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Improvement and efficiency of business strategy at Kawanseduh coffee by utilizing supply chain management applications

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ABSTRACT

Kawanseduh Coffee is a growing coffee shop in Surabaya City. Kawanseduh Coffee faces a number of challenges in managing business operations. Some of the main problems are the inability to efficiently record raw materials, manage procurement from suppliers, and make accurate sales predictions. This research discusses Supply Chain Management (SCM) which is built specifically to meet the needs of Kawanseduh Coffee. The implementation of SCM at Kawanseduh Coffee provides good and effective results in improving efficiency in production management, raw material procurement, and inventory management. The features contained in the SCM implementation consist of raw material management, sales features, raw material entry and exit features, and reports consisting of stock reports, receipt reports, and sales reports. The prediction feature in the application has functioned properly and is able to provide an estimate of sales and raw material requirements needed for the following month, based on previously recorded sales data.

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1. INTRODUCTION

Coffee has great potential to improve the welfare of the community and MSME players in the economic sector, especially with the growing coffee consumption in Indonesia. However, the key to successful high-quality coffee are factors such as variety, agroecology, harvest time, harvest method, processing, and storage (Sanaky & Nashori, 2018). In Indonesia, Arabica Coffee is the oldest variety that thrives at an altitude of 800-1500 m above sea level with a temperature of 15-24°C (Hasanuddin, 2021; Sairdama, 2023). Regions such as Jambi, Flores, Bali, Jember, and Probolinggo are famous for the best quality Arabica coffee. Although Indonesia is known as a producer of quality Arabica coffee, coffee types in the country are divided into Arabica and Robusta, with Arabica having a better flavor and higher price. Coffee circulating in the world today is generally divided into 70% arabica coffee and 30% robusta coffee (Arlius et al., 2017). Thus, the coffee processing business and its derivative products are things that have quite good prospects in the future.

Supply Chain Management, or Supply Chain Management, regulates the management of goods from raw materials to final products and their distribution to consumers(Arif, 2018). In the retail business, careful supply management can significantly reduce costs(Sulastriyono & Saputra, 2020). This application aims to simplify, speed up and reduce time and costs in the SCM process. The benefits include customer satisfaction, increased revenue, reduced costs, better asset utilization, increased profits, and company growth(Attaran, 2020; Jacobs & Chase, 2018).

Supply chain management can also be integrated with technology, such as a web-based SCM system(Giannakis et al., 2019; Mora-Monge et al., 2019; Papetti et al., 2019). This system increases the responsiveness of the supply chain and its integration with other systems, such as sales and accounting. Facing challenges and opportunities in meeting consumer tastes and ensuring the availability of materials from suppliers to produce products according to consumer tastes is essential in company operations. In order to optimize this process, it is necessary to apply the Supply Chain Management concept, which not only minimizes costs and increases efficiency, but also has a positive impact on product distribution and overall company growth. SCM has a role as a market intermediary, which aims to ensure that what is provided by the supply chain reflects the desires of the end customer or consumer(Fotiadis et al., 2022; Nabila et al., 2022; Nasution & Ishak, 2019).

Kawanseduh Coffee, a coffee business that produces various types of coffee products, faces a number of challenges in its operations. One of the main problems is business planning that is not yet optimal. They need better analysis of consumer demand to avoid over- or under-supply. Currently, Kawanseduh Coffee management often mixes coffee without a strong basis, which can result in waste or product shortages. Apart from that, the raw material procurement process is also a crucial aspect that influences the quality of their products. This process requires ensuring quality, competitive prices, and quantities in accordance with production needs. Finally, the system for storing raw materials and recording goods in and out of the warehouse must be managed more thoroughly and regularly.

Integrating Supply Chain Management (SCM) is the right solution to overcome problems in Kawanseduh as a partner of the PIHAT (Application of Research Results for the Community) program. SCM will help Kawanseduh Coffee in production management, raw material procurement and inventory management more efficiently, thereby minimizing costs and optimizing their production results. With the implementation of SCM, it is hoped that the production and sales of Kawanseduh coffee will become more efficient, increase customer satisfaction, reduce costs, and result in an increase in sales of their products.

