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Web-based Business Management System for SSK Surprise Delivery

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Abstract: Being a newly established business, SSK Surprise Delivery is facing difficulties to get exposure among customers due to other well-known businesses. In addition, SSK Surprise Delivery faces challenges in retrieving orders and recording the sales report manually. Hence, a web-based business management system is developed to help him to manage his business. The system is developed with a linear and sequential approach utilizing the classical waterfall model. Upon completion of the system development, the system will have login module, registration module, product module, and tracking module. The system also developed to generate the sales report automatically to ease the recording of the transactions. In conclusion, this system ensures that the owner can manage and develop his business from anywhere and at any time just by accessing the system. In future, the system could be upgraded to application which will avoid the necessary to access the system from browsers.

Keywords: Web-based Management System, Business Management System, Waterfall Model

1. Introduction

E-commerce is rising an opportunity to many people who are passionate about running a business but do not have enough capital to open a physical store. There are four types of e-commerce namely Business to Consumer (B2C), Business to Business (B2B), Consumer to Business (C2B) and Consumer to Consumer (C2C) [1]. In recent times, surprise delivery is emerging as a profitable B2C service-related online business. The business has caught attention of many customers and became famous during lockdown period as people could not meet and gift their loved ones face-to-face due to the reason being obliged to stay at home. Hence, this service comes as a savior to deliver gifts to loved ones with added advantage of surprising them as well on their special day.

The sole purpose of surprise delivery is to portray gratitude or to enchant a person with surprise gifts. Examples of such gifts are flower bouquets, cake, chocolates, balloons, greeting card and many more [2]. This business is a perfect option for person who are passionate about running small business but not being able to prepare the capital to secure a place to open a shop. This business requires a minimal cost, and the risk is genuinely lower.

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SSK Surprise Delivery is a surprise delivery business which was established in 2020. The business is based in Kajang, Selangor, where the targeted customer would be the dwellers of Kajang area. The owner feels that he has great competition with other type business owner in advertising his company. Apart from that, the owner finds it difficult to get more orders because there is not enough exposure about his business in online platform.

As a result, this project aims to develop web-based surprise delivery business management system for the SSK Surprise Delivery company. The owner solely depends on WhatsApp to receive order and communicate with the customers. This type of communication is very unorganized and can make the data storage about customers to be difficult. Hence. The purpose of this project is to create an automate system which eases the process of making order, receiving order, making payment, receiving payment and to store all the information about past orders.

The paper is arranged in the following manner: related works are presented in Section 2; research methodology is presented in Section 3; the results and discussion of user test case is discussed in Section 4; the last section summarizes the whole study.

2. Related Work

2.1 Case Study

A Business Management System (BMS) is a set of policies, methods, procedures, and processes that are utilized in the development and implementation of strategies, as well as other related management activities [4]. BMS is needed for a company to keeps things moving smoothly. This is because companies may simply get all of the information, they require regarding their business operations. They can simply travel from one screen to another with just a few clicks, shifting from orders to sales reports with ease, and, more crucially, connecting these operations.

A system that works over a server which is when there is an internet connection to the computer is referred as the web-based system. This type of system can be accessed by the users by using any Internet browsers [6]. A web-based system could be developed by utilizing technologies like Java, Phyton, PHP, etc.

The BMS for many businesses out there especially surprise delivery business would be a web-based system due to its vast advantages. A web-based system is accessible no matter where you are. The only requirement to access is internet connection. This literally means you can “bring” the system with you wherever you go which can ensure that the owners can always check up on their business from any corner of this world. Next, the system can be accessed from various devices not only limited to computers. For instance, the system could be accessed through smartphones which are portable compared to personal computers. Finally, developing the business system as a web-based system makes it easier to be deployed and maintained.

2.2 Study of Existing Systems

There are many existing web-based business management systems for surprise delivery business. It is crucial to study and analyze the features of those systems in order to improve the existing features also, to add new features to the proposed system. It is at utmost importance to implement the output of the comparisons so that a well-developed and best system could be delivered to SSK Surprise Delivery. **Table 1** presents the comparative analysis between the existing systems, Happy Bunch [5], Bull and Rabbit [6], Surprise Delivery [7] and proposed systems.

