FRENCHIE (Frenchtoss Clothing Co. Inventory and POS Management with Barcode System

Lowela Arevalo and Reynaldo Bautista

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FRENCHTOSS CLOTHING CO. INVENTORY AND POS MANAGEMENT WITH BARCODE SYSTEM

Lowela A. Arevalo
BSIT Full Stack Developer
Gordon College Tapinac Sports Complex, Donor St. East Tapinac, Olongapo City
201910189@gordoncollege.edu.ph

Mr. Reynaldo G. Bautista JR.
Project Advisor
Gordon College Tapinac Sports Complex, Donor St. East Tapinac, Olongapo City
.reynaldojr@gordoncollege.edu.ph

ABSTRACT

The main objective of this project is to help the Frenchtoss Clothing Co. business to eliminate the problem regarding unorganized managing of their inventory. This system will help them create an easier way to manage and organized their inventory and generate reports without hassle. The system also has a barcode features which will be used to make finding an item within the system much easier, instead of scrolling throughout a lot of item or product just by entering the product barcode, they can easily find and update the data for a specific product. This project provides security for the information about the employee, and the product itself. It also gives assurance to the owner that their product data is safe from being manipulated by unauthorized personnel. Using this system gave a lot of help specially to organizing the inventory of the business, it helps them track and create more diverse way of managing their business and handling their product. This generates soft copies of the product data as well as the POS of the business which will be helpful to track the performance of the business throughout a year, or a month, week or even for a day. It can help the owner alleviate the stress of having too much product, or less product of an item, with this system it will accurately count the number of items/product that was available to the store and make everything easier.

KEYWORDS

Inventory Management System, Point of Sale (POS), Technology, Security, Authentication.

1. INTRODUCTION

Inventory management is essentially a variety of techniques, tools and technologies that a business uses to manage and control their inventory. The way it's utilized and implemented ranges from simple right through to complex. It depends and the capabilities and functionality of the management software used. For all inventory –centric businesses, inventory management software is an essential and valuable tool. It is what controls the flow of stock in and out, it maintains the correct inventory level for all items and stock, it allows access to sales data and analytics, and is how businesses set individual safety – stock requirements. Inventory management describes the system business use to ensure optimal inventory levels at all times by organizing sourcing, storing and selling both raw materials and finished product. Good inventory management leads to optimal stock levels at the right price at all times and reduces overall costs. With inventory management techniques, businesses can oversee both raw materials and finished products, and can regulate the warehousing and processing of these items, as well. In a very real way, how well a business manages its inventory can have a significant impact upon its overall success. The benefits of a highly optimized and efficient inventory

management system can be huge. Equally, the opposite is also true – many businesses have failed largely due to the continuing mismanagement of their inventory. One of the most exciting things about inventory management software, especially now, is how flexible it is regarding new technologies and innovation. Barcode and mobile technologies are now a standard part of many businesses operations, something which is made possible via the use of good software. It isn't uncommon now, especially with the rise of cloud computing, to see warehouse managers, sales and even logistics staff using mobile devices to enter and access inventory information in real-time, and from any locations. This project will help the beneficiary manage and organize their inventory in a very innovative and safe way. With the help of the products barcode to the system, it will save them a lot of time and eliminate the risk of the product being lost and unorganized. The system will show a dashboard to the users, which will help them track and see which product was making sales for a specific day or time, which is coded as the POS (Point of Sales) of the system. One of the basic features also of the system was the capturing of the barcode so that user doesn't need to encode the barcode to the system they can either upload a photo of the barcode or capture it via the use of the APIs, and that will help them a lot, and ensure them the safety of the products data.

2. RELATED LITERATURE

This section presents the review of related studies, both local and foreign studies that are relevant to inventory and point of sale management system.

2.1 Inventory Management

Inventory management is the system a business uses to order, store, organize and move inventory through their supply chain. It ensures businesses have the right amount of product in the right place at the right time. It also tracks your company's stocked goods and monitors their weight, dimensions, amounts, and location. The goal of inventory management is to minimize the cost of holding inventory by helping you know when it's time to replenish products or buy more materials to manufacture them. This helps you maintain optimal inventory levels and minimize costs. Inventory management is a critical part of any successful business, ensuring your store has enough of the right inventory at the right time. However, inventory management grows in complexity as your business scales. Effective inventory management requires a delicate balance of not having too much inventory (leading to overstocking) or too little inventory (causing stock outs). Effective inventory management is essential for ensuring a business has enough stock on hand to meet customer demand. Poorly-handled inventory management can result in a business either losing money on potential sales that can't be filled or wasting money by stocking too much inventory.

