MARI

Mangkuk Tingkat System

Nurfarahin Zafir*, Mazida Ahmad, Norliza Katuk

School of Computing, UUM College of Arts and Sciences,
Universiti Utara Malaysia, Sintok, Kedah, 06010, MALAYSIA

*Corresponding Author Designation

Abstract : An organized menu that provides a list of available dishes is essential, especially food vendors. A paperless menu can easily be created using a Mangkuk Tingkat System, which will facilitate food vendors in organizing the list of food and beverages effectively and efficiently. In addition, the system helps to overcome the problems of missing pages and misplaced menus. Therefore, using the Mangkuk Tingkat System, the creation and searching of a dish or meal in the menu will be much simpler. To bridge this gap, this study aims to design and develop a mobile application to create and manage food menus using smartphones. The development of the mobile system used the Waterfall methodology. The functional requirements were gathered using questionnaire. The construction of the prototype began once the data were analysed. The results obtained from the prototype evaluation suggested that the Mangkuk Tingkat System is useful and easy to use. The respondents were also satisfied and gave beneficial feedbacks on the system. The study contributes towards an understanding of mobile system requirements and use interface in managing the list of menus. This can prove and give confidence to other researchers to continue and further develop such applications in the future.

Keywords: Food Vendors, Manage Food, Mangkuk Tingkat, Mobile App

1. Introduction

An organized menu is implemented to be used by food vendors to facilitate the management of their main tasks. Those who are not food vendors, usually use the Notes application on their smart phones to list and manage their daily routines. Thus, similar concept can be applied by a food vendor in creating a list of various dishes and beverages. As a solution, the Mangkuk Tingkat System can be a life saver for vendors in managing their list of food. Living in the technology era, the use of papers in presenting a food menu is quite challenging because it is time consuming and might trigger a mistake during the creation of the list [1]. Unfortunately, currently, all menus are still paper-based. Among the disadvantages of the traditional menu include the manual updating of the latest list or price and inconvenience of searching the one used by other customers.

The main advantage of the Mangkuk Tingkat system is the simple process of creating a menu for both restaurant owners and customers. When using the application, customers will presented with an interactive and organized menu. This system also provides available options for food vendors to add or delete the menu list. Customers can view the details of the latest updated list of the available foods before deciding to place an order. Customers are no longer have to queue to get access to the menu, in which they can directly call the waiters to place their orders.

Although various paper-based menus are currently available, a better application needs to be developed using mobile phone [2]. The paper-based menus, especially those that are hand-written may be misplaced, polluted with water or dirt, and difficult to include additional items.

Due to all the problems, several mechanisms are urgently needed to create and efficiently manage the food lists. For instance, the development of smartphone technology can be a mechanism in handling those issues, particularly when smartphones have become an integral part of human lives [3][4]. Therefore, this paper tries to overcome the difference by examining the potential of a smartphone as a tool for electronically creating and managing the food menu. This study aims to bridge the gap by designing and developing a mobile application to create and manage food menus using a smartphone.

The first section presents the background of food menus and related studies. This section also discusses the role of IT in facilitating the creation and management of a food menu. Even though, it may not be a big problem for food vendors, customers may find it stressful and be impatient, especially during peak hours the menu might not be available. Details of the concept and related studies are provided in the following paragraphs. **Figure 1** shows the hand-written menu designed by most food vendors before the development of a computer-based application.

Figure 1: Example of hand-written menu lists

The advancement of digital devices, such as handphones and computer tablets, has made it easier and more flexible to generate printed food lists. A lot of attention has been given to the digital menu because the device penetrates every aspect of human life [7]. By using their smartphones or tablets, most vendors are now able to create, design, and print their menus in the form of graphical and colourful banners (**Figure 2**).

Figure 2: Example of printed menu lists

In order to overcome the consumer science research gaps, the whole process of establishing and managing the food lists with smartphones and mobile applications has to be improved. Automation research and development are thus needed to create a list of food products that can minimize effort and time, especially for busy and working consumers [8]. This study aims at designing and developing a mobile app that will help food suppliers create and manage food lists.

