Article

Design of Food Ordering Application in Teaching Factory Nutrition Care Center in Supporting Zero Stunting

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Abstract: Jember Regency was in the spotlight because the prevalence of stunted toddlers has reached the highest rank in East Java with a figure of 34.9% in 2022. Teaching Factory Nutrition Care Center (NCC) has nutritional catering services with Managed Health Meal and Kids Meal packages. However, the ordering process was still done via telephone or chat from social media groups. The research objective was to generate the online application for ordering food at the Teaching Factory NCC to accelerate zero stunting program. It used waterfall method contains of system investigation, system analysis, system design, system implementation, and system maintenance. Meanwhile, this article limited to system design. The results showed that NCC Food facilitates clients/ patients to order nutritious food online according to nutritional adequacy rate needs, particularly for stunted toddlers.

1. Introduction

The prevalence of stunting under five in Indonesia in 2022 is still high, namely 21.6% above the limit set by World Health Organization of 20% [1, 2]. Jember Regency is in the spotlight because the prevalence of stunted toddlers has reached the highest rank in East Java with a figure of 34.9% in 2022 [2, 3]. The number of stunting sufferers in Jember Regency will increase to reach 20,506 children under five in 2022 [1, 3]. WHO has made stunting the focus of its Global Nutrition Target for 2025 with a 40% reduction [4]. Reducing the prevalence of stunting in children under five is the main target of the National Mid-Term Development Plan with a target of 14% by 2024 [5].

Stunting occurs when toddlers do not receive the right type and amount of nutrition. Stunted toddlers experience decreased body growth and brain development and even permanent damage [6]. This has the impact of increasing the risk of disease and child death and hampering economic growth by around 8% due to reduced productivity [7]. Moreover, Stunting can hinder labor market productivity, resulting in a loss of 11% of GDP and contribute to widening inequality, thereby reducing 10% of total lifetime income and causing intergenerational poverty [8].

Teaching Factory Nutrition Care Center (Tefa NCC) has nutritional catering services with Managed Health Meal and Kids Meal packages, namely catering services for clients/patients with special dietary needs such as toddlers with indications of malnutrition/stunting. Food is created in attractive shapes and nutritional needs are adapted to the age of toddlers. Tefa NCC has a diverse catering menu and the nutritional content is determined based on the Nutritional Adequacy Rate.

However, food purchases from the Tefa NCC nutritional catering service are still small. The ordering process is still done via telephone or chat from social media groups. The promotion is only through word of mouth, from personal acquaintances and people

who have interacted with customers and are interested in ordering. Tefa NCC already has an MoU of cooperation with two nutritional catering companies, but utilization of these services is still very limited. This is because there is no platform that facilitates ordering food via online applications. The trend of ordering food via online applications is widely chosen nowadays (9) (10) (11). Unfortunately, thousands of food menus are not accompanied by calorie and nutritional information for users (12). Even though there are nutritious foods, most of them focus on treating non-communicable diseases (NCDs), such as obesity, hypertension, diabetes, but not stunting. Stunting is a chronic health problem in toddlers due to long-term malnutrition that is permanent, so the only way that can be done is early prevention (13). Preventing stunting through the continuous storage feature of toddler nutritional status data such as height, weight, age, history of allergies, etc. as well as increasing cost efficiency, reducing travel time and waiting for patients (14).

The novelty of this research is that this online food ordering system can provide nutritional information on the food chosen by consumers. Apart from that, the types of food offered in this application are healthy foods to fulfill consumers' diets, particularly for stunting. This research aims design the online application to order the foods in the Teaching Factory Nutrition Care Center to accelerate zero stunting in Jember Regency.

2. Materials and Methods

The study was done in Teaching Factory Nutrition Care Center (Tefa NCC), Politeknik Negeri Jember. It was a research and development research. The data was collected between May and September of 2023. The research population consists of the head of Tefa NCC, technician of Tefa NCC, and the administrators of Tefa NCC who were 5 students in Nutritionist Program Study, Politeknik Negeri Jember.

