Improving Responsiveness of Micro, Small, and Medium Enterprise (MSME) Business Process by Using SCOR Racetrack Method (Case Study: Sahara Aluminium)

THESIS

Submitted to International Program
Department of Industrial Engineering
the Requirement for the degree of
Sarjana Teknik Industri
at
Universitas Islam Indonesia

By
Muhammad Rizqy Abdurrahman Assyifa (18522005)

INTERNATIONAL PROGRAM
DEPARTMENT OF INDUSTRIAL ENGINEERING
UNIVERSITAS ISLAM INDONESIA
YOGYAKARTA
October 2021

With this, I declare that thesis entitled "**Improving Efficiency and effectiveness of Micro, Small and Medium Enterprise (MSME) business process by using Supply Chain Management Method (Case Study: Sahara Aluminium)**" this undergraduate thesis and all its content is truly the work of my own except for quotation that I have mentioned if in future there is proving that show I conduct plagiarism, I am ready to bear all the risk / any sanction imposed to me by applicable regulation.

Yogyakarta, July 2022

Muhammad Rizqy Abdurrahman Assyifa

NIM. 18522005

IMPROVING EFFICIENCY AND EFFECTIVENESS OF MICRO, SMALL, AND MEDIUM ENTERPRISE (MSME) BUSINESS PROCESS BY USING SUPPLY CHAIN MANAGEMENT METHOD (CASE STUDY: SAHARA ALUMINIUM)

Thesis

By

Name : Muhammad rizqy abdurrahman assyifa

Student Number: 18522005

Yogyakarta, July 2022

Supervisor

Dr. Ir. Elisa Kusrini, M.T.

UNDERGRADUATE THESIS APPROVAL OF EXAMINATION COMMITTEE

IMPROVING RESPONSIVENESS OF MICRO, SMALL AND MEDIUM **ENTERPRISE** (MSME) BUSINESS PROCESS BY USING SCOR RACETRACK METHOD (CASE STUDY: SAHARA ALUMUNIUM)

UNDERGRADUATE THESIS

By:

Name Muhammad Rizqy Abdurrahman Assyifa
Student Number 18522005

Has been defended in front of Examination Committee in Partial Fulfillment of the Requirement of Bachelor Degree of Industrial Engineering Department Universitas Islam Indonesia

Examination Committee

Dr. lr. Elisa Kusrini, M.T., CPIM., CSCP.
Examination Committee Chair

Dr. Taufiq Immawan, S.T., M.M.
Member I

Winda Nur Cahyo, S.T., M.T., Ph.D.
Member II

Acknowledge by,
Head of Undergraduate Program
Department of Industrial Engineering
Faculty of Industrial Technology
Universitas Islam Indonesia

(Dr. Taufiq Immawan, S.T., M.M.)

DEDICATION PAGE

This research is presented to my beloved mom, who always supports me in every possible situation and has become my source of inspiration and my role model that continuously provides moral, spiritual, emotional, and all support that I've ever needed.

To aura, who always backs me up when I was hopeless, ambitionless, and always cheers me with her ways give me strength and motivation to finish this thesis.

To my brothers and sisters, who always give me motivation and strength to face all possible struggles in completing this undergraduate thesis

To my friend's mom, ibu hariyati that give me a new point of view and a way to]see the problem from the positive side, that give me more strength and wisdom.

Last but not least, to all my best friends from IP batch 18 that been sincerely accompanied me from the beginning until now.

ACKNOWLEDGEMENT

Assalamualaikum Wr. Wb.

Alhamdulillahirabbil'alamiin, Praise be to our gratitude to pray for the presence of Allah SWT, the One and Only God who has given His grace and guidance so that the researcher can carry out undergraduate thesis at Sahara Aluminum and compile reports smoothly. Not to forget the prayers and greetings are always poured out to our Lord, the great Prophet Muhammad SAW, and his followers who have fought and guided us out of the darkness into this path of light.

The advice, assistance as well as support are obtained, directly or indirectly, from certain interested parties. On this point, the author wishes to express gratitude and thanks to all the parties below:

1. **(Prof. Dr. Ir. Hari Purnomo, MT),** as Dean of the Faculty of Industrial Technology, Universitas Islam Indonesia.
2. **(Muhammad Ridwan Andi Purnomo, S.T., M.Sc., Ph.D.),** as Head of the Department of Industrial Engineering, Faculty of Industrial Technology, Universitas Islam Indonesia.
3. **(Dr. Taufiq Immawan, S.T., M.M.),** as Head of Undergraduate Program in Industrial Engineering, Faculty of Industrial Technology, Universitas Islam Indonesia.
4. **(Dr. Ir. Elisa Kusrini, M.T.),** as the Undergraduated Thesis supervisor appointed from the Industrial Engineering Study Program who has provided direction, guidance, criticism, and suggestions in preparing reports and Undergraduated Thesis implementation.
5. **Particularly both parents,** who always provide spiritual and material support and motivation in various ways to the researcher during the implementation of the internship.

Hopefully, this thesis report can be useful for readers. The researcher realizes that this Thesis report still has many shortcomings, so the researcher expects constructive criticism and suggestions from all readers for further research.

Wassalamu`alaikum Wr.Wb.

Yogyakarta, September 2021

Muhammad Rizqy Abdurrahman Assyifa (18522005)

MOTTO

1. "Tidak ada kesuksesan tanpa kerja keras. Tidak ada keberhasilan tanpa kebersamaan. Tidak ada kemudahan tanpa doa." – Ridwan Kamil
2. "Orang yang hebat adalah orang yang memiliki kemampuan menyembunyikan kesusahan, sehingga orang lain mengira bahwa ia selalu senang." – Imam Syafi'i
3. "Terkadang orang dengan masa lalu paling kelam akan menciptakan masa depan paling cerah." – Umar bin Khattab
4. "Sesungguhnya Allah tidak akan mengubah keadaan suatu kaum, sebelum mereka mengubah keadaan diri mereka sendiri." – QS Ar Rad 11

ABSTRACT

Nowadays, there are many Micro, Small, and Medium Enterprises (MSME) that exist in Indonesia but cannot survive for a long time. Only several Micro, Small, and Medium Enterprises (MSME) can make it survive for a long time. From this research, the researcher found that the main problem in this Micro, Small, and Medium Enterprise (MSME) is their responsiveness. The method that will be used in the project is SCOR Racetrack 12.0 and SWOT analysis in SCOR 12. The research was started with Pre-SCOR which contains a SWOT analysis on it, and then Set the Scope, Configure the supply chain, Optimize Project, and be Ready for Implementation. In this project, researcher obtained information from observation and interviews with the owner of Sahara Aluminium. Based on the result of the observation and the analysis within matrix 2.1 production Cycle Time, there is a gap of 1,7 days between actual time and internal target time. Analysis of Metrix level 3 found that there are 3 Metrix level 3 that has a gap. It is matrix RS. 3.1 production Scheduling activities with a gap of 0,14 days, and RS. 3.2 Raw material procurement activities that have a gap of 0,5725 days, and 3.3 Production and test cycle time that have a gap of 0,8875 days. According to the fishbone diagram researcher found out that 6 major problems cause gaps in time in Sahara Aluminium. After the researcher found the problem, then the next step is to create an improvement list project.

Keywords: SCOR 12.0, Micro, Small and Medium Enterprise (MSME), Performance

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CHAPTER I
INTRODUCTION

1.1 Study Background

The role of the right supply chain strategy is essential for Micro, Small, and Medium Enterprises (MSME). Supply chain management is a system that involves the production, delivery, storage, distribution, and sales of a product in a company. Therefore, to meet the demand for some sort of product, the supply chain includes all processes and activities involved in delivering these products to consumer hands (Wuwung., S., C., 2013). Supply chain management is essential for the business because it will bring an advantage in terms of Price, Quality, Standard Products, Delivery Time, and Customer Service. Making the business more effective was the same as making the business more lucrative since a successful business is one that is effective and efficient.

With the existence of Micro, Small, and Medium Enterprise (MSME) in Indonesia, many people are supported, because it reduces the number of unemployed and reduces the poverty, on the other hand, there will be hard to sustain in the market if the business did not manage well, because the competition in the Micro, Small and Medium Enterprise (MSME) were very tight. It is shown by the presence of 30 million micro, small and medium enterprises in Indonesia that have gone bankrupt (Ikhsan., 2021). It is clear that the competition for micro, small and medium enterprises in Indonesia is very tight and carries the risk of bankruptcy. Bankruptcy that occurred in Indonesia can be categorized as high. So, MSME owners must make more efforts to improve performance so that their business can be sustainable.

Micro, Small, and Medium Enterprise (MSME) is a business concept that can make anyone and everyone have their own business. Micro, Small, and Medium Enterprise (MSME) have three kinds of industries. The first is a small business that covers only total net revenue between Rp. 2.000.000.000 – Rp. 15.000.000.000 per year. Later, middle business Rp. 15.000.000.000 – Rp. 50.000.000.000 per year,

and lastly, Micro businesses, which only have a total asset of Rp. 2.000.000.000 and revenue Rp. 1.000.000.000 per year (Pratama., M., A., 2021). Micro, Small, and Medium Enterprise (MSME) have grown in popularity due to their flexibility to react to market situations and create a work field.

Sahara Company is one of the micro, small and medium enterprises located in Yogyakarta that focuses on producing customized aluminum, glass, and hollow iron handicrafts. During running the business, the company encountered several obstacles. The main constraint was the production time that exceeded the target. It is known that the company's production process can be considered inefficient because the production target time cannot be achieved without adding resources. It leads to the insufficient number of finished products so that they are unable to meet the existing demand. Of course, it has an impact on the company's sales figures and customer loyalty and satisfaction.

The Sahara company seems not to be aware of their goals, so the production time is far from the target. This issue certainly proves that the company has not been committed to the principles they have made. Essentially, every business and every organization must have a clear vision of where they want to lead their firm and how to get there. They also require a fundamental concept in order to conduct their firm successfully and efficiently. One of the strategies that a corporation may utilize to improve its principal is 5s Kaizen. 5s Kaizen will assist the firm in being more efficient and productive in their manufacturing line, as well as increasing employee engagement in the organization. 5s Kaizen focuses not only on being productive and efficient but also on being people-oriented by generating employee pride while they work at the organization. The kaizen idea was created in Japan in 1950 when the government and management realized a problem in their management structure and system due to a looming labor shortage (Brunet, 2000).

A company cannot overlook the importance of supply chain management in its management system. Therefore, a business needs to be aware of their supply chain managerial. To make an effective and efficient supply chain, it would be very useful for the company to make an effective and efficient business, to improve the business profit because supply chain management is a very detailed system used by a small

and large organization, well-organized supply chain management will bring the company to have a fast and efficient business (Kleab., K., 2017).

A good Micro, Small, and Medium Enterprise (MSME) must implement the Supply chain management concept in running its business. Increasing awareness of the importance of Supply Chain Management in a company making more and more research related to this study, such as research carried out by the IACSIT (International Scientific Association of Distinguished Scholars) (2015), and Agus (2015). A good implementation of Supply Chain Management implementation gives a positive impact, such as excellent product quality, low operating costs, on-time deliveries, and reduced wastage and inventory.

In measuring the supply chain performance in Sahara company, this study used SCOR 12.0 Racetrack. The SCOR model offers integral and thorough performance measurements and covers the internal and external environments, including both operational and financial aspects. The Supply Chain Operations Reference (SCOR) model offers a distinctive framework that integrates performance indicators, procedures, industry best practices, and personnel into one cohesive system. The framework improves the efficiency of supply chain management, technology, and related supply chain improvement operations. It will facilitate communication between supply chain parties (Wibowo & Sholeh, 2016) (Supply Chain Council, 2012). The performance of the supply chain should be guided by these metrics rather than the performance of individual businesses (Sudaryanto & Bahri, 2007).

Inside SCOR Racetrack, there are several stages, and in the Pre-SCOR stage, there is called SWOT analysis. SWOT analysis is commonly used as an instrument to conceptualize and measure the condition of an organization, whether the internal factor or external factor. It is used to see the specific condition of a company and perceive the thing that needs to be improved concerned and see the position and the best way to overcome the business problem.

By measuring the supply chain management performance at Sahara Company using SCOR 12.0 Racetrack, the company can identify problems that can reduce supply chain performance. It is hoped that with the supply chain performance measurement, it is also known which parts must be improved in order

to compete in the business world. By proposing improvement projects, it is hoped that they will be able to improve the supply chain performance of Sahara companies.

1.2 Problem Formulation

Based on the background, the big problem can be figured and formulated, which are:

1. What aspect of supply chain management performance at Sahara Company needs to be improved based on SCOR 12.0 Racetrack?
2. What recommendation can be suggested to improve the performance of supply chain management at Sahara Company.

1.3 Problem Limitation

The limitation of this program is needed so there will not arise bias at the time of discussion and analysis to be conducted. This study limits only to:

1. Research data based on Micro, Small, and Medium Enterprise (MSME)
2. The method used is SCOR Racetrack
3. Data used only ranged from September 2021 to February 2022

1.4 Objective

The objective of this research is:

1. Finding the Supply Chain Management Responsiveness in Micro, Small, and Medium Enterprise (MSME).
2. Proposing project improvement for supply chain management in Micro, Small, and Medium Enterprises (MSME).

1.5 Benefit of Research

This research will give benefit students and companies. The benefits are:

1. For Students
    a. Students can implement the knowledge and skill of industrial engineering in the field so that it will give an experience for students

b. Students can understand the Micro, Small, and Medium Enterprise (MSME) business process in supply chain management.
c. Students are gaining experience in analyzing Micro, Small, and Medium Enterprises (MSME), making it easier for them to practice their skills in decision and judgment.
d. Build the character of professionalism, critical thinking, responsible, and problem solver in real work.
e. See the abilities and skills that have been possessed.
f. Get experience in comparing theory in lectures and practice in real situations.

2. For the Company
   a. Improving supply chain management effectiveness and efficiencies so that the company can make a better business process and raise the profit,
   b. Students could give a different perspective of problems, making the company see what they did not see before.
   c. The company can apply the suggestion from students to improve its business management.

1.6 Systematics Writing

The Undergraduate Thesis report is compiled systematically in the form of chapters consisting of:

Chapter 1 Introduction

This chapter contains the study background, problem formulation, problem limitation, research objectives, research benefits, and systematic writing of the Undergraduate Thesis report.