2. RESEARCH METHOD

The development of the SCM application at Kawanseduh Coffee consists of 3 stages, namely the needs analysis stage to determine the functional needs of the system, the system planning stage which is intended to design a system with a Data Flow Diagram which will illustrate the data flow and processes involved in the system Conceptual Data Model (CDM) to illustrate stored data, Physical Data Model (PDM) to illustrate physical database design (Beas Petersson, 2022; Burgos et al., 2018; Nisaa et al., 2022; Sa'adillah & Ali, 2022) as well as creating mockups. As well as the system implementation and testing stage to implement and test the system.

2.1. Needs Analysis

This phase is the most important phase in software development, because in this crucial step the needs of system users will be examined regarding the features that must be provided by the system, errors in this phase can have a negative impact on the next research step (Mandyartha et al., 2022; Rachmad et al., 2023; Rifauzi et al., 2023;

Sudipa et al., 2023; Wibawani et al., 2022). Data collection is carried out by conducting observations and interviews with partners to find out the need for features that must be included in the SCM application that will be implemented at Kawanseduh Coffee to then form a list of system requirements (SRS) which is the basis for creating a system that is able to meet all needs. user.

2.2. System planning

After all system requirements have been formulated, the next step is to design the system. The Kawanseduh Coffee SCM application will be created in a structured manner so that in its design several diagrams are needed which will be useful in the system coding process such as a Data Flow Diagram which will illustrate the data flow and processes involved in the system(Kwintiana et al., 2023), Conceptual Data Model (CDM) to illustrate stored data, Physical Data Model (PDM) to illustrate physical database design(Swaratunggadewi, 2016), as well as creating mockups.

