



PES UNIVERSITY, BANGALORE

Department of Computer Science and Engineering

# SUBJECT: SOFTWARE ENGINEERING

## Software Requirements Specification for McClan!



**Version 1.0 approved**

**Prepared by: TEAM McClan**

- |                    |               |
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**ORGANISATION: PES UNIVERSITY**

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# INTRODUCTION

## 1.1 Purpose

Customer Loyalty programs play a major role in business growth by retaining the present customers and attracting potential ones. In order to achieve these roles, organizations should have a powerful customer loyalty system which gathers valuable information concerning customers' purchasing frequency, purchasing interests and their spending practices. Customer information will be analysed by the customer loyalty system and utilized to create useful promotion and reward plans.

## 1.2 Intended Audience and Reading Suggestions

This document is intended for company stakeholders, developers, marketing staff and for general discussions on the implementation decisions regarding the loyalty programs. The rest of the SRS mainly addresses the communication channels and offered services, namely, the point's calculation method, the reward policy and the promotion policy.

## 1.3 Product Scope

The Developed loyalty system requires the firm to set the following components which are shown in Figure. The firm should first setup its objectives. Among other factors, customer satisfaction plays a major role. There are many factors that have high impact on customer satisfaction including quality, after sales service, promotions, gifts and rewards, advertisements, competitive prices and others. This study addresses mainly two issues namely promotion and gifts and rewards. Customer satisfaction has a direct and positive impact on customer loyalty.

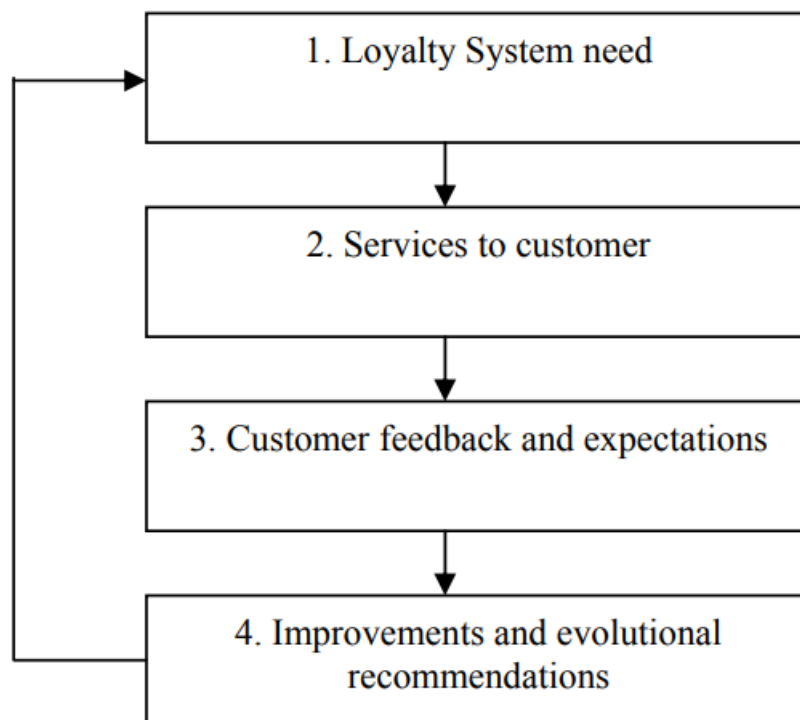
## 1.4 References

- CHAPTER 12 Customer Relationship Management.
- MKTG308 Customer Relationship Management (CRM)
- Relationship Marketing and Customer Relationship Management
- 09\_Development of a Customer Loyalty System Al-Sayyedet al

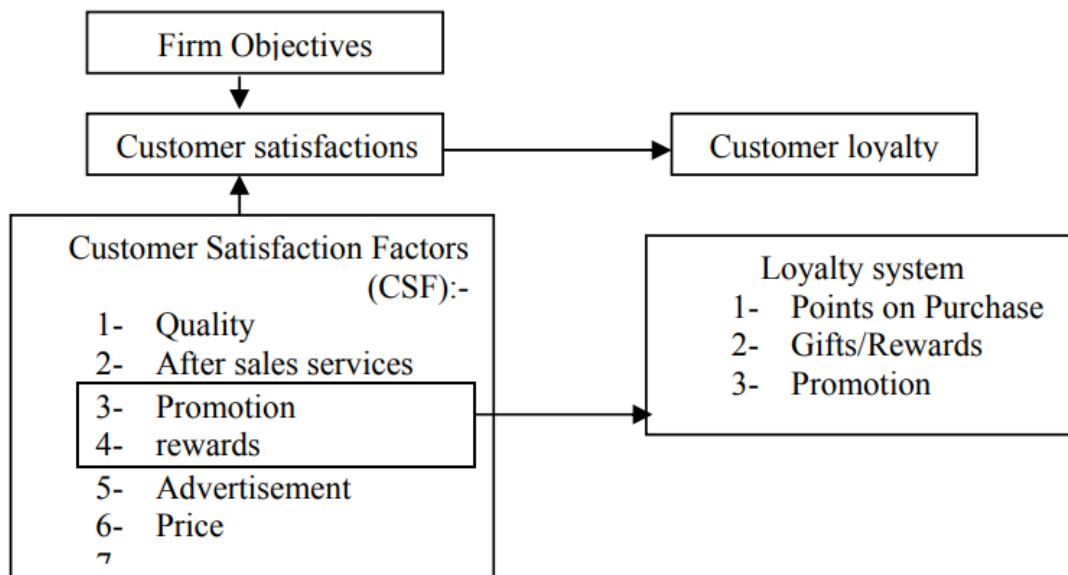
## 2.Overall Description

### 2.1Product Perspective

The McClan model requires the examination of four major stages. These stages are shown in Block diagram 1. As shown in Figure 1, there is an imperative need for a loyalty system which represents the first stage in our model. The second stage is identifying the services that will be offered to the customer. By skipping many details and jumping to the implementation stage, the customer feedback and expectations are collected and placed for further processing which represents the third stage. The fourth stage is associated with the decisions that should be made about the improvements and the evolutionary recommendations which will be fed back to the first stage and thus the cycle continues.



The Developed loyalty system requires the firm to set the following components which are shown in Figure 2. The firm should first setup its objectives. Among other factors, customer satisfaction plays a major role. There are many factors that have high impact on customer satisfaction including quality, after sales service, promotions, gifts and rewards, advertisements, competitive prices and others. This study addresses mainly two issues namely promotion and gifts and rewards. Customer satisfaction has a direct and positive impact on customer loyalty.