Chapter 2 Literature Review

This chapter contains deductive and inductive literature as a support for research.

Chapter 3 Methodology

This chapter explains how this research will be carried out, the data that will be used in the study, the research variables, and the research flowchart to be carried out.

Chapter 4 Data Collecting and Processing

This chapter will describe the process of collecting and processing data with a particular method, including pictures and graphics obtained from the results of the study.

Chapter 5 Discussion

This chapter will contain a critical discussion of the results of data processing. The results obtained will be the basis for decision-making and improvement proposals.

Chapter 6 Conclusion

This chapter will discuss the conclusions of the research and answer the problem formulation. It is coupled with recommendations for improvement and development for the company and subsequent research.

References

CHAPTER II
LITERATURE REVIEW

2.1 Inductive Study

Inductive is a study that discusses the research that has been done in the past to help determine the direction of the research. In the table below were the previous studies regarding performance measurement in the production process. Table 1 below is the previous research data.

Table 1. Inductive Study

No	Title	Author (Year)	Method	Result
1.	SWOT ANALYSIS: A THEORETICAL REVIEW	Karina Arbelina, Rani Rumita (2020)	This research is a literature study on SWOT, qualitative and descriptive. This study will examine SWOT Analysis from a historical, theoretical perspective, and time frame as an effective situation analysis technique that plays an	SWOT analysis, reveals the current situation of the organization and allows to development of future action plans for the organization. If the technique is used correctly, it can provide a good basis for strategy formulation. Although it is a simple managerial tool and has many advantages in the planning process,

No	Title	Author (Year)	Method	Result
			important role in marketing, public relations, advertising, and any field that requires strategic planning.	drawbacks and limitations are also available. SWOT analysis only presents a list of factors for the micro and macro environment of an organization. Moreover, it is difficult to use the listed factors qualitatively in decision-making. A qualitative examination of internal and external factors can only be a prelude to in-depth analysis in the planning process. The growing literature reviewing the SWOT method indicates that referring only to SWOT is

No	Title	Author (Year)	Method	Result
				insufficient in strategic planning. Academic research on the subject shows that the effectiveness of SWOT can be increased by using qualitative and quantitative techniques together. Several experts have proposed new analytical methods to be combined with SWOT and some experts have suggested alternative methodologies for it.
2.	Analisis SWOT Dalam Menentukan Strategi Pemasaran	Anissa Mayang Indri Astuti, Shinta Ratnawati	SWOT analysis carried out with the IFE (Internal Factor Evaluation)	Based on the results of calculations using the SWOT

No	Title	Author (Year)	Method	Result
		(2020)	matrix, which describes the factors company strengths and weaknesses and the EFE (External Factor Evaluation) matrix that describes the company's opportunity and threat factors and the IE (Internal External) matrix that shows current position of the company.	approach, it can be concluded that The position of the Post Office of Magelang City 56100 is in the position of Kudaran I so that it shows the situation it is very profitable for the company to carry out an aggressive/growth strategy. Then the results of the IFE internal factor and EFE external factor obtained the value of strength and opportunities (SO) of 4.56, strengths and treats (ST) of 3.93, weaknesses and opportunities (WO) of 4.01 and weakness and treat (WT) of

No	Title	Author (Year)	Method	Result
				3.38. The strategy that has the highest score is SO by improving quality services, expanding market share to support performance Magelang City Post Office,
3.	ANALISIS SWOT DALAM PENGEMBAGAN BISNIS	Istiqomah, Irsad Andriyanto (2017)	MSMEs have a strategic role in national economic development. Apart from playing a role in economic growth with employment as well play a role in the distribution of Industrial products. During	Based on the discussion of the research that has been done, then the results of this study show: 1. MSME Sentra Jenang, Kaliputu Kudus tourist village are expected to continue to innovate in improving product quality BUSINESS, Vol. 5, No. 2,

No	Title	Author (Year)	Method	Result
			the economic crisis a few years ago, most of large-scale businesses experienced the temporary stop or even full stop on their activities. MSMEs have proven to be more resilient in facing these times. However, this still does not rule out the possibility that there are still many weaknesses inherent in the SMEs as well as in accessing information. With limitations	December 2017 381 SWOT Analysis in Business Development 2. Marketing efforts that have been carried out should be necessary to continue to be developed using the media information by the times. 3. Government support is expected to continue to increase for help improve the quality of human resources and promotion MSME Sentra Jenang, Kaliputu Kudus tourist village

No	Title	Author (Year)	Method	Result
			In this case, MSMEs which have a large potential market share quite large in the international world, in fact still not yet widely known by consumers so that the public's interest for MSMEs products are still low.	4. Strong support and commitment are required from various parties involved in making Kaliputu Village as the center of jenang in Kudus Regency.
4.	ANALISIS SWOT DALAM MENETUKAN STRATEGI PEMASARAN UDANG BEKU PT. MUSTIKA MINA NUSA AURORA TARAKAN,	Rahmayati HM (2015)	This study aims to identify strengths and weaknesses (internal environment) as well as opportunities and threats (external	

No	Title	Author (Year)	Method	Result
	KALIMANTAN UTARA		environment) and formulate the right frozen shrimp marketing strategy through a SWOT analysis (Strengths, Weaknesses, Opportunities and Threats)	
5.	ANALISIS SWOT: FAKTOR INTERNAL DAN EKSTERNAL PADA PENGEMBANGAN USAHA GULA MERAH TEBU	Yani Subaktilah, Nita Kuswaardani, Sih Yuwanti (2018)	Internal external factor analysis is a SWOT analysis method that can be used to identify internal and external factors that exist in Company environment. Next, can be identified internal and	SME's brown sugar cane business results Bumi Asih consists of internal and external factors external factors. These two factors are necessary become the main focus of the company so that can survive in the competition.

No	Title	Author (Year)	Method	Result
			external factors and how they affect company. Therefore, an analysis was carried out external and internal factors for identify factors either in the form of strengths, weaknesses, and opportunities and threat. These factors can affect the development of the sugar business sugar cane to Bumi Asih SMEs	External factor analysis score of 2,812 and an internal factor analysis score of 3.0315. The two scores above 2.5, which means the company has above average ability to get take advantage of the strengths and opportunities possessed to deal with threats and weaknesses they have.

No	Title	Author (Year)	Method	Result
			so that it can be used as a reference in follow-up efforts.	
6.	ANALISIS SWOT SEBAGAI UPAYA PENGEMBAGAN DAN PENGUATAN STRATEGI BISNIS	Danu Kusbandono (2019)	As time goes by and increase in the printing business, then a strategic plan is a key to success in business so that competition getting tighter and fluctuating , in the practice of UD. Budi's warehouse always accepts orders requested by the community without refuse a bit, so	Based on research results what has been done on the factor internal and external with using a SWOT analysis can concluded that UD. Budi's Warehouse is in quadrant I (strength) and opportunities) so that it drips focus on the company to using an aggressive strategy where to carry out development

No	Title	Author (Year)	Method	Result
			consumers are happy. System applies marketing by using print media, namely between others: banners & pamphlets, besides that using promotional media on radio local. So far in practice, focus on consumer's direct orders that is, consumers himself come directly to order a design so that it feels not enough in terms of marketing.	maintain the top position for closing the gap. On the threat factor and Weakness, by adding printing unit, cooling addition comfortable room for consumers, when viewing graphic design worked on and founded new branch to add market share control so that people will be more familiar.

No	Title	Author (Year)	Method	Result
7.	IMPLEMENTASI ANALISIS SWOT DALAM STRATEGI PEMASARAN PRODUK MANDIRI TABUNGAN BISNIS	Angelica Tamara (2016)	Changes in the social, cultural, economics, technology, politics, and also in competition can affect the shape of and market conditions. Because the market always changes, the company must improve their service continuously. There is thing to note here is how does the company take initiative to change the way of service to adapt to the environment	Results SWOT analysis states that PT. Bank Mandiri is ready to compete in a competitive market. Based on interpretation SWOT analysis, strategy development marketing of savings products that can carried out by PT. Bank Mandiri is by harnessing the power and existing opportunities, and minimizing weaknesses and threats.

No	Title	Author (Year)	Method	Result
			outside the company .	
8.	STRATEGI PENJUALAN SEPATU DENGAN METODE ANALISIS SWOT DI ERA PANDEMIC COVID-19	Aprilia Puspasari, Popon Rabia Adawia (2020)	The purpose of this study is to see the shoe sales strategy carried out by the method SWOT analysis	Based on the discussion, it can be concluded that the Amira Collection should have Their marketing strategy before they run or market their products/services. The marketing strategy that is made must consider the situation and condition of the company the internal state of the company itself or the company's microenvironment, as well as external circumstances

No	Title	Author (Year)	Method	Result
				company or what is known as the company's macro environment, especially marketing when Pandemic, which must be strong in innovating so that MSMEs continue to fly among foreign competitors.
9.	PENGUKURAN KINERJA RANTAI PASOK PADA PT. LOUSERINDO MEGAH PERMAI MENGGUNAKAN SCOR DAN FAHP	Sarah Azmiyati, Syarif Hidayat (2016)	Challenges faced by the manufacturing world, always changing and getting heavier from time to time. Competitive advantage in this era is not only determined by the ability of an	Conclusions obtained from the process SCOR in LMP consists of 4 core processes, namely Plan, Source, Make and Deliver. Plan carried out by Marketing and PPIC; Source by Procurement and Warehouse; Make by

No	Title	Author (Year)	Method	Result
			industry to create a lot of output per unit of time. Productivity is important but not enough as a provision to compete in the market. Customers are starting to be able to differentiate products based on their quality. Product quality is too highly dependent on processes, people, and the system as a whole. Quality control It's no longer enough just to do the product inspection	Production and Deliver by Logistics. The measurement variables used are customer-focused includes Reliability metrics [Perfect Order Fulfillment], Cost [Total Supply Chain Management Cost], Asset Management [Cash to Cash Cycle Time] and Responsiveness [Order Fulfillment Cycle time]. For 2015, the LMP performance score is 81.02%, and is in the Good category according to the indicator monitoring system

No	Title	Author (Year)	Method	Result
			model, but more fundamentally by looking at the process.	performance by Hvollby. Gained 9 metrics with low-performance scores, namely: 1) Delivery Performance to Customer Commit Date [60%] 2) %Faultless Installation [55%] 3) Rout Shipments Cycle Time [60%] 4) Deliver Cycle Time [30%] 5) Ship Product Cycle Time [60%] 6) Load Vehicle & Generate Shipping Documentation Cycle Time [60%] 7) Install Product Cycle Time [30%]. Amount of time between companies paying

No	Title	Author (Year)	Method	Result
				materials to suppliers and receive payments from customers for products made from material i.e., 325 days for 1 period i.e. January 2015 – November 2015.
10.	Pengukuran Kinerja Rantai Pasok Dengan Model Supply chain Oprations Refrence (SCOR) dan Metode Perbandingan Berpasangan	David Try Liputra, Santoso, Nadya Ariella Susanto (2018)	The rapid development of the industrial world has resulted in increased competition between companies, in which the competition is also getting tighter. This condition shows the importance of improving	This research combines the application of SCOR model and comparison method in pairs (pairwise comparison) in measuring supply chain performance from a packaging company product. From the results obtained, it is known that the performance of

No	Title	Author (Year)	Method	Result
			performance, doesn't it? only within a company but also other parties in the relevant supply chain, to be able to compete with other companies or supply chains	metric attributes that have the highest priority interests are make criteria (M), attribute reliability (R), and sub-criteria MR-1 (conformity with specifications product). Overall, the current performance of The company's supply chain is good (good). In the future, this research is still can be developed towards the formulation strategies for performance improvement

No	Title	Author (Year)	Method	Result
				the supply chain of the company becomes even better (from good to excellent).
11.	Pengukuran Kinerja Rantai Pasok Menggunakan Metode SCOR dan AHP pada unit pengantongan pupuk Urea PT. Dwimatam Multikarsa Semarang	Rizqi Rahmawati Chotimah, Bambang Purwanggo, Aries Susanty (2020)	In the procurement process, this company often experiences delays in raw material so that it affects the delay in the production process time resulted in not achieving the production volume target of packaging fertilizers and delays in delivery. Therefore, an evaluation of the company's supply chain	Based on the results of research that has been done some conclusions can be drawn, namely: 1. From the results of research that has been carried out from 35 Supply chain KPIs, there are 30 supply chain KPIs which is suitable to be applied at PT. DMK. This result according to the results of the first questionnaire, namely KPI selection questionnaire filled out by 10

No	Title	Author (Year)	Method	Result
			performance is needed, which aims to know the performance of supply chain performance, identify problematic indicators, and determine the proposed improvements to these indicators.	respondents. For 5 KPIs that were not selected includes indicators of debt, receivables, value at risk at the plan, shipping cost, cost of goods sold (HPP). For indicators of debt, receivables, value at risk at plan were not selected because the data are the company secrets, while for indicators of shipping costs and HPP were not selected because what determines the amount of the cost is not

No	Title	Author (Year)	Method	Result
				PT. DMK, but a main supply company PT. Princess. 2. From 30 companies' supply chain performance indicators that have been selected, after the process of scoring and weighting, the total score of supply chain performance of PT. DMK, which is 73,344. According to the total value chain performance as indicated in the monitoring table, the supply is in good condition (Well). 3. There are 30 company's supply

No	Title	Author (Year)	Method	Result
				chain performance indicators selected, after being evaluated one by one 13 performance indicators are still available under average and marginal conditions, which means that they have not reached a good enough condition. It is largely due to there is no thorough planning process from the procurement process, bagging production, until delivery, as well as the absence of good coordination between suppliers, PT.

