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Performance Measurement Supply Chain Management (SCM) Using the Supply Chain Operation Reference (SCOR) Method at PT X

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A B S T R A C T

In the world of the fertilizer industry in Indonesia, there are some of problems in the process of planning, procurement and, delivery of materials that adversely affect the company's operations. One approach to fixing this problem is to use a SCOR strategy that is effective in improving the supply chain. PT. X is one of the fertilizer companies whose current condition is that there are problems in planning to meet the needs for production supporting materials so which has the potential to hinder fertilizer production. This is because PT X has not carried out an analysis that hinders demand planning or the supply chain as a whole. Thus, researchers can measure the value of effectiveness in the supply chain to improve targets that have not been achieved. In this research, a scoring method called SCOR was used which included AHP weighting. Fifteen key performance indicators (KPI) were generated based on the five SCOR model indicators used in processing, namely data plan, source, make, delivery, and return. With a final score of the SCM performance level of 86.872, which is included in the Good category. However, this value can still be improved so that it is included in the excellent category, namely >90. So inecessary to identify KPI indicators that have performance values that are not yet optimal, and to make suggestions for improvements to increase PT X SCM performance values.

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1. INTRODUCTION

In the industrial world, competitiveness is an important challenge that must be faced by manufacturing and service companies. The increasingly fierce competition encourages a company to strive to improve its performance. The supply chain is a network of companies that work to create and deliver a product to consumers (Pujawan, 2017). Supply Chain Management (SCM) is a unified process and production activity starting from the procurement of raw materials from suppliers, the value-added process that converts auxiliary materials into finished products, the holding inventory process, and the process of sending goods to retailers and consumers.

According to Putri & Surjasa (2018) to overcome the supply chain delivery process, SCOR (Supply Chain Operations Reference)

has the advantage of being an initial method, namely identifying what indicators are needed in measuring Supply Chain Management (SCM) performance. PT X is a state-owned enterprise under the auspices of PT ABC holding and is the most complete fertilizer producer in Indonesia which produces various kinds of fertilizers. One of the products, namely product A and product B, to produce these two products requires Anticaking Liquid as an auxiliary material. PT X in supply chain activities to meet the needs of Anticaking Liquid has a production planning work unit (planning production needs), procurement planning work unit (planning procurement needs), goods procurement work unit (sourcing vendors to supply needs), vendors (suppliers of goods requested), and production work units (goods users). The current condition when the arrival process of Anticaking Liquid is that the procurement planning work unit sees a potential shortage before the delivery period by vendors ends from the plan. Table 1 below explains the difference between planned and actual arrivals, namely in October 2023, where the planned arrival quantum is scheduled to run out at the end of October 2023. However, due to the potential shortage, arrivals are scheduled earlier so the planned quantum runs out in October 2023. So from the activities of the Anticaking Liquid procurement process, it can be seen that there has been a change in the needs plan so that the procurement planning work unit has to re-calculate to meet the needs for Anticaking Liquid. From this problem, PT X needs to evaluate performance indicators to find out what improvements are needed to improve the company's Supply Chain Management (SCM) performance. At the same time, there is uncertainty in the uncertainty of demand, supply, delivery time, price, and quality of raw materials, and internal uncertainty, that is, machine failure, imperfect and uncertain production quality machine performance. Performance measurement allows managers to successfully manage the supply chain through the most effective way to provide the necessary support to improve performance as a means to achieve supply chain excellence. The supply chain effect is the most fundamental for companies to maintain a continued competitive advantage. In solving this, the measurement of supply chain performance needs to be carried out as a whole (Murniati et al., 2019).

Table 1. Arrival plan for liquid anticaking material vendors

Anticaking Liquid Arrival Delivery Plan				
Month	Date	Supplier LN	Supplier HJ	Result (Kg)
June	13 ~ 17 June 2022	80.000	26.100	106.100
	20 ~ 24 June 2022	-	26.100	26.100
	7 ~ 30 June 2022	-	-	-
July	04 ~ 08 July 2022	-	-	-
	11 ~ 15 July 2022	80.000	26.100	106.100
	18 ~ 22 July 2022	-	26.100	26.100
	23 ~ 25 July 2022	-	-	-
August	08 ~ 12 Augut 2022	80.000	26.100	106.100
	15 ~ 19 August 2022	-	26.100	26.100
September	12 ~ 16 Septembar 2022	80.000	26.100	106.100
	19 ~ 23 September 2022	-	26.100	26.100
	26 ~ 30 September 2022	-	-	-
	19 ~ 23 September 2022	-	26.100	26.100
	26 ~ 30 September 2022	-	-	-
October	03 ~ 07 October 2022	-	-	-
	10 ~ 14 October 2022	50.800	26.100	76.900
	17 ~ 21 October 2022	-	12.300	12.300
	Total	**370.800**	**247.200**	**618.000**

