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Business Process Reengineering And ERP System Implementation Plan For A Manufacturing Company: A Case Study

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Abstract

A rubber company was established in the Philippines in 1986 as a pioneering producer of metal and rubber goods. Despite its good reputation, the company's manual processes caused mistakes, compliance issues, and inefficiencies, making it difficult to meet client needs. Paper-based material management made invoicing and buying order processes slow and error-prone. This study introduces the company to technologies that improve efficiency, provide real-time data, and consolidate department processes, such as Enterprise Resource Planning. The researchers employed a Business Process Reengineering methodology to plan, analyze, and model future Materials Management processes using SAP S/4HANA; the software produced reports for inventory monitoring, material tracking, trend identification, and inventory optimization to meet business needs. The results showed that using SAP S4/Hana features eliminates repetitive and manual tasks and enables recording all purchases in the system, with the ability to generate or print documents and reports as required.

Implementing ERP software has reduced the lead time from 243 minutes to 40 minutes, improving the process's effectiveness and productivity and enhancing the VS ratio.

Keywords: Enterprise Resource Planning, Materials Management, SAP S/4HANA, Business Process Reengineering

Introduction

1.1 Background of the Study

A rubber company was established in the Philippines in 1986 as a pioneering producer of metal and rubber goods. Despite the good reputation the company had built, the manual processes it used led to mistakes, compliance issues, and inefficiencies that made it challenging for the business to meet the needs of its clients. The company relied on paper-based systems for material management, making the invoicing and buying order processes time-consuming and full of potential errors. As a result, order delays and inefficient supply chains were the results. This article aims to introduce the organization to technologies that can boost efficiency, provide real-time insights, and combine the operations of several departments into a single platform. Additionally, the article aims to persuade the corporation of the advantages of implementing an automated and digitalized manner of operation in their company.

The fundamental aim of enterprise resource planning (ERP) software is to provide organizations with a comprehensive management tool that streamlines their operations and facilitates informed decision-making through real-time data analysis. The primary objective of the ERP software is to achieve its principal goal. Enterprise Resource Planning (ERP) software integrates various business processes of an organization into a unified system. Implementing this approach facilitates a decrease in the frequency of errors in data and enhances interdepartmental communication. This article aims to introduce the company to enterprise resource planning (ERP) software to enhance its inventory management capabilities and promote cross-functional collaboration among its departments. The organization comprises three divisions, namely administration, sales and marketing, and manufacturing and operation, responsible for budgeting and planning. The manufacturing department manages the procurement process, which is tasked with identifying local suppliers across the Philippines and initiating communication with rubber factories to obtain information on the different types of rubber available and their corresponding pricing. The rubber used in manufacturing is sourced from the latex vessels in rubber-producing plants. The procurement of materials by the organization is contingent upon the capacity and needs of its storage facilities. Implementing ERP software will facilitate a streamlined approach to managing necessary supplies and obtaining accurate information regarding the requisite materials, thus

enabling the organization to enhance its ability to fulfill customer requirements.

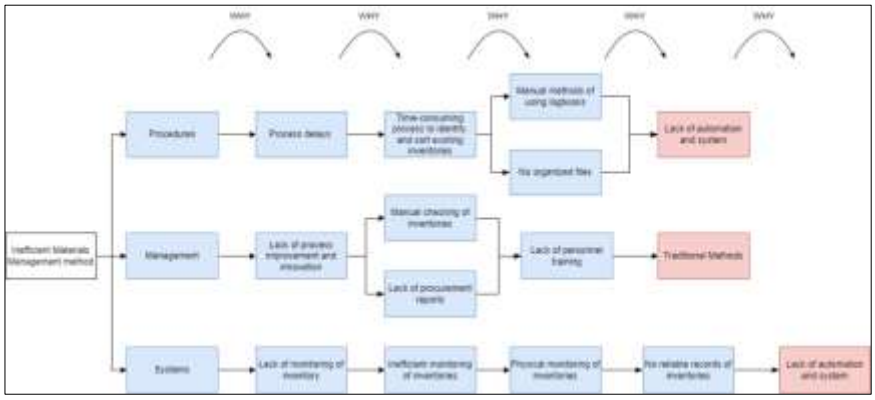
1.2 Problem Statement

A Rubber Manufacturing company needs to work on maintaining and monitoring its inventory due to manual and traditional processes, leading to inefficient work processes and limited growth opportunities.

The inefficiency of its inventory management process can lead to various problems. For example, the company may need help to track stock levels accurately, leading to stockouts or overstocking, which can negatively impact the company's revenue and profitability. Additionally, the company may need help to make timely decisions about inventory replenishment, which can lead to delays in fulfilling orders and disappointing customers. It could consider implementing an ERP system providing real-time visibility into inventory levels and movements to address this problem or need. Such a system can help the company optimize inventory levels, reduce waste, and make informed decisions about inventory replenishment. The rubber company can improve operational efficiency, reduce costs, and create growth opportunities.

