

Cosmetic Manufacturing & Sales Management System

Project Report



Sri Lanka Institute of Information Technology
IT2080 Information Technology Project

Group WD_B01_ITP_03

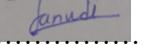
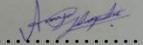
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November 2022

DECLARATION

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ABSTRACT

The Cosmetic Manufacturing and Sales Management System is a system that consists of customer and sales management, batch production management, warehouse management, supplier management, employee management, formulation and laboratory management, delivery management and cost analysis management. This system was developed to automate the manual tasks done by a cosmetic company to a greater extent and produce the greatest amount of output, at the highest possible quality for the lowest possible amount of input resources, including time and labor. This system enables the company to collect, process, store and disseminate the confidential data of the company and analyze the information in the system to deliver an accurate and effective service.

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LIST OF ABBRIVIATIONS

ER	Entity Relationship
HR	Human Resource
NIC	National Identity Card

1. INTRODUCTION

1.1 Background

Glamour Cosmetics is a company that manufactures and distributes several cosmetic products, including hair cosmetics, skincare cosmetics, nail cosmetics, and makeup products. The Cosmetic Manufacturing and Sales Management System is proposed to maximize the operational efficiency of cosmetic production and sales activities at this company. This system facilitates the interaction of suppliers, customers, employees, and factory management, as well as the storage and manipulation of company-related information. There are several administration sectors in this company, namely customer and sales management, batch production management, warehouse management, supplier management, employee management, formulation and laboratory management, delivery management, and cost analysis management. Customers and suppliers are the external parties who are interested in the company.

1.2 Problem and Motivation

Lack of organization of workflow

A major problem faced by manufacturing organizations is the inability to organize the heavy workflow throughout the manufacturing and sales activities. Without proper workflow management in the current manual system, complicated repetitive processes like scheduling productions and completing orders become overwhelming, leading to added stress, disorganization, and poor quality of work.

Data redundancy and storage problems

When everything is done within a manually centered environment, data duplication is a common problem. With the expansion of the company storing a large number of documents and manipulating simultaneously generate faults.

Difficulty of updating details

Updating system information manually is a major issue identifies in current system. In sectors like employee management, supplier management and customer management, registrations of new users happen frequently. Updating this information manually is inefficient. Human mistake in data input is one of the leading sources of accounting problems. According to Bloomberg research, 27.5 percent of companies manually enter inaccurate data into their systems, resulting in tax and accounting errors. [1]

Time consuming

In the current system all the managers and supervisors must maintain documents manually for every task that done by them. When creating documents, it takes lot of time to gather all the data for those documents. Because humans don't work at one solid rate through the whole day. On the other hand, managers can't keep track on stocks in real time so they cannot manage stocks properly. [2]

Security Problems

In a manual system unauthorized access is possible as documents and other details are open for everyone. Because most automated systems need to integrate with other systems API connections are needed to make things work. Unfortunately, each of those connections is another potential vulnerability. If communication is not done using encrypted exchanges and secured channels, data could become vulnerable especially if it's all happening in the background. [2, 3] It is a major problem when it comes to confidential documents such as transaction details, secret formulations of products and bank details.

1.3 Literature Review

Paper based records

Keeping all necessary records of transactions, employees, suppliers, preparation methods of products in physical files is one of the basic methods that can be used as a solution for storing information. In this approach, physical files containing important details are at high risk of being damaged and misplaced.

Table 1. 1 Pros & Cons of using paper-based records

Pros	Cons
Cheaper	High risk to be damaged
Easy to record	High risk to be misplaced
No technical knowledge needed	Low security. Everyone can access
	Difficult to filter out important data
	Problems associated with storing

Microsoft Office applications

Microsoft office is an extremely versatile option when it comes to documenting. We can use Microsoft office for saving and printing reports and Microsoft excel for storing and keeping database records. Data stored in excel sheets can be corrupted due to unexpected system failures and as there is no proper security, important data such as preparation methods of products and transaction details can be accessed by unauthorized parties cause major problems.

Table 1. 2 Pros & Cons of using MS Office

Pros	Cons
Data can be stored in a well-organized manner	Not suitable in collaborative working
Easy to record	Less reliability
Not much technical knowledge needed	Low security. Everyone can access
Available at any time	Time consuming for entering and filtering out data

As a solution for above mentioned drawbacks in these approaches we have suggested more reliable and efficient solution to completely handle all the tasks efficiently.

1.4 Aim and Objectives

The general aim of this project is to achieve process optimization in every task of the business from the manufacturing stage up until the products are rendered to the customers. Manufacturers need to minimize time consuming and labor-intensive tasks, reduce material waste, optimize the use of equipment by minimizing damage, simplify their supply chains to achieve this aim. [4]

A proper workflow management can be achieved by automating decision making processes and task monitoring processes normally performed by employees. This will provide a sequential order for accomplishing tasks. Details of previous processes are recorded, and future processes are made repeatable by eliminating heavy analyzations such as checking availability of raw materials necessary for productions.

As a solution for time-consumption, data redundancy and storage problems, databases are maintained which can keep all the details of the products, formulations, and transactions of the company. Since there are validation methods, errors occurring due to the user inputs are minimal. On the other hand, the system is hosted so that the data can be stored in the cloud.

Cosmetic Manufacturing and Sales Management System is designed to overcome the issue of difficulty of updating details. User experience is improved by providing proper user interfaces and easy navigation method. When a database is used, necessary information can also be searched and manipulated very quickly and easily. Hence, all records are updated duly.

An online payment option is included in this web application to carryout payment transactions with customers and suppliers associated with the company. The system will also record all the transaction details in the relevant databases automatically. This will facilitate customers with easy purchase activities in the e-commerce platform of the company.

In order to maintain reports of all data and information in the databases, an export function is provided for almost all main functions. By using that managers can generate reports whenever they want at an instinct.

As physical documents can be looked up by unauthorized people, a fully automated system with high security is required. In here username and password is issued for administration panel hence, only the authorized people can access the confidential documents.

1.5 Project Report Structure

The main purpose for preparing this document is to give a general insight into the analysis and requirements of the system or situation, and for determining the operating characteristics of the system. The report will further describe about the full design of the system by giving the details of the requirement analysis and how it's above mentioned main eight functions are interacted and work through the whole system.

The tools and technologies used to complete this project are discussed under the methodology chapter. It is categorized as requirements engineering methods, design methods, development and integration methods and finally testing methods.

The design and development section indicates a high-level architecture diagram, ER diagram, Use case diagram and activity diagram for Cosmetic Factory Management System. This section also includes diagrams of user interfaces of all components, workflows, and databases.

The testing plan of the factory management system and individual test cases of each component are shown under the latter section of the report which is testing.

1.6 GitHub Repository Link

https://github.com/SLIITITP/y2_s2_wd_it_01-itp_wd_b01_03.git

2. METHODOLOGY

Table 2. 1: Technologies used

Framework	Django
Backend programming language	Python
Database	MySQL ➤ MySQL workbench, Data Grip
Frontend development tools	HTML5, CSS3, Bootstrap, JavaScript, jQuery
Payment gateway	PayPal Sandbox gateways
IDE	PyCharm
Version Controlling	Git, GitHub
Project Management	Trello – Kanban board

2.1 Requirement Engineering methods

Requirement gathering is mainly done through interviews with client and questionnaires. Then after those requirements were categorized into sections and prioritized accordingly. Requirement specification is done with several documents such as use case diagrams and creating product backlogs and s-print backlogs. After that requirements were validated by providing prepared documents to the client.

2.2 Design methods

When considering designing methods, a wireframing software is used for UI planning and sketching rapid wireframes. In that aspect we user Mock Flow which facilitates team collaborate in a systematic and organized manner. Color hunt is the online tool which we used to select the most suitable color pallet to be applied in designing the web application This helped us to achieve an interaction of colors in the design through complementation, contrast, and vibrancy.

2.3 Development and Integration methods

In this Information Technology Project, different kind of tools and technologies were used throughout the project implementation. In that scenario we select those tools and technologies by considering the newest technologies used in industry level. When developing this kind of webapp by a group, project management is a very important task. We use Trello to create Kanban boards which helped to visualize work, limit work-in-progress, and maximize efficiency.

We use Django as the main framework to build our system. Django is a high-level Python web framework associated with python language. Then we use MYSQL as the Database of our system. As the frontend development tools Bootstrap framework, HTML, CSS, and JavaScript were used throughout the project. HTML is used to create our templates and CSS, JavaScript to make them more user friendly.

For integration and version control, we used GIT and GitHub. As GitHub is a cloud-based hosting service it was very easy to integrate and manage the project.

PyCharm, VS Code, MYSQL Workbench, Data Grip and GitHub Desktop were used as the IDEs for development of the system. PyCharm is a very powerful IDE for developing python related projects. Workbench and Data Grip are powerful software for managing databases locally. GitHub Desktop comes in a handy way when integrating our work into a single system.

Since the development team includes hands-on learners, these technologies are a fairly new experience, Hence, Stack Overflow and Django Documentation is referred to avoid and solve issues upon implementation. Django Documentation is mainly referred while self-study sessions which provides detailed theoretical information about Python language and Django framework. Stack Overflow is also useful Q&A website for professional and enthusiast programmers. [5, 6]

2.4 Testing methods

In the testing process of the system initially the Black Box testing method is followed to get an idea about the functions that should be included in the system to meet the requirements gathered. During project implementation informal testing methods are used to test our web application. Informal testing is based on the tester's instincts and expertise. [7]Testing was performed in three different levels: Unit testing, Integration testing and System testing. Every single functional program was tested by the allocated team member via unit testing. Once it is completed, integration testing is carried out where all the components of the web application are integrated and tested to verify whether the system is working after the collection of all the functional components. Next, we proceed with the system testing where we decide the web application works as a complete system.

3. REQUIREMENT ANALYSIS

3.1 Stakeholder analysis

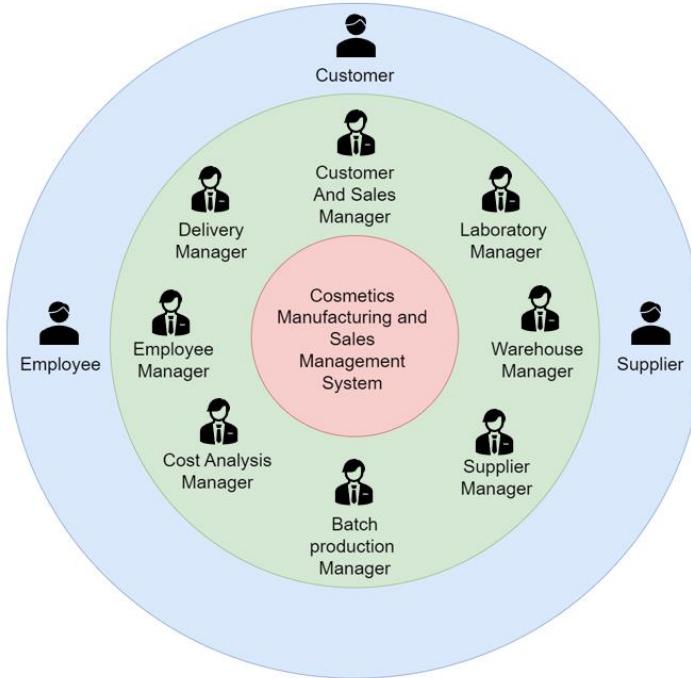


Figure 3. 1: Onion Diagram

3.2 Functional Requirements

Customer and Sales Management

- Users should be able to register as a new customer.
- Customer should be able to search products
- Customers should be able to order factory products.
- Customers should be able to provide review and feedback for purchased products
- Customer should be able to update profile information and reset their password.
- Sales manager should be able to add and manage products to
- Sales manager should be able to manage sales teams
- Sales manager should be able to assign sales employees to each team.
- Sales manager should be able to assign sales tasks to each team
- Sales manager should be able to generate sales reports

Batch Production Management

- Batch production manager should be able to manage raw materials inventory in the plant.
- Manager should be able to schedule a batch production.
- Manager should be able to calculate deficiency in raw materials upon scheduling.
- Manager should be able to handle Raw material requisitions
- Manager should be able to update and delete a scheduled production
- Manager should be able to manage productions
- Manager should be able to search production details
- Manager should be able to Generate production reports

Warehouse Management

- Warehouse manager should be able to manage raw materials in the warehouse.
- Manager should be able to view availability of products and raw materials. If quantity is less than reorder level system should indicate it to manager.
- Manager should be able to update stocks according to receiving and dispatching of stocks.
- Manager should be able to inform suppliers about the production that wants to reorder.
- Manage material handling equipment and regularly update the status of those.
- Manage new employees and assign sections to those new employees.
- Manage orders came from delivery management.
- Manager should be able to view history of each change of the system.
- Manager should be able to generate reports on each function.
- Manager should be able to Request New Orders from Supplier.
- Manager should be able to view Order Requests made by Factory.

Supplier Management

- Supplier manager should be able to manage all suppliers associated with the company.
- Manager should be able to manage warehouse requests
- Manager should be able to purchase order requisitions
- Manager should be able to send invoices and pay slips
- Manager should be able to retrieve and download invoices
- Manager should be able to search orders, raw materials, and suppliers
- Manager should be able to generate reports

Formulation and Laboratory Management

- Formulation manager should be able to add new products and product formulations.
- Manager should be able to view detailed description of products in the system.
- Manager should be able to schedule tests to be done at laboratory.
- Manager should be able to view and manage scheduled tests for each product.
- Manage laboratory related materials.

Employee Management

- Employee should be able to request leave
- Employee should be able to mark attendance
- Employee manager should be able to view and manage leave requests
- Employee manager should be able to register new employees to the system
- Employee manager should be able to assign departments and positions to employees

Delivery Management

- Delivery manager should be able to assign delivery vehicles to customer orders
- Should be able to manage delivery vehicles
- Should be able to manage driver details
- Should be able to generate delivery reports

Cost Analysis Management

- Cost Analysis manager should be able to calculate production cost
- Manager should be able to calculate net price of a cosmetic product
- Manager should be able to manage expenses and income of the company
- Manager should be able to calculate net profit of productions
- Manager should be able to generate financial reports

3.3 Non-functional Requirements

Reliability

- System should validate payments accurately.
- System should validate user credentials when logging to the system.

Availability

- System should be accessible to the users 24/7.

Usability

- System should provide a user-friendly interface which is easy to handle for the front-end users.
- System should provide a maximum user-experience.

Security

- System must encrypt all user data and system data such as product formulations.

Speed

- System should validate and proceed payment transactions instantly.
- System should display the searched content without any delay.
- System should refresh the pages promptly.

3.4 Technical Requirements

- Data Quality
- Productivity
- Authentication and Authorization
- Maintainability

4. DESIGN AND DEVELOPMENT

4.1 High level architecture diagram

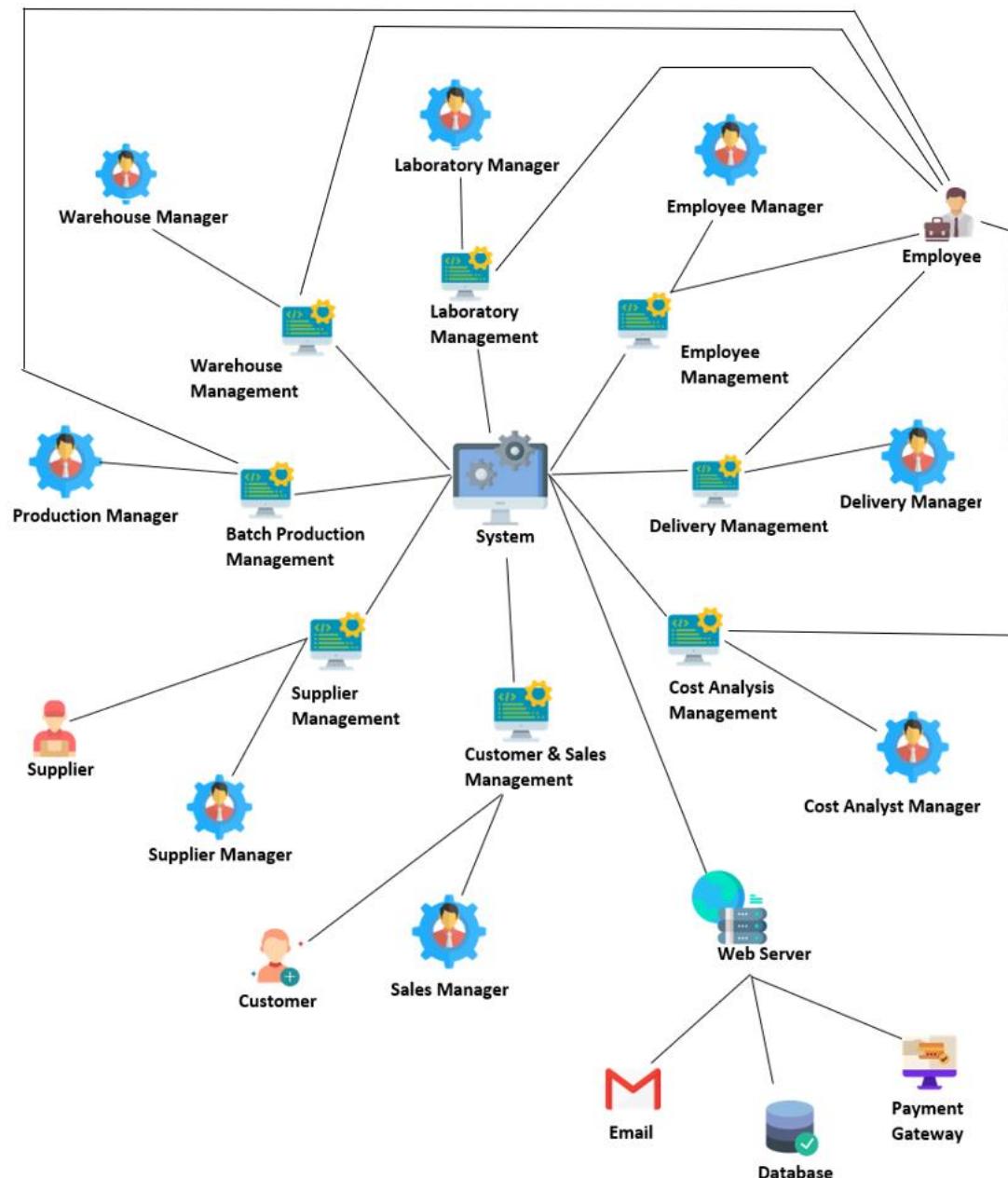


Figure 4. 1: High-Level Architecture diagram

4.2 ER diagram

** Customer, Supplier and Employee covers User
 ** Direct Labour Cost, Direct Material Cost and Factory Overhead Cost covers Expense

