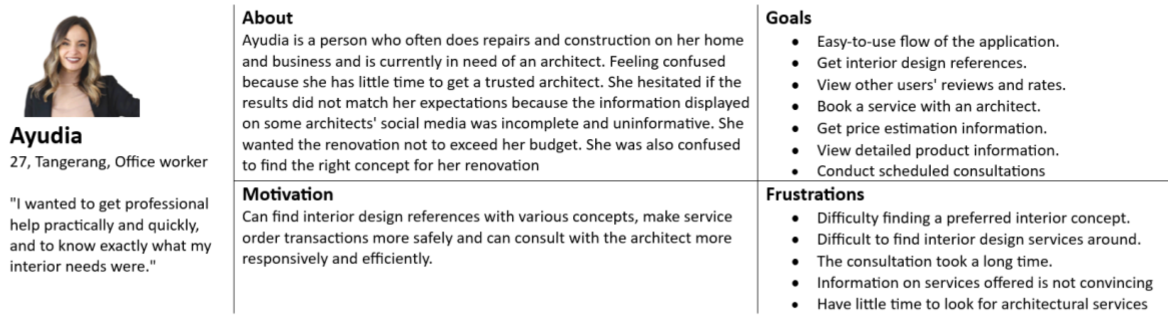

Figure 1. User persona

Table 3. How might we

HOW	MIGHT
How can consumers book architectural services easily?	Created an architect page to search and select architects. Consultation feature on architect profile and product details.
How can we enhance consumer understanding of the products we offer?	By providing an FAQ feature and providing a special section for important information.
How can we showcase customer reviews to attract new customers?	By creating a section containing customer reviews about projects that have ended on the architect's profile and each product.
How can customers order services with clear order details?	By creating a Consultation feature to fill in the order details, which will display the estimated price.
How can consumers organize the consultation so that it is scheduled?	By selecting a booking time for consultation on the Consultation feature when placing an order.
How can customers see the progress of their project?	By creating a History page that displays a list of scheduled consultations and ongoing projects.
How can we make it easier for consumers to get design references?	By providing a Project page that showcases a variety of architects' design products. Users will be able to search and filter these products based on their preferences.
How do consumers save preferred products and architects?	By offering comparable features on the product specifications and profile of the architect.

Ideate

This stage aims to generate ideas and solutions that guide the designed [9]. Researchers created a user flow to understand the flow of using the "AlterOmah" application to facilitate user interaction. User flow helps identify user steps in completing tasks or achieving goals [14]. The "AlterOmah" application has 5 menus: Home, Architect, Project, History, and Profile. The results of the user flow are shown in Figure 2, covering all stages of the consultation booking scenario from start to success. This user flow becomes a reference in designing the interface and user experience of the product.

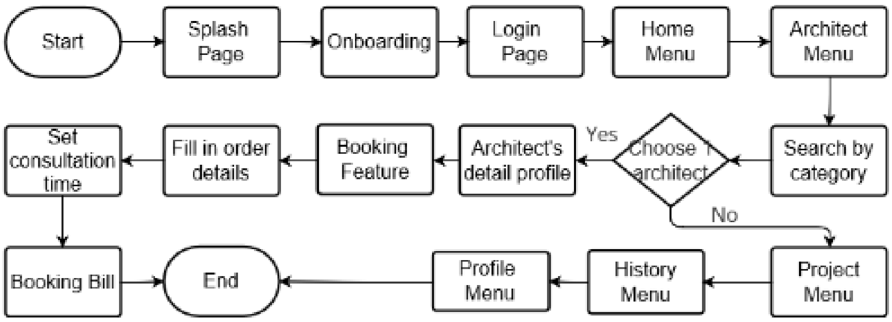

Figure 2. User flow

The mood board in Figure 3 contains references for designing the app, with the color green chosen to create a sense of calm and balance for the user. In addition to color, the mood board includes references to typography, icons, buttons, and other design styles.

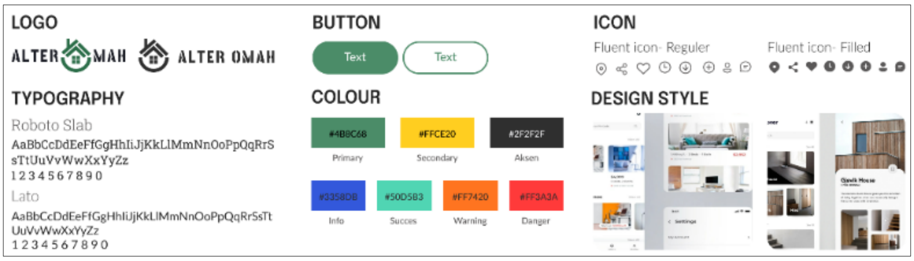

Figure 3. Mood board

Prototype

A low-fidelity wireframe or a rough picture of a design that will be developed into a high-fidelity wireframe. A high-fidelity wireframe is the final product design created by providing images of coloring, fonts, and shapes [11]. For making wireframes at this stage, researchers use Figma tools. The wireframe pages created at this stage are architect and project details, booking features, tracking features, and several pages of detail and filter (Figure 4a and Figure 4b).

