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Review Article

A Perspective Review on Online Food Shop Management System and Impacts on Business

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Abstract: The Online Food Ordering System presented in this article was created to address a unique market need by allowing small restaurants to provide their clients an online ordering option without having to invest enormous amounts of time and money in having specialized software made expressly for them. The system, which is very adaptable, enables restaurant personnel to effortlessly manage site material, most notably the menu, using a very user-friendly graphical interface. The website, which is the only component that clients see, is then dynamically generated depending on the current status of the system, so that any modifications made are reflected in real time. Once registered, visitors to the site may simply traverse this menu, add food items to their order, and designate delivery choices with just a few clicks, substantially simplifying the ordering process. Back at the restaurant, orders are quickly received and displayed in an easily understandable manner for efficient processing. The goal of this document is to offer detailed explanations of the system's architecture and implementation details, as well as descriptions of all available capabilities and future goals. Furthermore, user manuals and troubleshooting suggestions have been given for all three components to give the reader a comprehensive picture of the system's intended usual use scenarios.

Keywords: Online Food System, Management System, Online Business, Wireless System

1. Introduction

The evolution of internet meal delivery services may be ascribed to the changing character of metropolitan customers. These customers employ food delivery services for a number of reasons, but the most prevalent appears to be the desire for quick and easy meals during or after a long day at work. The various food delivery services that are readily available relieve consumers of the burden of thinking about and planning meals, regardless of whether the consumer is preparing the meal himself, going to a restaurant and dining in, or going to a restaurant and purchasing food to bring back to the office or home [1]. Food delivery services have altered consumer behavior so drastically, particularly among urban customers, that utilizing OFD services has become regular and customary [2]. The COVID-19 epidemic has driven numerous enterprises to close, causing enormous disruptions in various industry sectors. Short-term difficulties for retailers and brands include those relating to health and safety, the supply chain, the workforce, cash flow, customer demand, sales, and marketing. However, overcoming these obstacles does not ensure a bright future, or even a future at all. This is due to the fact that once we have recovered from the pandemic, we will find ourselves in a world that is vastly different from the one that existed before the outbreak [3]. Affordability of smart devices, advancements in telecommunication infrastructure, and increasing purchasing power, lack of time, and extra convenience have forced businesses to integrate technology into their operations and cater to people's growing needs, allowing for the rapid growth of this new business model of online food ordering [4]. With the goal of embracing digitization, Bangladesh has seen a rapid proliferation of low-cost smart gadgets as well as an increase in the number of mobile and internet customers in the last few years. Because of the growing working population and their time-crunched work–life culture in metropolitan areas, the concept of meal

delivery is swiftly gaining traction [5].

Customers have more options and convenience thanks to online food–delivery systems, which allow them to order from a variety of restaurants with a simple tap of their mobile phone [6]. M. ciric identified the conventional model as the most prevalent method of delivery, which is the traditional food delivery system, in their study "The shifting market for food delivery." This conventional category, in which consumers make an order with a local pizza parlor or other restaurant and wait for the business to deliver the food to their door, accounts for 90 percent of the market, and the majority of those orders are still done by phone [7]. However, as digital technology advances, this industry, like others, is witnessing growth. Consumers are increasingly accustomed to purchasing online via apps or websites for convenience, and they expect the same when ordering meals. Growing urbanization, female labor-force involvement, and increased family wealth are all factors that have contributed to the popularity of dining out. Young guys with higher salaries who reside in cities are eating out in greater numbers [8]. Foods having a greater calorie content are some of the foods that the general population prefers. Until the early 1990s, going out to eat was considered a secondary pastime and hence superfluous. It was also not a priority in daily decisions, and people preferred a la carte restaurants, which were time-consuming and expensive; as a result, individuals preferred to cook at home [9]. Many researchers have conducted consumer behavior in the context of Indian food delivery applications such as Zomato, Swiggy, Foodpanda, Ubereats, and Fasoos. Vinaiketal.(2019) did research to better understand the viable elements that customers consider when ordering food from a certain app, as well as the numerous ways and criteria that can be used to compare food apps. Chandrasekhar et al. (2019) evaluated the influence of online food delivery services such as Swiggy, Foodpanda, Zomato, and others on customers and discovered that consumers prefer distinctness in terms of pricing, quality, and delivery [10]. Das (2018) conducted a comparison research on customer perceptions of online food ordering and delivery services such as Zomato, Swiggy, UberEats, and Foodpanda. Sethu and Saini (2016) researched the impact of OFD services on students in India and discovered that online food purchase services assist students manage their time better by offering quick access to their chosen cuisine. When a consumer hits the ordering webpage, they are provided with an interactive and up-to-date menu that includes all available options and dynamically adjusts costs based on the selections picked. After making a decision, the item is added to the customer's order, which the client can review at any moment before checking out. This gives rapid visual confirmation of what was chosen and guarantees that the things in the order are indeed what was intended [11]. The method also significantly reduces the workload on the restaurant's end, as the whole order-taking procedure is automated. When a customer places an order on the website, it is saved in the database and then retrieved in near real time by a desktop program on the restaurant's end. Within this program, all goods in the order are shown in a succinct and easy-to-read format, together with their accompanying choices

