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Application of The SCM Concept in Maintaining Smoothness of Cabinet Production

Chalista Alfina
Information System
University Royal
Asahan, Indonesia
chalistaalfina@gmail.com

Maulana Dwi Sena
Information System
University Royal
Asahan, Indonesia
maulanadwisena@gmail.com

Sudarmin
Information System
University Royal
Asahan, Indonesia
edisudarmindra@gmail.com

Abstract—This study examines the application of Supply Chain Management (SCM) concepts in maintaining the smoothness and efficiency of cabinet production processes. In highly competitive manufacturing environments, production continuity is crucial to meeting customer demand and ensuring operational effectiveness. This research adopts a qualitative descriptive approach, collecting data through observations, interviews, and documentation within a cabinet manufacturing company. The findings reveal that the implementation of SCM practices such as supplier integration, inventory control, demand forecasting, and coordinated production planning significantly enhances material availability, reduces production delays, and minimizes operational disruptions. Furthermore, effective collaboration among supply chain actors improves communication flow and responsiveness to market changes. The study concludes that adopting SCM concepts not only ensures smoother production processes but also contributes to cost efficiency and improved customer satisfaction. These results highlight the strategic importance of SCM in strengthening manufacturing performance and sustaining business competitiveness in dynamic industrial environments..

Keywords— Supply Chain Management (SCM), Panglong Adi, Cabinet Making

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I. INTRODUCTION

The development of information technology in today's modern era has had a significant impact on various industrial sectors, including the wood processing industry. Innovations in production and raw material management are driving businesses to adapt to more efficient and integrated systems [1]. The use of technology not only accelerates the production process but also improves accuracy in inventory management and the distribution of goods to consumers [2]. Therefore, the success of a business depends heavily on the ability to manage the entire production workflow effectively and systematically [3]. In the wood cabinet and plywood-based product manufacturing industry, the implementation of an effective management system is a key factor in ensuring the smooth operation of the production process [4]. ncreasingly fierce competition requires businesses to not only rely on manual labor but also to systematically organize the flow of raw materials, production processes, and distribution [5] [6]. Thus, businesses can maintain

product availability and consistently meet consumer demand without encountering significant obstacles in procurement or production [7] [8].

Wooden cabinets remain the top choice for many people today due to their superior strength, durability, and natural aesthetic appeal. Wooden cabinets add a warm and elegant touch to home interiors while offering greater durability than synthetic materials. Additionally, wood is easy to shape and adapt to various designs, ranging from minimalist to classic styles. It's no wonder that lumberyards remain highly sought after as the primary source for quality wood, as many craftsmen and consumers require solid wood to ensure that the cabinets they create possess high aesthetic value and durability.

On the other hand, communication between suppliers and Panglong Adi has not been established in a structured manner, making it difficult to accurately estimate raw material needs and determine precise order completion times. Additionally, the recording of production and inventory data is still done manually without a proper management system, so the owner frequently faces challenges when evaluating performance and making decisions regarding future production performance or raw material needs. To address these issues, Panglong Adi needs to implement the concept of Supply Chain Management by integrating all processes from raw material procurement to the production stage through a data-driven recording and monitoring system to ensure procurement is well-controlled, improve coordination between Panglong Adi and suppliers through scheduled order planning and continuous communication, and implement an integrated information system to monitor inventory, and production processes, as well as the routine processing of orders, so that cabinet manufacturing operations can run more efficiently and in an organized manner, and meet customer demand on time.

Supply Chain Management (SCM) is an approach used to effectively and efficiently integrate suppliers, manufacturers, warehouses, and retailers [9]. A strategy based on the concept of Supply Chain Management involves a series of strategic activities and actions along the flow of goods and information, creating alignment between the needs of end customers and the capabilities of the resources within the supply chain network [10].

Supply Chain Management is a term for managing the supply chain from suppliers to buyers, covering the processing stages from purchasing raw materials to manufacturing finished goods and selling them to end consumers [11] [12]. Supply Chain Management (SCM) is a critical process for coordinating parties involved in the supply chain by implementing evolving information systems, particularly web-based information technology [13].