No	Title	Author (Year)	Method	Result
				DMK, as well as distributor companies. 4. According to the research results, most of the problems supply chain experienced by PT. DMK is lack of coordination between stakeholders, such as suppliers, companies, and distributors. Therefore recommended strategies are given to this research includes a flexible supply base, strategic stock, supply management,

No	Title	Author (Year)	Method	Result
				manufacturing planning and scheduling, information management, coordination, and activity-based costing, and distribution planning.
12.	PENGUKURAN KINERJA SUPPLY CHAIN DENGAN PENDEKAN METODE SCOR	Jejen Zaenal Mutaqin, Sutandi (2020)	So among the efforts that can be done is to measure and improve the quality of supply performance chain management, to measure supply chain performance, a KPI (Key Performance Indicator) is needed	Data processing in this study uses the Green SCOR model with six main components namely Plan, Source, Make, Deliver, Return and Enable. 1. Application of the SCOR (Supply Chain Operations Reference) method approach to chain management supply at PT XYZ that was carried out, it was found

No	Title	Author (Year)	Method	Result
			appropriately. and the most relevant performance measurement tool is to use the Supply Chain model approach Operations Reference (SCOR), a model designed by the Supply Chain Council (SCC)	that the company PT XYZ was in the category Good with a value of 89.31 out of 100, while the value found is not perfect because it is still there are 4 KPIs that are categorized as red out of a total of 21 KPIs, which means they need it improvements, among the 4 KPIs that need improvement are water used, Upside Source Flexibility, Source Cycle Time, and Make Cycle Time. 2. The supply chain measurement process at PT XYZ begins with the

No	Title	Author (Year)	Method	Result
				supply chain process being mapped using the SCOR (Supply Chain Operations Reference) method to 6 processes, namely plan, source, make, delivery, return, and enable, in which 6 processes has a sub-process or indicators which are then identified by relevant stakeholders according to their goals and needs. Results identification of indicators that have been deemed appropriately and considered relevant by

No	Title	Author (Year)	Method	Result
				stakeholders then defined and formulated. To assist the process of calculating the score value where weight is given to each business process and each indicator, the weighting is carried out by using the Analytical Hierarchy Process (AHP). The weighting results are normalized using the snorm de Boer theory to get a uniform unit of value. then the final stage, the whole result of the calculation is processed using the traffic light theory to obtain the

No	Title	Author (Year)	Method	Result
				result value, which aims to know which indicators are included in the red zone so that improvements need to be made by the company PT XYZ.
13.	PENGUKURAN KINERJA RANTAI PASOK UKM KALAMAI UNI WAR MENGGUNAKAN METODE SCOR DAN FUZZY AHP	Misra Hartati, ST., MT (2019)	The development of the industry is currently growing rapidly, causing increased competition between the manufacturing and service industries. The manufacturing and service industries are growing rapidly	a. Based on the research that has been done, 22 indicators affect performance Kalamai Uni War SME supply chain. 5 indicators consist of the planning process, which covers 4 indicators, then in the making process, there are 6 indicators Fourth, the delivery process consists of 4

No	Title	Author (Year)	Method	Result
			at this moment. Every company wants to create good, quality products and preferred by consumers. To improve product quality, the company should think of ways to increase productivity while still paying attention to quality goods. Not only from the productivity and product quality but from the raw materials until the finished product that is	indicators, and the last process is the return with 3 indicators. b. Based on the analysis of the performance values achieved by UKM Kalamai Uni War, is calculated as 68.68 classified as an average category. The highest performance is in the process make and the lowest in the return process. c. The proposed performance improvement strategy using the mapping strategy provides a proposed strategy as many as 14 strategies, namely improving the

No	Title	Author (Year)	Method	Result
			used by consumers.	planning process in the production section, right time in the delivery process, increase employee morale by give bonuses, make notes or books for production scheduling, increase accuracy in delivery, improve the ability to meet demand, provide facilities for employee breaks, improve the accuracy of the amount and time according to customer demand, improve product quality, increase profit,

No	Title	Author (Year)	Method	Result
14.	PENGUKURAN CAPAIAN KINERJA SUPPLY CHAIN : STUDI KASUS PADA PT EASTERN PEARL FLOUR MILLS MAKASSAR	Andi Abdul Azis Ishak (2019)	This research aims to observe and measure the performance of the supply chain implemented by PT. Eastern Pearl Flour Mills in Makassar. The research was conducted by using Supply Chain Operation Reference (SCOR) Method. There are five components, reliability, responsiveness, flexibility, costs, and assets, being assessed and tested as to	Based on the performance measurement that has been carried out on the supply chain of PT Eastern Pearl Flour Mills, in 2017 used the SCOR version 10.0 and gap analysis, the results obtained are Supply Chain Management Cost (SCMC) and Cost of Averages Sold (COGS) has been in a position excellent with each gap value of 20% and 12%. Perfect Order Fulfillment (POF), Order Fulfillment Cycle Time (OFCT) and Cash to

No	Title	Author (Year)	Method	Result
			whether it is aligning and appropriate as the best way to achieve a business's objectives. It is found that both Supply Chain Management Cost (SCMC) and Cost of Averages Sold (COGS) were in a high level of performance (excellent positions) with a gap value of 20% and 12%, respectively. Meanwhile, Perfect Order Fulfillment (POF), Order Fulfillment Cycle Time (OFCT), and Cash to Cash	Cash Cycle Time (CTCCT) is in a good position with gap values of 6% and 15%, respectively and 10%. Meanwhile, Return On Supply Chain Fixed Assets (ROFA) and Return on Working Capital (ROWC) is still in the average position with a value of each gap is 8%. From the gap value analysis, it can be concluded that the overall performance of the existing supply chain at PT Eastern Pearl Flour Mills has been managed

No	Title	Author (Year)	Method	Result
			Cycle Time (CTCCT) are only at a moderate level by indicating results (gap value) around 6%, 15%, and 10% respectively	well as most metrics the measurement used has been in the position excellent and good position. In addition, integrative and collaboratively on the supply chain of PT Eastern Pearl Flour Mills has also been applied.
15.	The 5s and kaizen concept for overall improvement of the organization: a case study	Int. J. Lean Enterprise Research, Vol. 1, No. 1, 2014	The literature has suggested that 5S and kaizen, if applied properly, can result in overall organizational improvement. This study aims to help small industries by	This research aims to apply some of the 5S and kaizen principles to help small-scale manufacturing organizations become more efficient and productive. This paper systematically

No	Title	Author (Year)	Method	Result
			using the 5S and kaizen principles. Up to now, the xyz industry has used good old manufacturing technology. But to stay in business and respond to a changing environment, the industry has to leave traditional manufacturing techniques behind and needs to keep up with new manufacturing techniques. There is a need to make the company competitive enough to survive. There	categorizes, analyzes, and methodically reviews the published literature. In the case study framework, 5S and kaizen rules in organizations have been analyzed and implemented. Based on the case studies, it can be stated that introducing 5S and kaizen rules brought major changes in the organization, for example, increased effectiveness and efficiency in processes, increased visibility of processes, increased morale, and organizational security.

No	Title	Author (Year)	Method	Result
			is a need to build a culture of continuous improvement. Activities carried out within a company are categorized as value-added activities (VAA) and non-value-added activities (NVAA). The customer only pays for the product's VAA and not for the NVAA. After extreme brainstorming and a detailed thorough study of the shop floor, it was found that the material flow contains	employees, reducing delays, search times, and hazardous conditions. 5S and kaizen are powerful tools and can be implemented in any industry, be it micro, small, medium, or large. The implementation of 5S and kaizen has a large horizontal development and can be implemented in all workstations of the organization. The 5S and kaizen methods start every improvement program in a company. The result is an effective

No	Title	Author (Year)	Method	Result
			various forms of NVAA and that is the reason the company desperately needs change in the organization. Starting with an effective event to implement 5S and kaizen requires careful planning, design, and execution of the business changes needed to achieve the desired improvement goals. Implementation should not begin unless top management firmly	workplace organization. The publications and case studies presented in this paper will be useful for researchers, professionals, and other parties related to this subject to understand the importance of 5S and kaizen.

No	Title	Author (Year)	Method	Result
			champions the effort with the understanding that many business processes must be changed. Company XYZ was selected for the case study, which is a small-scale industry located in Ambala, Haryana (India).	

2.2 Deductive Study

2.2.1 SWOT

Micro, Small, and Medium Enterprises (MSME) are one of the most important parts of the Indonesian economical structure because they open so many work fields and bring income to the country, Micro, Small, and Medium Enterprise (MSME) is an enterprise that develops something from nothing to something that can a much higher value toward the service and the product, in which resources are inputs, added value and then transformed through a developing system into finish goods or product and service, According to Rudjito (2003), states that the notion of Micro, Small and Medium Enterprises and Medium Enterprises (MSMEs) are businesses

that have an important role in the Indonesian economy, both in terms of the jobs created and in terms of the number of businesses.

SWOT analysis is a method to visualize a company image in detailed images, it comes from the identification of a company that sees and categorize the condition into Strengths, Weakness, Opportunity, and Treats. This method was part of the method that can be used to make business plan. One of the most important things in running a business is to see the business itself and also our company, so we need planning. In planning, the company needs to see and judge the current situation and the future visualization that can influence the company to achieve its goals. With this SWOT analysis, we can see the characteristic of the main strength, added strength, and neutral factor, main weakness, and added weakness, based on the internal and external factors (Alma, dan Priansa, 2009: page. 115-125).

SWOT analysis is an analysis that analyses many factors, internal or external factors are analyzed in SWOT analysis, SWOT analysis is conducted systematically so that the data can be more accurate. SWOT analysis was focused on analyzing what is the power that a company has (strength), the thing that the company cannot do (weakness), the thing that can threaten the company (threat), and the thing that might give a profit to the company (Opportunity). That is gathered to make a strategic decision for the company.

SWOT matrix is a tool to categorize the important and strategic aspects of an organization that can give images of the condition of the company in detail, and it's important to make a strategic decision so that we can make the right decision.

1. Strength is the internal situation of the organization in the form of competence/capability/resources owned by the organization, which can be used as an alternative to deal with threats.
2. Weakness is the internal situation of the organization where are the organizational competencies/capabilities/resources difficult to use to handle opportunities and threats.
3. Opportunity is a situation external to the organization that is potentially profitable. Organizations that are in the same industry will generally feel the benefit when faced with external conditions. For example, certain market

segments that have not been entered by other players will generally be an opportunity for any organization that has managed to see the market (Tripomo, 2005: pp. 118-119).

4. The threat is an external condition that potentially causes trouble. Organizations that are in the same industry, the public will feel harmed/complicated/threatened if faced with these external conditions. Example: In the following year, the foreign new player will come and equipped with advance technology and strong capital. In general, this condition will be a threat to all organizations currently in the same industry.

~~SWOT analysis method can be categorized as a basic analytical method that is very useful to give an image's about what happened in a company from 4 points of view, in the strong point of view, weakness, opportunity, and threats. The result of SWOT analysis is direction/ recommendation to add more in one field, or the other; several things need to be considered in making a SWOT analysis :~~

1. SWOT analysis can be very subjective, therefore, two people analyze the same company but generate different SWOTs.
2. Analysts must be realistic in describing strengths and internal weaknesses. Hidden weakness or unexplained power will make direction strategy becomes unusable.

3. The analysis must be based on current conditions, not a situation that should have happened.
4. Avoid "gray areas". Avoid the unnecessary hassle and excessive analysis

1. SWOT Matrix

The SWOT matrix is one of the basic metrics in this research. The SWOT matrix is one of the performance tools for developing four types of strategies, namely SO (strength-opportunity) strategy, WO strategy (weakness-opportunity), ST strategy (strength-threat), and strategy WT (weaknesses-threats) (Widiyarini., Hunuselela., Z., F., 2019).

1. SO strategy is a strategy that is determined based on the organization's way of thinking to utilize all the power to seize and take advantage of opportunities as much as possible. This is what an aggressive strategy is positive, namely attacking full of initiative and plan. Strategies that take advantage of strengths so that opportunities exist can be utilized. Data on programs or activities that will be implemented, when and where it is carried out so that organizational goals will be achieved in a planned manner and measurable. In SO strategy, the organization pursues external opportunities by considering organizational strength.
2. WO strategy is a strategy that is determined based on taking advantage of existing opportunities by minimizing weaknesses in the organization. In this case, it is necessary to design turnaround strategy is a turnaround strategy. Huge external opportunities are important to seize. However, internal problems or weaknesses that exist in the internal organization are more important to find solutions, so the achievement of this great opportunity needs to be lowered the scale is small. In this case, the weaknesses organization needs to be improved, and solutions are found to get that opportunity.
3. ST strategy is a strategy that is determined based on the power that the organization has to overcome detected threats. This strategy is known as diversification strategy or differentiation strategy. It means no matter how

big the threat is, panic and haste only make things worse for that an organization with great power and independence can be used as a weapon to address these threats, and identify strengths and use them to reduce threats from outside.

4. WT strategy is a strategy that is applied in the form of activities that are defensive in nature and seek to minimize weaknesses and avoid threats. Because under these conditions, organizations that are in danger, Weaknesses override internal conditions with threats from outside will also attack. If you don't take strategy right, then this condition can have a bad impact on the image and the existence of the organization in the future; what needs to be done is together with all elements of the organization to plan an activity to reduce organizational weaknesses, and avoid external threats.

	Strengths	***Weakness***
Threats	ST Memanfaatkan potensi untuk menghadapi ancaman	WT Meminimalkan kelemahan untuk menghadapi ancaman
Opportunities	SO Memanfaatkan potensi untuk meraih peluang	WO Mengatasi kelemahan untuk meraih peluang

Figure 1. SWOT Analysis in Developing Company
(Istiqomah., Andriyanto., 2017)

2.2.2 Supply Chain management

The supply chain is one of the important elements of the industry, and even nowadays, supply chains were become very popular due to the massive expansion of delivery industries. Supply chain management is the foundation that supports the fulfillment of consumer needs carried out by manufacturing, retail and wholesale

businesses. In other words, SCM is a critical success factor for these businesses (Anindita K., 2021).

The supply chain in every business can be different. The most basic version includes the company, its suppliers, and the company's customers. For larger companies, however, the scope is also wider. The main objective of supply chain management is to manage and coordinate supply & demand effectively. Thus, problems that may arise in the supply chain management process can be handled effectively and efficiently.

Supply chains were introduced by several logistic consultants in the 1980s, which in the future were analyzed by several researchers for more specific and better ones in the 1990s, which made the concept of supply chain management born. Supply chain management is an integrated activity between procurements and services, production into a half-done project and end product, and shipment to the customer (Ariana D., Dwiyanto M., 2013). According to Turban (2004), there are 3 main elements of the supply chain, that is :

1. Upstream Supply chain

   Upstream Supply Chain is an activity that is related to the thing that involves a company with some supplier. The relation between them can be wider with the earlier supplier. The main activity is procurement.

2. Internal Supply Chain

   The internal supply chain is the activity that has the input from inside of the company that can be produced to be a product from one company. In the Internal Supply chain, the activity included production and fabrication.

