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Supply chain management evaluation in the oil and industry natural gas using SCOR model

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This study aims to evaluate supply chain management on fuel oil to optimize improvement strategies that can be applied to ConocoPhillips companies in Indonesia. Effective and efficient supply chain management is one of the goals to achieve the company's business stability in the fuel oil supply chain. Fuel oil is a very complex basic need for companies in carrying out industrial and transportation activities. The research method is measuring and evaluating company performance through a combination of the Supply Chain Operation Reference (SCOR) model and the Analytic Hierarchy Process. Research respondents through interviews with four informants from the company ConocoPhilips. Based on the SCOR Version 11.0 model, in this study the SCOR measurement is divided into four perspectives, namely Plan, Source, Deliver and Return. Furthermore, through the measurement of Key Performance Indicators, it is classified using five supply chain dimensions, namely reliability, responsiveness, agility, costs, and assets. The research resulted in the final value of supply chain performance of 74,992 which can be categorized as a moderate or intermediate level, this implies that the existence of an assessment system or measurement of supply chain performance on an ongoing basis can be used as a consideration in determining the optimal strategy. Research findings, improvements, and strategies are needed, especially in the perspective of delivering which has the lowest score.

1. Introduction

In the oil and gas industry, there are two types of business activities, namely core business and non-core business (Endri et al., 2021a). The core business consists of upstream and downstream activities which are business activities from searching for petroleum sources, refining, transporting, storing, and trading. Meanwhile, non-core business is a service business activity and industrial business in upstream and downstream activities. Supporting service activities include construction and non-construction services, while industrial business includes the business of producing goods, materials, and/or equipment used as direct support for oil and gas business activities (Endri et al., 2021b). The supply chain is a network of various interconnected organizations that have the same goal, namely as best as possible to organize the procurement and distribution of materials (Janvier-James, 2012). In the supply chain network run by the oil and gas company, ConocoPhillips, in Indonesia, which integrates several divisions within the company, namely the planning division, logistics division, and warehouse division, in addition, there is a government company, Pertamina as the sole supplier for the procurement of this fuel. The supply chain process forms a downstream supply chain where the process includes all activities that involve the transportation and distribution process from the allocation of inventory or available goods, to the final recipients. To provide cheap and good quality products, supply chain management is the key to determining the company's competitive advantage.

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Several reasons for choosing fuel as the material object in the research in this paper are; (1) The demand for this fuel oil is always there and routine and the amount tends to fluctuate. However, in this case, the company has not been able to control optimally in the face of demand that is not easily predicted, (2) there is a relationship between different parties in each supply chain process. This is very complex if there is a discrepancy in the supply chain process because it will create a domino effect for all stakeholders. And it is difficult to determine the responsible party, and (3) There is no specific and targeted performance measurement for fuel oil materials applied by the company. In practice, the company is faced with obstacles in the supply chain process, especially in terms of purchasing planning, conditions for fuel procurement by government regulations are required to use suppliers from within the country, the distribution system from supplier depots to the company's operational areas where access to roads is difficult and risky, and conditions and utilization of storage tanks that have not been maximized for fuel.

The findings of the problems in this study are; (1) Purchase planning that changes frequently due to the demand for fuel oil in the field with varied demands, (2) Limitations in choosing suppliers, due to provisions for using goods and services from within the country so that fuel suppliers are determined by the government, (3) There is a risk of delays, such as stolen materials. or transportation equipment accidents in the process of delivery, due to access to reception locations in remote areas that are difficult to pass, (4) The use of transportation for fuel supply activities to the operating area requires high costs, and (5) Availability and capacity of storage tanks at ConocoPhillips is not optimal to be used to store fuel oil because the capacity is smaller than the monthly fuel receipts. Constraints that occur in the entire supply chain for fuel at ConocoPhillips, namely, the existing supply chain process is less effective and the need for a measure of how effective and efficient the fuel supply chain is through the establishment of performance indicators that have not existed before for the fuel supply chain.

