

Designing Information System Inventory and Transaction Reports Web-Based Using ICONIX Process Method

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Abstract— *Tjangkir Kopi* is a small-medium enterprise (MSMEs) engaged in food and beverage in West Java, precisely in City. There is a problem in the current business process, namely in managing the stock of materials that are still done manually through the Microsoft Excel application, which is very likely to occur misunderstandings. Competition in the Food and Beverage Industry is getting tougher, making MSMEs *Tjangkir Kopi* have to improve their business processes by creating an information system that helps develop their business to achieve a competitive advantage. In addition, there is still a lack of fulfillment of job descriptions for each employee and centralized report data. The System to be Built helps quickly and directly integrate with material stock and expenditure data in the database, so there won't be material stock problems in the warehouse. This system makes transaction reports on business processes much more effective because the data is automated. This research aims to analyze and design systems to support better inventory management and transaction reports and to support business processes with more complete and clear diagrams using the ICONIX Process method. This research explains the stages of analysis by collecting data through interviews and literature studies. The stages of system design produce business process proposals supported by GUI design, *use case diagrams*, *domain models*, *robustness diagrams*, *sequence diagrams*, and *class diagrams*. The results of research through analysis and system design using the ICONIX process method, it is hoped that *Tjangkir Kopi* can use it as an illustration of business processes to develop the business to be better and able to compete with competitors.

Keywords— Inventory, Transactions, MSMEs, ICONIX Process, Analysis Design System

I. INTRODUCTION

Inventory regulating the inventory of raw materials in an organization is significant because it maintains, supervises, and controls the goods inventory in a business. The activity contained in inventory management is to find out how much stock is owned and needed until the use of stock for business purposes [1]. If there is a problem with the raw materials inventory, it will impact business processes and organizational expenses. Transaction reports that present information on sales and purchase results become crucial evidence in an organization. The more complex the business process, the transaction report, and traditional inventory management will cause various problems such as redundancy of stock of goods, errors in financial calculations, and incompatibility of products sold with income [2].

Tjangkir Kopi MSMEs engaged in coffee Food and Beverage will find it difficult to move if they are still carried out with traditional reports, in addition to the increasing number of MSMEs who are also engaged in the coffee sector. In addition, MSMEs in *Tjangkir Kopi*, which are getting more significant over time, will require a system to support business processes. Where the system will solve problems that often occur, such as lack of material stock needs, fulfillment of jobless in each worker, especially data distribution report. The stock of materials that support MSMEs *Tjangkir Kopi* is essential to maintaining and developing their business. The procedure of stocking materials is performed manually through the application known as Microsoft Excel. This

greatly reduces the likelihood of misunderstandings or incorrect communication between the two parties. On the other hand, if the direct recording is performed, it is possible for errors to occur, such as an excess or lack of the total required stock. This will indirectly impact the satisfaction level felt by customers, such as customers will feel let down and unsatisfied, and they are less likely to return [3].

The Literature Study from the prior study discussed the design of a system for collecting inventory data from businesses that had previously conducted business processes with a manual system, specifically recording with books. This was done so the business could not afford to make the maximum possible profit. The research was designed by fixing diagrams and HIPO (Hierarchy Plus Input Process Output), presenting more accurate reports, storing data using databases, and facilitating the checking process or data search [4]. The next literature study [3] will be on research that discusses offline and online transactions, and the shop wants to do further marketing by building a system with a prototype method. The next literature study will focus on research that discusses offline and online transactions. The research resulted in the production of a web-based information system for online sales, which can also be used as a medium to deliver information to clients regarding products from the shop. This system was built after it was put into implementation [3]. The next literature study that has existed before discusses designing and analyzing a web-based system that can order sportswear effectively and efficiently using the ICONIX process method. The research resulted in a system design that supports the needs of the business venture to make

ordering time more efficient and storage subscribe data to make bookings easier [5]. Based on this literature review, the foundation for developing this research is to assist MSMEs in making inventory information systems and web-based transaction reports business using the ICONIX Process method. The study makes GUI Boards, use case models, domain models, robustness diagrams, sequence diagrams, and class diagrams [6][7] to help solve the problems encountered and meet the needs required by MSMEs Tjangkir Kopi to develop their business.

Through this analysis and design, *Tjangkir Kopi* can develop its business by creating a web-based system. It can help company ventures grow, make maximum profit, compete with competitors, and more evenly divide the job description according to the portion of each task. In addition, currently, Food and Beverage MSMEs in the coffee industry are rising rapidly and continue to grow. Therefore, based on the existing problems, we are interested in taking this case study because these problems can be overcome by making an Inventory Information System Design and Report Transactions to help MSMEs *Tjangkir Kopi* with the ICONIX Process Method.

II. RESEARCH METHODOLOGY

This section explains in detail the research conducted. Briefly describe the material and methods used in the study, including the subject/material studied, the tools used, the design of the experiment or design used, the sampling technique, the variables to be measured, the technique of data collection, analysis, and statistical models used. Successive quotes in parentheses [1]. The research methodology to obtain results and discussion of information system design is carried out by going through several stages, including [5][8]:

- Literature Studies: Collecting literature by analyzing data and information from reference journals that can support the research process.
- Data Collection: Collect data on the problems that are the purpose of the research by conducting a question-and-answer interview process directly with the owner of *Tjangkir Kopi*.
- Analysts are a Necessity: Analyze needs based on the results of interviews with the owner of *Tjangkir Kopi* from existing business processes so that they can create functional, non-functional, domain modeling, and GUI design needs.
- System Design: Designing the system through the Iconix process stage includes analysis or preliminary design, producing robustness diagram output. Then the Detailed Design stage produces the output of the sequence diagram and the database design, namely the class diagram.
- Conclusions and Suggestions: Make a summary of the analysis and design of the system as a solution to the research problem and make suggestions as evaluation material from the research.

A. Business Process

A business process is a set of activities designed with coordination within an organization where this set of activities together will generate business goals [9]. Business processes are several activities or tasks that require input and are contained in each department in the organizational structure to produce the desired output further and follow the company's objectives [10]. A business process is a sequence of interrelated, organization-designed actions that produce products or services. The result aligns with company goals.

B. Unified Modelling Language (UML)

The Unified Modelling Language, also known as UML, is a graphical representation of a system intended to facilitate specifying, describing, building, and documenting an object-oriented software system. This representation takes the form of a diagram and includes text that provides context for the depiction of the diagram. The object-oriented design methodology sees the system as a collection of objects connected and responsible for the system's functionality [11].

The web-based information system that will be designed and focused on MSMEs in *Tjangkir Kopi* is in its manufacture and development using the ICONIX Process method with Unified Modelling Language (UML). The system will implement an inventory information system and a transaction report for MSMEs *Tjangkir Kopi*, constructed with the ICONIX approach and defined in UML diagrams to better understand each process or stage.

C. Use Case Driven Object Modelling with UML (ICONIX Process)

ICONIX Process is a method that prioritizes making application prototypes or user interface designs that refer to use cases [12].

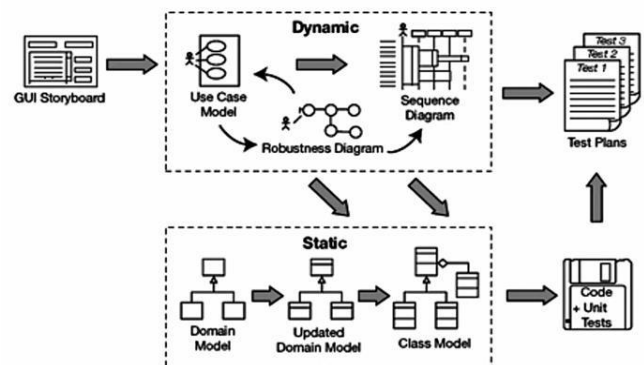


Figure 1. Iconix Process

Based on Figure 1, the ICONIX Process consists of several stages, and each existing stage produces a useful output for the next stage. Here are the six stages of the ICONIX process:

1) *Requirements*: It is the stage where the functional need for software creation is needed and explains everything that can be done by the user in the system [13]. Table I above explains that output is documented or depicted in diagram form (UML) at the requirement stage. The UML diagram generated as an

illustration of the system at the requirements stage is the domain model, the behavioral requirement in the form of GUI, and the use case diagram.