Now, we are going to take the information given by the customer in a website, reduce it to a database, and collect the proper information about the customers and products chosen in it, and we will suggest them for better products and give them rewards in the form of loyalty points.

## 2.2Product Functions

There are many tactical and systematic functions based on the products the customers buy:

- > which tracks the data of all customers
- > Tracking of expenditure
- > Provide different views to the user depending on his/her roles.
- > Using Machine Intelligence algorithm, an efficient Recommendation System is developed
- > maximizes the sales returns and eases operation
- > each customer could be categorised, given a Rank to improve his retention.
- > Loyalty points are assigned to them based on RFM model
- > Discount Rates can be finalised in an unbiased manner to ensure utmost customer satisfaction and to make him/her feel engaged.

### 2.3 User Classes and Characteristics

USERS:

- a) Customer
- b) Admin
- c) Analysts
- d) Retailer

1	Customer	Recommendations based on previous buys and loyalty points for further discounts. Available products in the website and Cart of his choices.
2	Admin	Details of all the selections and the products bought by the customers. Estimate the growth of the company using multi graphs
3	Analysts	Analyse the data and make a multi regression model and finally helps in building a machine learning model with proper datasets and Sampling methods
4	Retailer	Buy in whole and sell at a proper discount rate based on the loyalty points.

### 2.4 Operating Environment

The software will be designed to work on any version of Windows, Linux (kernel 2.7 and above) and Mac platform. The software is completely web based and runs on popular web browsers namely brave, fire-fox, chrome, internet explorer (IE8 and above). These web browsers are preferred since they support HTML.

### 2.5 Design and Implementation Constraints

We have to design different pages for different types of users such as Customer, Admin, Analysts and the Retailer. The implementation part is yet to be done. But, we have a clear picture as to how our pages would look. The communication protocol will be http. There are a number of tools which can be used for its implementation. The maximum number of users at a time is yet to be decided

### 2.6 Assumptions and Dependencies

The user is familiar with internet and web based software like social networking sites. The browsers which the user is using is either Google Chrome 10.0 and above or Mozilla Firefox 4.0 and above.

No other coding perquisites are needed. Knowledge of online transactions is expected from the user.

