LIN-TEAK: AN ONLINE ORDERING SYSTEM AND FOOD SERVICE APPLICATION WITH THERMAL PRINTED RECEIPT OF LIN-TEAK MILK TEA SHOP

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TABLE OF CONTENTS

CHAPTER 1

INTRODUCTION

Background of the Study

COVID-19 pandemic has severely affected the Philippines, the community, our greatest resource was paralyzed. All face-to-face activities were canceled and the people were locked down in their homes. The employees had to do their job online, the students had to shift into a flexible learning method where they are free to choose of what is more convenient to them as a student experiencing the lack of resources, and the market world invaded online pace to keep their business in the momentum despite the current situation we are in.

The small and medium-sized businesses account for 99% of registered businesses in Metro Manila, Central Luzon, Calabarzon, and Cebu City regions in late 2019 are providing 60% of the jobs. These jobs are affected now that businesses are extremely affected by the pandemic, everything from lower sales (88% of respondents) and difficulty accessing inputs (86%) to reduced logistic services (46%) and clients not paying bills (33%). The harsh impact of the pandemic led 9% of interviewed companies to say they expected to shut down permanently as a result. SMEs were twice as likely as large firms to predict their own closure within three months (International Trade Centre, 2020).

As our economic rate continuously drops, the entrepreneurs are doing their best to cope with the latitude. In line with this, businesses have adopted the trend of online delivery wherein, they offer a delivery service to the customers wherever they are. This is not just for businesses' own benefit, but also for both parties to continue their tasks without violating the rules implemented by the government. This brings the customers satisfaction while saving both time and money. One of the food/drink trends right now is Milktea, the milk tea business has been growing drastically over these past few years and the competition is very close.

In accord with this issue, the researchers came up with the idea of making an online application that will aid the business' necessities in the online market. This study is intended to lessen the manual tasks of the employees while providing the customers' convenience in terms of online transaction/s.

Overview of the Current State of the Technology

The Lin-TEAk Milk Tea shop owned by Mr. Roderick Aranda Mangali started to operate last November 2019 and offers a variety of milk tea (Winter Melon, Hokkaido, Okinawa, Cappuccino, Cookies n' Cream, Caramel, Salted Caramel, Matcha, Chocolate, Taro, Strawberry, Vanilla Latte, and Red Velvet), Lemonade (Lemonade+Yakult, Lemonade+Strawberry, Lemonade+Blueberry, Lemonade+Kiwi, and Lemonade+ Passion Fruit) and Fruit Tea flavors (Passion Fruit, Blueberry, Kiwi, and Peach) and also different kinds of snacks (Siomai, Fries, and Takoyaki). The store has two (2) branches: The Lin-TEAk milk tea shop located at Blk. 16 L 28, Condido Ramos Drive, Talon I, Golden Acres Las Piñas City, and the EIGHT TEA's located at Marigold St. Corner Golden Heaven Drive Talon IV, Las Piñas City which started to operate last four (4) months. There are a total of three (3) employees in the business and they are using the following appliances to enhance their product and make their task easier: Sealing Machine (for Milk Tea, Lemonade, and Fruit Tea), Steamer (for Siomai), Fryer (for the Fries), and the Takoyaki Stove (for the Takoyaki). The store daily accommodates up to 200 and above customers before the pandemic, and 100 below per day during the pandemic period. This is because they are having difficulty in promoting the business due to the lack of resources (hardware and software systems). A system like an online ordering system that would help them manage and boost their business and raise their sales wherein, all the orders aside from the ones in the store (online orders) will be taken into account.

The challenge that the store faces from a day-to-day basis is the lack of hardware (Thermal Receipt Printer) and software systems (Application). The store

needed such equipment to elevate their sales and mobilize the store in a way that is more convenient for both the employees and the customers that will benefit the business at its utmost.

Statement of the Problem

The general aim of the study is to identify how can an online ordering system help in contributing to one's business growth during a pandemic crisis.

Along with this general problem, the following questions are also expected to be answered by the end of the study:

1. How can an online ordering system expedite certain workflows around a business?

2. How does an online ordering system facilitate communication between the seller and the customer?

3. How can an online ordering system serve as a platform to expand the marketplace of the business?

4. What are the variables to be considered in creating an online ordering system?

5. What is the level of convenience that an online ordering system offers to both the business and its customers?

Objective of the Study

The overall objective of the study is to develop and implement an Online Ordering System and Food Service Application of Lin-TEAk Milk Tea Shop that will help in contributing to the business' growth during the pandemic crisis.