2. Materials and Methods

The System Development Life Cycle (SDLC) or Waterfall Methodology by Rouse was applied in developing the Mangkuk Tingkat System [5]. This methodology was chosen as its activities suit the scope and requirements of this project. Hence, many beginners used this methodology in their project and research [6]. SDLC consists of seven main phases, namely requirements, analysis, design, coding or implementation, testing, operation or deployment, and maintenance.

The requirements phase includes the identification of the research goal, significance, and needs research in more detail. In addition, a lot of information, knowledge, and ideas were gathered from previous research to better understand the analyzed problem. A comparison process with an existing application, DahMakan, was also conducted.

The second phase, analysis, produces the detailed Mangkuk Tingkat System model and implementation plan. The requirements of the proposed application were gathered from the target users that represented all food vendors. The functional requirements of this application were to ease the vendors in managing their menu lists. In the third phase, the design of the Mangkuk Tingkat System prototype began. The outcome of this phase is the interface design, including the required Storyboard to understand the flow of the application. The coding or implementation phase started once the logical structures of the system were obtained. All the logical structures in the design phase had been process through coding. Lastly, after conducting the implementation phase, the results of the project were displayed, which include data conversion, testing, and evaluation.

The requirement gathering process was carried out by distributing questionnaires to the targeted participants. Some examples of the items in the questionnaire are the features and interface design preferred by the participants. Another method used for data collection was to analyze previous research. All responses were recorded for future references.

As for the second requirement gathering process, the previous online documents were determined using the Google Search Engine by inserting two main keywords; "menu lists" and "food menu lists". These documents have been analyzed to establish and manage the lists of food menus for the performance of a mobile application.

3. Results and Discussion

A mobile application prototype for Mangkuk Tingkat System was developed to create and manage a food menu. The requirements set out in the previous section are presented. Software prototyping is a standard way to demonstrate requirements. Moreover, the experience of interacting with the prototype shared by users provides further comments and suggestions.. The tool and software used for the prototype development are the integrated development environment (IDE) and Android Studio, whilst the Firebase platform is for creating the database. **Figure 3** and **4** depict the screenshots for the selected interfaces.
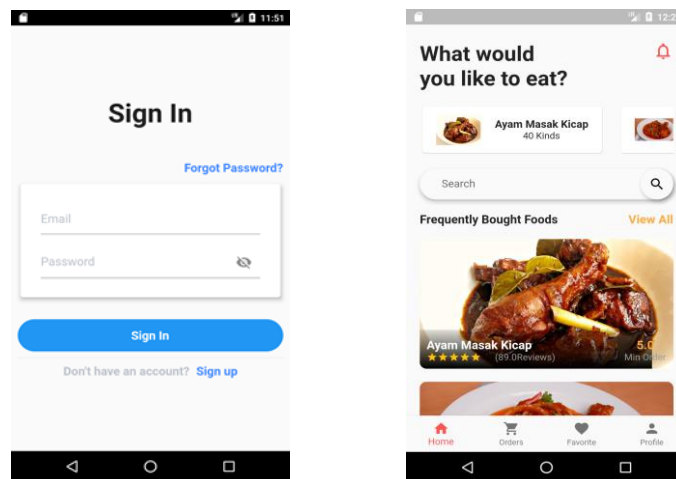
Figure 3: The interfaces for sign in (left) and the home page (right) of the Mangkuk Tingkat system
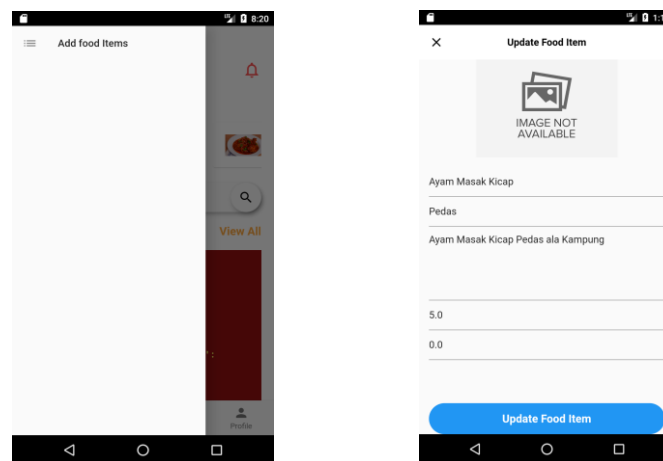
Figure 4: The interfaces for managing (left) and updating the menu of the Mangkuk Tingkat system

The usability testing of the prototype was conducted by 31 respondents. The purpose of the testing was to determine the ease of use and ensure that the application met users' expectations.. The analyses on the demographic profiles reveal that majority of the 21 to 30 years old participants are females (80.6%). Students recorded the highest of 87.1% as compared to those working in the private and public sectors of 12.9%.