TABLE I
REQUIREMENT ICONIX PROCESS

Artifact	Definition	The UML
Functional Requirement	Defining what the system can do	No.
Domain Modelling	Ensuring the completeness of the object	Yes
Behavioral Requirement	Create GUI designs as well as use case diagrams	Yes

2) *Preliminary Design*: At this point in the process, the link between analysis and design is established. Table II, which can be found above, explains where the output created during analysis or the early design stage is illustrated using UML notation. This output is called robustness.

TABLE II
PRELIMINARY DESIGN ICONIX PROCESS ANALYSIS

Artifact	Definition	UML Process
Robustness Analysis	Describing the details of the use case	Yes

3) *Detailed design*: Detailed design is a stage that ensures that the design meets all the completeness and results of previous identification. Table III above explains that at the detailed design stage, there is an output annotated with UML, namely sequence and class diagrams.

TABLE III
DETAILED DESIGN ICONIX PROCESS

Artifact	Definition	UML Process
Sequence Diagram	Describes the details of the system scenario	Yes
Class Diagram	Development of the domain model	Yes

4) *Critical Design Review*: Critical Design Review ensures a system can be tested. Table IV confirms that the critical design review has diagram outcomes [14].

TABLE IV
CRITICAL DESIGN REVIEW ICONIX PROCESS

Artifact	Definition	UML Process
Consistency Analysis	Ensuring system design following analysis and needs	Yes

5) *Implementation*: The fifth stage is when a system performance that has been analyzed and made in earlier stages takes place. Coding and testing are both parts of the implementation process.

6) *The Output Of Coding And Testing*: Unified Modeling Language (UML) notation is not coding and testing documentation with the results in Table V.

TABLE V
IMPLEMENTATION ICONIX PROCESS

Artifact	Definition	UML Process
Coding	The system creation	No.
Testing	Test cases	No.

D. Micro, Small, and Medium Enterprises (MSMEs)

Article 1 of Law no.20 of 2008 discusses MSMEs as micro businesses owned by individual business entities that meet microenterprise criteria provided for in this law. Meanwhile, a small business is a stand-alone business carried out by a wishful person or business entity that is not a subsidiary or branch of the company owned, mastered, or become part of either directly or indirectly. Medium or large firms that meet the criteria for small businesses as defined by the rule.. MSMEs are productive economic enterprises carried out by individuals or business entities that are not subsidiaries or branches of a company owned, controlled, or part of it directly or indirectly with a small business or a large business with a total net worth or annual sales as provided in this Act. Medium enterprises are carried out by individuals or business entities, not subsidiaries or branches of the company owned, controlled, or part of it, either directly or indirectly, with a small or large business [15].

E. Inventory information system

An information system can be interpreted as a scheme or structure that regulates human resources or computers to convert inputs into information to get the company's desired results. Inventory can benefit from the management of stock inventory which includes goods or other resources [15].

The inventory information system or inventory is a system that regulates the administration of raw materials that helps organizations overcome challenges in purchasing products, managing stock goods, and centralizing reports so that the company may minimize errors and maximize management [16].

III. RESULT AND DISCUSSION

A. Business Process Analysis

The analysis of *Tjangkir Kopi's* business processes is made into two parts, the current business process and the proposed business process as a solution to research problems using BPMN (Business Process Modelling Notation) [5]. The business processes identified are the current raw material input process, current order process, the process of recording current expense reports, the proposed raw material input process, the proposed menu management process, the proposed ordering process, and the proposed income and expense transaction report process.

Figure 2 shows the business process with five objects: Headbar, Owner, Admin, Moka applications, and Excel. Moka clients place orders, while Excel keeps stock data and

transaction reports. Material stock data is documented in Excel, and requests are spoken. Save Excel transaction reports manually.