2.2 Inventory Management System

We mainly use Inventory Management System to systematically organize our products and its data, and to accordingly ensure the safety and confidentiality of the business and the product. As our technology advance and grow, the same goes to our business, so why not emerge technology to our business. It will be a great help using technology as an advancement of our business and create a line from the other competitors to makes us unique and more organize. The usage of technology also gives us the chance to promote our business, to be known and to be able to create a wide range of customers and opportunity to grow.

2.3 Point of Sale (POS)

POS systems may be used in a variety of ways. They are most useful for small businesses that sell products. POS systems that track inventory are especially useful in businesses that sell products or those use products they want to track in their production process. These systems are a useful tool in the toolbox of businesses that engage in inventory management. POS isn't a simple cash register or cash box anymore, unless yours is the smallest of businesses or a home-based service operation. Most businesses, even those providing services, need a more sophisticated cash management system in order to track sales, manage inventory, administer customer loyalty and gift card programs, and generate reports, to name a few

2.4 Relation between POS and Inventory Management System

POS and Inventory Management are two main components for a business to successfully grow and be organized. Inventory Management provides the list of product data that needed in order to the owner to know important information about the product that they sell or create. It also gives an insight how to further enhance the performance and knowledge regarding business management, how they can efficiently maintain the success of their business or how they can make everything better and functional for the business to be known and create other opportunity. In the other hand, POS generates the reports it act as an ledger for what product does really makes a profit and what product doesn't.

3. TECHNICAL BACKGROUND

This section discusses the technical background of the study including the software application used during the development of this study.

3.1 Cross-Platform Development

The development of software applications compatible with several mobile operating systems is referred to as cross platform mobile development. Initially, the difficulties of designing a backend that functioned across various platforms added to the complexity of producing mobile applications. Although time-consuming and costly, developing native apps for each mobile operating system was often simpler (OS). The issue was that code written for one operating system could not be reused for another.

For "write one, run anywhere" coding, programmers depend on a cross platform app development framework to provide the required tools, plugins, and UI components. There is a wide variety of frameworks to choose from, each with its own set of tools, programming languages, code reuse, learning curve, platforms support, and documentation.

3.1.1 Mobile Application Development

The process of building software for portable, wireless devices like smartphones and other handheld gadgets is known as mobile application development.

Mobile application development has its origins in older, more conventional software development, just as web application development. Mobile apps are frequently created particularly to take advantage of the special features of a given mobile device, which is a crucial distinction.

3.1.2 Web Application Development

Designing, creating, testing, and deploying web-based applications that will be installed on remote servers and supplied to users or customers via the internet are referred to as web application development. Users can access a

web application and its features and a service using any web browser after it has been installed on an application server (Google Chrome, Mozilla Firefox, Microsoft Edge, etc.)

3.2 Web and Mobile Framework

- *Web Framework* - Developers use web app frameworks when designing a website. A web app framework allows a software engineer's creations to function well on the internet, and they usually have a higher rate of usability, making them inclusive to users. Websites require frequent updates and changes and developers and coders benefit from using web app frameworks, as they're easy to adjust.

- *Mobile Framework* - A mobile app framework provides a general structure for developers to add onto to create an application for mobile devices, such as smartphones. These frameworks are often open-source, and developers can use a variety of coding languages to create them. While the mobile app framework is often similar to a web app framework, this framework allows software developers to format the application specifically for easy use on a smartphone or tablet.

3.2.1 *Front-end Technologies*

The part of a website that the user interacts with directly is termed the front end. It is also referred to as the 'client side of the application. It includes everything that users experience directly: text colors and styles, images, graphs and tables, buttons, colors, and a navigation menu. HTML, CSS, and JavaScript are the languages used for Front End development. Responsiveness and performance are the two main objectives of the Front End. The

developer must ensure that the site is responsive i.e. it appears correctly on devices of all sizes no part of the website should behave abnormally irrespective of the size of the screen.