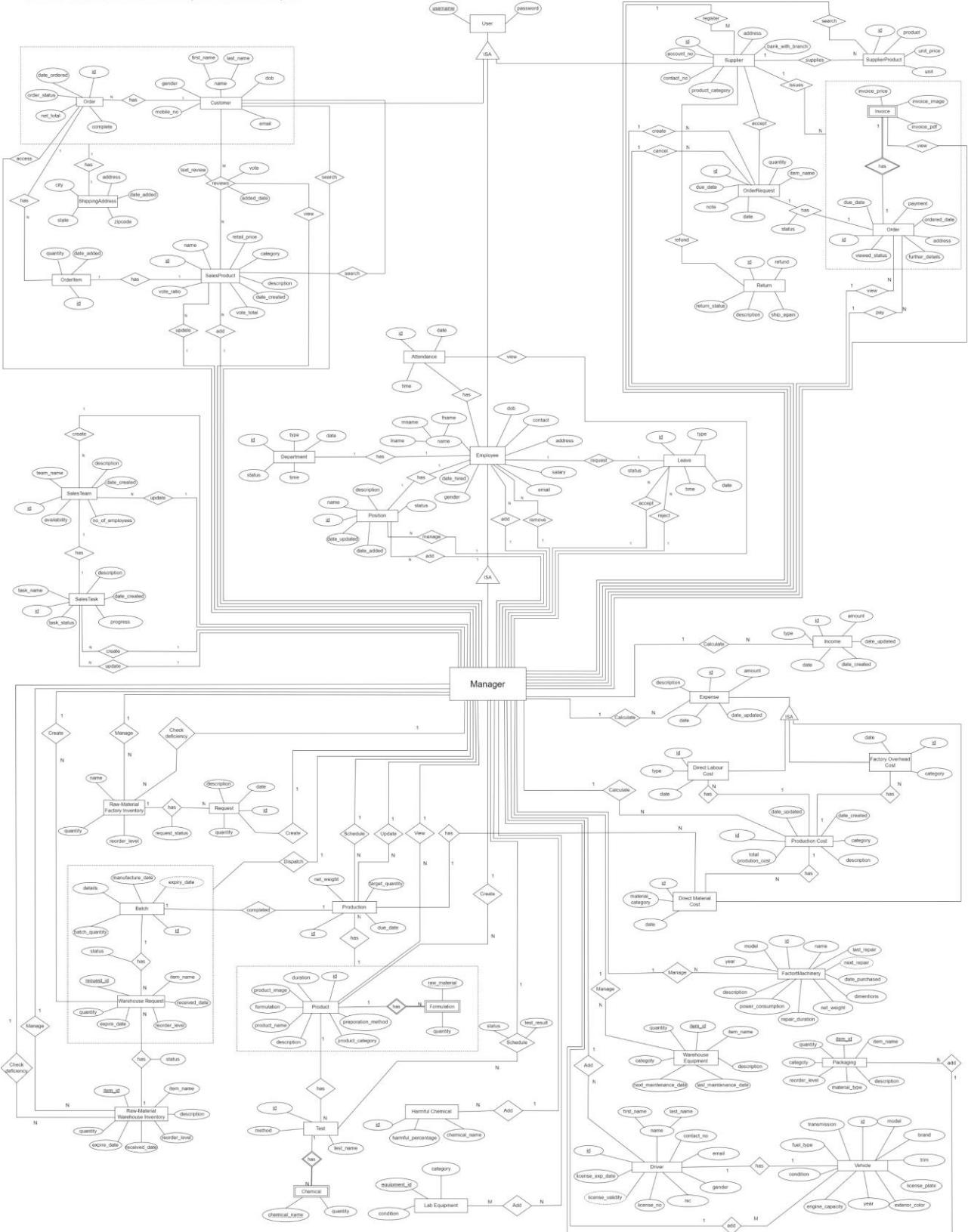


Figure 4. 2: ER Diagram

4.3 Usecase diagram

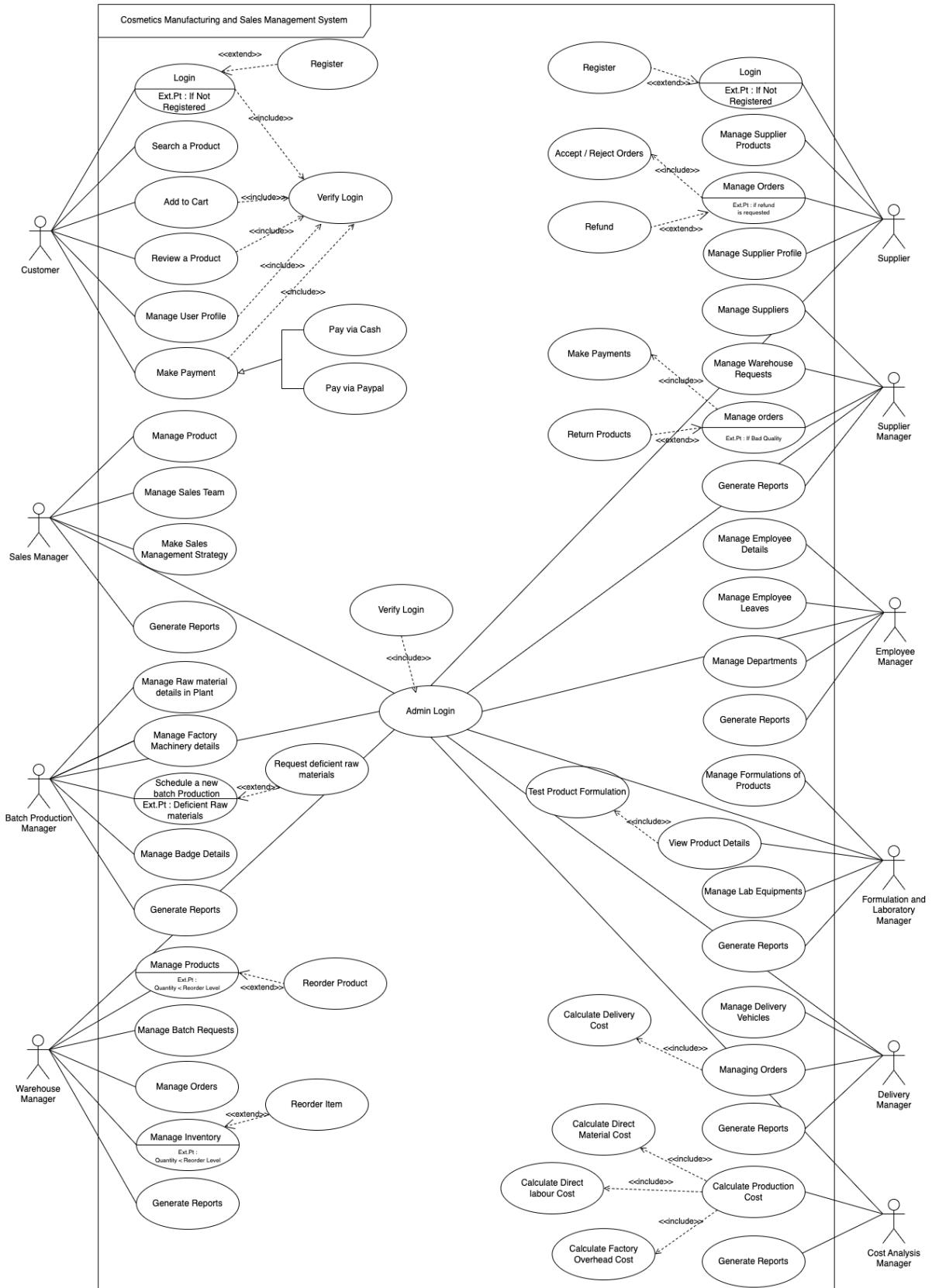


Figure 4. 3: User Case Diagram

4.4 Activity diagram

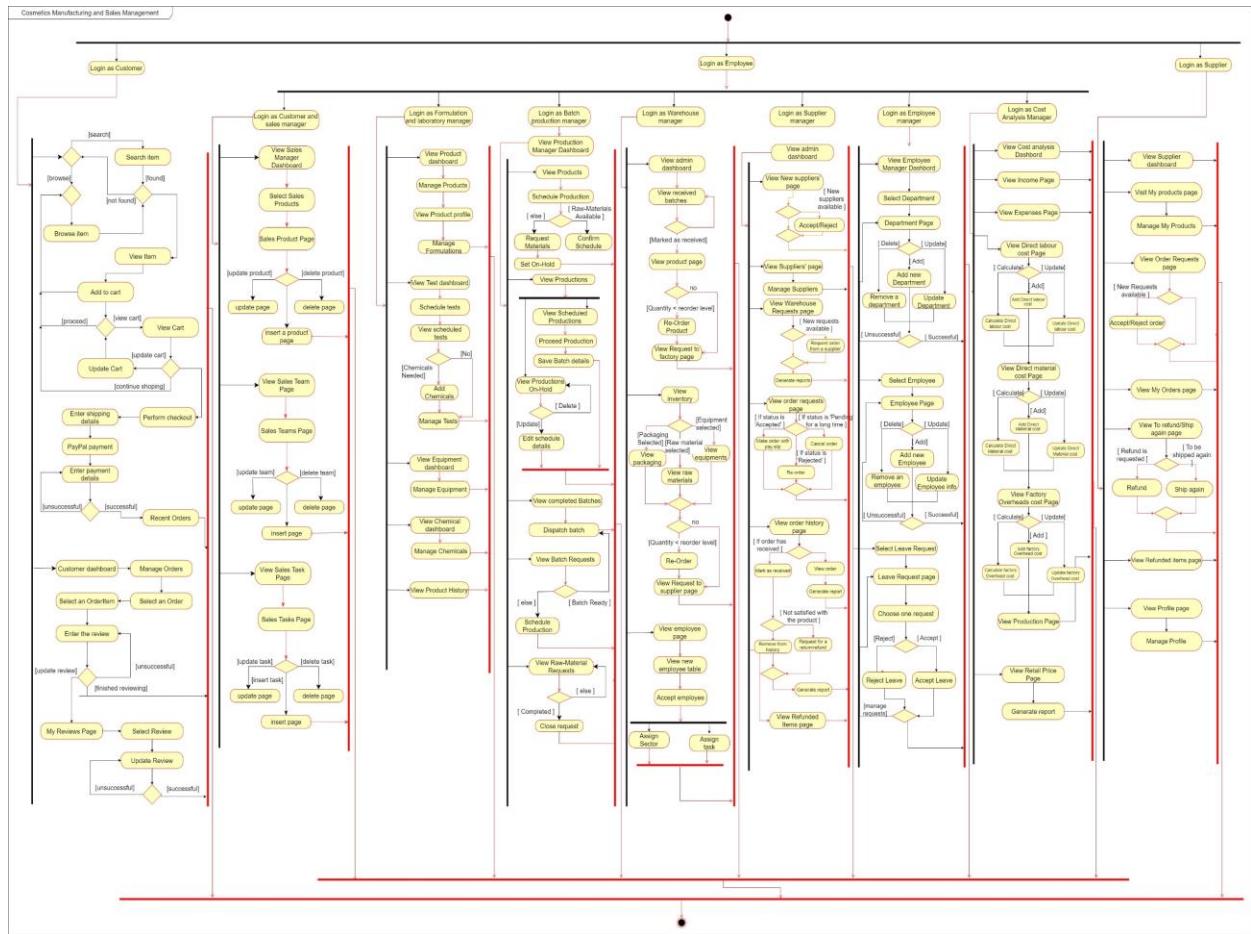


Figure 4. 4: Activity Diagram

4.5 User Interfaces

Customer and Sales Management System.

The company's long-term viability is contingent on its ability to maintain positive client relationships. Customer & Sales management system is a marketing platform for the global distribution of factory-produced cosmetics to wholesale and retail clients. This system facilitates the efficient management of customer orders and the analysis of the sales process to generate up-to-date statistics.

Products Page

On this page, the customer has the ability to search for any product, view products and add it to the shopping cart.

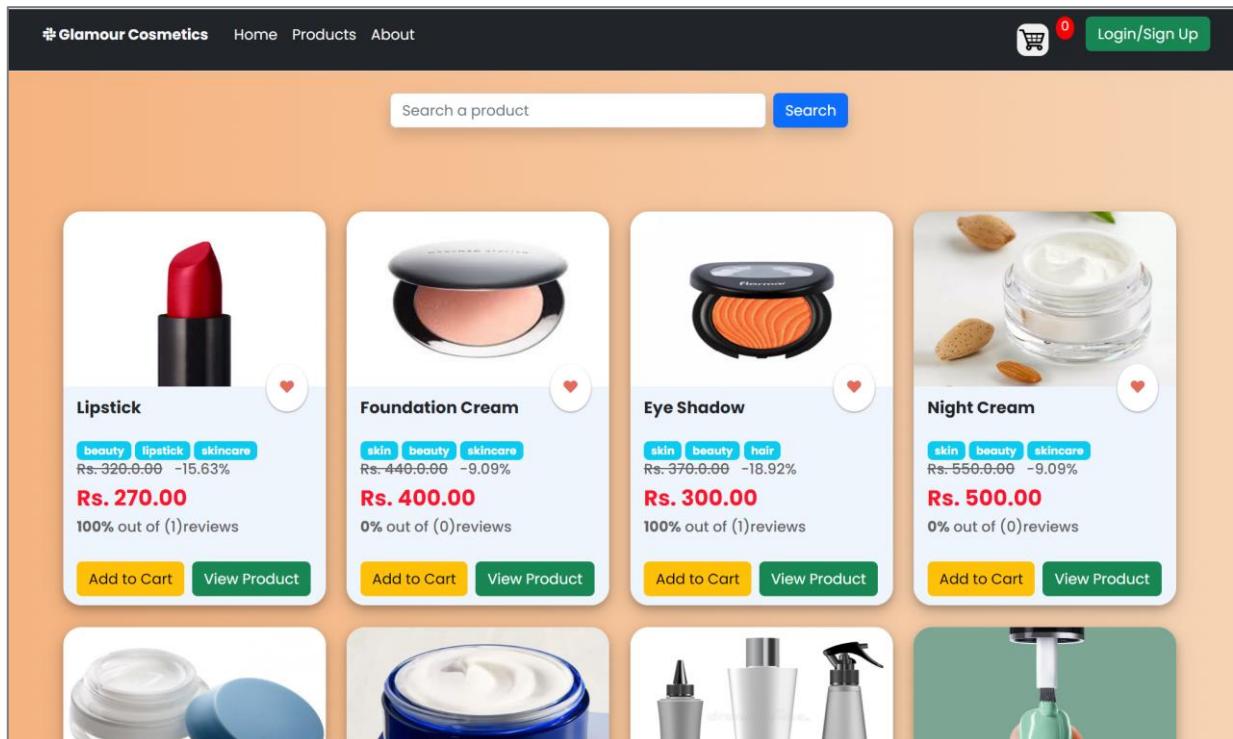


Figure 4. 5: Customer Products Page

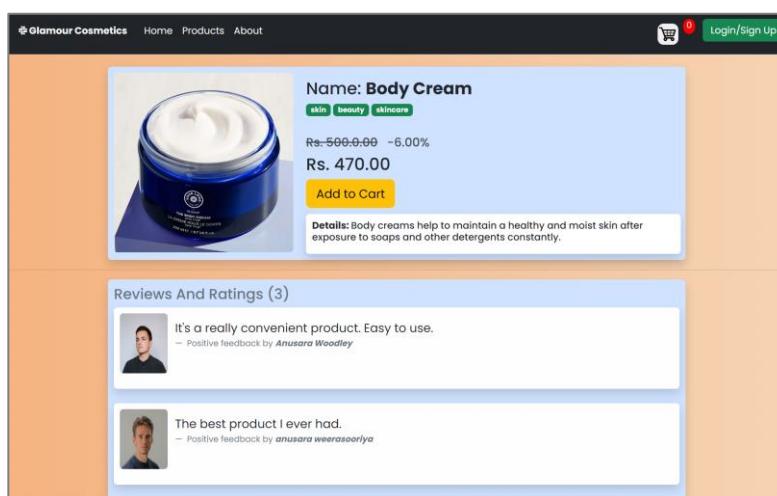


Figure 4. 6: Customer Product View page

Customer Registration and Login Page

This page allows users to register as customers with the system by inputting relevant user information. On the Login page, users can input their login credentials to access the website.

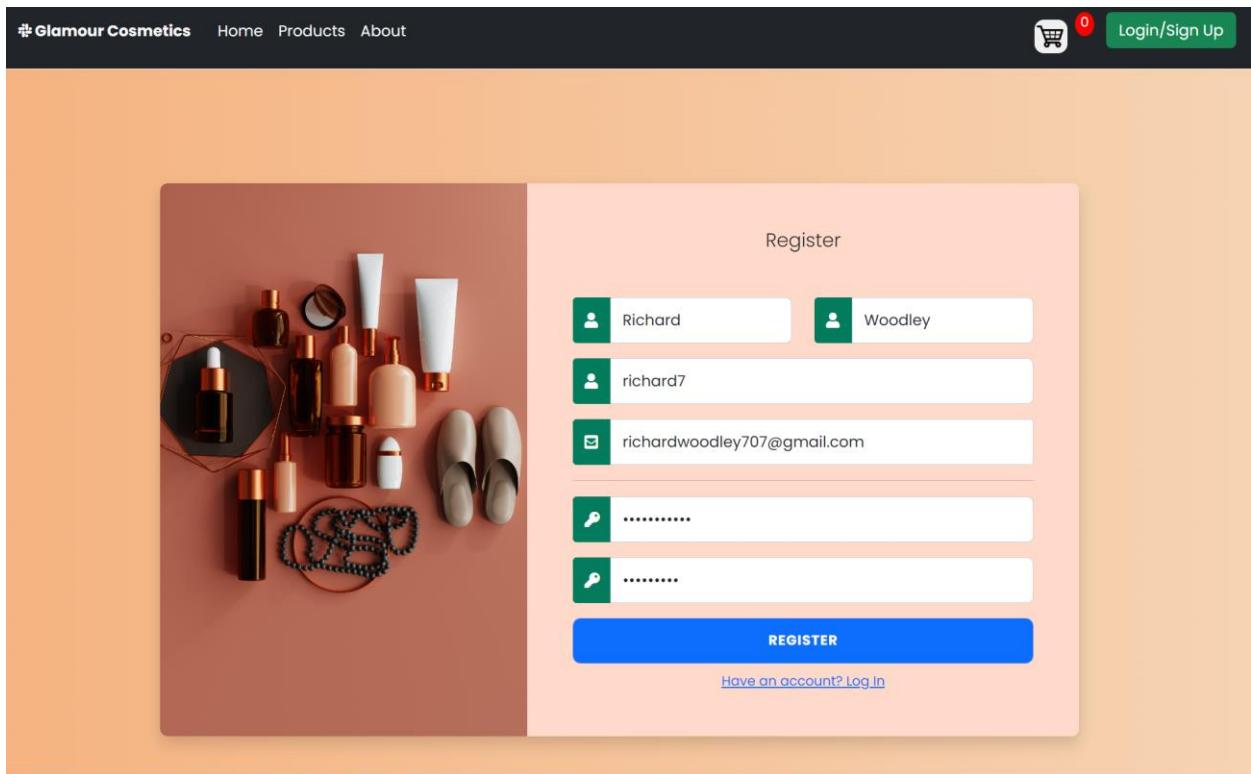


Figure 4. 8: Customer Registration page

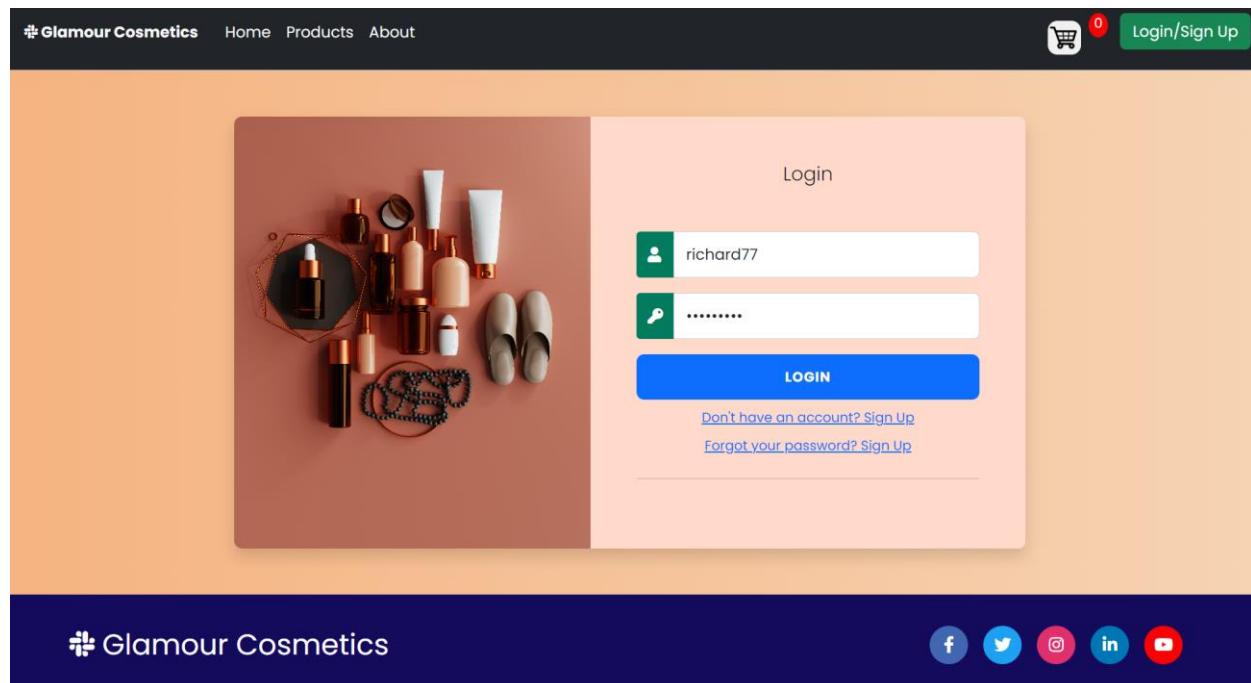
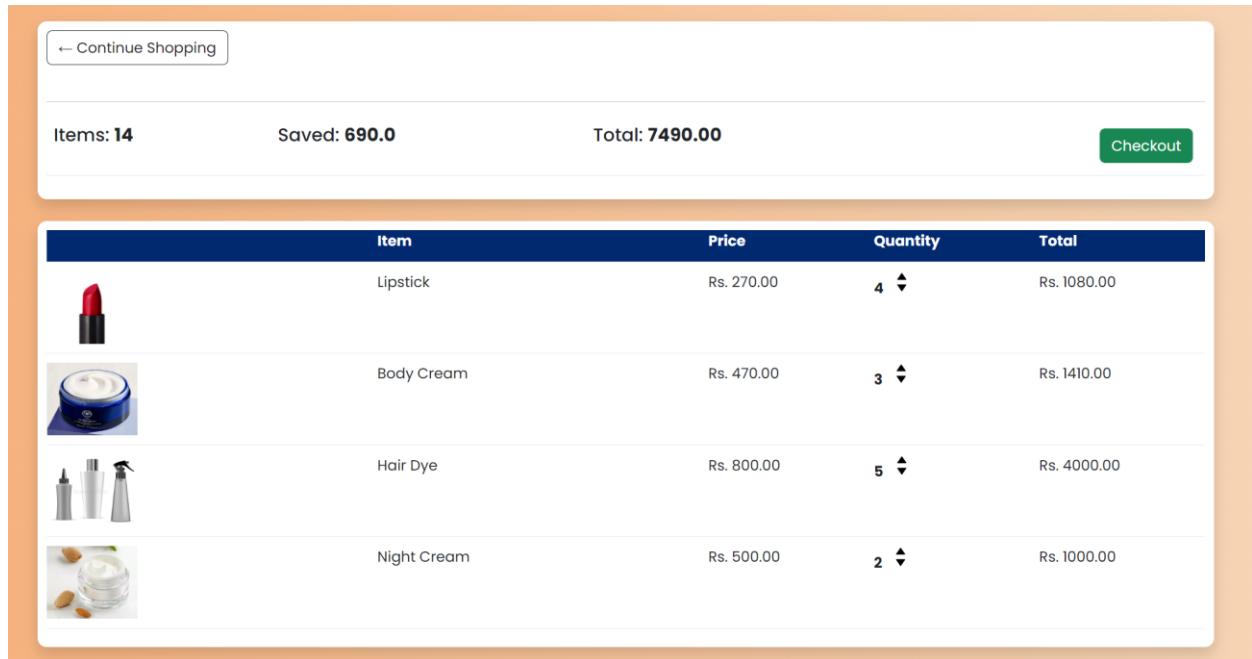


Figure 4. 7: Customer Login page

Cart Page

This page gives the user the ability to view the order items that have been placed to the shopping cart, as well as provide them the option to increase, decrease, or delete products from the shopping cart.

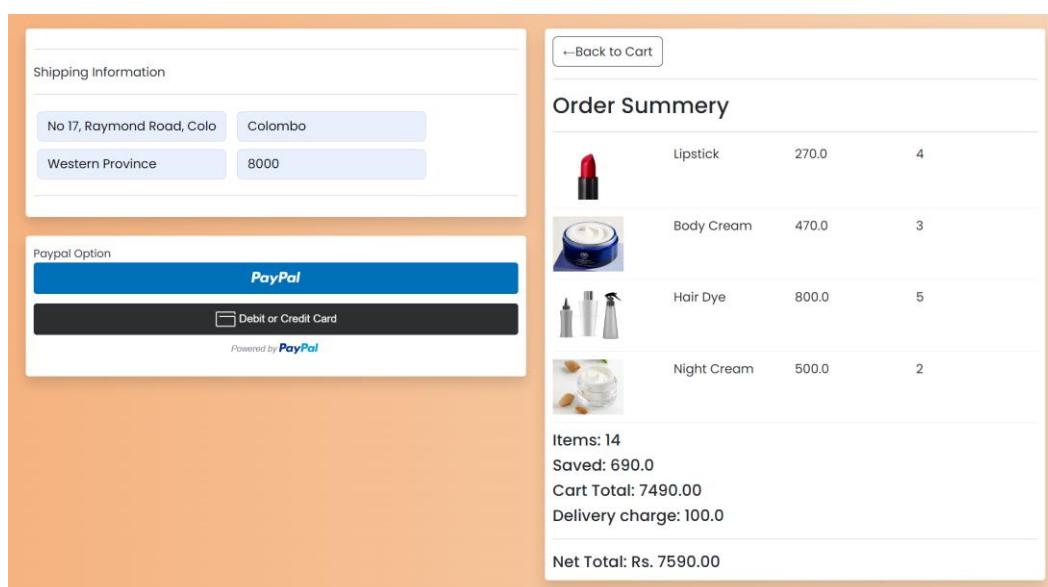


Item	Price	Quantity	Total
Lipstick	Rs. 270.00	4	Rs. 1080.00
Body Cream	Rs. 470.00	3	Rs. 1410.00
Hair Dye	Rs. 800.00	5	Rs. 4000.00
Night Cream	Rs. 500.00	2	Rs. 1000.00

Figure 4. 9: Shopping Cart page

Checkout Page

This page allows the user to submit their shipping information and make a PayPal payment for their order. This page automatically computes the final price by applying shipping fees and applicable discounts.



Order Summary			
	Lipstick	270.0	4
	Body Cream	470.0	3
	Hair Dye	800.0	5
	Night Cream	500.0	2

Items: 14
Saved: 690.0
Cart Total: 7490.00
Delivery charge: 100.0

Net Total: Rs. 7590.00

Figure 4. 10: Checkout page

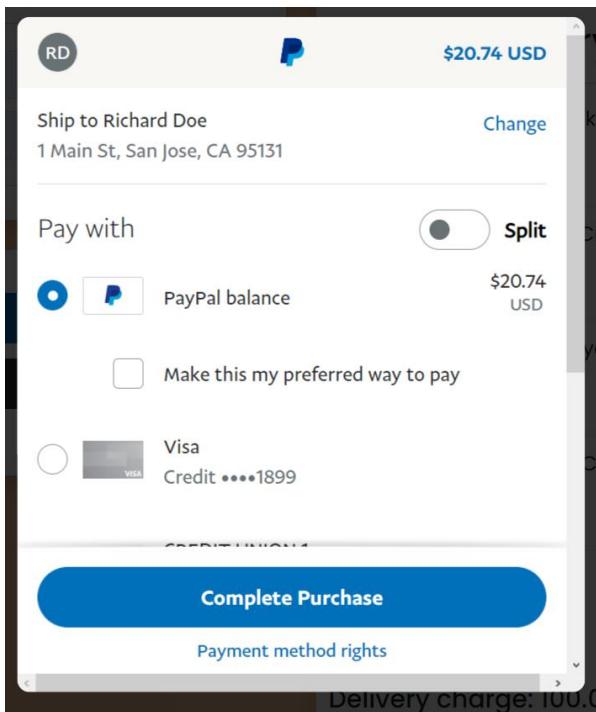
PayPal payment portal

Figure 4. 11: PayPal Payment Box1

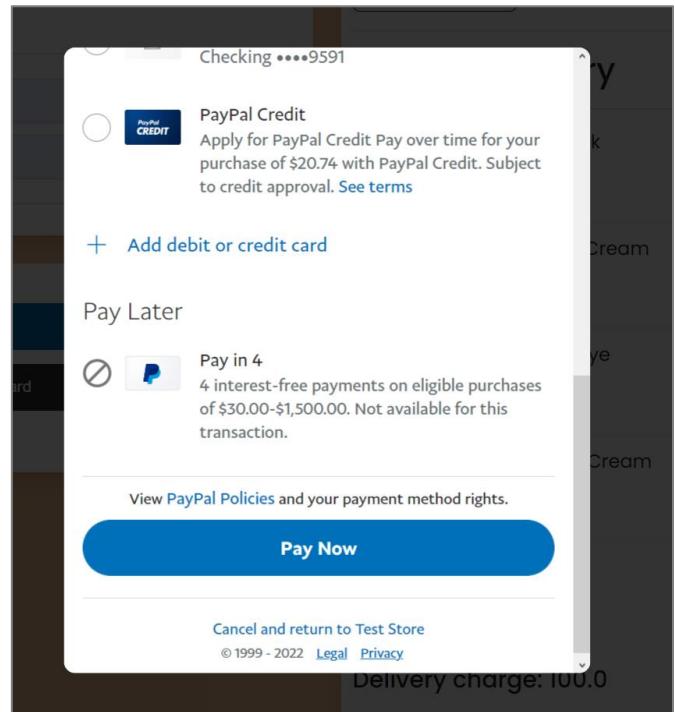


Figure 4. 12: PayPal Payment Box2

Customer dashboard

The customer can manage their most recent orders through the use of the customer dashboard.