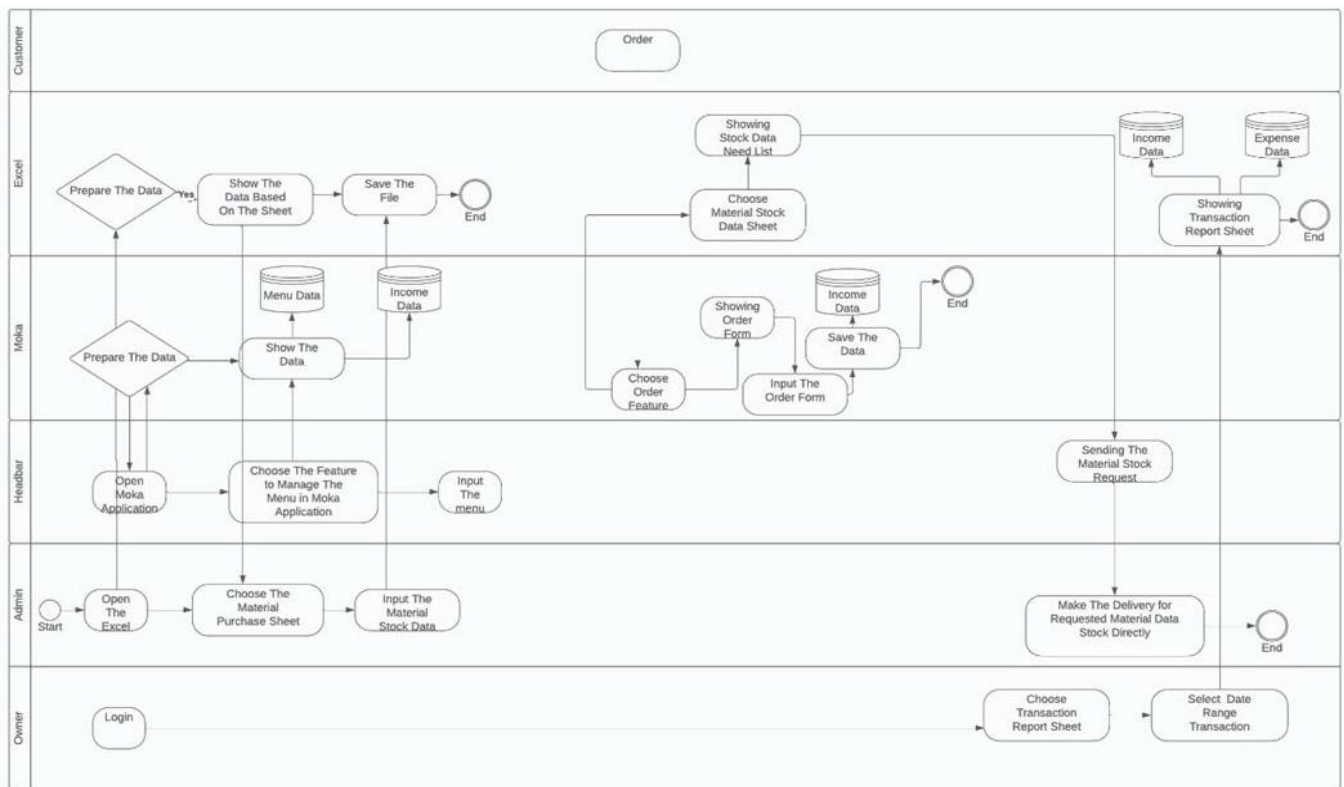


Figure 2. Current Business Processes

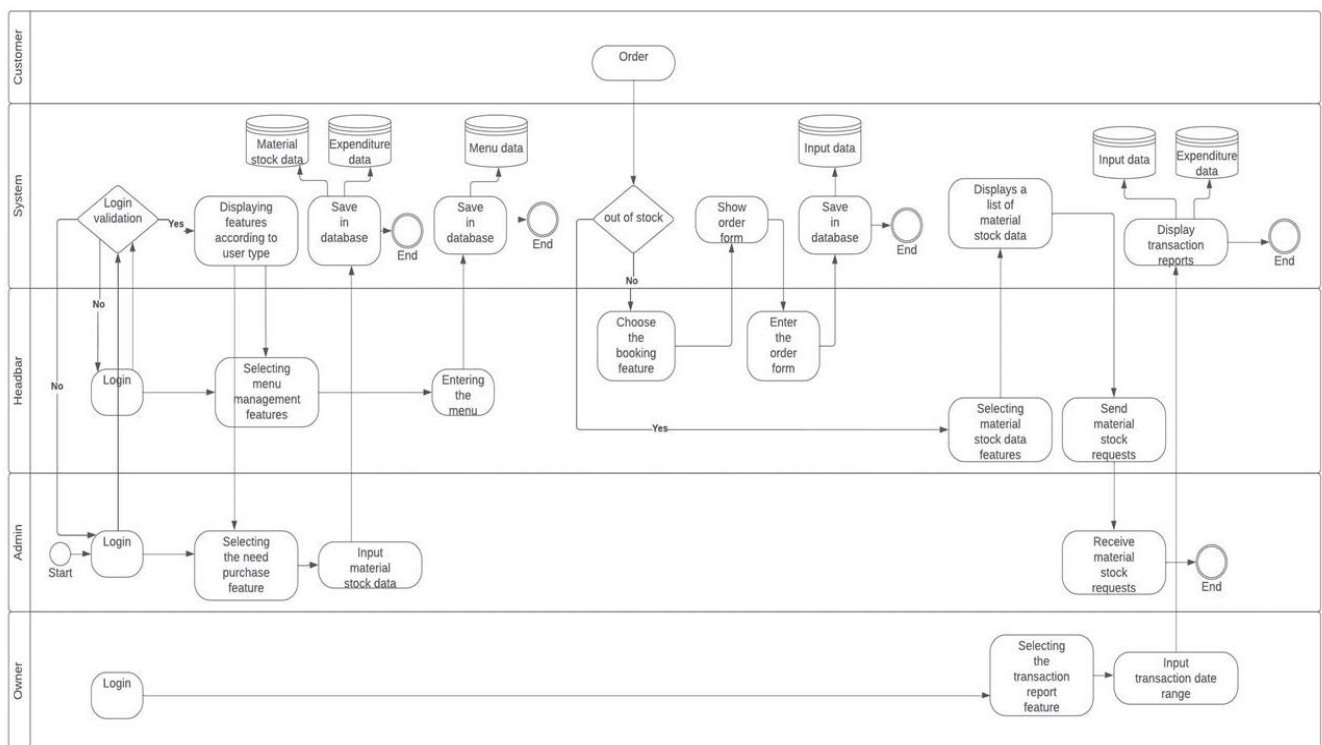


Figure 3. Business Process Proposed

The proposed business process in the form of a diagram in Figure 3 begins with the division of the job description to actors evenly by utilizing the same system and the existence of system access restrictions in using features. Inventory management will be made more efficient by sending material stock requests from the Headbar to the Admin through a system that will accept requests for material stock purchases to be able to purchase and input into the system related to the purchase of stock materials. A Headbar will manage the ordering process, and later on, the ordering data will be able to be stored in the system database. This will allow transaction reports to be easily accessed by all actors. To better concentrate the data on material stock and make monitoring simpler.

B. Requirements

Identification of the system's needs to be used by actors is carried out by conducting functional and non-functional analysis supported by designing graphic user interface (GUI) use case diagrams and domain modeling.

1) *Functional Requirement*: Functional needs are the processes carried out by the system to support user needs [3]. Based on user identification, three users act as actors. Table VI can be utilized to evaluate the functional requirements needed.

TABLE VI
FUNCTIONAL REQUIREMENT

Name	Description
Dashboard	The program can display the option of registering accounts by logging in.
Register an account	The program provides a registration form for account creation.
Login	The software offers a login form with a selection of user roles, such as Admin, owner, and Headbar. Each has different usability restrictions and options.
Admin menu	The program provides for the purchase of necessities, data on the stock of materials, deleting accounts, and transaction reports.
Owner menu	The program provides transaction reports, viewing access to material stock data, and menu management.
Headbar menu	The program provides menu management, ordering, and transaction reports.
Delete account	The program can delete user accounts that admins can only do
Most recent booking	The program can input customer orders
Purchase of necessities	The program can input expenditure data and increase the stock of materials.

Name	Description
Material stock data	The program can view, perform requests and accept stock requests for materials.
Transaction reports	The program can display the results of income, expenses, and both based on the date selected daily, monthly, and yearly.

2) *Non-Functional Requirement*: The functioning of systems concerning their requirements is described by non-functional needs [3]. Table VII contains an analysis of Tjangkir Kopi's non-functional requirements and requirements.

TABLE VII
NON-FUNCTIONAL REQUIREMENT

Necessity	Description
Reliability	The information provided by the system is easy to read and can help the sales process effectively. Such as in a system that provides information related to material stock data along with transaction results reports that users can access
Availability	The system provides services that support the business processes, from inputting and requesting stock data and ordering and purchasing transactions to transaction reports within the desired period.
Security (Security)	The Admin can only use the system as a warehouse operation, the owner as the owner of <i>Tjangkir Kopi</i> in, and the Headbar as the section head. The system asks for user authentication by entering a password. The system always provides a warning in the form of confirmation on every input activity. Admins are the only ones who can delete user and owner accounts and can see all the information in the system.
Portability	All users can access the system easily on the website, anytime, and anywhere through various devices connected to the internet.

3) *Behavioral Requirement*: The design stage of the interface is made after the design is completed [17]. The GUI design and *use case diagram* illustrating the expected needs by identifying, clarifying, and designing system requirements [18]. The following are the results of the GUI design for the *Tjangkir Kopi* MSMEs. Each page has features according to the type of user who logs in. Figure 4 is a transaction report display requesting date range data and the type of transaction you want to view or print. The transaction report data will be displayed when the search button on the transaction report page is clicked and whose results can be published.

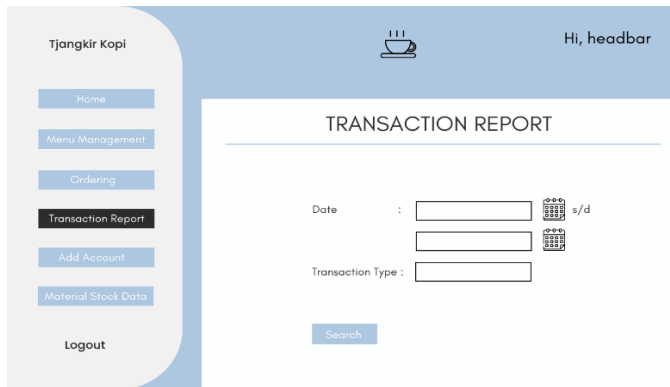


Figure 4. GUI Headbar Transaction Report Page

The material stock data page in Figure 5 displays a list of material stocks and quantities centrally that can be managed by monitoring and sending requests for purchasing stock materials according to necessary needs to Actor Admin. In this system's design of the use case diagram, three actors use the system: Admin, The Headbar, and Owner. The three actors can be said to be different users who have authority over several existing features. The depiction of the interaction between the system and the user [3] is outlined in the use case diagram.