## 3.External Interface Requirements

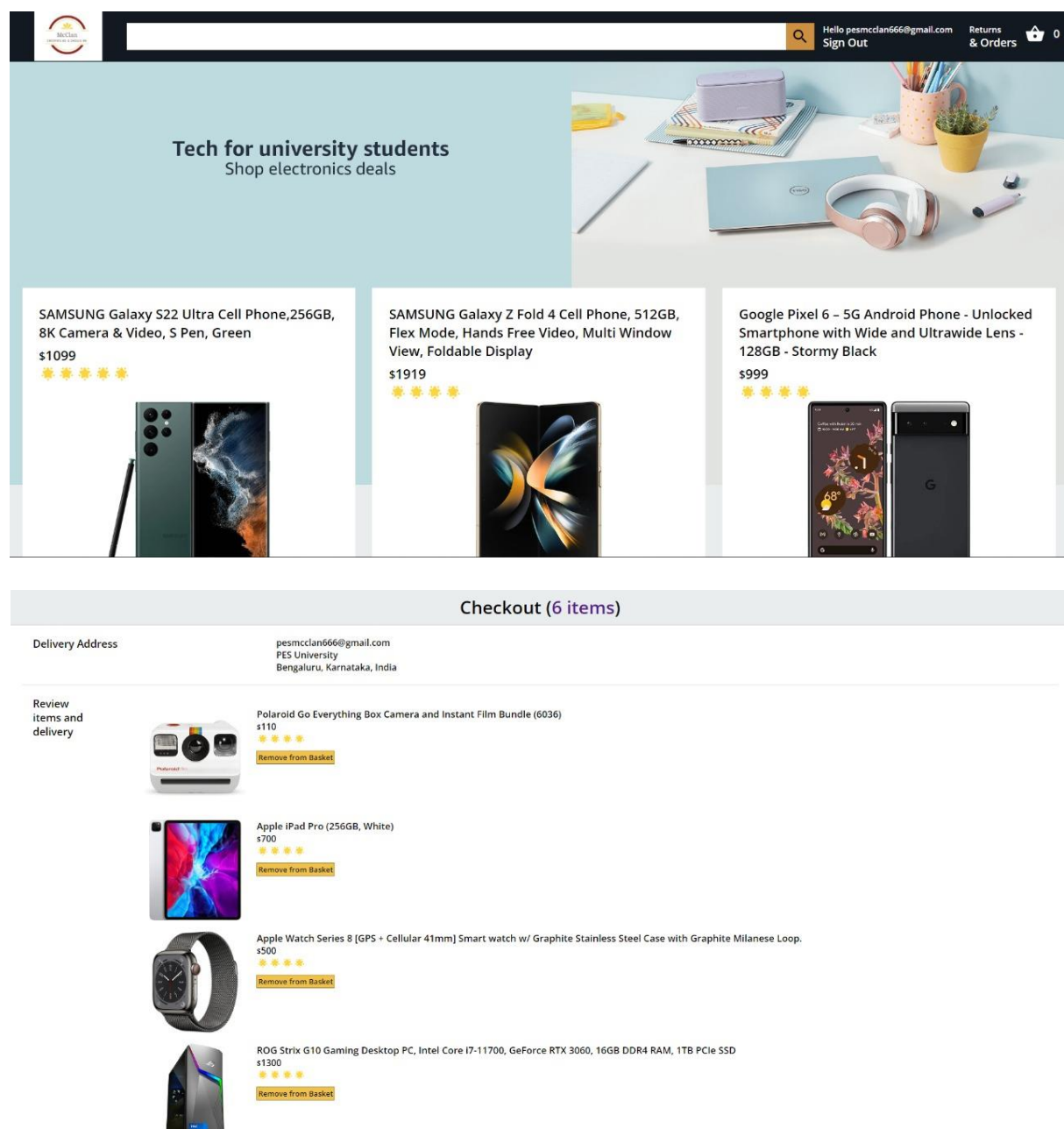
### 3.1User Interfaces

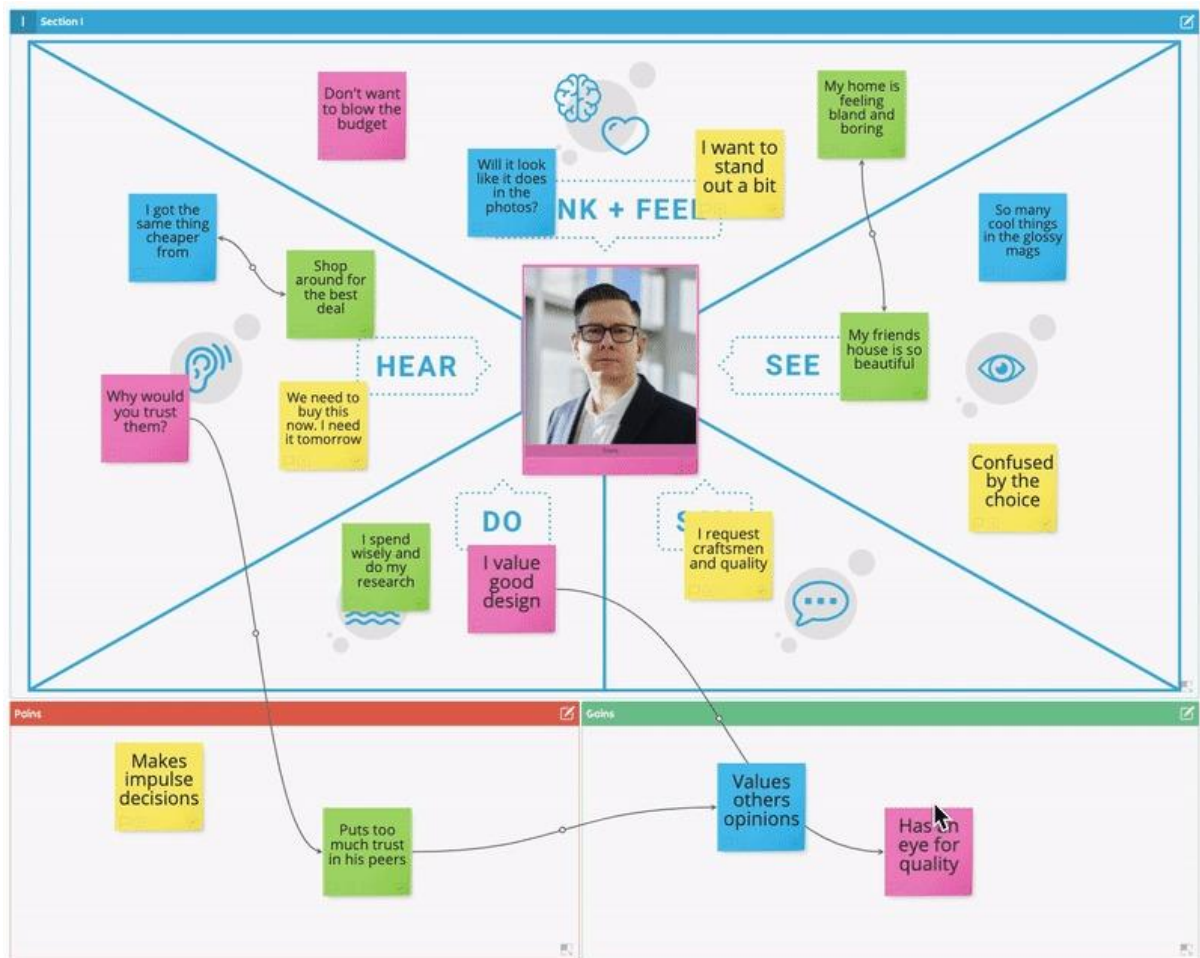
McClan is Top class E-commerce Web-Application that focuses on Customer satisfaction.

McClan processes the customer's reviews and purchases using Advanced Machine Learning Algorithms to understand their needs and strives to help provide a superior experience. It's Web-app is user-friendly and a delight to the Customers.

It offers a wide range of products to our customers to choose from our home page that consists widgets for easy avigation Top trending products.

It also offers our customers redeemable points that he/she can use to buy Products at a discounted price





McClan Cloud Firestore

Go to docs

users > pesmccolan666... > orders > 1

More in Google Cloud

pesmccolan666@gmail.com orders 1

+ Start collection + Add document + Start collection

orders > 1 + Add field

+ Add field

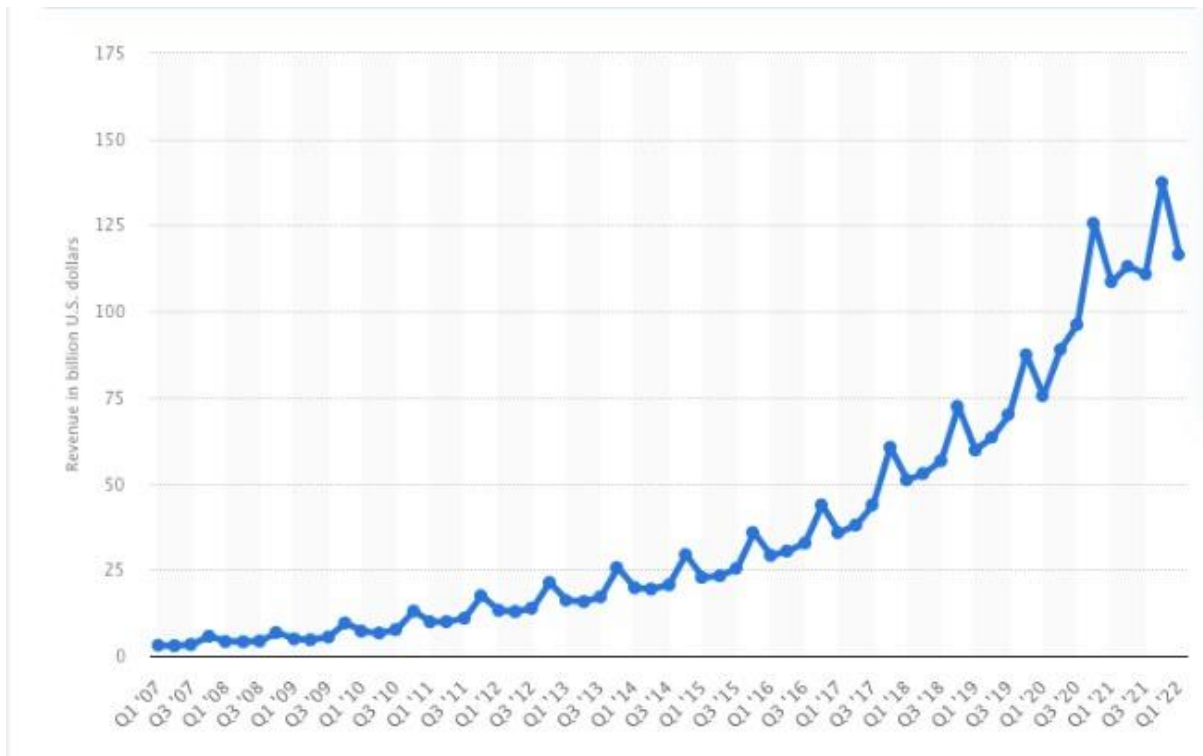
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Database location: nam5 (us-central)

▼ basket

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  - rating: 4
  - title: "Polaroid Go Everything Box Camera and Instant Film Bundle (6036)"
- 1
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### 3.2 Software Interfaces

The software is operating system independent. It would run on Linux, Windows and Mac.