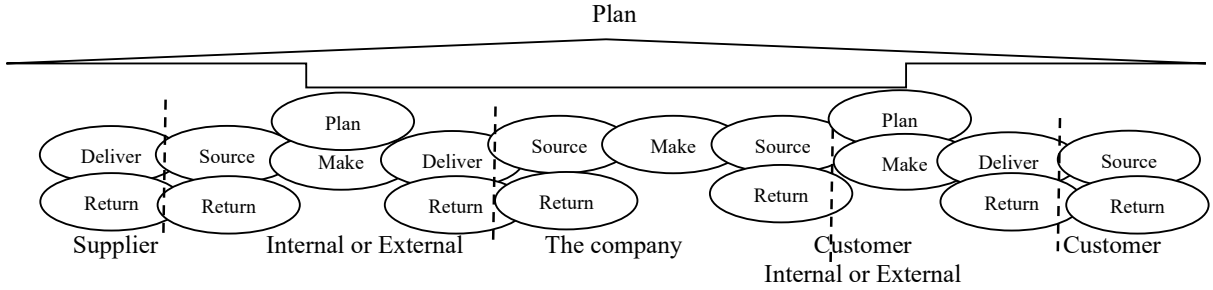
Research on the supply of fuel needs in Pertamina is said to have been well regulated by aligning suppliers and distributors, but production capacity needs to be increased to meet domestic oil needs (Harisnanda et al., 2016). The difference between this research and previous research is from the point of view of the object of research, namely the fuel supply chain at ConocoPhillips which is limited to the company's internal scope to meet its production targets as an oil and gas company, through measurements at each level of the SCOR Model. The SCOR model is a combination of benchmarking, business process engineering, and best practices as well as a reference for a model that has become an industry standard (Ayyildiz & Gumus, 2020). The SCOR model according to (Georgise et al., 2012; Huan et al., 2004; Teixeira & Borsato, 2019) can analyze its strengths and weaknesses and discuss how the SCOR model can help managers in strategic decision making, especially for the supply chain. Several studies on Supply Chain configuration have simulated the SCOR model (Lestari et al., 2014; Wang et al., 2010).

Especially in the oil and gas sector, there have been many studies using the SCOR model in terms of measuring efficiency, process performance, and activities at many oil distribution companies (Binlootah & Sundarakani, 2012; Hafeez et al., 2017; Immawan & Nugraha, 2020; Janaki, 2019; Maizi & Sastra, 2020). Research by Wang et al. (2018) describes the evaluation of potential project suppliers with a case study of oil production in Vietnam using the SCOR model and the AHP model. From the point of view of (Huan et al., 2004; Sarjono et al., 2017), the use of the Analysis Hierarchy Program method is a supporting method to obtain weight values at each level in the SCOR model.

2. Literature review

One way to measure supply chain performance is to use the SCOR (Supply Chain Operations Reference) method, and the Supply Chain Council (SCC) explains that the SCOR process extends from suppliers to all customers (SCC, 2004). This method by Theodore Pittiglio, Robert Rabin, Robert Todd, and Michael McGrath in 1996 was introduced by SCC as a supply chain performance measurement model across industries so that companies can perform supply chain fact-based analysis (Bolstorff & Rosenbaum, 2003; Huan et al., 2004). SCC first released the SCOR model in 1997, namely (1) Plan, (2) Make, (3) Source, and (4) Deliver, as a step to improve supply chain performance in addition to metrics, practices, and technology (Georgise et al., 2012). SCC added the reliability of supply chain performance is the company's ability to do work as expected (SCC, 2012). This SCOR model was developed and modeled for supply chain improvement of developing countries.

Currently, the SCOR model includes all activities of suppliers, customers, and all market interactions and already consists of five core processes, namely; (1) Plan, (2) Source, (3) Make, (4) Deliver, and (5) Return followed by the process of categories, elements, tasks and activities (Figure 1) (Georgise et al., 2012; Paul, 2004; Pujawan & Mahendrawathi, 2017). The SCOR model according to (SCC, 2004) is a management tool used to address, improve and communicate supply chain management decisions within companies and with government suppliers and customers. The SCOR model is described by (Huan et al., 2004) as a model that integrates business concepts from process reengineering, benchmarking, and measurement into its framework. In its development, five dimensions are used to determine performance measures, namely; (1) reliability, (2) responsiveness, (3) flexibility, (4) cost, (5) assets. The SCOR model consists of the top three levels associated with the three processes, at level 1. Level 2 is the configuration level associated with the process category and level 3 is the level of process elements. According to SCC,



Source: (SCC, 2010)