Through this study, the author seeks to analyze the implementation of a more structured production management system at Panglong Adi so that cabinet production activities can run smoothly and efficiently.

II. METHODOLOGY

This study used several stages, as shown in Figure 1 below.

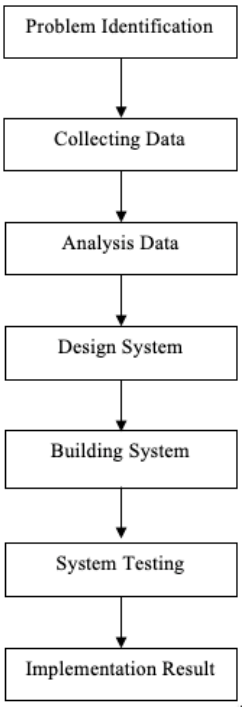

Figure 1. Research Method

A. Problem Identification

Problem identification is the first step in research. The problem identified in this study is:

1. The procurement of wood and plywood raw materials has not been managed optimally because it is still done manually, often resulting in production delays.
2. Communication between suppliers and Panglong Adi is not well-structured, making it difficult to accurately estimate raw material needs and order completion times.
3. There is currently no production and inventory management system, so record-keeping is still done manually. This complicates the process of evaluating and making decisions regarding production performance and future raw material needs.

B. Collecting Data

At this stage, data was collected to gain a better understanding of the system under study [14]. The author collected data by visiting Panglong Adi in person and conducting an interview with the owner, Mr. Adi, regarding matters such as raw materials, the production of wooden cabinets and plywood, and supplier information. After that, the author documented the raw materials and the production of wooden cabinets and plywood, as well as conducting documentation with the owner of Panglong Adi.

Panglong Adi is a small business specializing in cabinetry. The business was founded by Mr. Adi in 2020 and is located at Jalan Besar Sei Silau Timur, Dusun 1A, Buntu Pane Subdistrict, Asahan Regency, North Sumatra. Panglong Adi is independently managed by a team of two people. Since its establishment, Panglong Adi has focused on providing high-quality wooden cabinets and plywood to meet the needs of the local community. However, in its operations, the business still faces various challenges, particularly regarding raw material management, production time efficiency, and coordination with suppliers and customers. In running its business, Panglong Adi relies on several suppliers for raw

materials. In recent years, the challenges faced by Panglong Adi have become apparent as demand for cabinets has increased. The raw material procurement process is still carried out manually, often resulting in delays that impact the production schedule.

C. Analysis Data

The data obtained was then analyzed to improve the existing system with the aim of achieving better results [15]. Based on raw material and supplier data from Panglong Adi, an analysis was conducted to determine how all production and record-keeping processes at Panglong Adi were carried out. This analysis was conducted to identify what Panglong Adi needed to ensure the sustainability of its business.

D. Design System

System design is a blueprint of a system created to address problems faced by an organization following a preliminary analysis [16]. The supply chain management system at Panglong Adi will be designed using the PHP programming language, a MySQL database, Information System Flowcharts (ISF), and Entity-Relationship Diagrams (ERD). The user interface will be designed using Microsoft Visio, and Unified Modeling Language (UML) diagrams will be designed using Visual Paradigm [17].

E. Building System

System development involves creating a new information system or modifying an existing one, either in whole or in part. Essentially, system development is related to the processes of system analysis and design. In developing a system, the steps involved include preparing the software which consists of PHP (Hypertext Preprocessor), XAMPP, and a MySQL database and writing code to implement Supply Chain Management (SCM) into the program [18].

F. System Testing

Once the design is complete, the program will first be tested to determine whether it meets its intended objectives. The supply chain management system at Panglong Adi, which has been fully designed, will be tested using black-box testing [19]. This is useful for determining whether the system that has been developed meets the author's expectations.

G. Implementation Result

The program, which is now ready, will be implemented at this stage; the question is whether it is user-friendly and easy for users to understand. The supply chain management system, having completed testing, can now be implemented at Panglong Adi and utilized to its fullest potential [20].