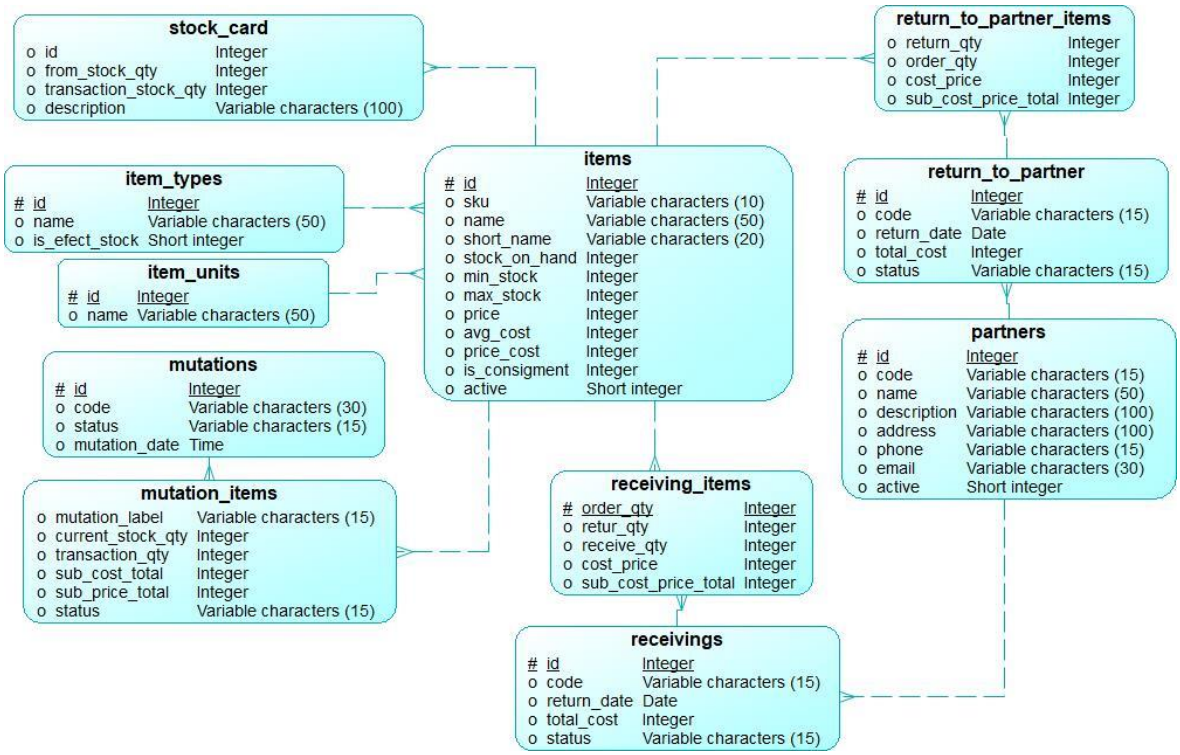
2.3. System Implementation and Testing

The final phase in system development is implementing the system design results into program code to later become an information system that is ready to use. The system is made web-based for easy data access. PHP is used as the system development programming language, while the database is created using MySQL.

3. RESULTS AND DISCUSSIONS

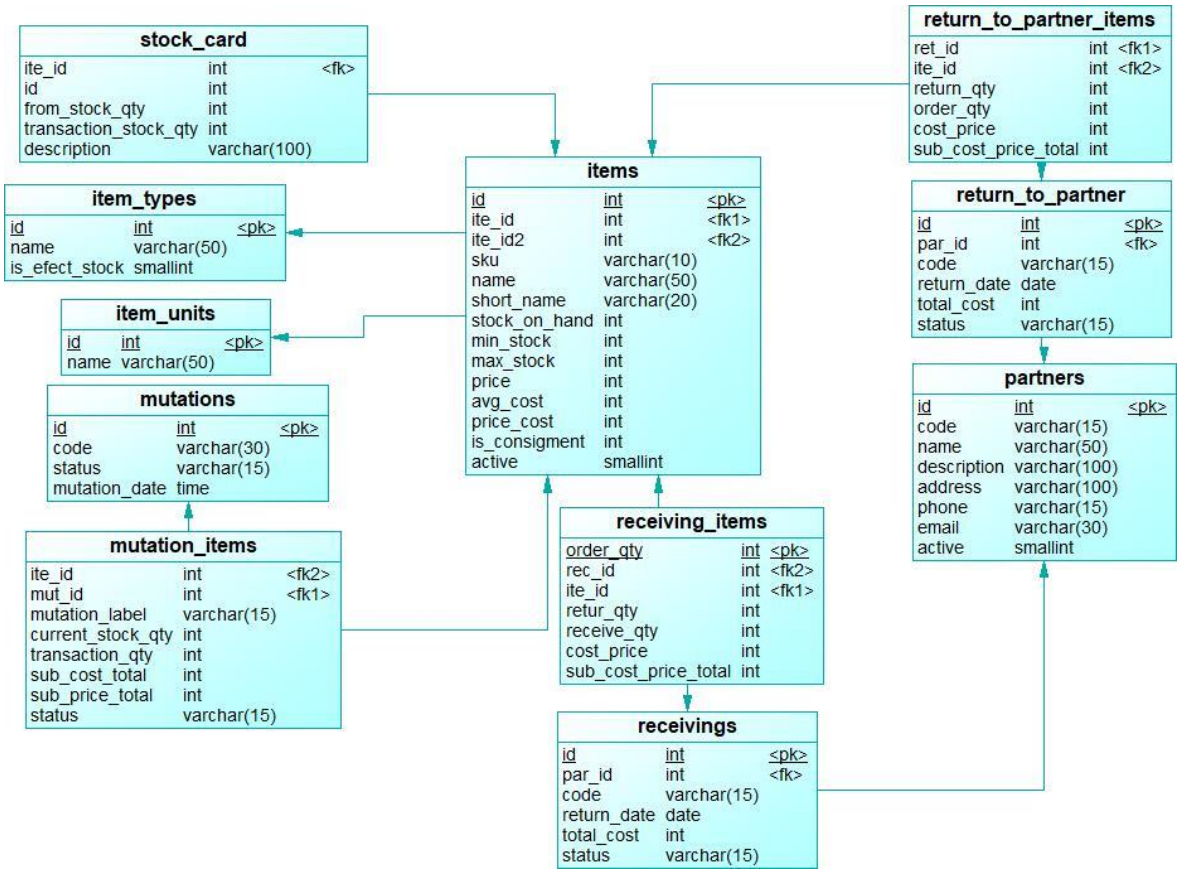
3.1. Conceptual Data Model and Physical Data Model