Fig. 1. SCOR Model's Five Core Processes

2.1. Application of the SCOR Model

This SCOR model allows leverage of capital management, creation of supply chain roadmaps, alignment of business functions (SCC, 2004). The application of the SCOR model within certain limits is quite flexible and can be adapted to increase productivity to meet needs. The measurement uses a structured set of metrics. This SCOR model explains the state of "as is" by modeling the current situation at all levels and developing the desired state of "to-be" (Huang et al., 2005). The to-be model was then developed with recommendations from (Alvarado et al., 2007; Hafeez et al., 2017) which takes into account the challenges faced by companies operating in emerging markets. In general, the SCOR model has been applied through the global market (Georgise et al., 2012; Golparvar & Seifbarghy, 2009; Salman et al., 2013). They added that the SCOR 4.0 model can be used by the public and private sectors to improve supply chain strategies in many countries (Ayyildiz & Gumus, 2021). Integration is fundamental in the use of all tools, resources, strategies, and implementation of Supply Chain Management. However, (Vijay, 2005) argues that the SCOR model is strong on the technical dimension, but weak on the social dimension,

2.2. Combination of SCOR and AHP

The use of AHP, as a multi-criteria decision-making method, can solve complex and unstructured problems into groups arranged into a hierarchy (Delipinar & Kocaoglu, 2016; Immawan & Nugraha, 2020; Ntabe et al., 2015; Saaty, 2012). The working principle of AHP is the simplification of an unstructured, strategic, and dynamic complex problem into parts and arranged in a hierarchy. (Abbaspour, 2019; Kocaoğlu et al., 2013; Li et al., 2011; Palma-Mendoza, 2014) explains that the SCOR model as a hierarchical model consisting of different processes and metric levels can be combined with AHP. Mohammad and Price (2004) argue that through the AHP method, oil and gas companies will face challenges in the procurement process. Several other studies by Asy'Ari & Ardi (2020, Firdaus et al. (2021), and Sunkari (2015). Finally, Palma-Mendoza (2014) suggests combining the use of SCOR with AHP analysis in selecting targets for supply chain redesign.

2.3. Supply Chain Management

Theoretically according to Render and Heizer (2014), and Schroeder (2007) from suppliers through factories and distribution to end customers. Supply Chain Management, manages the flow of information, products, and services throughout the network, be it customers, companies to suppliers (Ricardianto et al., 2022; Chase et al., 2006; Russell & Taylor, 2016). In addition, Supply Chain Management according to Fatorachian and Kazemi (2021), is individual supply chain processes such as procurement, production, inventory management, and retail through the integration of enabling processes, digitization and automation, and generating new analytical capabilities. Supply chain performance measurement has often used SCOR as a guideline. The supply chain according to Chopra et al. (2013), and Pujawan & Mahendrawathi (2017) is performance management and continuous improvement in supply chain management. The purpose of this research is based on the background and several existing problems, namely analyzing and evaluating the performance value of fuel supply chain management and optimizing improvement strategies that can be applied to ConocoPhillips companies in Indonesia using the SCOR method combined with AHP.

3. Methods

This research is a type of qualitative research that uses a combination of Supply Chain Operating Reference (SCOR) and Hierarchy Process (AHP) analysis models. The initial stage in this research is to identify the supply chain process of fuel oil which is currently run by the oil and gas company Pertamina. This stage is carried out through direct observation in the company to identify problems at the research location. Furthermore, from the problems that have been identified, the formulation of the problem and setting the research objectives are carried out. The second stage is data collection and processing. Research respondents through interviews with four informants from ConocoPhilips companies such as Material Control Supervisor, Warehouse Supervisor, Logistics Staff, and Planning and Scheduling Staff. Furthermore, from the data

obtained, data analysis was carried out. The data processing steps consisted of; (1) Identifying the supply chain by observing the supply chain process run by the company, then using the concept of the SCOR approach version 11.0, (2) Establishing Performance Indicators is carried out through the results of supply chain identification, which is then stated in a questionnaire, and (3) Calculation of weights for each perspective, dimensions and performance indicators using AHP.

From the results of data collection through questionnaires to determine the most appropriate and important Key Performance Indicators (KPIs) to be measured and evaluated, there are 15 valid KPIs, namely 4 KPIs from a planning perspective, 6 KPIs from a source perspective, 3 KPIs from a delivery perspective, and 2 KPIs from a returns perspective. AHP will break down complex multi-factor problems into a hierarchy. Set a quantitative scale of 1 to 9 on the AHP to assess the comparison of the importance of an element to other elements. The analysis and conclusion stages are carried out in two steps, namely, the first analysis and discussion are carried out by calculating the weights and analyzing at each SCOR level using the AHP method.