The analyses on the post-task evaluation indicate that the participants perceived the Mangkuk Tingkat System as useful and effective as shown in **Table 1**. For each question, most respondents selected the four or five Likert scales.

Table 1: The Respondents' Usability Evaluation

The post-task questionnaire items	Strongly disagree	Disagree	Neutral	Agree	Strongly agree	Average
I think I would like to use the Mangkuk Tingkat System frequently	0 (0.00)	0 (0.00)	6 (19.40)	16 (51.60)	9 (29.00)	4.10
The information on this app is valuable	0 (0.00)	0 (0.00)	0 (0.00)	20 (64.50)	11 (35.50)	4.35
I feel confident to use this app	0 (0.00)	0 (0.00)	6 (19.40)	14 (45.20)	11 (35.50)	4.16
This app is very helpful in managing order	0 (0.00)	0 (0.00)	3 (9.70)	15 (48.40)	13 (41.90)	4.32
I found the Mangkuk Tingkat system is hard to use	5 (16.10)	12 (38.70)	7 (22.60)	5 (16.10)	2 (6.50)	2.58
The interface of this app is pleasant	0 (0.00)	0 (0.00)	5 (16.10)	13 (41.90)	13 (41.90)	4.26
I will likely return to this app in the future	0 (0.00)	1 (3.20)	7 (22.60)	14 (45.20)	9 (29.00)	4.00
Mangkuk Tingkat System is time saving when I used it	0 (0.00)	0 (0.00)	1 (3.20)	18 (58.10)	12 (38.70)	4.35
Overall, I am satisfied with this app	0 (0.00)	0 (0.00)	3 (9.70)	14 (45.20)	14 (45.20)	4.35

Based on the evaluation results, most participants give a good and positive feedback. Therefore, it can be concluded that the Mangkuk Tingkat System is very easy to use. On average, the participants are very satisfied with the features because it helps vendors to manage the menu and customers to see the menu list.

4. Conclusion

In conclusion, this research managed to fulfill all its aim and objectives. The participants signify their satisfaction by stating that the information on the application is valuable in saving their time. This paper also describes the development and design of the food menu list applicationin various aspects. Hopefully, in the future, the authors will be able to add other functions, such as online ordering and payment, to complete the overall operation of the Mangkuk Tingkat System.

References

[1]   M. Patel, Online Food Order System for Restaurants, 2015.

[2]   R. Layona and B. Yulianto, Application for Providing the Food Menu Based on Available Food Raw Materials, Cost, and Avoidance for Certain Diseases. Procedia Computer Science, 179, pp. 878-885, 2021.

[3]   D. Wang, Z. Xiang, and D. R. Fesenmaier, "Smartphone use in everyday life and travel," Journal of travel research, vol. 55, pp. 52-63, 2016.

[4]   N. Ahmed, F. Nahar, and A. M. Haque, "iFREEPHONY: Minimalistic Interface Developed For The Visually Impaired And The Elderly Community In Bangladesh," Journal of ICT, vol. 16, pp. 175-191, 2017.

[5]   M. Rouse, "What is waterfall model?" - Definition from WhatIs.com, 2021.

[6]   R. M. Muminur, Implementation of Responsive Online Food Ordering Application with Social Media Integration. 10.13140/RG.2.2.32716.36486, 2018.

[7]   Y. Huang and Z. Yang, "Write or Type? How a Paper versus a Digital Shopping List Influences the Way Consumers Plan and Shop," Journal of the Association for Consumer Research, vol. 3, pp. 000-000, 2018.

[8]   R. Jain, "SmartGrocer: a context-aware personalized grocery system," Master of Science Thesis, Department of Computer Science, Rashtrasant Tukadoji Maharaj Nagpur University, India, 2018.