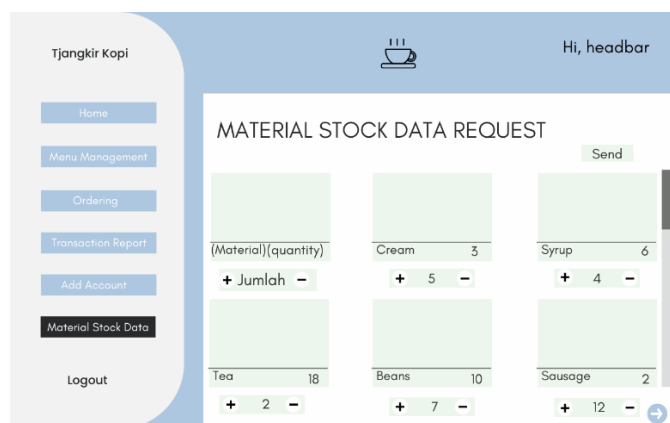


Figure 5. GUI Material Stock Data Page

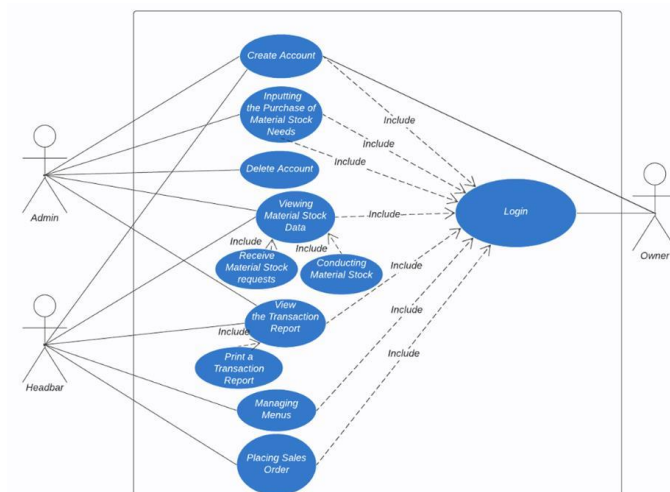


Figure 6. Use Case Diagrams

Figure 6 shows that the actor owner only has the authority to see some of the existing features, such as material stock data, menu management, and transaction reports. All actors are required to register an account first before being able to use the system. Whereas in registration, actors will be divided into user types. Then, all actors must log in first to use the existing features according to the type of user. Admins have authority over the login feature, create accounts, input stock purchases of materials, and view and receive material stock requests and transaction reports. The Headbar has authority over the login, account creation, transaction reports, menu management, and ordering features.

4) *Domain Modeling*: The identification of nouns obtained from the previous stage is carried out. Obtained ten domains that are apart, as in Figure 7. The domain model in Figure 7 has a user class. The user class can be further subdivided into The Headbar, Owner, and Admin subclasses. There are three distinct categories of users. Because a Headbar can manage many different menu iterations, it is related to the class menu in a way that is called a one-to-many relationship. Class menu has a relationship of many too many to class Customers because at least one maximum many customers can order at least one maximum many menu variants. In the relationship of many to many, a new class is formed, namely the order class. The order class has many to many relationships to the Material class because many order quantities will reduce a lot of material quantities. The new class formed is transaction reports. Class Admin has a relationship of one to many to a class of expenses because one Admin can buy many stocks and variants of materials.

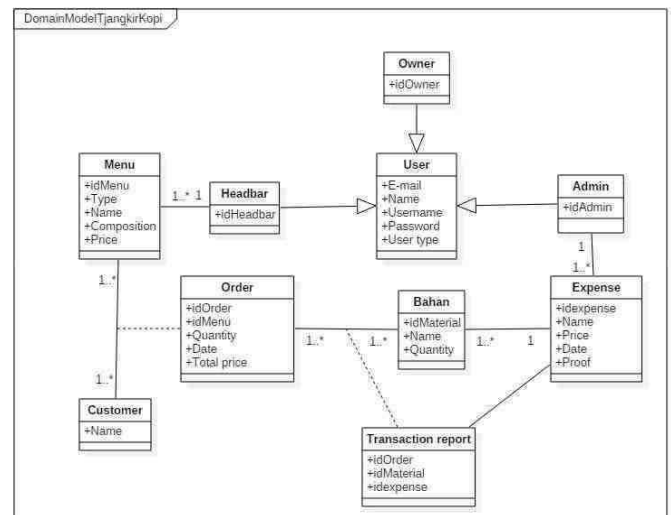


Figure 7. Domain Model

C. Analysis/Preliminary Design

In the analysis section, it is a stage that will be passed when using the designed system. The stage of the robustness diagram is a path or link regarding the system's design, which is a development of the use case model that has been made [5].

The analysis includes the features include (i)creating an account in Figure 8, (ii)viewing, requesting, and receiving material stocks in Figure 9, (iii)menu management in Figure 10, (iv)viewing the most recent booking in Figure 11, (v)inputting and purchasing necessary materials in Figure 12, (vi)transaction report in Figure 13, and (vii)deleting an account in Figure 14.

Figure 8 illustrates the process in which the user is directed to the system page, where they can select the account list. If the account list is empty, the user will be redirected to the registration page. Once data has been inputted, it will be checked for any duplicates. If duplicates are found, a message will be displayed indicating that the data has already been used. The data will proceed to the verification and authentication phase if there are no duplicates.

Figure 9 depicts the process in which the Admin receives information about requests for material stock data made by the Headbar. If there is a request notification, the Admin can approve it and send it to the Headbar. The Headbar can view information about the material stock and make requests to the Admins. Once the material stock request data has been completed, it will be sent to the Admin. If a request is made, it must be confirmed by the Admin before collecting the material stocks. The material stock data store is where received stock data is added and removed.

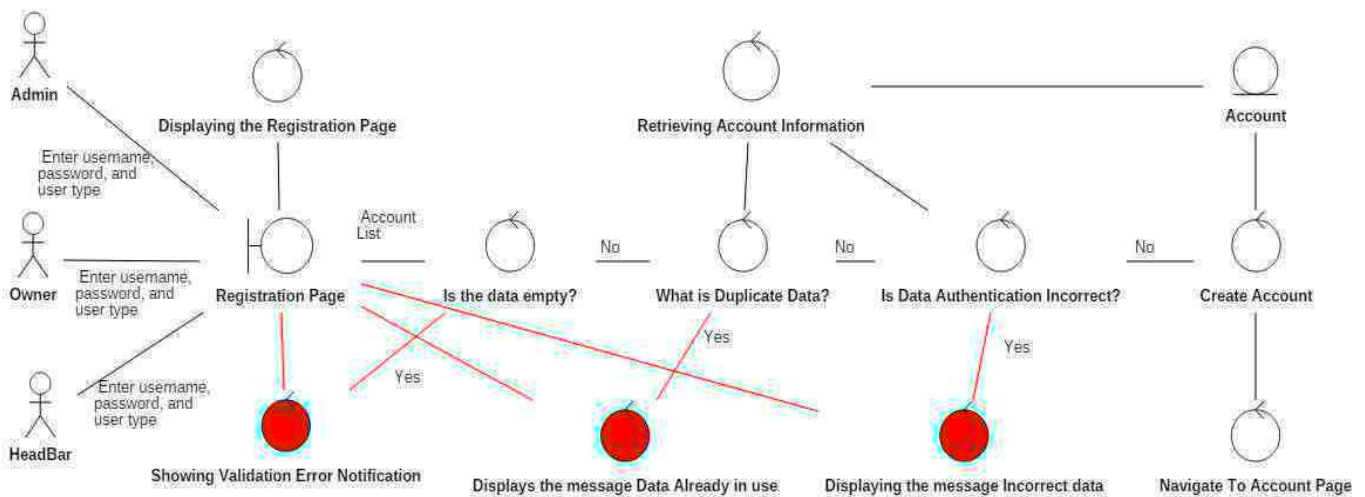


Figure 8. Robustness Diagram Create Account

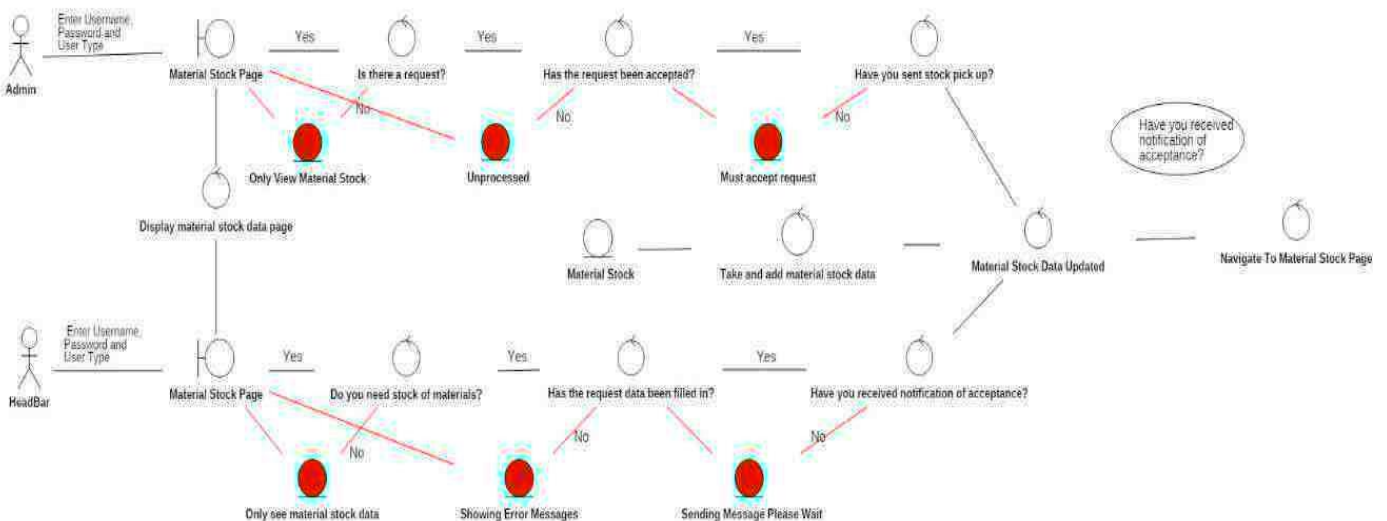


Figure 9. Robustness Diagrams of Viewing, Requesting, and Receiving Stock Materials