4. Results and Discussion

4.1. Interview Result

The object of this research is the supply chain process for fuel oil at the ConocoPhillips Oil and Gas Company in Indonesia. Activities from ordering fuel to being used for operational activities in oil and gas mining involve stakeholders in it. The FUEL OIL supply chain connects FUEL OIL end-users to one company as the sole supplier, namely Pertamina, two transportation companies, namely Carpotama and Dara Transindo, and several other functions in the company, namely the logistics function, warehouse function, and finance function.

Some of the findings from interviews, deliveries for drilling operations that coincidentally require a lot of fuel while in the distribution process the trucks experience rainy conditions so that the roads are muddy. So as a Logistics function, it is necessary to immediately make a backup plan to overcome this. From the results of interviews in general, the supply of fuel from suppliers there are no significant obstacles, the stock provided by the Pertamina depot can meet the demand every day. However, in terms of distribution, there are obstacles in shipping by truck due to the road access to the ConocoPhillips location being in the interior of the forest, as a supplier and appointing a transportation company, Pertamina has experienced difficulties so that transportation prices are significant. The results of the interview also identify the improvements and targets to be achieved by the company in the future as well as the strategies that will be used to achieve them, of course, in line with the company's goals and meet the objectives of the supply chain activity itself, namely carrying out effective, flexible and innovative supply chain operations. These results will later be used in strategic analysis of the results of the SCOR model measurement

A questionnaire in the form of a KPI (Key Performance Indicator) validity was used to identify supply chain KPIs needed by the company. This questionnaire was filled out by four members of the informants in the interview, namely the material control supervisor, warehouse supervisor, logistics staff, and planning staff. The KPI validation method is carried out by finding the average of each indicator, if the average is more than equal to three, it means that the indicator will be taken. Meanwhile, if it is less than three then the indicator will be removed. From the results of the questionnaires that have been distributed, 15 KPIs have been determined which can be used as indicators to evaluate the fuel supply chain at ConocoPhillips. Based on the SCOR Version 11.0 model, the supply chain can be divided into five perspectives, namely plan, source, make, deliver, and return. From each perspective, there are five dimensions, namely reliability, responsiveness, agility, costs, and assets. From the five dimensions, analysis was carried out and adjusted to the conditions and goals of the company, so that KPIs were obtained which were included in four perspectives, namely Plan, Source, Deliver, Return. Furthermore, each KPI will be analyzed and classified using four supply chain dimensions, namely reliability, responsiveness, agility, costs, and assets. From the results of data collection through questionnaires to determine the most appropriate and important KPIs to measure and evaluate, there are 15 valid KPIs, namely 4 KPIs from a planning perspective, 6 KPIs from a source perspective, 3 KPIs from a delivery perspective,

4.2. Weight Calculation

a. SCOR Mapping Hierarchy model

From the company's vision and mission, it can be seen that the company's goal is to achieve maximum business value by prioritizing effectiveness and efficiency. This is applied in the distribution of metrics through the SCOR perspective. Furthermore, at this level weighting is carried out on four SCOR perspectives, namely Plan, Source, Deliver, and Return, for the Make perspective it is not included with the consideration that the supply chain that has been identified is not needed, seeing that the supply chain activities run by ConocoPhillips only process the purchase, distribution and storage of FUEL OIL only. There is no process of making products or processing products that create added value before being distributed to users in activities in the area of oil and gas operations. It can be seen in table 1 which has been arranged in the form of a SCOR hierarchy, level 1 is a perspective process from the ConocoPhillips supply chain, level 2 is the result of KPI classification according to SCOR dimensions through the reference to the SCOR book revision 11.0. Level 3 is a definition of the scope of the supply chain in the form of performance measures needed for companies to carry out supply chain evaluations. The analysis is carried out in stages or levels to obtain interrelationships with each other through weighting on

Perspectives, dimensions, and Key Performance Indicators Level 3 is a definition of the scope of the supply chain in the form of performance measures needed for companies to carry out supply chain evaluations. The analysis is carried out in stages or levels to obtain interrelationships with each other through weighting on Perspectives, dimensions, and Key Performance Indicators Level 3 is a definition of the scope of the supply chain in the form of performance measures needed for companies to carry out supply chain evaluations. The analysis is carried out in stages or levels to obtain interrelationships with each other through weighting on Perspectives, dimensions, and Key Performance Indicators.