3.2.2 *Back-end Technologies*

The backend is the server side of the website. It stores and arranges data, and also makes sure everything on the client side of the website works fine. It is the part of the website that you cannot see and interact with. It is the portion of software that does not come in direct contact with the users. The parts and characteristics developed by backend designers are indirectly accessed by users through a front-end application. Activities, like writing APIs, creating libraries, and working with system components without user interfaces or even systems of scientific programming, are also included in the backend.

4. METHODOLOGY

This study uses an agile methods approach to completing and developing the project.

Agile Methodology is a people-focused, results-focused approach to software development that respects our rapidly changing world. It's centered on adaptive planning, self-organization, and short delivery times. It's flexible, fast, and aims for continuous improvements in quality.

Figure 01: Agile System Development Life Cycle of the System [Nvisia Learn (September, 2020)]

4.1 REQUIREMENT SPECIFICATION

A conceptual model of the research is shown below in Figure 2, based on concepts, theories, and findings from relevant literatures, studies reviewed, and insights gained from them:
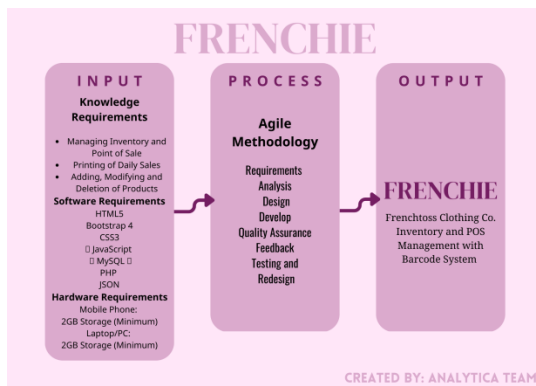

Figure 02: The Conceptual Model of the Study

4.2 DATA AND PROCESSING MODELING

The focus of this section is on the use of different diagrams to represent the logical design of the mobile application.

4.2.1.1 Functional Decomposition Diagram

Functional decomposition is a method of analysis that dissects a complex process in order to examine its individual elements. A function, in this context, is a task in a larger process

whereby decomposition breaks down that process into smaller, easier to comprehend units. Figure 03 shows business functions of the study and then breaks them into lower-level functions and processes.
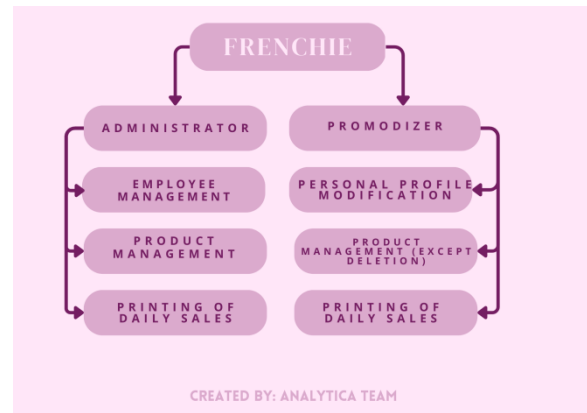
Figure 03: The Functional Decomposition Diagram of the Study

4.2.1.2 Use Case Diagram

The interaction between users and the system is visually represented in a use case diagram represented in Figure 04. It displays all of the users involved as well as the processes that are available to them.
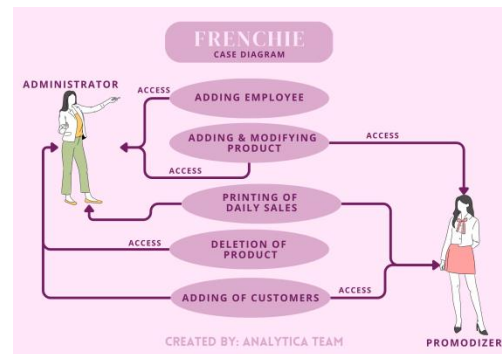
Figure 04: The Use Case Diagram of the Study