Anticaking Liquid Arrival Delivery Plan				
Month	Date	Supplier LN	Supplier HJ	Result (Kg)
June	13 ~ 17 June 2022	-	-	-
	20 ~ 24 June 2022	40.000	-	40.000
	27 ~ 30 June 2022	40.000	26.100	66.100
July	04 ~ 08 July 2022	-	26.100	26.100
	11 ~ 15 July 2022	-	26.100	26.100
	18 ~ 22 July 2022	40.000	26.100	66.100
	23 ~ 25 July 2022	40.000	-	40.000
August	08 ~ 12 August 2022	-	26.100	26.100
	15 ~ 19 August 2022	80.000	26.100	106.100
September	12 ~ 16 September 2022	40.000	26.100	66.100
	19 ~ 23 September 2022	40.000	26.100	66.100
	26 ~ 30 September 2022	-	26.100	26.100
October	03 ~ 07 October 2022	54.400	12.374	66.774
	10 ~ 14 October 2022	-	-	-
	17 ~ 21 October 2022	-	-	-
Total		**374.400**	**247.274**	**621.674**

(Source: Data PT X)

Table 1 above shows that the initial arrival quantum of LN vendors is 370,800 kg and HJ vendors are 247,200 kg. However, at the end of the realization, LN vendors amounted to 374,400 kg and HJ vendors amounted to 247,274 kg. So it is known that the actual percentage of LN vendors is 100.97% and HJ vendors are 100.02%. So it can be seen from the percentage of realization that there is excess delivery of material (Anticaking Liquid), but the excess delivery is considered normal for supporting material commodities (Anticaking Liquid).

In this study the method used to identify and measure performance indicators is the SCOR (Supply Chain Operations Reference) method approach. In the previous literature study, it was identified that the SCOR (Supply Chain Operations Reference) method has the advantage of being an initial method, namely identifying what indicators are needed to measure Supply Chain Management (SCM) performance. Of course, the company also does not know what improvements are needed to improve the company's Supply Chain Management (SCM) performance (Putri & Surjasa, 2018). SCOR is approached through interviews and questionnaires with experts from PT X, then performs calculations using the Analytical Hierarchy Process (AHP) to model solutions to complex problems in a hierarchical structure. Results of interviews with PT X experts regarding performance criteria were used to arrange a hierarchical structure. By applying the Analytical Hierarchy Process as a guiding model, you can apply weighting to indicators on performance and then use the calculation of the actual value and Snorm De Boer as the calculation of the success score for each indicator. By establishing the priority of the elements in the decision problem is a pairwise comparison, that is, a comparison of pairwise elements according to certain criteria. The matrix form is widely used in pairwise comparisons. The matrix is a simple mathematical form that is commonly used, and provides a framework for testing consistency (CR<10%) and obtaining consistency information. The results of performance indicator measurements during the previous measurement period are the value of performance quality indicators or performance measurements produced. Next, to show whether the performance indicator should be changed or not, the calculation of the actual value and Snorm De Boer is carried out.

It is hoped that this research will prove useful in solving problems faced by PT X to find out whether the implementation of the supply chain has been running effectively and

efficiently, as well as knowing the level of performance measurement using the SCOR (Supply Chain Operations Reference) method. The results of measuring the performance of the SCOR method show the lowest performance in the Supply Chain Management (SCM) process internally at PT. X. The focus of this research is on the conditions that affect changes in plans and the realization of the arrival of Anticaking Liquid. This approach can provide suggestions for improvements to minimize problems in the supply chain for the arrival of Anticaking Liquid shipments. So that this research can provide improvements and improve supply chain performance at PT X