III. RESULT AND DIISCUSSION

A. Analysis Data

In the course of its operations, Panglong Adi relies on several suppliers for its raw materials. The supplier data for Panglong Adi is presented in Table 1.

Table 1. Supplier Data

No	*Supplier*	Item for Sale
1	Panglong Putra	Wood and Plywood
2	Glass Store	Glass and Glass Adhesive
3	Saudara Jaya Store	Wooden Strips and Sandpaper
4	Sinar Jaya Store	Nails, Wheels, Handles, Locks, and Paint

B. Design System

In general, the system process to be designed is illustrated using a use case diagram, as shown in Figure 2.

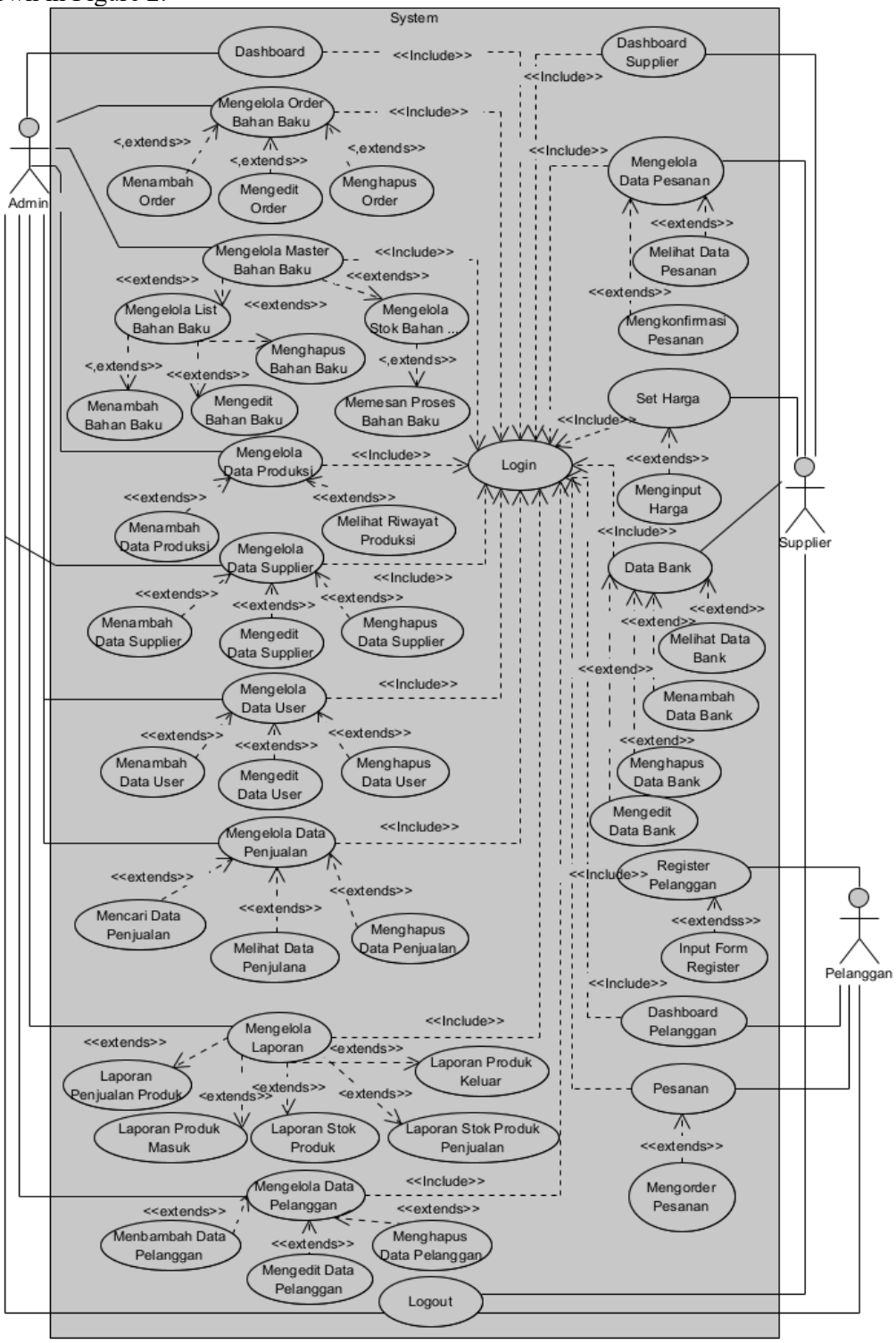

Figure 2. Use Case Diagram

C. Implementation System