To illustrate the data storage structure used in the development of supply chain management at Kawanseduh Coffee, the CDM figure is used as seen in Figure 1.



Figures 1. CDM

As can be seen in Figure 1, there are 11 external entities involved in the supply chain management being built, including the entities items, item types, item units, mutations, mutation items, stock cards, receiving, receiving items, partners, return to partners, and return to partner items. The CDM that has been created is then lowered into physical tables that are ready to store data. These physical tables are represented in the physical data model seen in Figure 2.

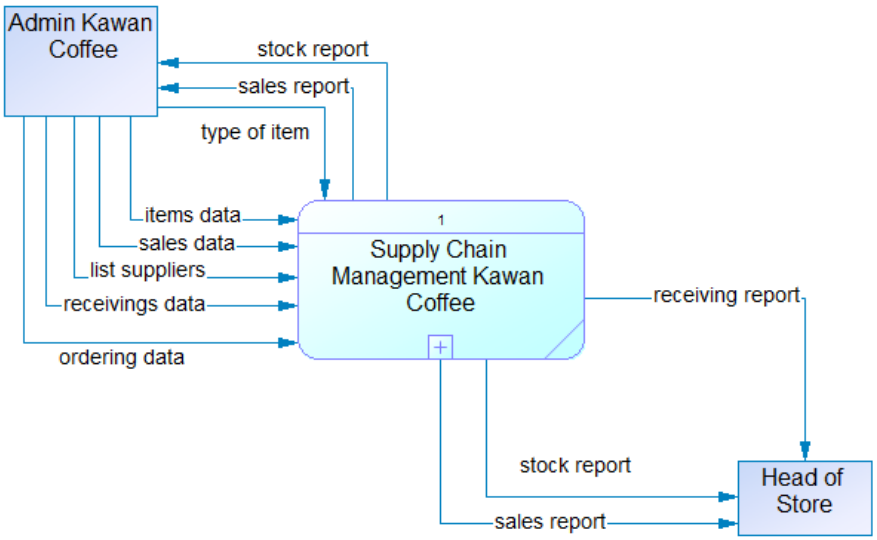


Figures 2. CDM

Just like the previous CDM, the PDM in Figure 2 that was created also produces 11 physical tables. This is caused by the absence of "many-to-many" relationships in CDM which affects the number of tables in PDM.

3.2. Data Flow Diagrams

To illustrate the processes involved in the supply chain management system being built, a data flow diagram was created, which includes a context diagram and DFD level 0 for each process formed. Figure 3 is a context diagram of the supply chain management that is formed.



Figures 3. Context Diagrams

Based on the context diagram that has been formed, it can be seen that there are 2 external entities as users of the system being built, namely the Kawanseduh Coffee admin and the shop head with the input data required by the system in the form of goods data, sales data, partner data, receipt data, return data. goods, and item type data. The results of data processing produce several reports, namely stock reports, sales reports, receipt reports, stock reports, and sales reports which will be used by the shop head in choosing future product sales strategies.

In developing this system, there are 7 main processes involved in the supply chain management being built, each process has its own user or external entity as well as data stores involved according to their data needs.