Glamour Cosmetics Home Products About

Cosmetics Anusara

Dashboard My Profile My Orders My Reviews Bulk Orders

My Account

Recent Orders

Order Id	Placed On	Items	Total	Action
31	Nov. 3, 2022, 5:34 p.m.		Rs. 1170.00	<button>Manage</button>
32	Nov. 4, 2022, 9:01 a.m.		Rs. 1100.00	<button>Manage</button>
33	Nov. 4, 2022, 9:01 a.m.		Rs. 0.00	<button>Manage</button>
38	Nov. 4, 2022, 2:16 p.m.		Rs. 7490.00	<button>Manage</button>

Figure 4. 13: Customer Dashboard Page

Order Details page

This page contains information pertinent to the order in question. It displays the order's products, prices, and shipping address. Once a customer's order has been delivered, they can review their order items on this page.

The screenshot shows the 'Order Details' page for an order placed on Nov. 3, 2022, at 5:34 p.m. The total amount is Rs.1170.0. The first item is a 'Lipstick' priced at Rs. 270.0, quantity 1, with a 'Reviewed' status. The second item is an 'Eye Shadow' priced at Rs. 400.0, quantity 1, with an 'Add a Review' button. The left sidebar includes links for Dashboard, My Profile, My Orders, My Reviews, and Bulk Orders.

Figure 4. 14: Customer Order page

Customer Reviews page

This page grants users' access to the previously published user reviews. Using this page, the user can update the current review.

The screenshot shows the 'Review a Product' page displaying three reviews. The first review is for a 'Lipstick' from Nov. 4, 2022, at 9:08 a.m., with negative feedback and an 'Update Review' button. The second review is for an 'Eye Shadow' from Nov. 4, 2022, at 9:09 a.m., with positive feedback and an 'Update Review' button. The third review is for a 'Hair Dye' from Nov. 4, 2022, at 4:09 p.m., with positive feedback and an 'Update Review' button. The left sidebar includes links for Dashboard, My Profile, My Orders, My Reviews, and Bulk Orders.

Figure 4. 15: Customer Reviews page

Sales Manager Dashboard

This is the Sales Manager Dashboard, which is part of our system's management component. It provides all pertinent data, including total sales, total sales revenue, total orders, etc. It depicts overall sales revenue over the past six days using a line graph and the number of products in various categories using a bar graph.

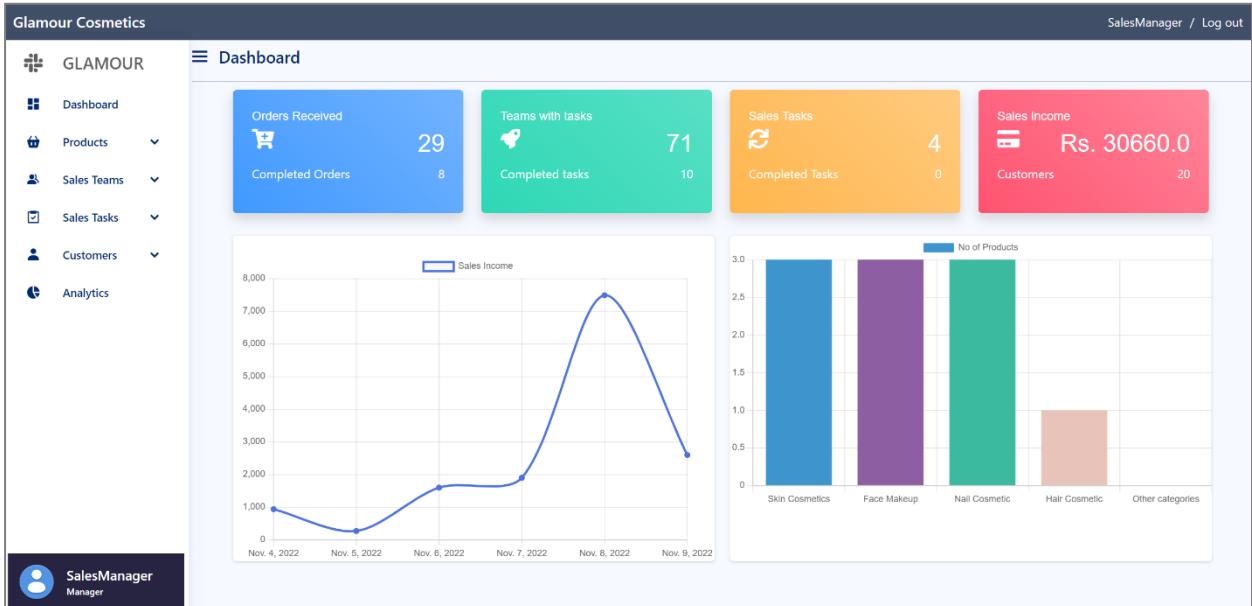


Figure 4. 16: Sales Manager Dashboard page

Sales Products Page

This page gives the sales manager with access to the customer platform's sales product manipulation tools. It enables the manager to add, update, remove, search for, and generate sales report information.

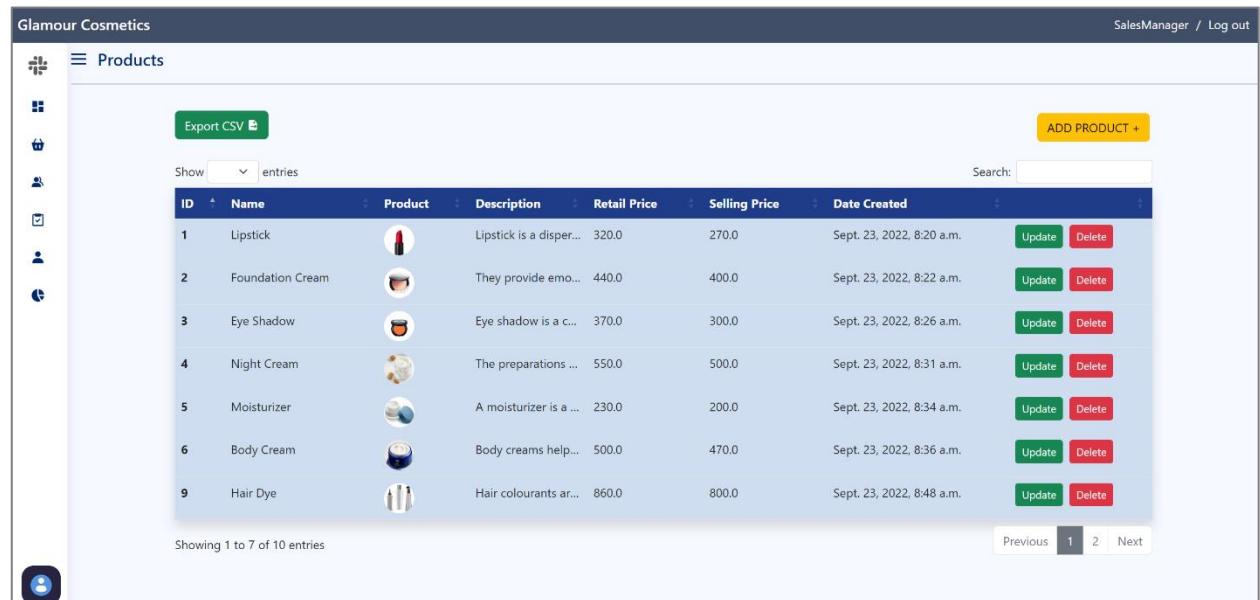


Figure 4. 17: Sales Products Management page

Sales Teams Page

This page allows the sales manager to control the sales teams inside the Sales Department. It enables the manager to create, update, delete, search for, and generate sales team reports.

The screenshot shows the 'Sales Teams' management page for Glamour Cosmetics. At the top, there are four summary boxes: 'Total Teams' (5), 'Team Members' (9), 'Teams with tasks' (4), and 'Sales Income' (Rs.). Below these are icons for 'Available Teams', 'Available members', 'Completed Tasks', and 'Customers'. A navigation sidebar on the left includes icons for Home, Sales, Products, Customers, and Reports. The main area features a table with columns: Team, Date Created, Description, Availability, and No of Employees. The table lists four teams: team 1, team 2, team 3, and team 4, each with a 'View Team Info', 'Update', and 'Delete' button. At the bottom, it shows 'Showing 1 to 4 of 5 entries' and a page navigation with 'Previous', '1', '2', and 'Next'.

Figure 4. 18: Sales Teams Management page

Sales Tasks Page

This page also gives the sales manager control over the sales duties inside the Sales Department. It enables the manager to create, modify, delete, search for, and generate reports on sales tasks.

The screenshot shows the 'Sales Tasks' management page for Glamour Cosmetics. At the top, there are four summary boxes: 'Total Tasks' (4), 'Completed Tasks' (0), 'Pending Tasks' (3), and 'Assigned Tasks' (1). Below these are icons for 'Available Teams', 'Incomplete tasks', 'Completed Tasks', and 'Assigned teams'. A navigation sidebar on the left includes icons for Home, Sales, Products, Customers, and Reports. The main area features a table with columns: Task, Description, Sales Team, Progress, and Task Status. The table lists six tasks: 'Making an advertisement', 'task 3', 'task 5', 'Task 6', 'task 3 description', 'task 5 description', 'Task 6 description', each with a 'Status Pending', 'Update', and 'Delete' button. At the bottom, it shows 'Showing 1 to 4 of 4 entries' and a page navigation with 'Previous', '1', and 'Next'.

Figure 4. 19: Sales Tasks Management page

Customers Page

The customer page enables the manager in obtaining client information and managing it efficiently.

Glamour Cosmetics SalesManager / Log out

Customers

Total Customers
19
 Customers 19

ID	Customer	Name	Username	Email	Mobile	Action
3		Anusara Woodley	richard77	abccompany@gmail.com	773082346	<button style="background-color: cyan; border: none; color: black; padding: 2px 5px;">view customer</button>
4		anusara weerasoorya	anusara7	anusara7@gmail.com	None	<button style="background-color: cyan; border: none; color: black; padding: 2px 5px;">view customer</button>
5		Kevin Wallaby	kevin123	kevin123@gmail.com	None	<button style="background-color: cyan; border: none; color: black; padding: 2px 5px;">view customer</button>
6		Richard Woodley	richard1234	richardwoodley797@gmail.com	None	<button style="background-color: cyan; border: none; color: black; padding: 2px 5px;">view customer</button>

Showing 1 to 4 of 19 entries

Previous 1 2 3 4 5 Next

Figure 4. 20: Customer Management page

Glamour Cosmetics SalesManager / Log out

Customer Information

Customer Details

First Name : **Anusara**
 Last Name : **Woodley**
 User Name: **richard77**
 Email : **abccompany@gmail.com**
 Mobile No : **773082346**
 Gender : **Male**
 Birth Date : **July 19, 2000**

ID	Date Ordered	Payment	Transaction ID	Order Status	Action
15	Oct. 29, 2022, 12:22 p.m.	completed	1663916281.881747	Order confirmed	<button style="background-color: green; border: none; color: white; padding: 2px 5px;">manage</button>
16	Nov. 4, 2022, 12:28 p.m.	completed	1663916301.825612	Delivered	<button style="background-color: green; border: none; color: white; padding: 2px 5px;">manage</button>
17	Sept. 23, 2022, 12:28 p.m.	completed	1663916327.165408	Delivered	<button style="background-color: green; border: none; color: white; padding: 2px 5px;">manage</button>
18	Oct. 30, 2022, 12:28 p.m.	completed	1663916379.553818	Delivered	<button style="background-color: green; border: none; color: white; padding: 2px 5px;">manage</button>
19	Sept. 23, 2022, 12:29 p.m.	completed	1667370875.837134	Order confirmed	<button style="background-color: green; border: none; color: white; padding: 2px 5px;">manage</button>
28	Nov. 5, 2022, 12:04 p.m.	completed	1667375132.780414	Order confirmed	<button style="background-color: green; border: none; color: white; padding: 2px 5px;">manage</button>
29	Nov. 2, 2022, 1:15 p.m.	completed	1667476183.356459	Order confirmed	<button style="background-color: green; border: none; color: white; padding: 2px 5px;">manage</button>
30	Nov. 3, 2022, 5:17 p.m.	pending	None	Order confirmed	<button style="background-color: green; border: none; color: white; padding: 2px 5px;">manage</button>

Figure 4. 21: Customer Information page

Batch Production Management System.

Batch production manager is the prominent user of this feature who handles all the production related activities of the cosmetic factory.

Batch Production Manager Dashboard

It provides all pertinent data to the manager, pending requests, pending productions and due machine repairs which can be directly accessed by one-click. Graphs depicts overall productions due for the next seven days using a line graph and the total number of batches produced under each cosmetic category using a bar graph.

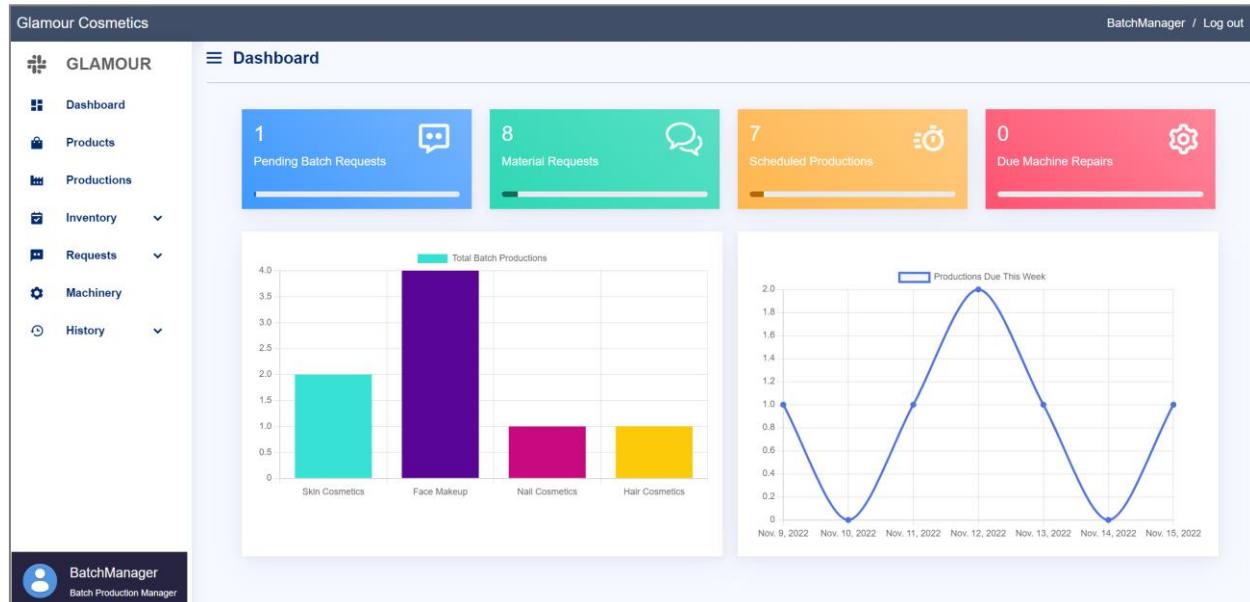


Figure 4. 22: Batch Production Manager Dashboard

Products page

In this page manager has the ability to search and view cosmetic product details. He can also schedule a production when necessary.

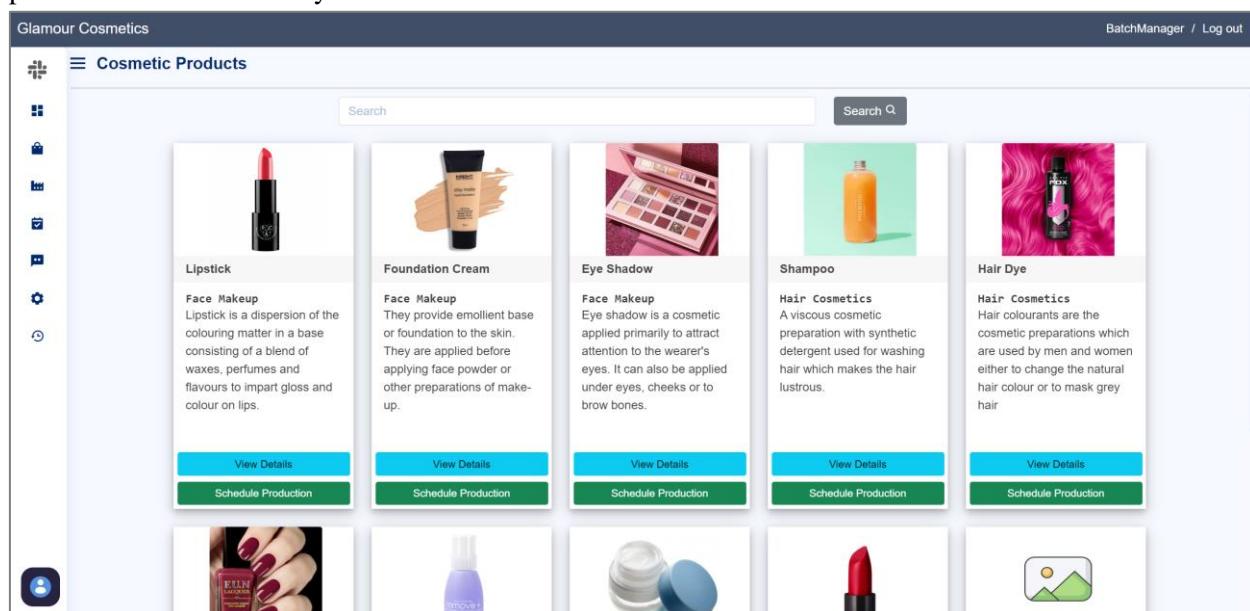


Figure 4. 23: Formulated Products page

[View Product Details Page](#)

Production manager is able to filter and view statistical data according to selected product.

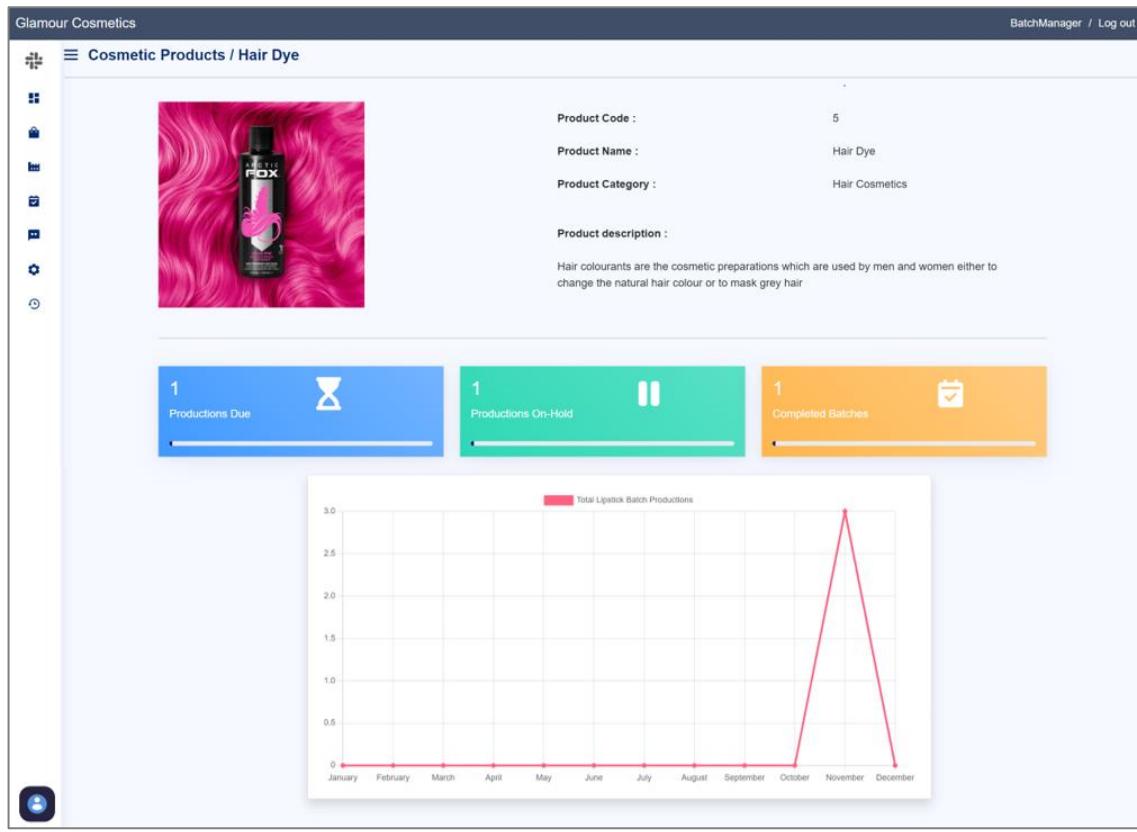


Figure 4. 24: Product Details page

[Schedule Form](#)

Manager can select the necessary product and proceed with scheduling. Manager needs to enter the target quantity, select the net weight and a date. The system automatically restricts the user from selecting a past date.

The screenshot shows the 'Glamour Cosmetics' application interface. The top navigation bar includes 'dilshi / Log out'. The main title is 'Schedule Form'. On the left, there's a vertical sidebar with icons for Home, Lock, File, Chat, Settings, and User. The main content area has a 'Production' section with fields for Product Code (1), Product Name (Lip stick), Category (Face Makeup), Target Quantity (input field), Net Weight of a product (dropdown menu 'Select weight in ml/g'), and Due Date (calendar dropdown showing November 2022, with the 10th highlighted). A green 'Proceed ➤' button is at the bottom of the form.

Figure 4. 25: Schedule Production Form

4. Design and Development

Upon proceeding the schedule manager is able to view the availability of Raw-Materials. In here manager can make requisitions for deficient materials and confirm schedule

The screenshot shows a table titled "Proceed Schedule" under the "Glamour Cosmetics" header. The table has columns for "Raw Material", "Quantity for 100g", "Total Quantity Required (kg)", "Available Quantity (Inventory)", "Deficiency (Inventory)", and an empty column. There are eight rows of data. The first four rows have a pink background, while the last four have a light green background. Each row contains a "Request" button. To the left of the table is a vertical sidebar with icons for navigation. At the bottom are buttons for "Cancel", "On Hold", and "Confirm Schedule".

Raw Material	Quantity for 100g	Total Quantity Required (kg)	Available Quantity (Inventory)	Deficiency (Inventory)	
Anhydrous lanoline	11.0 g	82.5 kg	40.0 kg	42.5 kg	<button>Request</button>
Candelilla wax	9.0 g	67.5 kg	23.0 kg	44.5 kg	<button>Request</button>
Castor oil	54.0 g	405.0 kg	100.0 kg	305.0 kg	<button>Request</button>
Castor oil	10.0 g	75.0 kg	100.0 kg		✓
Colour	5.0 g	37.5 kg	200.0 kg		✓
Isopropyl myristate	8.0 g	60.0 kg	200.0 kg		✓
Tocopherol	0.1 g	0.75 kg	300.0 kg		✓
White bees wax	5.0 g	37.5 kg	345.0 kg		✓

Figure 4. 26: Proceed Schedule page

Scheduled Productions

All the Scheduled productions and production set on-Hold can be viewed and updated from this page. Manager can check the raw-material availability of on-hold productions and update the status or delete the scheduled production accordingly.

The screenshot shows a table titled "Monthly Production Details" under the "Glamour Cosmetics" header. The table has columns for "Schedule ID", "Product Code", "Product Name", "Product Category", "Target Quantity", and "Due Date". There are two sections: "Scheduled" and "On Hold". The "Scheduled" section contains seven rows of data with "View", "Update", and "Proceed" buttons. The "On Hold" section contains two rows of data with "View", "Update", and "Delete" buttons. To the left of the table is a vertical sidebar with icons for navigation.