1. Dashboard Admin

The admin dashboard is a page that displays a summary of key information, such as the quantity of raw materials, suppliers, customers, and product inventory, as well as sales data, material inventory, and material requests, making it easier for administrators to manage Panglong Adi's operations.

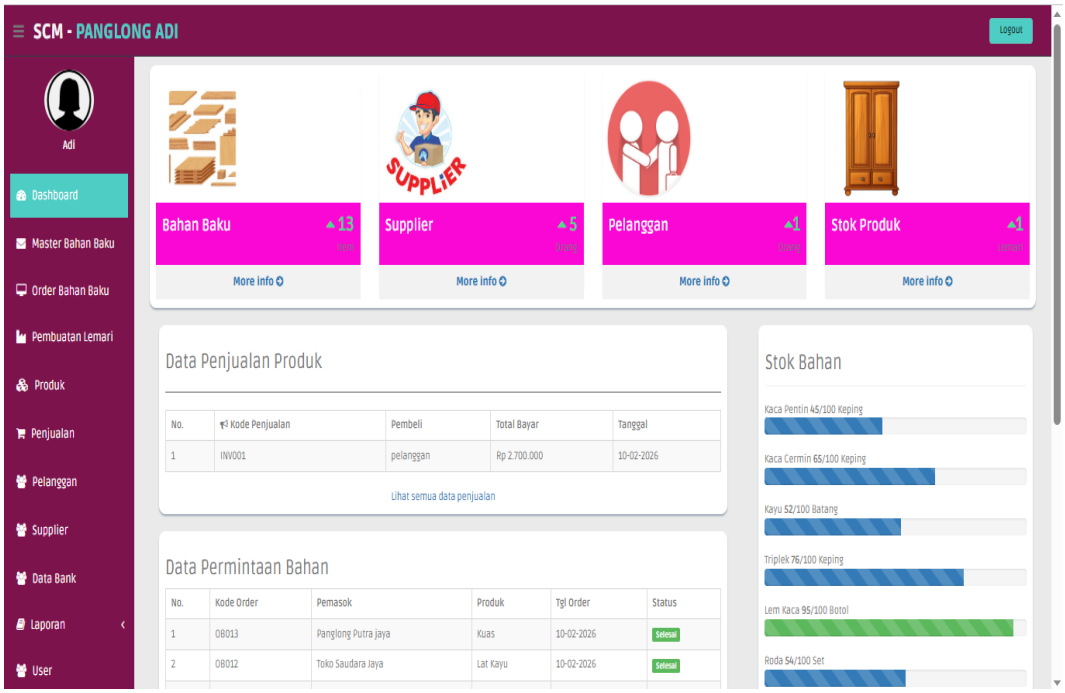

Figure 3. Form Admin Page

2. Order Raw Materials

The Raw Materials Order View (Raw Materials Order List) is a page that displays a list of available raw materials, complete with codes, names, stock quantities, and action buttons for placing orders or viewing material details.