2. LITERATURE REVIEW

Increasingly fierce competition encourages a company to strive to improve its performance, it requires Supply Chain Management (SCM). According to Sembiring et al., 2023 Supply Chain Management (SCM) is integrating competent business resources into the distribution of goods, including planning and managing procurement and logistics activities as well as information related to the raw point to the point of consumption, including coordination and networking with business partners (vendors). , producer, warehouse, transportation, distribution, retail, and consumption) to meet customer needs. To provide cheap and good quality products, supply chain management is the key to determining a company's competitive advantage. However, in practice, management is faced with uncertainties in demand, supply (delivery lead time, price, quality of raw materials, etc.), and internal (machine damage, imperfect machine performance, production quality, etc.) parties (Wahyuniardi, 2017). According to Siahaya (2013) supply chain management is integrating competent business resources into the distribution of goods, including planning and managing procurement and logistics activities as well as information related to raw point to point of consumption, including coordination and networking with business partners (vendors). , manufacturers, warehouses), transportation, distribution, retail, and consumption) to meet customer needs. Implementation of Supply Chain Management (SCM) in its activities includes planning, procurement, production, storage, transportation, and allocation starting from the point of origin (upstream) of raw materials to the point of use (downstream). Supporting elements of Supply Chain Management (SCM) include 9 management elements that play an important role in the success of the movement of goods including procurement, logistics (transportation, warehousing, distribution), inventory, demand estimates, vendors, production, information, quality with customers (Lukman, 2021). The goal of supply chain management is to harmonize demand and supply effectively and efficiently (Heizer, 2014).

Performance measurement allows managers to successfully manage the supply chain through the most effective way to provide the necessary support to improve performance as a means to achieve supply chain excellence. The supply chain effect is the most fundamental for companies to maintain a continued competitive advantage. In solving this, the measurement of supply chain performance needs to be carried out as a whole (Murniati et al., 2019). According to Saputra (2014) measuring supply chain performance is very important in a business in large companies. The impact that occurs if you do not evaluate supply chain performance is that the company cannot find the cause of the problems that occur, resulting in less than optimal company revenue. Supply Chain describes the SCOR model as consisting of three levels (levels) covering the upper level, configuration level, process elements and their implementation outside the scope of the SCOR model the level of implementation varies from person to person in the company. The SCOR model is well known for being able to link business processes, performance metrics, standard practices, and people skills into an integrated structure. According to Setiawan et al., (2020). Performance measurement can be measured using the Supply Chain Operation Reference (SCOR) approach to determine supply chain performance. Despite its simplicity, the SCOR model has proven to be powerful and useful as a tool to describe, analyze, and improve supply chains. Where the performance of company processes can be measured objectively based on the data obtained so that performance evaluation can be carried out (Yusrianafi et al, 2021). The SCOR

approach presents quantitative measures as measurement criteria called metrics. Generally, companies that apply the SCOR approach use a SCOR card accompanied by assessment metrics. The SCOR metric measures every metric that represents the company's internal and external performance (Ginantaka, 2017).

Supply chain performance is measured according to the attributes of the SCOR model performance indicators. The SCOR performance metric attribute measures SCOR interprocess performance (schedule, procure, manufacture, ship, and return). Using this model of measurement has many advantages over using standard metrics. It is difficult if there is a measurement standard to compare performance between organizations. The SCOR model has 5 process categories namely Plan, Source, Make, Delivery, and Return. Attributes of inter-process performance measures in SCOR are reliability, responsiveness, flexibility, cost, assets (Liputra, 2018). This following Table 2 is a performance indicator monitoring system.

Table 2. Performance indicator monitoring system

Monitoring system	Performance Indicator
<40	Poor
40 – 50	Marginal
50 – 70	Average
70 – 90	Good
>90	Excellent

(Sourch : Putri & Rukmayadi, 2022)

3. RESEARCH METHOD

In this case study research using independent variables and divided into 5 variables namely Plan, Source, Make Deliver, and Return. each variable is also divided into sub-variables. Where each of these variables is used to determine the assessment criteria of the attributes of each KPI indicator that has been verified with experts, so that PT X can determine which Key Performance Indicator (KPI) indicators can be applied and are in accordance with the conditions of PT X. This following Table 3 is variables and sub-variables.