Schedule ID	Product Code	Product Name	Product Category	Target Quantity	Due Date	
● Scheduled						
23	5	Hair Dye	Hair Cosmetics	45	Nov. 9, 2022	<button>View</button> <button>Update</button> <button>Proceed »</button>
8	8	Moisturizer	Skin Cosmetics	600	Nov. 11, 2022	<button>View</button> <button>Update</button> <button>Proceed »</button>
7	6	Nail Polish	Nail Cosmetics	3000	Nov. 12, 2022	<button>View</button> <button>Update</button> <button>Proceed »</button>
28	1	Lipstick	Face Makeup	1000	Nov. 12, 2022	<button>View</button> <button>Update</button> <button>Proceed »</button>
29	1	Lipstick	Face Makeup	3000	Nov. 12, 2022	<button>View</button> <button>Update</button> <button>Proceed »</button>
19	1	Lipstick	Face Makeup	2000	Nov. 13, 2022	<button>View</button> <button>Update</button> <button>Proceed »</button>
6	4	Shampoo	Hair Cosmetics	3000	Nov. 15, 2022	<button>View</button> <button>Update</button> <button>Proceed »</button>
II On Hold						
9	5	Hair Dye	Hair Cosmetics	50	Nov. 23, 2022	<button>View</button> <button>Update</button> <button>Delete</button>
12	4	Shampoo	Hair Cosmetics	6000	Nov. 23, 2022	<button>View</button> <button>Update</button> <button>Delete</button>

Figure 4. 27: Scheduled Productions page

Production In Progress

Batch Production manager can proceed with production activities according to production details appearing in the multi-step form and at last complete it by submitting necessary batch details

The figure consists of four screenshots of a 'Production In Progress' multi-step form, each showing a different step in the process:

- Step 1: Product Details**
 - Schedule ID: 15
 - Product Code: 7
 - Product Name: Nail Polish Remover
 - Category: Nail Cosmetics
 - Production Target: 2000 pieces
 - Net Weight: 15 g
- Step 2: Raw-Materials**

Raw-Materials	Required Quantity
Nitrocellulose	2.1 kg
Dibutyl phthalate	1.5 kg
Polyvinyl acetate	2.4 kg
Methylene chloride	9.0 kg
Ethylene glycol monomethyl ether	8.4 kg
Diethyl glycol monomethyl ether	0.6 kg
Ethyl alcohol	4.5 kg
Perfume	1.8 kg
- Step 3: Manufacture**

Preparation Method:

In this method, all the liquid components are mixed together to form a liquid phase. The binding agent is then mixed with the liquid phase with uniform stirring in order form mucilage. The solid ingredients excluding the surfactants are then gradually added to the mucilage with uniform mixing in an agitation mixer, in order to form a homogenous paste. The remaining ingredients i.e., the surfactants, the flavoring agents, coloring agents are added under vacuum to the homogenous liquid.
- Step 4: Batch Details**
 - Target Quantity: 2000
 - Batch Quantity*: [empty input field]
 - Manufacture Date: 2022-11-09
 - Duration: 0:06:05
 - Expiry Date: 2022-11-09
 - Batch Details: optional

Figure 4. 28: Proceed Production Multi-Step Form

Batch Details

Manager can view and search through all completed batch details. The total number of batches and batches ready to be displayed are categorized at the top of the page for better overview.

The screenshot shows the 'Batch Details' section of the application. At the top, there are four cards representing different cosmetic categories: FACE MAKEUP (4 batches), SKIN COSMETICS (2 batches), NAIL COSMETICS (1 batch), and HAIR COSMETICS (1 batch). Below these are search and export buttons. The main area displays a detailed product record for a Nail Polish Remover:

Batch Number	10
Schedule ID	15
Product Code	7
Product Name	Nail Polish Remover
Product Category	Nail Cosmetics
Product Description	Polish removers are designed to soften polishes, treatments, or hardeners so that the coating on the nail can be easily removed.
Batch Quantity	2000
Product Net Weight	15 g/ml
Manufacture Date	2022-11-09
Expiry Date	2022-11-09
Batch Details	
Batch Status	Ready

A green 'Dispatch' button is located at the bottom right of the table.

Figure 4. 29: Batch Details page

Raw-Material Details

Raw-Materials page maintains a complete list of materials available in the production plant. If the quantity level goes below re-order level the production manager will be notified where he can make a request to the warehouse.

The screenshot shows the 'Raw Materials' section of the application. It includes a search bar for 'Reorder level', 'Deficiency request', 'Quantity is less than or equal to', and a 'Search' button. Below is a table listing raw materials:

#	Raw-Material	Quantity Available (kg)	Re-Order Level (kg)	Action
7	Anhydrous lanoline	40.0	50.0	<button>Request</button>
8	Antioxidant	100.0	10.0	<button>Update</button> <button>Delete</button>
9	Borax	200.0	10.0	<button>Update</button> <button>Delete</button>
10	Butyl acetate	10.0	20.0	<button>Requested</button>
11	Calcium carbonate	25.0	30.0	<button>Requested</button>
12	Candelilla wax	23.0	20.0	<button>Update</button> <button>Delete</button>
13	Carnauba wax	100.0	30.0	<button>Update</button> <button>Delete</button>

Figure 4. 30: Raw Materials page

Raw-Material requests page

All material requests made by the manager is displayed here. Once the request is completed by the warehouse manager, production manager is able to close the request by which the Raw-Material inventory will be updated with new details automatically.

The screenshot shows the 'Raw-Material Requests' page from the Glamour Cosmetics application. At the top, there is a search bar with fields for 'Rawmaterial:' and 'Status:', and a 'Search' button. Below the search bar are two buttons: 'Add Request +' and 'Export'. A dropdown menu shows 'Show 10 entries'. A search input field is also present. The main area displays a table with the following data:

Request#	Raw-Material	Request Quantity (kg)	Description	Requested Date	Request Status	Action Buttons
3	Butyl acetate	200.0	Request for Butyl acetate within a week.	Nov. 4, 2022	Completed	<button>Close Request</button>
4	Calcium carbonate	300.0	Urgent Raw-material request	Nov. 4, 2022	Pending	<button>Update</button> <button>Delete</button>
5	Dibutyl phthalate	112.5	urgent	Nov. 4, 2022	Pending	<button>Update</button> <button>Delete</button>
6	Ethyl alcohol	737.5	urgent	Nov. 4, 2022	Pending	<button>Update</button> <button>Delete</button>
7	Ethylene glycol monomethyl ether	1550.0	urgent	Nov. 4, 2022	Pending	<button>Update</button> <button>Delete</button>
8	Methylene chloride	1575.0	urgent	Nov. 4, 2022	Pending	<button>Update</button> <button>Delete</button>

At the bottom, it says 'Showing 1 to 6 of 6 entries' and has navigation buttons for 'Previous', '1', and 'Next'.

Figure 4. 31: Raw-Material Requests page

Batch Requests

All batch requests made by the warehouse manager is displayed here. Production manager is able to view request details and dispatch any matching batches readily available. If not, the production manager can directly schedule the production form that page.

The screenshot shows the 'Batch Requests' page from the Glamour Cosmetics application. At the top, there is a search bar with a 'Show 10 entries' dropdown and a 'Search' input field. The main area displays a table with the following data:

Request#	Type	Product Name	Requested Quantity	Requested Date	Due Date	Request Status	Action Buttons
1000	Raw Material	Moisturizer	2000	Nov. 4, 2022	Dec. 1, 2022	Pending	<button>View Request</button>
6000	Product	Nail Polish Remover	600	Nov. 4, 2022	March 31, 2023	Dispatched	<button>View Request</button>

At the bottom, it says 'Showing 1 to 2 of 2 entries' and has navigation buttons for 'Previous', '1', and 'Next'.

Figure 4. 32: Batch Requests page

Machinery page

Production manager maintains details of all machinery available in the production plant

Machine#	Item Name	Model	Year	Date Purchased	Last Repair	Next Repair	Condition	View	Update	Delete
2	Tube Filler and Sealer	NF-250	2019	Nov. 2, 2022	Nov. 2, 2022	Nov. 1, 2024	Brand New	<button>View</button>	<button>Update</button>	<button>Delete</button>
3	Mixing and storage tank	PZG-100	2018	Nov. 2, 2022	Nov. 2, 2022	Aug. 29, 2023	Brand New	<button>View</button>	<button>Update</button>	<button>Delete</button>
4	Bottle filling machine	NF-120	2010	Nov. 3, 2022	Nov. 3, 2022	Oct. 3, 2024	Brand New	<button>View</button>	<button>Update</button>	<button>Delete</button>
5	Cartooning machine	NF-140	2014	Nov. 2, 2022	Nov. 2, 2022	March 16, 2024	Brand New	<button>View</button>	<button>Update</button>	<button>Delete</button>

Showing 1 to 4 of 4 entries

Previous 1 Next

Figure 4. 33: Machinery Management page

History page

All changes made in the Raw-Material inventory are displayed in the history page

Raw-Material Name	Quantity Available	Re-Order Level	Last Updated	Action
Anhydrous lanoline	40.0	50.0	Nov. 9, 2022	Updated
Antioxidant	100.0	10.0	Nov. 9, 2022	Updated
Borax	200.0	10.0	Nov. 9, 2022	Updated
Butyl acetate	10.0	20.0	Nov. 9, 2022	Updated
Calcium carbonate	25.0	30.0	Nov. 9, 2022	Updated
Candelilla wax	23.0	20.0	Nov. 9, 2022	Updated
Carnauba wax	100.0	30.0	Nov. 9, 2022	Updated
Castor oil	100.0	10.0	Nov. 9, 2022	Updated
Ceto Stearyl alcohol	100.0	50.0	Nov. 9, 2022	Updated
Cetyl alcohol	100.0	20.0	Nov. 9, 2022	Updated

Showing 1 to 10 of 57 entries

Previous 1 2 3 4 5 6 Next

Clear History

Figure 4. 34: Raw-Material History page

Warehouse Management System.

Manager Dashboard

Warehouse manager can view a summary of data in the warehouse like number of total products and raw materials in a Statistical way.

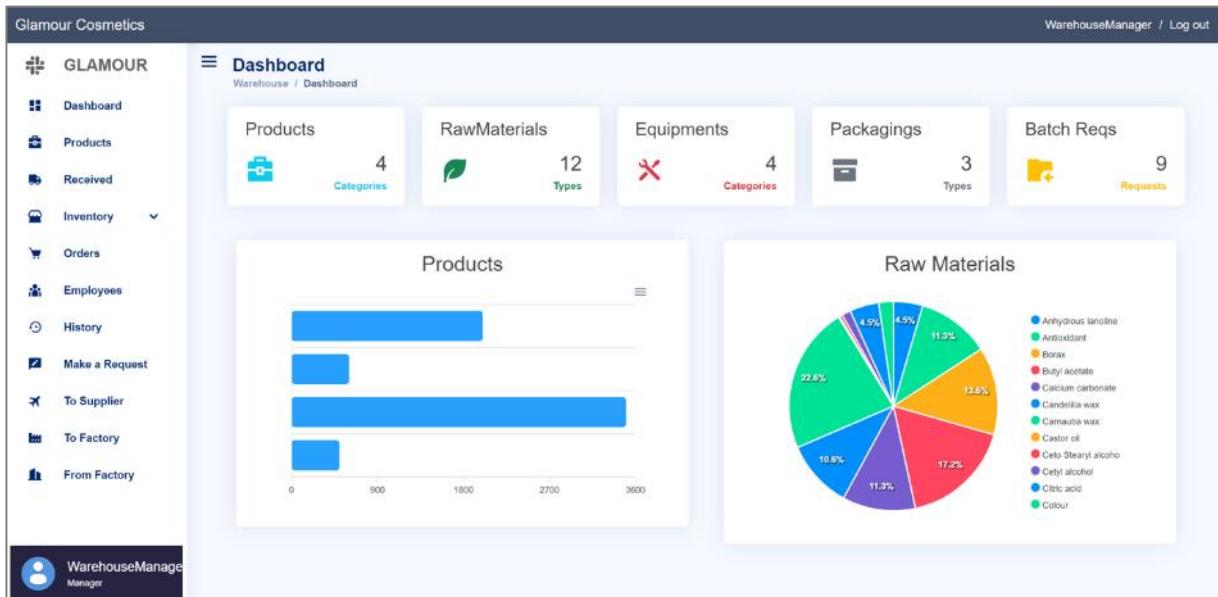


Figure 4. 35: Warehouse Manager Dashboard page

Received Batch Page

Here warehouse manager can view all the new badges that Dispatched from badge production, and he can change the status of received badges as “Received” by clicking a button. Also, he can search items by its name and category. As well as he can generate report about data by using this page.

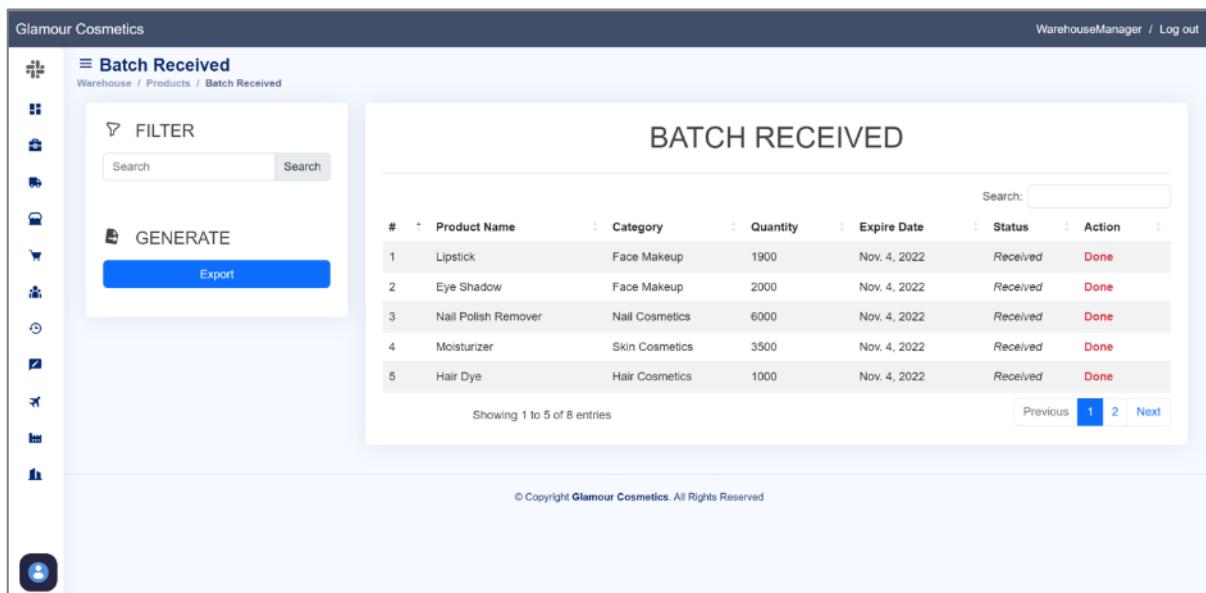


Figure 4. 36: Received Batch page

Product Page

Manager can view all the received badges and their details in this page, and he can view more details, update reorder level and quantity, delete product from the database. Also, he can search products by its name and category and, he can generate a report about products by using this page. When product quantity in decrease than its reorder level the system will indicate that products quantity in red color. On top of the page there are cards which displays a summary of important data to the user.

The screenshot shows the 'Products' section of the Glamour Cosmetics warehouse management system. At the top, there are four summary cards: 'Products' (4), 'Categories' (4), 'Reorder' (3), and 'Expired' (4). Below these are sections for 'FILTER' (with a search bar) and 'GENERATE' (with an 'Export' button). The main area is titled 'ALL PRODUCTS' and contains a table with the following data:

#	Product Name	Category	Quantity	Expire Date	Action
1	Eye Shadow	Face Makeup	2000	Nov. 4, 2022	View Update Delete
2	Nail Polish Remover	Nail Cosmetics	600	Nov. 4, 2022	View Update Delete
3	Moisturizer	Skin Cosmetics	3500	Nov. 4, 2022	View Update Delete
4	Lipstick	Face Makeup	500	Nov. 4, 2022	View Update Delete

Showing 1 to 4 of 4 entries

Figure 4. 37: Products Inventory page

Orders Page

Here warehouse manager can view the orders came from delivery management. He can update the progress of those orders and see a summary of those orders from the cards that displays on the top of the page.

The screenshot shows the 'Orders' section of the Glamour Cosmetics warehouse management system. At the top, there are four summary cards: 'Orders' (2), 'Not Started' (0), 'On Progress' (2), and 'Completed' (0). Below these are sections for 'ORDERS' (with a search bar) and a table with the following data:

#	Order ID	Product	Quantity	Received Date	Progress	Actions
1	2	Nail Polish Remover	2342	Nov. 4, 2022	Preparing	Complete Reset
2	2	Nail Polish Remover	2342	Nov. 4, 2022	Preparing	Complete Reset

Showing 1 to 2 of 2 entries

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Figure 4. 38: Orders page

Raw material, Equipment, and Packaging page

From these pages warehouse manager can view details about raw materials, equipment, and packaging. He can add new item, view all details, update an item, and delete an item by using these pages. Also, he can search and generate reports by using these pages. On top of each page there are cards which displays a summary of important data to the user.

The screenshot shows the 'Raw Materials' page. At the top, there are four summary cards: 'Raw Materials' (12 Count), 'Categories' (2 of Raw Materials), 'Reorder' (3 Products), and 'Expired' (7 Raw Materials). Below these is a form titled 'ADD A RAW MATERIAL' with fields for Item ID*, Item Name*, Category*, Quantity*, Reorder Level*, Description*, Expire Date*, and Receive Date*. To the right is a 'FILTER' section with a search bar and an 'Export' button. The main area is titled 'RAW MATERIALS' and shows a table of items:

#	Item Name	Category	Quantity	Expire Date	Action
1	Anhydrous lanoline	Chemical Based	1000	Aug. 5, 2023	View Update Delete
2	Antioxidant	Plant Based	2500	Dec. 10, 2022	View Update Delete

Figure 4. 39: Raw Materials page

The screenshot shows the 'Equipment' page. At the top, there are four summary cards: 'Equipments' (4 Count), 'Categories' (3 of Equipments), 'Fair' (1 Status), and 'To Maintain' (0 Equipments). Below these is a form titled 'ADD A EQUIPMENT' with fields for Item ID*, Item Name*, Category* (with a dropdown 'Select a Category'), Condition* (with a dropdown 'Select a Status'), Description*, Last Maintenance*, and Next Maintenance*. To the right is a 'FILTER' section with a search bar and an 'Export' button. The main area is titled 'EQUIPMENTS' and shows a table of items:

#	Name	Category	Quantity	Maintain	Action
1	Gravity Roller	Conveyor	2	Dec. 31, 2024	View Update Delete
2	Belt	Conveyor	2	Nov. 1, 2023	View Update Delete

Figure 4. 40: Equipment page

Figure 4. 41:Packaging page

Inventory Page

Here displays all raw materials, equipment, and packaging items of the warehouse in a tabular format. Warehouse manager can view the total number of each inventory items using the cards on top of the page. Also, he can search an item and generate a report of inventory using this page.

#	Item ID	Item Name	Category	Quantity
1	RM-1000	Anhydrous lanoline	Chemical Based	1000
2	RM-1001	Antioxidant	Plant Based	2500
3	RM-1002	Borax	Chemical Based	3000
4	RM-1003	Butyl acetate	Plant Based	3800
5	RM-1004	Calcium carbonate	Chemical Based	2500

Figure 4. 42: Inventory page

4. Design and Development

Request Pages

Manager can view the request made to badge production, supplier manager and the requests came from badge production by using these pages. Also, he can update the status of those requests and generate a report by using those data.

The screenshot shows the 'Batch Requests' page under the 'Warehouse / Requests / Batch Production' section. On the left, there's a sidebar with various icons and a 'GENERATE' button with an 'Export' option. The main area is titled 'BATCH REQUESTS' and contains a table with two entries:

#	Request ID	Item	Quantity	Request Date	Due Date	Status	Actions
1	1000	Moisturizer	200g	Nov. 4, 2022	Dec. 1, 2022	Pending	<button>Update</button> <button>Delete</button>
2	8000	Nail Polish Remover	600	Nov. 4, 2022	March 31, 2023	Completed	

At the bottom, it says 'Showing 1 to 2 of 2 entries' and has 'Previous' and 'Next' buttons. The footer includes a copyright notice: '© Copyright Glamour Cosmetics. All Rights Reserved'.

Figure 4. 43: Batch Request page

The screenshot shows the 'Requests from Factory' page under the 'Warehouse / Requests / Requests from Factory' section. The sidebar has a 'GENERATE' button with an 'Export' option. The main area is titled 'REQUESTS FROM FACTORY' and contains a table with 5 entries:

#	Raw Material	Quantity	Request Date	Status	Actions
1	Butyl acetate	200.0	Nov. 4, 2022	Completed	<button>Update</button>
2	Calcium carbonate	300.0	Nov. 4, 2022	Pending	<button>Update</button>
3	Dibutyl phthalate	112.5	Nov. 4, 2022	Pending	<button>Update</button>
4	Ethyl alcohol	737.5	Nov. 4, 2022	Pending	<button>Update</button>
5	Ethylene glycol monomethyl ether	1550.0	Nov. 4, 2022	Pending	<button>Update</button>

At the bottom, it says 'Showing 1 to 5 of 5 entries' and has 'Previous' and 'Next' buttons. The footer includes a copyright notice: '© Copyright Glamour Cosmetics. All Rights Reserved'.

Figure 4. 44: Raw Material Request page

The screenshot shows the 'Supplier Requests' page under the 'Warehouse / Requests / Supplier' section. The sidebar has a 'GENERATE' button with an 'Export' option. The main area is titled 'SUPPLIER REQUESTS' and contains a table with 4 entries:

#	Request ID	Item	Quantity	Request Date	Due Date	Status	Actions
1	2000	Castor oil	500	Nov. 4, 2022	Dec. 10, 2022	Confirmed	
2	3000	Ceto Stearyl alchoho	1000	Nov. 4, 2022	Dec. 1, 2022	Confirmed	
3	4000	Rigid	20	Nov. 4, 2022	Dec. 1, 2022	Confirmed	
4	5000	Citric acid	1000	Nov. 4, 2022	Dec. 10, 2022	Confirmed	

At the bottom, it says 'Showing 1 to 4 of 4 entries' and has 'Previous' and 'Next' buttons. The footer includes a copyright notice: '© Copyright Glamour Cosmetics. All Rights Reserved'.

Figure 4. 45: Supplier Requests page

Employee Page

Here warehouse manager can see the all-new employees in the warehouse, and he can assign a sector to the employee and accept them to the warehouse by using this page.

#	ID	Name	Contact	Actions
1	34	Calum Smith	0773087654	<button>View</button>
2	004	kasun kalhara A.D.	0714447724	<button>View</button>
3	009	K.L Pasindu Kavinda	0714589652	<button>View</button>
4	111	pathum aaaa sss	0745869641	<button>View</button>

Figure 4. 46: Warehouse Employees page

Supplier Management System.

Supplier Management

Almost every organization purchase good and service from third parties, or suppliers. In this Cosmetic Manufacturing and sales management system, there are suppliers for raw materials, packaging materials and also for machinery needs. The supplier manager is responsible for managing the suppliers and purchasing orders from them according to the requests given by the warehouse.

Apply as a Supplier

Our web application provides an opportunity for the new users to register as a supplier and sell their products to the company. After the Supplier manager accept, user can log in to the system.

Figure 4. 47: Supplier Login & Registration Form

Supplier Manager Dashboard and Supplier Dashboard

This page provides a rough idea about the things that should be done by the Supplier and supplier manager. Contains statistical data.