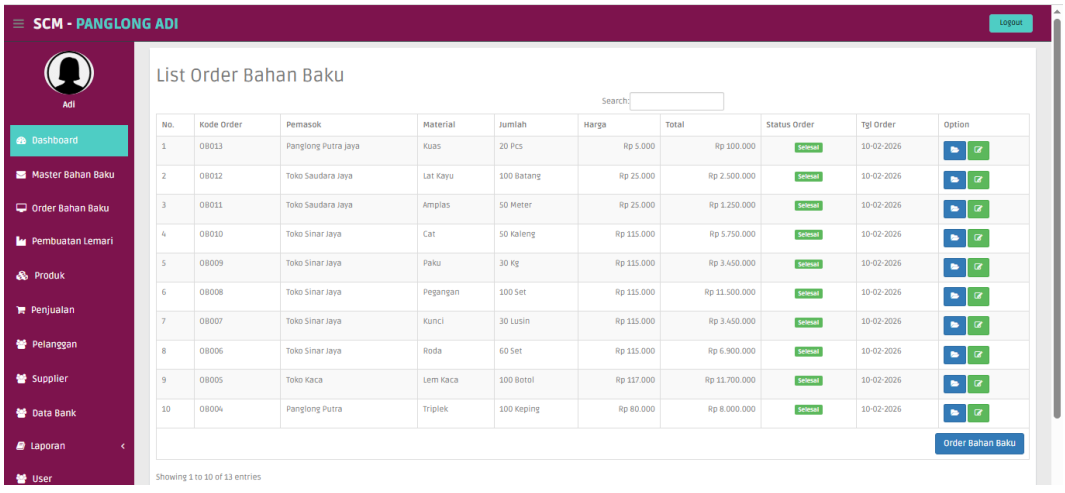

Figure 4. Order Raw Materials

3. Customer page

The Customer View is a page for managing customer data, which includes customer ID, name, phone number, and address, and provides features for viewing, editing, or deleting customer data.

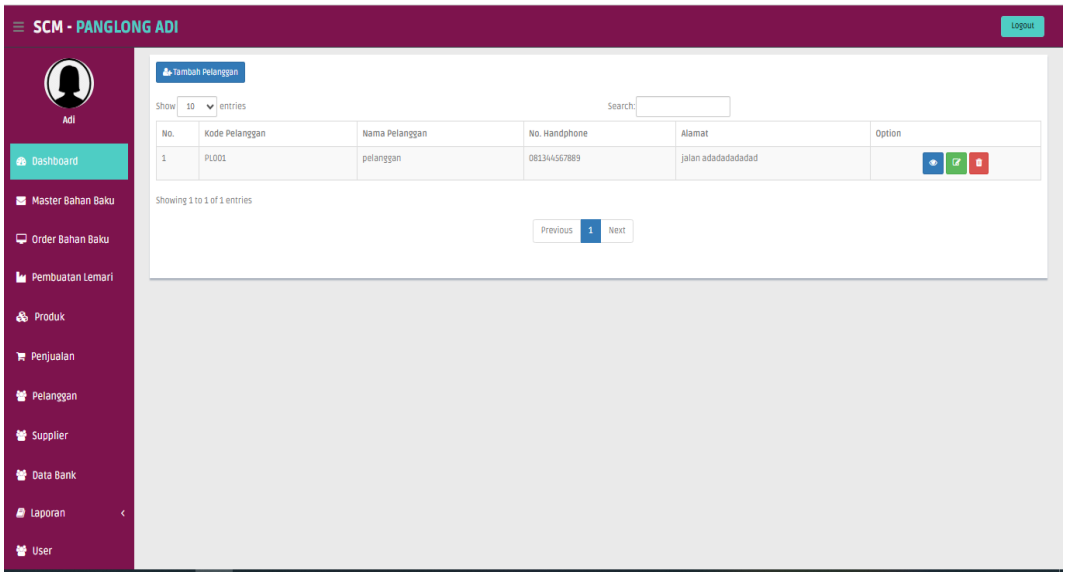

Figure 5. Customer Page

4. Raw Material Inventory Report

The raw material inventory report page displays data on the quantity of inventory available in the store. This page provides information such as serial number, product code, product name, and the quantity of stock still available in appropriate units such as pieces, meters, units, and others. This feature is essential for monitoring real-time product availability, aiding decision-making in procurement and sales, and includes a “print” button to print the inventory report as a physical document or digital archive.