In Backend we run python files and analyse the graphs based on the regression models and datasets using Jupiter notebook and we are going to merge the model with Java-script.

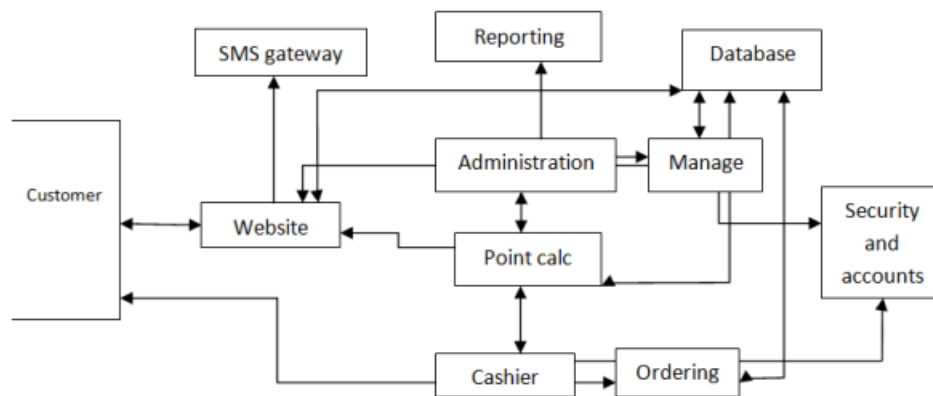
### 3.3 Communications Interfaces

A web browser is a basic necessity for the software to be deployed. Authentication is done by OpenID which uses HTTPS for security. We communicate with the MongoDB and get the input given by the customer.

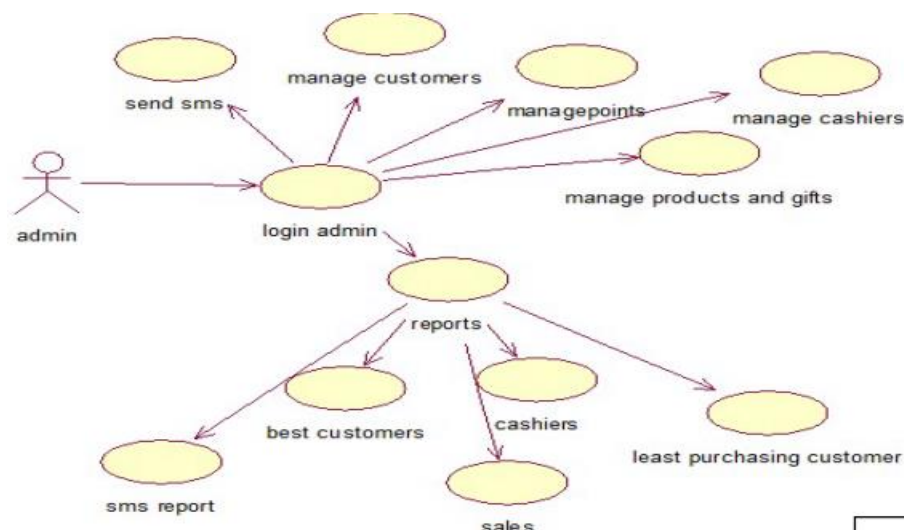
## 4. Analysis Models

### The Model Design

The proposed model comprises a set of logical subsystems. The administrator has full control over the system in terms of managing customers, setting point's ratio describing the reports required, and dealing with employees' accounts. The cashier enters the customer's merchandise into the system. In the Point calc, the process of calculating customers' points on products is performed and based on this the database is then updated. In Ordering, the administrator enters a customer's specific order of products and gifts. In the Manage component, the administrator manages the various subsystems like customers, points etc. The customer can view his/her points through the Website. As a final component, Reporting is used to generate certain reports that the system provides such as sales reports and the best customer.



Use Cases Description of the proposed model. The administrator is the person who is responsible for the system control panel, where he/she controls the system, generates reports, and manages accounts. The administrator can generate reports related to points and other issues such as the best buyer, the average sales, and the overseeing of cashier's actions by reporting cashier sales, and analyse these reports in a strategic way in order to achieve a company's goal. Also, the administrator can manage the customers' accounts, and also enter the data that is required for the operations of the system.

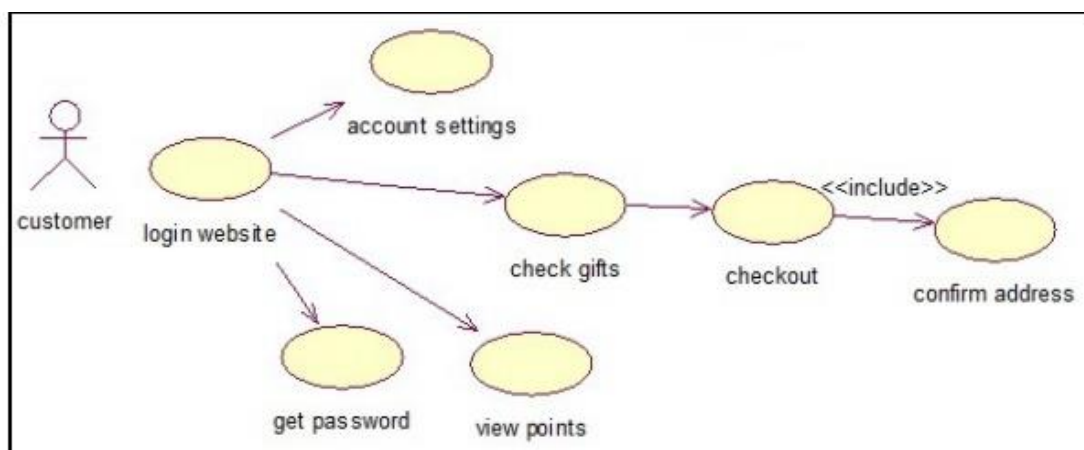


- 1 Stay connected with the favourite brands
- 2 Collect reward points with a single camera scan
- 3 Brand wallet to manage reward points
- 4 Redeem for gifts and offers - online, retail and Amazon

