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The Role of Enterprise Resource Planning in Supply Chain Management: A Case Study of Automotive Component Manufacturing Company

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Abstract
Supply Chain Management (SCM) has become a key component of competitive strategy to enhance a company's productivity and profitability. SCM requires the involvement of all stakeholders to deliver low-cost, high-quality products and excellent service. Manufacturing companies can improve their performance by prioritizing SCM, starting with improving the quality of their raw materials, suppliers, and product distribution. This will enable them to survive and compete with other manufacturing companies. SCM requires the support of a reliable Information, Communication, and Technology (ICT) system, specifically an Enterprise Resource Planning (ERP) system. ERP is used to increase profits through an integrated planning and control system. This study aims to determine the effect of Enterprise Resource Planning on the implementation of Supply Chain Management in a manufacturing company located in Karawang. The research method used in the analysis is a qualitative approach. The results of this study indicate that ERP implementation influences SCM practices and has a positive impact on manufacturing companies. The three ERP benefit constructs, namely operational function benefits, tactical benefits, and strategic benefits, must be strengthened by several factors during implementation to achieve a positive impact. These factors include individual impact, information quality, workgroup impact, organizational impact, leadership or superior support, vendor or consultant quality, system quality, training and education, business process reengineering, project management, and ERP fit. This study concludes that every factor influencing the success of ERP implementation, both internal and external, needs to be considered. These factors play a crucial role in facilitating the implementation of ERP systems in companies, thereby increasing productivity and creating a positive work environment. This also facilitates smooth information dissemination and effective work execution, ultimately improving SCM performance.

Keywords: Supply Chain Management, Enterprise Resource Planning, Information Communication Technology, Automotive Component Manufacturing Company

1. Introduction

The role of Supply Chain Management (SCM) has become a concern for industry players who realize that providing affordable, high-quality, and fast products is not enough to maintain a company's survival (Jannah & Rahmawati, 2020) [17]. SCM is an increasingly important concept in the era of free trade and globalization (Hasriani *et al*., 2012) [13]. However, the role of suppliers and distributors is a necessity that cannot be separated from the production process. Meanwhile, consumers basically want products that can provide more benefits, but still at an acceptable price level. Supply Chain Management is a set of approaches used to integrate suppliers, manufacturers, warehouses, and stores, so that goods are produced and distributed in the right quantities, to the right locations, at the right time, to minimize system-wide costs and satisfy service levels of need (Andini & Pratiknyo, 2016) [2].

Supply chain management, or SCM, encompasses the processes of supplier selection, logistics planning, and supply distribution (Manambing *et al*., 2014) [21]. The supplier selection process is a key factor in a company's success. Selecting the right supplier ensures a smooth flow of goods and services, particularly raw materials, to maintain the production process (Hasibuan *et al*., 2022) [12]. Supplier selection is a crucial activity in the procurement department to achieve a competitive advantage. Essentially, supply chain management has three flows that must be managed by SCM (Rahardian, 2019) [27]. The first flow is the flow of goods, which flows from upstream to downstream. The second flow is the flow of money and related

resources, which flows from downstream to upstream. The third flow is the flow of information, which can occur from upstream to downstream or vice versa. The purpose of SCM is to provide additional supporting information for decision-making both within and outside organizational boundaries, in terms of pricing, risk assessment, and evaluation of resources and logistics alternatives, as well as strengthening effective collaboration with vendors and customers (Nawawi & Akbar, 2019) [24].

Logistics is defined as the strategic management process of moving and storing goods, spare parts, and finished goods from suppliers, between company facilities, and to customers (Nabila *et al*., 2022) [23]. Logistics is an organized process that regulates the flow of merchandise from supply sources to vendors, wholesalers, or distributors through internal process functions until the merchandise is sold and reaches the customer (Yahya *et al*., 2022) [31]. Distribution is a part of logistics that performs a fundamental function for a company (Jamaludin, 2022) [16]. Distribution is also a marketing tool. Distribution can also be defined as a marketing activity that seeks to facilitate the delivery of products and services from producers to users, until their use is commensurate with needs (such as type, quantity, price, place, and time required). Logistics is responsible for ensuring that a product is delivered in the right conditions and at the right price to satisfy the end consumer. To make SCM performance more effective and efficient, technology is needed in its management. The technology that can be used is ERP (Enterprise Resource Planning) because the implementation of ERP can help the SCM operational performance become even more productive (Kristanti *et al*., 2023) [18].