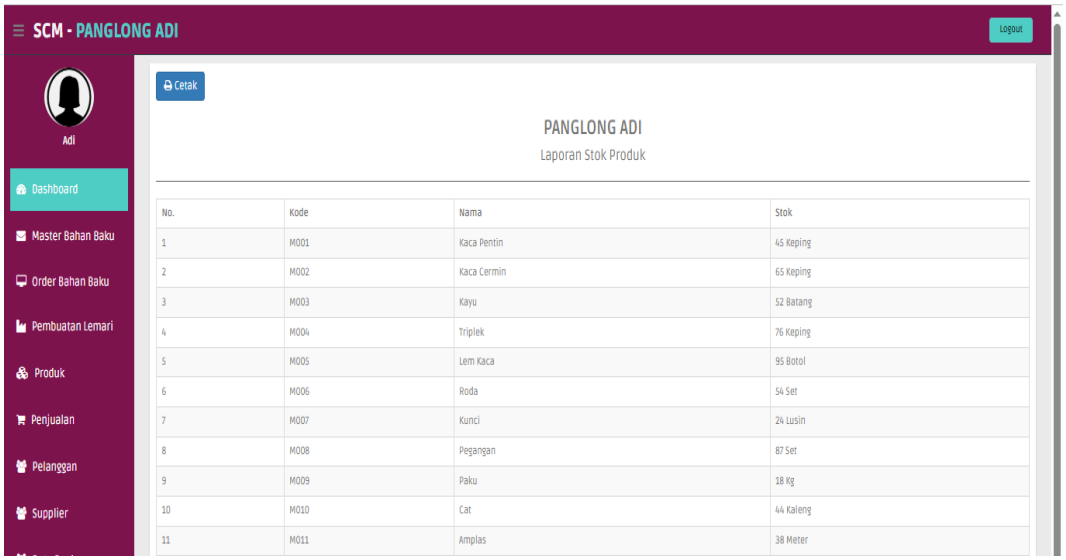

Figure 6. Raw Material Inventory Report

Discussion

The implementation of the Supply Chain Management (SCM) system at Panglong Adi shows significant differences compared to the previous manual process. Before the implementation, raw material procurement was carried out without a structured system, resulting in frequent delays in material availability that directly affected the cabinet production schedule. In addition, communication with suppliers was not well-coordinated, making it difficult to estimate raw material requirements accurately. Inventory recording was also performed manually, leading to data inaccuracies and difficulties in evaluating production performance.

After the implementation of the SCM system, all processes related to raw material procurement, inventory management, and production planning are integrated into a single system. The system enables real-time monitoring of raw material stock, more accurate recording of inventory data, and better coordination with suppliers. As a result, delays in raw material procurement can be minimized, and production scheduling becomes more organized and efficient.

Furthermore, the availability of structured data supports faster and more accurate decision-making in determining production needs and managing stock levels. The system also improves transparency in the supply chain process, allowing better control over each stage of production.

Therefore, it can be concluded that the implementation of the SCM system successfully addresses the problems identified in the previous manual system and significantly improves the efficiency and effectiveness of cabinet production at Panglong Adi.

IV. CONCLUSION

Based on the research conducted, the conclusion that can be drawn is that the workflow for raw material management and the cabinet production process at Panglong Adi has been integrated through a Supply Chain Management (SCM) system that encompasses raw material procurement, inventory management, and the production process. The system developed presents data in a structured manner, allowing each operational stage to be controlled in a more targeted and systematic way. The design of the Supply Chain Management (SCM) system at Panglong Adi was implemented by integrating suppliers, the administrative department, and the customer service department into a single unified system. This design resulted in a mechanism for planning raw material requirements, recording inventory, and scheduling production in a structured manner to ensure the continuity of the production process. The implementation of the designed Supply Chain Management (SCM) system has had a positive impact on the smooth production of cabinets. This is demonstrated by improved accuracy in inventory control, efficiency in raw material usage, and stability in the production process. Thus, the implementation of the Supply Chain Management (SCM) concept plays a significant role in maintaining the operational effectiveness of Panglong Adi.

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