Table 1: Comparison analysis with existing systems

Features / System	Happy Bunch	Bull And Rabbit	Surprise Delivery	Web- Based Surprise Delivery Business Management
Login Module	Yes	Yes	Yes	Yes
Registration Module	Yes	Yes	Yes	Yes
Product Module	Yes	Yes	Yes	Yes
Tracking Module	Yes	No	No	Yes
QR Code	No	No	Yes	No
Report generator	Yes	Yes	Yes	Yes
Internet Requirement	Yes	Yes	Yes	Yes
Use Case	Small Business	Small Business	Small Business	Small Business
Platform	Web-based	Web-based	Web-based	Web-based

3. Methodology/Framework

Name of process design that is applied for this project is called the Waterfall Model. This model is suitable for this system due to the advantage of organized structure that can give different scope for mainly different purpose. The first step is the requirement analysis aimed to capture all the information from existing user. Therefore, this step is needed for brainstorming to analyze and finding output for the new system implementation. The second phase of waterfall model is system design required to create the design of prototype including software and hardware. For the third phase of SDLC is implementation, this process takes a lot of time since we need to insert the coding and implement the GUI design. This business management system is developed until the stage of prototype due to project requirement.

3.1 Planning Phase

In this first phase, an appointment for a gathering with the client to comprehend the prerequisites or the user requirements is arranged. The scope of the project and plan for quality management is developed at this stage. In addition, the expected time for each activity, project cost and budget are estimated as well.

3.2 Analysis Phase

The user requirements gathered from previous phase are stacked up in this phase. According to the necessities, the product, and equipment required for the appropriate finish of the venture are dissected in this stage. In addition, the highlights of the project are chosen at this stage; from choosing which code ought to be utilized for developing the system, to the information base system that can be utilized for the smooth working of the system. Lastly, the challenges that will be faced at the early stage of implementation phase is diagnosed. The functional, non-functional, user, hardware and software requirements involved in this phase are presented in **Table 2, 3, 4** and **5** respectively.

Table 2: Functional requirements of the system

No	Module	Description
1.	Register and Login Module	• The system should allow customer to register new accounts with valid email address and password • The system should allow customer to login into the system using registered username and password. • The system should allow administrator to login into the system using registered username and password. • The system should redirect customer and administrator to the main page and dashboard respectively upon successful login.
2.	Gifts and Gifts Category Module	• The system should display all the gifts available in the database to both customer and administrator. • The system should allow the administrator to add new gift, update information of the gifts and delete gifts that listed in the database. • The system should allow the administrator to add new gift category, update information of the gifts and delete the gifts category information that listed in the database.
3.	Cart and Checkout Module	• The system should allow the customer to add a new gift into the cart, update the cart and remove added gift from the cart. • The system should redirect to the checkout page from the cart page once the user is intended to check to proceed with payment. • The system should allow the customer to input delivery details and payment details.
4.	Order Module	• The system should display the order history to the customer. • The system should allow the customer to cancel the order. • The system should display all the orders that have been made to the administrator. • The system should allow the administrator to manage and update the progress of every order.
5.	Payment Module	• The system should allow customer to choose a payment method for their order. • The system should allow the administrator to review the payment of the orders that have been made.
6.	Tracking Module	• The system should allow the customer to track the progress of their module
7.	Enquiries Module	• The system should allow the customer to send inquiries and receive replies from admin. • The system should allow the administrator to receive inquiries and send replies to customer.
8.	Report generation	• The system should be able to generate a report of sales and invoice of each and order. • The system should generate error message if the report can't be generated

Table 3: Non-functional requirements of the system

No	Requirements	Description
1.	Performance	The system should be usable at all times
2.	Compatibility	The system should function well when other applications are running
3.	Security	The system should be protected to prevent unauthorized access
4.	Reliability	The system should operate well even after extensive use

Table 4: User requirements of the system

No.	User Requirements
1.	Administrator and Customer must be able to enter a valid id and password to enter the system
2.	Administrators should be able view all registered customers.

3.	Administrators and Customers should be able to see all gifts that available in list.
4.	Administrators should be able to add, modify, categorize and delete the gifts in the system
5.	Customer should be able to add, update and delete gifts into the cart.
6.	Customer should be able to insert delivery address and other information during checkout in order to proceed with their order.
7.	Customer should be able to make an order via available payment methods.
8.	Customer should be able to receive receipt and tracking id which will be used to track their order.
9.	Customer should be able to view their order history and cancel the orders.
10.	Administrator should be able to manage order such as approve and cancel every order.
11.	Administrator should be able to update the progress of their customer's order.
12.	Administrator should be able to update the progress of each order.
13.	Administrator should be able to view and reply enquires and feedbacks from the customers.
14.	Administrator should be able to generate a report of sales and invoice of each and order.

3.3 Design Phase

The Database, Flowchart, Data Flow Diagram (DFD), Entity Relationship Diagram (ERD) and template for the system outlook are designed in this stage using the Mockflow application. In order to ensure that the system functions well, a suitable algorithm is designed during this time.

