Performance Analysis of Supply Chain Management PT. Asia Palem Lestari Uses the Supply Chain Method Operation Reference (SCOR)

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Abstract

The aim of this study is to evaluate the performance of the supply chain at PT. Asia Palem Lestari uses the Supply Chain Operations Reference (SCOR) method and analyzes the problems occurring within the company. The objective of this study is to enhance the company's performance by providing solutions to the identified problems. The research employs a quantitative approach with a descriptive method. Data collection involves interviews, observations to understand supply chain activities, and documentation to obtain secondary data from the company. The results of the supply chain performance calculation are derived from the attributes of performance in SCOR, which include Perfect Order Fulfillment (POF) 84% Order Fulfillment Cycle Time (OFCT) 30 days Cost of Goods Sold (COGS) 58% Cash to Cash Cycle Time (CTCCT) 64 days. This study uses the SCOR method to analyze supply chain performance and provide solutions to the identified problems. Therefore, this study can help improve the company's performance in a more effective and efficient manner.

Keywords: supply chain performance; supply chain management; supply chain operation reference.

1. Introduction*

Competition in the industrial world is the main challenge for companies in carrying out their production activities. Competitive ability is an important challenge that must be faced by manufacturing and service companies. Currently, industry players realize that supplying products at low prices, high quality and quickly is customer expectations. These three aspects require the role of all parties starting from suppliers, manufacturers, companies, transportation, and distribution networks. This is the basis for the importance of the supply chain in companies (Putri, 2022)

The supply chain is a concept that includes the process of distributing goods from start to finish, including transportation, storage, procurement, information systems, and related costs. This is a crucial factor for companies because it regulates the distribution of goods from producers to consumers without reducing the value of the product. Optimal supply chain quality can improve the company's reputation and customer satisfaction, so that many companies compete to improve the performance of the production chain as added value. In addition, a good supply chain can also strengthen the company's relationship with its business partners. (Putri, 2022)

The Indonesian palm oil industry is a significant contributor to the country's economy. In addition to being used as a raw material for cooking oil that meets quality and food safety standards, this industry also has the potential to be processed into biodiese (Matondang & Budiman, 2019). To ensure sustainable production growth, the competitiveness of the products produced is very important to maintain. This depends on the role of each stakeholder in the supply chain, from raw materials to the production process and delivery of products to consumers. The downstream industry also requires crude palm oil (CPO) as a raw material (Rizqiah & Slamet, 2016) . Product quality is an important aspect for the food industry which is highly dependent on primary raw materials. In addition, the characteristics of agricultural products are susceptible to spoilage, which can be caused by seasonal changes. This can pose significant challenges and requires special attention and proper handling. Of course, every industry aims to achieve a business process that meets

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customer satisfaction by considering market quality, minimum costs, and timely delivery. The availability and supply of raw materials are important issues in increasing productivity.

PT. Asia Palem Lestari is a private company engaged in oil palm plantations and palm oil mill processing, with products in the form of fresh fruit bunches (FFB) of oil palm and crude palm oil (CPO) and palm kernel (PK) from palm oil mills. The palm oil supply chain enters the company through several suppliers using client-owned and third-party transportation. The palm oil used in the production process must meet adequate quality and criteria for good end product requirements in order to obtain good and quality result. In this case, the role of suppliers is needed to pay attention to the quality of the palm oil to be harvested and the role of the company to provide good information to suppliers in order to choose and provide good quality for the palm oil to be supplied. In addition, the company also has problems that are often faced in managing its supply chain, namely regarding late delivery of goods from suppliers. Delays in delivery of goods can cause various problems, such as late delivery of products to consumers and delays in production. If there are obstacles in the production process, it will have a negative impact on the overall production implementation. These obstacles can cause obstacles in the selection of raw materials, so that the production process will be hampered and production results will decrease. As a result, the company will experience a loss of time, decreased income, and cannot meet consumer demand (Sihadi et al., 2018). In the production process, obstacles can have a negative impact on the overall implementation. Obstacles in the selection of raw materials can cause the production process to be hampered and production results to decrease.

Based on the background of the problem that has been explained, it is necessary to analyze the supply chain performance of the raw material supplier PT Asia Palm Lestari which aims to assess whether the supplier's performance is optimal in terms of effectiveness and efficiency (Rahmani et al., 2023). In this case, researchers will use the SCOR (Supply Chain Operations Reference) method to carry out an objective evaluation of supply chain performance based on available data, as well as to identify areas that need to be improved in order to increase competitive advantage.