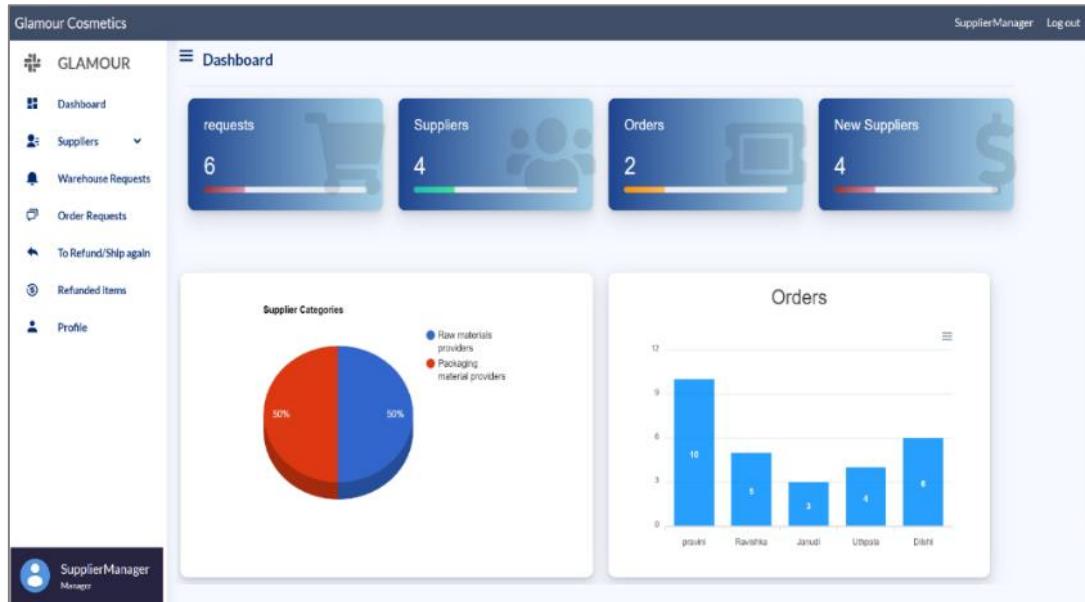


Figure 4. 48: Supplier Manager Dashboard

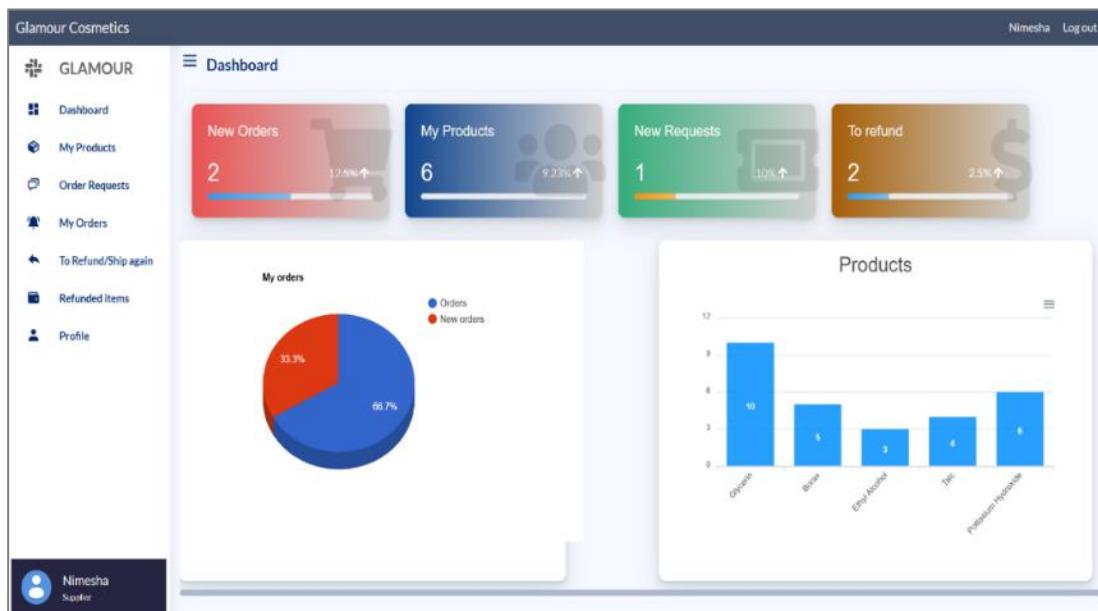


Figure 4. 49: Supplier Dashboard

Newly applied suppliers

Newly registered suppliers are shown on this page. The supplier manager has given access to view, search, accept or reject the applicant and generate reports of the applicants as well.

The screenshot shows a web application interface for managing suppliers. At the top, there's a navigation bar with 'Glamour Cosmetics', 'SupplierManager', and 'Log out'. Below it, a sidebar on the left contains icons for home, new suppliers, notifications, and other management functions. The main content area is titled 'New Suppliers' and displays a table of 'NEWLY APPLIED SUPPLIERS'. The table columns include Name, Product Category, Address, Status, and Actions. There are four rows of data:

Name	Product Category	Address	Status	Actions
Nimesha Priyabandu	Raw materials	No 17, Raymond Road, Colombo 07	Accepted	View Remove
Janudi Kule	Packaging materials	Matara	Pending	View Accept Reject
Sithmi weerasinghe	Raw materials	No 17, Raymond Road, Colombo 07	Pending	View Accept Reject
Pathum Nadeera	Packaging materials	No 17, Raymond Road, Colombo 07	Accepted	View Remove

At the bottom of the page, there's a footer with the text '© Copyright Glamour Cosmetics. All Rights Reserved'.

Figure 4. 50: New Suppliers Management page

The screenshot shows a 'CREATE NEW SUPPLIER FORM' on the left and a 'SUPPLIER INFORMATION' summary on the right. The form fields include:

- First name: Sithmi
- Last name: Wick
- Email*: scnd@gmail.com
- Username*: Sithz
- Required: 150 characters or fewer. Letters, digits and @/_/- only.
- Password*: [REDACTED]
- Required: Your password can't be too similar to your other personal information.
Your password must contain at least 8 characters.
Your password can't be a commonly used password.
Your password can't be entirely numeric.
- Password confirmation*: [REDACTED]
- Enter the same password as before, for verification.

A green 'Create User' button is at the bottom of the form. The summary on the right lists the following information:

SUPPLIER INFORMATION	
FIRST NAME	Sithmi
LAST NAME	Wick
ADDRESS	Galle
CONTACT NO	0712234256
EMAIL	scnd@gmail.com
CATEGORY	Raw materials
USERNAME	Sithz
PASSWORD	sith@12345

Figure 4. 51: Create New Supplier Form

List of Suppliers

All the suppliers of the company are shown on this page. The supplier manager can view, search, generate reports and remove the suppliers from here.

#	ID	First Name	Last Name	Email	Username	Actions
1	21	Nimesha	Priyabandu	abccompany@gmail.com	Nimesha	
2	23	Uthpala	Subashini	abccompany@gmail.com	Uthpala	
3	24	Charith	Aththallage	abccompany@gmail.com	Charith	
4	26	Pathum	Nadeera	pathum@gmail.com	Pathum	

Figure 4. 52: Suppliers Management page

Warehouse requests

When the warehouse runs out of stocks, the warehouse manager requests the deficient goods from the supplier manager. All the warehouse requests are displayed here. The supplier manager can view and order them from suppliers. Search and generating reports are also available in here.

RequestID	Type	Item	Quantity	Date	Due date	Status	Actions
444	raw material	Glycerin	5000	Nov. 9, 2022	Nov. 27, 2022	Not Ordered	
333	Packaging	plastic bottles	1000	Nov. 9, 2022	Nov. 23, 2022	Not Ordered	
222	Equipments	Potassium	300	Nov. 9, 2022	Nov. 22, 2022	Not Ordered	
111	raw material	Aloe vera	200	Nov. 9, 2022	Nov. 16, 2022	Not Ordered	

Figure 4. 53: Warehouse Requests Management page

The screenshot shows a user interface for adding an order request. On the left, a green-themed form titled 'ADD ORDER REQUEST' contains fields for Request ID (333), Item Name (plastic bottles), Quantity (1000), Due Date (2022-11-23), Supplier ID (Pthum), and a Note field containing 'Urgent'. On the right, a blue-themed section titled 'FILTER' includes a search bar and a 'SUPPLIERS' table with three rows:

ProductCategory	ID	Username	Info
Raw materials	4	Ravishka	
Equipments	5	Sithz	
Packaging materials	6	Pthum	

Figure 4. 54: Order Request Form

Order Requests page

All the orders requested by the suppliers are shown on this page. If the supplier has accepted the order, it will be displayed, and the manager can continue the order by sending the pay slips. The manager can cancel the order if the supplier hasn't responded yet. Search and generating reports options are also available.

The screenshot shows a management page for order requests. At the top, there are four summary boxes: 'Total requests' (4), 'Pending Requests' (2), 'To Re-Order' (0), and 'To Pay' (0). Below this is a 'FILTER' section with a search bar and an 'Export' button. The main area displays a table of order requests:

RequestID	SupplierID	Item	Quantity	Price	Date	Due date	Status	Actions
5000	Nimesha	Citric acid	1000		Nov. 4, 2022	Dec. 10, 2022	Pending	
4000	Nimesha	Rigid	20	3400.00	Nov. 4, 2022	Dec. 1, 2022	Ordered	
3000	Charith	Ceto Stearyl alcoho	1000		Nov. 4, 2022	Dec. 1, 2022	Pending	
2000	Nimesha	Castor oil	500	15000.00	Nov. 4, 2022	Dec. 10, 2022	Ordered	

Figure 4. 55: Order Requests Management page

Order ID*
444

Ship to*
SManager, Glamour cosmetics, Matara.

Attachments(payment details)
as image
Choose File devicenew.png

further details
Send before 20th.

Send Request

Figure 4. 56: Make Order Now Form

Order history of Supplier manager

All the completed orders are shown on this page. When the order has been received, the manager can mark it has received and take actions to return or remove it. Generating report option is available.

SupplierManager Log out

Order History

Export

ORDER HISTORY

#	OrderID	ordered from	Item	Quantity	Price	Ordered Date	Due date	Status	Actions
1	2000	Nimesha	Castor oil	500	15000.00	Nov. 4, 2022	Dec. 10, 2022	Pending	View Mark Received
2	4000	Nimesha	Rigid	20	3400.00	Nov. 4, 2022	Dec. 1, 2022	Pending	View Mark Received

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Figure 4. 57: Order History page

Product page of the supplier

Supplier can add his products, update, search and also remove them from here.

The screenshot shows the 'My Products' page for a supplier. On the left, there is a sidebar with various icons. The main area has a header 'My Products'. Below it is a 'FILTER' section with a search bar and a 'Search' button. To the left, there is a green box titled 'ADD NEW PRODUCTS' containing fields for 'PRODUCT*', 'UNIT*', and 'UNIT PRICE*', with an 'Add' button at the bottom. To the right, there is a table titled 'MY PRODUCTS' with columns: #, ID, Name, Unit, UnitPrice, and Actions. The table contains 10 rows of product data, each with 'Update' and 'Delete' buttons. At the bottom of the page, there is a copyright notice: '© Copyright Glamour Cosmetics. All Rights Reserved'.

#	ID	Name	Unit	UnitPrice	Actions
1	2	Colour	L	1000.00	<button>Update</button> <button>Delete</button>
2	4	White bees wax	Kg	3000.00	<button>Update</button> <button>Delete</button>
3	5	Zinc oxide	kg	500.00	<button>Update</button> <button>Delete</button>
4	6	Glycerin	L	4500.00	<button>Update</button> <button>Delete</button>
5	7	Borax	Kg	790.00	<button>Update</button> <button>Delete</button>
10	12	Glycerin	L	4500.00	<button>Update</button> <button>Delete</button>

Figure 4. 58: My Products page

Order Requests of supplier

Supplier can accept or reject the requests given by the supplier manager. When accepting the order, the supplier must upload the invoice and submit it.

The screenshot shows the 'Order Requests Management' page. On the left, there is a sidebar with various icons. The main area has a header 'Order Requests'. Below it is a 'FILTER' section with a search bar and a 'Search' button. To the left, there is a blue box titled 'ORDER REQUESTS' containing a table with columns: RequestID, Item, Quantity, Date, Due Date, Status, and Actions. The table contains 3 rows of order data, each with 'Accept' and 'Reject' buttons. At the bottom of the page, there is a copyright notice: '© Copyright Glamour Cosmetics. All Rights Reserved'.

RequestID	Item	Quantity	Date	Due Date	Status	Actions
5000	Citric acid	1000	Nov. 4, 2022	Dec. 10, 2022	Pending	<button>Accept</button> <button>Reject</button>
4000	Rigid	20	Nov. 4, 2022	Dec. 1, 2022	Ordered	
2000	Castor oil	500	Nov. 4, 2022	Dec. 10, 2022	Ordered	

Figure 4. 59: Order Requests Management page

Figure 4. 60: Order Accept Form

My orders page of the supplier

This page displays the orders received to the supplier. Supplier can view the pay slip and other details related to the order by clicking the view button.

#	OrderID	Item	Quantity	Ordered Date	Send before	Actions
1	2000	Castor oil	500	Nov. 4, 2022	Dec. 10, 2022	View
3	4000	Rigid	20	Nov. 4, 2022	Dec. 1, 2022	View

Figure 4. 61: My Orders page

Return Products

Supplier manager requests a refund by filling this form

PRODUCT RETURN FORM

Order ID*
444
 Refund
 Ship again

Description
The quality was not good as expected. Please refund soon.

SEND

Figure 4. 62: Product Return Form

Supplier can view the items to be refunded in the ‘To refund/Sip again’ page

Glamour Cosmetics Ravishka Log out

To refund/Ship again

FILTER Search Search

To refund/Ship again

RequestID	Ordered date	Item	Quantity	Price	Requested method	Status	Actions
444	Nov. 9, 2022	Glycerin	5000	20000.00	refund	new	<button>Refund</button> <button>View</button>

Figure 4. 63: Refund page

Formulation and Laboratory Management System.

Laboratory Manager Dashboard

Laboratory manager can view a summary of data in the formulation and laboratory management system like number of total products under each category and analysis of tests scheduled for products.

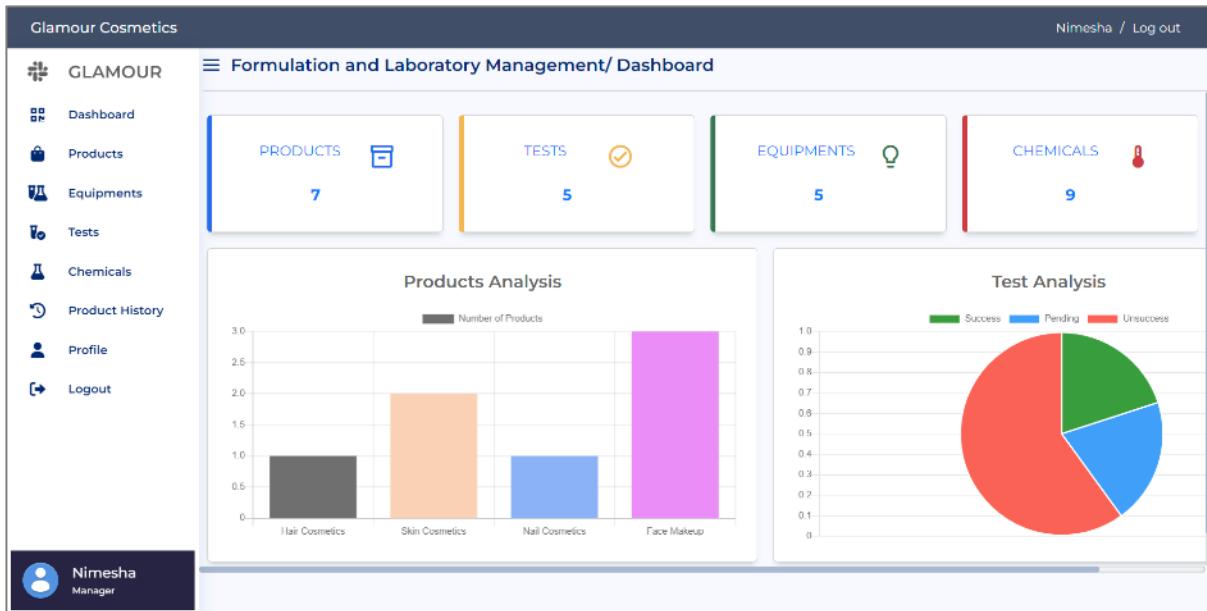


Figure 4. 64: Laboratory Manager Dashboard page

Product Dashboard

This gives overall analysis of products in the system. By clicking “Add new product” button a new product can be added to the system. By clicking on “view product list” button user can navigate to the below page containing list of all the products in the system

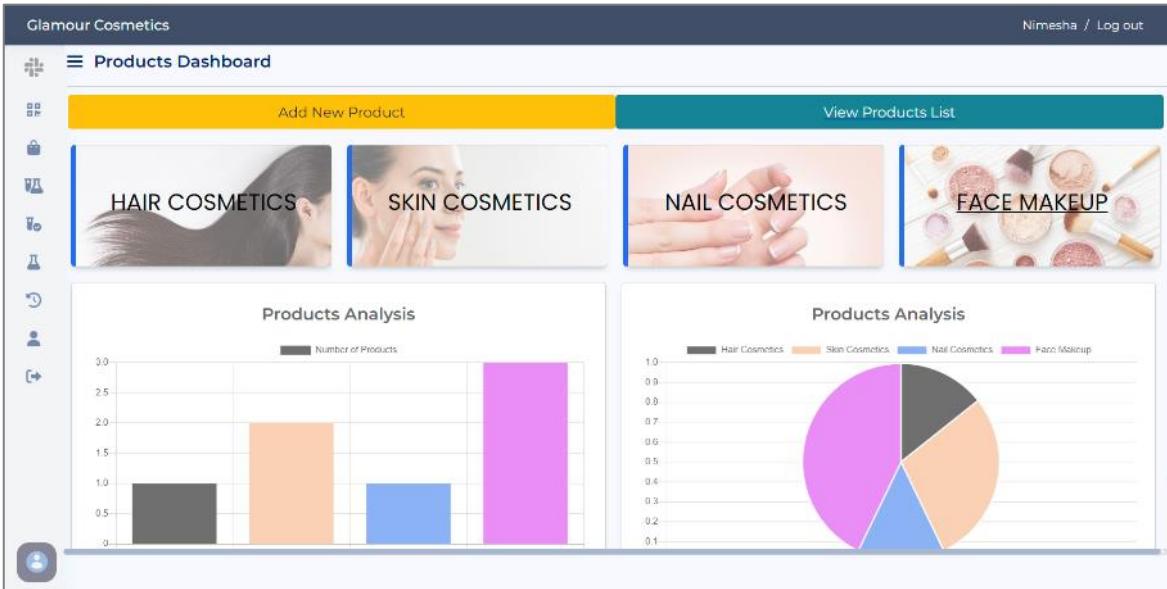


Figure 4. 65: Products Dashboard page

Product page

This page shows a list of all the products in the system. User can get a report of products through export button. By clicking on view product button user can navigate to the below page containing a detailed description of the respective product.

Name	Category	Description	Action
Lipstick	Face Makeup	Lipstick is a dispersion of the colouring matter in a base consisting of a blend of waxes, perfumes and flavours to impart gloss and colour on lips.	View Product
Foundation Cream	Face Makeup	They provide emollient base or foundation to the skin. They are applied before applying face powder or other preparations of make-up.	View Product
Eye Shadow	Face Makeup	Eye shadow is a cosmetic applied primarily to attract attention to the wearer's eyes. It can also be applied under eyes, cheeks or to brow bones.	View Product
Nail Polish	Nail Cosmetics	Nail lacquers or nail polish is a viscous or semiliquid preparations that are intended for the decoration of the nails of the fingers and toes.	View Product
Hair Dye	Hair Cosmetics	Hair colourants are the cosmetic preparations which are used by men and women either to change the natural hair colour or to mask grey hair.	View Product

Figure 4. 66: Products page

Product profile

This page shows all details of the selected product and user can update and deleted the product also. By clicking on “add Formulation” and “edit formulation” buttons user can add formulation of the product and edit the existing formulation of the product respectively

Raw Material	Quantity (g/100g)
Aromatic wax	10
Skin base	60
Flavor extract	50
Color	50
Emulgator	10
Preservative	10

Figure 4. 67: Product Details page

Laboratory materials management

Laboratory manager can view and manage all the laboratory related materials like laboratory equipment and chemicals.

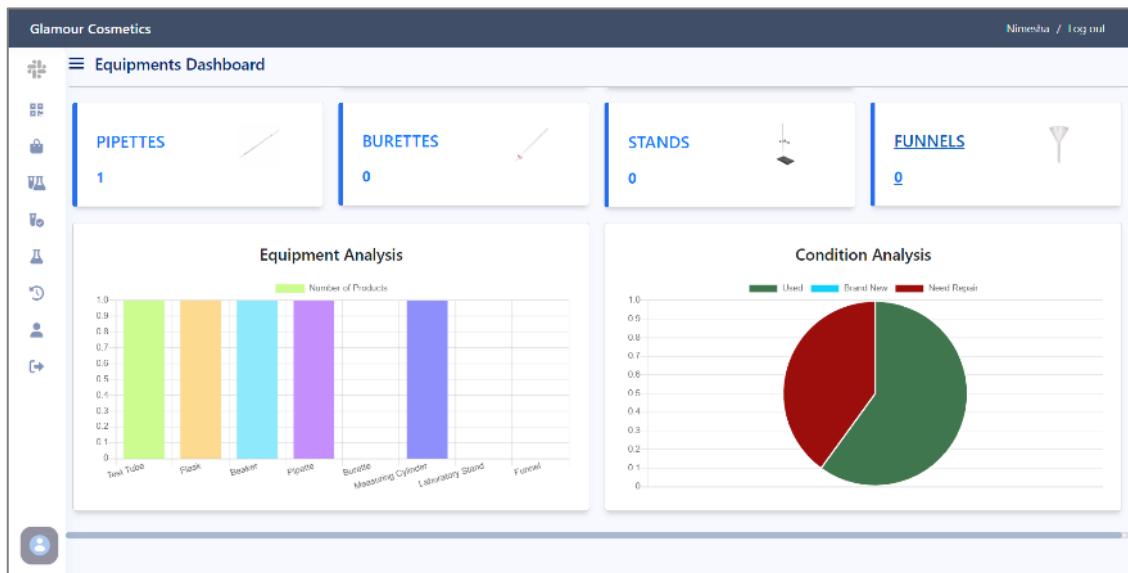


Figure 4. 68: Equipment Dashboard page

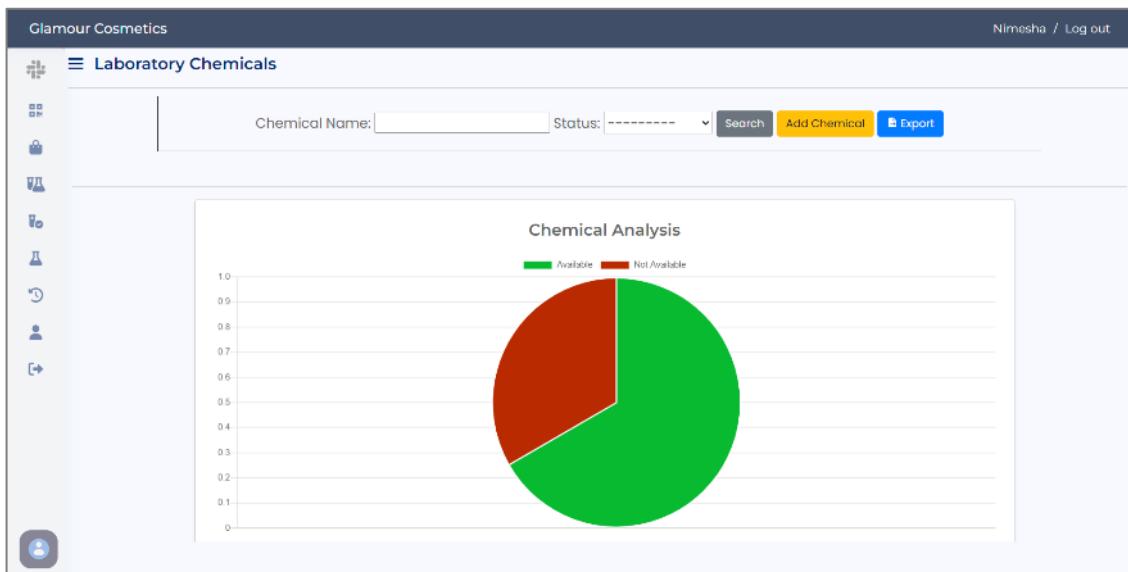


Figure 4. 69: Laboratory Chemicals page

Test dashboard

This page gives analysis of tests scheduled to be done at the laboratory.