3. Downstream Supply Chain

   The downstream supply chain is a supply chain in that all activities included the shipment of products from the company directly to the end customer.

2.2.3 Supply Chain Operation Reference (SCOR)

(Paul, 2014, p.xii) Stated that the Supply Chain Operations Reference Model (SCOR) is a supply chain language which can be used in various contexts to design, describe, configure and reconfigure various types of commercial business activities.

This model gives a framework for the business process, work indicator, best practice, and the technology that support the communication and collaboration between supply chain partner that make the supply chain effective.

The purpose of the SCOR or business process framework is to define processes in a way that is aligned with key business functions and objectives. How interacting processes are configured, and the requirements (skills) of the staff who operate the process (APICS, 2017). The SCOR model consists of 4 main parts:

1. Performance, which is a standard matrix to describe process performance and determine strategic goals.
2. Processes, namely standard descriptions of management processes and process relationships.
3. Practices, namely management practices that result in better process performance significantly good.
4. People, namely the standard definition for the skills needed to perform supply chain processes. SCOR Process Hierarchy is shown in 4 (four) levels starting from the highest level is major processes, process categories, process elements, then improvement tools/activities.

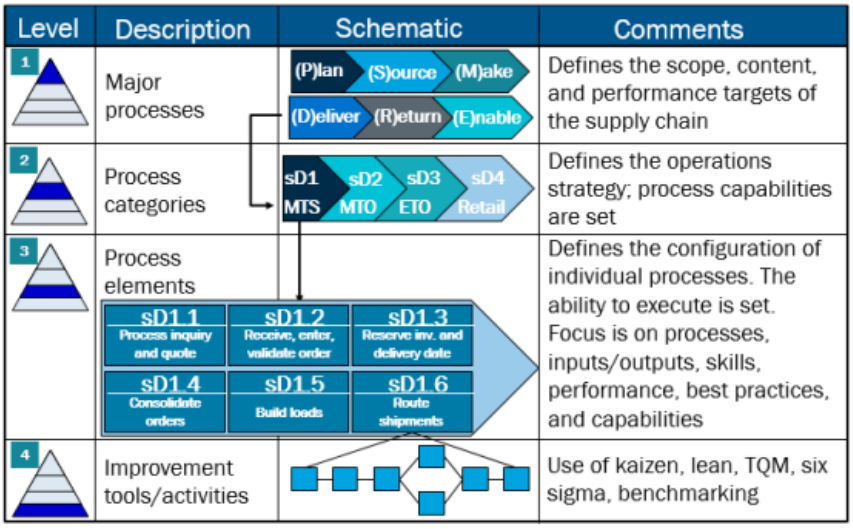

Figure 2. SCOR Hierarchical Process Model

APICS (2017)

As we can see in graphic 4, the model is designed to support supply chain analysis at multiple levels. SCOR was not meant to give an organization an exact way about how an organization should conduct its business. Every company that uses a supply chain to improve their business was needed to make a model at least to level-4, using industry, organization, and location-specific processes, systems, and practice.

2.2.4 SCOR performance

The performance section of the SCOR supply chain management method was focused on the measurement and assessment of the outcomes of supply chain process execution. The approach to understand, evaluate, and identify the supply chain performance had 3 main elements: Work attribute, Matrix, and the working process. Reliability, responsiveness, and agility were focused on the customer. Cost and asset management efficiency were considered an internal focus. All SCOR Metrix were classified in one working attribute (APICS, 2017). Here's the working attribute:

Performance Attribute	Definition
Reliability	The ability to perform tasks as expected. Reliability focuses on the predictability of the outcome of a process. Typical metrics for the reliability attribute include: On-time, the right quantity, the right quality.
Responsiveness	The speed at which tasks are performed. The speed at which a supply chain provides products to the customer. Examples include cycle-time metrics.
Agility	The ability to respond to external influences, the ability to respond to marketplace changes to gain or maintain competitive advantage. SCOR Agility metrics include Adaptability and Overall Value at Risk
Costs	The cost of operating the supply chain processes. This includes labor costs, material costs, and management and transportation costs. A typical cost metric is Cost of Goods Sold.
Asset Management Efficiency (Assets)	The ability to efficiently utilize assets. Asset management strategies in a supply chain include inventory reduction and in-sourcing vs. outsourcing. Metrics include: Inventory days of supply and capacity utilization.

Figure 3. Performance Attributes

APICS (2017)

1. Reliability

Ability to perform tasks as expected. Focus on the predictability of the outcome of a process. Common metrics for the focus attribute include the exact right time, right quantity, and right quality.

2. Responsiveness

   The speed at which tasks are performed, and the supply chain speed provides product to customers. Examples include the cycle time matrix.

3. Agility

   The ability to respond to external influences and the ability to respond to market changes to gain or retain a competitive advantage. SCOR's agility matrix includes adaptability and the overall value at risk.

4. Costs

   Supply chain process operating costs. This includes labor costs, costs materials, as well as management, and transportation costs. Cost metrics such as price selling point.

5. Asset management efficiency

   Ability to utilize assets efficiently. Asset management strategy in the supply chain includes inventory reduction and in-sourcing vs. outsourcing. The matrix includes usage and utilization inventory days capacity.

Each Performance Attribute has one or more level-1 strategy metrics. Matrix level-1 is a calculation that organizations use to measure how successfully to achieve the desired position in the competitive market space. Level-1 of each attribute can be seen in Table 3 below:

Performance Attribute	Level-1 Strategic Metric
Reliability	• Perfect Order Fulfillment (RL.1.1)
Responsiveness	• Order Fulfillment Cycle Time (RS.1.1)
Agility	• Upside Supply Chain Adaptability (AG.1.1) • Downside Supply Chain Adaptability (AG.1.2) • Overall Value at Risk (AG.1.3)
Cost	• Total Supply Chain Management Costs (CO.1.1) • Cost of Goods Sold (COGS) (CO.1.2)
Asset Management Efficiency	• Cash-to-Cash Cycle Time (AM.1.1) • Return on Supply Chain Fixed Assets (AM.1.2) • Return on Working Capital (AM.1.3)

Figure 4. Level-1 Strategic Metrix

2.2.5 SCOR Racetrack

SCOR Improvement Program Racetrack is an improvement program sourced from SCOR 12.0 as the basis for the preparation of improvement programs. Say Racetrack is taken from the word race or runway. In addition to the abbreviation of Supply Chain Operational Reference, SCOR in Racetrack stands for Set the Scope, Configure the Supply Chain, Optimize Project, and Ready for Implementation. Before starting the project, there is a process that must be passed, namely the pre-SCOR stage Program Steps.

The objectives of implementing the SCOR Improvement Program are as follows:

1. Learning how to set up a SCOR method supply chain improvement program.
2. Learning how to use the SCOR Reference Model framework to develop an effective supply chain improvement program.
3. Developing an understanding of the typical steps of the program increase in SCOR.
4. Developing an understanding of how to use the racetrack SCOR supply chain improvement program.
5. Developing knowledge and skills to complete the results main implementation program.
6. Exploring case studies that describe the implementation of SCOR Racetrack and SCOR 12.0 framework.

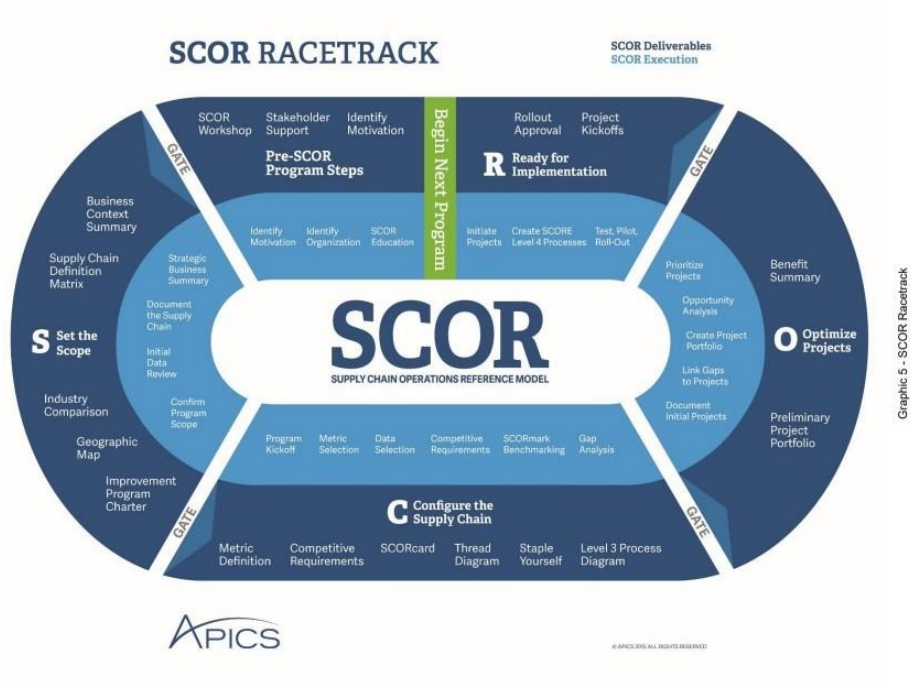

Figure 5. SCOR Racetrack

APICS (2017)

In supply chain management, there is a method called SCOR Racetrack. The method described how to organize a SCOR improvement using the SCOR process and supporting methodologies. The methodology is described in 5 steps:

- Pre-SCOR Program steps: this step prepares the organization for the mission-critical SCOR improvement program
- Set the scope: in this step, we will understand the business environment and define the scope of the supply chain for the SCOR improvement program
- Configure the supply chain: here, we Determine the performance metrics and processes of the SCOR Improvement program
- Optimize project: in this step, we will establish the project portfolio, including process scope, priority, and anticipated benefits
- Ready to implement: in this step, the design was ready to be implemented in the portfolio and commence benefits realization.

2.2.6 Concept 5s

5s (seiri, seiton, seiso, seiketsu, shitsuke) are the 5 steps and principles to arrange works place and maintenance developed through intensive efforts in the field of manufacture. After being translated to English, the 5s become (concise, Neat, Clean, Treat, and Diligent) below is the explanation of the 5s Kaizen:

1. Seiri

   Seiri is distinguishing between what is a need and don't in the workplace area and eliminating the unnecessary ones. To create a compact workplace that only accommodates the needed one.

2. Seiton

   Seiton is the thing that needs to be put in the right position so that it would be ready when needed, so it will increase the efficiency on the working place.

3. Seiso

   Seiso is the maintenance of the machine that will assure the machine will be clean and ready to use when needed. It will create a clean workplace and work environment. Cleaning here means a process that considers every machine or tool nice and clean. It is important because it will increase the effectiveness when the machine is ready to use.

4. Seiketsu

   Seiketsu is expanding the concept of personal hygiene and continuously practicing the previous three steps. It means the company must maintain the current situation well through the standard that has been created.

5. Shitsuke

   Shitsuke is a personal building like self-discipline and gets used to applying 5s through their works and standardization.

CHAPTER III
METHODOLOGY

1.1 Research Object

This research has conducted at Sahara Aluminium, located in Sleman, Yogyakarta, Special Region of Yogyakarta. This company was in the form of an Engineer to order. It is focused on making a product based on customer requests.

1.2 Data Collection Technique

a. Primary Data

Premier data can be gathered directly from the research object. Premier data that the researcher gathered were as below:

1. Interview

   Interviews were conducted by using questions and answer to authorized persons. In this case, the researcher was interviewing the owner of the company. It's needed to know the company's condition. The question that was given was connected with the problem that occurred and the way

2. Observation

   Observations were conducted directly to the research location. Observations were being held to see the real condition of the company in a wider and more precision to describe the problem that exists.

b. Secondary Data

Secondary data were data gathered from the literature review that exists. It's gathered from articles, journals, and books related to the research. Secondary Data are gathered indirectly, which is useful as supported knowledge.

1.3 Data Processes

In this research study, the goal is to maximize the efficiency and effectiveness of Micro, Small, and Medium Enterprises (MSME), especially Sahara Aluminium. To maximize the efficiency and effectiveness of Sahara Aluminium, researcher uses SWOT (Strength, Weakness, Opportunity, Threat) and SCOR 12 to design an effective and efficient way to maximize the profit.

1.3.1 SWOT (Strength, Weakness, Opportunity, Threat)

To acknowledge the company and map the company about which side should be improved and provide the best strategy for the company, it is necessary to use the SWOT method to map and acknowledge the company even better so that the design and the result of the research would be fit with the needs of the company. Several things will be focused on in this method:

1. Strength

   In strength, the researcher will search the company's power over another competitor, whether the company has power in product or management. Mainly it's a thing that company has power and benefits from it better than other competitors

2. Weakness

   Weakness is a defect, mistake, and limit in the organization that make the company hard to achieve their goals

3. Opportunity

   Opportunity is any situation that would be beneficial for the company. It's usually a trend or change of some kind and overlooked need that increased demand for products or services produced by the company.

4. Threat

   The threat is a potential external damage that threatens the company to achieve its goals.

1.3.2 SCOR

There are several steps to process the data that have been gathered, in this research researcher processes the data as follows:

1. First of all, the researcher identifies the background of the company, what company vision and mission, the company's major view, and its organizational structure according to observations and interviews in Sahara Aluminium.
2. After that, the next step is creating a supply chain definition matrix that is gathered from quantitative data, like sales, production, etc.
3. Creating geographical mapping in Sahara Aluminium based on the location of the customer, their supplier, warehouse, etc.
4. After problems are found then, in this step researcher will choose the performance attribute using SCOR level 1 performance metrics and then continue to assemble level 2 metrics from the performance attribute that has been chosen.
5. Later, the researcher will arrange metrics data collection in detail where the data were gathered from observation and interview
6. In this step researcher conduct benchmarking on the specific industries, internal target, and specific data to continue in the analysis of the gap in detail supported by a thread diagram
7. Crating a level 3 processes workflow
8. Identifying the cause of the gap that occurs in the company through a fishbone diagram
9. Create metrics gaps in detail through the quantitative method to get an alternative improvements performance
10. Identifying issues in the work field with performance issues worksheet and conducting grouping with the issues that have a similarity in terms of character to be continued to create a project list for improvements.
11. Conducting opportunity analysis that will be converse into a nominal in rupiah to know the impact of the improvement that will be implemented on the company.
12. Conducting a forecast in recommendation about the need in infrastructure and other things that will support the implementation of the improvement program that has been designed.