The specific objectives of the system are listed as follows:

1. To create a system that will expedite and efficiently improve the process or workflows around the business through online ordering.

2. To develop an online ordering system as a platform for communication between the seller and the customers.

3. To develop a system that will help the Lin-TEAk business in expanding their market and promote a new means of ordering through online transactions.

4. To identify the variables to be considered in creating an online ordering system.

5. Identify the level of convenience that an online ordering system offers to both the business and its customers.

Scope and Limitation

Scope

The scope of the study circles around the following:

Access Levels

Certain limitations, permissions, and boundaries are offered by the system. This allows the system to be accessed by different user types.

Administrator. The administrator is the one who has the raw control of the system. Restrictions and boundaries are not applied to the administrator. Management of couriers and orders are some of the few functionalities of the administrator.

Courier. A courier is someone employed by the business to handle deliveries. The options for the courier are limited to viewing and updating orders that the courier deliberately accepted.

Registered Customer. A registered customer is someone who has an account in the system. Customization of the account's profile such as address and contact details management is a privilege offered to a registered customer. Also, a registered customer can avail of certain promos offered by the business. Lastly, the ordering capabilities are fully accessed at this level.

Guest Customer. A guest customer is someone who wishes to access the system's ordering options quickly without having to sign-in or sign-up for an account. Only the ordering functionalities are given to a guest customer.

Functionalities

Below are the general functionalities that the system can offer. These enable the system to operate in different ways and communicate well with the users involved in the system.

Order Management. This allows the administrator to view the orders initiated by the customers of the system. The administrator can manage these orders by confirming the order by means of approval or rejection. Upon the approval of the order, the administrator can then set an estimated time of delivery within the placement day of the order. Rejected orders are immediately disposed from the queue of pending and unapproved orders, customers are then notified about it and the reasons for its rejection.

Receipt Printing. After an order has been approved, it directly goes into printing, where the details for the order are printed using a thermal printer, like a receipt. Information such as the order number, receiver of the order, items ordered, the amount for each one, the total amount, and the included additional expenses are all listed in the receipt. A QR Code that represents the order number is also imprinted for courier tracking purposes.

Courier Management. This entitles the administrator to add the couriers into the system employed by the company to handle the deliveries. This part of the system allows the administrator to view the current status of the courier as well as its current deliveries. Adding and removal of couriers in the system are also scoped in this.

Courier Status Tracking. This mostly relies on the courier itself. The courier can set its status and the status of the deliveries that they deliberately took from the shop for delivery by scanning the QR Code or inputting the order number manually.

Notification. This allows the administrators, couriers, and customers to receive dedicated notifications. Placement of orders and statuses of couriers and their deliveries are all notified to the administrator of the system. For the courier, notification about the pending undelivered orders will be shown in the courier's app. The approval or rejection of the order and the current status of the order are notified on the customer side.

Limitation

Putting aside the functionalities offered by the system, the following are the known limitations:

1. The management application that will be used by the administrator will be application-based. This means that it needs to be installed first on a laptop or personal computer.

2. The application that both the courier and customer will use will be a smartphone application. This means that it needs to be installed first on a smartphone. The smartphone platforms supported are Android and iOS devices.

3. Returns and refunds are not handled by the system. These kinds of concerns are by any means manually talked over by both parties; the seller and the buyer.

4. Cancellation of an order can be done only within an uncertain time span. The time window that is given for canceling an order solely depends on how much time it will take before the order gets approved by the administrator of the system.

5. Notifications are only done through the e-mails, SMS, and accounts of each user in the system. However, SMS notification is merely dependent on the client of the system since most of the reliable SMS APIs require a subscription or payment in order to avail of their text messaging services.

This means that SMS notifications will be added but will be an optional feature that the client can opt to activate.

6. Messaging directly through the system to contact the customer, or the other way around is not supported. The system can only offer the contact details of both end-users where the users themselves can use these to manually connect with each other.