Figure 4a. Low-fidelity wireframe for the 5 menus of the "AlterOmah" application

Figure 4b. High-fidelity wireframe for the 5 menus of the "AlterOmah" application

1. Wireframe detail architect and project

Architect details include the architect's profile, service range, distance, and reviews. Project details include specifications, price estimates, reviews, and before and after photos. Users can use the Wishlist button to save preferences and the Consultation button to book architect services (Figure 5a and Figure 5b).

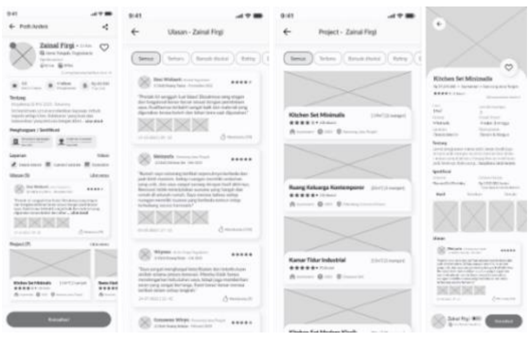

Figure 5a. Low-fidelity for detail architect & project

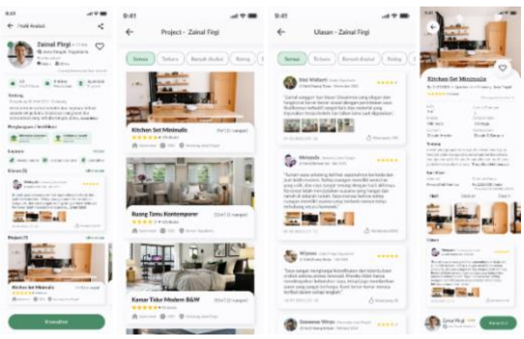

Figure 5b. High-fidelity for detail architect & project

2. Wireframe booking features

Pressing the consultation button directs the user to the consultation booking page, where they enter details of their renovation needs and personal information. Upon completion, pressing the reservation button leads to the consultation checkout page, confirming a successful booking (Figure 6a and Figure 6b).

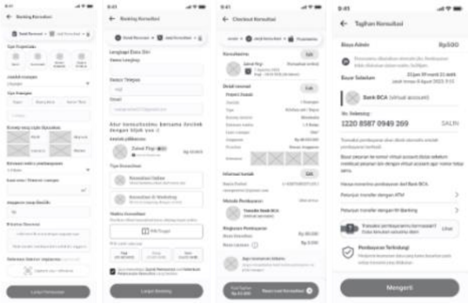

Figure 6a. Low-fidelity for booking features

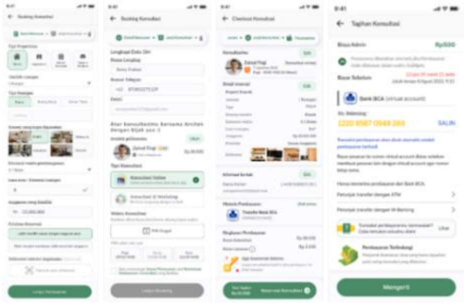

Figure 6b. High-fidelity for booking features

3. Wireframe tracking features

Selecting progress on the order tracking page directs the user to the order progress details page, displaying the latest report. Users confirm progress by pressing the agree button (Figure 7a and Figure 7b).

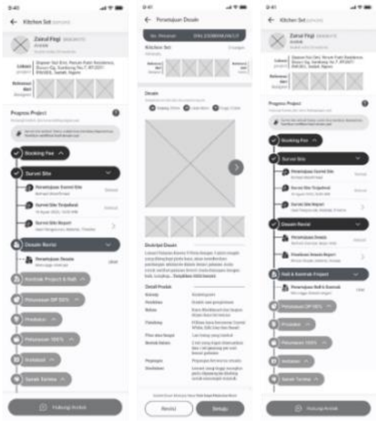

Figure 7a. Low-fidelity for tracking features

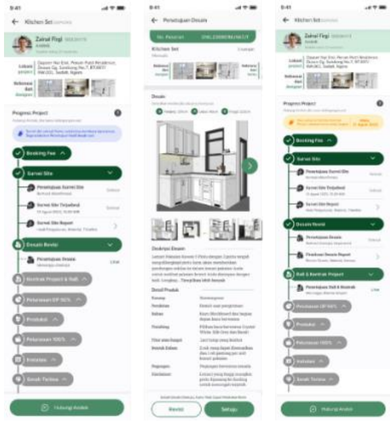

Figure 7b. High-fidelity for tracking features

Test

Usability testing was conducted on 5 representative user participants who fit the criteria of having experience using architect or renovation services. According to Nielsen (2000), testing with 5 participants can identify 85% of usability problems in a system [15][16]. Usability testing was carried out with task scenarios using the maze application to help assess the extent to which respondents could carry out the given task prototype. There were 6 task scenarios tested: login, search for architects, order consultation, search for design references, track orders, and view Wishlist. The results of the scenario task testing can be seen in the following table.