Table 1
SCOR Mapping Hierarchy model

Core Process	Dimensions (Level 2)	KPI Number	Key Performance Indicators (Level 3)	Unit
Plan	Responsiveness	RS 3.98	Purchase Planning Process	Day
		RS 3.27	Communication with suppliers	Day
	Reliability	RL 3.37	Purchase Planning Accuracy	Day
	Cost	CO.3.009	Material Purchase Cost	%
Source	Responsiveness	Hospital 3.11	Response to order notification changes	Day
	Reliability	RL 3.18	The suitability of the fuel delivery process	%
		RL 3.20	Acceptance of conformity with the terms of the request	%
	Agility	AG 3.40	Purchasing cycles and supplier lead times	Day
	Cost	CO 3.010	Order Fee to Supplier	0
	Asset	AM 3.2	Daily supplies	%
Deliver	Reliability	RL 2.2	FUEL OIL reaches the user according to the requested date	%
		RL 3.35	The amount received by the user corresponds to the amount	%
	Cost	CO 3.022	Material Delivery Fee	0
Return	Reliability	RL 3.10	Complaint rate from users	%
	Responsiveness	RS 3.118	Time to replace non-conforming products	Day

b. Metric Weighting Level 1

At this level, the weighting is carried out on the four SCOR perspectives, and the weighting is carried out using the AHP calculation principle to obtain a weighted value for each perspective or supply chain core process (Table 2).

Table 2
Perspective Weighting Results

Perspective	Weight
Plan	0.422
Source	0.307
Deliver	0.145
Return	0.125
Total	**1**

c. Level 2 Weighting

The level 2 stage is to weight the supply chain dimensions that have been arranged in the SCOR hierarchy, namely Reliability, Responsiveness, Agility, Cost and Asset Management through the same process, namely the distribution of questionnaires to the three previous informants, and the weighting is calculated using the AHP principle and the resulting dimension weighting (Table 3).

Table 3
Dimensional Weighing Results

Core Process (Level 1)	Dimensions (Level2)	Weight
Plan	Responsiveness	0.416
	Reliability	0.182
	Cost	0.401
	Total	1
Source	Responsiveness	0.154
	Reliability	0.222
	Agility	0.099
	Cost	0.424
	Asset	0.101
	Total	1
Deliver	Reliability	0.167
	Cost	0.833
	Total	1
Return	Reliability	0.667
	Responsiveness	0.333
	Total	1

d. Level 3 Weighting

The level 3 stage is also weighted on each validated Key Performance Indicator (KPI) (Table 4).

Table 4
KPI Weighting Results

Core Process (Level 1)	Dimensions (Level2)	KPI Number	Weight
Plan	Responsiveness	KPI 1	0.250
		KPI 2	0.750
	Reliability	KPI 3	1.000
	Cost	KPI 4	1.000
Source	Responsiveness	KPI 5	1.000
		KPI 6	0.333
	Reliability	KPI 7	0.667
	Agility	KPI 8	1.000
	Cost	KPI 9	1.000
	Asset	KPI 10	1.000
Deliver	Reliability	KPI 11	0.500
		KPI 12	0.500
	Cost	KPI 13	1.000
Return	Reliability	KPI 14	1.000
	Responsiveness	KPI 15	1.000

e. Scoring System

From the weighting results that have been obtained, then the SCOR calculation is carried out on the performance indicator. The KPI SCOR is obtained by calculating the absolute value of each indicator in each scope. Each indicator will have a different absolute value so it is necessary to equalize or normalize. In this study, normalization was carried out using the storm de Boer formula, where it was agreed that the highest value of the performance score was one hundred and the lowest value was zero. The results of the normalization of each performance indicator can be seen in Table 5.

Table 5
Scoring System

Core Process (Level 1)	Dimensions (Level2)	KPI Number	Weight	Score	Final Score
Plan	Responsiveness	KPI 1	0.250	74.747	55.808
		KPI 2	0.750	37.121	
	Reliability	KPI 3	1.000	64.646	64.646
	Cost	KPI 4	1.000	100.000	100
Source	Responsiveness	KPI 5	1.000	77.778	77.778
		KPI 6	0.333	22.200	
	Reliability	KPI 7	0.667	56.594	78.794
	Agility	KPI 8	1.000	75.758	75.758
	Cost	KPI 9	1.000	100.00	100
	Asset	KPI 10	1.000	79.798	79.798
Deliver	Reliability	KPI 11	0.500	37.879	67.677
		KPI 12	0.500	29.798	
	Cost	KPI 13	1.000	39.394	39.394
Return	Reliability	KPI 14	1.000	74.747	74.747
	Responsiveness	KPI 15	1.000	89.899	89.899

After knowing the value of the scoring system for each performance indicator, a calculation will be carried out to find the value of each dimension using the final result will be multiplied by the weight of each aspect. The weight of each aspect is taken from the results of the calculation of the second level weighting coefficient data which has been calculated in the previous calculation using the AHP principle. The results of the calculations are shown in Table 6.