Figure 1 shows the Context Diagram for the surprise gifts ordering system of SSK Surprise Delivery. Context diagram is the top levels view that shows the boundary of the system and the brief movement of information. Data storage is not shown in this diagram unless it is owned by another information system because data storage is the internal components of the system.

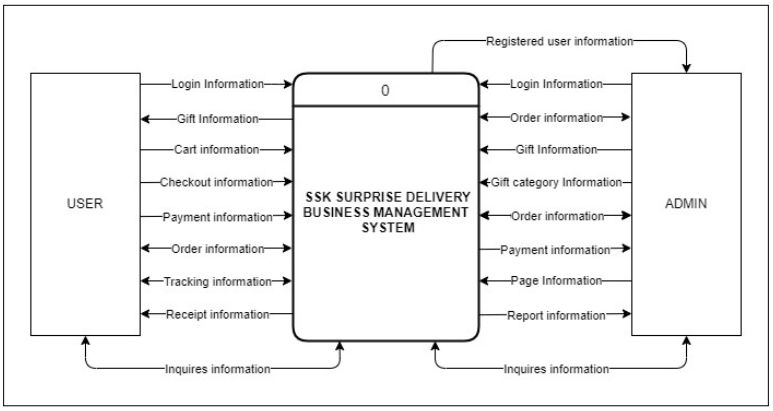


Figure 1: Context Diagram

Figure 2 illustrates DFD Level 0. DFD Level 1 is the breakdown of process from DFD Level 0. This diagram is detailed to the key process involved in the SSK Surprise Delivery Business Management. **Figure 3** and **Figure 4** shows the DFD Level 1 for Order Process and Approval & Tracking Process respectively.