and delivery data. This enables restaurant personnel to swiftly process orders as they come in and supply the relevant goods with little delay and confusion [12].

The study's goal was to uncover elements that are crucial to the success of the online meal delivery industry. Understanding the consumer environment better would aid in realizing the full potential of the e-commerce platform, which has the capacity to affect the economy, companies, and people's quality of life. People's lives have been touched by the internet and e-commerce in a variety of ways, including increased access to education and information, encouragement of entrepreneurship, the creation of new markets, and the reduction of poverty and income disparity. The internet has been successful in assisting firms to reduce costs, improve efficiency, influenced repeat customer, build customer loyalty, gain a larger market share, and increase profitability, and can be strategic tools for business competitive [13]. E-commerce and online food ordering may potentially have an influence on individuals' social well-being. E-commerce is less stressful and helps users to better manage their time, enhancing their quality of life tremendously [14].

2. Literature Review

Food delivery service over the internet According to Hoffman et al. (2010), commodities are items, gadgets, or things, while services are activities, efforts, or performances. As people's lives get busier by the day, they have less time to go out to eat or make a meal at home, creating a need for online food ordering [15]. According to Pigatto et al. (2017), online meal delivery services may be defined as business platforms that provide order services, payment, and process monitoring but are not responsible for food preparation. Face-to-face engagement is being supplanted in online retail transactions by interaction via mobile phone applications and internet-based communication tools such as e-mail, chat, and SMS or company websites, where customers may search, retrieve, and place purchases (Cai and Jun, 2003). Companies who want to offer services and goods profitably, according to Chen et al. (2009), are embracing novel delivery methods as a new base of distinction and offering more value to customers. Similarly, Gronroos and Gummerus (2014) noted that value creation is a process that involves the actions of numerous players, beginning with the service provider and ending with the consumer and others, and that results in the production of value for the customer. There are two sorts of retailers who offer meal delivery services. The first are the retailers themselves. This sector is dominated by fast-food corporations such as PizzaHut, McDonald's, Domino's Pizza, Kentucky Fried Chicken (KFC), and others. The second group is made up of several restaurant intermediaries that provide delivery services for a wide variety of eateries [16]. UberEats, Food Panda, Room Service, GrubHub, HungryNaki, PathaoFood, and more services are examples. The food-delivery sector, from restaurants to consumers' homes, is changing dramatically as new internet platforms compete for markets and customers all over the world. Kedahetal. (2015) investigated the factors that influence the

customer ordering experience, such as website trust, customer happiness, and loyalty, among Malaysian customers. Daud and Yoong (2019) investigated two aspects, time and price, impacting Malaysian customers' behavioral intention to utilize online food delivery intermediaries (FDI) services and discovered that only time had a significant influence. Correaa et al. (2018) studied clients in the city of Bogot to assess the influence of traffic conditions on key performance metrics of online food delivery services. The internet meal delivery sector is still in its early stages. To build a decent internet takeout environment, the online food delivery platforms and restaurants, the involved government departments, customers, and all parties in society must work together [17].
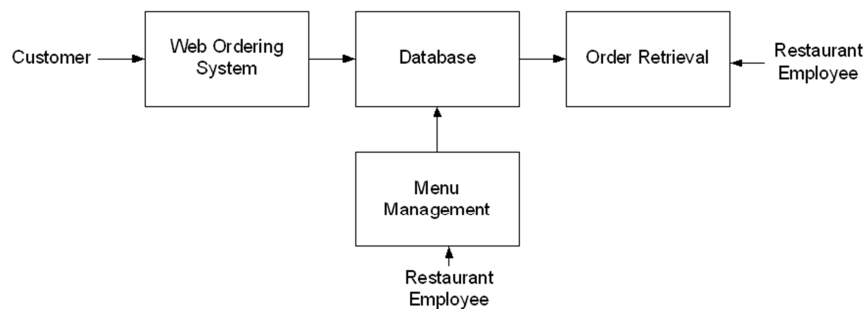
2.1. Requirements Specification