1.2.1 Why-why Diagram

Figure 1. Why-why diagram of Rubber Company



The Why-why diagram depicts a particular rubber company's ineffective materials management strategy. By examining and challenging the fundamental cause, this diagram assists in identifying the problem's underlying causes. The Rubber company receives weekly orders from various clients but can only provide prompt service due to efficient materials administration. Current methods, management practices, and the system contribute to the rubber company's inability to meet client expectations. Therefore, the issue can be further investigated into these three components.

Due to the time-consuming process of identifying and categorizing existing records, the first element, procedures, causes delays before production. This is due to the manual nature of logbook use and the absence of organized folders for such documents. This is due to the organization's need for an automation system. The second component is management practices, which need to be added to process improvements and innovation due to the continued use of manual inventory reviews and the absence of procurement reports. Due to a need for more training, employees tend to adhere to the organization's established procedures. The final issue is the organization's current system, which needs more effective inventory monitoring because physical monitoring is still conducted with human error. Consequently, there are no reliable inventories because they note what they observe before beginning production. This is due to the need for more automation and system. Consequently, the primary cause of the rubber company's difficulties is more automation and system integration, resulting in repetitive and manual purchasing tasks. The company's outdated methods result in tedious and time-consuming procedures.

1.3 SWOT Analysis

Table 1. SWOT Analysis of Rubber Company's Materials Management Phase

Strengths	**Weaknesses**
- Good payment history - Strong compliance with requirements - Good vendor relationships	- Paper-based/manual processes - Absence of real-time data insights - Manual handling of materials - High lead time
Opportunities	**Threats**
- Integrate technology solutions or automation - Leverage supplier capabilities and innovation - Better storage and handling processes	- Inventory damage - Stockouts or excess inventory - Low-efficiency rate - Unavailability of suppliers

Table 1 displays the rubber company's Materials Management strengths, weaknesses, opportunities, and threats. The company's strengths are internal, such as its timely and comprehensive payment history. They also strictly follow operation criteria like purchase orders, product receipts, etc. They have good relationships with their vendors, who deliver high-quality goods and a smooth process. Its shortcomings are primarily internal, such as paper-based or manual operations, lack of real-time data insights, manual material handling, and long lead times. On the other hand, external variables affect corporate operations. The organization can integrate technology solutions by identifying automation prospects,

utilizing supplier capabilities and innovation, and improving storage and handling. The company's vulnerabilities include inventory damage from manual handling, low staff productivity, stockouts or surplus inventory due to the lack of real-time data, low efficiency due to the long lead time, and supplier unavailability.

Many elements affect the company's operations. From there, strategies and plans might be formed to maximize their strengths, improve their shortcomings, seize opportunities, and reduce threats. The researchers advise utilizing an ERP system to effectively manage the Materials Management phase, eliminating paper-based operations and reducing lead time to increase efficiency and staff productivity.

1.4 Objectives

This research explores the impact of implementing an ERP system on the operational efficiency and growth opportunities of a rubber manufacturing company struggling with manual and traditional inventory management processes. Further objectives are to:

- Resolve the underlying problems in handling inventory and procurement
- Eliminate manual processes
- Increase the company's productivity
- Cut down the lead time on monitoring inventory and procurement of materials
- Fast-track processes before production
- Enhance the overall satisfaction of customers

Overall, the research objective offers a precise and distinct aim for the study that can direct the planning, data gathering, and analysis procedures.

Related Literature

A. Enterprise Resource Planning

Enterprise Resource Planning (ERP) is a strategic tool that synchronizes, integrates, and streamlines an organization's data and operations into a single system to obtain a competitive advantage in an uncertain business environment [1]. The use of Enterprise Resource Planning (ERP) systems in small and medium-sized organizations (SMEs) and its effects on business performance have been studied by several authors. The problems and potential fixes for SMEs implementing ERP systems were examined; it was known that when SMEs install ERP, they encounter high expenses, technical inexperience, and employee opposition. It is suggested to choose an ERP system suited to SMEs' needs, train personnel, and ensure efficient departmental collaboration and communication [2]. ERP systems can improve productivity, financial savings, and decision-making. However, open innovation is hampered by

ERP systems, which restrict flexibility and the capacity for experimentation with novel concepts; this leads to investing in complementary technologies, modifying ERP systems to support innovation, and promoting collaboration and information sharing [3].

SMEs often require more resources and skills than larger firms to use ERP systems. Despite these challenges, the author added that specific success criteria could boost SME ERP deployment. These include aligning the ERP system with the company's goals and processes, educating and supporting users, and choosing a provider with SME experience [4]. Moreover, ERP systems aid business and knowledge management—implementing an ERP system is complex, expensive, and time-consuming. Still, ERP systems are worth the cost, especially for improving business and knowledge management. They can give companies a competitive edge by improving their ability to adapt to market changes, speeding up decision-making, and encouraging collaboration and knowledge sharing across business groups [5]. Critical success factors (CSFs) can significantly impact a firm's ability to adopt an ERP system successfully [6].