According to Erwanto & Zusi (2020) [10], the implementation of ERP (Enterprise Resource Planning) will greatly support direct interaction between consumers and sellers, more efficient business management, and more controlled finances. For example, in a company with an accounting system that automatically connects accountants and operational cashiers, every time money is received from a customer by the cashier, the transaction will be recorded directly in the system at the cashier, and the transaction will also be recorded directly by the accountant. For example, if there is a data loss or shortage of funds, an accountant can provide evidence without explanation in the form of assumptions. This is the business function of using an ERP system, resulting in an effective and efficient company. ERP systems have a strong potential to improve the achievement of the entire supply chain, such as production efficiency (Puspita, 2012) [25]. Supply chain integration also connects internal processes with external processes (external partners), such as suppliers and customers, through the ERP system to achieve a quick response to customer needs (Zalfa, 2023) [33].

Manufacturing companies engage in product manufacturing by processing raw materials into finished goods. Manufacturing or production involves every human business producing goods or services that directly or indirectly help meet human needs (Somadanayasa *et al*., 2022) [29]. In producing products, manufacturing companies generally employ a product inventory strategy. In raw material procurement, manufacturing companies begin their activities by liaising with suppliers, from providing materials, receiving them from suppliers, to producing them into finished products. The final stage of the production process involves interacting with customers, such as accepting orders for various products and distributing them to customers who have ordered them. Most businesses today rely on an ERP framework to support the utilization and fulfillment of various business supply chain commitments and policies when the work is unrelated (Awaliya *et al*., 2023) [5]. ERP is a business information framework that describes the coordination and optimization of business processes and exchanges in a streamlined manner. One perspective shows the benefits of an ERP system on an organization and its effects on other areas or other information technology systems, such as the Supply Chain Management (SCM) system that is integrated with it (Putra & Fiolyta, 2019) [26].

Based on observations at a manufacturing company, it was found that the company's raw material procurement department supplies raw materials weekly. Meanwhile, production is usually carried out every day from Monday to Friday. Potential problems can occur when high-order demand causes a shortage of raw materials in the warehouse, resulting in production delays so that product orders do not run smoothly or cannot be processed. There is also an excess that occurs, namely an excess of raw materials, resulting in low order demand, resulting in excess products and raw materials in the warehouse, resulting in a buildup of products and raw materials. Meanwhile, the marketing department in the company's activities includes receiving product orders from customers. After customers place a product order, warehouse staff will check the stock of products available in the warehouse and then carry out the distribution process to customers. In carrying out the distribution process, the company distributes its products using two methods. If customers are located within the city, delivery is carried out using transportation already available at the company, while for customers outside the city, delivery is carried out by expedition services. However, in the process of scheduling distribution to customers, companies sometimes distribute products not according to the previously determined schedule, because the number of product stocks in the warehouse is insufficient, resulting in delays in the delivery process to customers.

Based on the existing problems, manufacturing companies need an information system that can manage their supply chain information, starting from ordering raw materials from suppliers to scheduling the delivery of finished goods to customers. With the influence of Enterprise Resource Planning (ERP) on the implementation of Supply Chain Management (SCM), it is expected to simplify the problems that occur in the procurement of raw materials and marketing of manufacturing companies that are the subjects of the case study. Therefore, the author wants to analyze the role of Enterprise Resource Planning in the implementation of Supply Chain Management with a case study on one of the manufacturing companies located in the Karawang district area, West Java province, Indonesia.

2. Materials and Methods

2.1 Materials of the Theoretical Review

2.1.1 Supply Chain Management

Supply Chain Management (SCM) is the process by which products are structurally created and delivered to consumers. A supply chain refers to the complex network of relationships an organization has with its business partners to acquire productive resources for supply to consumers.

Supply chain management is the integration of various activities and services from raw material procurement to transformation into semi-finished and finished goods and delivery to customers (Manambing *et al*., 2014) [21]. Supply Chain Management is the optimization of the creation and flow of products from raw material sources through production, logistics, and delivery to the end customer. Supply Chain Management relies on business strategy, specialized software, and collaboration to function. The flow of resources through the supply chain must be managed to ensure timely and efficient delivery (Zai *et al*., 2022) [32].

The supply chain involves all parties involved, both directly and indirectly, to fulfill consumer demand. The supply chain includes not only suppliers and producers but also warehouse staff, retailers, transporters, and consumers themselves. Within any company, such as a factory, the supply chain encompasses every role involved in fulfilling and receiving consumer demand. These roles include, but are not limited to, customer service, operations, distribution, new product development, marketing, and finance (Anwar, 2011) [4]. Following its principles, SCM operates through coordination, integration, and collaboration through information, demand, and production planning, capacity changes, marketing strategies, product development, implementation of new technologies, purchasing planning, delivery, and everything else that impacts purchasing, production, and distribution planning (Huda, 2022) [15].