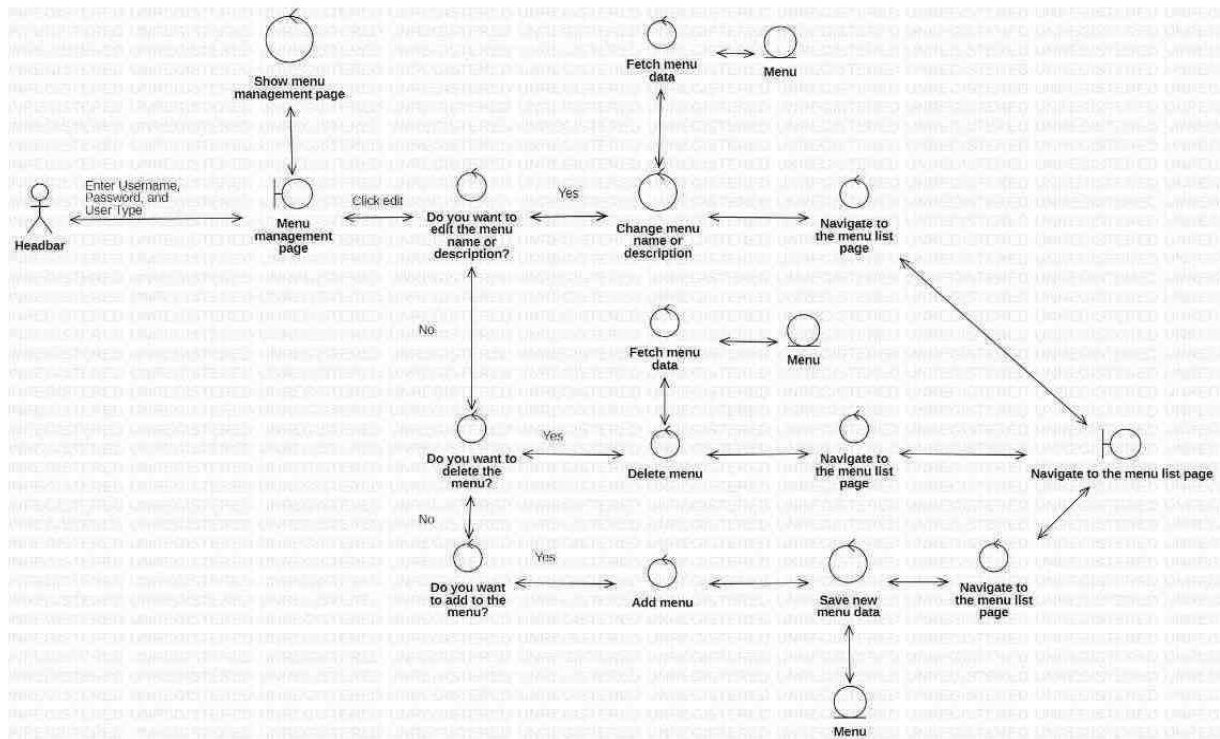


Figure 10. Robustness Menu Management Diagram

Figure 10 depicts a robustness diagram for your viewing pleasure. The Headbars, as stakeholders in the system, have access to all of the capabilities that are accessible to them, including the ability to create new menus or edit existing ones. It is possible to modify not only the name of the menu but also its description; after that, the system will alter the data linked to the menu. The system removes a menu's data from the database if a menu is removed. Deleted menus cause this. If the Headbar adds a menu, the system will preserve it in either

the data store menu or the data menu, depending on which one was selected.

Figure 11 is a robustness diagram that displays a list of menus. The Headbar can select the menu from the list and enter the order quantity to place an order. The system will process and save the order in the income datastore if deemed appropriate. The system can then use the information in the income datastore to calculate the total income for that day.

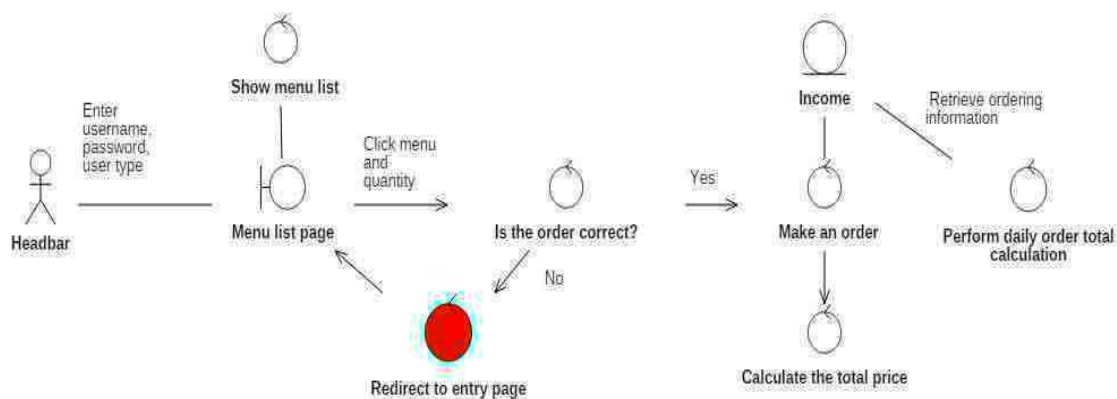


Figure 11. Robustness of Ordering Diagrams

Figure 12 system displays an exit transaction form page containing the ID, date, item name, price of goods per unit, number of goods, and total payment. Later the Admin can

input the form based on the memorandum obtained from the purchase of raw materials. After the Admin saves the data, the system will display a list of daily transactions taken from the expense data store.

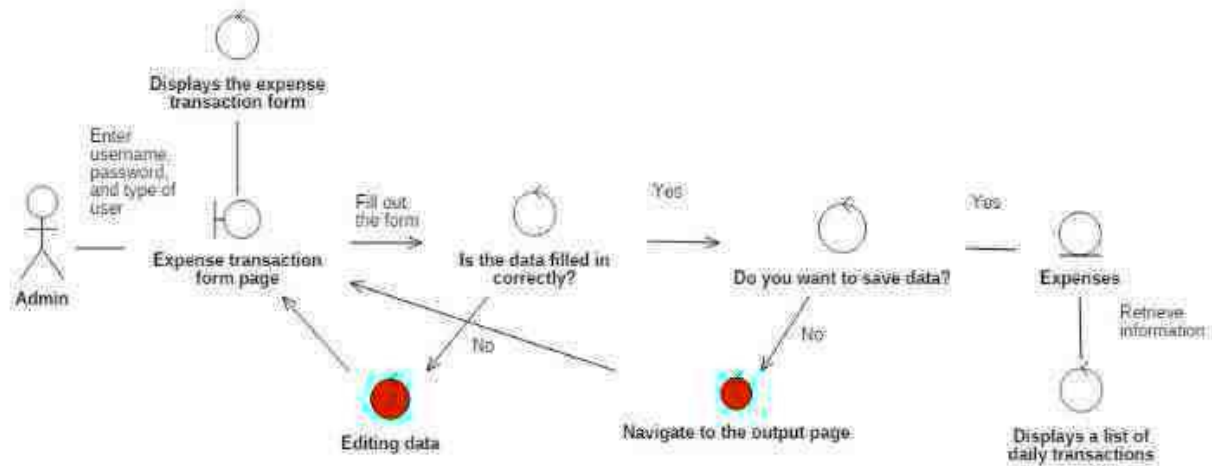


Figure 12. Robustness of Inputting Diagrams and purchasing material needs

Figure 13 explains the actors who can do this process, namely the Headbar and admins who need to log in first. The system will display a transaction report page, after which the actors can input the type of transaction and the time range they want to see. After that, the system will check whether there is data in the selected time range in the database. If there is none, then the system will display a message that the transaction report you want to see does not exist, but if there is

a transaction report result page, it will be displayed on the layer. Then the actors can choose to print the report.