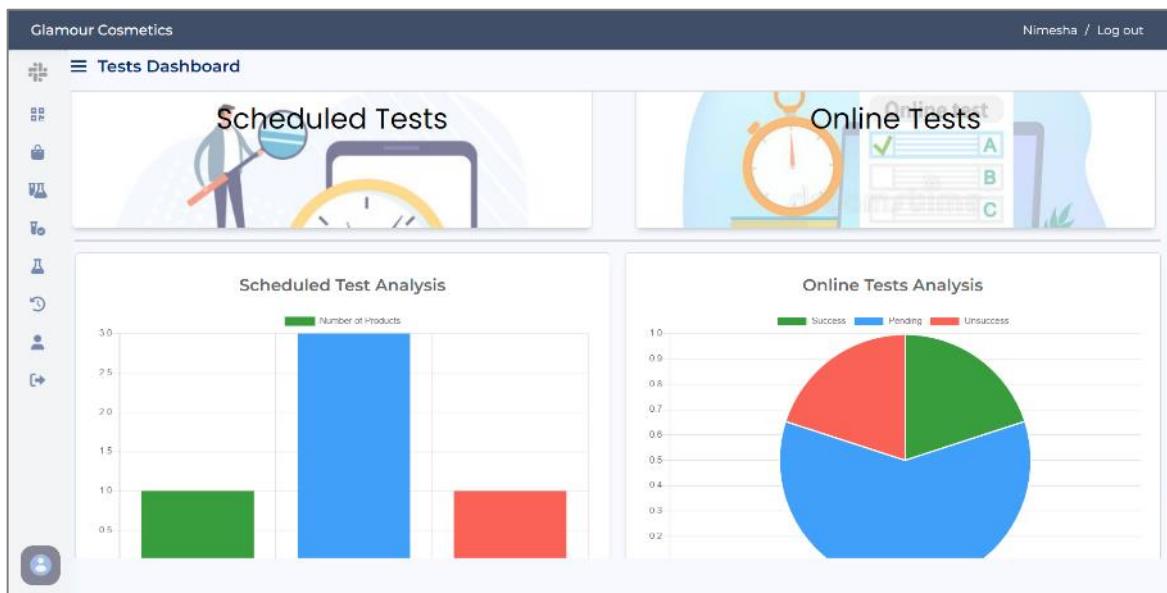


Figure 4. 70: Test Dashboard page

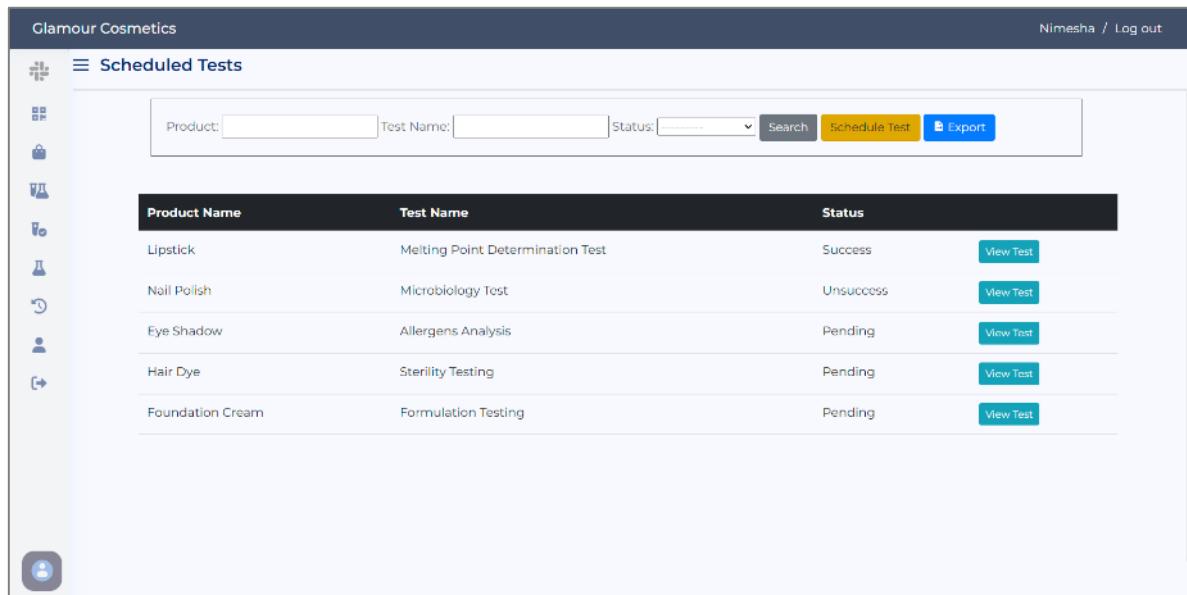


Figure 4. 71: Schedule Tests page

Test page

This page gives all the details about the tests that are done to test products. By clicking on update and delete buttons user can update and delete the test. By clicking on add and edit chemicals button user can add and edit chemicals that are needed for the test.

The screenshot shows a modal window titled "Product Name : Nail Polish" and "Test Name : Microbiology Test". The "Method" section contains a detailed description of the testing process, mentioning materials like pH polymer, NaCl, and Hydrogen. The "Chemicals Needed" table lists three items: Nutrient broth (10.0g), NaCl (5.0g), and Hydrogen (20.0g). Below the table are "Add Chemicals" and "Edit Chemicals" buttons. At the bottom are "Update Test" and "Delete Test" buttons.

Chemical	Quantity(g)
Nutrient broth	10.0
NaCl	5.0
Hydrogen	20.0

Figure 4. 72: Test page

History page

This page shows the history of changes that are done to products in the system.

The screenshot shows a table titled "Products History" with columns: Name, Category, Description, Action, and Date. The table lists three entries: Eye Shadow (Face Makeup), Hair Dye (Hair Cosmetics), and Lipstick (Face Makeup). Each entry includes a "View Product" button. Navigation buttons for "Previous" and "Next" are at the bottom.

Name	Category	Description	Action	Date
Eye Shadow	Face Makeup	Eye shadow is a cosmetic applied primarily to attract attention to the wearer's eyes. It can also be applied under eyes, cheeks or to brow bones..	Updated	Nov. 10, 2022
Hair Dye	Hair Cosmetics	Hair colourants are the cosmetic preparations which are used by men and women either to change the natural hair colour or to mask grey hair.	Deleted	Nov. 10, 2022
Lipstick	Face Makeup	Lipstick is a dispersion of the colouring matter in a base consisting of a blend of waxes, perfumes and flavours to impart gloss and colour on lips..	Updated	Nov. 10, 2022

Figure 4. 73: Products History page

Employee Management System.

Employee Dashboard

The complete number of departments, roles, and personnel has been displayed. And the total number of employees in this department is depicted in the bar graph.

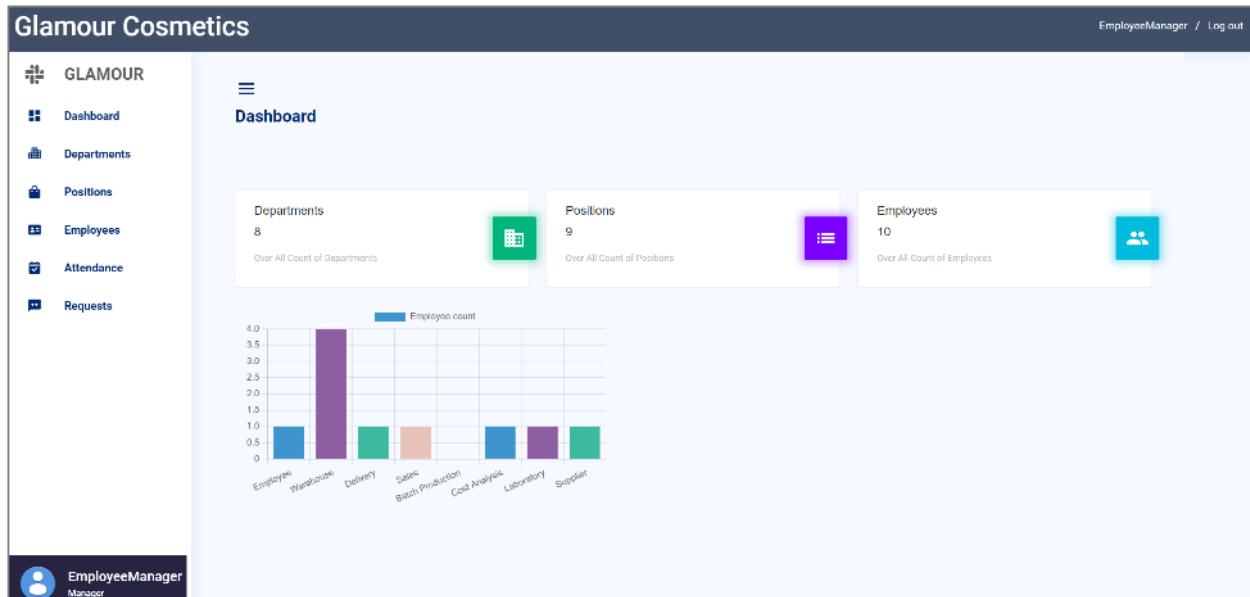


Figure 4. 74: Employee Manager Dashboard page

Department Page

Examine the several departments that are already operating in this factory.

#	Department Name	Description	Status	Action
1	Warehouse	Department Warehouse management	Active	Edit Delete
2	Sales Department	Department of sales management	Active	Edit Delete
4	Employee Department	Department of employee management	Active	Edit Delete
6	Batch Production Department	Department of Batch Production management	Active	Edit Delete
7	Cost Analysis Department	Department of Cost Analysis management	Active	Edit Delete
8	Delivery Department	Department of Delivery management	Active	Edit Delete
9	Laboratory Department	Department of Laboratory management	Active	Edit Delete
10	Supplier Department	Department of Supplier management	Active	Edit Delete

Figure 4. 75: Departments Management page

Employee Positions Page

Examine the current positions in this manufacturing facility.

#	Position	Description	Status	Action
1	Warehouse Manager	Manager	Active	Edit Delete
2	Sales Manager	manager	Active	Edit Delete
4	Employee Manager	manager	Active	Edit Delete
5	Cost Analysis Manager	manager	Active	Edit Delete
6	Delivery Manager	manager	Active	Edit Delete
7	QS	qs	Active	Edit Delete
8	HR Manager	manager	Active	Edit Delete
10	test	1234	Active	Edit Delete
11	www	qqq	Active	Edit Delete

Figure 4. 76: Positions Management page

Employee Page

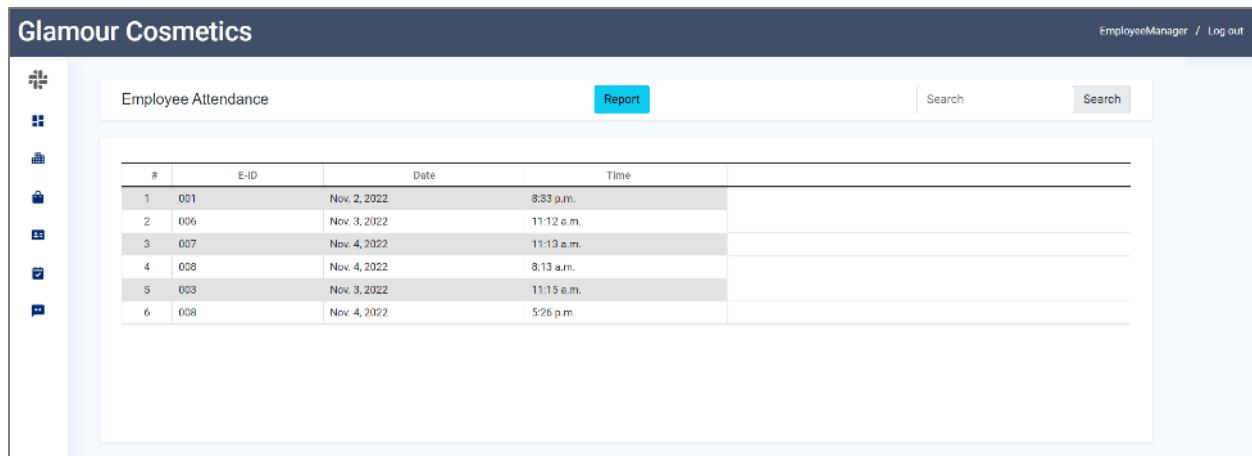
Keeping track of all the employees' particulars and managing their information.

#	E-ID	Name	Department	Position	Status	Action
1	003	John smith Abraham	Sales Department	Warehouse Manager	Active	Edit Delete
2	34	Calum Smith	Warehouse	Warehouse Manager	Active	Edit Delete
3	45	Joshep Linon	Employee Department	HR Manager	Active	Edit Delete
4	001	A.A.D Pathum Nadeera	Supplier Department	Warehouse Manager	Active	Edit Delete
5	004	kaun kathara A.D.	Warehouse	Warehouse Manager	Active	Edit Delete
6	006	K A Avindu Kavinda	Laboratory Department	HR Manager	Active	Edit Delete
7	007	Senduni Nilmeshya priyabandu	Delivery Department	Delivery Manager	Active	Edit Delete
8	008	K Anusara Weerasooriya	Cost Analysis Department	Cost Analysis Manager	Active	Edit Delete
9	009	K.L Pasindu Kevinda	Warehouse	Warehouse Manager	Active	Edit Delete
10	111	pathum aaaa sse	Warehouse	Employee Manager	Active	Edit Delete

Figure 4. 77: Employees Management page

Attendance Page

Examine the attendance particulars that have been entered by users.



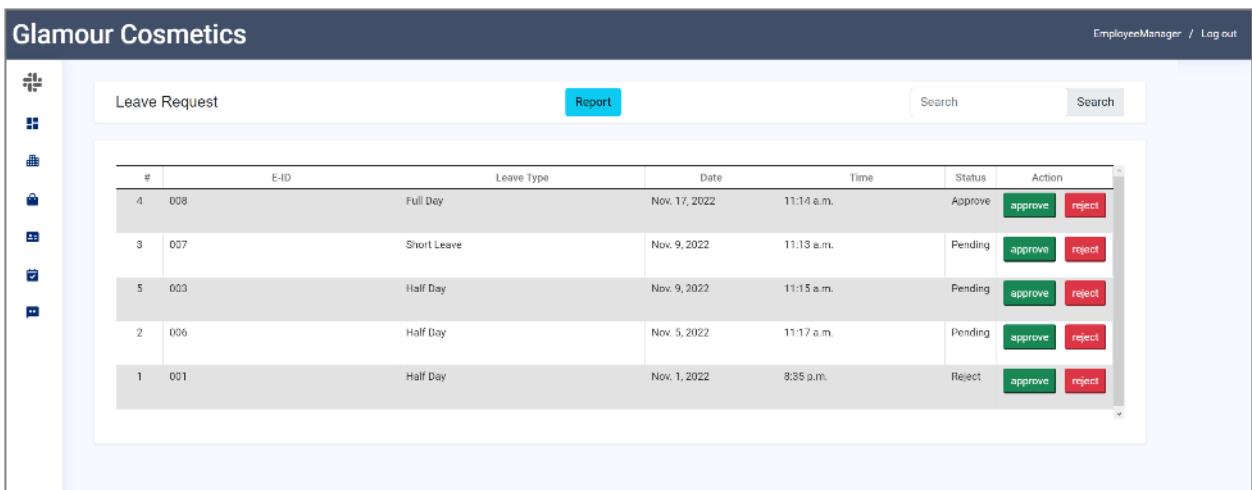
The screenshot shows a web-based application interface for managing employee attendance. The top navigation bar includes the company name "Glamour Cosmetics" and links for "EmployeeManager / Log out". On the left, there is a vertical sidebar with several icons. The main content area is titled "Employee Attendance" and contains a table with the following data:

#	E-ID	Date	Time
1	001	Nov. 2, 2022	8:33 p.m.
2	006	Nov. 3, 2022	11:12 a.m.
3	007	Nov. 4, 2022	11:13 a.m.
4	008	Nov. 4, 2022	8:13 a.m.
5	003	Nov. 3, 2022	11:15 a.m.
6	008	Nov. 4, 2022	5:26 p.m.

Figure 4. 78: Attendance Management page

Leave Request Page

Employees' leave requests can be viewed from this page.



The screenshot shows a web-based application interface for managing leave requests. The top navigation bar includes the company name "Glamour Cosmetics" and links for "EmployeeManager / Log out". On the left, there is a vertical sidebar with several icons. The main content area is titled "Leave Request" and contains a table with the following data:

#	E-ID	Leave Type	Date	Time	Status	Action
4	008	Full Day	Nov. 17, 2022	11:14 a.m.	Approve	<button>approve</button> <button>reject</button>
3	007	Short Leave	Nov. 9, 2022	11:13 a.m.	Pending	<button>approve</button> <button>reject</button>
5	003	Half Day	Nov. 9, 2022	11:15 a.m.	Pending	<button>approve</button> <button>reject</button>
2	006	Half Day	Nov. 5, 2022	11:17 a.m.	Pending	<button>approve</button> <button>reject</button>
1	001	Half Day	Nov. 1, 2022	8:35 a.m.	Reject	<button>approve</button> <button>reject</button>

Figure 4. 79: Leave Requests page

Cost Analysis Management System.

Cost Analysis Dashboard

The Cost analysis manager can monitor all of the financial performances using this dashboard, which is referred to as the Finance dashboard.

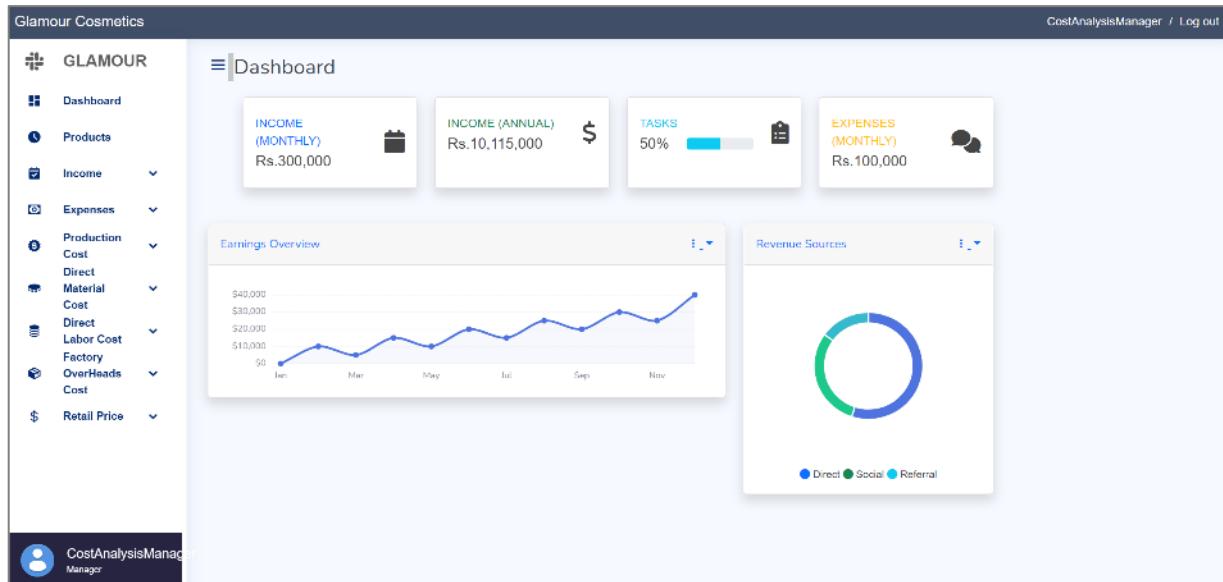


Figure 4. 80: Cost Analysis Manager Dashboard page

Income page

The manager of cost analysis can access all of the Income details. Income details can be added by the manager of cost analysis.

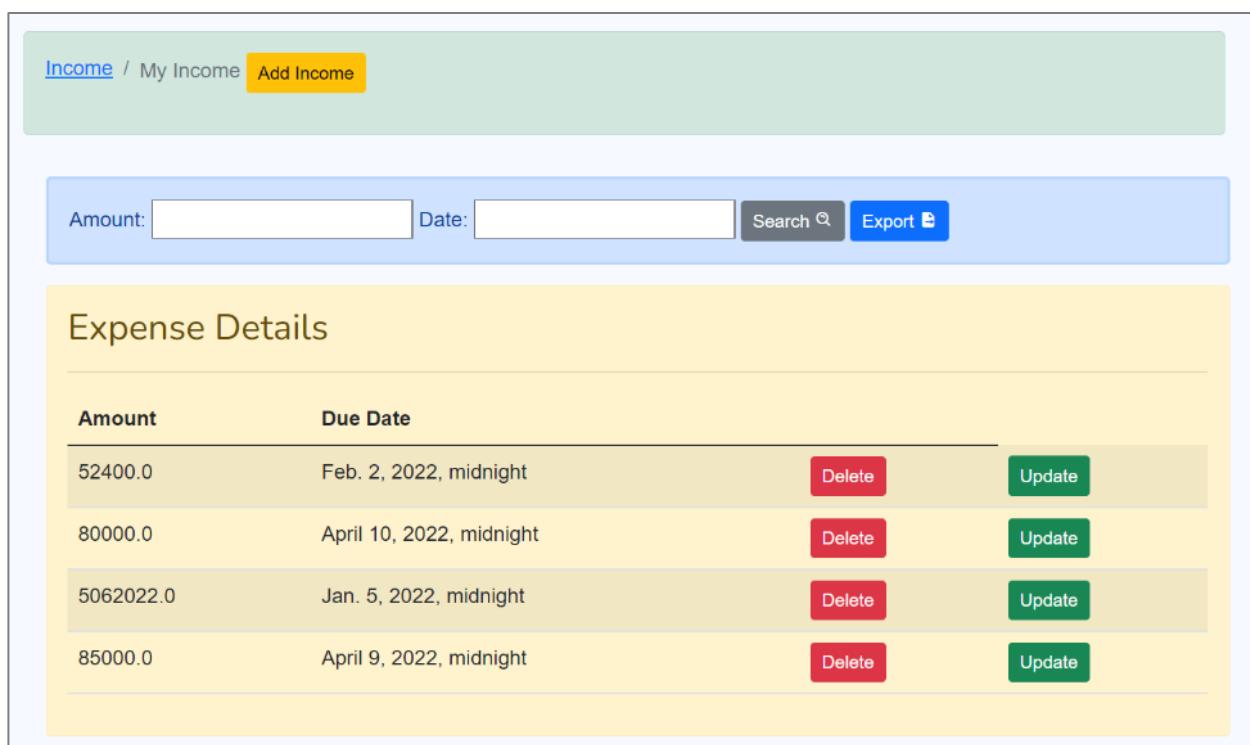


Figure 4. 81: Income Management page

Expenses page

The manager of cost analysis can observe every detail of Expenses. The manager of cost analysis can add the specifics of Expenses.

Figure 4. 82: Expense Management page

Amount	Due Date	Type	Category	Action	Action
555000.0	Feb. 2, 2022, midnight	1	2	Delete	Update
500400.0	April 10, 2022, midnight	1	3	Delete	Update
450090.0	Feb. 2, 2022, midnight	3	4	Delete	Update
350000.0	April 10, 2022, midnight	4	2	Delete	Update
50000.0	May 5, 2022, midnight	2	3	Delete	Update

Product Cost Details page

The manager of cost analysis has access to all Production cost details. The manager of cost analysis can include the specifics of Production expenses.

Figure 4. 83: Product Cost Management page

Total Production Cost	Date	Category	Description	Action	Action
55555555.0	Jan. 2, 2022, midnight	Hair Cosmetics	Eye shadow is a cosmetic applied primarily to attract attention to the wearer's eyes. It can also be applied under eyes, cheeks or to brow bones	Update	Delete
40000.0	Jan. 2, 2022, midnight	Skin Cosmetics	A moisturizer is a cosmetic preparation used for protecting and lubricating the skin. Act as a repellent for sebum produced by healthy skin.	Update	Delete
800000000000.0	Jan. 2, 2022, midnight	Nail Cosmetics	The preparations which are applied during night providing nourishment to the skin and removed in the morning.	Update	Delete

Direct Material Cost Details page

The manager of cost analysis can view every aspect of Direct material costs. The manager of cost analysis can add Direct material cost details.

Total Direct Material Cost	Date	Category	Description	Action	Action
5000.0	Jan. 2, 2022, midnight	Skin Cosmetics	foundation powder	<button>Update</button>	<button>Delete</button>
4500.0	Jan. 5, 2022, midnight	Hair Cosmetics	damage hair oil	<button>Update</button>	<button>Delete</button>
2300.0	April 9, 2022, midnight	Nail Cosmetics	blue nail polish	<button>Update</button>	<button>Delete</button>

Figure 4. 84: Direct Material Cost Management page

Direct Labor Cost Details page

The manager of cost analysis can view every aspect of Direct Labor costs.

Total Direct Labor Cost	Date	Category	Description	Action	Action
1000.0	April 10, 2022, midnight	Workers Compensation	workers paymenet	<button>Update</button>	<button>Delete</button>
1500.0	May 8, 2022, midnight	Life Insurance	insurance	<button>Update</button>	<button>Delete</button>
80000.0	Jan. 2, 2022, midnight	Health Insurance	INSURANCE	<button>Update</button>	<button>Delete</button>

Figure 4. 85: Direct Labor Cost Management page

Factory Overheads Cost Details page

The manager of cost analysis can access all Factory Overheads cost data. The manager of cost analysis is able to include all costs associated with Factory Overheads.

The screenshot shows a web-based application interface for managing factory overhead costs. At the top, there is a header bar with the title "Factory Overheads Cost / My Factory Overheads Cost" and a yellow button labeled "Add Factory Overheads Cost". Below the header, there is a search/filter section with fields for "Total FOAmount" and "Category", a "Filter" button, and an "Export" button. The main content area is titled "Direct Factory OverHeads Details" and contains a table with three rows of data. The table columns are: Total Factory OverHeads Cost, Date, Category, Description, Action, and Action. The data in the table is as follows:

Total Factory OverHeads Cost	Date	Category	Description	Action	Action
500.0	Jan. 2, 2022, midnight	Electricity Units	kloI	Update	Delete
750.0	Jan. 2, 2022, midnight	Labor Hours required	paid	Update	Delete
890.0	May 8, 2022, midnight	Electricity Units	monthly bill	Update	Delete

Figure 4. 86: Factory Overhead Details page

Delivery Management System.

Delivery Dashboard

Delivery manager can view a basic overview of the delivery management function.

The screenshot shows a web-based application interface for delivery management. The left sidebar has a navigation menu with items: GLAMOUR (Dashboard, Vehicle Management, Driver Management, Orders), and a dropdown menu for Orders. The main dashboard area has a title "Dashboard". It features a chart with two bars: one teal bar labeled "Need a Repair" and one purple bar labeled "In Good Condition". To the right of the chart is a map showing a delivery route with a scooter icon and a red pin indicating a destination with a "20min" delivery time. The top right corner shows the user "DeliveryManager" and a "Log out" link.