It was a research and development study to develop a website and mobile-based information system for food ordering with a System Development Life Cycle (SDLC) paradigm. SDLC is also a pattern for developing software systems that consist of planning, analysis, design, implementation, testing, and maintenance phases (15). Meanwhile, this article was only limited to system design.
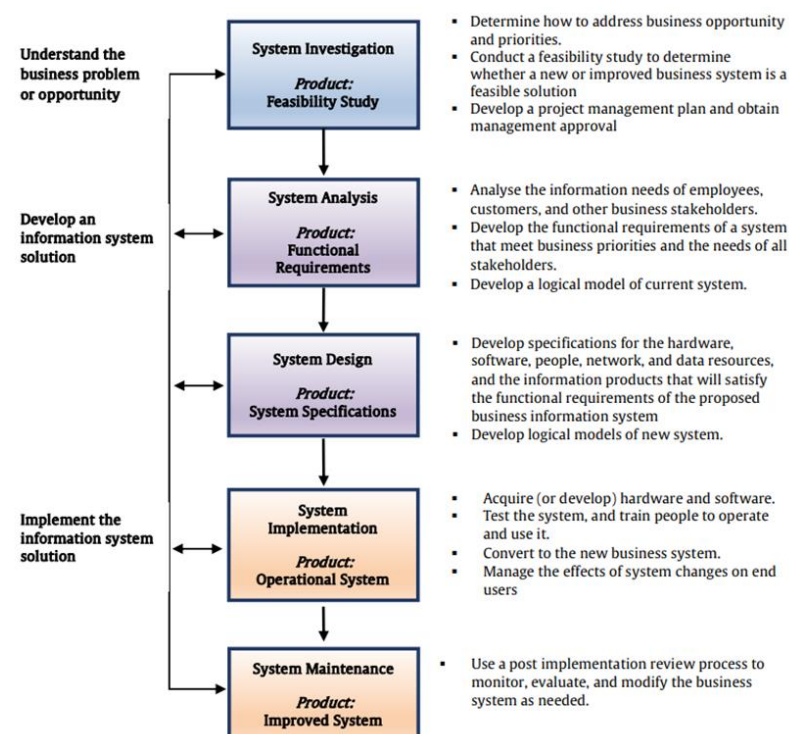

Figure 1. System Development Life Cycle (SDLC).

3. Results

There are 2 applications designed, namely a website-based application as an admin panel and dashboard, and a mobile-based application as an application for customers. The website-based application can be accessed using the address https://food.nccpolije.id/login/admin, where system users are divided into super admin (researcher), admin (the head of Tefa NCC), officer (used by Tefa NCC officers' to fill in food, categories, types of food, view orders, view customers, reports, dashboards etc.), courier (view orders from customers, and make food deliveries, can see his own income, etc. The following figure is the front page of application. There are several menus must be filled to signed in the front page i.e., email; password and captcha value.
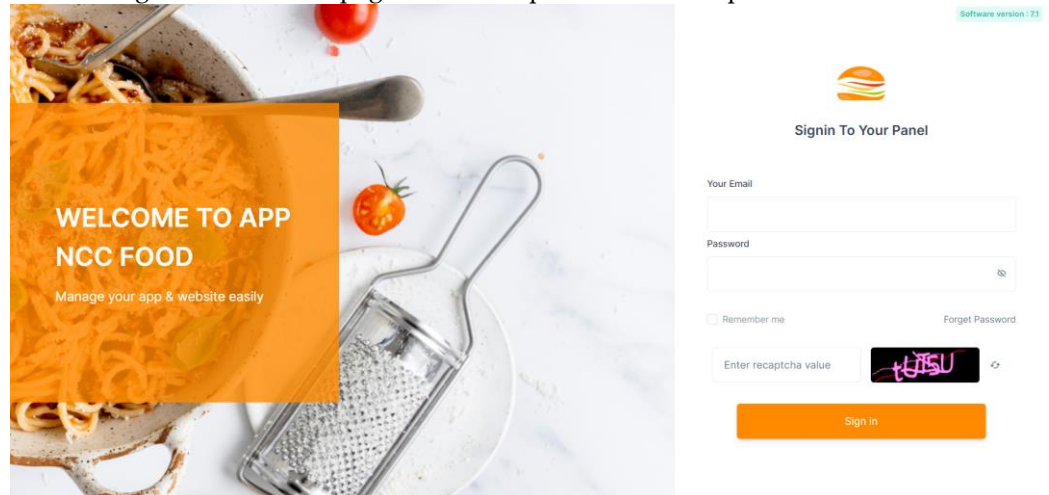
Figure 2. The Front Page of Application