Figure 14 system will display a list of accounts and their types. Admins can choose which accounts they want to delete. To perform an account deletion, the Admin must first enter the admin account password so that the system can authenticate the admin account.

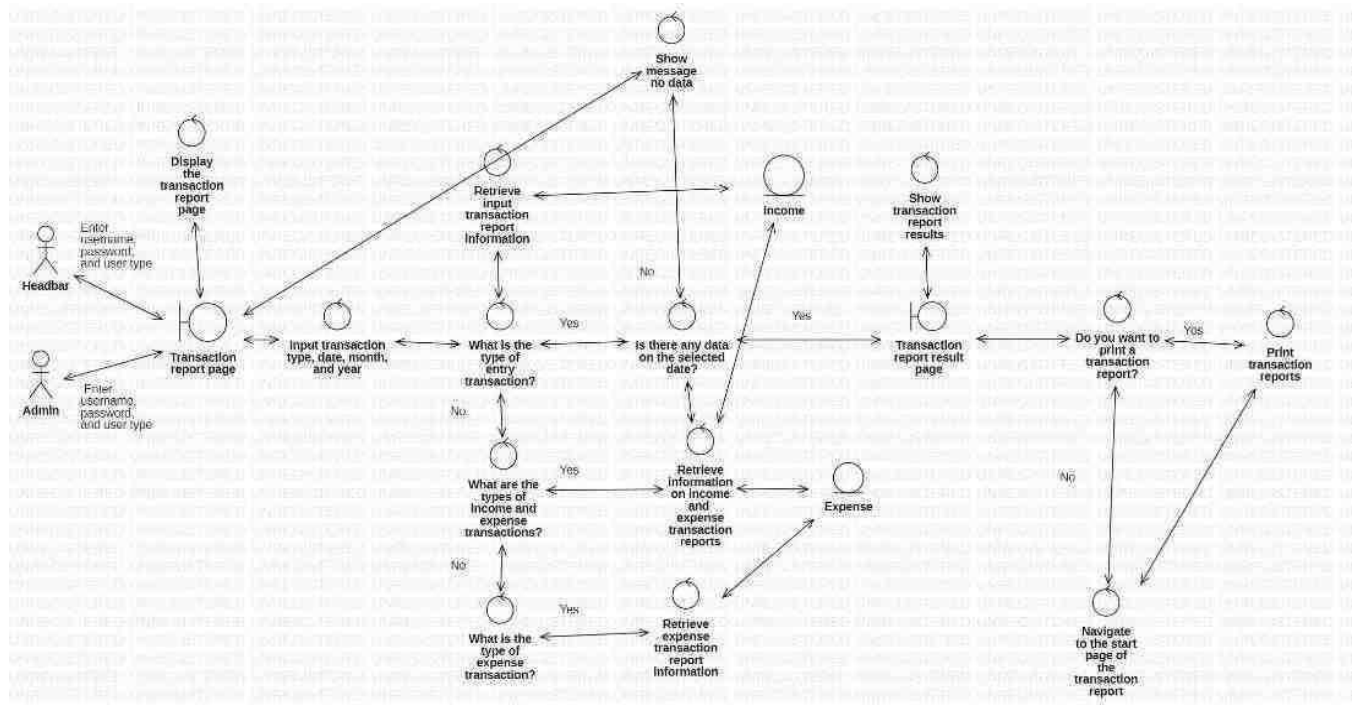


Figure 13. Robustness Chart Transaction report

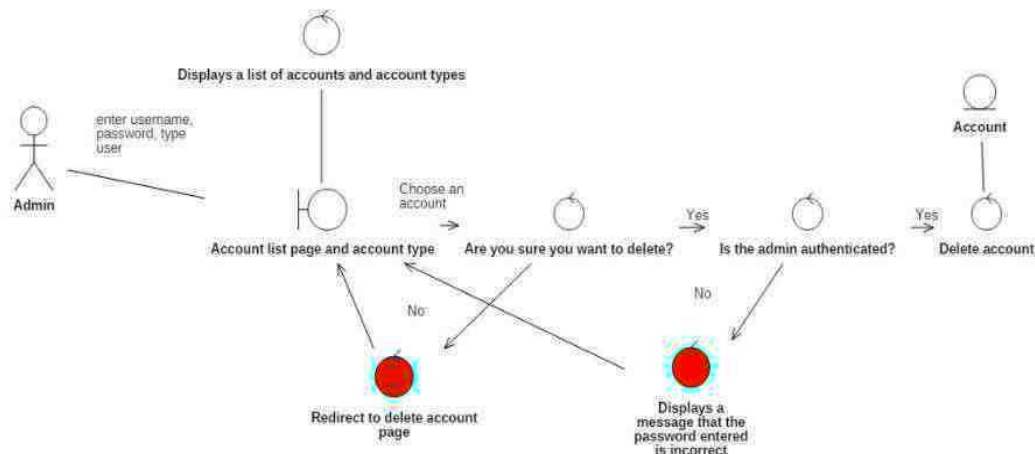


Figure 14. Robustness Diagram Delete Account

D. Detailed Design

This section is a reference that will explain the design drawings in detail about how the stages of the system can run

1) *Sequence Diagram*: This diagram is an advanced design development that combines the diagram's robustness and the domain of the previous model [5]. A diagram describes and displays the interactions between objects in a system in detail [19]. This diagram illustrates the processes and sequence of messages exchanged between them to perform the functionality [20] (i)creating an account in Figure 15, (ii)login in Figure 16, (iii)inputting the menu in Figure 17, (iv)inputting the purchase of material stock needs in Figure 18,(v)viewing stock data (receiving and performing material stock requests) in Figure 19, (vi)placing sales orders in Figure 20, (vii)view transaction reports (printing transaction reports) in Figure 21, and (viii)deleting an account in Figure 22.

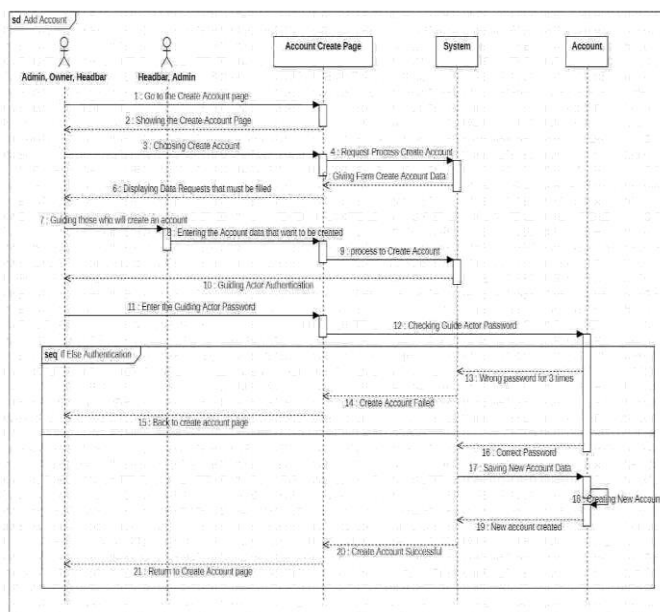


Figure 15. Sequences Diagram Create Account

In Figure 15, the Sequences Diagram shows admins, owners, and Headbars can be involved in the add account feature. In the Sequence Diagram, there are two Object Actors, the first Actor is a guide for the account creator, and the second Actor is the account creator. The account creation feature must have a supervisor in order to access the system. In Figure 16, the actors or Admins, Owners, and Headbars are involved in the Login feature. In addition, all actors must log in before logging in to the web and using all available special features. The Sequence Diagram has four objects: actors, web login pages, systems, and Account databases.