4.2.1.3 Date Flow Diagram

A data flow diagram (DFD) maps out the flow of information for any process or system. It uses defined symbols like rectangles, circles and arrows, plus short text labels, to show data

inputs, outputs, storage points and the routes between each destination. The context diagram of the study is shown in Figure 05.
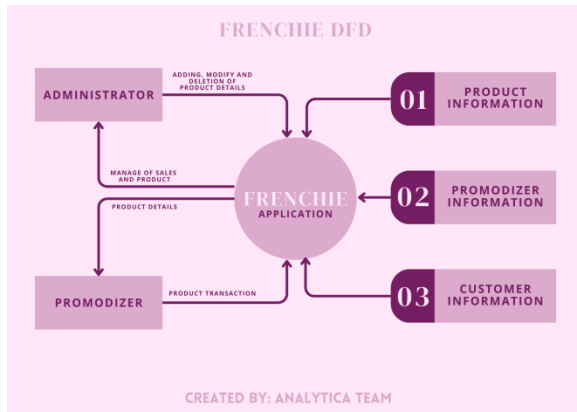
Figure 05: The Data Flow Diagram of the Study

4.3 DESIGN

This section presents the system architecture of the study.

4.3.1.1 System Architecture

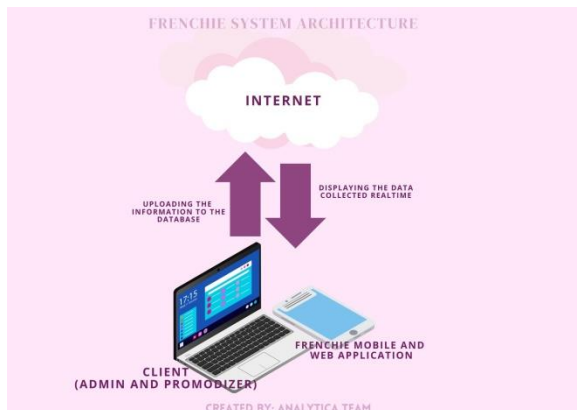The study is a web and mobile application utilizing Web technologies and the Internet for users.

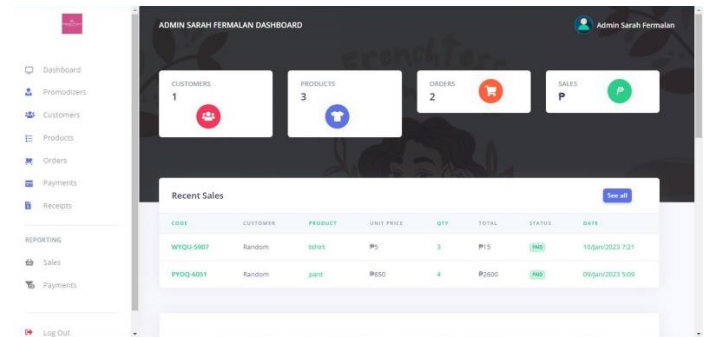*Figure 06: The System Architecture of the Study*

4.3.1.1 Screen Design

Figure 07: The Frenchie Application Admin Panel Dashboard (Web App)