After logging in, you will be logged into the dashboard which has complete details regarding the application, namely order statistics. We can see the number of delivered orders, canceled orders, refunded orders and payment failed orders. The application also providing the menus for campaigns, banners, promotional banner, coupons, and etc. Moreover, the restaurant management section, providing zone management to add sales zones. The admin can setup the business zone according to the location of restaurant. For example, Tefa NCC is located in Jember regency. So, the business zone can be adjusted in Jember regency. It could be seen in the Figure 2.
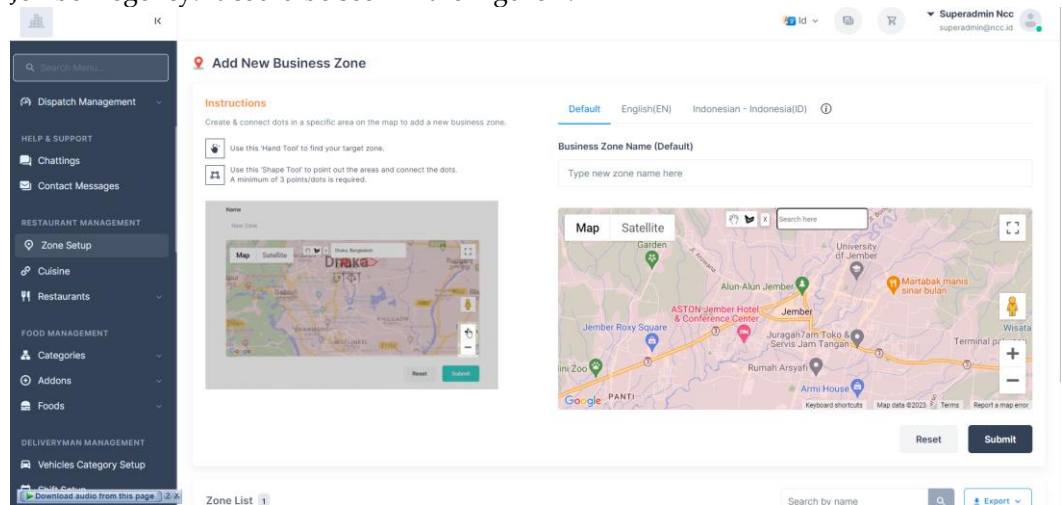

Figure 3. Zone Setup of Application

After setup the business zone, admin can add the restaurant in the restaurants section. It could be seen in the following figure. The menus of this section are restaurant name, restaurant address, logo, restaurant cover, tax, cuisine, estimated delivery time and etc.

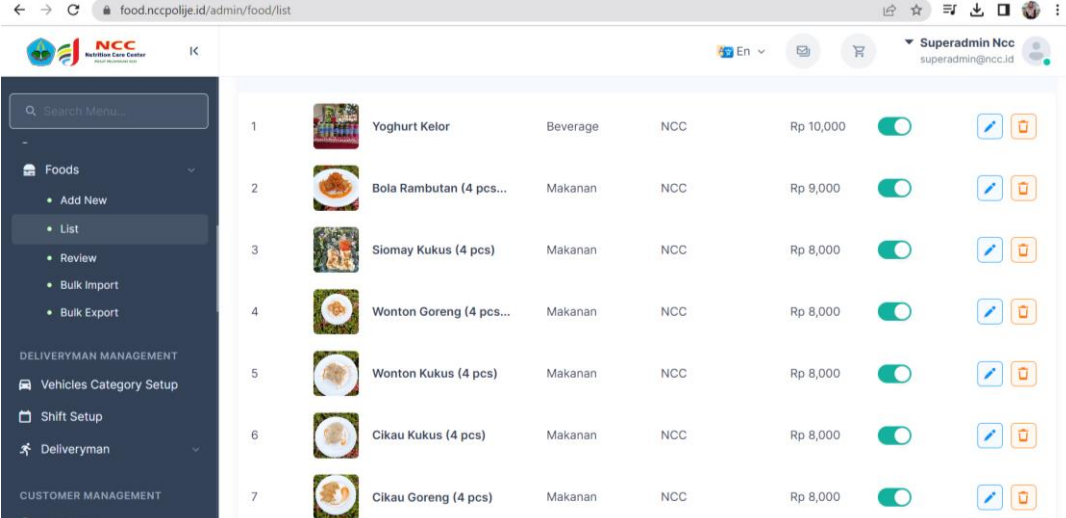**Figure 4.** Restaurant Section of Application (Add Restaurant)