2.1.1. System Model

The system's structure may be divided into three major logical components. The first component must include menu management, allowing the restaurant to restrict what guests may order. The second component is the web ordering system, which allows clients to make their orders and submit all relevant information. The order retrieval system is the third and final logical component. This component is used by the restaurant to maintain track of all orders that have been placed, obtaining and presenting order information, as well as updating orders that have previously been processed [18].

Figure 1. *System Model for Online food shop.*

2.1.2. Functional Requirements

Each of the three system components, as depicted in the system model above, basically offers a layer of separation between the end user and the database. This seclusion is motivated by two factors. For starters, allowing the end user to engage with the system via a rich interface provides a far more delightful user experience, especially for non-technical people, who will make up the bulk of the system's users [19]. Furthermore, this isolation layer preserves the database's integrity by preventing users from doing any actions other than those that the system is built to manage. Because of this design pattern, it is critical to specify which functions will be given to the user, and these functions are detailed below, categorized by component [20].

2.1.3. The Web Ordering System

1) Users of the web ordering system, i.e. restaurant customers, must have access to the following features:
2) Make an account.
3) manage their account.
4) Access the system by logging in.
5) Understand the restaurant's menu.
6) Choose an item from the menu.
7) Change the choices for a specific item.
8) Include an item in their current order.
9) Examine their existing order.
10) Remove an item from.
11) their current order/remove all items from their current order.
12) Provide delivery and payment information.
13) Make a purchase.
14) You will be sent an order number as confirmation.

Because the system's purpose is to make the ordering procedure as easy as possible for the consumer, the capability given through the online ordering system is limited to that which is most relevant to completing the intended job. With the exception of account registration and administration, all of the services listed above will be used every time a consumer puts an order [21].

2.1.4. Menu Management System

The menu administration system will be accessible solely to restaurant staff and, as the name implies, will allow them to manage the menu that is shown to web ordering system users. The menu management system's functionalities enable users to do the following via a graphical interface:

1) Add/update/delete a vendor from/from the menu.
2) Add/update/delete a food category from/from the menu.
3) Add/update/delete a food item from/from the menu.
4) Create a new/update/delete option for a certain food item.
5) Change the price of a certain food item.
6) Change the default selections for a certain food item.
7) Revise extra information (description, photo, etc.) for a specific food item.

The functionality offered by this component is expected to be one of the first things noticed by the restaurant user, since they will have to go through it to customize their menu, etc. before beginning to take orders. However, after everything is set up, this component will most likely be the least used, given menu modifications do not happen frequently [22].

2.2. Order Retrieval System

The order retrieval system is the most basic of the three components in terms of functionality. It, like the menu

management system, is intended for usage solely by restaurant personnel and performs the following functions:

1) Locate and retrieve fresh orders from the database.
2) Display the orders in a graphical format that is easy to understand.
3) Mark an order as completed and remove it from the list of ongoing orders [23].

2.2.1. User Interface Specifications

Each of the system components will have their own unique interface. These are described below.

2.2.2. Web Ordering System

The web ordering system's users will interact with the program via a succession of simple forms. Each food category has its own form, which includes a drop down menu for selecting which specific item from the category should be included to the order, as well as a number of check boxes and radio buttons for selecting which alternatives are to be included. A single button click is required to add an item to the order [24]. Users navigate a menu bar to pick the category of food they want to order, and hence which form should be presented. This technique should be familiar to most users. In a similar fashion, delivery and payment transactions are entered. Before checking out and obtaining a confirmation number, the user is provided with a form and must complete the required fields, which contain both drop down and text boxes. One thing to note here is that whenever feasible, drop down boxes and buttons were utilized instead of freeform input to simplify the sorting process while also reducing the likelihood of a SQL injection attempt [25].