1.3.3 5S Kaizen

By applying the 5S Kaizen concept, there are several benefits for companies to build a solid foundation in building a productive, efficient, high level of work ethic and a disciplined culture to achieve green manufacturing. The 5S Kaizen program also provides a foundation for changing the attitudes, behaviour, or thinking of management and employees to increase productivity based on the "KAIZEN" principle, namely, through gradual but continuous improvement. 5S stands for Seiri, Seithon, Seiso, Seiketsu and Shitsuke. It is a sequence and technique for structuring the workplace and the work environment. 5S can be interpreted as sorting, systematic, brilliance, standardization, and maintenance, which means that by improving the above points, the company will be able to ascend and reach his goal of getting to the point of green production.

1.4 Research Flow Diagram

Flow chart diagram is a flow of research that is conducted by first preliminary study, and then literature review, observation, choose a fit method to overcome issues, analyze the problem to make improvement by using a method that has been chosen, make a result and based on that researcher can make conclusion and suggestion, finish. Those flows are depicted in Figure 7 below:

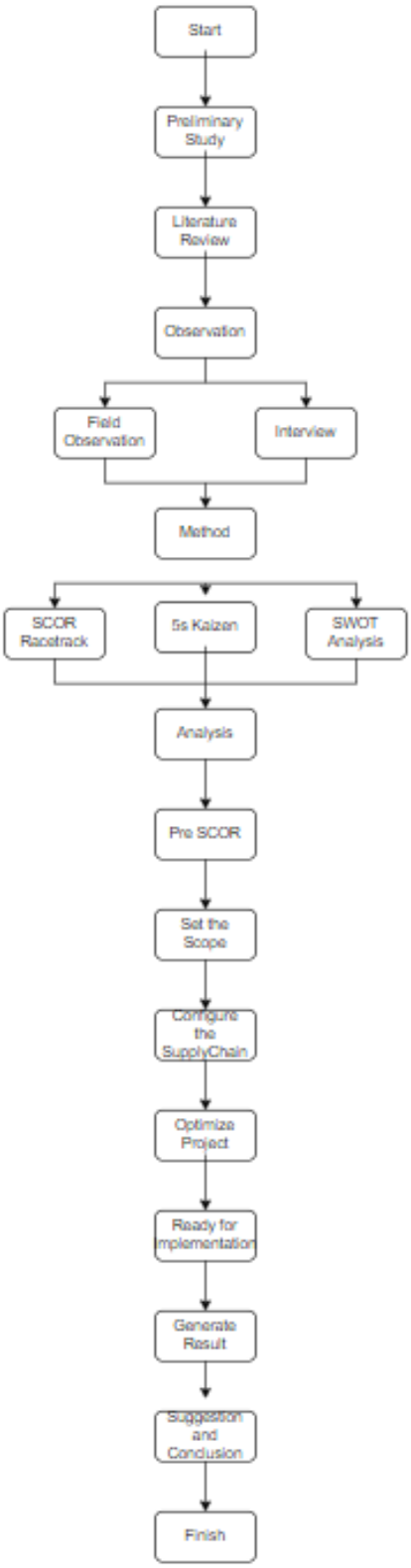

Figure 6. Flowchart Diagram

According to the picture above, it can be explained in several steps, as follow:

1. Preliminary Study

   In this step, the researcher starts to identify the condition in the field. These steps were meant to know the possible issues that might happen, and then the researcher can start to learn the basic knowledge by reading some journals that might have a similar problem.

2. Literature Review

   In this stage, the researcher starts to make a study to have a basic understanding about what will happen in the field and how to overcome it through some literature that has been created before, which might have a similar case.

3. Observation

   In this step, observations were conducted in two ways. First there's primer observation which the data were directly collected from the field, and secondary observation which the data were collected from the journals that have a similar problem or previous research that can help a researcher to understand the problem that happened in the field and how to overcome it. First, the company profile is the initial data for the research, ,and then the researcher begins to identify the activity of the supply chain in performance.

4. Method

   In this the method that will be used were selected, a method that will be used must be related to the problem and can figure out how to overcome the issues and how it can make improvements for the company. Therefore, the researcher chose SWOT analysis, 5s Kaizen, and SCOR Racetrack 12.0. SWOT analysis was chosen because it can show the researcher what kind of strategy that company should choose, later, the SCOR Racetracks will give an image of the problem and how to overcome it. 5s Kaizen can be the

key to sustain the improvement, by implementing some principals based on 5s Kaizen.

5. Analyze

   In this stage the data that have been gathered from the observation, whether it is primary or secondary data will be further analysed. There are several steps that will be conducted in order to analyze this data, as follows:

   a. Pre-SCOR

      In this step, the problems were being identified based on the performance level. This identification was important because it will provide the perspective about what actually happened in the field in the form of performance level and can identify which one should be improved in the company based on the performance level. In this point, the researcher will give an explanation to Sahara Aluminium about the SCOR Racetrack. Three main phases are introduced as follows:

      1) Identify Improvement Motivation

         In the first stage in pre-SCOR with IKM, determine what needs to be developed. At this stage, it will also determine what methods will be used during the project. In this process, an analysis of the conditions that occur in SMEs will be carried out and classified into each category for easy to determine what performance should be developed. Besides performing analysis, SCOR 12.0 is also delivered on how to run a project based near SCOR Race Course. These activities can be in the form of workshops for owners and employees in SMEs.

      2) Identification of SCOR Program Organization.

         Once employees fully understand SCOR 12.0 and how to work on a project using SCOR Racetrack, the next stage is forming an organization to carry out the project. The

organization consists of all components of the appropriate IKM with their respective fields and competencies. Exodus from the formation of the organization is in order to achieve the success of the project as expected and also as function of supervision during project design, implementation, and evaluation of the project.

3) Plans for the next phase

When the concept and supporting organizations have been formed, next is where the project will continue its implementation or not. Some of the components that need to be considered regarding decision-making, include:

- Total cost calculation (Cost Estimate)
- Scheduling on each project component (Scheduling)
- Resources and tools needed (Resources and Requirements).

Decision-making in formulating the above components must be carefully calculated to help determine its use approach of Project Management. It is expected that throughout analysis and careful consideration will eventually result in a decision regarding the project in the IKM.

b. Set the Scope

At this stage, an understanding of the business environment and determining the scope of the supply chain for the SCOR improvement program are carried out. In determining the scope of the supply chain, there are main tasks that must be considered, as follows:

1) Description of the business context and supply chain from a high-level view (from the company's point of view) that the competitive landscape can use SWOT analysis to understand the business position or supply chain position,

so what kind of business strength, which part of the company that is more dominant, where does the source come from? In describing the business context, data can be obtained from stakeholders, financial statements, business plans, competitive analysis, and even from independent, which means the company wants to identify how the conditions of the supply chain in the company today.

2) Documenting the supply chain or visually mapping the supply chain, such as who the customer and the market are; what products and services; who is the supplier and the channel partner, and what is the marketing organizational structure like, the organizational structure of procurement, and the type of product service requested by the customer. The data obtained from:
   - Customer and markets: derived from marketing, business development, and other organizations that are customer-segmented.
   - Products and services: derived from ERP and product management systems.
   - Suppliers and Channel partners: strategic and organizational sourcing business development to identify who the supplier is and where the location is. This data are obtained from master suppliers such as ERP, SRM, and logistics systems.

3) Prioritizing the Supply Chain, the goal is for the SCOR team to recognize that not all supply chains will provide value or benefits for a company. Suppose there are several supply chain networks that generate very high revenue but there are also some, which are not so high and need to be prioritized, as well as to be sorted according to relevance. So you can use quantitative supply chain criteria to

determine the ranking of {Size; revenue; volume and margin, Complexity (SKUs or number of items sold), Strategic importance (such as opening branch markets in other countries), cash consumption, risk, volume variability}

4) Geographical depiction of maps with the aim of:
   - Visualization of the total scope of business operations.
   - Enable inventory visualization and information flow between different supply chain entities.
   - Enable identification of what product or service package is sold to which channel entity.
   - The addition of financial data can identify the largest sales revenue and profitabilityoccur in supply chains.
   - Linkages of SCOR processes with supply chain entities are possible.
5) Collecting performance data (high-level data) relevant to Supply Chain improvement programs and also finding performance Which GAP is found. The gap itself is in which position.
6) Defining the scope of the improvement program and getting the agreement referred to an agreement that arises from current supply chain conditions. The current supply chain condition is obtained from the current performance matrix, then from there will get a gap.
7) At each step, it must be decided what is found in the process of setting the scope will be approved or not by the research team (go, no go decision), to take a further research decision since the areas of improvement already found.

c. Configure the Supply Chain

At this stage, the determination of performance metrics and processes from SCOR is carried out for an improvement

program that covers 6 main tasks and 7 variable . 6 The main tasks are as follows:

1) Improvement Program Kick-off (meeting)

The goal is to create, create motivation and enthusiasm and provide a general understanding of the SCOR program in an organization. The scope has been determined in the previous stage. then at kick-off at this stage. The kick-off meeting is in the form of presentations such as motivation, the reason for making SCOR, commitment, structure, and making a summary of the scope, which then convey to management at the kick-off meeting.

2) Selecting the SCOR performance attribute used to measure

supply chain performance

The goal is to get support and commitment from both the internal team and external. Then, the selected SCOR performance attribute is selected and used to measure supply chain performance. After kickoff is completed, then, the next stage is carried out to choose the performance of SCOR, it can make a selection from the performance gaps (where previously we have done initial identification) so that when choosing performance gaps it can choose gaps based on consensus or based on standards. The goal is to identify and select what metrics will be used for improvement. The first thing to do is educate the team. Metric can be applied, just different in its implementation between those in SCOR 12.0 and those in the supply chain company. Therefore, the definition, how to calculate, and the SCOR 12.0 model must first be understood so that when taking

measurements, the baseline is already accurate. Then, the team matches the different standards in SCOR with the conditions in the field. So that there are

agreements between in-company metrics and in-house metrics SCOR model. If it is not appropriate, it must be adjusted, for example, the adjustment can be performed by involving some modifications because SCOR has general properties, not customized. Second, when determining performance, comparison can be carried out with the competitors by comparing data with benchmarks or compare it with existing standards. However recommended, the selected metric to improve is no more than 3 in level 1. Then a metric selection will be made, and it can be from the position supply chain or originated from management advice and consensus of the team. Besides that, benchmarking of similar industries can be conducted to see which gap is the biggest that should be improved. At the time of the selection, data must be collected from level 2. Level 1 is selected, then level 2 is measured. Level 2 is measured to determine what % of level 1 is.

3) Collect detailed data

Identifying the owner of the data, by collecting data level 2 then calculating them to find out percentage value from level 1, which is presented in the Metrics Data Collection table. The value for level 1 is taken from the lowest value of level.

4) Benchmarking

After getting the data, the next stage is the benchmark process against competitors or other standardization. The goal is to determine targets and performance

comparisons in an organization with comparable industry organizations and the same types of processes. Then the process of determining the target metric target is carried out, namely parity (same) with 50% percentile, advantage (good) with 70% percentile, and superior (quality/very good) with 90% percentile. This is determined based on competitive analysis.

5) Gap analysis

This stage is used to determine the position of the current supply chain with target. The goal is to carry out the process of selecting priority metrics process improvement will be carried out. Next is the process illustration using Thread Diagram, modeling level 3 processes workflow, fishbone diagram to identify the cause gaps, compiling detailed gaps metrics, and determining alternatives using Pareto diagrams.

6) Plan for the next phase

At this stage, the team must carry out a decision-making process, and a detailed agreement on the activities and resources repair process is carried out.

d. Optimizing Projects

At this stage, a list of all improvement projects is identified and carried out in the previous stage for a benefit-cost assessment of these projects, then identification of SCOR level 3 is processed. Later, linking performance gaps to projects, then document the expected benefits or opportunities of each project. The next goal is to prioritize which projects must be improved. Outputs or deliverables from this stage are as follows:

1) Initial project portfolio.

2) Project portfolio.

3) The final phase plan is ready for implementation. The implementation steps are as follows:

1) Making a matrix of the list of process issues or defects compiled in the previous stage.
2) Grouping performance issues into implementation projects that use a combination of SCOR processes.
3) Connecting the benefits of each project.
4) Sorting the projects from one with the highest benefit to be selected. The improvement is carried out first using the impact matrix, improvement, return to complexity, effort, risk.
5) Authorization and planning for the next stage, ready for implementation.

e. Implementation

Carry out basic development of selected metrics as best practice from merging level 3 and level 4 processes, then by solving in the form of the selected design to be implemented as test material, pilot, roll out the solution. After the project has been agreed upon by the project team, the person who is wading has benefits and has an impact high, and already has scheduling and priorities, then the team into the implementation readiness stage. The stages are as follows:

1) Starting a project kick-off (a project that has been determined by the team).
2) Discussing the project charter (this activity is more specific than set the scope). Like an improvement project charter which is more detailed than set the
3) Defining the project schedule.
4) Assemblying to SCOR level 3 and level 4 processes based on best practice. If the best practices already

found for project improvement, then the best practice process described at level 3. Next, it will be described in more detail to level 4 process using best practices in good industries. Level 4 process will serve as activities to improve processes.

5) Then determining from the selected design approval (six sigma, kaizen, lean, etc.)
6) Configure, test, pilot, and rollout solutions.
7) Starting the next project

6. Generating Result

After data processing, the next step is conducting analysis and discussion to know improvement suggestions in the performance supply chain at Sahara Aluminium in accordance with SCOR Racetrack method.

7. Suggestions and Conclusion

The conclusion contains the result, processing, and analysis of the data to answer the purpose of this research that have been set. On the other hand, the suggestions were based on the consideration and recommendations that will be given to improve the next research.

CHAPTER IV
DATA COLLECTION AND PROCESSING

4.1 Pre SCOR

4.1.1 Company Profile

Company Name	: Sahara Aluminium
Owner	: Ali
Company Form	: Individual
Company Product	: cupboard, aquarium, table, chair, shelf
Raw Material	: Aluminium, Glass, Iron, Wood
Location	: Jl. Kaliurang KM. 14,5, Nglempong, Ngemplak, Sleman, Special Region of Yogyakarta
Worker	: 5 People

Sahara Aluminium is a home industry that focuses on Handcrafting that uses the Raw material of Aluminium, Iron, Glass, and wood. This home industry was founded in 2015 by Ali. The founding background of this company was triggered when the owner looked at so many demands on the market, but only a few that could provide the service to make a customizable product that could be designed by the customer. Yet, there were only a few people back then who could make it happen since usually, a company would rather to produce a product in a big amount of order rather than make a product based on the order. Because of that, Sahara Aluminium was founded.