3.3. Login Implementation

To ensure that only those who have access rights can use the system, and to maintain data confidentiality, there is a login feature to enter supply chain management. There are 2 user access rights according to the results of the system design stage that has been carried out previously, namely the Kawanseduh Coffee admin and the shop manager, where the advantage of the shop manager is that he can access the profit or loss receipt reports generated by the shop in the specified period. Figure 4 is the implementation of the login function in supply chain management.

Figure 4. Login page

3.4. Implementation of Master Data Management

Master data is the main data that is managed in supply chain management to become reports that can be accessed by the admin and owner of Kawanseduh coffee. There are 3 master data management that can be carried out in this system, namely item master data, item unit master data, and item type master data. Figure 5 is the implementation of master data item management.

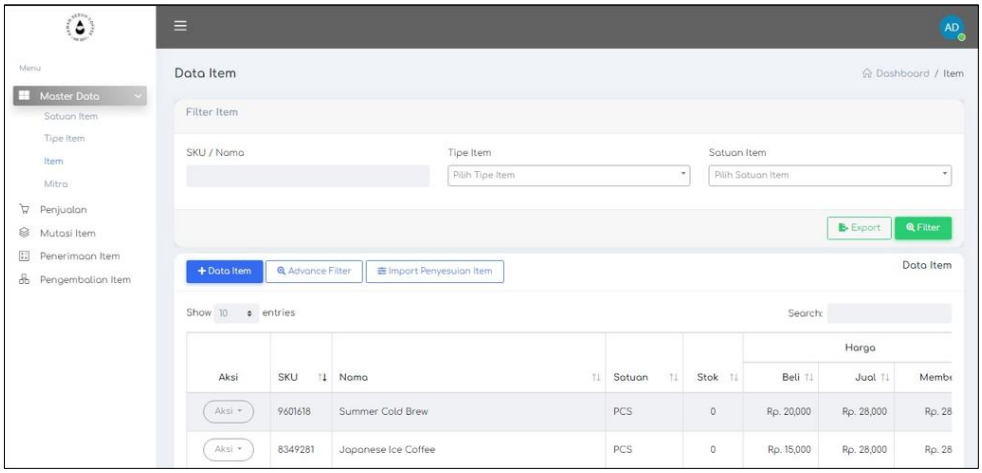


Figure 5. Manage Master Data Items

In this feature, admins from Kawanseduh Coffee can manage item data, namely the variety of non-mixed products directly sold. On the item master data management page, you can see the stock of each item, the purchase price (capital spent) for 1 product and the selling price of each product. The next feature related to master data management is the unit item management feature, as seen in Figure 6.

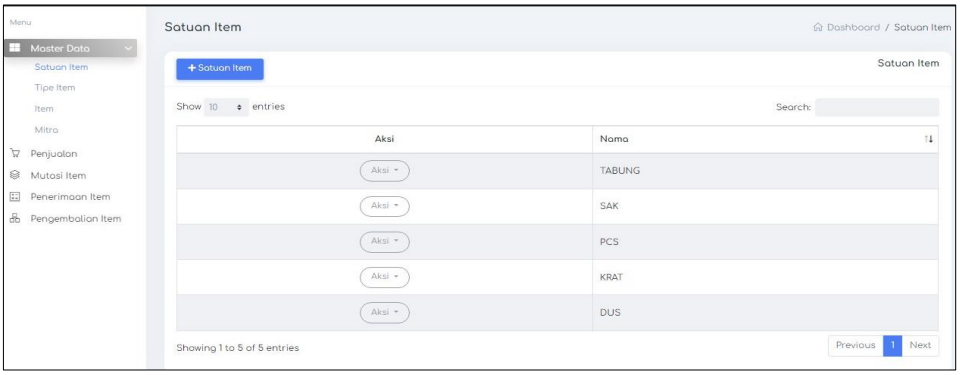


Figure 6. Manage Item Units

The item unit management feature that has been built functions to register each item unit in Kawansduh Coffee, for example the unit for gas is a cylinder, the unit for manual brew is pcs, and so on. The last feature related to master data management is managing item types, the implementation of this feature can be seen in Figure 7.