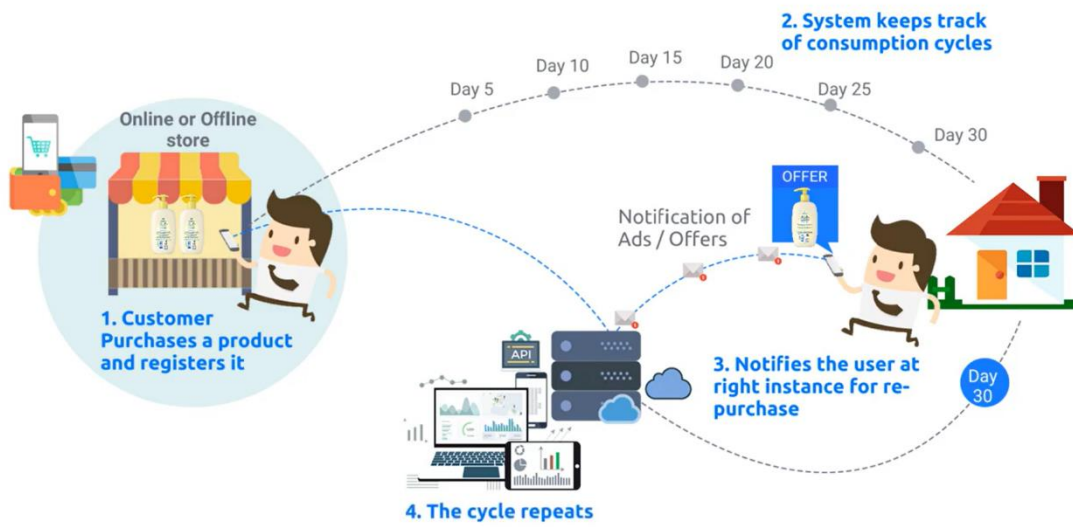


### Customer user case diagram:

After logging into his/her account on the company's website, the customer can check his/her point balance, view current offers, and select from available gifts. The customer also has the ability to login to the website, edit his/her personal account information through the edit screen option, and update his/her phone number, name, birthday, and address which will then reflect these changes on the database.



## Automatically remind your users to buy again

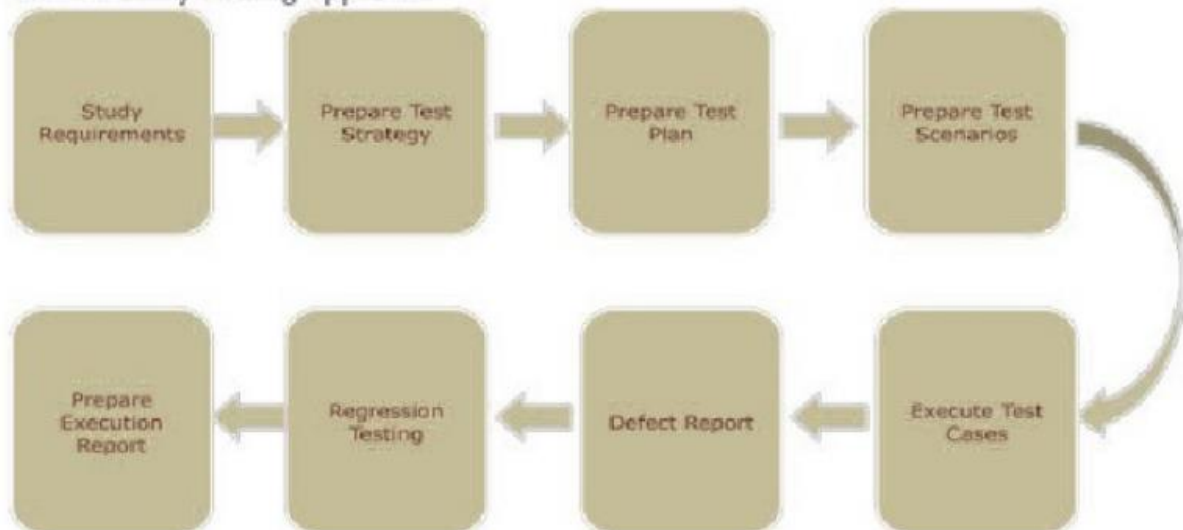


Sales automation can be customized for any product, and is tracked online and offline

## 5. System Features

Many business corporations focus their efforts on increasing revenues by reducing their costs and increasing the quality of service provided to the customers. As this process continues over a long time, new problems and challenges arise, like how to keep the present customers, increase their purchases and maintain a list of their actual needs and interests. When it comes to gathering valuable purchase information such as purchasing frequency, interests, spending, etc, and analysing of this information to understand what is required and there was no actual efficient system the managers to benefit from in order to increase the customers average buying and to gain their loyalty while increasing their satisfaction. The system will provide lists of products and their prices, categories, other details, and a table of points for each product/category. Depending on the customer points, the system will generate a gift and send a report about this to the customer. The website will be updated for future promotions. The system will also provide useful reports such as the best buyer, the best purchasing customer, average sales per month, and the best and worst sales category.

### Functionality Testing Approach



### Functional Requirements:

The stakeholders of this system comprise the administrator and the customer. The following list shows the major functions that the system must allow the administrator to perform:

1. Authorization to set an account for himself with all privileges and another one for the cashier to access the system.
2. The ability to delete customers' accounts.
3. The ability to view customer account information.
4. The ability to send to customers rewards and special offers.
5. The ability to report to the management the average sales for month, the best and the worst seller.
6. The ability to filter customers upon average buying.
8. The ability to provide an easy way to manage products, add (initiate) products sale, add gifts, and map gifts to points.

The following list shows the major functions that the system must allow the customer to perform:

1. Through the web site the system must provide a registration form for the new customers to enroll in the program, add their desired usernames and passwords and their mobile numbers, address, and DOB.
2. The ability to login to their accounts and view/update their information, view their points, receipts.
3. The ability to provide to customers an easy way to redeem points.
4. The ability to change a customer's password through the website.
5. The ability to obtain help using the website map.