Furthermore, to add food you can start by adding categories, sub categories (optional), after that you can add food and its details. When admin add new food, several menus such as name of new food, short description of food, food image should be fulfilled. It could be seen in the following figure.

Figure 5. Food Management of Application
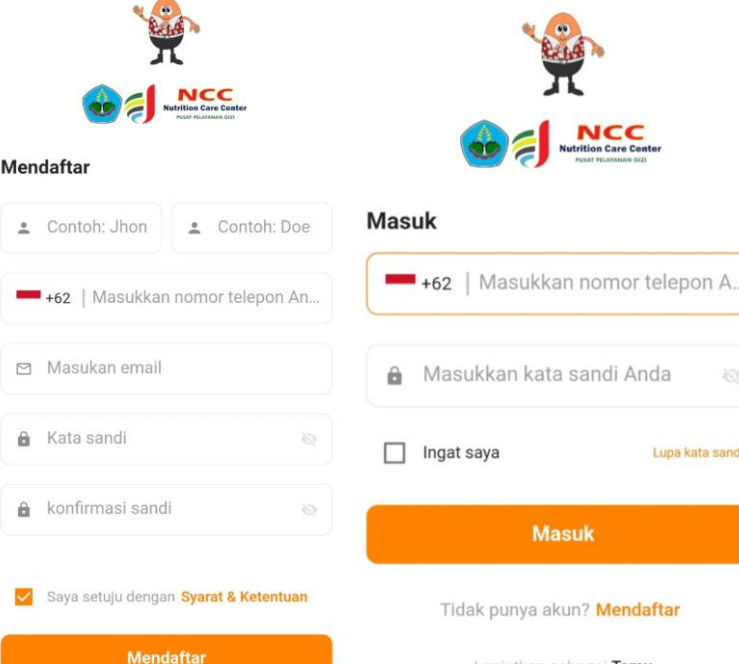
After adding these data, then the list of foods and beverages can be seen as following figures.

Figure 6. List of Foods and Beverages.

Figure 6. Showed the list of foods and beverages which could be ordered using this application. The prices of each are mentioned besides the foods and beverages. The super admin can edit or delete the list by klick the pencil or trash symbols. Super admin also can add some foods or beverages to the list, if the products are available.

Figure 7. Menus for Signing up and signing in

On the other hand, the customer side (customer Flow) showed that new customer should register for the first time. To sign up, customer can fill the data included first and last name, phone number, email, password, confirm password and the sign-up menu. Afterward, customer can access the application by signing in and fill the phone number and password. The following figure shows the sign-up appearance.

Next, choose to directly use the current location as the address to send, or use set from map, to select manually. Furthermore, the home page appears with various information about nearby food. When customers choose foods or beverages, they can choose