Figure 4. 87: Delivery Manager Dashboard page

Driver Management page

In here, delivery manager can add new drivers to the system, view overall driver details, update driver details and delete existing drivers from the system. Also, he can search items by its full name, gender, and license number. Furthermore, he can generate report on the driver details by using this page.

driverID	Full Name	Contact Number	Email	Gender	License Number	NIC	License Validity	Update	Remove
1	Anusara Weerasoonya	776785541	anusara7@gmail.com	Male	1622912	20007382901	License Valid	<button>UPDATE</button>	<button>DELETE</button>
3	wen ton	71263718	wentn@icloud.com	Female	17271891	18291001-1	License Expired	<button>UPDATE</button>	<button>DELETE</button>
4	Richard Sam	112345645	richardsam@gmail.com	Male	556782920	199573728911	License Expired	<button>UPDATE</button>	<button>DELETE</button>
5	Kavindu Perera	76349012	kavinduperera@icloud.com	Male	16278191	2000188291	License Valid	<button>UPDATE</button>	<button>DELETE</button>
7	Mary Fernandz	715692634	williamF@gmail.com	Female	178920123	1998097625	License Expired	<button>UPDATE</button>	<button>DELETE</button>

Figure 4. 88: Driver Management page

Vehicle Management Page

In here, delivery manager can add new vehicles to the system, view overall vehicle details, update vehicle details and delete vehicles from the system. Also, he can search items by its model, brand and license plate. Furthermore, he can generate report on the vehicle details by using this page.

Vehicle ID	License Plate	Model	brand	Edition	Exterior Color	year	Engine Capacity	Mileage	Fuel Type	Transmission	Quantity	Condition
2	KM-2776	Toyota	Allion	s1201	Pearl White	2017	800 cc	50000 km	Petrol	Automatic	10	Good condition
3	PI-6816	Daihatsu	Hijet	s120	Black	2016	800 cc	80000 km	Petrol	Automatic	12	Needs to be repaired
4	KC-7152	Toyota	Nissan	AG0	Grey	2003	650 cc	50000 km	Diesel	Automatic	30	Good condition
5	KF-5421	Daihatsu	Hijet	AMG	Pearl White	2009	700 cc	75000KM	Petrol	Automatic	30	Good condition
7	PG-	Daihatsu	Hijet	Trail	Red	2010	700 cc	70000	Petrol	Automatic	30	Good condition

Figure 4. 89: Vehicle Management page

Retail orders Page

Here, it will display all the added retail orders of the customer and the delivery manager can add order item by navigating into the page of add order items button.

Order ID	Transaction ID	Customer	Date Ordered	Complete	Net Total	Order Status	
11	1663915605.650285	anusara weerasooriya	Oct. 27, 2022, 12:16 p.m.	True	400.0	Delivered	<button>Add Order Items</button>
12	1663916926.277674	anusara weerasooriya	Oct. 28, 2022, 12:16 p.m.	True	270.0	Order confirmed	<button>Add Order Items</button>
13	1663916411.682483	anusara weerasooriya	Sept. 23, 2022, 12:22 p.m.	True	2170.0	Delivered	<button>Add Order Items</button>
14	None	None	Sept. 23, 2022, 12:22 p.m.	False	0.0	Order confirmed	<button>Add Order Items</button>
15	1663916281.881747	Anusara Woodley	Oct. 29, 2022, 12:22 p.m.	True	2140.0	Order confirmed	<button>Add Order Items</button>
16	1663916301.825612	Anusara Woodley	Sept. 23, 2022, 12:28 p.m.	True	940.0	Delivered	<button>Add Order Items</button>
17	1663916327.165408	Anusara Woodley	Sept. 23, 2022, 12:28 p.m.	True	1900.0	Delivered	<button>Add Order Items</button>
18	1663916379.553818	Anusara Woodley	Oct. 30, 2022, 12:28 p.m.	True	1600.0	Delivered	<button>Add Order Items</button>

Figure 4. 90: Retail Orders page

ID	products	Quantity	Date Added	OrderID*
25	Foundation Cream	1	Sept. 23, 2022, 12:16 p.m.	
26	Lipstick	1	Sept. 23, 2022, 12:21 p.m.	Product*
27	Lipslick	1	Sept. 23, 2022, 12:27 p.m.	Quantity*
28	Foundation Cream	1	Sept. 23, 2022, 12:27 p.m.	Progress*
29	Eye Shadow	1	Sept. 23, 2022, 12:27 p.m.	Received
30	Body Cream	1	Sept. 23, 2022, 12:27 p.m.	<input type="button" value="Submit"/>
31	None	1	Sept. 23, 2022, 12:27 p.m.	
32	Body Cream	2	Sept. 23, 2022, 12:28 p.m.	
33	None	1	Sept. 23, 2022, 12:28 p.m.	
34	Nail Polish Remover	1	Sept. 23, 2022, 12:28 p.m.	
35	Nail Base Coat	1	Sept. 23, 2022, 12:28 p.m.	
36	Nail Polish	1	Sept. 23, 2022, 12:28 p.m.	
37	Foundation	1	Sept. 23, 2022, 12:28 p.m.	

Figure 4. 91: Assign Vehicles page

4.6 Databases

Customer and Sales Management System.

	<u>id</u>	<u>first_name</u>	<u>last_name</u>	<u>username</u>	<u>email</u>	<u>mobile_number</u>	<u>gender</u>	<u>birth_date</u>	<u>profile_picture</u>	<u>user_id</u>	<u>id</u>	<u>user_id</u>
▶	3	Anusara	Woodley	richard77	abccompany@gmail.com	773082346	Male	2000-07-19	alex-suprun-ZHvM3XIOHoE-unsplash_GYsYUQ5...	3	2	3
	4	anusara	weerasooriya	anusara7	anusara7@gmail.com	NULL	NULL	NULL	julian-wan-WNoLnJo7tS8-unsplash_0081dY.jpg	4	3	4
	5	Kevin	Wallaby	kevin123	kevin123@gmail.com	NULL	NULL	NULL	alex-suprun-ZHvM3XIOHoE-unsplash.jpg	5	4	5
	6	Richard	Woodley	richard1234	richardwoodley797@gmail.com	NULL	NULL	NULL		6	5	6
	12	Anusara	Woodley	richard777	richardwoodley707@gmail.com	773087165	Male	2000-07-03	julian-wan-WNoLnJo7tS8-unsplash_FvA04Im.jpg	12	11	12
	25	Richard	Weerasooriya	user123	user123@gmail.com	NULL	NULL	NULL		25	24	25

Figure 4. 92: Customer Table

	<u>id</u>	<u>date_ordered</u>	<u>complete</u>	<u>transaction_id</u>	<u>order_status</u>	<u>net_total</u>	<u>customer_id</u>
▶	11	2022-10-27 06:46:19.000000	1	1663915605.650285	Delivered	400	4
	12	2022-10-28 06:46:47.000000	1	1663915926.277674	Order confirmed	270	4
	13	2022-09-23 06:52:07.702240	1	1663916411.682483	Delivered	2170	4
	14	2022-09-23 06:52:43.236934	0	NULL	Order confirmed	0	NULL
	15	2022-10-29 06:52:50.000000	1	1663916281.881747	Order confirmed	2140	3
	16	2022-09-23 06:58:03.263057	1	1663916301.825612	Delivered	940	3
	17	2022-09-23 06:58:22.995110	1	1663916327.165408	Delivered	1900	3
	18	2022-10-30 06:58:48.000000	1	1663916379.553818	Delivered	1600	3
	19	2022-09-23 06:59:41.223411	1	1667370875.837134	Order confirmed	1000	3
	20	2022-10-31 07:00:12.000000	1	1663916434.738055	Order confirmed	1600	4
	21	2022-09-23 07:00:35.860346	0	NULL	Order confirmed	NULL	4

Figure 4. 93: Order Table

	<u>id</u>	<u>text_review</u>	<u>value</u>	<u>added_date</u>	<u>customer_id</u>	<u>product_id</u>
▶	1	It's a really convenient product. Easy to use.	up	2022-09-23 07:06:49.435936	3	6
	3	It was really bad	down	2022-09-23 07:08:31.256454	3	5
	4	The best product I ever had.	up	2022-09-23 07:09:32.107255	4	6
	5	This is the cream I was looking for.	up	2022-09-23 07:10:04.758506	5	6
	6	Good product	up	2022-09-23 11:08:19.203193	3	12
	7	It is a convenient product	down	2022-11-04 03:38:43.862051	12	1
	8	This product is really satisfying	up	2022-11-04 03:39:00.152484	12	3
	9	Good product	up	2022-11-04 10:39:44.463186	12	9

Figure 4. 94: Product Review Table

	id	team_name	team_description	date_created	available	no_of_employees
▶	16	team 2	team 1 description	2022-11-03 11:45:08.354895	1	2
	18	team 1	team description	2022-11-04 10:45:25.133345	1	2
	19	team 3	team 3 description	2022-11-08 11:37:24.606343	1	1
	20	team 4	team 4 description	2022-11-08 11:37:47.112491	1	2
	21	team 5	team 5 description	2022-11-08 11:38:19.130781	1	2

Figure 4. 95: SalesTeam Table

	id	task_name	task_description	progress	task_status	sales_team_id
▶	7	task 3	task 3 description	0	Status Pending	16
	8	Making an advertisement	Needs to make an advertisement about Lipsticks.	20	Assigned	18
	9	task 5	task 5 description	40	Status Pending	20
	10	Task 6	Task 6 description	60	Status Pending	19

Figure 4. 96: SalesTasks Table

Batch Production Management System.

	id	target_quantity	net_weight	due_date	status	product_code_id
▶	5	2000	15	2022-11-04	Completed	1
	6	3000	125	2022-11-05	Scheduled	4
	7	3000	15	2022-11-08	Scheduled	6
	8	600	125	2022-11-05	Scheduled	8
	9	50	125	2022-11-23	On Hold	5
	10	6000	15	2022-11-16	Completed	7
	12	6000	250	2022-11-23	On Hold	4
	13	5000	15	2022-11-04	Completed	1
	14	2000	15	2022-11-04	Completed	3
	15	2000	15	2022-11-05	Scheduled	7
	16	4000	100	2022-11-24	Completed	8

Figure 4. 97: Productions Table

	id	quantity	description	date_requested	status	rawmaterial_id	last_updated
▶	3	200	Request for Butyl acetate within a week.	2022-11-04	Completed	10	2022-11-04 07:24:51.273379
	4	300	Urgent Raw-material request	2022-11-04	Pending	11	2022-11-04 05:20:47.487214
	5	112.5	urgent	2022-11-04	Pending	20	2022-11-04 11:11:51.053862
	6	737.5	urgent	2022-11-04	Pending	24	2022-11-04 11:12:09.403222
	7	1550	urgent	2022-11-04	Pending	25	2022-11-04 11:12:13.845406
	8	1575	urgent	2022-11-04	Pending	33	2022-11-04 11:12:17.437702
	9	287.5	urgent	2022-11-04	Pending	34	2022-11-04 11:12:20.408206
	10	125	urgent	2022-11-04	Pending	38	2022-11-04 11:12:23.277264
	11	150	urgent	2022-11-04	Pending	41	2022-11-04 11:12:26.042382

Figure 4. 98: RawMaterialRequest Table

	id	name	quantity	reorder_level	deficiency_request
▶	7	Anhydrous lanoline	40	50	0
	8	Antioxidant	100	10	0
	9	Borax	200	10	0
	10	Butyl acetate	10	20	1
	11	Calcium carbonate	25	30	1
	12	Candelilla wax	23	20	0
	13	Carnauba wax	100	30	0
	14	Castor oil	100	10	0
	15	Ceto Stearyl alcohol	100	50	0
	16	Cetyl alcohol	100	20	0
	17	Cetyl Trimethyl Am...	10	20	0

Figure 4. 99: RawMaterial Table

Warehouse Management System.

	id	itemID	itemName	category	description	quantity	reorderLevel	expireDate	receivedDate
▶	3	RM-1000	Anhydrous lanoline	Chemical Based	Lorem Ipsum	1000	500	2023-08-05	2022-11-01
	4	RM-1001	Antioxidant	Plant Based	Lorem Ipsum	2500	1000	2022-12-10	2022-11-08
	5	RM-1002	Borax	Chemical Based	Lorem Ipsum	3000	1000	2022-11-01	2022-07-06
	6	RM-1003	Butyl acetate	Plant Based	Lorem Ipsum	3800	1000	2022-11-01	2022-02-16
	7	RM-1004	Calcium carbonate	Chemical Based	Butyl acetate	2500	1000	2022-12-03	2022-11-01
	8	RM-1005	Candelilla wax	Plant Based	Lorem Ipsum	2342	100	2022-10-30	2021-12-31
	9	RM-1006	Carnauba wax	Chemical Based	Lorem Ipsum	5000	500	2022-11-01	2022-04-27
	10	RM-1007	Castor oil	Chemical Based	Lorem Ipsum	50	200	2022-12-10	2022-11-01
	11	RM-1008	Ceto Stearyl alcoho	Plant Based	Lorem Ipsum	100	500	2022-11-03	2022-03-15
	12	RM-1009	Cetyl alcohol	Plant Based	Lorem Ipsum	300	100	2022-10-31	2021-03-04
	13	RM-1010	Citric acid	Plant Based	Lorem Ipsum	1000	1500	2022-11-01	2018-12-29

Figure 4. 101: RawMaterial Table

	id	request_ID	req_from	type	itemName	quantity	date	due_Date	status
▶	4	1000	BP Manager	Raw Material	Moisturizer	2000	2022-11-04	2022-12-01	Pending
	5	2000	Supplier Manager	Raw Material	Castor oil	500	2022-11-04	2022-12-10	Accepted
	6	3000	Supplier Manager	Raw Material	Ceto Stearyl alcoho	1000	2022-11-04	2022-12-01	Accepted
	7	4000	Supplier Manager	Packaging	Rigid	20	2022-11-04	2022-12-01	Accepted
	8	5000	Supplier Manager	Raw Material	Citric acid	1000	2022-11-04	2022-12-10	Accepted
	9	6000	BP Manager	Product	Nail Polish Remover	600	2022-11-04	2023-03-31	Dispatched

Figure 4. 100: WarehouseRequest Table

	id	itemID	itemName	category	description	quantity	reorderLevel	materialType
▶	2	PK-1000	Corrugated	Secondary	Lorem Ipsum	1000	500	Paper and Paperboard
	3	PK-1001	Rigid	Tertiary	Lorem Ipsum	20	100	Paper and Paperboard
	4	PK-1002	Poly bags	Secondary	Lorem Ipsum	2000	1000	Polythene

Figure 4. 102: Equipment Table

	id	itemID	itemName	category	description	quantity	status	lastMaintenanceDate	nextMaintenanceDate
▶	3	EQ-1000	Gravity Roller	Conveyor	Lorem Ipsum	2	Excellent	2022-11-01	2024-12-31
	4	EQ-1001	Belt	Conveyor	Lorem Ipsum	2	Fair	2022-11-01	2023-11-01
	5	EQ-1002	Shelves	Storage	Lorem Ipsum	3	Good	2022-09-08	2022-11-30
	6	EQ-1003	Forklifts	Lifting	Lorem Ipsum	10	Good	2022-11-01	2022-12-10

Figure 4. 103: Packaging Table

Supplier Management System.

	id	address	contact_no	product_category	profile_image	account_no	bankWithBranch	user_id
▶	1	No 17, Raymond Road, Colombo 07	071234129	Raw materials	avatar.png	NULL	NULL	21
	3	No 17, Raymond Road, Colombo 07	07124356345	Raw materials	Profile_images/julian-wan-WNoLnJo7tS8-unsplash.jpg	NULL	NULL	24
	4	No 17, Raymond Road, Colombo 07	0712423406	Packaging materials	Profile_images/taylor-8Vt2haq8NSQ-unsplash.jpg	NULL	NULL	23
	5	No 17, Raymond Road, Colombo 07	07124356345	Packaging materials	avatar.png	NULL	NULL	15

Figure 4. 104: SupplierInfo Table

	id	invoice_pdf	invoice_image	price	request_ID_id
▶	2	invoices/pdfs/952-Texto_do_artigo-1900-1-10-...	invoices/images/invoice.png	15000.00	2
	3	invoices/pdfs/56-Article_Text-163-1-10-201705...	invoices/images/invoice_ipJJZUE.png	3400.00	4

Figure 4. 105: SupplierInvoice Table

	id	first_name	last_name	address	contact_no	email	product_category	username	password	status
▶	1	Nimesha	Priyabandu	No 17, Raymond Road, Colombo 07	0712367459	abccompany@gmail.com	Raw materials	Nimesha	nimesha@12345	Accepted
	2	Janudi	Kule	Matara	071236567	janu@gmail.com	Packaging materials	Janudi	janu@12345	Pending
	4	Sithmi	weerasinghe	No 17, Raymond Road, Colombo 07	0712367459	abccompany@gmail.com	Raw materials	Sithz	sith@12345	Pending
	5	Pathum	Nadeera	No 17, Raymond Road, Colombo 07	0772345123	pathum@gmail.com	Packaging materials	Pathum	nadeera@123	Accepted

Figure 4. 106: NewSupplier Table

	id	request_ID	itemName	quantity	date	due_Date	Note	status	SupplierID_id
▶	2	2000	Castor oil	500	2022-11-04	2022-12-10	Urgent. Send before 19th.	Ordered	1
	3	3000	Ceto Stearyl alcohol	1000	2022-11-04	2022-12-01	Urgent. Send before 12th.	Pending	3
	4	4000	Rigid	20	2022-11-04	2022-12-01	Urgent.	Ordered	1
	5	5000	Citric acid	1000	2022-11-04	2022-12-10	Urgent	Pending	1

Figure 4. 107: OrderRequest Table

	id	Product	Unit_Price	Unit	Supplier_id
▶	2	Colour	1000.00	L	21
	4	White bees wax	3000.00	Kg	21
	5	Zinc oxide	500.00	kg	21
	6	Glycerin	4500.00	L	21
	7	Borax	790.00	Kg	21
	8	Citric acid	2500.00	L	24
	9	Liquid paraffin	1500.00	L	24
	10	Perfume	1500.00	L	24
	11	Propyl paraben	3500.00	L	24
	12	Glycerin	4500.00	L	21

Figure 4. 108: SupplierProduct Table

Formulation and Laboratory Management System.

	id	product_name	product_category	description	preparation_method	duration	product_image
▶	1	Lipstick	Face Makeup	Lipstick is a dispersion of the colouring matter in...	If a solvent is used for the dissolution of bromo ...	365000000	formulation/lipstick2.jpg
	2	Foundation Cream	Face Makeup	They provide emollient base or foundation to th...	Lanolin, cetyl alcohol, stearic acid and potassium...	400000000	formulation/foundation_cream_2N3Dk2.jpg
	3	Eye Shadow	Face Makeup	Eye shadow is a cosmetic applied primarily to at...	Perfume is added to some part of calcium carbo...	450000000	formulation/eye_shadow_PrwNLpF.jpg
	4	Shampoo	Hair Cosmetics	A viscous cosmetic preparation with synthetic d...	Initially, a solution of detergent and water are ...	365000000	formulation/shampoo.jpg
	5	Hair Dye	Hair Cosmetics	Hair colourants are the cosmetic preparations ...	Triethanolamine, glyceryl monostearate and tr...	200000000	formulation/hair_dye.webp
	6	Nail Polish	Nail Cosmetics	Nail lacquers or nail polish is a viscous or semi li...	The preparation of nail polishes can be carried ...	480000000	formulation/nailpolish.webp
	7	Nail Polish Remover	Nail Cosmetics	Polish removers are designed to soften polishes...	In this method, all the liquid components are mi...	365000000	formulation/nailpolishremover.jpg
	8	Moisturizer	Skin Cosmetics	A moisturizer is a cosmetic preparation used for ...	Moisturizing cream formulation were developed ...	460000000	formulation/moisturizer_SqSB2Ci.jpg
	9	Lipstick2	Skin Cosmetics	this is lipstick	aaaaaaaaaaaaaa	365000000	formulation/lipstick_sSphvlu.jpg
	10	Cream	Skin Cosmetics	this is	cccc	20000000	default_image.jpg

Figure 4. 109: Products Table

	id	test_name	method	status	product_id
▶	2	Melting Point Determination Test	The determination of melting point is done in or...	Success	1
	3	Microbiology Test	Company needs Materials laboratory nfor Defor...	Unsuccess	5
	4	Allergens Analysis	Need cosmetics laboratories to conduct perform...	Pending	5
	5	Sterility Testing	Hair dye is a complex item for manufacturers to ...	Success	7
	6	Formulation Testing	Lanolin, cetyl alcohol, stearic acid and potassiu...	Unsuccess	2

Figure 4. 110: ScheduleTest Table

	id	chemical_name	available_quantity	status
▶	3	NaCl	500	Available
	4	Talc	10	Not Available
	5	Aluminium Hydroxide	45	Not Available
	6	Lanolin	800	Available
	7	Cetyl alcohol	500	Available
	8	Potassium Hydroxide	900	Available
	9	Propylene glycol	10	Not Available
	10	Nutrient broth2	20	Available

Figure 4. 111: TestChemicals Table

	id	equipment_id	category	condition
▶	5	F001	Funnel	Used
	6	B001	Beaker	Used
	7	B003	Burette	Need Repair
	8	MC001	Measuring Cylinder	Brand New
	9	LS001	Laboratory Stand	Used
	10	Fl001	Flask	Brand New
	11	B004	Burette	Used
	12	P001	Pipette	Need Repair
	13	F003	Flask	Need Repair
	14	T001	Test Tube	Used
	17	B011	Pipette	Used

Figure 4. 112: Equipments Table

	id	raw_material	formulation_qty	product_name_id
▶	2	Castor oil	54	1
	3	Anhydrous lanoline	11	1
	4	Candelilla wax	9	1
	5	Isopropyl myristate	8	1
	6	White bees wax	5	1
	7	Colour	5	1
	8	Tocopherol	0.1	1
	12	Lanolin	2	2
	13	Cetyl alcohol	0.5	2
	14	Stearic acid	10	2
	15	Potassium hydroxide	0.4	2

Figure 4. 113: Formulation Table

Employee Management System.

	id	name	description	status	date_added	date_updated
▶	1	Warehouse	Department Warehouse management	1	2022-10-14 07:44:20.000000	2022-10-14 07:45:56.899630
	2	Sales Department	department of sales management	1	2022-11-03 14:56:47.789052	2022-11-03 14:56:47.792052
	4	Employee Department	Department of employee management	1	2022-11-04 03:22:09.058934	2022-11-04 03:22:09.062943
	6	Batch Production Department	Department of Batch Production management	1	2022-11-04 03:23:15.357753	2022-11-04 03:23:15.363749
	7	Cost Analysis Department	Department of Cost Analysis management	1	2022-11-04 03:24:03.425013	2022-11-04 03:24:03.429299
	8	Delivery Department	Department of Delivery management	1	2022-11-04 03:24:32.930778	2022-11-04 03:24:32.936275
	9	Laboratory Department	Department of Laboratory management	1	2022-11-04 03:25:04.016014	2022-11-04 03:25:04.021949
	10	Supplier Department	Department of Supplier management	1	2022-11-04 03:26:15.922842	2022-11-04 03:26:15.931854

Figure 4. 114: Department Table

	id	code	firstname	middlename	lastname	gender	dob	contact	address	email	date_hired	salary	status	c
▶	1	003	John	smith	Abraham	Male	2022-11-01	0778609345	Nugegoda	abraham@gmail.com	2022-10-07	2000	1	2
	2	34	Calum		Smith	Male	2022-11-10	0773087654	Adress	calum@gmail.com	2022-10-14	40000	1	2
	3	45	Joshep		Lincon	Male	2022-11-03	0778096547	Adress	joshep@gmail.com	2022-10-14	5000	1	2
	4	001	A.A.D		Pathum	Male	2013-01-29	0711949466	Kotte	pathummadeera@gmail.com	2022-11-02	2000	1	2
	5	004	kasun	kalihara	A.D.	Male	2022-11-02	071447724	nugegoda	kasun@gmail.com	2022-11-02	25000	1	2
	6	006	K.A		Avindu	Male	2022-11-01	0714586952	Pannipitiya	avindu@gmail.com	2022-10-31	30000	1	2
	7	007	Sanduni	Nimesha	priyabandu	Female	2016-02-02	0711494955	Kotte	sanduni@gmail.com	2022-11-01	60000	1	2
	8	008	K	Anusara	Weerasooriya	Male	2005-02-01	0745869541	Maharagama	anusara@gmail.com	2022-11-03	20000	1	2
	9	009	K.L	Pasindu	Kavinda	Male	2015-02-19	0714589652	Nugegoda	pasindu@gmail.com	2022-11-04	4500	1	2