Supply Chain Management is broadly categorized into five steps (Zai *et al*., 2022) [32], namely:

1. Plan. Using supply chain analytics and material management features in ERP systems, organizations create strategic plans to meet customer demand for products.
2. Source. The organization identifies and selects vendors who can efficiently supply materials and follow the agreement.
3. Make. At this stage, the product will begin production. This stage includes production scheduling, testing, ensuring compliance requirements are met, packaging, storage, and release.
4. Deliver. The shipping stage relates to logistics and focuses on delivering finished goods to consumers. Inventory management and warehouse management systems are crucial at this stage.
5. Return. The returns phase encompasses all product returns, including defective and no longer supported products. This phase also encompasses elements from other phases, including inventory and transportation management.

All steps in the supply chain are linked through the movement of funds, information, and products. These movements always converge in opposite directions and can be carried out by intermediaries. Not all steps in the diagram above are required to be present in the supply chain. The correct structure of the supply chain depends on consumer demand and the characteristics of the interconnected steps (Angelino *et al*., 2022) [3].

The functions of Supply Chain Management (SCM), according to Setiawan & Setiyadi (2017) [28] are as follows:

1. SCM physically converts raw materials into finished products and delivers them to end users.
2. SCM as a market intermediary ensures that what is offered by the supply chain reflects the desires of customers or end users.

The supply chain is also responsible for distributing goods and delivering finished products to customers at the right time and place in the most efficient manner. This means that goods are produced in the right quantities, at the right time, and in the right place to achieve minimum costs for the entire system, and also achieve the desired service level (Kristanti *et al*., 2023) [18]. The SCM function is also understood as a unity of stages and activities in starting production, raw materials are obtained from suppliers, followed by a value-added process where raw materials are converted into finished goods, the inventory storage stage, and finally the process of shipping finished goods to traders and customers. If the supply chain is managed well, the resulting product can be of high quality at a low price and on time, so that market targets can be achieved and profits for the company are realized (Leona *et al*., 2023) [19].

2.1.2 Enterprise Resource Planning

Enterprise Resource Planning (ERP) is software designed to manage and integrate core business process functions such as finance, HR, supply chain, and inventory management into a single system (Zai *et al*., 2022) [32]. In recent years, many companies, both local and international, have invested in ERP systems to integrate all business activities into a unified platform (Mwilu *et al*., 2020) [22]. Enterprise Resource Planning (ERP) software can be used to automate and simplify individual activities across a business or organization. ERP can generate significant time and financial savings by providing organization-wide visibility that highlights inefficient manual processes and reveals growth opportunities. An ERP system is a software system that integrates and processes every business process within a company or organization (Huang *et al*., 2021) [14]. An ERP system makes it easier for businesses to maintain data and conduct transactions. Using manual processes without a system is very complicated for a company. Therefore, an ERP system can help simplify transaction processes and data security for businesses, both large and small.

ERP systems themselves come in various models that utilize information technology, depending on business regulations and transaction standards across various company functional management areas, such as accounting, finance, marketing, manufacturing, sales, logistics, and human resources (Huang *et al*., 2021) [14]. ERP systems are equipped with hardware and software to process, integrate, and coordinate data across all business processes, facilitating rapid business decision-making. ERP systems also serve as a platform, ensuring data and information privacy, integrity, and ease of access (Mahar *et al*., 2020) [20]. They also consider these systems to be foundational because they are used in everyday life. ERP systems also generate unique ways to streamline company activities to achieve predetermined goals. Examples of ERP systems currently in use include SAP, Microsoft, Epicor, GF Accounting, MYOB, Oracle Financial, and many more.

The use of ERP applications will increase the efficiency of a company's activities, especially with a production base utilizing high-end technology (Drobkova, 2020) [8]. On the other hand, ERP is understood to be a high-cost and complex investment compared to other investments (Leona *et al*., 2023) [19]. An ERP system is a management resource categorized as crucial for future implementation. ERP systems are typically more suited to industrial sectors such as production, with numerous branch connections, long-term production, and other challenges. According to Angelino *et*

al., (2022) [3], before the implementation of this Enterprise Resource Planning system, companies generally used separate database systems in their operations, where each work section had its own database, such as the accounting sector had its own database, purchasing had its own database, financing had its own database, and other parts of the work unit had their own database. With separate databases, the data processing method became more complicated and also took a lot of time. After the company replaced the old system with an Enterprise Resource Planning system, the database of each work section became more structured and organized, making data management more efficient and effective.

According to Megalomania in Angelino *et al*., (2022) [3], the benefits that can be obtained for companies that have implemented Enterprise Resource Planning are:

1. More accurate integration of company financial data

This ERP system simplifies the management of single, real-time data for companies. Changes to data in one department automatically affect records in related departments. For example, if a company updates data in the purchasing department, it automatically affects data in the inventory department, increasing inventory, and recording it in the accounting and financing departments.

2. Increased productivity and efficiency

Enterprise Resource Planning (ERP) enables companies to run their business processes more effectively and efficiently, while also reducing costs. This ERP system integrates databases, making data management easier and saving time, leading to increased productivity.