the amount of food to order. After checking out in the basket menu, customers can add other information to their order.
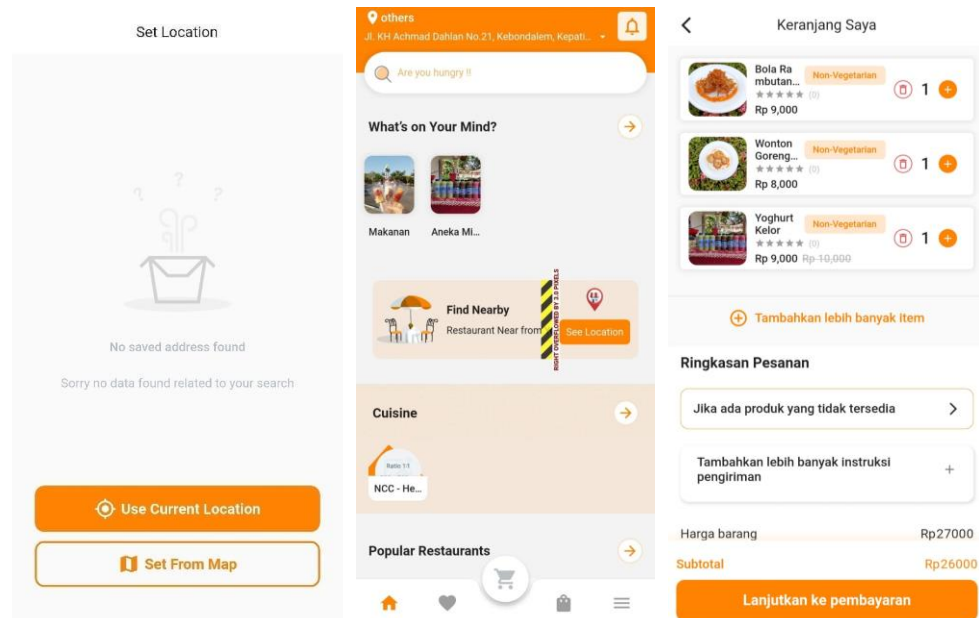

Figure 8. Page for setting location, home page and basket menu.

Furthermore, there is a choice of our payment details. The foods have been ordered can be monitored via order menu.
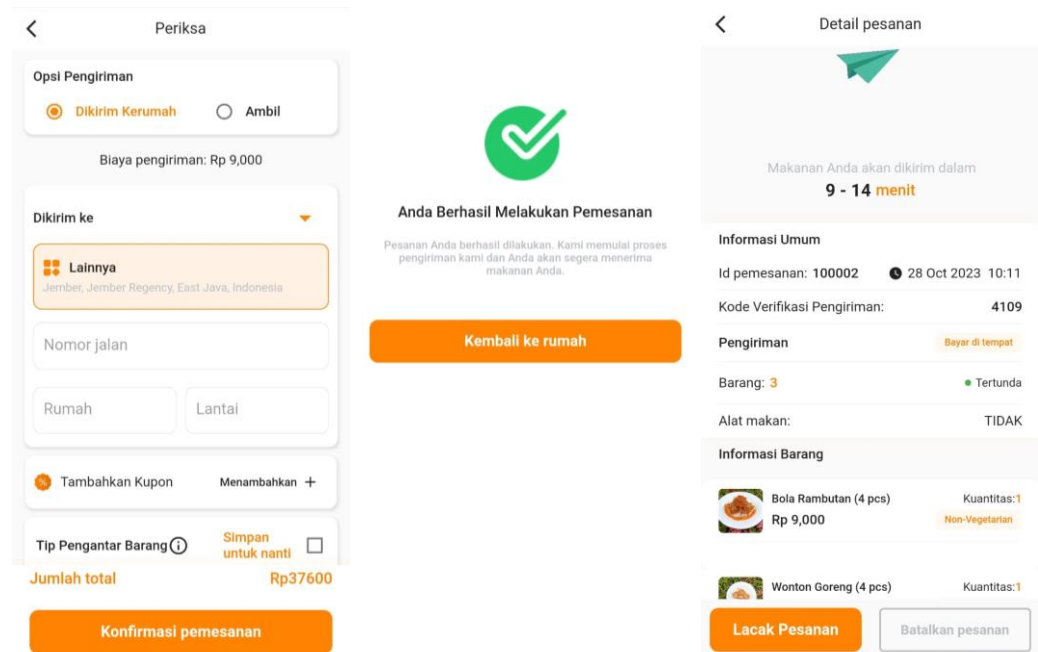

Figure 9. Page for confirming the order and food monitoring menu.

Figure 9. showed that customers can monitor the status of their order by looking at the general information. It showed some information i.e., the ID of order, the number of ordered food, the status of delivery, the list of ordered foods, quantity and price.

5. Conclusions

System analysis shows that Tefa NCC managers and officers need an online application to facilitate the customers in ordering Tefa NCC products to the wider community in order to reduce the incidence of stunting and increase Tefa's income. The online application has been designed to suit user needs to make it easier for NCC officers to input food menus and for the public to order food online. Training on the use of the application has been carried out for Tefa NCC managers and officers.

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