B. Business Process Reengineering

Enterprise Resource Planning (ERP) and Business Process Reengineering (BPR) improve systems integrating corporate data, especially inventory management. Since the particular company manually manages its inventories, there are delays in delivery times. The researchers suggested digital management to monitor and update stock information. The study employed five steps to boost efficiency: Preparing for Engineering, Mapping and Analyzing As-Is, Designing To-Be, Implementing Reengineered Processes, and Improving Continuously. The strategies reduced the As-Is-To-Be model time comparison by 36% [7]. Similarly, BPR was used to rearrange a company's procurement process operations to address project material delays since the construction initiatives were postponed due to supply acquisition delays and incorrect material storage. Based on initial analysis and expanded sub-process activity, they identified wasteful processes and developed redesign-level adjustments (typically portrayed in the To-Be model). Comparing the models, the procurement and storage business processes can reduce processing times by 46% [8].

BPR implementation in SMEs has benefits and drawbacks, including cost reduction, efficiency, and change resistance. Organizations should incorporate staff in BPR to solve these problems, give proper training and support, and build a precise BPR implementation. The upper management's support and commitment to BPR contribute to SMEs' success [9]. Moreover, BPR was implemented in a design company that does not have a capable and integrated system—their operational activities are still carried out manually, causing a decrease in work performance. The researchers proposed using an ERP system and simplifying and streamlining work to improve the company's overall

performance. The method used in the study consists of problem identification, data collection, data analysis, data processing, and system implementation testing. The existing business processes were converted into improved and value-adding processes following ERP best practices with the help of business process reengineering. The assessment results through BPR found that the ERP system implementation was highly accepted [10].

C. Process Improvement

Enterprise Resource Planning tools (e.g., SAP S/4HANA) improve non-banking services like procurement and finance; it makes financial management more transparent and efficient. The study showed how ERP implementation rethought workflows, analyzed business processes, and customized ERP systems. The FICO module was employed for financial management and control, and the procurement module was for purchase. SAP S/4HANA deployment increased financial reporting, procurement efficiency, financial management transparency, and financial transaction control [11]. Similarly, ERP was used to create an eco-friendly rubber processing procurement system. The study considers numerous environmental factors in the rubber firm's purchasing decisions. It also integrates environmentally responsible purchasing with a buy, supplier, inventory, and logistics ERP system. ERP boosts productivity, data management, worker collaboration, and costs. With this, ERP can help the rubber company attain sustainability and accountability [12].

The effects of ERP implementation in small and medium-sized firms and the reasons that led to its adoption were examined. The survey showed how ERP systems might help SMEs grow; the study found that enhanced process visibility helps personnel understand and control the service process, which improves customer satisfaction. Moreover, the organization needs a vital component to understand data in real time. The research explained how an ERP system gives a company real-time data insight—it also proposes prioritizing ERP system implementation to improve organizational activities, performance, and competitiveness [13]. Additionally, value stream mapping (VSM) was utilized in a manufacturing company to identify waste and inefficiencies in the production process, and the Lean-Kaizen approach was employed to enhance it. Ensuring employee participation and commitment to process improvements is important, as Lean Kaizen allows for a culture of continuous development [14]. ERP systems may also reduce operating costs, cycle times, and customer satisfaction; they have several benefits, especially for management procedures; however, deployment can be complex [15].

Methodology

3.1 Conceptual Framework

Table 2. Conceptual Framework

Input	Process	Output
Profile of Rubber Company Through primary research (interview): - Company Background - Identify inputs and outputs - Define tasks and activities - Identify pain points - Recognize the underlying problems	Mapping of Process Flows Generating a Root Cause Analysis (Why-Why diagram) of the current procurement process Creation of SWOT Analysis Creating a simulation of the current state and future state to identify opportunities	Design of the future procurement process Changes to the current state process Eliminate pain points in the procurement process

Table 2 shows the conceptual framework of the study. As for the input, the researchers interviewed one of the key employees of the Rubber company and gathered the necessary information such as the company background, the inputs and outputs of the company, daily tasks and activities involved in their operations, the pain points, and the underlying problems. As for processing, the researchers first mapped the process flow of the company's procurement process. This allowed the researchers to gain a clearer picture of the current state process of the company. Secondly, the researchers generated a root cause analysis, creating a why-why diagram to find the root cause of the problems within the current procurement process. Third, the researchers created a SWOT analysis to identify and evaluate a business or organization's strengths, weaknesses, opportunities, and threats. Lastly, the researchers have performed a simulation to identify the difference between the current state process and the proposed future state process. As for the output, the researchers designed the future procurement process, made changes to the current state process, and eliminated pain points in the procurement process.

3.2 Analysis of Current and Future State using Flow Process Chart and Swimlane

The procurement processes of the rubber company were identified using the Swimlane Diagram. The Flow Process Chart was used to conduct the efficiency analysis of the process. Understanding the flow of the process, both in its present state and its future stages, required the usage of both diagrams.