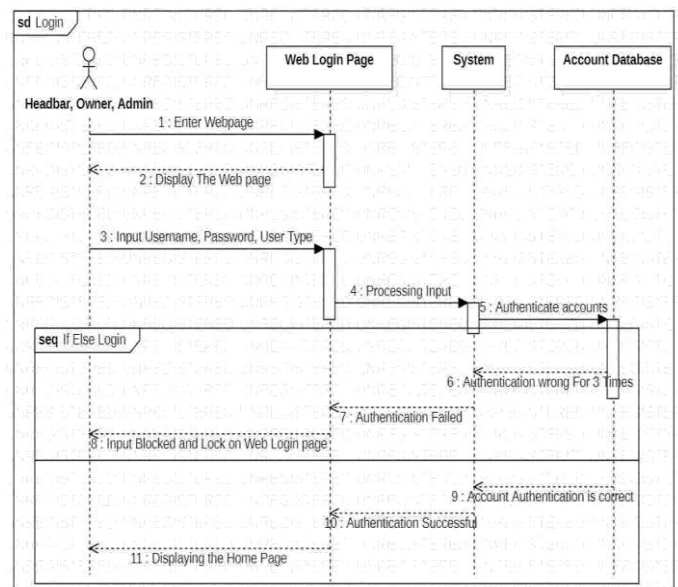


Figure 16. Sequences Diagram Login

In Figure 17, Headbar actors can manage the menu by selecting the feature. The menu list will be displayed in the if-else box, a condition that will occur depending on the Headbar selecting the process you want. First, when the Headbar changes the name or description of the menu. The system will process the changes by retrieving the menu data you want to

change on the menu database. Then the database will be changed, and then saved the change. If the changes are saved, the system will send information on the data changes successfully made on the menu management page, and the page will display a menu list after being changed.

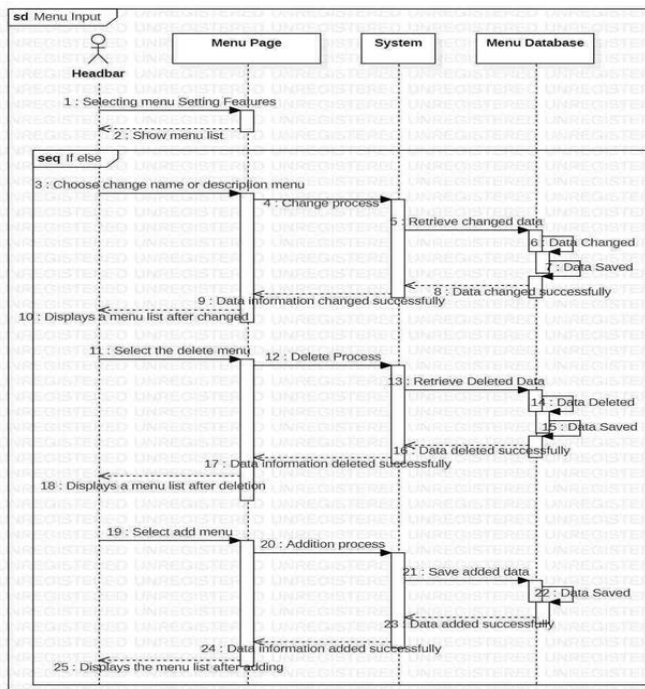


Figure 17. Sequences Diagram Performing Menu Input

In this process, based on Figure 18, the Actor who plays the role is the Admin. After purchasing raw materials from the supplier, the Admin can input them into the system. To input, admins can fill in the exit transaction form, which contains the date, item name, price of goods per unit, number of goods, and total payment.

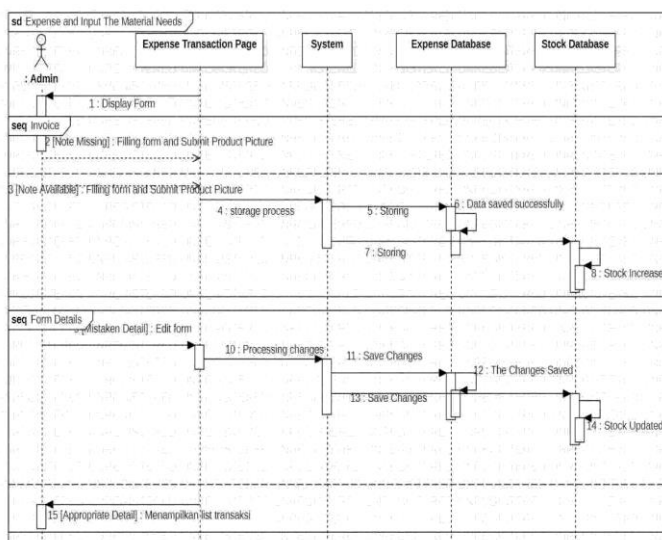


Figure 18. Sequences Diagram Inputting the Purchase of Material Stock Needs

In Sequence Figure 19, there are five objects with two object actors: Headbar, Admin, Material Stock Data Menu, System, and Material Stock Data. The two Actors can only view material stock data by entering the material stock data menu, and the system will process the material stock database. The database will send the latest material stock data to the system and will be displayed in the Material Stock data menu.

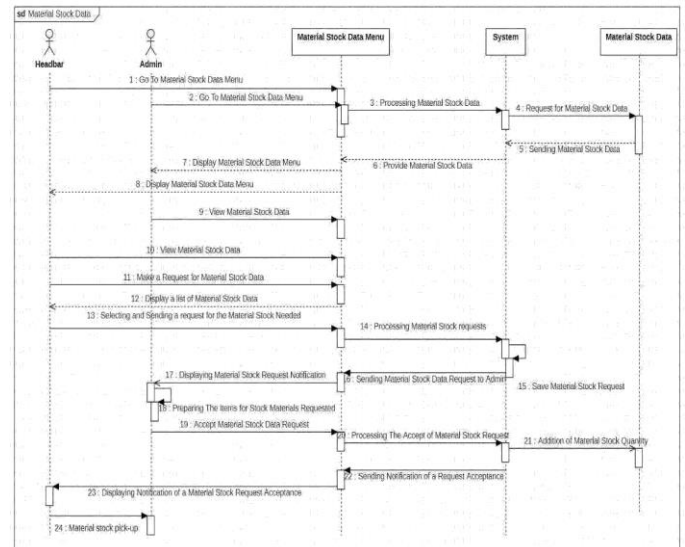


Figure 19. Sequences Chart Viewing Stock Data

In Figure 20, the actors who play a role in this process are the customer and the Headbar. The menu page displays a list of menus available in *Tjangkir Kopi*. To place an order, customers can directly contact the Headbar. After that, the Headbar will input the order by clicking the customer's menu and the amount desired. Furthermore, the system will process the order and then display a confirmation of whether the order is appropriate.