Table 4. Usability testing success

	R1	R2	R3	R4	R5
T1	S	S	S	S	S
T2	S	S	S	S	S
T3	P	P	P	P	P
T4	S	S	F	F	S
T5	S	S	S	S	S
T6	S	S	S	S	S

T=Task; R=Participant; S=Success; F=Failed; P=Partial Success

$$Success\ Rate\ = \frac{(S + (PS\ x\ 0.5))}{Total\ Task} x\ 100\% \quad (1)$$

$$= \frac{(23+(5\ x\ 0.5))}{6\ x\ 5} \text{x } 100\%$$

$$= 85\%$$

Table 5. Usability testing time duration (second)

	R1	R2	R3	R4	R5
T1	27	10	20	55	15
T2	17	7	14	10	8
T3	88	39	50	44	48
T4	31	17	92	169	24
T5	33	29	45	38	19
T6	16	13	23	38	8

T=Task; R=Participant;

$$Time\ Based\ Efficiency\ = \frac{\sum_{j=1}^{R} \sum_{i=1}^{N} \frac{nij}{tij}}{NR} \quad (2)$$

$$= \frac{\frac{1}{27}+\frac{1}{10}+\frac{1}{20}+\cdots+\frac{1}{8}}{6\ x\ 5}$$

$$= 0.05\ \text{goals/sec}$$

The learnability aspect measures how easily users can complete basic tasks in the application [12]. The learnability analysis using Table 4 obtained a success rate of 85% for the "AlterOmah" app tasks. A system is considered effective with a 78% or more success rate [17]. Data from Table 5 was used to analyze the efficiency aspect, which showed a time-based efficiency of 0.05 goals/second. This means that, on average, a participant can complete a task in 35 seconds. Efficiency reflects how users can complete tasks or achieve goals in the application [12][18][19].

Table 6. Task opportunities

	Opportunities
T1	11
T2	3
T3	11
T4	6
T5	4
T6	2
Total	**37**

T=Task;

Table 7. Usability testing errors

	R1	R2	R3	R4	R5
T1	0	0	0	0	0
T2	0	0	0	0	0
T3	0	1	0	1	1
T4	1	0	9	9	0
T5	0	0	1	0	0
T6	0	0	0	0	0
		Total Error			**23**

T=Task; R=Participant

$$Defective\ rate = \frac{Total\ Defect}{Total\ Opportunities}(3)$$
$$= \frac{23}{37\ x\ 5}$$
$$= 0.12$$

Sauro (2012) stated that the average number of errors per task is 0.7 [17]. Table 6 and Table 7 were used to calculate the error aspect with the defective rate formula, which resulted in 0.12. The error aspect signifies inappropriate actions or user errors [12] during task completion. With an error rate below 0.70, user errors are considered reasonable.

Table 8. SUS calculation

Respondent	Calculation score										Total	Value (Sum x 2.5)
	Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10		
R1	3	3	4	3	3	3	4	3	2	2	30	75
R2	4	3	3	3	4	4	4	3	3	3	34	85
R3	3	3	3	3	4	4	4	4	3	4	35	87.5
R4	3	3	2	3	3	3	3	3	2	1	26	65
R5	3	3	4	4	3	3	3	3	3	3	32	80
Average												**78.5**

The satisfaction aspect was analyzed using the System Usability Testing (SUS) Questionnaire on users of the "AlterOmah" application to measure satisfaction and provide an overall picture of the user experience. The questionnaire, consisting of 10 questions with a scale of 1-5, was given after usability testing as a post-test. As a result, the SUS score reached 78.5, earning a "Grade B" and a "Good" rating. This shows the respondents were satisfied with the idea and design (Table 8).

Conclusion

Testing the "AlterOmah" application using the design thinking method on 5 participants with 6 task scenarios. Usability testing showed a learnability rate of 85%, above average. Time-based efficiency reached 0.05 goals/second, indicating a very fast achievement. Testing with the System Usability Scale (SUS) resulted in a score of 78.5, declared "Acceptable" with a "Grade B" category and a "Good" rating. A good level of usability in the “AlterOmah” application shows that users can easily understand and use the application effectively. Nonetheless, this study has limitations in covering all aspects of daily use, mainly because participants tend to be experienced. For future research, it is recommended that the user sample be diversified to increase external validity and better representativeness.

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