3.3 Development and Analysis of Future State

The researchers utilized SAP S4/HANA to simulate the future state. SAP S4/HANA is a software system that can transform and optimize a company's procurement process. The system offers numerous benefits that the Rubber company can leverage to enhance its procurement processes. One of the most significant benefits of SAP S4/HANA is its real-time data processing capabilities. It can handle vast amounts of data in real-time, enabling the company to make informed decisions quickly [16]. Moreover, the software features a modern and intuitive user interface that simplifies navigation and procurement task completion. Another benefit of SAP S4/HANA is the automation of routine tasks. The software can automate many procurement tasks, freeing employee time to focus on strategic activities. Additionally, the system provides a comprehensive view of the procurement process, including supplier performance, inventory levels, and purchasing trends. It can also integrate with other systems, such as supplier portals and logistics software, to improve procurement efficiency. The functionalities of SAP S4/HANA in the procurement process include purchase requisition management which allows users to create and manage purchase requisitions, monitor approvals, and track spending against budgets. Purchase order management enables users to create and manage purchase orders, track order status, and manage order changes.

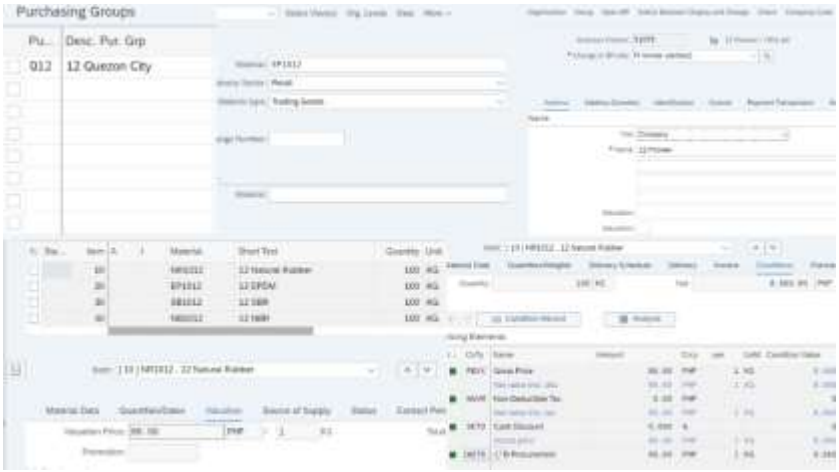
SAP S4/HANA can optimize a company's procurement process by providing real-time data, automating routine tasks, and enhancing process visibility. Its functionalities include tools for managing purchase requisitions and orders, supplier relationships, and contracts. Overall, SAP S4/HANA is an invaluable system that can help companies achieve greater efficiency and success in their procurement process.

3.4 Development of Future State of Materials Management Process

During the first phase of developing the future state of the procurement process, the researchers established essential details, including the company code, business area, empty chart of accounts, controlling area, credit control area, variants for open posting periods, account groups, and tolerance groups. In addition, the team established the future state of the procurement process. These particulars are essential to configure Phase 2 of SD and MM.

SAP S/4HANA Phase 2 allows for the creation of purchasing groups, the assignment of purchasing organizations and plants to company codes, the grouping of valuation areas, the activation of material ledger types, the configuration of automatic postings, and the creation of master data for trading goods, vendors, purchase requisitions, purchase orders, goods receipts, invoice receipt, and vendor payments.

Figure 2. SAP S/4HANA Materials Management Configuration



The ERP system's Materials Management (MM) module makes handling procurement and material management operations easier. From planning and procurement through inventory control and invoice verification, it is designed to support the whole material management cycle of the business. The four primary tasks performed by the MM module are (1) Material Planning, which establishes the materials needed for production and purchasing; (2) Procurement, which coordinates vendor purchases and generates purchase orders; (3) Inventory Management, which keeps track of stock levels, manages inventory valuation, and handles goods receipt; and (4) Material Valuation, which validates vendor invoices. The rubber company must have the appropriate supplies on hand at the appropriate time to satisfy production needs while maximizing inventory levels and controlling costs; this is where the Materials Management module comes into play.

Results And Discussion

4.1 Current Business Process

The rubber company's materials management procedures rely on manual processes that entail paper-based purchase orders, invoices, storage, and distribution transactions. The efficient management of materials is highly important to guarantee the timely availability and cost-effectiveness of the required materials. The company's present condition suggests that using manual procedures is associated with several adverse consequences. Paper-based methods for job completion are inefficient, slow, and time-consuming, leading to missed deadlines, manufacturing delays, and decreased worker productivity. The process of manually manipulating materials has the potential to result in errors in sequencing, inaccuracies in inventory calculations, and misplacement of supplies. The organization faces challenges in determining distribution and order decisions due to the absence of up-to-date data on material flow and

inventory quantities. Inadequate visibility may lead to stockouts or overstocking, impacting precision, financial gains, and operational achievements.