3. Information Systems Planning and Management

This Enterprise Resource Planning system can help management in presenting company reports quickly and in an organized manner, and the reports presented can be accessed by management at any time when needed.

ERP is effective in several operational activities because it can integrate and process data analysis results into SCM. ERP and SCM work together interactively to provide data analysis that businesses can use to improve their operational quality. Cost reductions and process integration effectiveness are achieved by combining the information systems in ERP with SCM customer data (Leona *et al*., 2023) [19].

2.2 Methods of the Research

This article is a study that uses a qualitative approach to data collection. Qualitative research is a research method used to examine natural object conditions, where the researcher serves as the key instrument, data collection techniques are triangulated (combined), data analysis is inductive, and qualitative research results emphasize meaning rather than generalization (Sugiyono in Valensia & Zai, 2021) [30]. The type of research used by the author in analyzing the influence of SCM and ERP on a manufacturing company in the Karawang area uses a descriptive approach. The author analyzes by describing the object to be analyzed in detail and providing a comprehensive overview through data collected from various existing sources.

Data collected from various sources can be used to gain in-depth insights into a problem or generate new ideas for research. The data used in data collection was sourced primarily through interviews with IT officers and direct observation of the company to obtain detailed information about the ERP system used in the application used by a manufacturing company in the Karawang area, thus facilitating the analysis process. The author also collected data using document study or document analysis techniques. Document analysis is a form of qualitative research in which documents are interpreted by the researcher to provide voice and meaning to an assessment topic (Bowen in Zai *et al*., 2022) [32]. In addition to primary data, the author also utilized secondary data sources, including several journals and articles used as references, as well as previously studied theories, which will then be applied to this report to support the discussion and results.

By examining information collected through various methods, researchers can strengthen findings across the entire data set. The data analysis techniques used in this study consisted of four stages, namely:

1. Data Collection:

Data collection is the process of systematically gathering and measuring information to test hypotheses and evaluate results. Researchers will compile all data regarding supply chain management and enterprise resource planning into a unified whole. The goal of data collection is to ensure that the data is complete and reliable.

2. Data Reduction:

Once the data has been collected, researchers will perform data reduction by simplifying, classifying, and possibly eliminating data that is less important to the study. Classified data will be easier to organize in the next stage, preventing data from becoming mixed up.

3. Data Presentation:

The next stage is data presentation. The author organizes the data systematically to make it easier to understand. Data presentation helps conclude and keeps the data neatly organized.

4. Conclusion and Verification:

The final stage is concluding and verifying the data. The author summarizes all the data from beginning to end to form a conclusion for the entire research.

3. Results and Discussion

The case study method was employed in this research to uncover the implications of Enterprise Resource Planning used in Supply Chain Management. The conceptual framework of the study is depicted in the following model:

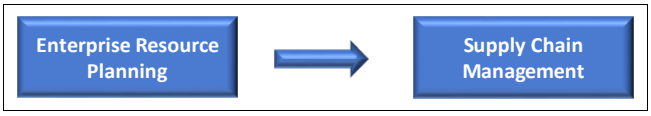

Fig 1: Conceptual Framework

Based on the theoretical review and the conceptual framework above, several supporting indicators are required to assess Supply Change Management (SCM), one of which is Enterprise Resource Planning (ERP). It was found that there are three ERP benefit constructs that have a positive impact on SCM performance. First, the operational function of ERP benefits is a very important influencing factor in improving SCM performance in internal and external business processes. Second, tactical benefits are a significant influencing factor in improving SCM performance in customer service and cost management. Third, strategic benefits only impact internal business processes and do not affect external business processes (Aziz *et al*., 2018) [6].

The case study in this research was conducted in a company that implemented an ERP system to coordinate its internal and external processes as a manifestation of the information systems strategy in each functional unit. A fully implemented ERP system in a company's supply chain will enable the company to build strong relationships between each department (Cindy *et al*., 2023) [7]. When a company can integrate information technology internally and externally, SCM implementation will be easier. This integration will certainly facilitate supply chain operations, reduce production costs for consumers, and provide an overview, especially of the company's internal conditions, through periodic reports, from the company's raw material perspective to an effective raw material supply strategy. This is because partner companies can deliver goods on time, facilitating sales and purchasing planning, inventory reporting, and forecasting raw material needs. To face competition, companies must improve the quality of service provided to customers in an increasingly competitive environment (Cindy *et al*., 2023) [7].

3.1 Enterprise Resource Planning System Analysis

In the manufacturing industry, ERP systems assist in business management, including production, sales, inventory, finance, and other areas. ERP systems make company data clearer and more integrated. This will assist companies in managing production, finance, and several other areas or departments, thereby making business management more effective and efficient. The manufacturing company used for this research is one of the companies in Indonesia that has implemented an ERP (Enterprise Resource Planning)-based information system with the McFrame application since 2014. One way to improve company performance is by implementing information technology in company activities, which can increase excellence and competitiveness. To achieve information reliability, companies can implement an information system that can integrate all activities and functions within the company (Huda, 2022) [15]. Information system security in Information Technology (IT) in a company is determined through policies, procedures, and technical measures used to prevent unauthorized access, alteration, theft, or physical damage to applications.