4.1.2 Product

Sahara Aluminium produces several products of aluminum, glass, and wood that made into a cupboard, table, aquarium, shelf, and customizable things originated from woods, aluminum, and glass. Following are several products produced by Sahara Aluminium:

Figure 7. Shelf

(Source: Sahara Aluminium, 2021)

Figure 8. Steel Doors

(Source: Sahara Aluminum, 2021)

Figure 9. Stand

(Source: Sahara Steel, 2021)

Figure 10. Steel Shelf
(Source: Sahara Steel, 2021)

4.1.3 Vision & Mission

Vision:

"Always give the best customizable product for the customer that can satisfy customer needs"

Mission:

1. Create a high-quality product with the right precision based on the design
2. Help students making their designs into the real product
3. Build customer trust toward Sahara Aluminium

4.1.4 Production system

Technology

Technology in the form of machines that help the furniture work process at Sahara Aluminium.

- Wood cutting machine

  An instrument for changing the size and shape of semi-finished wood products and parts by cutting the wood and removing the shavings, either manually or by machine (lathes). Many types of woodcutting machine tools operate at cutting speeds of up to 60-100 m/sec and feed rates of 100-180 m/min.

- Spray Gun

  This spray functions to spray the outer layer of furniture with termite repellent and coating paint to make it more durable and good

- Sander Machine

  Electric powered stationary machines with a moving abrasive surface (usual sandpaper); are used for smoothing the surface; the abrasive surface is usually a belt, disc, or shaft. This tool is useful for smoothing the surface of the wood so that it is smooth and worth selling.

- Table Saw

  is a woodworking tool consisting of a circular saw blade mounted on an arbor, that is driven by an electric motor (either directly, by belt, or by gears). The blade protrudes through the top of a table, which supports the material, usually wood, being cut.

- Profile Machine

  For carpenters, the profile machine has the function of attaching the hinge holder as well as the glass holes for the shutters. To use a profile machine, of course, requires hand expertise so that the wood material does not run out in vain. The point is to master the measuring system to make holes such as in frames/doors.

- Drilling machine

  The main functions of drilling machines include making grooves, holes, widening, and smoothing them accurately and precisely. According to its development, the drilling machine has several variants. Starting from hand drills, cordless drills, core drills, sit drills, and impact drills to engine drills. Each use is tailored to the carpenter's needs.

a. Production capacity

   Production capacity is a limited ability for the company to produce a product in some sort of time, so Sahara Aluminium Production capacity is a limit for Sahara Aluminium to create some sort of products in a specific time. Below is the estimation of production limit in Sahara Aluminium:

Table 2. Production Capacity

No	Product	Capacity/Week
1	Shelf	≥ 10

No	Product	Capacity/Week
2	Cupboard	≥8
3	Aquarium	≥15

So based on the table above, we can see that the limit production of shelves per week is less than 10 units, cupboards less than 8 units per week, and aquariums less than 15 on a single week. Still, Mr. Ali said, it depends on the size of the product. If the main size of the ordered product is small, then the limit capacity can be increased, but if the size of the ordered product is higher than the limit, it is shown as above.

b. Price

According to Roni as owner, there is no standard price for the product, the determination depends on the level of difficulties, how many raw materials are needed, and what kind of raw material is needed, however, Mr. Ali said there are a minimum and maximum price for each product categories, as follows:

Table 3. Price List

No	Product	Price Range (Rupiah)
1	Iron Shelf	175,000-4,000,000
2	Cupboard	50,000-3,000,000
3	Aquarium	50,000-4,000,000
4	Iron-based product	100,000-4,000,000
5	Wooden based product	50,000-3,000,000

According to the table above, we can see that every type of product has a variation price. As we can see that Iron products were more expensive than wooden products, it's because the raw material that used to make the product and usually iron products were so much harder to make, that's why the price was different.

4.1.5 Working Hours

Sahara Aluminium has a standard working hour in their company, the operation hour is set from Monday to Saturday. But on Monday until Friday the worker will work for 8 hours, while on Saturday the worker was only allowed to work for 4 hours, below table gives a detail working hours in Sahara Aluminium:

Table 4. Working Hours Table

No	Days	Working Hours
1	Monday - Friday	08.00 – 16.00
2	Saturday	08.00-16.00

From the table above, we can see that the working hours are limited, and there is no overtime, but sometimes if the order were high, then Mr. Ali will add over time, but in normal circumstances, there's no overtime.

4.2 `Set the Scope

4.2.1 Global Organization

An organization needs to determine the division of the department in their organization. It is to ensure the flow of work in the company flows faster because it distributes responsibility among the department.

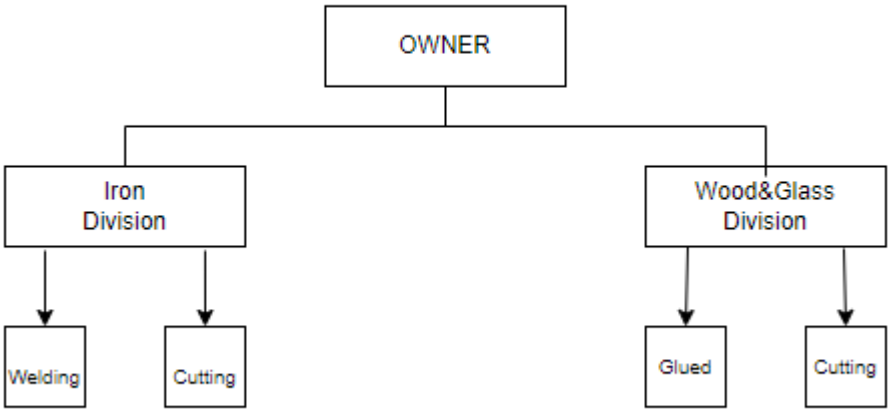

Figure 11. Sahara Aluminum

From the picture of the organizational structure of the Sahara company, it is known that the highest organizational structure is held by the owner of the company. The company itself has 2 (two) divisions, namely iron and wood & glass division. The division is based on the final product to be produced. The iron division is divided into 2 (two) parts, namely the welding section and the cutting section. Meanwhile, the wood & glass division is divided into 2 (two) parts, namely glued and cutting.

The picture above is a global organization that is applied to Sahara Aluminium which is useful for helping all activities in the production process to sales of products Sahara Aluminium, there are 5 workers in Sahara Aluminium Company, each man deals with specific job on the specific working station, there is 1 (one) owner, 1 (one) worket in welding, 1 (one) worket in cutting specific for an iron product, 1 (one) in glued and assembling the wooden product, and 1 in cutting specific for a wooden product, and the finishing is handled by one of the members in the iron and wooden station. For glass product, one of the wooden production or iron production will work on it based on whom have the lesser order on their station. Supplier for Sahara Aluminium was from several places, iron is obtained from Sleman, while the wood are originated from Bantul, and Glass obtained from Godean.

4.2.3 Global Network

Sahara Aluminium has a vast network in Yogyakarta which helps in the sector of supply and manufacturing of the product itself. So, based on that, the data on the global network that Sahara Aluminium has are described down below:

Figure 12. Sahara Aluminum Global Network

Customers GE:

The main sales market of Sahara Company focuses on areas around Central Java and the Special Region of Yogyakarta, such as Semarang, Solo, Magelang, and Jogja. It is the main focus for the company to dominate market share in the manufacturing of hollow iron, aluminum, and glass crafts.

Customers GB:

The second market for sales of the company's Sahara products focuses on the Jakarta and Surabaya areas. The goal is to increase the level of sales in the Java region to be more leverage.

Customers SEU:

The third market is a market that is focused outside Java with a focus on the Lampung area. The goal is to meet the needs or demands that exist on the island of Sumatra. It is very beneficial for Sahara companies in expanding markets outside Java, especially in the Sumatra region.

4.2.4. Business Context Summary

Sahara Aluminium is a manufacturing company engaged in the manufacture of Customizable products. The products that Sahara Aluminium made were mostly made from wood, iron, and glass supplied by other companies. Sahara aluminum is located in Ngemplak, Sleman, DIY, Indonesia and and founded in 2015. Its main business is making customizable products. It is continuously consistent in creating a comfortable work environment for its employees, and make a good quality product for their customers.

Table 5. Business Context Summary

Component	Description
Business Description	Sahara Aluminum is a company that produces customizable products mainly with the raw material of glass, iron, and wood.
Challenges and Opportunities	This company has many customers that trust in this company with many suppliers. It is the opportunity to gather a bigger market share due to quality of product and services, with affordable price.
Value Proposition	The company starts providing competitive value to each customer segment.
Critical Issues	The Performance gap is in the responsiveness. It is caused by the lateness in production cycle time, where it takes longer than expected.
Risks	Having a risk when storing wood furniture can make the product porous and damaged by termites, missing the specific detail while creating customizable products.
Financial Performance	Noted the current company income, assets, liabilities, and profitability expectations.
Internal Profile	Making internal business structure, function, and performance.

Component	Description
External Profile	Supply chain and business partners and the customer during the delivery channel

4.2.5. SWOT Analysis

The SWOT analysis is done using the quotatives and qualitative, where we use the IFAS, EFAS, SWOT Quadrant, and SWOT Matrix to determine the company's position when they are in the SWOT Quadrant.

1. IFAS Analysis

The table below mentions the internal factor of the company.

Table 6. IFAS Strength Table

No.	Strength	Initial
1	Good organizational structure	A
2	Have a good product imagery	B
3	Trusted by customer	C
4	Good quality of the product	D

Table 7. IFAS Weakness Table

No.	Weakness	Initial
1	Too much time to make a product	E
2	it's too expensive	F
3	Don't have many variations	G
4	The price of raw material always increase annually	H

2. EFAS Analysis

The table below mentions the external factor of the company.

Table 8. EFAS Opportunities Table

No	Opportunities	Initial

1	Big scale of the market	I
2	Big company market link	J
3	The growth of new students and citizens around that need the furniture in their new home	K
4	It can be cheaper than other competitors overseas because the production cost is cheaper than others	l

Table 9. EFAS Threat Table

No	Threat	Initial
1	There is much same product	M
2	The speed of other company innovation	N
3	The government rule's that may interrupt the business	O
4	Change of the situation	P

Here is the calculation:

1. IFAS Calculation

The technical weighting of IFAS calculation is described as follows:

Table 10. IFAS Technical Weighting

Factor	A	B	C	D	E	F	G	H	TR	Scale
A	X	1	1	0	1	0	1	0	4	0.137931
B	0	x	0	1	0	1	1	1	4	0.172414
C	0	1	x	1	0	1	1	0	4	0.137931
D	1	0	0	x	1	1	1	0	4	0.137931
E	0	1	1	0	x	1	0	1	4	0.137931
F	1	0	0	0	0	x	1	1	3	0.103448
G	0	0	0	0	1	0	x	1	2	0.068966
H	1	0	1	1	0	0	0	x	3	0.103448
Total									28	1

Table 11. Calculation of weight, rating, and score in the IFAS

Initial	Weight	Rating	Score
A	0.137931	4	0.551724
B	0.172414	5	0.862069
C	0.137931	4	0.551724
D	0.137931	4	0.551724
Total S			2.517241
Initial	**Weight**	**Rating**	**Score**
E	0.137931	4	0.551724
F	0.103448	3	0.310345
G	0.068966	2	0.137931
H	0.103448	3	0.310345
Total W			1.310345
S-W			1.206897

2. EFAS Calculation

The technical weighting of the EFAS calculation is:

Table 12. EFAS Technical Weighting

Factor	I	J	K	L	M	N	O	P	TR	Scale
I	X	1	1	0	0	1	1	1	5	0.178571
J	0	x	1	0	1	1	1	0	4	0.142857
K	0	0	x	1	1	0	0	1	3	0.107143
L	1	1	0	x	0	0	0	1	3	0.107143
M	1	0	0	1	x	1	1	0	4	0.142857

Factor	I	J	K	L	M	N	O	P	TR	Scale
N	0	0	1	1	0	x	1	1	4	0.142857
O	0	0	1	1	0	0	x	0	2	0.071429
P	0	1	0	0	1	0	1	x	3	0.107143
Total									28	1

Table 13. Calculation of weight, rating, and score in the EFAS

Initial	Weight	Rating	Score
I	0.178571	5	0.892857
J	0.142857	4	0.571429
K	0.107143	3	0.321429
L	0.107143	3	0.321429
Total O			2.107143
Initial	**Weight**	**Rating**	**Score**
M	0.142857	4	0.571429
N	0.142857	4	0.571429
O	0.071429	2	0.142857
P	0.107143	3	0.321429
Total T			1.607143
O-T			0.5

SWOT Diagram

The results of the IFAS and EFAS analysis are included in the SWOT analysis diagram, with the difference between Strengths and Weaknesses as the X-axis coordinates while the difference between Opportunities and Threats in the Y-axis coordinates. The quadrants in the SWOT diagram are divided into 4 quadrants. Quadrant I (progressive), quadrant II (strategy diversification), quadrant III (change

strategy), and quadrant IV (endure). Based on the results of qualitative and quantitative analysis, the results show that the Sahara Aluminium Company is in the Quadrant I position. It means that the company's position has a strong and good opportunity. So, the strategy that must be implemented is an aggressive growth policy or a progressive strategy. The following is a SWOT analysis diagram based on the results of the SWOT analysis and matrix.