## 6.Other Non-functional Requirements:

### 6.1Performance Requirements

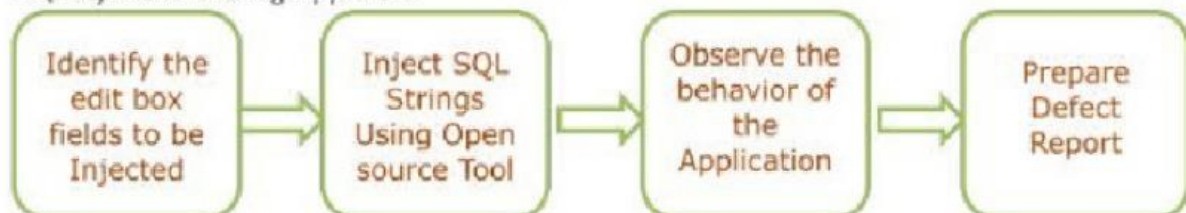
#### Performance Testing Approach:

##### Performance Testing Approach

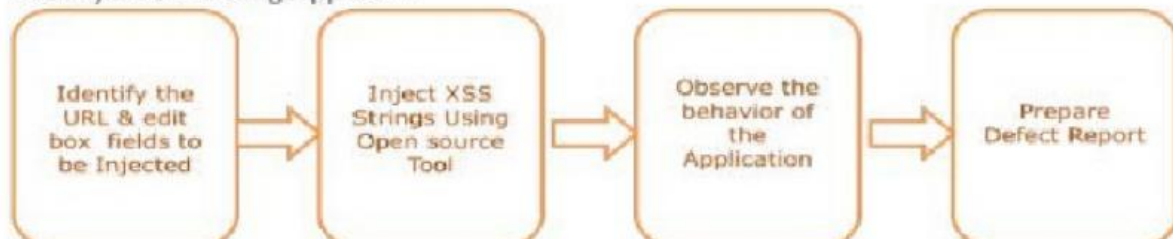


### 6.2 Safety and Security Requirements

##### SQL Injection Testing Approach



##### XSS Injection Testing Approach



## **6.3 Software Quality Attributes**

We have not reached the point to reach the software quality we will update the Software usage attributes while developing the software.

## **6.4 Business Rules**

The Loyalty System Components

The proposed loyalty system mainly addresses the communication channels and offer services, namely, the point's calculation method and the reward policy. Communication channels and their offered services cover three "customer to business" (C2B) channels: direct access to store, web site access. The services cover direct access to store include:

- (1) purchasing,
- (2) points query,
- (3) rewards query
- (4) rewards selection.

From the web site services, the customer can make query about: the accumulated points, the deserved rewards. With respect to the rewards granting policy, the model addresses a fixed rewarding policy, and from time to time, the manager can make changes on the offered rewards. These rewards are limited to specific products. In the promotion policy, the model does not have a clear promotion policy. The manager decides the time and the product to be promoted.

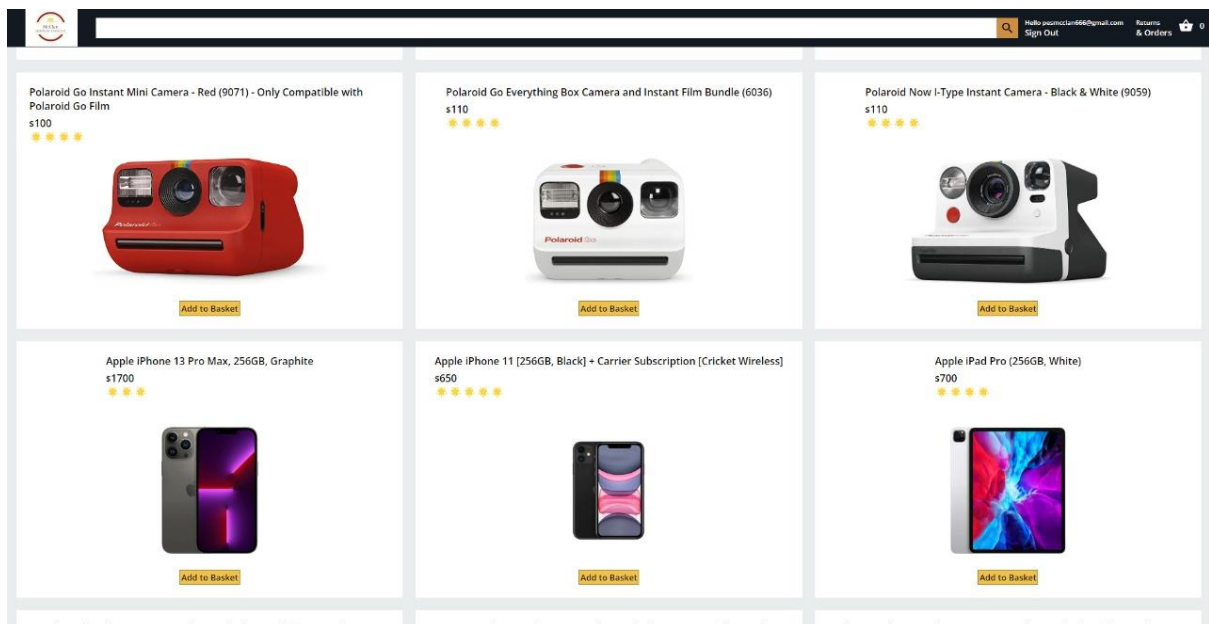
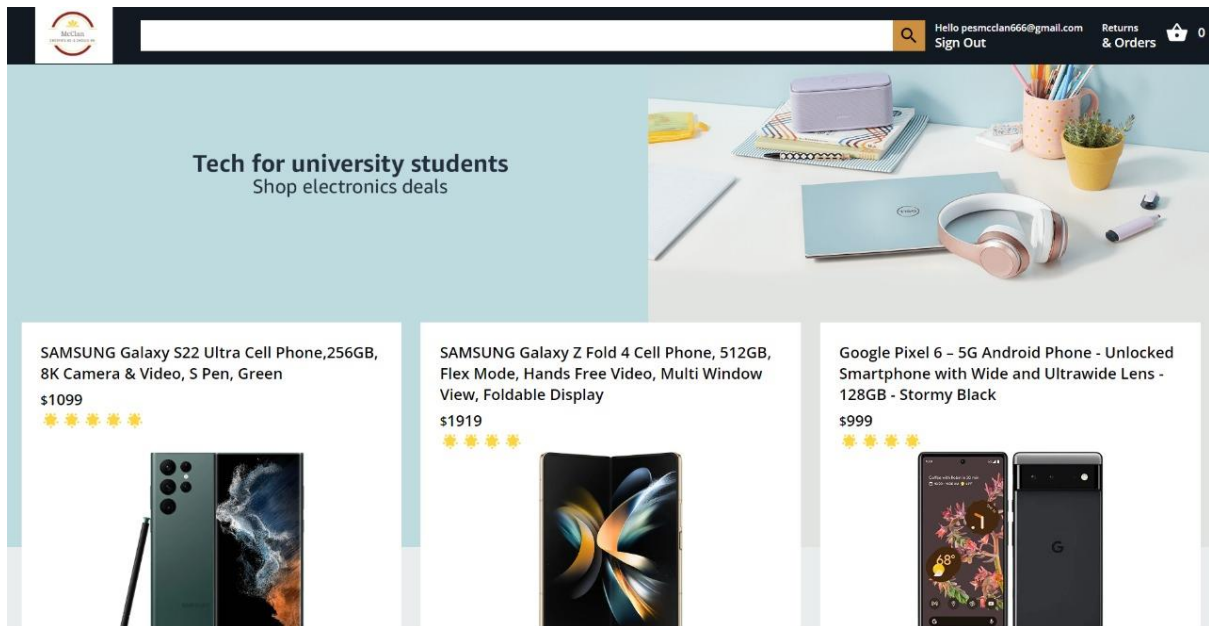