2.2.3. Menu Management System

The menu management system's user interface is comparable to the web ordering system's. Users traverse a tree structure to discover the vendor, category, or exact food item that they want to change, and then they are provided with a form that displays all of the existing fields and values connected with that item, all of which may be changed or removed. The form also has buttons that allow you to add new fields and values. However, unlike the web ordering system, much of the input here will be freeform, notably in the form of text boxes, because there is no finite amount of fields that might be added. However, this is not a huge worry because input cleaning will be undertaken and the user, who is considered to be a restaurant employee, is less likely to be hostile than a web user [26].

2.2.4. Order Retrieval System

The interface between the user and the order retrieval system will be relatively straightforward. At regular intervals, the application will acquire new orders from the database and display the order numbers, as well as the delivery time, in a panel on the left hand side of the application. To examine an order's details, simply click on the order number, which will populate the right-hand panel with the information in an easy-to-read and navigate tree structure. This structure may be extended and compacted easily to present only the information

needed. Finally, once an order has been completed, the user can remove it from the list of active orders by clicking a single button labeled "Processed." [27].

2.2.5. Non-functional Requirements

Because the Online Ordering System's design patterns are very much conventional for a web application, the system's non-functional needs are fairly simple. The program is cross-compiled to HTML and JavaScript, with a PHP backend, and can be run on any relatively well-maintained web server, though I would prefer Apache2, and especially the free XAMPP version. Because all of the application data is stored in a PostgreSQL database, the host computer must also have a PostgreSQL server installed [28]. This software, like Apache2, is freely accessible and may be installed and operated on a wide range of operating systems. Any machine capable of running both the web and database servers and managing the expected traffic can be used as the server hardware. An ordinary personal computer may be adequate for a restaurant that does not expect a lot of online traffic or is simply undertaking a brief test run. However, as the site begins to receive more traffic, it will almost certainly be required to change to a dedicated server to ensure optimum performance. Extensive stress testing of the system will be required to identify the exact cutoffs [29].

2.3. System Evolution

The database, as described in the system model, is at the center of the entire ordering system. In fact, given that all users are well-versed in SQL and love using it to buy meals, the system may be perfectly operational with only the database and an appropriate shell application. While this is a bit excessive, it does demonstrate that the database is the one aspect of the system that will remain pretty consistent [30]. The other components, on the other hand, are quite likely to continue to change through time. With the growing popularity of mobile applications, for example, I'd like to make the online interface available as a phone app as well. It may also make sense to transfer the menu management and order retrieval systems to online, or perhaps mobile, apps at some time in the future, since certain users may wish to do so [31].

2.4. System Design

2.4.1. Level 1: The Database & the 3 Components

The system's structure may be divided [32] into three primary logical components. The first component must include menu management, which allows the restaurant to limit what consumers may order. The web ordering system is the second component, and it allows clients to place orders and give all relevant information online. The order retrieval system is the third and final logical component. This component, which is used by the restaurant to keep track of all orders placed, is responsible for obtaining and presenting order information, as well as updating orders that have already been processed [33].

2.4.2. Web Ordering System Components

Six essential components make up the online ordering

system. The login form, main menu, account management form, order form, shopping cart, and checkout form are all examples. The login form is given to the consumer when they first arrive at the site. The user is sent to a welcome page with the main menu after signing in or, if they do not yet have an account, first registering and then signing in [34]. They have two choices from here: they may use the account management form to alter their password and other settings, or they can choose an order form and start adding products to their cart.
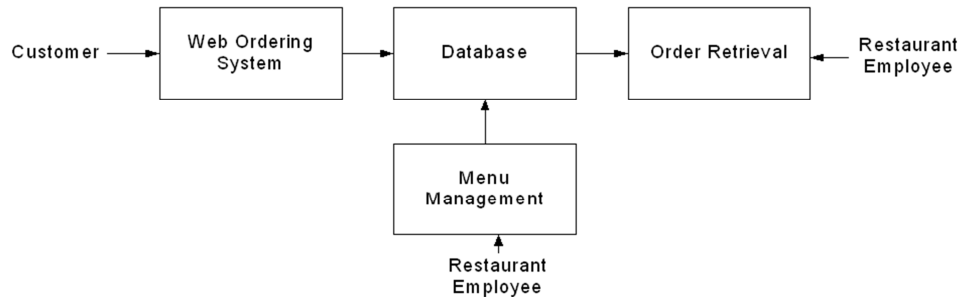

Figure 2. System management manu.