The Frenchie Application Admin Panel Dashboard is where the Admin can see the actions and real time events that are happening within the system. From the navigation bar that we can see on the left side of the screen, list the different components of the system that serves different purpose that is crucial for the functionality and efficiency of the system.
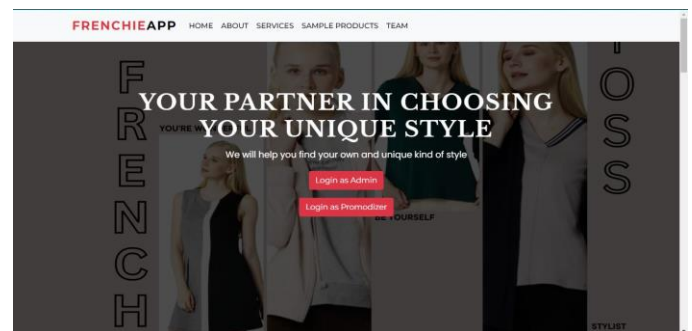
Figure 08: The Frenchie Landing Page (Web App)
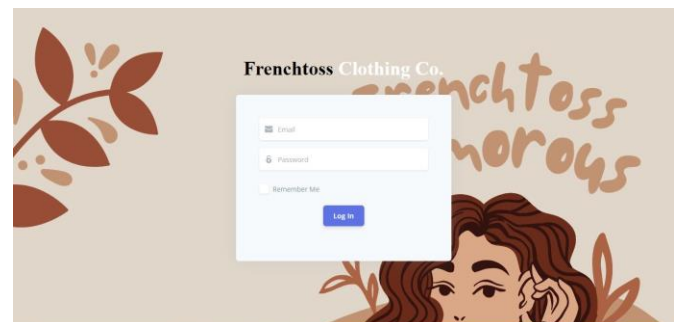
Figure 09: The Frenchie Admin Login Page (Web App)
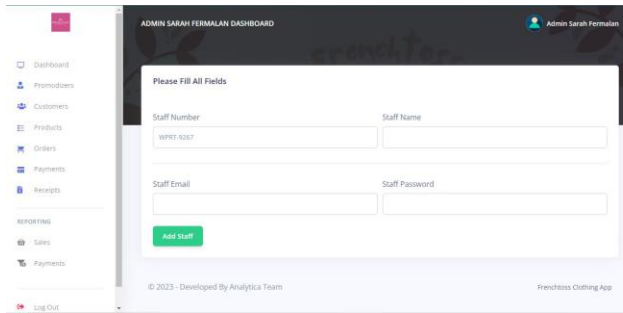
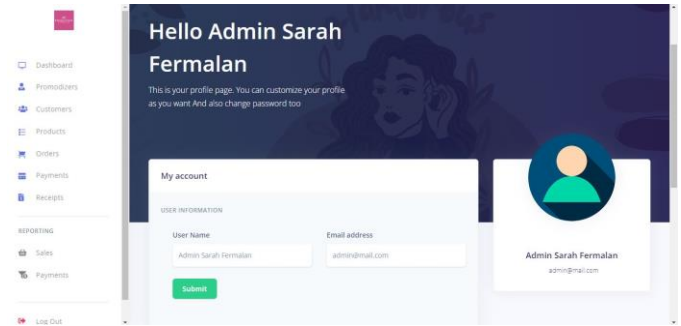*Figure 10: The Frenchie Adding Promodizer Page (Web App)*

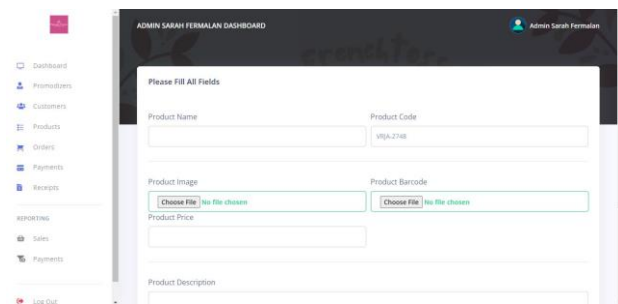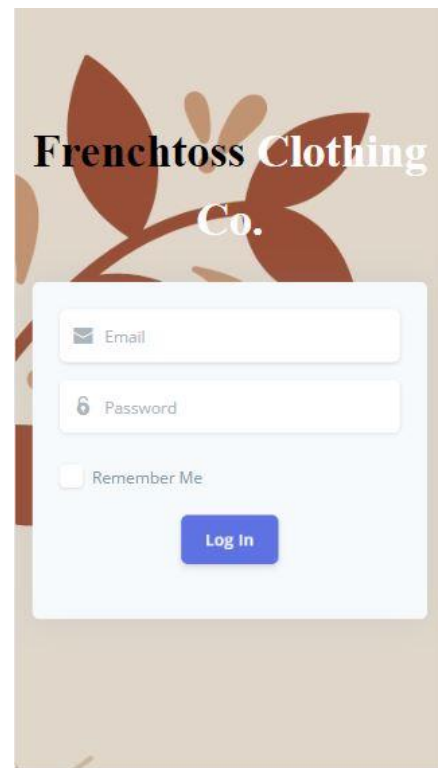*Figure 11: The Frenchie Adding Product Page (Web App)*
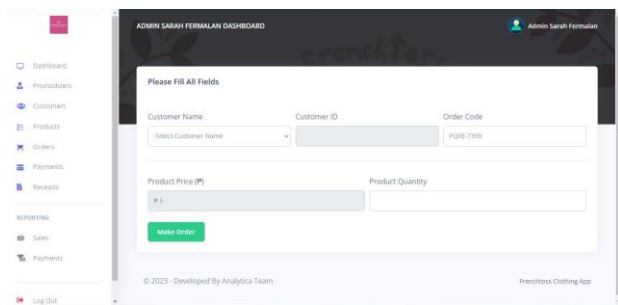