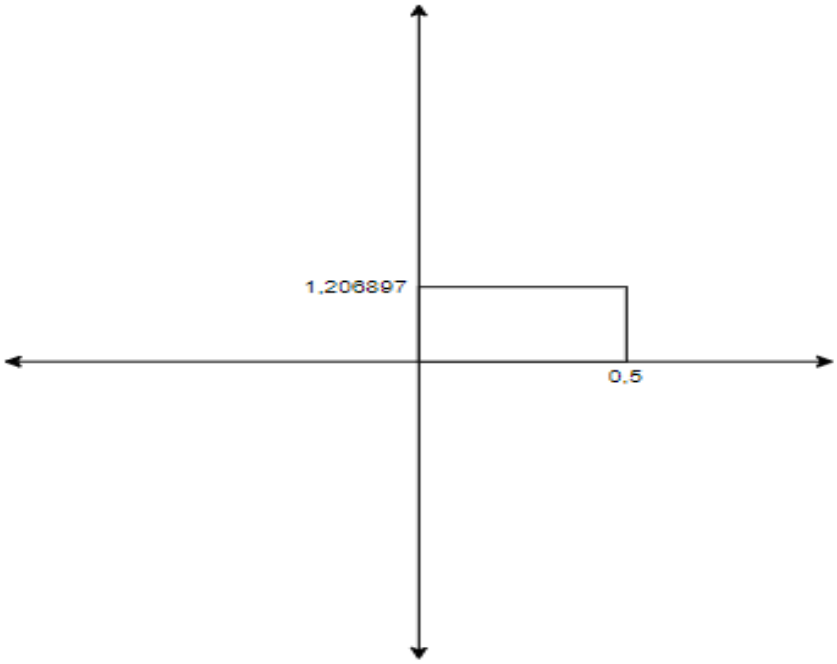

Figure 13. SWOT Quadrant of Sahara Aluminium

SWOT Matrix

Based on the SWOT analysis diagram, it is known that the company is in Quadrant I. So, it is illustrated this company has both strengths and opportunities. Quadrant I position is the best and most profitable position for the company. The following is a matrix of possible business strategies.

Table 14. SWOT Matrix

	Strength	Weakness
Opportunity	By maximizing the good organizational structure as a company. Sahara Aluminium can make their employee eager to make the company can fulfill the demand in the market and can maximize the customer trust to make more profit. By decreasing the cost and making the product even cheaper with the same quality that can maximize customer's trust and make Sahara Aluminium even bigger and increase the profit.	By creating much innovation to make a variation that is suitable overseas and with the Indonesian market so that the company can maximize the customer trust and sell more products to gain a bigger profit
Threat	To compete with other products, then Sahara Aluminium products must exploit the customer trust to gain even more trust by increasing the quality at a cheaper cost so that many new customers would come.	Sahara Aluminium must evaluate to identify the customer's needs and can figure out the way to conduct production effectively, as well as to create a solution to answer the problem.

4.2.6 Document the Supply Chain

The supply chain document is all about the company's network with other third parties such as suppliers, channel partners, and customers. Below is the supply chain document.

Table 15. Document the Supply Chain

<table>
<tr><th>Suppliers</th><th>Sahara Aluminium</th><th>Customers</th></tr>
<tr><td rowspan="2"><u>Suppliers of Wood:</u>
To supply wood as raw material for furniture, this company has suppliers from Bantul.

<u>Suppliers of Glass:</u>
To supply the needs of Glass as raw material for aquariums and furniture, this company has suppliers from the Godean.

<u>Suppliers of Steel:</u>
To supply the needs of steel as raw material for shelves, this company has suppliers from Sleman DIY.</td><td><u>Sahara Aluminium Head Quarters:</u>
Sahara Aluminium is a company that produces furniture such as corner tables, family furniture, and glassware, which is based in Kudus city, Central Java, Indonesia.

<u>Sahara Aluminium Factory:</u>
Sahara Aluminium produces furniture which has a factory located in Sleman</td><td rowspan="2"><u>Customers GE:</u>
The main sales market of Sahara Company focuses on areas around Central Java and the Special Region of Yogyakarta, such as Semarang, Solo, Magelang, and Jogja.

<u>Customers GB:</u>
The second market for sales of the company's Sahara products focuses on the Jakarta and Surabaya areas.

<u>Customers SEU:</u>
The third market is a market that is focused outside Java with a focus on the Lampung area.</td></tr>
<tr><td>Channel Partners

<u>Sahara Aluminium Warehouse :</u>
Sahara Aluminum has a warehouse located in Sleman</td></tr>
</table>

Below is shown the supply chain definition matrix that demonstrates the score of each location based on the product groups.

Table 16. Supply Chain Definition Matrix

	Customers: GE			**GB**	**SEU**
Product Groups	**Solo**	**Sleman**	**Magelang**	**Godean and Bantul**	**Lampung**
Shelf / Steel Product	5	15	5		
Cup Board / Wooden Product	5	12	4		1
Aquarium	8	30	11		

The Supply chain matrix in Sahara Aluminium was made based on the sales data that were divided based on the material used by Sahara Aluminium, the following are the data:

A. Glass

Sahara Aluminium makes several products that used glass as their raw material, like small Aquariums, Medium Aquariums, Large aquariums, Display Windows, Doors, etc. The following are the data of sales

Table 17. Table of Glass Products Sales

No	**Year**	**Month**	**Product**			**Total**
			Aquarium	**Display Windows**	**Doors**	
1	2021	September	Rp. 1.700.000	Rp. 500.000	Rp. 1.200.000	Rp. 3.400.000
2		October	Rp. 1.200.000	-	Rp. 1.000.000	Rp. 2.200.000
3		November	Rp. 700.000	Rp. 1.000.000	Rp. 500.000	Rp. 2.200.000
4		December	Rp. 2.000.000	Rp. 500.000	-	Rp. 2.500.000
Total			Rp. 5.600.000	Rp. 2.000.000	Rp, 2.700.000	Rp. 10.400.000
Total Product sold (Unit)			40	5	4	49

From the table above we can see that the total product sold for glass products, for total of 49 units, while the total income is Rp. 10.400.000 in 4 months periods.

B. Steel

In Sahara Aluminium, several things will be produced from using steel, specific Sahara Aluminium focused on Aliminium in producing a product, but the company also can produce another type of steel product. Several products will be produced by using steel as the raw material, it can be in the form of shelf, decoration, and desks. etc

Table 18. Table of Steel Product Sales

No	Year	Month	Product			Total
			Shelf	Decoration	Desk	
1	2021	September	Rp. 2.700.000	Rp. 2.000.000	Rp.	Rp. 4.700.000
2		October	Rp. 1.800.000	Rp. 1.900.000	Rp. 1.500.000	Rp. 5.200.000
3		November	Rp. 1700.000	Rp. 1.000.000	Rp. 2.500.000	Rp. 5.200.000
		December	Rp. 2.000.000			Rp. 4.000.000
Total			Rp. 18.200.000	Rp. 4.900.000	Rp, 4.000.000	Rp. 28.100.000
Total Product sold (Unit)			50	7	7	64

From the table above, it can be seen that that the total sales of the steel product is Rp. 28.100.000 with the total sold unit sold of 64 in 4 months.

C. Wood

In Sahara Aluminium, several products are produced by Sahara Aluminium, even though for wooden products, Sahara Aluminium focuses on making the cupboard, but it also accepts making the desk set (with chairs), doors, decoration, etc.

Table 19. Table of Wood Product Sales

No	Year	Month	Product			Total
			Cupboard	Decoration	Desk Set (with Chair)	
1	2021	September	Rp. 1.700.000	Rp.0	Rp. 1.000.000	Rp. 2.700.000
2		October	Rp. 2.800.000	Rp. 900.000	Rp. 2.500.000	Rp. 6.200.000
3		November	Rp. 700.000	Rp. 1.100.000	Rp. 2.650.000	Rp. 4.650.000
4		December	Rp. 1.200.000			Rp. 1.200.000
Total			Rp. 6.400.000	Rp. 2.000.000	Rp, 6.150.000	Rp. 14.750.000
Total Product sold (Unit)			12	5	8	25

From the table above, it can be seen that the total revenue that Sahara Aluminium earns is Rp. 14.750.000. with the total production of 25 units in 4 months.

4.2.6. Geographic Map of the Supply Chain

The picture below is the geographical map of the distribution and supplier direction. The blue arrow indicates the distribution direction, and the yellow arrow demonstrates the supply distribution direction.

Figure 14. Geographical Map of Supplier and Customer of Sahara Aluminum

4.2.7. Improvement Program Charter

The Charter Program is a high-level document that states and describes the existence of a project. This document contains important information that includes a brief description of a project that will be executed.

Table 20. Improvement Program Charter

Section	Subsection	Discussion
Introduction	Purpose, table of contents, control/maintenance	Improvement program charter overview
Program Definition	Scope	Which supply chain selected
	Business Objective	Performance Metrics
	Improvement Program Objective	Supply chain performance
	Program Organization	Definition of the program team and shareholders

Section	Subsection	Discussion
Program Contents	Methodology	Five-Phased SCOR Racetrack
	Schedule	Timeline, detailed activities, meetings
	Roles	Program Activity responsible
	Deliverables and Milestones	Detailed deliverables and milestone
	Risk and Dependencies	Critical risk and avoidance strategies
	Benefits	The measure of success, analysis

4.3 Configure the Supply Chain

4.3.1 SCOR Performance Attributes Selection

Sahara Company is a Yogyakarta-based micro, small, and medium firm that specializes in making customized aluminum, glass, and hollow iron handicrafts. The corporation confronted various challenges in running the business. The biggest limitation was that the production time surpassed the objective. As a result, the quantity of finished items is not in line with the objective, and they are unable to fulfill the current demand. Of course, it affects the company's sales numbers as well as client loyalty and happiness.

Based on the existing problems, the appropriate attribute SCOR level 1 metrics of Sahara companies is responsiveness. It is appropriate because of the problem in which the production time is far from expectations so that it cannot meet customer demand on time.

Table 21. SCOR Level 1 Metrics of Sahara Aluminum

	Attribute	Level 1 Strategic Metrics
Customer	Supply Chain Delivery Reliability	RL. 1.1 Delivery Performance
		RL. 1.2 Perfect Order Fulfilment

	Supply Chain Responsiveness	RS. 1.1 Order Fulfilment Lead Times
	Supply Chain Agility	AG. 1.1 Supply Chain Responses Time
Internal	Supply Chain Costs	CO. 1.1 Total Supply Chain Management Costs
		CO. 1.2 Warranty / Returns Processing Costs
	Supply Chain Asset Management Efficiency	AM. 1.1 Cash-to-Cash Cycle Time
		AM. 1.2 Asset Turns

So based on the SCOR Level 1 Metrics of Sahara Aluminium, the next step is to create the Level 2 Metric, which shows the more detailed version of the Level 1 Metric. So, below is the Level 2 Metric.

From the table above, we can see that Order fulfillment Lead Time is one of the variables that have been chosen. From that variable, we have 4 variables that will affect the Order Fulfilment Lead Time/level 2 Matrix that is: Raw Material Cycle Time, production Cycle Time, Delivery Cycle Time, and Delivery Retail Cycle Time

Table 22. Table of Metrics works level 2

Level 1	**Level 2**	**Actual Time (Days) Average**	**Target (Days) Average**	**Gaps**
Supply Chain Responsiveness	RS 2.1 Raw Material Cycle Time	1	1	0
	RS 2.2production Cycle Time	5	3	2

Level 1	Level 2	Actual Time (Days) Average	Target (Days) Average	Gaps
	RS 2.3 Delivery Cycle Time	2	2	0
	RS 2.4 Delivery Retail Cycle Time	1	1	0
Total		8	6	2

According to the Level 2 matrix above, we can see that the actual time for the whole process needs 8 days, but on another hand, the actual time was 6 days. There is a gap of 2 days between the target and the actual, and it happened on the Production Cycle Time 2 days gap. It was taken from the production of a wooden product of 10 products. This gap occurs because the layout of the company is not effective. It causes long production times and stagnation of work. According to this gap, then this research will focus on Production Cycle Time. Production Cycle Time in Engineering to order level 3 has 6 matrixes. Above, we can see the level 2 matrix, and now below is the level 3 matrix.

Table 23. Table of Metrics works level 3

Level 1	Level2	Level 3	Activity
Supply chain responsiveness	RS. 2.2 Production Cycle Time	RS. 3.1Production Scheduling activities	Amount of average time needed to plan production schedule
		RS. 3.2 Raw material procurement activities	Amount of average time needed to get the raw material

Level 1	Level2	Level 3	Activity
		RS. 3.3 Production and test cycle time	Amount of average time needed to produce and test product, from Raw material until it surpasses the test
		RS. 3.4 Packaging Cycle Time	Amount of average time needed to package finished product
		RS. 3.5 Quality Control Cycle Time	Amount of average time needed to double-check finished product
		RS. 3.6 Delivery Cycle Time	Amount of average time needed to deliver the finished product to the customer

From the table above, it can be seen that the table of matrix level 3 for Sahara Aluminium was made. After that, the next step is we need to make a specific table to specify the characteristic of each variable above, whether if less is better or more is better. Below is the specific table to specify the characteristic:

Table 24. Works metrics Formula

No	Matrix	Formula	Characteristic
1	Supply Chain Responsiveness	$\frac{Total\ actual\ time\ needed\ to\ send\ all\ product}{Total\ Order}$	Lesser better
2	RS. 2.1 Production Cycle Time	Production cycle time – Production scheduling + Raw material Procurement / Production Cycle Time + Production time and test + Delivery Time Cycle	Lesser better
3	RS. 3.1Production Scheduling activities	Average Production Scheduling Time	Lesser better
4	RS. 3.2 Raw material procurement activities	Average Material Procurement	Lesser better
5	RS. 3.3 Production and test cycle time	Average Production and test cycle time	Lesser better
6	RS. 3.4 Packaging Cycle Time	Average Packaging Cycle Time	Lesser better
7	RS. 3.5 Quality Control Cycle Time	Average Quality Control Cycle Time	Lesser better
8	RS. 3.6 Delivery Cycle Time	Average Delivery Cycle Time	Lesser better

After we make a description and mapping, then the next step is we need to configure the supply chain. In this step, the activity will be calculated data matrix that we choose according to the priority to be solved in benchmarking.

4.3.2 Data Collection

Before conducting the calculation, first of all data/data owners are need to be identified.. Below is the detail from whom the data were gathered:

Table 25. Collection Detail Data

Metrix	Process	Owner	Due Date	Status
Supply Chain Responsiveness	Rs 1.1	Owner of Sahara Aluminium	01/12/2021	Full

After identifying the data owner, then the next step is to calculate the Metrix data collection that contained on the performance matrix level 1 and 2. Metrix RS1.1 Supply Chain Responsiveness with matrix level 2 Production Cycle Time in Sahara Aluminium. It will be calculated according to SCOR version 12.0 Metrix Supply Chain Responsiveness level 1 and 2 in the table below:

Table 26. Metrics RS level 1 and 2

Supply Chain Responsiveness Order Fulfilment Lead Times					
Matrix level	**Calculation**	**Days**	**Days**	**Level 2 Matrix**	**Calculation**
RS.1.1 Supply Chain Responsiveness	The total actual time needed to send all products / total order	8	5	Production Cycle Time	Production cycle time – Production scheduling + Raw material Procurement / Production Cycle Time + Production time and test

					+ Delivery Time Cycle

From the table above, the actual time can be identified and needs to process RS 1.1 Order Fulfilment Lead Times for 20 products is 8 days, while Production Cycle Time takes 5 days, and the rest 3 days is required to process RS 2.1 Raw Material Cycle Time, RS 2.3 Delivery Cycle Time, RS 2.4 Delivery Retail Cycle Time.