If customers use the second route, they may use the main menu to go through the many order forms, each of which corresponds to a different category of order items, and add products to their shopping cart as they go [35]. They may browse and amend their shopping basket at any time, and then go to the checkout form when they are ready to submit their purchase. The checkout form utilizes the contents of the shopping cart to show an order summary and compute the final cost, as well as enabling the user to select all essential shipping information [36].

2.5. The Login Form

For a form of this kind, the login form is standard. It has text boxes for the user's username and password, which must be entered before signing in. This form also allows users to register for the site if they have not done so before [37].

2.6. The Main Menu

The primary menu, which, like other apps, is located at the top of the screen, offers the user two tiers of options. They must first choose a seller to see, followed by a food category. The program creates a report after customers make these two choices. an order form specifically for that type of food, and displays this form to the user [38].

2.7. The Account Management Form

The account management form currently only allows users to change their password.

2.7.1. The Order Form
The order form is dynamically produced depending on the main menu options.

2.7.2. The Shopping Cart
The shopping cart performs much like a shopping cart in any other application. After an item is added to the order, it is displayed, along with its price, in the shopping cart. The shopping cart also keeps a running total of the current price of the whole order. By clicking on an item in the shopping cart, the user can review all of the details for that particular item. Finally, the shopping cart contains a button for the user to proceed to checkout [39].

2.7.3. The Checkout Form
Before making a purchase, the user has one final opportunity to double-check that the contents of their order are right on the checkout form. The user may additionally fill out sections on this form to offer all of the relevant checkout and shipping information (payment type, delivery address, etc.) [40].
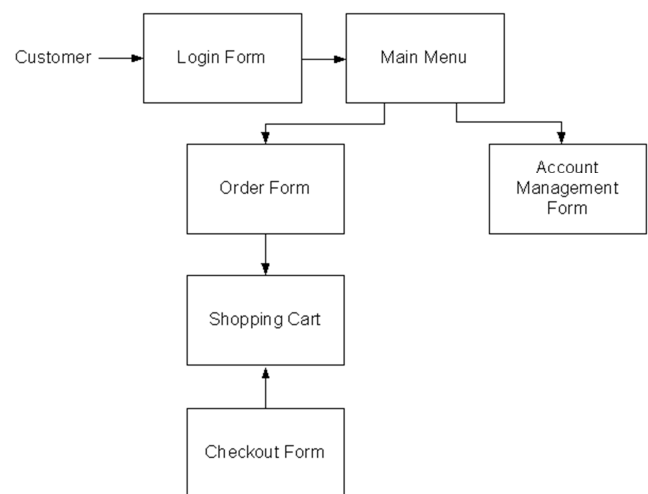

Figure 3. Customer main manu form.

3. Menu Management System Components

The user must interact with the navigation tree in order to utilize the menu management system, which employs a hierarchical tree structure to show all of the vendors, food categories, and particular food items stored in the system. When a user picks an item from this tree, they may update it using the relevant form - a Vendor Form if a vendor is chosen, a Category Form if a food category is chosen, and a Food Form if a single food item is chosen.
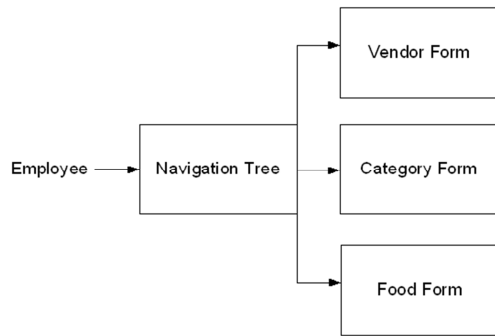
Figure 4. *Employe tree.*

The Navigation Tree

The navigation tree is a three-level hierarchical structure (excluding the root), with each leaf corresponding to a form. Vendors are on the first level, food categories are on the second level, and specific food products are on the third level. When a leaf is chosen, a form matching to the item on that leaf is shown [41].

3.1. The Forms

Vendor Forms, Category Forms, and Food Forms are the three kinds of forms in the menu management system. The three forms are all identical in that they enable the user to add, update, and delete pertinent information for the chosen object. The precise fields that the user may alter are where they vary. The appropriate entries in the database are updated once modifications to any of the forms are saved [42].