Figure 12: The Frenchie Making the Transaction Page (Web App)

Figure 14: The Frenchie Admin Profile Page (Web App)

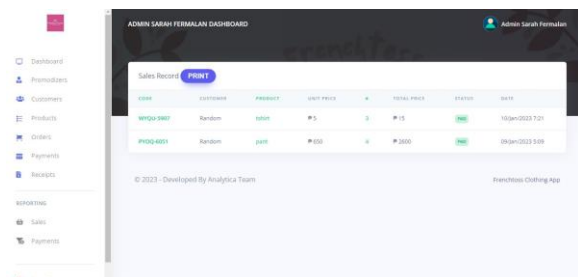*Figure 15: The Frenchie Promodizer Login Page (Mobile App)*

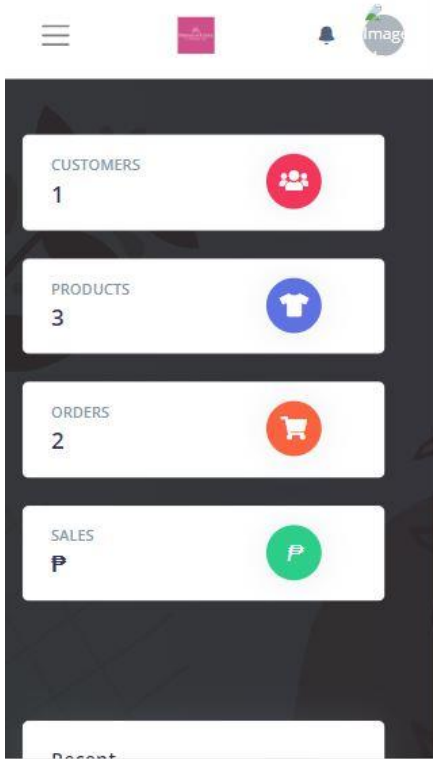*Figure 13: The Frenchie POS Page (Web App)*

Figure 16: The Frenchie Promodizer Dashboard Page (Mobile App)

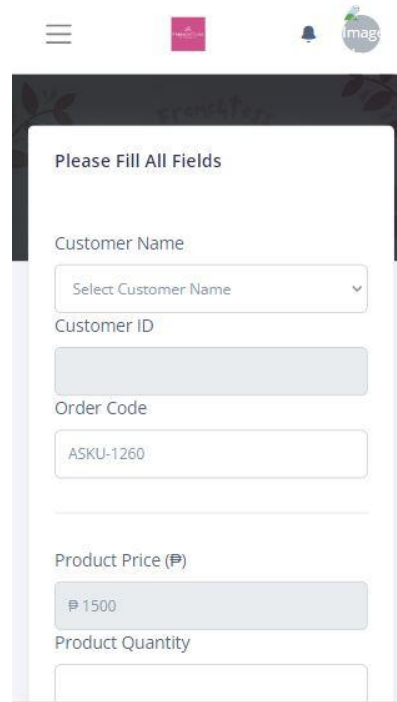*Figure 17: The Frenchie Promodizer Add Product Page (Mobile App)*