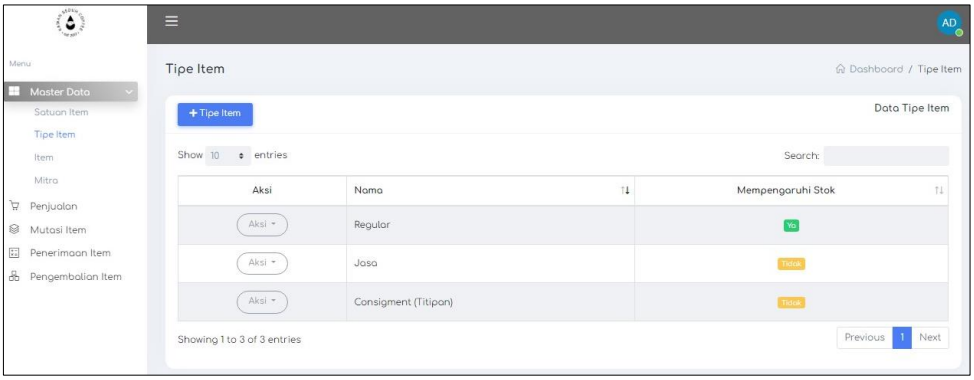


Figure 7. Manage Item Types

In the item type management feature, there are 2 types of sales, namely the product manufacturing system (regular), where this type will affect the stock of raw materials in the warehouse, as well as the deposit (cake) system.

3.5. Implementation of Goods Receipt Management

As a product sales business, Kawanseduh Coffee needs to manage raw material purchases from suppliers. The developed supply chain management system helps in recording and managing the stock of raw materials that will be processed into sales products. The goods receipt management section includes features for adding and registering raw material data in the warehouse, with the form shown in Figure 8.

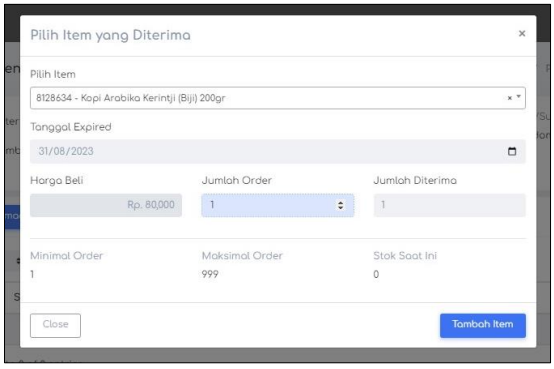


Figure 8. Goods Receipt

As seen in Figure 8, the admin can have the items received when the raw materials arrive at the shop. The number of goods received will increase the stock data for the material. Meanwhile, the recapitulation of material data acceptance can be seen in Figure 9.

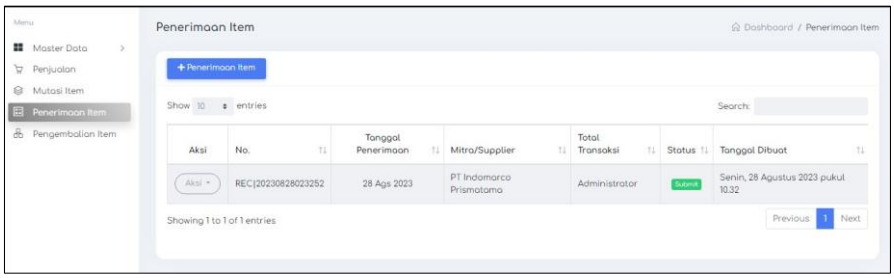


Figure 9. Data list

3.6. Implementation of Manage Returns to Suppliers

Sometimes the raw materials received by the admin of Kawanseduh Coffee do not match the order or are defective, so this causes the raw materials to be returned to the appropriate supplier, for this reason a page for returning materials to suppliers has been created which can be seen in Figure 10.