Table 6
Calculation of Final Value Dimensions

Core Process (Level 1)	**Dimensions (Level 2)**	**Final score**	**Weight**	**Total**	**Total Each**
Plan	Responsiveness	55.808	0.416	23.239	75.158
	Reliability	64.646	0.182	11.777	
	Cost	100	0.401	40.143	
Source	Responsiveness	77.778	0.154	11.999	87.427
	Reliability	78.794	0.222	17.503	
	Agility	75.758	0.099	7.500	
	Cost	100	0.424	42.390	
	Asset	79.798	0.101	8035	
Deliver	Reliability	67.677	0.167	11.279	44.108
	Cost	39.394	0.833	32.828	
Return	Reliability	74.747	0.667	49.832	79.798
	Responsiveness	89.899	0.333	29.966	

From Table 5, the final value for each dimension is generated. Furthermore, the final value is used to calculate the company's performance value by multiplying the final value of the dimension by the weight on the perspective taken from the results of

the perspective weight calculation at level 1. The results of the calculation of the performance value can be seen in Table 7. The results obtained from the company's performance are 74.99. Where the number is classified on a medium rating scale.

Table 7
Calculation of the company's performance value

Perspective	Total Perspective Value	Weight	Performance
Plan	75.158	0.422	31.741
Source	87.427	0.307	26.835
Deliver	44.108	0.145	6.411
Return	79.798	0.125	10.005
	Total		74.992

4.2. Discussion

From the processing and discussion using SCOR, the company's performance value of 74,992 can be categorized as good given the entire supply chain process. However, looking at the focus on achieving goals, there is a perspective that requires more attention and performance improvement. To be able to improve supply chain performance in the coming period, it is necessary to analyze each core process. The plan is a process that balances demand and supply to determine the best course of action to meet the needs of fuel procurement and delivery. Plan's performance score of 75,158 is categorized as moderate. Performance improvements can be made through improvements in planning techniques using technological innovations, for example, software that can assist in the internal communication aspect if there is a sudden change in fuel planning to create an integrated communication network between the parties involved in the fuel supply chain process. including with suppliers.

Plan as the core process, in this study is in line with the findings of Li et al. (2011), that collectively Plan and Source are important for supply chain performance. This research also supports the Supply Chain Council, that the Plan process describes the activities associated with developing a plan to operate the supply chain (Georgise et al., 2012). The source is the process of fulfilling or procuring fuel to meet demand. The processes involved include scheduling deliveries from suppliers, receiving, checking, and authorizing payments for goods shipped by suppliers, selecting suppliers, evaluating suppliers. The value of Source's performance of 87,427 can be categorized as satisfactory. However, several dimensions need to be improved, especially in terms of fuel receipts if there is a discrepancy. There needs to be a policy between suppliers and a clear logistics function regarding the handling of differences in the number of requests, deliveries, and receipts. So that no party is harmed or there is a policy defect that can create reproach, given the value of the fuel asset. In addition, performance improvement can also be done by monitoring the performance regularly to only one supplier, making it easier to set policies in contract agreements with suppliers in the next period. Thus, long-term partnerships with reliable suppliers can be built so that companies can maximize their supply chain network.

Source as this process Core source, in line with previous research by Verdouw et al. (2013), feasibility in the supply chain, improving quality and reducing lead time and findings Bowman et al.(2009), which explains better quality at lower cost low. This Source study also supports findings that analyze the impact of purchasing costs (Decker et al., 2008). Deliver, is the core process to fulfill the demand for FUEL OIL. This process includes order management, transportation, and distribution. The process involved in ensuring that the fuel received by the user is by the request, both in terms of location, quantity, and documentation. The value of the delivered performance of 44,108 can be categorized as not good. This is reflected in the number of purchases compared to transportation costs incurred. Efforts to improve supply chain performance can be done by implementing better inventory management so that frequent deliveries with small quantities can be minimized. And the utilization of storage tanks can be done optimally, one of which is by identifying which areas have the greatest use of fuel for the allocation of future tank supplies.