Implementing the SCOR method requires significant effort to describe ongoing business processes and formulate desired processes going forward. Therefore, it is important to carry out this study so that the author is interested in conducting research with the title "Performance Analysis of PT Asia Palem Lestari's Supply Chain Management Using the Supply Chain Operation Reference (SCOR) Method".

2. Literature Review

2.1. Supply Chain Management Performance

The term "performance" refers to the output results resulting from product and service processes that can be evaluated and compared relative to goals, standards, previous results, and other organizations. According to Yuwono and colleagues, performance assessment is defined as a measurement process carried out on various activities in the company's value chain. The results of these measurements serve as feedback that provides information about plan implementation performance as well as the point at which the company needs to adjust activities, planning and control.

Supply Chain Management (SCM) performance is a measurement that shows how effective and efficient a company is in managing its supply chain. This includes aspects such as effectiveness, efficiency, quality, productivity, quality of work life, innovation, and profitabilit.

Supply chain performance includes activities related to the flow of goods, information and funds from suppliers to final consumers. Sofian states that supply chain performance can be measured from the perspective of inventory that supports operations as a buffer. Synchronizing operations at each inventory stage is very important to minimize buffer inventory, because each inventory stage is related to fund allocation. One common method for evaluating efficiency is to measure inventory turnover and length of supply. For culinary business players, this performance evaluation is a strategic tool in managing their operations. According to Russell and Taylor, the main indicators in measuring supply chain performance are responsiveness and efficienc (Munir & Dwiyanto, 2018). Another opinion expressed by Levi et al. (2009) also suggests that supply chain performance indicators include competitiveness, market share, profitability and product quality.

2.2. Supply Chain Management

In general, a supply chain is a system where an organization distributes its production goods and services to its customers this chain is also a network of various organizations that are interconnected and have the same goal, namely to organize the procurement and distribution of goods as best as possible. Supply Chain Management is a set of approaches to streamline the integration of suppliers, manufacturing, warehouses and storage, so that goods are produced and

distributed in the right quantity, at the right location, at the right time, to minimize costs and provide service satisfaction to consumers (Widyarto, 2012). Supply chain can also be defined as a set of activities (in the form of entities/facilities) involved in the process of transformation and distribution of goods starting from the earliest raw materials from nature to finished products to final consumer (Supriadi & Hamdani, 2018). Based on this definition, a supply chain consists of companies that transport raw materials from the natural world, companies that transform raw materials into semi-finished materials or components, suppliers of product supporting materials, assembly companies, distributors and retailers who sell these goods. to the final consumer. There are 3 types of things that must be managed in the supply chain, namely (Yusuf & Soediantono, 2022):

Flow of goods from upstream to downstream, for example raw materials sent from suppliers to factories, after production is complete they are sent to distributors, retailers, then to end users. The flow of money and the like that flows from downstream to upstream. Information flow that can occur from upstream to downstream or vice versa.

2.3. Supply Chain Operation Reference (SCOR)

The SCOR (Supply Chain Operations Reference) model is endorsed by the SCC (Supply Chain Council). Founded in 1996, SCC is an international, independent, non-profit organization, with membership open to all companies and organizations. The association focuses on research, implementation, and efforts to advance improvements in supply chain management systems and practices. The SCOR model was developed by SCC to function as a cross-industry supply chain management standard and provide a way to independently examine and compare supply chain activities and performance. This model provides a business process framework, performance metrics, best practices, and proprietary technology to support communication and collaboration between supply chain partners to increase supply chain management effectiveness and supply chain improvement. The Supply Chain Operations Reference (SCOR) model is a supply chain language, which can be used in a variety of contexts to design, describe, configure and reconfigure various types of business commercial activities. The application of the Supply Chain Operations Reference (SCOR) model is within certain limits quite flexible and can be adjusted to increase productivity to meet consumer needs. SCOR has a performance attribute. (Jufendri et al., 2023)Performance attribute is one of the attribute cells used to assess the supply chain process from various different points of view. There are five attributes used in assessing the performance of the supply chain using the SCOR 11.0 method. Within one attribute, there are several metrics that can be used as performance measurement metrics Supply Chain management process (Pasaribu & Harahap, 2023).

Plan, is a process that balances demand and supply to determine the best action in meeting procurement, production and delivery needs. Source, namely the process of procuring goods and services to meet demand. The processes covered include scheduling deliveries from suppliers, receiving, checking and authorizing payment for goods sent by suppliers, selecting suppliers, evaluating supplier performance, etc. So the process can differ depending on whether the goods purchased are stocked, make-to-order, or engineer-to-order products (Hanifa & Asprianti, 2018).