Figure 3. Current Business Process of Rubber Company using Business Process Model Notation

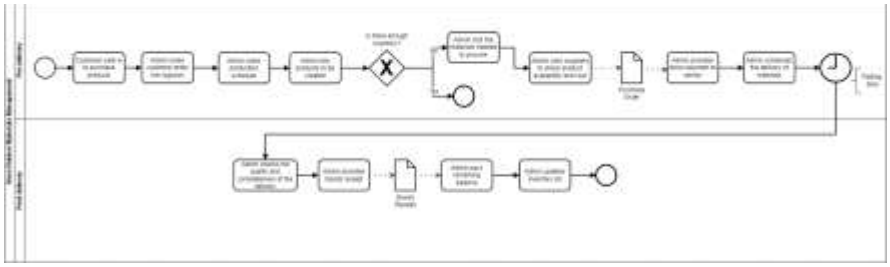


Figure 3 illustrates the current business or As-Is processes of the company's Materials Management operations. It is divided into two lanes, the pre-delivery and the post-delivery of materials. The process starts in the pre-delivery stage, where a customer calls in to purchase products. The admin then notes the customer's order by writing it down in a logbook. Next, the admin notes the production schedule on a whiteboard so they know when the products need to be finished, and they can plan by organizing their schedule and prioritizing rush orders. Then, the admin lists the products to be created; if there is enough inventory for the products needed for creation, the Materials Management process ends as the operations go into the Production phase. However, if there is insufficient inventory, the admin lists the materials needed to be procured based on the purchase order. The admin calls suppliers to check product availability and cost; if they have found a suitable vendor, they send a purchase order and then provide the down payment for the materials. Next, the admin schedules the delivery of the materials.

In the post-delivery stage, once the materials are delivered, the admin checks the quality and completeness of the delivery to ensure that the materials are non-defective and complete based on the order. After verifying that the order is fulfilled, they provide a Goods Receipt and pay the remaining balance for the order. From there, the admin updates the inventory list by adding the newly ordered materials. As seen in Figure 3, the current business process can still be improved to increase efficiency and eliminate manual and paper-based processes.

4.2 Future Business Process

Figure 4. Proposed Business Process of Rubber Company using Business Process Model Notation

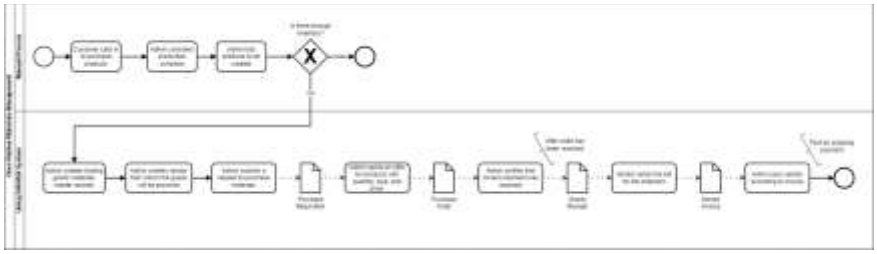


Figure 4 shows the proposed or future business process of the company's material management phase. It is divided into two lanes, the manual process and the process using the S/4HANA ERP system. The process starts when the customer calls in to purchase products or place an order. The admin considers the production schedule to identify the timing of production. After this, the admin lists the products to be created to know whether there is enough inventory to accommodate the customer's order. If there is sufficient inventory, then the process of Materials Management ends and moves into Production; if there is not enough inventory, the process continues using the S/4HANA system.

The process starts when the admin creates trading goods materials master records; trading goods are always bought and resold by the company. Here, materials needed are created by copying necessary material master data from existing trading goods. If the company has a supplier in mind, the admin creates the vendor from which the materials will be procured. Such information about the vendor (name, address, and other data such as currency) will be stored in individual vendor master records, which are stored in the vendor master database. Next, the admin submits a request to purchase materials, which yields a purchase requisition; in the system, the needed attributes to be filled out are the (1) material, (2) quantity, (3) delivery date, (4) plant, and (5) storage location. After that, the admin sends an offer for products with their quantity, type, and price, which is included in the purchase order. Once the order has been received, the admin verifies the shipment and ensures everything is complete; they will send a goods receipt to validate the shipment's quality. In return, the vendor sends the bill for the shipment, which is done by providing a vendor invoice. Lastly, the admin pays the vendor according to the invoice by posting an outgoing payment in the system.

The future or proposed process shows that integrating or implementing the S/4HANA system into the company's Materials Management is beneficial as it reduces lead time since everything is done within the system. This ensures that no process will be overlooked and all documents complied with. Moreover, looking at the company's SWOT,

taking advantage of one of its opportunities: automation or integrating technology solutions, eliminates its weaknesses and mitigates the threats.

4.3 As-is Process

Figure 5. Flow Process Chart of Rubber Company's Current Materials Management Phase

The company's manual operation results in noticeable waiting times, delays, and unproductiveness—despite having substantial potential in the rubber industry and a considerable customer base, the company must enhance its current process and improve efficiency to handle work more effectively.