Figure 4. 115: Employees Table

	id	name	description	status	date_added	date_updated
▶	1	Warehouse Manager	Manager	1	2022-10-14 07:46:20.000000	2022-10-14 07:46:37.567531
	2	Sales Manager	manager	1	2022-11-03 14:57:53.567951	2022-11-03 14:57:53.570597
	4	Employee Manager	manager	1	2022-11-04 03:27:07.290527	2022-11-04 03:27:07.294344
	5	Cost Analysis Manager	manager	1	2022-11-04 03:27:30.000731	2022-11-04 03:27:30.006683
	6	Delivery Manager	manager	1	2022-11-04 03:27:43.534790	2022-11-04 03:27:43.539146
	7	QS	qs	1	2022-11-04 05:35:42.402622	2022-11-04 05:35:42.406144
	8	HR Manager	manager	1	2022-11-04 05:36:18.634378	2022-11-04 05:36:18.638534
	10	test	1234	1	2022-11-04 12:01:39.974966	2022-11-04 12:01:39.978968
	11	www	qqq	1	2022-11-04 12:03:20.454167	2022-11-04 12:03:20.458475

Figure 4. 116: Positions Table

	id	eid	type	date	time	status
▶	1	001	Half Day	2022-11-01	20:35:00.000000	2
	2	006	Half Day	2022-11-05	11:17:00.000000	0
	3	007	Short Leave	2022-11-09	11:13:00.000000	0
	4	008	Full Day	2022-11-17	11:14:00.000000	1
	5	003	Half Day	2022-11-09	11:15:00.000000	0

Figure 4. 117: Leave Table

	id	eid	date	time
▶	1	001	2022-11-02	20:33:00.000000
	2	006	2022-11-03	11:12:00.000000
	3	007	2022-11-04	11:13:00.000000
	4	008	2022-11-04	08:13:00.000000
	5	003	2022-11-03	11:15:00.000000
	6	008	2022-11-04	17:26:00.000000

Figure 4. 118: Attendance Table

Delivery Management System.

	id	fullname	contact_number	email	gender	LicenseNumber	nic	LicenseValid
▶	1	Anusara Weerasooriya	776785541	anusara7@gmail.com	Male	1622912	20007382901	License Valid
	3	wen ton	71263718	wentn@icloud.com	Female	17271891	18291001-1	License Expired
	4	Richard Sam	112345645	richardsam@gmail.com	Male	556782920	199573728911	License Expired
	5	Kavindu Perera	76349012	kavinduperera@icloud.com	Male	16278191	2000188291	License Valid
	7	Mary Fernandz	715692634	williamF@gmail.com	Female	178920123	1998097625	License Expired
	8	Janudi W	91627829	janudiw@gmail.com	Female	1773891	2000173919	License Valid

Figure 4. 119: Driver Table

	id	modelVehicle	mileage	LicensePlate	exteriorColor	year	transmission	engineCapacity	fuelType	quantity	condition	brand	driver_id	trim
▶	2	Toyota	50000 km	KM-2776	Pearl White	2017	Automatic	800 cc	Petrol	10	Good condition	Allion	1	s1201
	3	Daihatsu	80000 km	PI-6816	Black	2016	Automatic	800 cc	Petrol	12	Need to be repaired	Hijet	4	s120
	4	Toyota	50000 km	KC - 7152	Grey	2003	Automatic	650 cc	Diesel	30	Good condition	Nissan	5	AGO
	5	Daihatsu	75000KM	KF - 5421	Pearl White	2009	Automatic	700 cc	Petrol	30	Good condition	Hijet	4	AMG
	7	Daihatsu	70000 km	PG - 7326	Red	2010	Automatic	700 cc	Petrol	30	Good condition	Hijet	7	Trail

Figure 4. 120: Vehicle Table

	id	province	delivery_cost
▶	1	Western Province	100
	2	Southern Province	100
	3	Eastern Province	100
	4	Central Province	100
	5	Northcentral Province	100
	6	Northern Province	100
	7	Northern Province	100
	8	Northwest Province	100
	9	Uwa Province	100

Figure 4. 121: DeliveryCost Table

Cost Analysis Management System.

	id	DLamount	date	category	quantity	reorderLevel	description	Total_DLAmount
▶	3	0	2022-04-09 18:30:00.000000	Workers Compensation	NULL	NULL	workers payment	1000
	4	0	2022-05-07 18:30:00.000000	Life Insurance	NULL	NULL	insurance	1500
	5	0	2022-01-01 18:30:00.000000	Health Insurance	NULL	NULL	INSURANCE	80000

Figure 4. 123: DirectLabourCost Table

	id	DMamount	date	category	quantity	reorderLevel	description	Total_DMAmount
▶	2	0	2022-01-01 18:30:00.000000	Skin Cosmetics	NULL	NULL	foundation powder	5000
	3	0	2022-01-04 18:30:00.000000	Hair Cosmetics	NULL	NULL	damage hair oil	4500
	4	0	2022-04-08 18:30:00.000000	Nail Cosmetics	NULL	NULL	blue nail polish	2300

Figure 4. 122: DirectMaterialCost Table

	id	amount	date	type	repetitive	repetition_interval	updated_at	created_at
▶	1	555000	2022-02-01 18:30:00.000000	1	0	2	2022-11-04 08:28:19.318056	2022-11-04 08:27:22.794019
	2	500400	2022-04-09 18:30:00.000000	1	0	3	2022-11-04 08:27:38.165185	2022-11-04 08:27:38.165185
	3	450090	2022-02-01 18:30:00.000000	3	0	4	2022-11-04 08:27:55.241019	2022-11-04 08:27:55.241019
	4	350000	2022-04-09 18:30:00.000000	4	0	2	2022-11-04 08:28:11.582797	2022-11-04 08:28:11.582797
	5	50000	2022-05-04 18:30:00.000000	2	0	3	2022-11-04 12:19:15.087708	2022-11-04 12:19:15.087708

Figure 4. 124: Expenses Table

	id	amount	date	created_at
▶	1	52400	2022-02-01 18:30:00.000000	2022-11-04 08:25:44.745100
	2	80000	2022-04-09 18:30:00.000000	2022-11-04 08:26:03.343305
	3	5062022	2022-01-04 18:30:00.000000	2022-11-04 08:26:21.766989
	4	85000	2022-04-08 18:30:00.000000	2022-11-04 08:26:37.502053

Figure 4. 125: Income Table

5. TESTING

Table 5. 1: Test case 01

Testing Function 1: Submitting a review to a product.										
Test case ID: TC_01	Test designed by: Reg. No- IT21060694 Name- Weerasooriya K. A									
Test priority (High/Medium/Low):	Medium									
Test Description: Submitting a review to an ordered product after delivery.										
Preconditions: Customer should be logged into the customer platform.										
Dependencies: The order status should be delivered.										
Test steps: 1. Customer should be logged into the system. 2. Navigate to the “My Account” page by clicking on “My Account” in the navbar. 3. Click on “Manage” button in the relevant order. 4. Click review button next to the relevant order item. 5. Vote the product. 6. Enter the review. 7. Click on “Submit” button.										
Pass-condition: Customer review should be displayed under the specific product.										
Test ID	Test Inputs	Expected Output	Actual Output	Result (Pass/Fail)	Comments					
TC_01_1	Vote: Up Review: It is a convenient product	Review should be added to the relevant product and update the total vote ratio.	Successfully added the review and update the total vote ratio.	Pass						

Table 5. 2: Test case 02

Testing Function 2: Adding a product to the customer platform.					
Test case ID: TC_02	Test designed by: Reg. No- IT21060694 Name- Weerasooriya K. A				
Test priority (High/Medium/Low):	High				
Test Description: Adding lipstick to the customer platform by defining a selling price and applying a discount.					
Preconditions: Sales Manager should be logged into the system.					
Dependencies:					
Test steps: <ol style="list-style-type: none"> 1. Sales Manager should be logged into the system. 2. Navigate to the “Sales Product” page by clicking on “Products” in the sidebar menu. 3. Click on “ADD PRODUCT” button. 4. Enter the product name. 5. Enter the product selling price. 6. Enter the pre-defined retail price. 7. Select the product category from the drop-down list. 8. Enter a product description. 9. Upload a product image. 10. Choose product tags. 11. Click on “Submit” button 					
Pass-condition: Product details should be displayed in the customer platform.					
Test ID	Test Inputs	Expected Output	Actual Output	Result (Pass/Fail)	Comments
TC_02_1	Product Name: Lipstick Selling Price: 270.00 Retail Price: 320.00 Product Category: Face Makeup Product Description: Lipstick is... Product image: Lipstick.jpg, Product tags: Beauty, lipstick, skin	Product added to the customer platform with the entered details and display the product in the “products” page with the applied discount.	Successfully added the product to the selling platform and discount are applied to the product.	Pass	

Table 5. 3: Test case 03

Testing Function 3: Scheduling a batch production									
Test case ID: TC_03		Test designed by: Reg. No – IT21037610 Name – Wanniarachchi W.D.D.M							
Test priority (High/Medium/Low):		High							
Test Description: There are pre-defined lists of product formulations in the system. When the user enters necessary details such as Target Quantity and Due date the system should display the availability of Raw-Materials. If there are any deficiencies user should be able to place a request for each deficiency item.									
Preconditions: User should be logged in as Batch Production Manager.									
Dependencies: Product Formulations and Raw-Material inventory must be maintained in separate tables.									
Test steps: 1. Click “Schedule Production” button under the relevant product in Products page. 2. In “Target Quantity” field, enter the target quantity. 3. In “Net-Weight” field, select the net weight per product. 4. In “Due Date” field, select the due date of the production. 5. Press “Proceed” button. 6. Request deficient Raw-Materials by clicking “Request” button. 7. Press “Confirm Schedule” button									
Pass-condition: Production should be scheduled and displayed in Productions Page.									
Test ID	Test Inputs	Expected Output	Actual Output	Result (Pass/Fail)	Comments				
TC_03_1	Target Quantity: -500 Net Weight: 15g Due Date: 12/01/2022	Show error message “Value must be greater than 0”. Under Target Quantity field Redirect to same page	Error message displayed	Pass					
TC_03_2	Target Quantity: 5000 Net Weight: 15g Due Date: 10/01/2022	Selection of past dates disabled.	Selection of past dates disabled.	Pass					
TC_03_3	Target Quantity: 5000 Net Weight: 15g Due Date: 12/01/2022	Castor oil Quantity for 100g: 54g Required Quantity: 40.5kg Availability: True	Required Quantity calculated successfully	Pass					

TC_03_4	Target Quantity: 5000 Net Weight: 150g Due Date: 12/01/2022	Castor oil Quantity for 100g: 54g Required Quantity: 405kg Availability: False Display “Request” button	Required Quantity calculated successfully Raw-Material Request placed successfully and display Successful message	Pass	
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Table 5. 4: Test case 04

Testing Function 4: Add batch details to the system										
Test case ID: TC_04	Test designed by: Reg. No – IT21037610 Name – Wanniarachchi W.D.D.M									
Test priority (High/Medium/Low):	High									
Test Description: User proceed with the production activities and submit batch details										
Preconditions: User should be logged in as Batch Production Manager.										
Dependencies: Bach production must be scheduled.										
Test steps: 1. Click “Proceed” button under the relevant production in Scheduled Productions page. 2. View and perform production activities as displayed. 3. In “Batch Quantity” field, enter the final batch quantity. 4. Click “Submit” button.										
Pass-condition: Details of completed batch should be added to the system										
Test ID	Test Inputs	Expected Output	Actual Output	Result (Pass/Fail)	Comments					
TC_04_1	Manufacture date: 11/09/2022 Duration: 365 days	Expiry date: 11/09/2023	Expiry date calculated successfully	Pass						
TC_04_2	Batch Quantity: 5000	Production Completed dialog box	Dialog box appeared successfully	Pass						

Table 5. 5: Test case 05

Testing Function 5: Add an Item					
Test case ID: TC_05	Test designed by: Reg. No- IT21052606 Name- Ranaweera G.R.D				
Test priority (High/Medium/Low):	High				
Test Description: When adding a new item, it will save data to the database and displays a successful message.					
Preconditions: All fields must be filled with correct data, without any validation errors.					
Dependencies:					
Test steps:	<ol style="list-style-type: none"> 1. Insert item id 2. Insert item name 3. Insert category 4. Insert quantity 5. Insert reorder level 6. Click on “Add Item” button 				
Pass-condition: New data added to the database					
Test ID	Test Inputs	Expected Output	Actual Output	Result (Pass/Fail)	Comments
TC_05_1	ID: PR_1234 Name: Lipsticks Category: Face Makeup Quantity: 30 Reorder Level: 50	Prompt a dialog box to indicate Successfully added message.	Displays a successfully added message.	Pass	
TC_05_2	ID: @3ish12 Name: Lipsticks Category: Face Makeup Quantity: 30 Reorder Level: 50	Indicate an error which says item id is invalid.	Displays an error message “Invalid Item ID”	Pass	

Table 5. 6: Test case 06

Testing Function 6: History					
Test case ID: TC_06	Test designed by: Reg. No- IT21052606 Name- Ranaweera G.R.D				
Test priority (High/Medium/Low):	High				
Test Description:	When adding, updating, or deleting an item, it will save data to the database and triggers respective triggers and automatically add to the history table.				
Preconditions:	All fields must be filled with correct data, without any validation errors.				
Dependencies:					
Test steps:	<ol style="list-style-type: none"> 1. Insert, update, or delete an item 2. View history page 				
Pass-condition:	Display the newly added, updated, or deleted item with its information.				
Test ID	Test Inputs	Expected Output	Actual Output	Result (Pass/Fail)	Comments
TC_06_1	ID: PR_1234 Name: Lipsticks Category: Face Makeup Quantity: 30 Reorder Level: 50	Displays a new field in History page with relevant information.	Displays a new field in History page with relevant information.	Pass	

Table 5. 7: Test case 07

Testing Function 7: Accept new suppliers.									
Test case ID: TC_07		Test designed by: Reg. No- IT21041402 Name - Wickramanayake V.P.P							
Test priority (High/Medium/Low):		High							
Test Description: Status must be changed into ‘Accepted’ after accepting a new supplier.									
Preconditions: There must be newly applied suppliers displayed in the new suppliers’ page.									
Dependencies:									
Test steps: <ol style="list-style-type: none"> 1. Log in as the Supplier Manager 2. Visit New Suppliers’ page. 3. Select an applicant and click the Accept button. 4. Fill the forum including the details of the applicant and submit. 5. Check the status. 									
Pass-condition: The status of the new supplier must be displayed as ‘Accepted’.									
Test ID	Test Inputs	Expected Output	Actual Output	Result (Pass/Fail)	Comments				
TC_07_1	First name: Sithmi Last name: Perera Email: sith@gmail.com Username: Sithmi Password: sith@12345 Password confirmation: sith@12345	Status changed in to ‘Accepted’	Status changed in to ‘Accepted’	Pass	First name, Last name, Email, Username are autofill with the applicant data and the manager has to enter only the password.				

Table 5. 8: Test case 08

Testing Function 8: Keep raw material records as a supplier.									
Test case ID: TC_08		Test designed by: Reg. No- IT21041402 Name - Wickramanayake V.P.P							
Test priority (High/Medium/Low):		Medium							
Test Description: Insert the available raw material details.									
Preconditions: Supplier must log in to the system.									
Dependencies:									
Test steps: 1. Log in as the Supplier 2. Visit My products page. 3. Enter the raw material details including product name, unit, and unit price and submit.									
Pass-condition: Raw material details will display in the table of my products page.									
Test ID	Test Inputs	Expected Output	Actual Output	Result (Pass/Fail)	Comments				
TC_08_1	Product: Glycerin Unit: Kg Unit Price: 990	Inserted details are displayed on the table.	Successfully added message passes and inserted details are displayed in the table.	Pass					

Table 5. 9: Test case 09

Testing Function 9: Add new Employee details									
Test case ID: TC_09		Test designed by: Reg. No – IT21073496 Name – Nadeera A.A.D.P							
Test priority (High/Medium/Low):		High							
Test Description: Manage all details of employees.									
Preconditions: Manager has to login to the admin part.									
Dependencies:									
Test steps: <ol style="list-style-type: none"> 1. Managers log in to the admin part 2. Click on the employee details display on the dashboard 3. Click on the “Add employee” button 4. Enter an employee ID 5. Enter the first, middle, last names 6. Select gender 7. Enter the birthday 8. Enter the E-mail address 9. Enter the contact number 10. Enter the Address 11. Enter the Department 12. Enter the Position 13. Enter the Date of entry 14. Enter the Salary 15. Enter the Status 16. Click on the save button 									
Pass-condition: New Employee details will be added to the system									
Test ID	Test Inputs	Expected Output	Actual Output	Result (Pass/Fail)	Comments				
TC_09_1	ID: 005 Name: S.K.Sanduni Gender: Male Birthday: 2001.03.17 Email: sk@gmail.com Contact: 0711949466 Address: Nugegoda Department: Sales Position: HR Entry date: 2022.5.12 Salary: 50000 Status: Active	New employee added to the system with given details	Successfully added to the system and displayed in the employee page	Pass					

Table 5. 10: Test case 10

Testing Function 10: Add new department									
Test case ID: TC_10		Test designed by: Reg. No – IT21073496 Name – Nadeera A.A.D.P							
Test priority (High/Medium/Low):		High							
Test Description: Maintain and View existing departments in this factory.									
Preconditions: Manager has to login to the admin part.									
Dependencies:									
Test steps: <ol style="list-style-type: none"> 1. Managers log in to the admin part 2. Click on the department details display on the dashboard 3. Click on the “Add” button 4. Enter the department name 5. Enter the description 6. Select Status 									
Pass-condition: New department will be added to the department list									
Test ID	Test Inputs	Expected Output	Actual Output	Result (Pass/Fail)	Comments				
TC_10_1	Department Name: Warehouse Management Description: Department of Warehouse Management Status: Active	New department added to the system with given details	Successfully added to the system and displayed in the department page	Pass					

Table 5. 11: Test case 11

Testing Function 11: Charts in product dashboard display right output					
Test case ID: TC_11	Test designed by: Reg. No- IT21073564 Name- Priyabandu H.K.S.N				
Test priority (High/Medium/Low):	High				
Test Description: Each time user input a new product the product charts should update and display the correct analysis					
Preconditions: User should log in as Formulation Manager					
Dependencies:					
<p>Test steps:</p> <ol style="list-style-type: none"> 1. Insert product name 2. Select product category 3. Insert product description 4. Insert method of preparation 5. Insert duration 6. Insert image of the product 7. Click on “Add Product” button to insert product information 8. View product dashboard 					
Pass-condition: Product analysis charts are updated with new information.					
Test ID	Test Inputs	Expected Output	Actual Output	Result (Pass/Fail)	Comments
TC_1_1	Product Name – Nail polish Category – Nail cosmetics Description – Nail polish add color and a texture to your nails Method of preparation - If a solvent is used for the dissolution of bromo acid, the solution is first prepared and set aside until required. Then lake colors are first dispersed by mixing with suitable quantity of castor oil. Duration- 365 Choose image	Product analysis charts are updated.	Product analysis charts are updated.	Pass	

Table 5. 12: Test case 12

Testing Function 12: Add Product formulation					
Test case ID: TC_12	Test designed by: Reg. No- IT21073564 Name- Priyabandu H.K.S.N				
Test priority (High/Medium/Low):	High				
Test Description: When adding a new product formulation, it will save data to the database and displays in the respective product profile.					
Preconditions: All fields must be filled with correct data, without any validation errors.					
Dependencies:					
Test steps:	<ol style="list-style-type: none"> 1. Insert product name 2. Select product category 3. Insert product description 4. Insert method of preparation 5. Insert duration 6. Insert image of the product 7. Click on “Add Product” button to insert product information 8. Select product from product list 9. Click on “Add Formulation” Button on product profile 10. Insert Raw material 11. Insert Quantity 12. Click on “Submit” Button to add formulation 				
Pass-condition: New data added to the database					
Test ID	Test Inputs	Expected Output	Actual Output	Result (Pass/Fail)	Comments
TC_12_1	Product Name: Lipstick Category: Face Makeup Description: Lipstick adds color and a texture to your lips Method of preparation: If a solvent is used for the dissolution of bromo acid, the solution is first prepared and set aside until required. Then lake colors are first dispersed by mixing with suitable quantity of castor oil. Duration: 365 Choose image: Raw material: Castor oil Quantity: 10	Display the product in the product list	Display the product in the product list	Pass	

TC_12_2	<p>Product Name: Cream</p> <p>Category: Skin Cosmetic</p> <p>Description: Cream texture to your skin</p> <p>Method of preparation: If a solvent is used for the dissolution of bromo acid, the solution is first prepared and set aside until required. Then lake colors are first dispersed by mixing with suitable quantity of castor oil.</p> <p>Duration: 365</p> <p>Choose image:</p> <p>Raw material:</p> <p>Castor oil</p> <p>Quantity: (-10)</p>	Indicate an error which says formulation quantity is invalid.	Displays an error message “-10 is invalid please enter a valid quantity”	Pass	
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Table 5. 13: Test case 13

Testing Function 13: Keep product cost details as a cost analysis manager									
Test case ID: TC_13		Test designed by: Reg. No- IT21510380 Name- Kularathna D.G.J.C							
Test priority (High/Medium/Low):		High							
Test Description: Insert Production cost details									
Preconditions: Cost Analysis must log in to the system									
Dependencies:									
<p>Test steps:</p> <ol style="list-style-type: none"> 1. Login as a Cost analysis 2. Visit My cost page 3. Enter the Production Cost details include product type, amount, date and submit 									
Pass-condition: Production cost details will display in the table of my production cost page.									
Test ID	Test Inputs	Expected Output	Actual Output	Result (Pass/Fail)	Comments				
TC_13_1	Product type: hair care Amount: 4500 Date: 22/10/2022	Inserted details are display on table	Successfully added message and inserted details are displayed in the table.	Pass					

Table 5. 14: Test Case 14

Testing Function 14: Add a driver to the system								
Test case ID: TC_14		Test designed by: Reg. No- IT21076220 Name- Galappaththi A.I						
Test priority (High/Medium/Low):		High						
Test Description: When adding a new vehicle, it will save data to the database and update the vehicle table.								
Preconditions: All fields must be filled with correct data, without any validation errors.								
Preconditions: All fields must be filled with correct data, without any validation errors.								
Dependencies:								
Test steps: Insert full name. Insert contact number. Insert email. Insert gender. Insert license number. Insert NIC. Insert license validity. Select the button “Add Driver”.								
Pass-condition: New data added to the database	Pass-condition: New data added to the database	Pass-condition: New data added to the database	Actual Output	Result (Pass/Fail)	Comments			
Test ID	Test ID	Test ID	Navigated back to the vehicle table containing vehicle details and	Pass				

Table 5. 15: Test Case 15

Testing Function 15: Add a vehicle to the system					
Test case ID: TC_15	Test designed by: Reg. No- IT21076220 Name- Galappaththi A.I				
Test priority (High/Medium/Low):	High				
Test Description: When adding a new vehicle, it will save data to the database and update the vehicle table.					
Preconditions: All fields must be filled with correct data, without any validation errors.					
Dependencies: There must be drivers available in the system.					
Test steps:	<ol style="list-style-type: none"> 1. Select a driver. 2. Insert license plate. 3. Insert model. 4. Insert brand. 5. Insert edition. 6. Insert exterior color. 7. Insert year. 8. Insert engine capacity. 9. Insert mileage. 10. Insert fuel type. 11. Insert transmission. 12. Insert quantity. 13. Select the condition 14. Click on “Add vehicle” button 				
Pass-condition: New data added to the database					
Test ID	Test Inputs	Expected Output	Actual Output	Result (Pass/Fail)	Comments
TC_15_1	Driver: Richard Sam License plate: KM - 2776 Model: Daihatsu Brand: Hijet Edition: s120 Exterior color: Black Year: 2009 Engine Capacity: 600cc Mileage: 40000km Fuel Type: Petrol Transmission: Automatic	Navigate back to the vehicle table and shows that newly added vehicle.	Navigated back to the vehicle table containing vehicle details and	Pass	

6. EVALUATION AND CONCLUSION

The "Cosmetics Manufacturing and Sales Management System" has been developed to override the problems prevailing in the practicing manual system. Moreover, this system is designed for the particular need of the company to carry out operations in a smooth and effective manner. The main objective of this framework is to save time, make the system cost effective and management records efficiently. No formal knowledge is needed for the user to use this system. Thus, by this all it proves it is user-friendly with a maximum user-experience. Accordingly, this led to an error free, secure, reliable, and fast factory management system.

7. REFERENCES

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