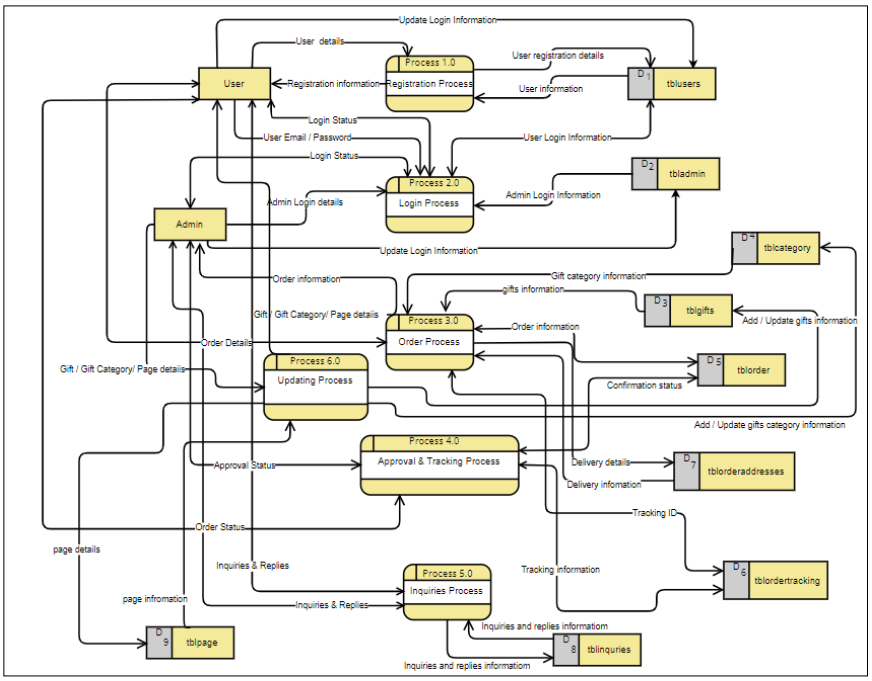


Figure 2: DFD Level 0

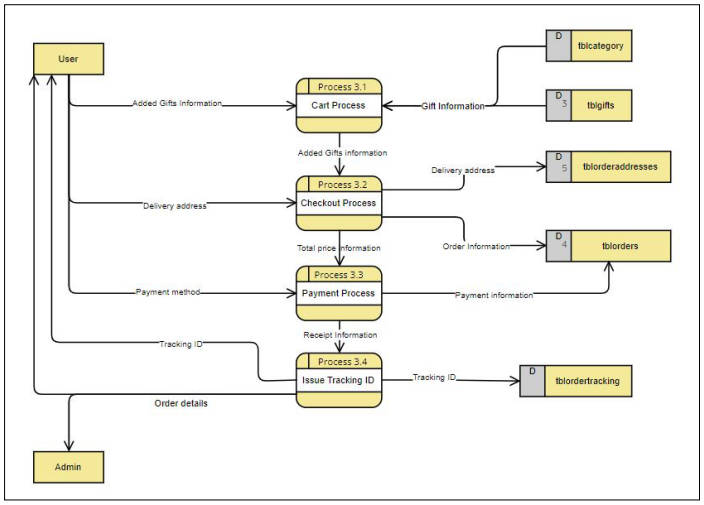


Figure 3: DFD Level 1 of Order Process

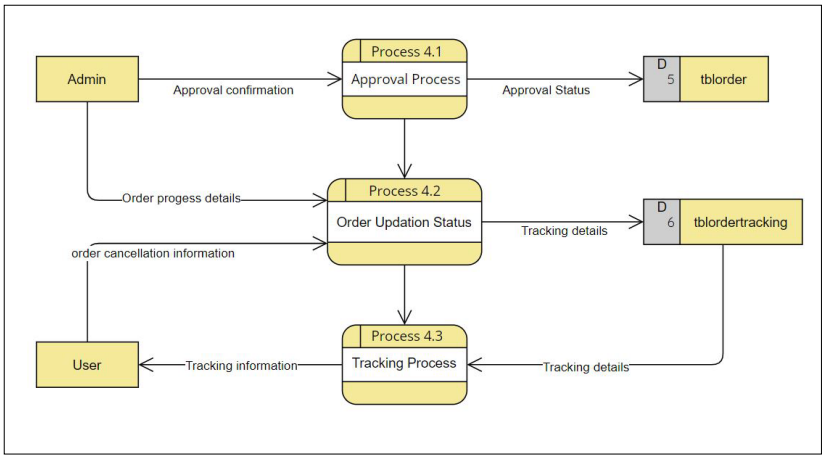


Figure 4: DFD Level 1 of Approval & Tracking Process

A flowchart is a symbol-based representation of a movement system that must be followed. **Figure 5** displays the customer's system flowchart whilst **Appendix A** displays the admin's system flowchart.

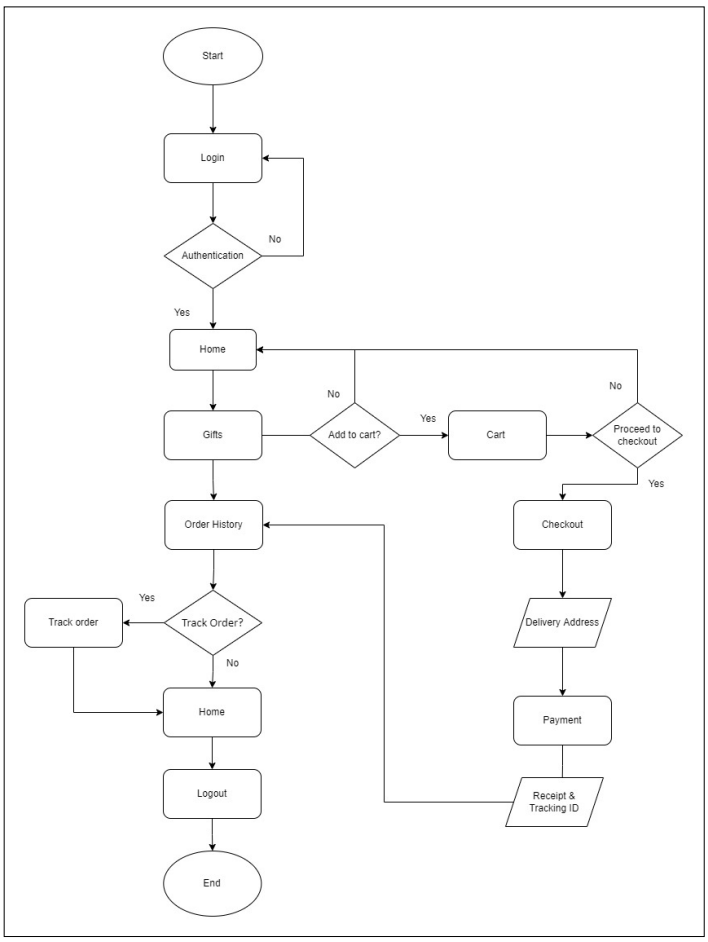


Figure 5: Customer's System Flowchart

Figure 6 depicts the ERD which shows the connections between entities involved in this system. The ERD for this system comprises eleven classes each with their corresponding attributes and operations.

