MenuKu: An Android-based Solution to Food and Beverage Order Management

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Abstract. The problem faced by restaurants when there are many customers is the accumulation of order lists, where the waiter will experience being overwhelmed when confirming customer orders. With this application, it is expected to be able to help ease the ordering process. Not only is the reservation feature provided, but it also offers a reservation feature to solve the problem of customers who don't want to get a table when visiting the restaurant. Applications are developed using the waterfall method. The data collection stage uses an online questionnaire system using Google Forms to meet users' requirements while designing systems using the UML method.

1 Introduction

The advancement of information technology has made it feasible for anyone to connect conveniently and efficiently in the present day. Among the numerous devices generated by improvements in information technology, mobile phones and smartphones are the most commonly used communication tools since they are portable and designed to deliver and receive information.

Mobile advanced technologies have improved and started to shift people's leisure habits away from traditional activities and toward mobile virtual endeavors. Meal ordering apps (MOAs) play an important role in daily eating habits as people use mobile devices for communication and recreation[1].

At present, the majority of restaurants in Indonesia still rely on manual systems for reserving tables and ordering food [2]. When a customer enters a restaurant, the waiter takes the order, transmits it to the kitchen, and delivers it. The sequences are straightforward but prone to human error, and the procedure requires a considerable amount of time. As the number of consumers rises, the likelihood of committing an error will increase.

Go-Food, Grab Food, Shopee Food, and Traveloka Eats are among the ordering systems that are currently available on the Indonesian app [3]. In contrast to dine-in businesses, their primary concentration is on meal delivery via the transportation system. Kulina is an extra application in the same business; they also provide a digital menu for food delivery orders. However, Kulina does not offer an on-site food ordering system; therefore, the MenuKu application was developed for this purpose.

This research designed an application to help eateries be more practical in serving customers. Using the MenuKu app, customers can find restaurants to reserve, then go there, scan the QR Code the business has provided to rapidly explore the menu, and place their orders without having to wait for a waitress.

2 Methods

This method of data collection attempts to satisfy user expectations and facilitate application development. Journals, websites, comparisons with other applications, and data collection in the form of questionnaires are utilized to establish the amount of demand for application users. In addition, OOAD (Object-Oriented Analysis and Design) is an analysis and design method that helps analyze and design program designs using UML Diagrams (such as use case diagrams, activity diagrams, sequence diagrams, etc.).

3 Data Collection

3.1 Data Collection

The authors employed a questionnaire with 66 responses to collect the essential information. The purpose of this

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survey is to determine the MenuKu application's users' requirements regarding its functionality.

Table 1. Result of the Survey

Description	Number of People	Percentage
Total	**66**	**100%**
Age		
15 – 18	12	18,2%
19 – 22	20	30,3%
23 – 26	14	21,2%
27 – 30	4	6,1%
>30	16	24,2%
Gender		
Male	30	45,5%
Female	36	54,5%
Area		
Jakarta	10	15,2%
Bogor	8	12,1%
Depok	2	3,0%
Tangerang	5	7,6%
Bekasi	16	24,2%
Not all the above	23	37,9%
Make a reservation		
Yes	45	68,2%
No	21	31,8%
If Yes, Make restaurant reservation		
Very rare	12	26,7%
Quite rare	11	24,4%
Quite often	14	31,1%
Often	8	17,8%
Very often	0	0,0%
If Yes, Difficulty in reservation		
Yes	27	60,0%
No	18	40,0%
If Yes, Make a reservation		
Phone	37	82,2%
Apps	8	17,8%
See menu list ini physical form		
Very rare	2	3%
Quite rare	4	6,1%
Quite often	12	18,2%
Often	15	22,7%
Very often	33	50%
Digital menu list is more effective		
Yes	50	75,8%
No	16	24,2%
Prefer digital menu		
Yes	45	68,2%
No	21	31,8%
Received wrong food		
Yes	42	63,8%
No	24	36,4%
Received different food		
Very rare	23	34,8%
Quite rare	22	33,3%
Quite often	11	16,7%
Often	9	13,6%
Very often	1	1,5%

Due to the considerable proportion, the 19- to 22-year-old demographic represents the largest target market, as seen in Table 1. Considering that there is little difference in the number of male and female responders, it is clear that this application does not target only one gender. Most of the respondents reside outside of JABODETABEK. This question does not identify the intended users of the program based on their residence; only the author's is specified. The majority of respondents have made dining reservations.