Table 3. Variables and sub-variables

Criteria (Level 1)	Attribute (Level 2)	Key Performance Indicator (Level 3)	Abbreviation
Plan (P)	Reliability (Re)	Anticaking Liquid Material Planning	PRe 1
		Production Planning	PRe 2
	Responsiveness (R)	Request Cycle Time	PR 1
Source (S)	Reliability (Re)	Source Cycle Time	SRe 1
		Order Received Damaged Free	SRe 2
		Delivery Quantity Accuracy by Supplier	SRe 3
	Responsiveness (R)	Timely Delivery Performance by Supplier	SR 1
Make (M)	Reliability (Re)	Yield	MRe 1
		Maintenance tool	MRe 2
	Responsiveness (R)	Make Cycle Time	MR 1
Deliver (D)	Reliability (Re)	Inventory Supporting Material Quantity Accuracy	DRe 1
		Inventory Accuracy For Anticaking Liquid Material	DRe 2
	Responsiveness (R)	Supporting Material Defect From Supplier	DR 1
Return	Responsiveness (R)	Return Rate From Customer	RR 1
		Anticaking Liquid Replacement Time	RR 2

(Sourch: processed data)

4. RESULT AND DISCUSSION

At this stage the researcher conducted interviews and filled out questionnaires together with experts to give weighting values to each criterion or KPI indicator process. The Key Performance Indicator (KPI) weighting aims to determine its importance in the Key Performance Indicator (KPI). A questionnaire weighting will be considered consistent, if the CR value is less than 0.1 (10%). In the supply

chain comparison matrix, the intensity of each interest from each Key Performance Indicator (KPI) has been determined by the company using a pairwise comparison scale starting from numbers 1 to 9. Scales 1 to 9 are the best scales and paired rating scales when expressing opinions (Atmanti, 2008). The following Table 4 is a description of each scale of the criteria comparison matrix or KPI indicator process:

Table 4. Comparison scale

Scale		Information
1	(Same)	Both criteria are equally important
3	(weak)	One criterion is slightly more important than the other
5	(strong)	One criterion is more important than the other
7	(very strong)	One criterion is clearly more important than the other criteria
9	(strongest)	One criterion is absolutely important than any other
	2, 4, 6, 8	Values between two adjacent judgment values

(Source: (Kharisma, 2022)

From the comparison scale in Table 4 above the PT X expert chooses the appropriate weighting for the assessment of each criterion or process, as the results of the weighting assessment become a criterion or process comparison matrix (level 1) according to table 5 below.

Table 5. Comparison matrix

Proses	Plan	Source	Make	Deliver	Return
Plan	1	1	3	3	5
Source	1	1	5	3	5
Make	0,33	0,20	1	1	3
Deliver	0,33	0,33	1	1	1
Return	0,20	0,20	0,33	1	1
Total	2,87	2,73	10,33	9,00	15,00

(Sourch: processed data)

Inter-Process Matrix x Weight of Each Process

After obtaining the comparison matrix from table 6 above, the AHP weighting calculation is carried out from between processes in the following way:

a. Normalization between processes with the formula:
   Normalization of each process =
   $$\frac{\text{Scale of indicators of each inter} - \text{process}}{\text{The total value of each process}}$$
b. The weight value of each process with the formula:
   The weight value of each process =
   $$\frac{\text{Total of each normalized row}}{\text{Number of rows}}$$
c. The maximum eigen value value of the process attribute with the formula:

   Eigen Value Maximum Value =

d. Consistency Index (CI) with the formula:
   Consistency Index (CI) = $\frac{\lambda \text{ maks}-\text{n}}{n-1}$

Information:
λ max : maximum eigen value
n : number of processes

e. Consistency Ratio (CR) with the formula:
   Consistency Ratio (CR) = $\frac{CI}{RI}$

The calculation is said to be correct if the CR value results ≤ 0.1. The calculation of the RI value or the Random Consistency Index is taken from the consistency ratio value. The following table 6 below shows the value of the consistency ratio or the Random Consistency Index:

Table 6. Consistency ratio value (RI)

	Consistency Ratio Value										
n	1	2	3	4	5	6	7	8	9	10	11

RI	0,00	0,00	0,58	0,90	1,12	1,24	1,32	1,41	1,45	1,49	1,51

(Source: (Kharisma, 2022)

Information:
RI : Random Consistency Index
n : the number of matrices

By calculating the AHP from the steps above, we get the Eigen Value Maximum value and the weight of each process attribute in Table 7.