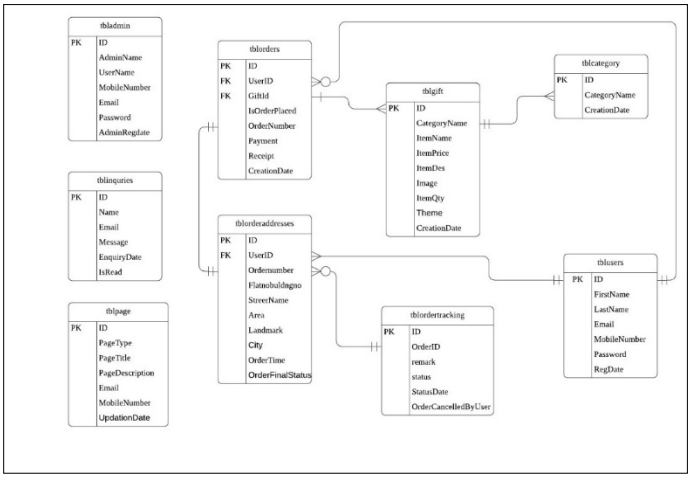


Figure 6: ERD for SSK Surprise Delivery

Based on the system architecture illustrated in **Figure 7**, the software system's structure could be interpreted. The user will undergo the web interface, where the modules are settled, which are the homepage, registration and login module, gifts and gifts category module, cart and checkout module, order module, payment module, tracking module, and inquiries module. The modules are interrelated with the database as in the end, it is used in report generator module that will be created by the user.

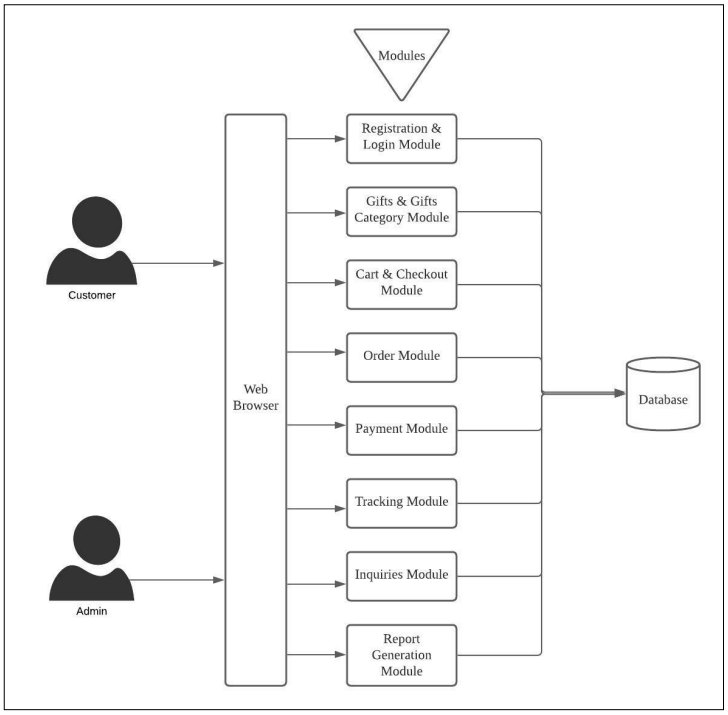


Figure 7: System Architecture

Relational schema for this system is listen in the following:

i. tbluser (ID, FirstName, LastName, Email, MobileNumber, password, RegDate)
ii. tbladmin (ID, , AdminName, UserName, MobileNumber, Email, Password, AdminRegDate)
iii. tblgift (ID, CategoryName, ItemName, ItemPrice, ItemDes, Image, ItemQty, itemTheme, CreationDate)
iv. tblcategory(ID, CategoryName, CreationDate)
v. tblorders (ID, UserID, GiftID, IsOrderPlaced, OrderNumber, PaymentMethod, Receipt, OrderDate)
vi. tblordertracking (ID, OrderID, remark, status, StatusDate, OrderCancelledByUser)
vii. tblorderaddress(ID, Userid, Ordernumber, Flatnobulngno, StreetName, Area, Landmark, City, OrderTime, OrderFinalStatus)
viii. tblinquiries (ID, Name, Email, Message, EnquiryDate, IsRead)
ix. tblpage (ID, PageType, PageTitle, PageDescription, Email, MobileNumber, UpdationDate)

Below are the interfaces that are designated based on the structure. Below figures explain user interfaces and have been designed by using MockFlow [3].