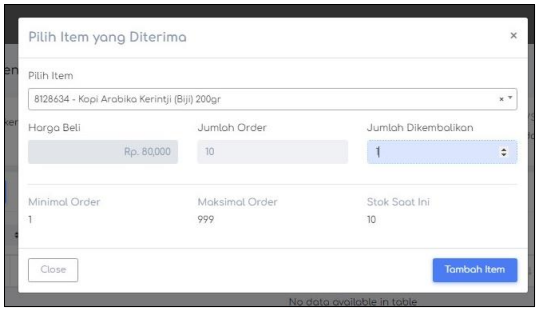


Figure 10. Add Return Data

After the return data has been entered correctly, the admin can see the return history in the return data list, as seen in Figure 11.

Figure 11. Return Data List

3.7. Implementation of Managing Points of Sale

The next feature that is also found in supply chain management at Kawanseduh Coffee is the feature for recording product purchases or what is often known as point of sale. Figure 12 shows purchasing transaction activities at Kawanseduh Coffee which will be recorded by the system.

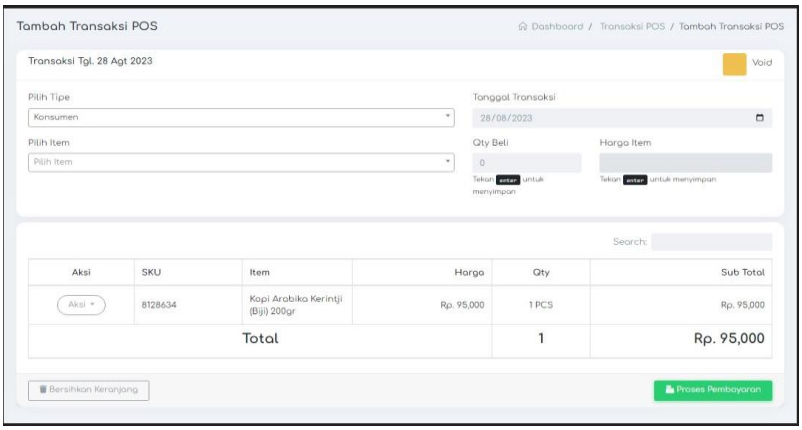


Figure 12. Purchase Transaction

The cashier can select the menu purchased by the customer by pressing the drop down menu to select an item. The items that appear are in accordance with the data that has been stored in the master data management process, after that the cashier can enter the purchase amount and the item price will appear automatically. Total consumer spending can be seen at the bottom right of the transaction page. After pressing the payment process button, the cashier will be directed to the payment page. The transaction will be saved in the sales database after the cashier presses the save transaction button as shown in Figure 13.

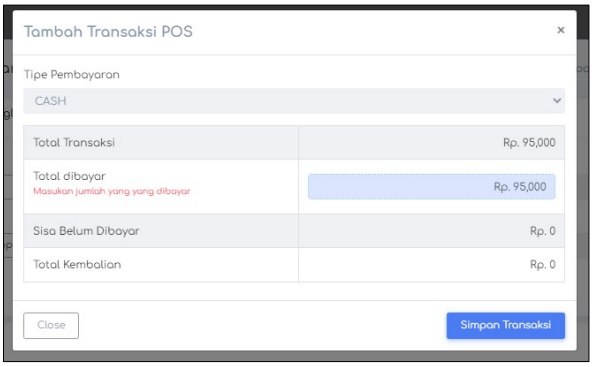


Figure 13. Payment Transaction

4. CONCLUSION

The conclusion of the research is that the supply chain management application has run well in increasing efficiency in managing production, procuring raw materials, and managing inventory. The application features contained in the SCM implementation consist of raw material management, sales features, raw material entry and exit features, and reports consisting of stock reports, receipt reports, and sales reports. The prediction feature in the application has functioned properly and is able to provide sales estimates and raw material requirements needed for the following month, based on previously recorded sales data. Suggestions for further research are to conduct system testing, especially related to user experience testing to users so that the results of the evaluation of the supply chain management application that has been successfully created are obtained.

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