Pain Points

- Manual noting of purchase orders
- Manual process of production scheduling
- Manual listing of materials needed
- Manual checking of inventories from the warehouse
- No accurate data for needed materials
- Paper-based recording of the materials and prices
- Manual calling of suppliers
- Manual updating of inventories
- Hard to sort and find data
- No real-time view of data or materials is needed
- Estimated orders of materials

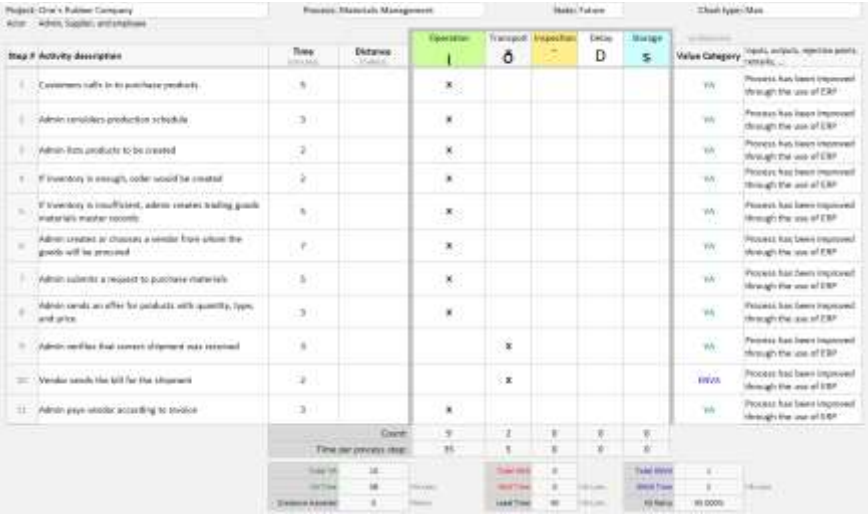
The material management process at the rubber company is carried out manually and based on paper. The production department uses a whiteboard and a logbook to determine the materials required for manufacturing, the amounts involved, and the service delivery. The procurement process entails making individual phone calls to suppliers to

assess availability and negotiate rates. After an agreement has been attained, the company determines a desired delivery schedule. It conducts quality checks on the items on the day they are delivered to verify that they are complete and meet all requirements. Materials are kept on hand by the available storage space, and an employee records the amount of those materials in a book for inventory control. The provision of a goods receipt by the corporation confirms that the item has been received.

Even though material management procedures are required, they can still be made better by implementing an ERP system. The current total lead time and essential non-value added (ENVA) activities for the material management process are 243 minutes, indicating that they must transition from operations that do not add value to those that create value for improving the situation. The use of an ERP system may assist in enhancing the company's overall operations by providing real-time data visibility, increasing efficiency, and facilitating improved communication among staff.

4.3 To-be Process

Figure 6. Flow Process Chart of Rubber Company's Future Materials Management Phase



The current lead time of 243 minutes has been reduced to 40 minutes through ERP software implementation, which has also contributed to the process being more effective and productive. The introduction of ERP also improves the VS ratio to 95%, indicating the process's productivity and efficiency using S4hana. In addition, research suggests a more definite approach in which ERP may assist companies and suppliers in settling payments orderly.

The present procedures have been enhanced because of the deployment of SAP S/4HANA, reducing waste; the researchers were able to determine which processes might benefit from being improved or eliminated to cut down on waste. According to the comparison findings, S/4HANA helped the organization achieve enhanced visibility and control—real-time data analytics available to the firm by S/4HANA. The procurement team uses these analytics to assess and monitor procurement processes, which helps detect and manage bottlenecks and ensures that the organization complies. Figure 6 also illustrates how automation may assist in simplifying the process of several procurement tasks, such as developing buy orders, processing invoices, and creating purchase requisitions. The automation provided by the ERP system aids in minimizing the possibility of errors occurring, hence contributing to improvements in both accuracy and productivity. The capability for managing supplier relationships, such as vendor assessment and performance monitoring, also assists the organization in managing its suppliers. Using S/4HANA has further suggested that the organization will have cost savings, such as negotiating better prices and reducing the cost and time required for procurement. The outcome means improved teamwork between procurement and the other departments due to the team's efforts. Technology makes it easier for departments to communicate with one another and make decisions, leading to increased productivity.

Implementing SAP S/4HANA in the purchasing procedure can result in significant benefits, such as enhanced visibility and control, increased levels of automation and streamlining, enhanced levels of supplier management, reduced costs, and enhanced levels of collaborative effort. Nevertheless, it is essential to ensure that the implementation is meticulously planned and carried out to ensure a successful outcome and prevent any potential problems.

4.4 Significant Reports and Functionalities Provided by SAP S/4HANA

Warehouse Stocks of Material

Figure 7. Warehouse Stocks of Material / Stock Overview

Figure 7 displays the company's materials stock levels. This report also indicates if the items are Unrestricted Unit, in Transit or Transfer, under Quality Inspection, Restricted-Use, Blocked, or Returns by Plant. The report also displays the overall quantity or worth of each material depending on the amount paid by the company. Furthermore, this report is important for inventory management and planning, as it allows users to monitor inventory levels swiftly, detect possible difficulties, and make educated stock management decisions. More importantly, it will enable the rubber company to track inventory levels, identify trends, and optimize them to meet business demands. The report will assist users in making educated decisions regarding purchasing, production planning, and other inventory-related operations by giving real-time visibility into inventory levels.