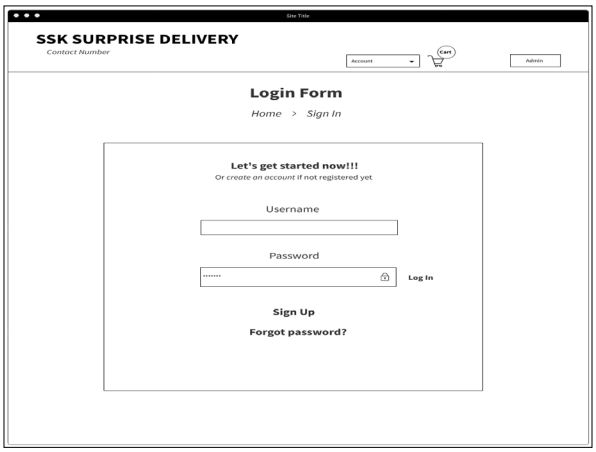


Figure 8: Customer Login Interface

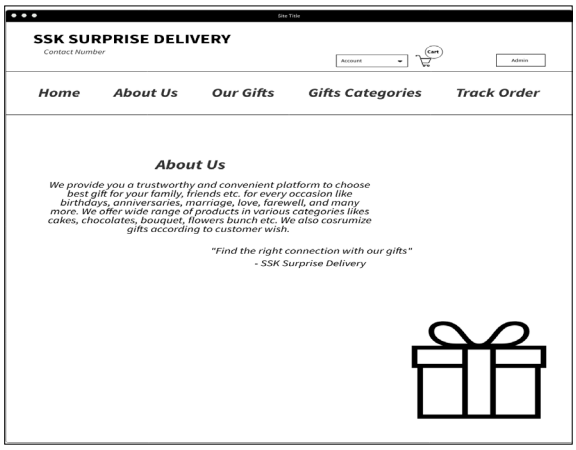


Figure 9: Home Interface

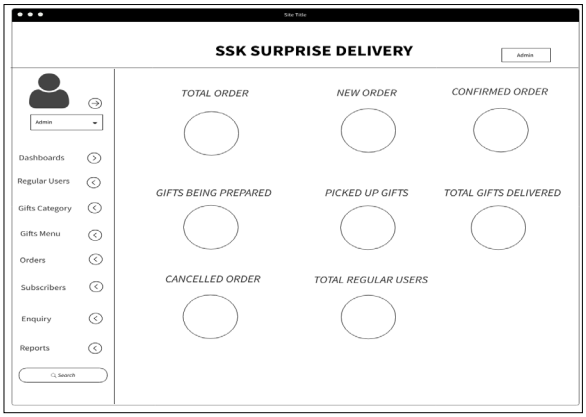


Figure 10: Admin Dashboard Interface

Figure 11: All Orders Interface

3.4 Implementation Phase

Considering the calculations written in the previous stage, the composition of product program happens at this stage. For each module present in the proposed system, programming code is composed and tried, to check if the right yield is gotten.

3.5 Testing Phase

The presence of defects in the developed system and the probability that the system has been built according to the recorded determinations are tested using integration testing. Apart from that, the bugs found will be fixed in this stage.

3.6 Maintenance Phase

After a thorough testing, the system is organized at the client's side. A routine maintenance work will be carried out after the system is deployed.

4. Results and Discussion

A test will be conducted in this part to evaluate the functionality of each module. Testing is carried out using the Questionnaire of User Interface Satisfaction (QUIS) approach. QUIS is a user satisfaction survey aimed to learn whether the system meets user requirements. The survey enables to improve the user experience, and deliver exactly what the user requires.

This section shows the outcomes of the QUIS approach with two users: admin, and a customer. Part A: Interface, Part B: Terminology and System Information, Part C: Learning, Part D: System Capabilities, and Part E: General Impressions are the five parts of this user test scenario. The QUIS method implements a scale system, with the lowest score being 0 whereas the highest score is 10.

Figure 12 shows the graph of user test case results, Part A: Interface. All of the elements have the highest overall rating by average score of 9 from two users, admin and customer.

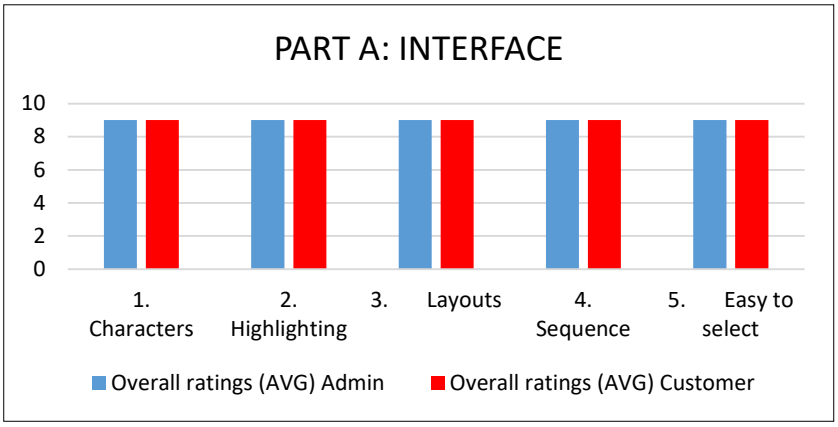


Figure 12: Part A Interface

Figure 13 shows the graph of user test case results, Part B: Terminology and System Information. All of the elements have the highest overall rating by average score of 9 from two users, admin and customer.