Methodology of the Study

To employ the right process in developing the proposed system in such a short span of time. The proponents are planning to use the Waterfall Model. The Waterfall Model is useful and can provide a number of benefits where deadlines are vital (Banks, 2021). This is because the process offered by the model is very straightforward because of its linear structure (Banks, 2021).
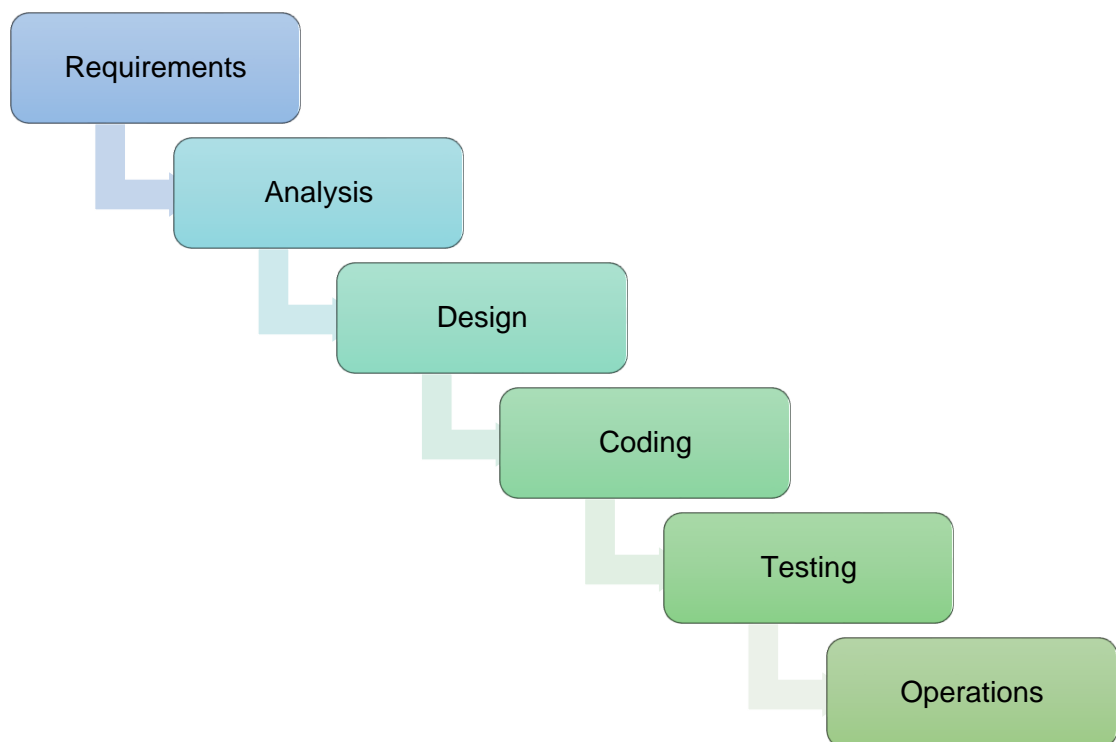
Figure 1: The Waterfall Model

The Waterfall Model encompasses six processes that are followed throughout the development.

Requirements. In this phase, the necessary pieces of information are gathered from the client. This information will serve as the specification that needed to be followed by the system.

Analysis. The information gathered at the Requirements phase is thrown into the analysis stage of the study. The specifications will be analyzed in order to come up with a possible model and workflow for the system. At the end of this phase, the logical process of the system is produced.

Design. Technical requirements are provided in the Design phase. Specifications such as the programming language to use, the tools to be incorporated, the services to be used, and more will be specified at this phase.

Coding. The source code for the system is finally written. Using the produced outputs from the earlier stages, the code is built from the ground up. Each specification will be used and implemented while creating the source code for the system.

Testing. Once the writing of source code is finished, it is important to see whether it is fully functional or not. This is where the Testing phase kicks in. The system will be tested by various testers. Testers will report any issues that needed to be resolved, such as bugs, performance issues, and more. Once the issues are identified it is common to go back to the coding phase and eliminate these issues in the system.

Operations. This will be the last phase of the model. At this point, the system is ready for deployment to a working environment. The process does not stop at the deployment, since maintenance is also a part of this. Maintenance will be done as a regular checkup and update to the system. This ensures the functional state of the system.

Significance of the Study

The development of Lin-TEAk: An Online Ordering System and Food Service Application with Thermal-Printed Receipt of Lin-TEAk Milk Tea Shop is believed to be beneficial to a certain individual, group of individuals, or organizations.

Business Owners. This study is important for the business owner as they are administered to manage the system itself. The employees and owner portray a crucial role in managing the functionality of the system, having a system will help them to be knowledgeable on the workflows of the business virtually.

Business Institutions. This study is important to other business institutions or establishments as it might serve as a basis in promoting a new platform to expand the reach of their businesses and cover a greater market.

Customers. This study is significant to the customers as they are the main beneficiary of the system wherein they will be offered accessibility and convenience as they can easily place their orders online.

Researchers. This study is important to the researchers for them to apply and to gain more knowledge about developing an online ordering system.

Future Researchers. This system is also important for future researchers and developers as it will be of use to become a groundwork in developing a new application relevant to the concepts of the system.

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