3.4 SYSTEM FEATURES AND REQUIREMENTS

3.4.1 Functional Requirements

(i) Registration of New Users

Use case name   : Registration of new users in the app

Objective   : To include user in the system and verify mobile number.

Precondition   : A mobile device with an internet connection

Postcondition   : User registered and assigned a unique customer ID

Flow of Events :   1. Basic Flow

(a) The user opens the application.

(b) User need to register in the app by providing necessary details.

(c) User's phone number is verified.

(ii) Login of existing users

Use case name   : Entry of user into the web app after signup.

Objective   : To authenticate a user by logging in

Precondition   : An android phone with an internet connection

Postcondition   : User can acccess their dashboard.

Flow of Events : 1. Basic Flow

        (a) After login, customers can click Generate QR Code button

        (b) QR code is generated based on user id.

(iii) Generation of QR Code for Customers

Use case name   : Generate QR code

Objective   : To generate QR code for customers

Precondition   : An android phone with an internet connection with the web app installed

Postcondition   : QR code is generated corresponding to the customer ID

Flow of Events : 1. Basic Flow

        (a) After login, customers get a QR for entering into store.

(iv) Scanning QR code at the entry of stores.

Use case name   : Scanning of QR code.

Objective   : To authenticate customer entry to stores by scanning of QR code.

Precondition   : An android phone with an internet connection with the web app installed

Postcondition   : Customer is allowed to enter the store and trolley is assigned.

Flow of Events : 1. Basic Flow

        (a) Customers scan their QR code at the entry of the stores.

        (b) Customers are allowed to enter the stores.

        (c) Trolleys are assigned to customers.

(v) Viewing of virtual cart.

Use case name   : Virtual cart viewing.

Objective   : To identify the products purchased by the customer.

Precondition   : Customers must put products to their assigned trolleys.

Postcondition   : Customers can view the products through applicationand can confirm purchase.

Flow of Events :   1. Basic Flow

                (a) Customers put products in their assigned physical carts.

                (b) When products with RFID stickers are put into the cart, the RFID reader in the cart identifies the products and show them to customer.

                (c) Customers can confirm the purchase and make bill payments within the application.

(vi) Recommendation of products.

Use case name   : Product recommendation.

Objective   : To recommend suitable products to customers.

Precondition   : Reliable data on past purchases and customer interactions with the productss.

Postcondition   : Recommended products shown

Flow of Events : 1. Basic Flow

          (a) Previous purchase data of customers are analysed.

          (b) The data is then used for creating a model based on content based filtering.

          (c) Recommend favourable products to customers by placing them on their shopping interface.

(vii) Generation of bills and payment

Use case name   : Bill generation and payment.

Objective   : Bill generation and payment.

Precondition   : Accurate and up-to-date information about the customer being billed.

Postcondition   : Customers can exit after payment.

Flow of Events : 1. Basic Flow

        (a) Once the customer confirms the purchase, the bill is generated automatically.

        (b) The customer can proceed to the payment gateway and pay using their preferred payment mode.

        (c) Invoice is provided to the customer after successful payment and the customer can exit through the RFID door.

(viii) Forecasting of sales and inventory analysis for shop owners

Use case name   : Sales forecasting and inventory analysis

Objective   : To forecast sales using the previous sales data.

Precondition   : Previous sales data for sales forecasting and inventory details.

Postcondition   : Accurate sales forecasting and inventory analytics.

Flow of Events :   1. Basic Flow

         (a) Sales data is analyzed thoroughly and is fed into XG-Boost algorithm for getting accurate forecast.

         (b) Shop owner gets the necessary inventory analysis.

         (c) Shop owner obtains the sales forecasting for the product and time period he/she chooses.

(ix) Notification of stocks and supply details for suppliers

Use case name   : Stock notifications

Objective   : To provide real-time stock notifications to suppliers and obtain supply details.

Precondition   : Stock details are available in real-time from the store.

Postcondition   : Suppliers notified about stock.

Flow of Events :   1. Basic Flow

         (a) Stock data is updated in real-time.

         (b) Suppliers are alerted if stock is required.