Most respondents rarely make restaurant reservations, indicating that there is still potential for the program to be utilized by potential users if it offers simple restaurant reservation functionality. There are still respondents who have trouble making restaurant reservations, indicating that there is potential for the program to be used by future users, provided it offers simple restaurant reservation functionality. Despite the fact that most respondents continue to make restaurant reservations by telephone, this application will make it simple to switch to alternate reservation methods. Most people still prefer paper restaurant menus over digital menus.

The majority of respondents concur that digital menus are more effective than physical menus. There is a disparity in the number of replies to the previous question, with 50 respondents agreeing that the digital list menu is more efficient but only 45 respondents opting for the digital menu list. The majority of responders have gotten orders that were not what they had requested. With this, the author provides a function that enables users to place orders from within the program, reducing human error. From the previous questions, it appears that many respondents have encountered a discrepancy between what they received and what they bought. However, most respondents rarely encounter this discrepancy while answering the questions above.

3.2 Main Question

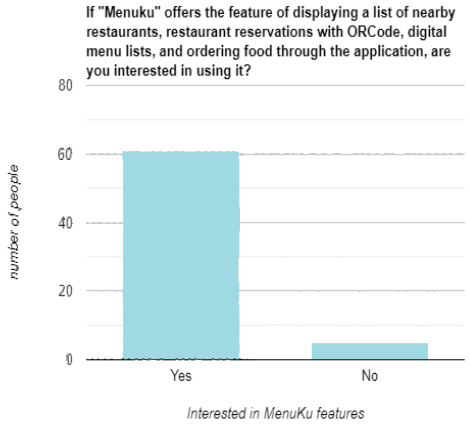

Fig. 1. Difficulty in Reservation

Table 2. Difficulty in Reservation

Difficulty in reservation	Number of People	Percentage
Yes	**61**	**92,4%**
No	**5**	**7,6%**

It can be seen from the survey findings that the majority of respondents are interested in using applications with the supplied capabilities.

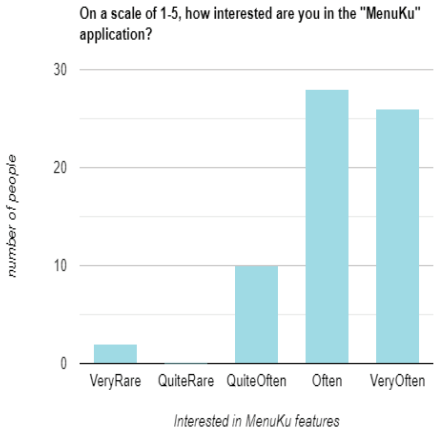

Fig. 2. Number of people interested in MenuKu application

Table 3. Number of people interested in MenuKu application

Likert Scale	Number of People	Percentage
Very rare	**2**	**3%**
Quite rare	**0**	**0,0%**
Quite often	**10**	**15,2%**
Often	**28**	**42,4%**
Very often	**26**	**39,4%**

Most respondents are interested in applications with the specified features, according to the results of the survey questions. The purpose of this question is to determine how interested respondents are in applications with the given attributes.

4 Result and Discussion

4.1 Proposed feature

MenuKu is an application for restaurant reservations and meal delivery services. The MenuKu program facilitates restaurant searches, restaurant reservations, and online food ordering. Accounts registered as shoppers can browse restaurant menus and add items to the basket, as well as book reservations and make payments directly from the MenuKu app. Developers use the admin account as a management account to organize and oversee app activity, such as adding restaurants and their categories to user accounts to keep the application running smoothly.