Table 7. Eigen value maximum process attributes

Proses	Plan	Source	Make	Deliver	Return	Total	Weight	Total/Weight
Plan	0,334	0,373	0,358	0,308	0,353	1,726	0,334	5,164
Source	0,334	0,373	0,597	0,308	0,353	1,965	0,373	5,268
Make	0,111	0,075	0,119	0,103	0,212	0,620	0,119	5,189
Deliver	0,111	0,124	0,119	0,103	0,071	0,528	0,103	5,152
Return	0,067	0,075	0,040	0,103	0,071	0,354	0,071	5,021
Average								5,159

(Source: processed data)

Table 7 above shows that the Eigen Value Maximum value is 5.159, where the result is obtained from the average Eigen Value Maximum for each process. The next step is to calculate the Consistency Ratio (CR), if the Consistency Ratio (CR) value is greater than the standard. Then the assessment is considered inconsistent, meaning that the questionnaire assessment needs to be redistributed, with the standard CR value being CR $\leq$ 10%. The calculation of AHP weighting is then carried out on attributes (level 2) to KPI indicators (level 3), then the weight values for each level are obtained as shown in table 8 below. The global weight value is obtained by multiplying each weight of the KPI criteria or processes, attributes, and indicators.

Table 8. AHP weighting

No	Proses	Weight Lv 1	Atribut	Weight Lv 2	KPI	Weight Lv 3	Weight Global
1.	Plan	0,334	Reliability	0,75	PRe 1	0,75	0,188
					PRe 2	0,25	0,063
			Responsiveness	0,250	PR 1	1	0,084
2.	Source	0,373	Reliability	0,500	SRe 1	0,525	0,098
					SRe 2	0,334	0,062
					SRe 3	0,142	0,026
			Responsiveness	0,500	SR 1	1	0,187
3.	Make	0,119	Reliability	0,833	MRe 1	0,750	0,074
					MRe 2	0,250	0,025
			Responsiveness	0,167	MR 1	1	0,020
4.	Deliver	0,103	Reliability	0,500	DRe 1	0,667	0,034
					DRe 2	0,333	0,017
			Responsiveness	0,500	DR 1	1	0,052
5.	Return	0,071	Responsiveness	1	RR 1	0,250	0,018
					RR 2	0,750	0,05325

(Source: processed data)

The SCOR process is carried out by calculating performance indicator values using Snorm de boer normalization. Snorm de boer normalization is carried out to standardize the scale of performance values, because each performance indicator value has a different size scale. The results of Smin and Smax were obtained from interviews with company

experts, these results were used to determine the maximum and minimum targets. The following Table 9 results of Snorm De Boer Normalization.

Table 9. Normalization of Snorm De Boer

No	Performance Indicators	Actual Value (Si)	Smin	Smax	Snorm
1	Anticaking Liquid Material Planning	87%	0%	100%	87%
2	Production Planning	96%	0%	100%	96%
3	Request Cycle Time	10	1	40	77
4	Source Cycle Time	1	1	30	100
5	Order Received Damaged Free	100%	0%	100%	100%
6	Delivery Quantity Accuracy by Supplier	104,75%	0%	100%	105%
7	Timely Delivery Performance by Supplier	67,71%	0%	100%	68%
8	Yield	83,13%	0%	100%	83%
9	Perawatan Alat/Mesin	6	1	23	77
10	Make Cycle Time	65	61	80	79
11	Inventory Supporting Material Quantity Accuracy	87,28%	0%	100%	87%
12	Inventory Accuracy For Anticaking Liquid Material	100,00%	0%	100%	100%
13	Supporting Material Defect From Supplier	0,00%	0%	10%	100
14	Return Rate From Customer	0,00%	0%	10%	100
15	Supporting Material Replacement Time	0,00	0,00	50,00	100

(Sourch : Processed Data)

From Table 9 of the normalization of Snorm De Boer above, it can be seen that the results of each KPI indicator are still less than 90 (excellent) in order to achieve a value of more than 90 there are a total of 7 indicators meaning that the process is not optimal. So that based on the normalization of Snorm de boer 7 indicators can be proposed recommendations for improvement to the company.