Analysis of Information Technology (IT) infrastructure on a computer network in a company for internet access uses fixed broadband internet services from the provider ASTINet Telkom, which is an internet access service via dedicated internet 24 hours a day, with a guaranteed 1:1 bandwidth ratio to the reference point using the Default Internet Gateway and Public IP Address owned by Telkom Indonesia. Internet from the provider is used for internal company needs via LAN (Local Area Network), both wired LAN and wireless LAN. Internet from the provider is also used for servers in the company, where the server is a computer system that provides a special service in the form of data storage. Internet connectivity in the company uses Internet Protocol (IP), which functions to identify all devices connected to the Internet. The internet connection in the company has a speed of 30 Mbps. Then, servers in the company are provided in 2 types, namely servers for databases and servers for applications. The database server uses a QNAP NAS from the provider Digital Sense. NAS (Network Attached Storage) is a data storage medium connected to the network. NAS provides easy backup and data access, and is equipped with strong security. The application server uses an IBM Server System with a rack type. The company chose the rack-type IBM server because it has the advantage of being able to be placed in a small 2x3 meter room available at the company.

The company uses an IBM application server to store data from the McFrame application, an integrated application for production management, sales management, cost management, and more. The McFrame application flexibly meets the diverse needs of the manufacturing industry and is a proven solution for core business operations used by many customers in Indonesia. The McFrame application comes from the provider B-EN-G, which is distributed in Indonesia. The company uses the McFrame application for the following purposes:

1. Visualize production costs by department, process, and expense item.
2. Understand operating profit by accounting for selling, general, and administrative expenses.

Additional revenue management axes to leverage revenue by product, shipping country, and organization for sales strategies, etc.

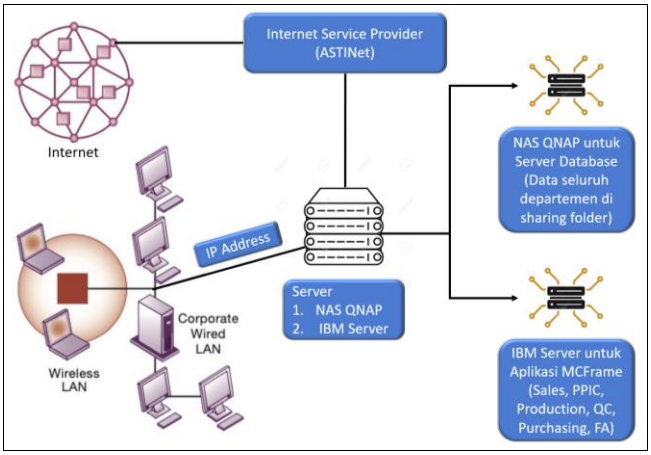

Fig 2: Enterprise IT Network Infrastructure

One of the technologies used by companies to secure information systems is a firewall, a security system that protects computers from various threats on the internet. Firewalls are used to protect company databases from hackers or irresponsible users, block annoying messages or emails, block unwanted content, monitor bandwidth usage, and access VPN services. The firewall provider used by the company is Palo Alto, an advanced firewall that provides security for the cloud and network from cyberattacks. Palo Alto's firewall can classify every type of traffic within the system according to certain criteria, for example, classification by application function, user, or content it contains, even including encrypted traffic. This firewall also helps companies implement a comprehensive digital security system, and the process of activating new applications can be done quickly and safely.

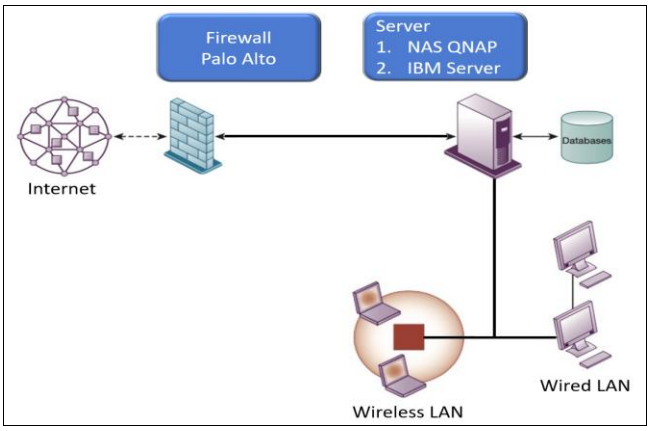

Fig 3: Enterprise Firewall

In the company's efforts to achieve operational excellence, the company uses an enterprise system. An enterprise system consists of a set of integrated software modules and a centralized database. The centralized database contains data from several departments within the company for use in internal business activities, where information from one process can be used in other processes. The company's enterprise system uses the McFrame application, which is used by the Sales, PPIC (Production Planning Inventory Control), Production, QC (Quality Control), Purchasing, and FA (Finance Accounting) departments.