4.2 System Design

4.2.1 Use Case Diagram

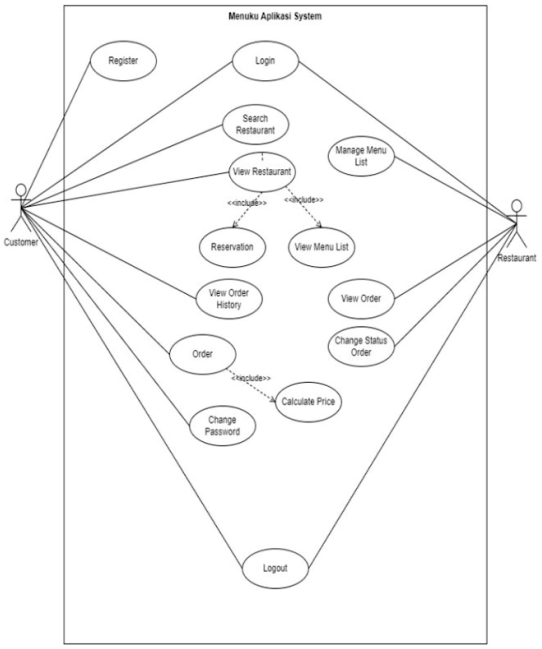

Fig. 3. Use Case Diagram

4.2.2 Activity Diagram Reservation

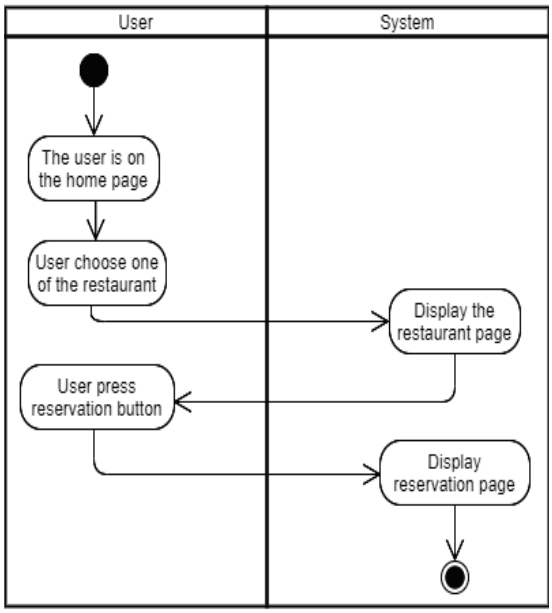

Fig. 4. Activity Diagram Reservation

4.2.3 Activity Diagram View List Menu

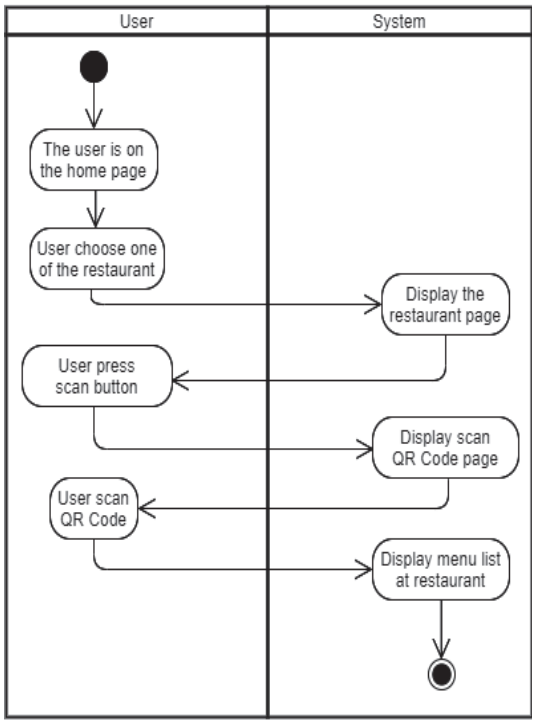

Fig. 5. Activity Diagram View List Menu

4.2.4 Activity Diagram View List Restaurant

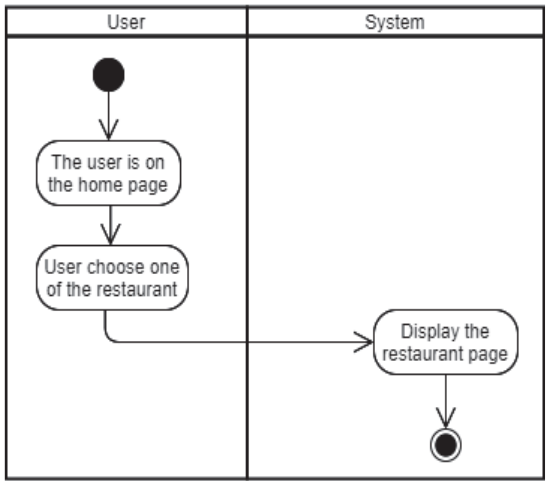

Fig. 6. Activity Diagram View List Restaurant

4.2.5 Activity Diagram Order Menu with QR Code

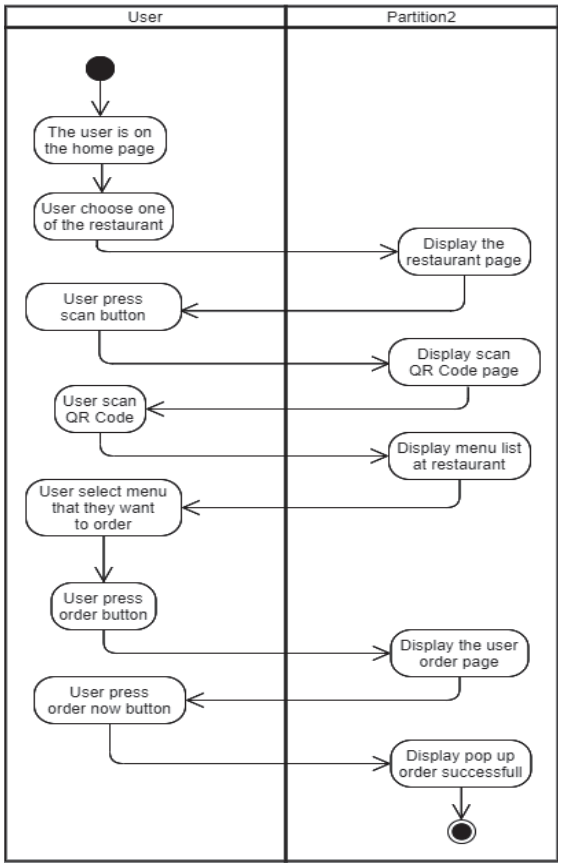

Fig. 7. Activity Diagram Order Menu with QR Code

5 Conclusion

With the advancement of information technology, it is now possible for anyone to communicate efficiently and with ease. Due to their portability, smartphones are the most widely utilized communication device for sending and receiving information among the numerous devices made possible by advancements in information technology. Today, the majority of restaurants in Indonesia employ a manual system for table reservations and meal orders. Even if the sequence is simple, the procedure is still prone to human error and time-consuming.

According to questionnaires, most respondents have ordered food from home and made restaurant reservations. However, the majority of them have received orders that differ from those they requested. In addition, they have encountered difficulties booking meal reservations. In addition, the vast majority of respondents believed that digital menus were more efficient than conventional menus.

The author proposed the design of the MenuKu application, a food delivery service and restaurant reservation application, in order to provide solutions to the problems encountered by respondents. The MenuKu application facilitates restaurant searches, restaurant reservations, and online food ordering.

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