Make, which is a process for transforming raw materials/components into products that customers want. Make or production activities can be carried out on the basis of forecasts to meet stock targets (make-to-stock), on the basis of orders (make-t- order), or engineer-toorder. The processes involved here are production scheduling, carrying out production activities and carrying out quality testing, managing semi-finished goods, maintaining production facilities. Deliver, which is the process of fulfilling demand for goods and services (Nurhasanah & Aspiranti, 2020). Usually includes order management, transportation and distribution.

Return, namely the process of returning or receiving a product return for various reasons. Activities involved include identifying the condition of the product, requesting authorization to return defects, scheduling returns, and making returns. Post-delivery-customer support is also a returns process .

SCOR Attributes (Herliana et al., 2020). Supply Chain Reliability is related to the reliability of a company's supply chain process. The indicator that measures the reliability of the process is Perfect Order Fulfillment (POF). Supply Chain Responsiveness is related to the speed of responding to any changes that occur in a company's supply chain process. An indicator that measures the speed of time in responding to each change is Order Fulfillment Cycle Time (OFCT). Supply Chain Agility is related to the company's flexibility in facing any market changes to maintain the competitive advantage of the supply chain. The indicator that measures the speed of time in responding to each change is Upside Supply Chain Flexibility (USCF). Supply Chain Cost is related to the costs required in a company's supply chain process. The indicator that measures the costs required in a company's supply chain process is the Cost of Gold Sold (COGS). Supply Chain Asset Management Efficiency (Assets) is related to the management of company assets, especially those related to the value of an item. The indicator that measures the company's assets is Cash-to-cash cycle time (CTCCT).

3. Research Method and Materials

The study aims to analyze the performance of Supply Chain Management (SCM) at the company PT. Asia Palem Lestari by utilizing the power of the SCOR method. To achieve this goal, a robust and structured research methodology is essential. A clear and measurable problem formulation will become a research compass, leading to valid data collection and objective analysis. SMART research objectives (Specific, Measurable, Achievable, Relevant, and Time-bound) will ensure this study is on the right track (Hastalona et al., 2019).

The appropriate research methodology used in this study is a quantitative method with a descriptive approach (Aisyah et al., 2023). The research method was prepared in order to provide a systematic description of scientific information originating from PT research objects. Sustainable Palm Asia. Descriptive research focuses on systematic explanations of facts obtained when research is conducted. Data collection in this study uses primary data and secondary data. Primary data is data directly obtained from the first source. The primary data in this study is literature data, interviews with related parties in the company. Interviews were conducted in the field with the assistant head, namely Mr. Yusuf, and employees of the company PT. Sustainable Palm Asia. Secondary data is data that indirectly provides information to data collectors such as through documents and databases from PT Asia Palem Lestari such as company profiles, company work process data and data on CPO (Crude Palm Oil) and PK (Palem Kernel) production results. The data taken is data from January to December 2023. Strong data analysis techniques, such as descriptive analysis, will process quantitative data accurately. This study was conducted from April 20 to April 30 at PT. Sustainable Palm Asia.

Throughout the research, research ethics will be maintained with full responsibility. Honesty, objectivity, confidentiality and accountability will be the main principles in every stage of the research. Respondent data will be kept confidential and their privacy will be respected. Clear and measurable research results will be formulated carefully, ensuring that the research findings can answer the problem formulation and achieve the research objectives.With a research methodology that is solid, structured and upholds ethics, it is hoped that it can produce findings that are useful and accountable, as well as making a positive contribution to science and the progress of PT. Sustainable Palm Asia.

The performance measurement design is based on the SCOR model by identifying metrics for supply chain management performance measurement. Indicators that measure SCOR attributes:

3.1. Perfect Order Fulfillment (POF)

POF is the percentage of orders sent complete with quantity, documents and on time according to customer requests and the goods sent do not have quality problems. The way to determine the POF value is (Santoso et al., 2020):

POF = totally orders – number of orders with problems - totally orders

$$\overline{\qquad\qquad\qquad\qquad\qquad\qquad}$$ **X 100**

3.2. Order Fulfillment Cycle Time (OFCT)

Order Fulfillment Cycle Time (OFCT), an indicator of the waiting time cycle in order fulfillment, is the time required from when the customer orders the product until the order is received. The way to determine OFCT is

OFCT = (Amount Of time (days) or (total products Received by customers)

3.3. Cost of Gold Sold (COGS)

Cost of Gold Sold (COGS) is a matrix to determine the details of the costs required in a company's supply chain process which includes direct costs for materials, labor costs and overhead costs. Cost of Gold Sold (COGS) is also defined as the cost of goods sold. The way to determine COGS is:

COGS = Beginning Inventory + Purchases During the Period –Final inventory

3.4. Cash-to-cash cycle time

Cash to Cash Cycle Time (CTCCT) is a matrix for measuring the speed of the supply chain by converting inventory into money. The shorter the time required, the better the supply chain. Good companies have short cash to cash cycles. The way to determine CTCCT is:

CTCCT = Inventory Days Supply + Account Receivable –Accounts Payable

In addition to the above matrix, to analyze company performance, benchmarking data is also used, where this data is needed to determine targets for the company's supply chain performance and provide an overview of the size of the

company's performance GAP Analysis which becomes a reference in benchmark data and performance trends from year to year, as well as helping in directing supply chain development (Putra et al., 2019) . Benchmark data was obtained from companies that have one type, namely central palm oil mill companies. The data is compared in order to know the company's performance control.

After getting the actual data results from each company's calculations, the next step is to calculate the GAP Analysis or performance comparison from the benchmarking results. This step is used to calculate how big or small the differences in the condition of one company and another within the same type of company are and to be able to set target performance for each matrix based on benchmark data. After getting the results, the differences can be seen in the GAP Analysis results, after looking at the results of the actual data and benchmark data. Then next fill in the opportunity with the amount of increase in income, if the performance on the POF and COGS matrices increases according to what has been targeted. To calculate the opportunity, data is needed, namely the total value of income and the percentage of gross profit generated by the product.

4. Results and Discussion

The FFB is taken to the PKS factory, when arriving at the PKS factory, the FFB deliverer must bring a goods delivery letter (SPB). If there is no food, the FFB delivery person cannot weigh the FFB being delivered, then the FFB that has been weighed and collected will be processed into CPO which will be sold. then to the CPO derivative factory and after that the product will be distributed to consumers. Supply Chain Management Performance Calculation Results Using the SCOR Method. Calculation of supply chain performance using the SCOR method at PT Asia Palem Lestari in terms of performance attributes, namely supply chain reliability, supply chain responsiveness, supply chain cost, and supply chain asset management efficiency. The results of the SCOR analysis will produce an output in the form of a SCORcard. The following is a SCORcard form that is tailored to your needs. Based on the calculations above, it can be seen that the average POF performance results from PT. Asia Palem Lestari is 84%.

Table 1. Achievement of Order Fulfillment Cycle Time (OFCT)

Month	Total Products Received Customers	Number of Fulfillment Days Order
January	280.920	30 days
February	947.840	37 days
March	387.564	30 days
April	143.066	15 days
May	300.428	30 days
June	200.264	25 days
July	811.910	37 days
August	830.907	37 days
September	499.980	30 days
October	494.900	30 days
November	386.315	30 days
December	335.620	30 days

From the Table 1, it can be seen that the average OFCT PT. Asia Palem Lestari is 30 working days.

Table 2. Achievement of Cost of Gold Sold (COGS)

Month	COCG (%)
January	61%
February	65%
March	60%
April	52%
May	85%
June	80%
July	71%
August	68%
September	42%
October	36%
November	45%

| December | 32% |

Based on the Table 2, it can be seen that the average COGS of PT. Asia Palem Lestari at 58.

Table 3. Achievement of Cash-To-Cash Cycle Time (CTCCT)

Month	CTCCT	Goal	Gap
January	51 days	60 days	9
February	58 days	60 days	2
March	67 days	60 days	6
April	76 days	60 days	16
May	30 days	60 days	30
June	55 days	60 days	5
July	72 days	60 days	8
Agust	80 days	60 days	20
September	60 days	60 days	0
October	43 days	60 days	17
November	48 days	60 days	12
December	82 days	60 days	28

Based on the Table 3, it can be seen that the average CTCCT of PT. Asia Palem Lestari for 64 days.

Table 4. SCOR Matrix Results for Determining Target Performance

| Performance Attributes | Performance Indicators | Mark Actual | Benchmark Data | | |
			Superior	Advantage	Parity
Supply Chain Reability	Perfect Order Fulfillment (POF)	84%	80%	75%	70%
Supply Chain Responsiveness	Order Fulfillmet CycleTime (OFCT)	30 days	25 days	20 days	35 days
Supply Chain Cost	Cost of Gold Sold (COGS)	58%	60%	65%	70%
Supply Chain Management	Cash-to-cash cycle time (CTCCT)	64 days	70 days	75 days	80 days

Based on the results in Table 4, it can see the results of the Perfect Order Fulfillment (POF) matrix, Cost of Good Sold (COGS) and Cash To Cash Cycle Time (CTCCT) PT. Asia Palem Lestari is superior compared to central company benchmark data. Next is determining the opportunity.