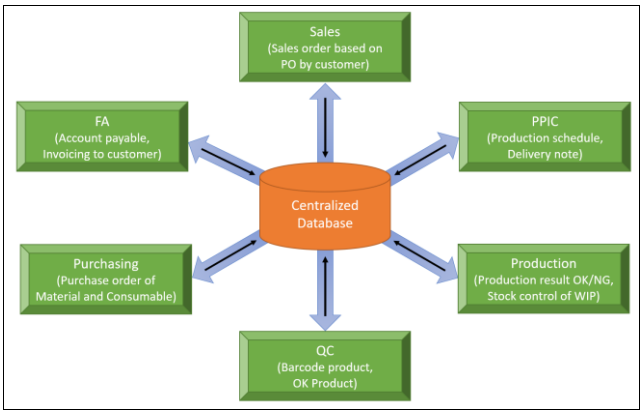

Fig 4: Enterprise System

This ERP system helps connect company data to existing departments within the company so that information can be conveyed effectively and communication will be easier, preventing miscommunication or negligence that can disrupt the company's productivity. In the production stage, companies certainly have a lot of production data being run, both old and new production data. However, with the presence of old production data that is no longer needed, the system will be heavier, so the data that is no longer needed can be deleted to prevent it from filling the ERP system's capacity. Time savings are also one of the advantages of using an ERP system by this company, for example, in finance and accounting. Typically, data collection will take quite a long time because staff usually need time to find the necessary data. After all, often documents or data are easily scattered. With this ERP system, accounting staff can search for documents that have been listed in the ERP system, so that work can be completed more quickly and efficiently. It can be concluded that the ERP system has a significant impact on company performance. The ERP system helps in managing data and delivering integrated information, and the company will be more productive, so the company's performance will also be better with the use of the ERP system in the company.

3.2 Supply Chain Management Implementation Analysis

Suppliers or suppliers in the company use many local suppliers for every product produced, and every year the company will continue to increase its suppliers to be able to obtain good goods and also produce quality products at reasonable and competitive prices. Likewise, in the purchasing department, the company will purchase raw materials whose quality standards have been determined by the manufacturing company, so that the company staff need to conduct analysis and research on the quality of raw materials that are suitable for use by the company for production. In production or the results of the products produced by the company certainly have good quality with competitive prices by maintaining the quality of the materials, so that each product produced is of good quality with a reasonable price. In distributing its products, the company distributes its products both locally and for export by using forwarding services that are confirmed to be part of the suppliers of this manufacturing company in distributing its products to various countries.

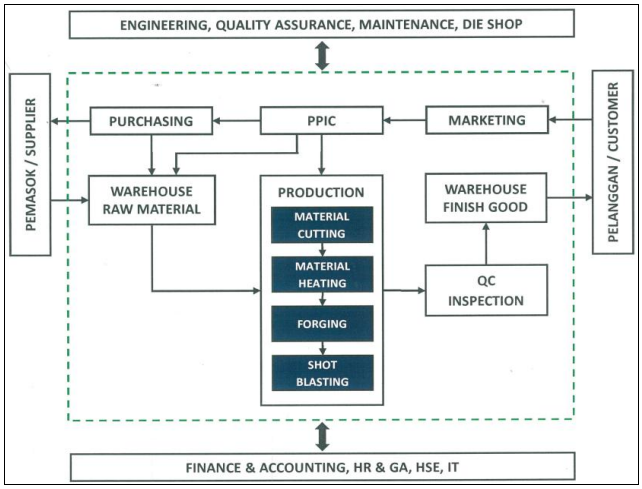

Fig 5: Process Flow of Activities in the Company

Fig 5 shows the company's process flow, where the raw material warehouse, a crucial part of the company's supply chain, plays a crucial role in logistics management and provides a competitive advantage. The raw material warehouse is one of the most important resources needed to ensure a high first-time-repair rate and recurring revenue. Based on the analysis above, it can be concluded that the supply chain significantly impacts the company's performance. The company continues to develop and improve its products and maintains its supply chain, from improving the quality of its raw materials, suppliers, and product distribution, to ensuring its continued viability and competitiveness with other manufacturing companies. Maintaining the supply chain helps the company maintain its operations, ensuring the smooth running of the production process.