Financial Statement

Figure 8. Financial Statement

Figure 8 offers a complete insight into a firm's financial performance and status over a certain period to the rubber company. The top decision-makers in the organization may use this report to examine financial data, detect patterns, and make educated choices regarding the company's financial future. This report is useful for financial analysis, planning, and decision-making.

Material Document List

Figure 9. Material Document List

Figure 9 gives a detailed summary of all material-related transactions completed in the system. The firm can use this report to track material movements and inventory levels. This report is an excellent resource for inventory management and planning. It helps users to spot possible concerns and take remedial steps to guarantee appropriate inventory levels by offering real-time visibility into material movements. It will also assist users in keeping track of material consumption, monitoring stock levels, and reconciling inventory discrepancies.

Purchase Order (Creation)

The Purchase Order (PO) generating function creates purchase orders for products or services from external suppliers. The PO generation feature will allow firm users to make purchase orders for various procurement categories, such as direct materials, indirect materials, or services. It will also enable customers to specify the vendor, the material or service to be purchased, the amount, the delivery date, and other purchasing terms and conditions. More importantly, the organization can improve its procurement processes, shorten procurement cycle times, and ensure timely delivery of materials and services. It also aids in improved inventory and cost control, allowing the company to negotiate better terms with vendors based on accurate and timely information.

Figure 10. Standard Purchase Order Creation

Purchase Order (Document)

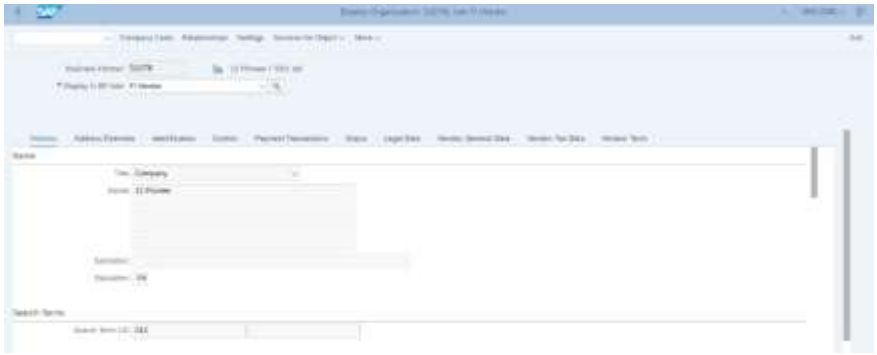
Figure 11. Generated Purchase Order Document

Figure 11 shows the printed version of the purchase order. There are various advantages to creating a purchase order document in SAP S/4HANA and overwriting it manually. Firstly, errors are decreased when a purchase order document is created in SAP S/4HANA because the system can automatically check vendor information, material information, price, and delivery dates. Secondly, creating a purchase order document in SAP S/4HANA is faster and more efficient than manually writing it down as the system may obtain information from existing records such as vendor master data, material master data, and price conditions, saving the time and effort necessary to generate a purchase order manually. Lastly, users may obtain improved visibility into the procurement process by establishing a buy order document in SAP S/4HANA. The system may offer real-time information on the purchase order's status, delivery dates, and any modifications.

Create/Display Vendor

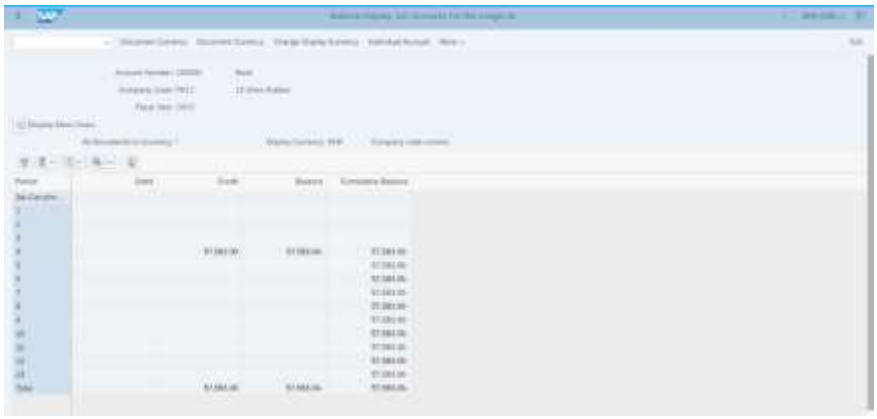
In SAP S/4HANA, the Create Vendor function is used to generate new vendor entries for external vendors. This function is critical to procurement because it allows firms to keep correct vendor master data and develop effective procurement partnerships. Furthermore, the rubber company can maintain accurate vendor master data by creating vendor records in SAP S/4HANA, ensuring that procurement activities are based on up-to-date information. This helps to eliminate procurement mistakes and delays, enhancing efficiency and lowering expenses.