Opportunity is the amount of increase in income if the performance between the Perfect Order Fulfillment (POF) and Cost of Good Sold (COGS) matrices is increased until it is successful in being in the position targeted by the company. And the next thing is to carry out a GAP Analysis which aims to calculate the magnitude of the difference between the company's actual data condition and the data condition that has been targeted by the company and determine the indicators in each matrix.

Based on the table 5, it can be seen that the average value of POF's actual data is 84%, which means that PT Asia Palem Lestari is able to fulfill customer orders and is quite satisfactory. GAP Analysis for the Perfect Order Fulfillment (POF) matrix is 4%, which means the actual data is superior to the target data. For the matrix results, based on calculations, it is clear that with an average OFCT value of 30 days, PT Asia Palem Lestari's performance in terms of the company's ability to fulfill customer orders in the shortest possible time is still not fulfilled, so it is necessary to evaluate problems related to the time required. in the delivery of goods from the time the order is received until the goods are sent and arrive at the customer's hands. Order Fulfillment Cycle Time (OFCT) actual data has a GAP Analysis of 5 days, which means the target data is better than the actual data. So improvements to this matrix must be made. Furthermore, for the Cost of Good Sold (COGS) matrix, it is clear that with an average COGS value of 59% of PT's performance. Asia Palem Lestari company is able to fulfill customer orders and fulfill customer desires and expectations. GAP Analysis is 8%, which means it is still better than benchmark data. Lastly, the Cash To Cash Cycle Time (CTCCT) matrix also shows that the time span from payment for raw materials and supplies to suppliers to payment received from consumers is 64

days. Having a GAP Analysis of 4 days which means the actual data is better than the target data. Based on the results of the analysis of the four POF, OFCT, COGS and CTCCT matrices from the company PT. Asia Palem Lestari is in a marginal indicator position. That's because there is still one excellent indicator, two good indicators and one poor indicator. Next, for opportunities in the Perfect Order Fulfillment (POF) matrix in the company PT. Asia Palem Lestari if it can achieve the set targets company, namely 2,234,394. For the Order Fulfillment Cycle Time (OFCT) matrix, the magnitude of the opportunity for achieving the target can be in line with the opportunity that comes from Perfect Order Fulfillment (POF). If the Order Fulfillment Cycle Time (OFCT) is lower, it means that the waiting time is getting shorter, which will automatically make the Perfect Order Fulfillment (POF) value higher and have an impact on increasing revenue. For the Cost of Good Sold (COGS) matrix obtained, if it is able to achieve the target set by the company PT Asia Palem Lestari it will get results with an estimate of 4,823,138.

Table 5. Gap and Opportunity

Performance Attributes	Performance Indicators	Mark Actual	Goal	Gap Analysis	Indicator	Opportunity
Supply Chain Reability	Perfect Order Fulfillment (POF)	84%	80%	4%	Good	2,234,394
Supply Chain Responsiveness	Order Fulfillmet CycleTime (OFCT)	30 days	25 days	5 days	Poor	Improve Delivery Performance
Supply Chain Cost	Cost of Gold Sold (COGS)	58%	60%	8%	Excellent	4,823,138
Supply Chain Management	Cash-to-cash cycle time (CTCCT)	64 days	70 days	4 days	Good	Maintain Performance

5. Conclusion

Based on the results of research that the author has conducted regarding supply chain management at PT. Asia Palem Lestari by using the Supply Chain Operation Reference (SCOR) method, conclusions can be drawn about the supply chain flow pattern at PT. Asia Palem Lestari has three streams that must be managed. The first is the flow of goods that flows from upstream to downstream. Second is the flow of money and the like from upstream to downstream. The third is the flow of information which can occur from upstream to downstream and vice versa. PT Asia Palem Lestari's supply chain flow starts from farmers who are involved as partner farmers/suppliers of fresh fruit bunches (FFB) for palm oil at PT. Bimandiri Agro Sedaya. TBS products from third parties and internal plantations are purchased by the company but according to company standards.

Based on the results of supply chain performance analysis using the SCOR method, it can be concluded that the Perfect Order Fullfillment (POF) indicator shows the percentage of the number of orders from the total orders received that PT can carry out perfectly. Asia Palem Lestari is 84%. The Order Fullfillment Cycle Time (OFCT) indicator shows the length of time when an order is received by PT. Asia Palem Lestari until the order is received by the consumer is 30 days. The Cost of Good Sold (COGS) indicator shows the ability of PT. Asia Palem Lestari in managing the production process into money is 58%. The Cash to Cash Cycle Time (CTCCT) indicator shows that the time span between payment from the company to the supplier until payment from the retail to the company is 64 days.

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