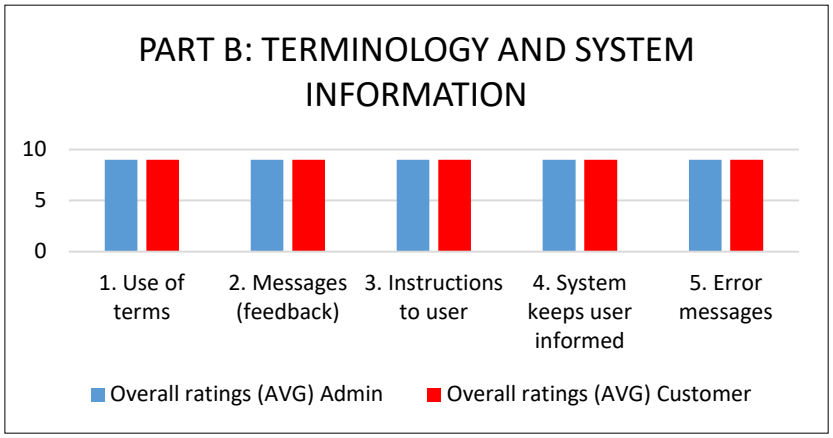


Figure 13: Part B Terminology and System Information

Figure 14 shows the graph of user test case results, Part C: Learning. All of the elements have the highest overall rating by average score of 9 from two users, admin and customer.

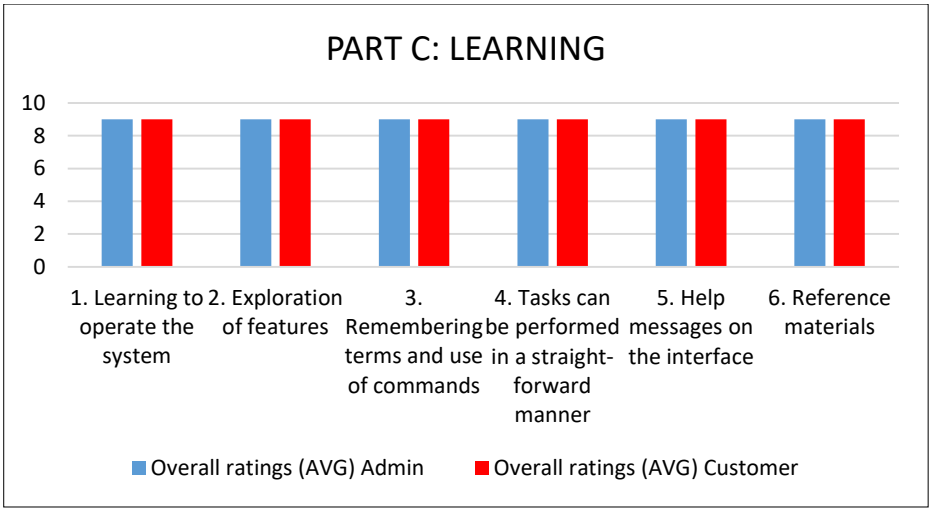


Figure 14: Part C Learning

Figure 15 shows the graph of user test case results, Part D: System Capabilities. All of the elements have the highest overall rating by average score of 9 from two users, admin and customer, except for the second element, system sound, is not applicable (NA) in the system.

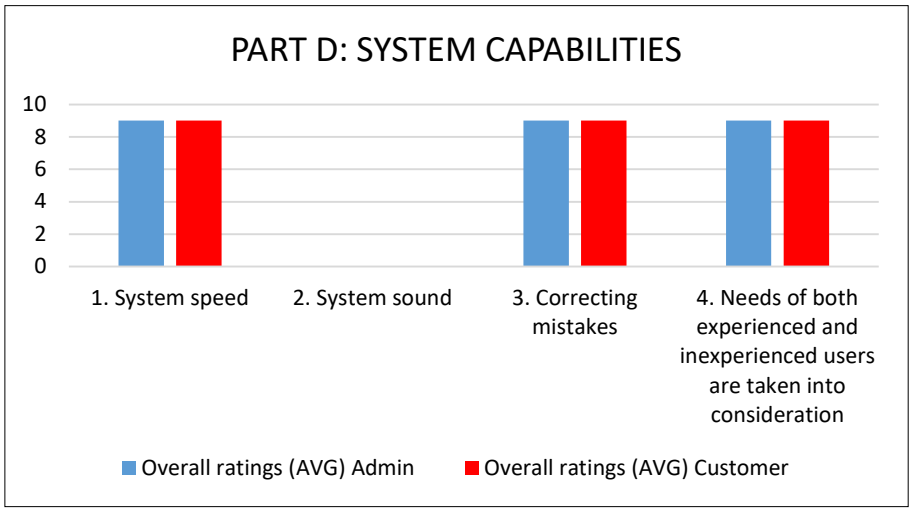


Figure 15: System Capabilities

Figure 16 shows the graph of user test case results, Part E: General Impressions. All of the elements have been rated with highest scores of 9 by two users, admin and customer.