# 7.Other Requirements

## Appendix A: Glossary

1	HTTPS	HTTPS stands for Hypertext Transfer Protocol Secure. This protocol is a widely used communications protocol for secure communication over a computer network, with especially wide deployment on the Internet.
2	OPENID	OpenID is a decentralized single sign-on authentication system for the Internet. The goal of the OpenID initiative is to allow users to log in at websites around the Internet with one ID, instead of having to create multiple unique accounts.
3	SRS	SRS stands for Software Requirement Specification. It is his used to refer to a document that completely describes all of the functions of a proposed system and the constraints under which it must operate
4	UI	McClan processes the customer's reviews and purchases using Advanced Machine Learning Algorithms to understand their needs and strives to help provide a superior experience.
5	VIEW	View means to display and look at data on screen.
6	ANALYST	Checks the data and analyse it in the forms of graph and regression models

## Appendix B: Field Layouts



[Hello pesmclan666@gmail.com](#)  
[Sign Out](#)

[Returns & Orders](#)

**SAMSUNG Galaxy Watch 4 40mm Smartwatch with ECG Monitor Tracker for Health, Fitness**  
 \$200  
 ★★★★★

[Add to Basket](#)

**Apple Watch Series 8 [GPS + Cellular 41mm] Smart watch w/ Graphite Stainless Steel Case with Graphite Milanese Loop.**  
 \$500  
 ★★★★★

[Add to Basket](#)

**Garmin quatix® 7X Solar Edition, Marine GPS Smartwatch, Solar Charging Capabilities, Durable Watch with Flashlight**  
 \$350  
 ★★★★★

[Add to Basket](#)

**ROG Strix G10 Gaming Desktop PC, Intel Core i7-11700, GeForce RTX 3060, 16GB DDR4 RAM, 1TB PCIe SSD**  
 \$1300  
 ★★★★★

[Add to Basket](#)

**2022 HP Pavilion Gaming Desktop PC, 32GB RAM, 1TB SSD+2TB HDD, Intel i5-10400F**  
 \$900  
 ★★★★★

[Add to Basket](#)

**Alienware Aurora R13 Gaming Desktop - Intel Core i7-12700F, 16GB DDR5 RAM, 512GB SSD + 1TB HDD0, Nvidia RTX 3060Ti LHR 8GB GDDR6, Air Cooled**  
 \$1900  
 ★★★★★

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**Exclusive offer for Amazon customers**

**39.9% APR** Representative variable

[Learn more](#)

**Intelligent Lending Ltd** (credit broker).  
**Capital one** (exclusive lender).

**Subtotal (6 items): \$6,010**  
☐ This order contains a gift

[Proceed to Checkout](#)

Hello, pesmclan666@gmail.com

## Your shopping Basket

**Polaroid Go Everything Box Camera and Instant Film Bundle (6036)**  
 \$110  
 ★★★★★  
[Remove from Basket](#)

**Apple iPad Pro (256GB, White)**  
 \$700  
 ★★★★★  
[Remove from Basket](#)

**Apple Watch Series 8 [GPS + Cellular 41mm] Smart watch w/ Graphite Stainless Steel Case with Graphite Milanese Loop.**  
 \$500  
 ★★★★★  
[Remove from Basket](#)

**ROG Strix G10 Gaming Desktop PC, Intel Core i7-11700, GeForce RTX 3060, 16GB DDR4 RAM, 1TB PCIe SSD**  
 \$1300  
 ★★★★★  
[Remove from Basket](#)

## Checkout (6 items)

### Delivery Address

pesmccan666@gmail.com  
PES University  
Bengaluru, Karnataka, India

### Review items and delivery



Polaroid Go Everything Box Camera and Instant Film Bundle (6036)  
s110  
★★★★☆  
[Remove from Basket](#)



Apple iPad Pro (256GB, White)  
s700  
★★★★☆  
[Remove from Basket](#)



Apple Watch Series 8 [GPS + Cellular 41mm] Smart watch w/ Graphite Stainless Steel Case with Graphite Milanese Loop.  
s500  
★★★★☆  
[Remove from Basket](#)



ROG Strix G10 Gaming Desktop PC, Intel Core i7-11700, GeForce RTX 3060, 16GB DDR4 RAM, 1TB PCIe SSD  
s1300  
★★★★☆  
[Remove from Basket](#)