The liquid material planning anticaking indicator has a performance value of 87, which means it is not optimal due to a discrepancy between the plan and the realization of the need for liquid anticaking because the plan is still not sufficient due to the change in production plan policy in the second semester. The request cycle time indicator has a performance value of 77, which means that it is not optimal due to a new policy regarding joint procurement procedures which were originally carried out internally to be centralized through the parent holding company. The timely delivery performance indicator by supplier has a performance value of 68, which means it is not optimal due to the adaptation conditions during the pandemic and the difficulty factor in providing raw materials by vendors due to global conditions. The yield indicator has a performance value of 83, which means it is not optimal due to changes in production planning policies which result in less than optimal realization. The tool or machine maintenance indicator has a performance value of 77, which means that it is not optimal due to the need for several factory spare parts which experience delays in arrival, which results in an increase in the maintenance time span or factory shutdown. In the inventory supporting material quantity accuracy indicator, it has a performance value of 87, which means

that it is not optimal due to changes in the production plan policy, which results in the use of anticaking liquid which is still not optimal from the plan. The following is a table of 10 KPI indicators that need improvement:

Table 10. Proposed improvement indicators

KPI	Normalization Score	Proposed Improvement
Anticaking liquid material planning	87	Improving planning for the production needs of liquid anti-caking auxiliary materials by providing earlier reminders if there is a change in plans. And the safety stock parameter method can be added so that the planning section can also provide information to production about the position of auxiliary material stocks..
Request cycle time	77	*R*equest cycle time with proposed improvements, namely standardizing lead times and monitoring the procurement process so that production needs can be maintained.
Timely delivery performance by supplier	68	Timely delivery performance by suppliers with proposed improvements, namely making delivery performance monitoring and conducting reminders to vendors before the due date of the delivery schedule.
Yield	83	Yield with proposed improvements, namely improving production planning management and communication with the marketing department and making joint monitoring so that sales requests can provide earlier information and procurement planning can estimate more optimally.
Maintenance of tools or machines	77	Maintenance of tools or machines with proposed improvements, namely improving preventive maintenance methods and strengthening reliability analysis so that the planning process for spare parts needs can be submitted earlier so as to avoid delays in delivery.
Make cycle time	79	Make cycle time with proposed improvements, namely making agreements or contracts regarding standard lead times until the material is sent by the company by the vendor and monitoring delivery performance.
Inventory supporting material quantity accuracy	87	Inventory supporting material quantity accuracy with proposed improvements, namely making joint reconciliations between the production planners and procurement planners so that changes in requirements can be informed.

(Sourch : Processed Data)

The results of calculating the final SCM performance value are carried out by multiplying the global weight and the Snorm results from the normalization of the Snorm de Boer Table 10. The total of the multiplication is the result of the final assessment of SCM performance. The following table 11 below is a calculation of the overall SCM performance

value:

Table 11. Calculation of SCM final performance value

No	Process	Weight Lv 1	Attribute	Weight Lv2	KPI	Weight Lv 3	Weight Global	*Snorm*	Performance Assesment
1.	Plan	0,334	Reliability	0,75	PRe 1	0,75	0,188	87	16,345
					PRe 2	0,25	0,063	96	6,012
			Responsiveness	0,250	PR 1	1	0,084	77	6,430
2.	Source	0,373	Reliability	0,500	SRe 1	0,525	0,098	100	9,791
					SRe 2	0,334	0,062	100	6,229
					SRe 3	0,142	0,026	105	2,781
			Responsiveness	0,500	SR 1	1	0,187	68	12,682
3.	Make	0,119	Reliability	0,833	MRe 1	0,750	0,074	83	6,171
					MRe 2	0,250	0,025	77	1,908
			Responsiveness	0,167	MR 1	1	0,020	79	1,570
4.	Deliver	0,103	Reliability	0,500	DRe 1	0,667	0,034	87	2,988
					DRe 2	0,333	0,017	100	1,715
			Responsiveness	0,500	DR 1	1	0,052	100	5,150
5.	Return	0,071	Responsiveness	1	RR 1	0,250	0,018	100	1,775
					RR 2	0,750	0,05325	100	5,325
Total Performance SCM									86,872

(Source: processed data)

Table 11 shows that the total SCM performance value of PT. X was obtained at 86.872, which means it is included in the good category so it needs to be increased to a performance value of > 90 (excellent).

5. CONCLUSION

Based on the results of the SCM performance measurement research at PT X, it can be concluded that the overall value of SCM performance is 86.872, which means it is in a good category. However, it can still be increased to a performance value of >90 or excellent. From the calculation of the performance value of each KPI, there are 7 KPIs out of 15 KPIs that have performance values below average or not optimal, namely the anticaking liquid material planning indicator with a value of 87, request cycle time with a value of 77, timely delivery performance by supplier with a value of 68, yield with a value of 83, maintenance of tools or machines with a value of 77, make cycle time with a value of 79, and inventory supporting material quantity accuracy with a value of 87, so that the 7 indicators need to be proposed for improvement.

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