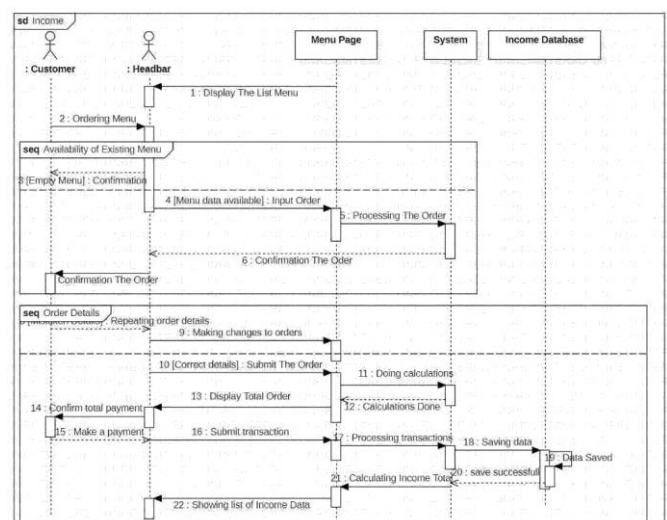


Figure 20. Sequences Diagrams Performing Sales Orders

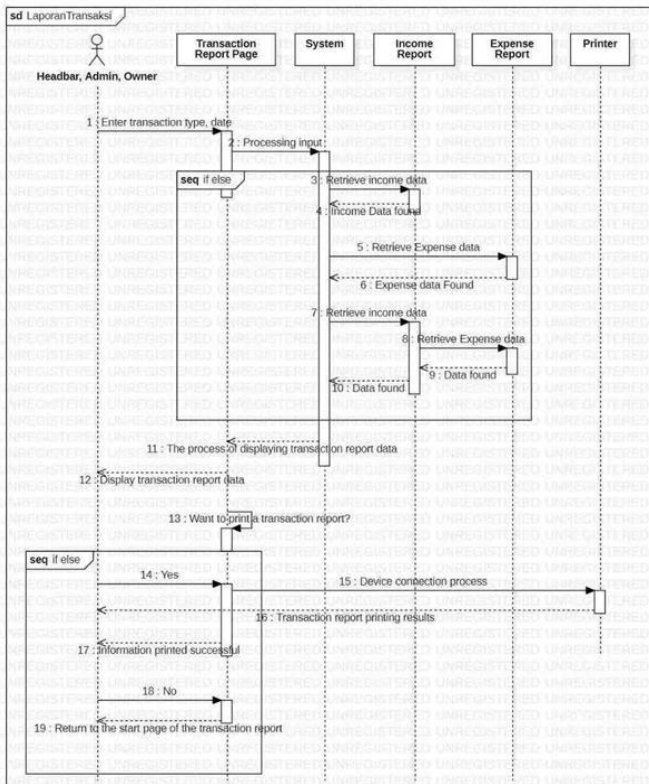


Figure 21. Sequences Chart Viewing Report

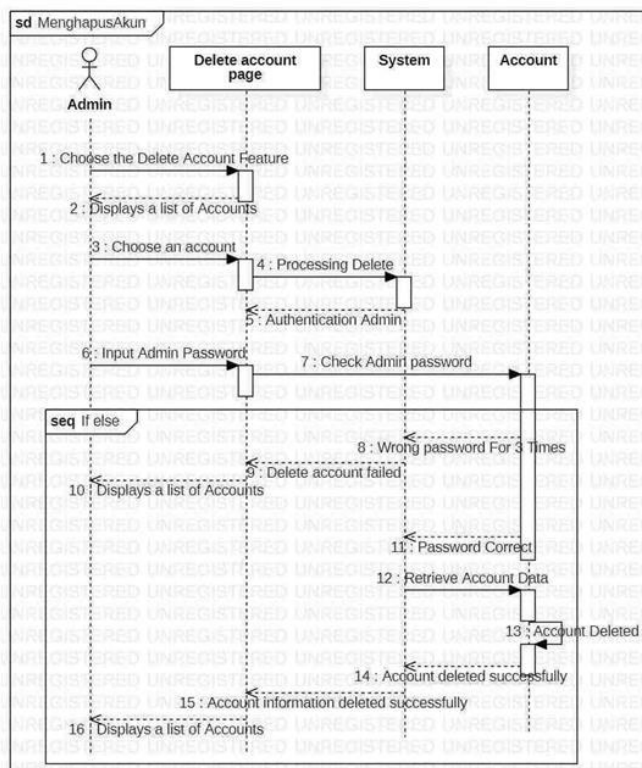


Figure 22. Sequences Diagram Deleting Accounts

Based on Figure 21, when the Actor accesses the transaction report feature, the actors, namely the Headbar, Admin, and owner, can input the type of transaction and the date they want

to see. After that, the input will be processed by the system. Enter into three conditions that will occur according to the type of transaction chosen. The process in Figure 22 explains that deleting an account can only be accessed by admins with the delete account feature on the admin menu, where later, after selecting the feature, a list of user accounts will appear. Then the Admin can choose an account to do the process of deleting the account, and the system will ask for admin authentication with the Admin entering the admin password.

2) *Class Diagram*: The Class Diagram of the web-based system design is a model development of the model that has been made and its forming diagrams in Figure 23. The Diagram class is divided into the owner class, menu class, order class, Headbar class, user class, admin class, customer class, income class, material class, expense class, and transaction report class. These classes are selected and built-in sequences from the stages of the system that are adjusted according to needs.

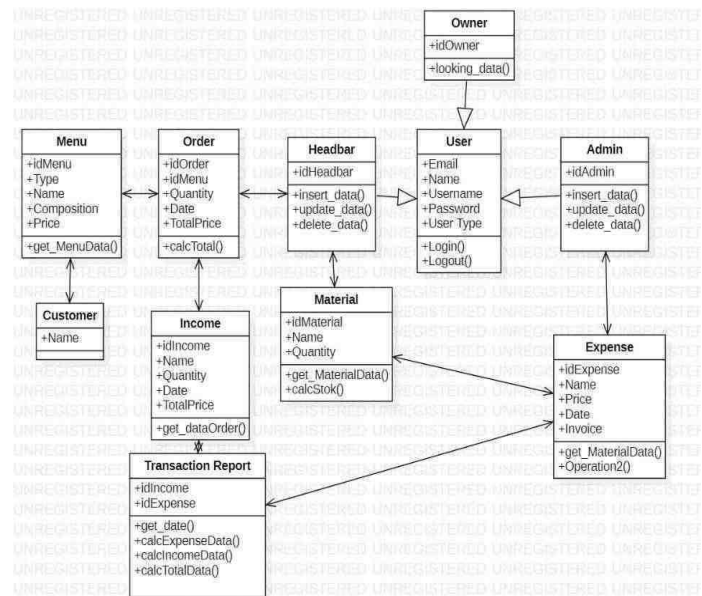


Figure 23. Class Diagram

IV. CONCLUSION

The ICONIX Process was utilized to design the inventory information systems and web-based transaction reports at MSME *Tjangkir Kopi*. The needs analysis stage was the method that was used. There are two processes which include the business process stage and the needs analysis stage. In our business process analysis, we divide it into two parts: the description of the current business process and the proposed business process.

Users only need less than one hour, depending on the number of materials entered into the system. The input process can be done quickly through the system and is directly integrated with the database's material stock and expenditure data. This is because the proposed business process initially involved inputting the purchase of raw materials using excel

and estimating it manually, which takes two hours. Users now only need less than one hour. This system can provide convenience for the Admin and Headbar to control material stock data so that there are no material stock problems in the warehouse. Likewise, in the ordering process, which initially used a different system, Moka, with the ordering business process, orders could be made by the relevant stakeholders and integrated with data entry. With the integration of data entry and output data, this system makes transaction reports on business processes much more effective because the data is automated in the system, which only takes 2 minutes compared to calculating transaction reports manually, which takes one day.

In the requirements process, 11 functional requirements have been generated that support the needs of users or actors involved, Headbar, owner, and Admin. For non-functional requirements, there are 4 points regarding reliability, availability, and system security. Ten main domains are obtained as classes for the next stage in this process, domain modeling. The next stage, Behavioral requirements, obtained GUI design and use case diagrams. The GUI design describes the appearance of all the features available on the system. The diagram obtained 11 use cases in the use case that actors can do as system users.

At the design stage, it consists of three processes: the preliminary analysis and design process, which generates seven resilience diagrams; milestone 2: the initial design review, which leads to an updated domain model that adds attributes to each entity and its relationships; and the final detailed design process, which generates eight sequence diagrams, class diagrams, and a database design. The preliminary analysis and design process produces the resilience diagrams.

The research future, MSME *Tjangkir Kopi* must re-adapt to the application of a new culture system for the first time if previously they wanted to implement a design system because MSME *Tjangkir Kopi* had never had a system. There is a need for training or guidance before implementing the new system so that the system can solve existing problems. The previous implementation can be done to add functions and features when you want to develop a business and can be used as evaluation material so that the system is as expected

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