## Database:

McClan Cloud Firestore

Go to docs

users > pesmccan666... > orders > 1

More in Google Cloud

pesmccan666@gmail.com orders 1

+ Start collection + Add document + Start collection

orders 1 + Add field

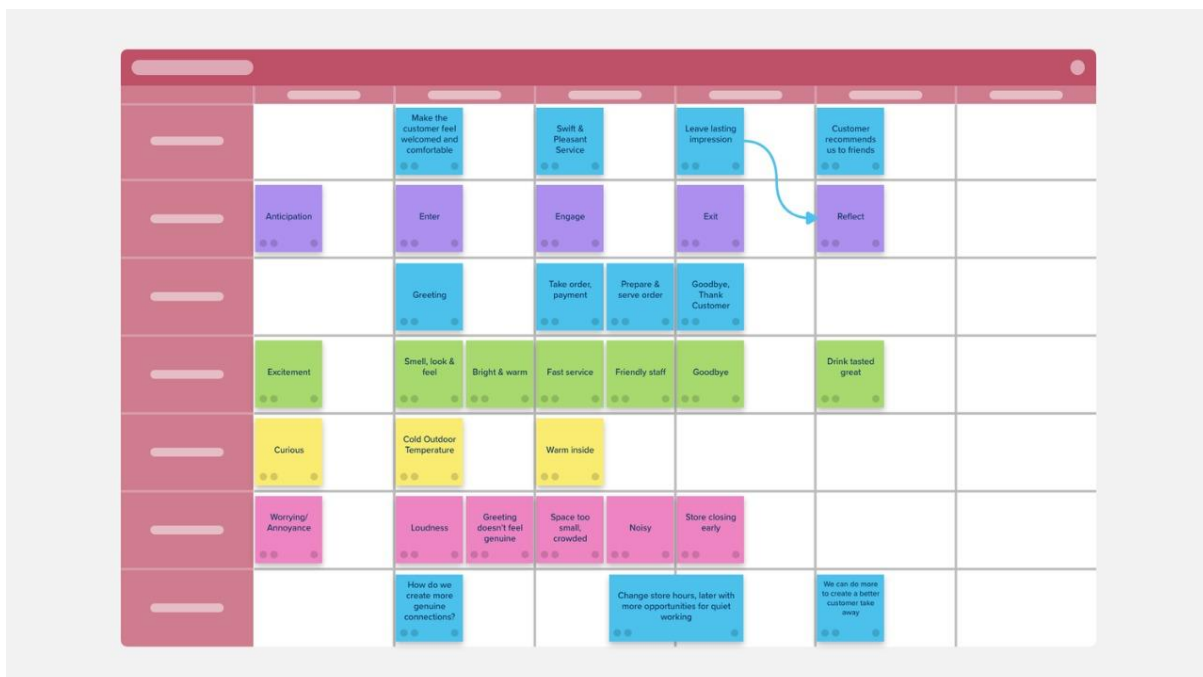
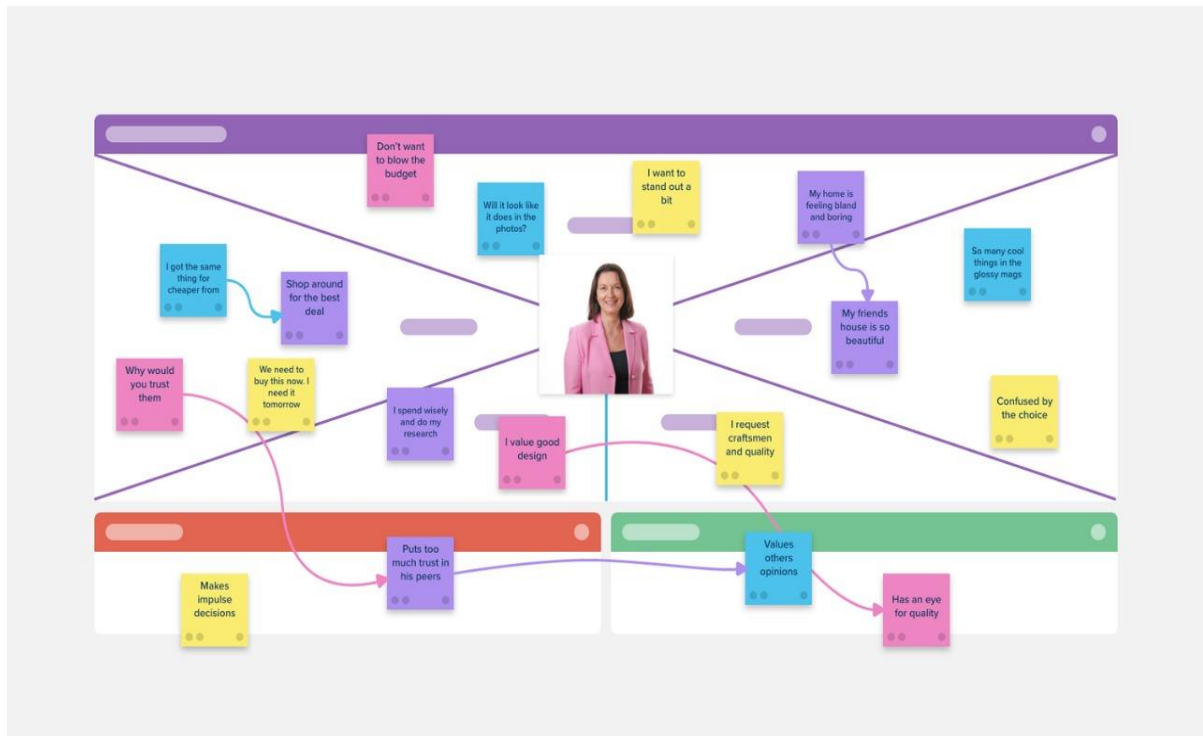
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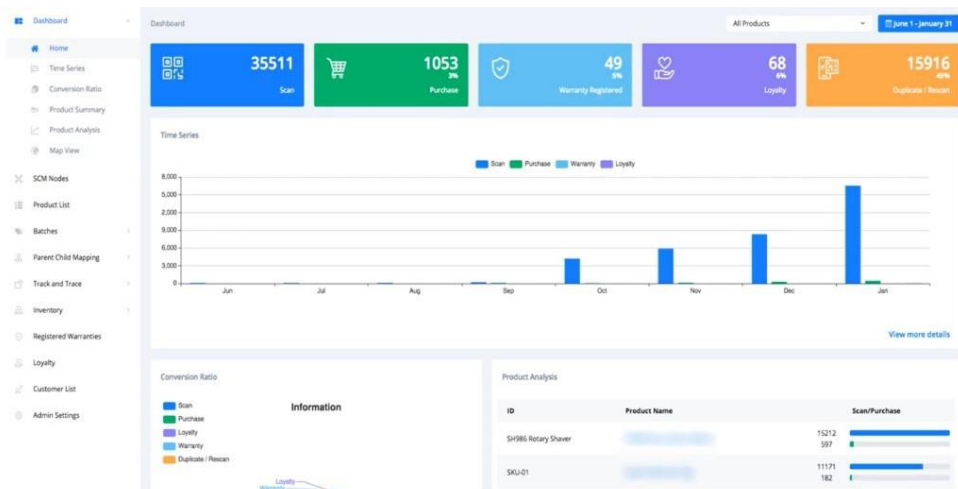
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[Learn more](#)

Database location: nam5 (us-central)

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      "rating": 4,
      "title": "Polaroid Go Everything Box Camera and Instant Film Bundle (6036)"
    },
    {
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      "image": "https://images-na.ssl-images-amazon.com/images/I/816ctt5WV5L_AC_SX385_.jpg"
    }
  ]
}
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## Empathy map:





## Appendix C: Requirement Traceability matrix

McClan is Top class E-commerce Web-Application that focuses on Customer satisfaction. McClan is a straight forward and easy to use web-app where our customers are able to buy products in a faster and a better way.

We offer our customers excellent review system McClan uses Advanced Machine Learning Algorithms to Optimise the Web-Site according to the users reviews and purchases.

McClan also rewards points to re-occurring Loyal Customers based on their purchases using which they can buy their favourite products at a discounted price.