Factors that can influence the performance of supply chain management in a company consist of inventory control policy, information sharing, customer demand, forecasting method, and lead time (Zai *et al*., 2022) [32]. The following is

an explanation of the factors that influence supply chain management performance in a company, namely:

1. Inventory Control Policy:

Inventory is a term used in manufacturing and logistics to describe goods that are inputs to production, finished products, or products in the manufacturing process. Because inventory items are physical, they are susceptible to expiration, theft, damage, or other types of loss. Overproduction can also be a problem in companies due to inaccurate scheduling and forecasting. Inventory protection is about knowing how many items are on hand and how old they are. To control inventory, companies need to know how many items are on hand, how many are being produced, and how many are being sold. To prevent inventory loss due to damage, misplacement, or theft, a number of policies and procedures are required to protect it. For example, high-value inventory should be stored in a secure, locked location. When inventory is received at the warehouse, a matching process is typically performed. This involves matching the receiving documents (such as the bill of lading), the invoice, and the actual quantity of goods received. Since the invoice is used to determine how much to add to the inventory record, if it does not match the actual quantity received, the inventory record will be deactivated. Another important policy is a physical inventory count (stock take).

2. Information Sharing:

One key aspect of coordination between parties in the supply chain is information sharing. Supply chain efficiency is crucial because today's competition is no longer between companies, but across supply chains. Information sharing can improve supply chain efficiency by reducing inventory and streamlining production. Companies share information with suppliers, where this information is used to maintain safe stock levels within the company, thus making the supply chain more efficient and ensuring smooth production.

3. Customer Demand:

Customer demands such as faster delivery times, on-demand production, and instant order status updates have been largely driven by advances in internet technology and the ability to provide immediate feedback. The impact of increased customer knowledge and the availability of information in the manufacturing world can influence changes in the supply chain. From a manufacturing perspective, on-demand production is known as JIT (Just In Time), where the company receives order information from consumers through an internet-enabled application system.

4. Forecasting Method:

If supply chain forecasting is inaccurate by even weeks, it can have costly consequences and damage profitability. Products arriving late at the warehouse or shipping center won't reach customers on time. This can not only damage a company's reputation but also lead to lost sales. If items are out of stock or under production, customers will go elsewhere. Market research and historical analysis are the most widely used forecasting methods in the manufacturing world.

5. Lead Time:

Reducing and accurately estimating lead times is a crucial element of any company's operations (Camalia in Alayida *et al*., 2023) [1]. As companies do, with a supply chain, they can organize product production on time, reduce defects, and be on time, thus aiming to satisfy customers (Fauzi in Zai *et al*., 2022) [32]. From the manufacturing side, the mechanism to reduce waiting time in the production process is by speeding up the product model changeover process time, speeding up machine maintenance time, and speeding up repair time when machine damage occurs.

3.3 The Role of Enterprise Resource Planning in Supply Chain Management

Since 2014, the company has implemented an ERP system using the McFrame application. The McFrame application consists of several modules capable of supporting all the company's required transactions. Each module is interconnected with the other so that all modules can work in a connected and integrated manner as an implementation of SCM. Enterprise Resource Planning, which is the foundation of Supply Chain Management, is a crucial factor in determining the company's performance (Dwita *et al*., 2023) [9]. Hwang and Min in Aziz *et al*., (2018) [6] identified that many driving factors facilitate or hinder ERP implementation in a business environment. ERP planning is intended to integrate all aspects of a company's business operations, including production planning, material purchasing, inventory control, logistics, accounting, finance, marketing, and human resource management by creating a single database repository that can be shared by the entire organization and its trading partners. Several studies have shown a link between SCM and a company's ability to compete and perform well. Furthermore, ERP-based SCM techniques have a significant impact on a company's success (Dwita *et al*., 2023) [9].

In general, it is implied that the successful implementation and effective use of ERP systems can contribute to the improvement of SCM performance in many ways such as, integration of internal business processes, improvement of information flow among various departments within the company, improvement of company relationships and collaboration with suppliers, customers, and supply chain partners, global resource sharing, exchange and movement of information, goods and services, improvement of product quality, flexibility and customer responsiveness, and finally reduction of inventory and operating costs (Aziz *et al*., 2018) [6]. The ERP system implemented in the manufacturing company where this research was conducted uses the McFrame application, which consists of the following modules:

1. Sales, responsible for sales orders based on customer purchase orders.
2. Production Planning Inventory Control (PPIC), responsible for production scheduling and delivery notes.
3. Production, responsible for production results (OK or NG) and WIP (Work In Process) stock control.
4. Quality Control (QC), responsible for product barcodes and OK product judgments.
5. Purchasing, responsible for purchase orders for materials and consumables.
6. Finance Accounting, responsible for accounts payable and invoicing customers.