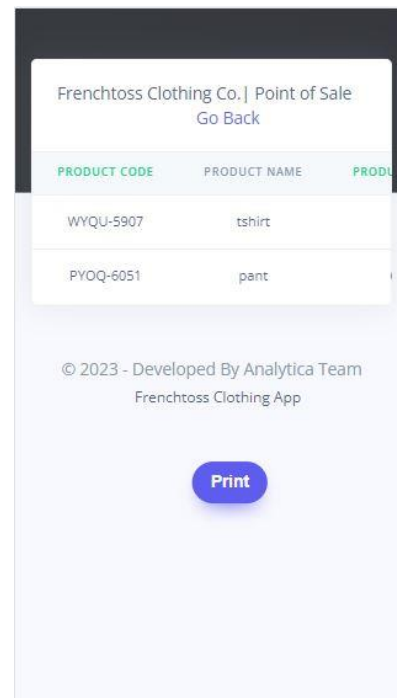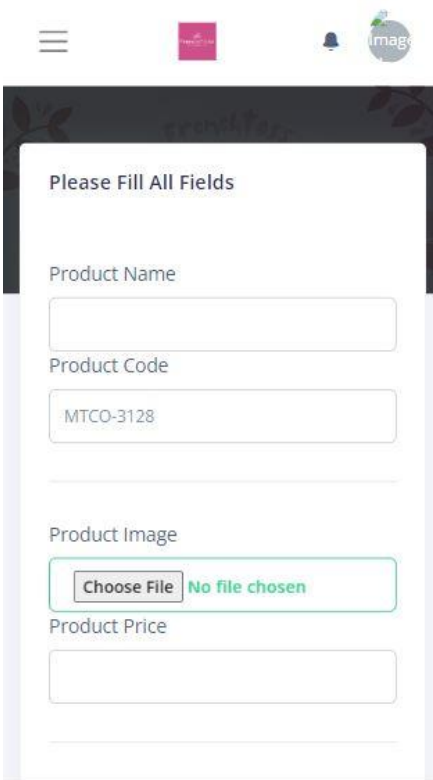*Figure 18: The Frenchie Promodizer Product Placement Page (Mobile App)*

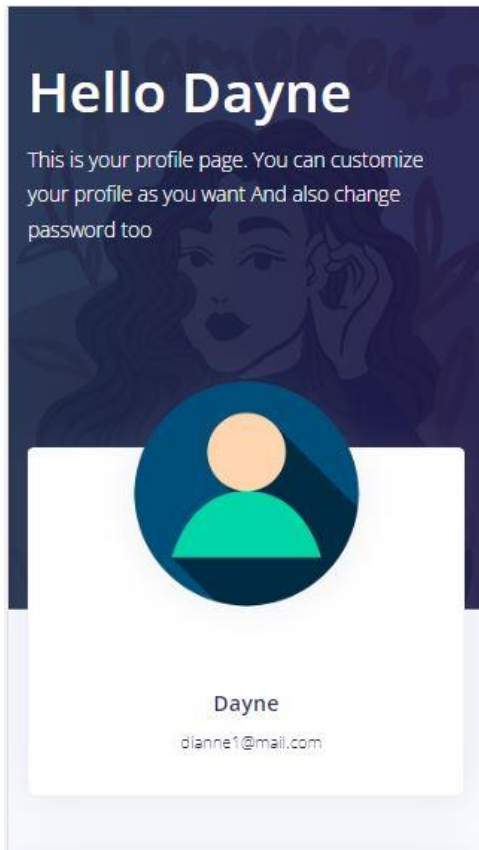*Figure 19: The Frenchie Promodizer Daily POS Page (Mobile App)*

Figure 20: The Frenchie Promodizer Profile Page (Mobile App)

4.4 Verification, Validation, Testing

I continued to use the agile method for the study's verification, validation, and testing phases because, for the testing, I let my beneficiary test the entire system and make the decision as to whether or not its functionality meets their needs. I also gave her the opportunity to suggest any additional functionality I should include in the system as a whole. As they will be the ones using this project, it is a terrific chance to learn about their thoughts and feedback.

5. CONCLUSION

Frenchie was established and made in order to give my selected beneficiary, the Frenchtoss Clothing Co. company, a speedier, simpler, and easier platform. Our application streamlines administrative tasks and gives Promodizer simple access to a POS system and managed inventory, saving them a ton of time. Based on the study's findings, the following Frenchie objectives have all been attained:

1. Provide users a platform so they can control their inventory whenever they want.

2. Effortless software that protects the company's sensitive data and information

3. Saves them a ton of time compared to manually counting and inspecting their point of sale.

4. Accessible from any device, such as a phone, laptop, or other.

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