Figure 12. Create/Display Vendor Function



Balance Display

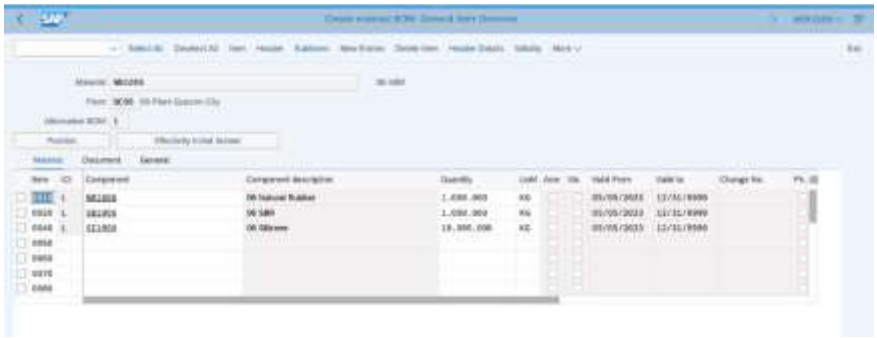
Figure 13. Balance Display



The Balance Display Report summarizes account balances for a certain time, such as the initial balance, debit/credit amounts, and closing balance. It also offers granular transaction-level data, which allows users to drill down into single transactions. This report is valuable for financial analysis, planning, and decision-making since it allows users to compare current balances to historical periods and discover account balance patterns. It also assists users in identifying anomalies and inaccuracies in account balances and taking remedial steps to guarantee accurate financial reporting.

Bill of Materials (Creation)

Figure 14. Create Bill of Materials

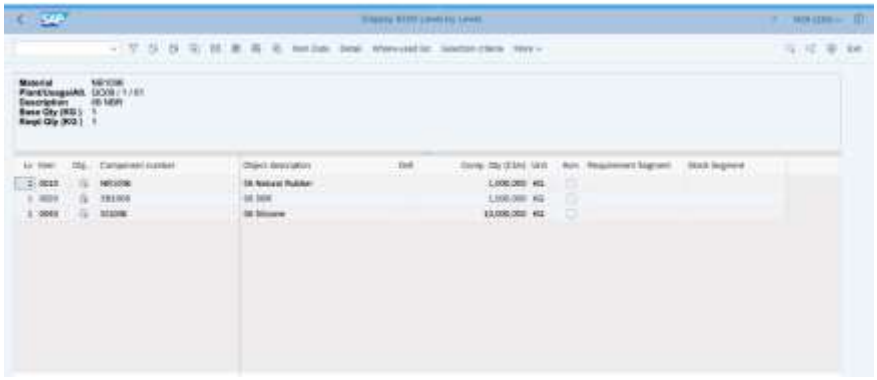


The "Create Bill of Material" feature available in SAP S/4HANA allows the rubber company to generate and maintain a comprehensive list of all components and raw materials that are necessary to produce a finished product, known as the Bill of Material (BOM). This function is crucial in manufacturing processes as it provides a complete breakdown of all materials required to manufacture a product. By using the "Create Bill of Material" feature in SAP S/4HANA, the rubber company can guarantee that all components are present and available, reducing the likelihood of

stock shortages or delays in production. It also enables users to specify the quantity and unit of measurement for each element in the BOM and link it to a specific material or finished product. Overall, the "Create Bills of Material" feature in SAP S/4HANA provides the rubber company with the necessary tools to manage and plan their manufacturing processes, ensuring that all necessary components are available, and production delays are minimized.

Bill of Materials (Display)

Figure 15. Display Bill of Materials



The "Display Bill of Material" function in SAP S/4HANA enables users to view a list of the required components and raw materials necessary for manufacturing a finished product. This feature provides a detailed breakdown of the materials and components necessary for producing a specific product. It can also provide additional information about each component, such as the required quantity and unit of measure, as well as the production version and status of the BOM. By utilizing the "Display Bills of Material" feature, the rubber company can enhance their production planning and management processes by having a complete and detailed view of the materials needed for a particular product. Additionally, it can aid in identifying potential production issues such as material shortages or bottlenecks, as well as analyzing production costs.

Conclusion

This study shows that implementing an ERP software solution can significantly improve the materials management processes of a rubber company. The ERP software generates various reports that enable the company to monitor inventory levels, track material movements, identify trends and optimize inventory levels to meet business demands. Utilizing the SAP S4/Hana functions eliminates repetitive and manual tasks. All purchases can be recorded in the system, with the option to generate or print out documents and reports when needed. With the help of the SAP system, the current process of storing data or records in logbooks can be replaced by virtual or cloud storage that the system offers to eliminate

the risks and dilemmas faced by the current process of storing data. Incorporating SAP S/4HANA into the materials management process can lead to various advantages, such as improved visibility and control, increased automation and streamlining, better supplier management, cost reduction, and more collaborative efforts. However, it is crucial to ensure a carefully planned and executed implementation to achieve a successful outcome and avoid any possible issues that may arise. Despite the improvements, there is room for further enhancement in the rubber company's material management process, such as smoother data entry allowing beginners to configure the system.

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