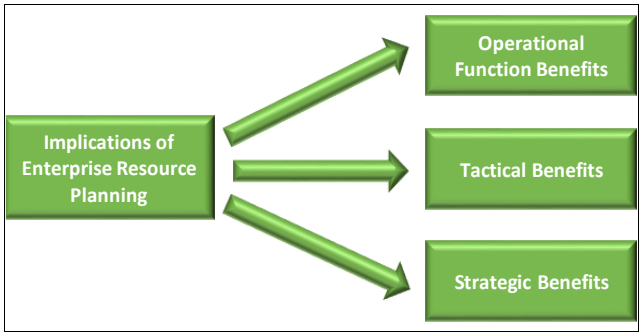

Fig 6: Implications of Enterprise Resource Planning

The ERP implementation at the manufacturing company where this research was conducted was successful. As shown in Fig 6, three ERP benefit constructs were found to have a positive impact on SCM performance. First, the operational function of ERP benefits is a very important influencing factor in improving SCM performance in both internal and external business processes. Second, tactical benefits are a significant influencing factor in improving SCM performance in customer service and cost management. Third, strategic benefits only impact internal business processes and have no impact on external business processes (Aziz *et al*., 2018) [6]. The ERP benefit constructs should be strengthened by several factors when implemented. Several factors that can support the success of ERP implementation, which have a positive impact on SCM performance in the manufacturing company where this research was conducted, are as follows:

1. Individual Impact, in the form of: ERP user involvement, capability, and performance.
2. Information Quality, in the form of ease of use, completeness, accuracy, and validity of information.
3. Workgroup Impact, in the form of: communication, productivity, and group participation.
4. Organizational Impact, in the form of: resistance, readiness, and synchronization within the organization.
5. Leadership or Superior Support, in the form of commitment from leadership and management.
6. Vendor or Consultant Quality, in the form of: quality of external goods or services.
7. System Quality, in the form of: accuracy, ease of use, flexibility, and reliability of the system.
8. Training and Education, in the form of sharing information with ERP users.
9. Business Process Reengineering, in the form of synchronization for business process improvement.
10. Project Management, in the form of human resources, technology, and finance.
11. ERP Fit, in the form of integration, configuration, and customization capabilities of the ERP system.

Companies use SCM practices and ERP systems to minimize errors in processes and lower production costs to gain a competitive advantage in cost leadership and improve company performance (Handoko *et al*., 2015) [11]. The manufacturing company where this research was conducted uses an ERP system in SCM practices to continuously improve company performance and maintain the company's sustainability in the face of competition with its competitors.

4. Conclusion

The manufacturing company that is the object of this research has production or product results with good quality at competitive prices due to the continuous development and improvement of the products produced, and by maintaining the supply chain. The company uses Supply Chain Management (SCM) practices, starting from developing the quality of its raw materials, suppliers, to product distribution, so that the company can remain sustainable and competent in facing other competing companies. The company has implemented an Enterprise Resource Planning (ERP) system using the McFrame application since 2014 as the basis for SCM practices. The McFrame application is a software developed to support a company or organization in carrying out its operational activities so that it can run more efficiently and effectively. The McFrame modules used by the company are Sales, Production Planning Inventory Control (PPIC), Production, Quality Control (QC), Purchasing, and Finance Accounting.

The ERP system using the McFrame application has a positive impact because it can assist in managing a company's business, such as in the areas of production, sales, inventory, finance, and others. With the ERP system, the company's performance is more productive and easier to manage data. Factors that influence SCM performance in companies consist of inventory control policy, information sharing, customer demand, forecasting method, and lead time. With several appropriate solutions and quick handling, companies can overcome supply chain management performance problems so that the business can run smoothly and well. In addition, it was also found that there are factors that can support the success of ERP implementation as a basis for SCM in companies, consisting of individual impact, information quality, work group impact, organizational impact, support from leaders, vendor and consultant quality, system quality, training and education, business process reengineering, project management, and ERP fit.

Based on the analysis above, it can be concluded that every factor influencing the successful implementation of an ERP system as a basis for SCM, both internal and external, requires attention. These factors play a crucial role and contribute to the implementation of an ERP system in a company. Their supportive presence will create productivity and a favorable work environment, facilitating smooth information dissemination and effective work execution. These factors will have a positive and significant impact on supply chain management.

5. Recommendations

In the implementation of the ERP system as the basis of SCM in the manufacturing company that is the object of this research, through the McFrame application is quite good. However, it would be better to add several other modules, such as Human Resource Management (HRM) and Total Productive Maintenance (TPM). Both work functions can support the effectiveness of SCM in the company through the integration of employee processes (starting from recruitment, administration, to salary payments) in HRM, as well as solutions for human development, and Overall Equipment Effectiveness (OEE) in TPM. It should also be noted that SCM practices and ERP systems can be influenced by contextual factors such as: company size, distance, number of transactions, type of industry, buyer preferences, and others. In the future, for further research that may be carried out by other researchers, it is hoped that

they can accommodate other factors that have not been explored in this study.

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