This research on delivery supports several findings that have an impact on significant time savings, efficient use of space and resources, timely delivery, and reduced shrinkage and misplacement (Choy et al., 2017; Qiu et al., 2015; Reaidy et al., 2015). This is in line with the findings (Dada & Thiesse, 2008; Jedermann, 2008; Tadejko, 2015) that quality-controlled Logistics (QCL) will direct product quality control dynamically and in real-time as the company moves through the supply chain. Return is the process of returning products for various reasons. The activities involved include identifying the condition of the fuel, in this case, whether the fuel tank sent is in a sealed condition so that the quality or quantity is still guaranteed since the truck departs from the Pertamina depot. This is also a factor that causes complaints from users. The return performance value of 79,798 can be categorized as moderate. In the fuel supply chain at ConocoPhillips, there has never been a return of the product to a supplier, this shows the supplier's commitment to providing the best service. However, regarding complaints from users, attention needs to be paid if there is a delay in receipt. Improving the performance of the company's supply chain, namely minimizing customer complaints due to the lack of responsiveness of distributors.

As a core process, this return is in line with previous findings that have an impact on reducing costs and lead times, and increasing customer satisfaction (Indrasari et al., 2022; Ricardianto et al., 2021; Pahala et a., 2021; Virgiawan et al., 2021; Kiritsis, 2011; Gu & Liu., 2013; Parry et al., 2016). Only research Sarjono et al. (2017) does not have a return process in the study, because product delivery is only diesel fuel. This research is in line with previous research by Zhou et al. (2011), that

there is a significant positive effect between the Plan process on Source, and Deliver. Their findings prove empirically that the SCOR model is valid. Another study by Lestari et al. (2014), that the simulation approach is carried out through the relationship between suppliers, manufacturers, and customers into four core processes, namely, Plan, Source, Deliver and Return. This study also supports the findings of Sutoni and Gopar (2019) which are the highest and lowest values of each Plan, Source, Deliver and Return metric.

Overall, this study is also in line with the opinion of Müller (2020), which explains that the SCOR model is one of the best models that describe supply chain activities in operations management and is closely related to quality management. This study also supports other research in many countries, such as in North America that the relationship between supply chain processes in the SCOR model is generally mutually supportive Zhou et al. (2011). This study is also in line with several previous studies by Immawan and Nugraha (2020), which proposed that the SCOR model is needed to improve supply chain performance specifically for oil and gas companies. This study also supports the findings of Bolstorff and Rosenbaum (2003), Hafeez et al. (2017), and Zdravković et al. (2011) they carry out the process of implementing the SCOR model in stages, especially in the oil and gas business sector. Finally, overall research with the SCOR model is by the opinion of Kocaoğlu et al. (2013) which allows companies to quickly determine and compare the performance of supply chains and other operations in the oil and gas sector. Thus, the combination of the SCOR and AHP metrics will allow the company to explain the impact of these merger criteria by providing reasonable results. Based on studies using the SCOR and AHP models, this study is in line with and supports the findings of previous researchers.

5. Conclusion

Supply chain performance evaluation at ConocoPhillips can be done using the SCOR model method. From the point of view of determining Key Performance Indicators in fuel supply chain activities, supply chain performance at ConocoPhillips can be categorized as good. This is reflected in the results of the SCOR calculation. The effort to improve supply chain performance can be done by implementing better inventory management so that shipments can be minimized in small quantities. And the utilization of storage tanks can be done optimally, one of which is by identifying which areas have the largest use of fuel for the allocation of tank supplies. Based on the results of the study, it shows that the evaluation value of fuel supply chain management at ConocoPhillips is at a moderate or intermediate level, this implies that the existence of an assessment system or measurement of supply chain performance on an ongoing basis can be used as a consideration in determining the optimal strategy in avoiding and overcoming problems. -problems that occur in the fuel supply chain network at ConocoPhillips. The development of the fuel supply chain management at ConocoPhillips through the management of the flow of fuel materials from suppliers to end-users involving the entire network of the company's organization from the most upstream to the downstream to align with the company's business objectives. Finally, this research will be able to optimize improvement strategies that can be applied in other industries and can develop models to evaluate supplier selection in future research.

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