3.2. Order Retrieval System Components

The order retrieval system, the simplest of the three components, may be broken down into just two parts. The summary panel, which shows a list of all presently active orders, and the order detail panel, which focuses on a particular order, are the two. The order details for the first order in the list are shown when the program initially begins. To examine the details of a different order, the user must simply choose it from the summary panel's list [43].

Figure 5. *Summary panel.*

3.3. Level 3

The summary panel on the left side of the screen lists all presently active orders, as well as their delivery timeframes and statuses. The user may alter the contents of the order detail panel by changing the chosen item in this list.

3.4. Order Detail Panel

The order detail panel is a hierarchical tree structure that allows you to see all of the information about the order that is presently chosen in the summary panel. A button to designate the order as processed and remove it from the list of current orders is also included in this component [44].

3.5. User Interface Design

There are two types of user interface design principles. The web application's interface is meant to restrict free form user input by relying heavily on drop down menus, radio buttons, and check boxes. This is done for two reasons: to reduce SQL injection attempts and to simplify the ordering process as much as feasible. However, free form input is required in the menu management component since all of the data must be given by the user. This component's interface includes typical forms with text fields and labels, as well as save and reject buttons for each form.

3.6. Help System Design

Because the apps are form-based, the design of the assistance systems will be basic.

It will be accessible from the application's main menu and will open in a new window in both the desktop and online apps. It will be searchable and have a navigation tree emphasizing frequent subjects, similar to a normal help system design. Each form type will have a help page that describes the relevance of each field on the page.

3.7. Testing Design

The system's structure may be broken down into three primary logical components, plus the database, which is invisible to the end user. Each of these components must be tested separately, and the methodologies that will be utilized for each component are outlined in the sections that follow [45].
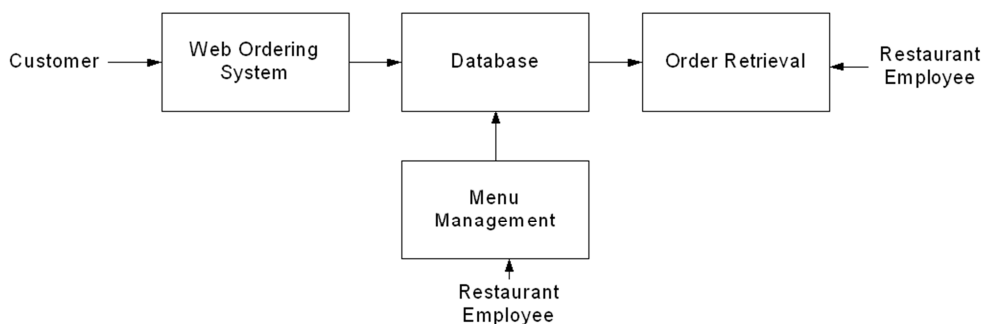

Figure 6. *Testing Design.*

4. Database

The database component's testing is simple and has already been accomplished in large part. Before working on any of the apps, we created all of the SQL queries I anticipated to require and performed them directly, basically isolating the database, using the psql client. By doing so, we were able to identify and swiftly correct a huge majority of the database's problems [46].

5. Conclusion

The bulk of research on online food buying have offered enough evidence showing both the consequences and benefits of e-commerce. Most of these studies, however, generalize all types of online shopping and neglect the reality that purchasing groceries online is fundamentally different from purchasing other commodities. As such, the complete academic evaluation done aids in elucidating the key issues in the existing literature. As a result, the crucial assertions reflected in these studies aid in recommending the four future study topics listed below. They include conducting studies to emphasize the viewpoints of customers and businesses, generating future projections, comprehending the ramifications of ordering via mobile applications, and researching upcoming technologies in online food ordering. The scholarly review and prepositions made are important to both researchers and online food retailers as individuals all around the globe begin to embrace online shopping in greater numbers than ever before. The Chinese online meal delivery sector is still in its infancy; certain evident issues may be recognized from customers' perspectives. To begin, if it is practicable, online food delivery platforms should supply consistent and suitable tableware to guarantee tableware safety, as well as enhance the share of selfdeliverymen to ensure delivery efficiency. Second, online food delivery platforms should increase self-training deliverymen's and require them to confirm the correspondence of food to online orders and the packaging is normal before delivery. Furthermore, deliverymen should be forced to identify ideal routes and maintain steady riding throughout the delivery.

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