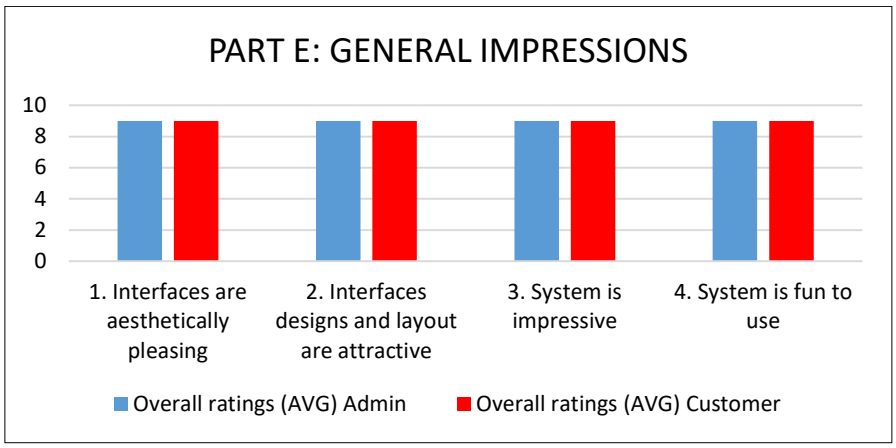


Figure 16: Part E General Impressions

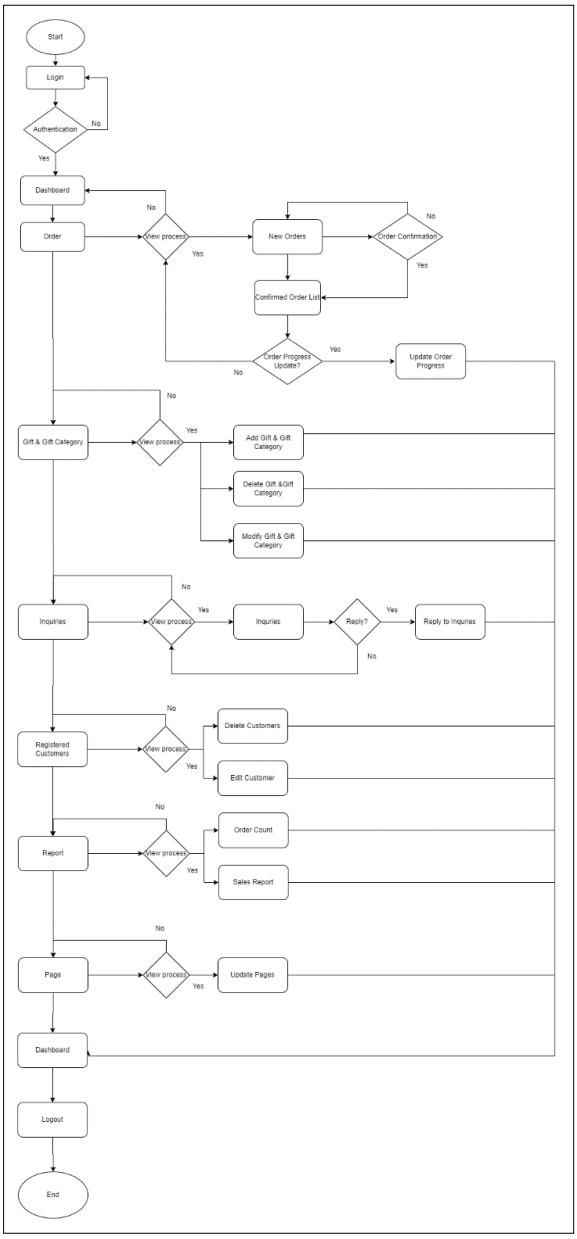
5. Conclusion

As a result, a web-based Business Management System for SSK Surprise Delivery should be developed to meet the user's requirements. The system is responsible to make the tasks easier for the administrator, and the customers.

Acknowledgment

The authors would like to thank the Faculty of Computer Science and Information Technology, Universiti Tun Hussein Onn Malaysia for its support.

Appendix



Appendix A: Admin's system flowchart

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