Next, the researcher creates a perform Competitive Analysis that will explain the calculation for performance in level 3. Data are gathered from 4 periods, which are September 2021, October 2021, November 2021, and December 2021. There are 6 Metrix in the variable of responsiveness that is used in this research. Below is the calculation for each variable:

Table 27. Metrics level 3 calculation

Matrix		**Average (Days needed)**
RS. 3.1	Production Scheduling activities	0.2
RS. 3.2	Raw material procurement activities	0.7125
RS 3.3	Production and test cycle time	2.8875
RS. 3.4	Packaging Cycle Time	0.2
RS 3.5	Quality Control Cycle Time	0.1
RS 3.6	Delivery Cycle Time	0.6
Total		4,7

From the table above, the explanation of production time needed in September - December 2021 is provided. The average was used in production processes for 10

products in some sort of time. So, the average time to produce 10 products is 4,7 days. It is based on working time at Sahara Aluminium, that spends 8 hours/day. There is a gap between internal target production which is 3 days, and the real-time 4.7 days. There is 1.7 days gap

Table 28. Production Days

Production Days		**Gap**
Target	**Real-Time**	
3 Days	4.7 Days	1.7 days

4.3.3 Benchmarking

Benchmarking is the final calculation in supply chain management. It calculates the workings matrix of the company in here, the comparison is performed between the company target and real-time. The data are gathered from the Sahara Aluminium owner. A unit uses days-based working hours in the company. Sahara Aluminium has a target of producing 10 products in 3 days which is 1 day have 8 hours working hours. Below is the benchmarking table.

Table 29. Benchmarking Table

Metrics	**Average actual time (days)**	**Internal Target (days)**	**Gap**
RS 3.1	0.2	0.06	0.14
RS. 3.2	0.7125	0.14	0.5725
RS. 3.3	2.8875	2	0.8875
RS. 3.4	0.2	0.2	0
RS. 3.5	0.1	0.1	0
RS. 3.6	0.6	0.6	0
Total	4.7	3	

From the table above, it can be identified that level 3 Metrics is a Metric with no gap or can be said already met the company's target, which means no further calculation should be made. There are Metrics that still have a gap between the company target and the actual time, which are Metrics RS. 3.1, RS. 3.2, RS. 3.3. There are still gaps within and need to be improved. In metrics RS 3.1, there is a gap of 0.14 days related to production scheduling activities. Then in metrics 3.2, there is a gap of 0.5725 days, which is related to raw material procurement activities. And the last gap is in metrics 3.3 of 0.8875 days related to production and test cycle time. The cause of the gap in the metrics will be identified in detail using a fishbone diagram in the next part.

4.3.4 Supply Chain Threat Diagram

Based on the mapping of each process in Sahara Aluminium, then it can be depicted in a thread diagram.

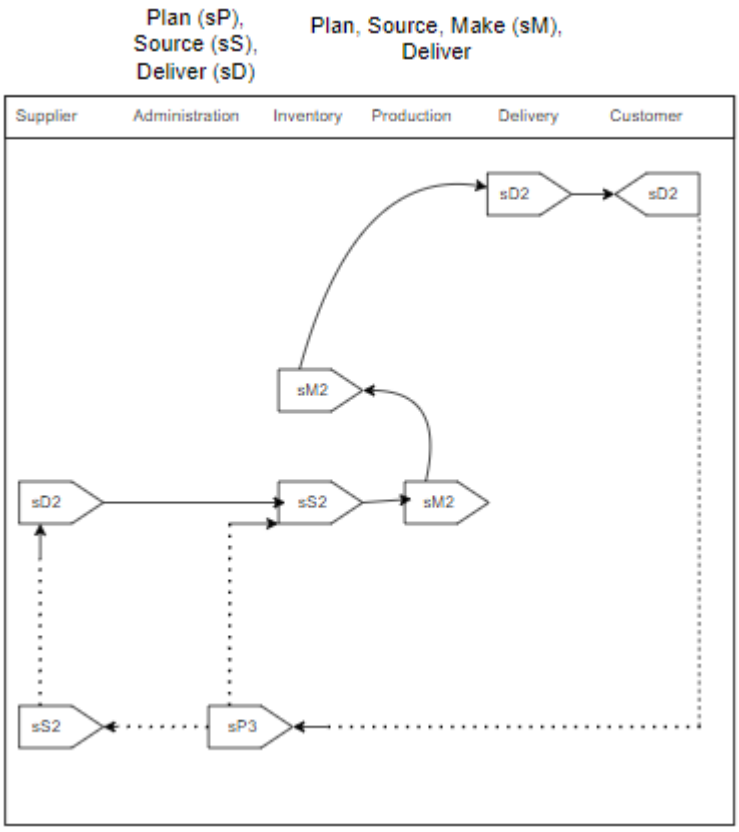

Figure 16. Supply Chain Thread Diagram.

In this diagram, it will explain the whole business processes, start from the supplier that supplies the raw material to Sahara Aluminium. The black line will describe the raw material chain, the raw material that has been delivered were saved in the inventory first before starting to be processed. After the production is done, then the product will be saved again in the inventory before being delivered to the customer, on the other hand, the dotted line means the chain of information where the processes plan can be decided starting from the customer order. Based on the customer's needs than the raw material will be calculated about how many raw materials needed in order to make the products. Below is the thread diagram of Sahara Aluminium.

Thread Diagram above is the image of the Cycle Time of production of 10 products in Sahara Aluminium. Future Thread Diagram can decrease the production time within the existence of improvement that will be implemented.

4.3.5 Fishbone Diagram

A Fishbone diagram is done to analyse the cause of the gap that happened in Sahara Aluminium in several matrices. Fishbone diagrams were collected by observation and interview based on the principle of 5W (why, When, who, where) + 1H (How). In this point, a fishbone diagram was needed to identify the cause of lateness in production processes in Factor RS. 3.1, RS. 3.2, RS. 3.3, below is the fishbone diagram that have neem gathered after using 5W+1H to see the root of the problem that caused lateness:

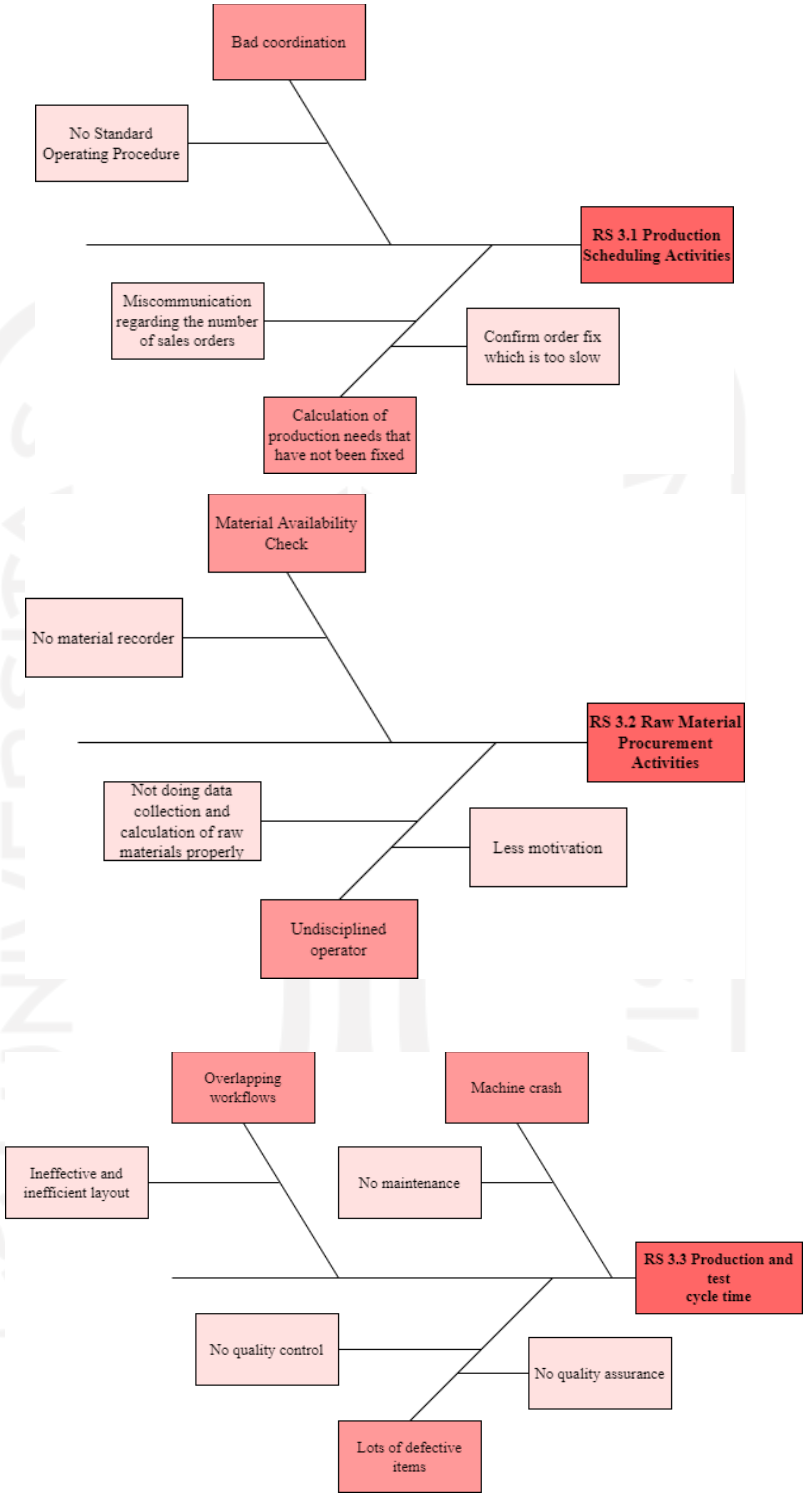

Figure 17. Fishbone Diagram

Based on the Fishbone diagram above, we can see the cause of lateness in production processes, below is the cause of the lateness in the 3 matrices with gap:

1. RS. 3.1 Production Scheduling activities

The lateness in Production scheduling happens because there is no good coordination between one and another working station. It is difficult since there is no standard operation that will coordinate one another. Hence, it takes more time to schedule production because it is harder to make a schedule if there's no good coordination between one and another. Calculation of the number of confirmed orders is still not fixed. It is due to a miscommunication regarding the number of orders and very slow sales confirmations (Marsheilla & Marsheilly, 2019).

2. RS. 3.2 Raw material procurement activities

   From the Fishbone diagram above, we can see the cause of lateness in Raw Material Procurement due to the company doesn't have a record of material that they have so that the company becomes not efficient in using raw materials and it will confuse them about what they need to buy and not, and on the other hand they the cause of lateness is that the company won't have a good system in planning purchasing raw material so that it would need some more time to make a list about what will they buy. Operators who are not disciplined in terms of data collection and also calculating the materials needed in the manufacture of products also lack of motivation. This makes them less aware of the available materials (Dewi, 2019).

3. RS. 3.3 Production and test cycle time

   From the fishbone diagram, we can see the cause of the lateness in RS. 3.3 Production and test cycle time. From the diagram, we can see several factors make the gap in RS. 3.3 Production and test cycle time happened because there's no Standard operation so the coordination becomes harder, and there's no proper quality control that leads to less efficient and effective processes.

According to the fishbone diagram above, we can see that the cause of the gap that makes lateness is the Production and test cycle time. Below is the table for the cause of gaps.

Table 30. Gaps Table

		Cause of gaps

RS. 3.1	Production Scheduling activities	No Standardization in scheduling
RS. 3.2	Raw material procurement activities	No material planning system
		No material recorder
RS. 3.3	Production and test cycle time	No quality standard procedure
		No Maintenance
		Inefficient layout

The table above shows there are 6 causes of gaps in RS. 2.1 Production Cycle Time. After that, the data are gathered to be optimized in the Optimize project step.

4.4 Optimize Project

In this step, the researcher will analyze the result from benchmarking. This analysis was meant to know the prioritized performance that needs to be solved and the benefit that is possible after the implementation of this project. Below is the step in Optimize project:

4.4.1 Project portfolio

Table 31. Project portfolio Table

Level 1	**Level 2**	**Level 3**		**Cause of gaps**	
RS. 1.1 Supply chain responsiveness	RS. 2.1 Production Cycle Time	RS. 3.1	Production Scheduling activities	#1	Scheduling Standardization
		RS. 3.2	Raw material procurement activities	#2	Make material planning system
				#3	Make material recorder
		RS. 3.3	Production and test cycle time	#4	Make quality standard procedure

				#5	Make Maintenance planning
				#6	Make effective and efficient layout

From the table above, we can see that there are 6 projects that need to be done from Metrix level 3. The next step is grouping issues that suit the character and similarity.

4.4.2 Grouping issues

In this step, Metrix will be grouped based on their similarity in their processes and the problem. The cause of the in Sahara Aluminium was grouped in Production and inventory, processes plan, source, make, deliver, return, and enable. Below is the table of grouping Metrix (grouping issues):

Table 32. Grouping Issues Table

Group	Plan	Source	Make	Deliver	Return	Enable
Production	#1#4		#5#6			
Inventory	#2	#3				

According to the identification above, we can see that projects 1,4,5, and 6 are in one group in production, while 2 and 3 are in the inventory group, projects 1,2, and 4 in the process plan, project 3 in source processes, and project 5 and 6 in making processes.

4.4.3 Project list

The project list is the proposal for improvement in the Metrix field with a gap in it. There are 6 proposals in this improvement proposal according to the thing that can cause gaps in the Metrix. Below is the project list proposal of improvement for Sahara Aluminium:

Table 33. Project List Table

Project	Project Description	SCOR level 3 metrics
#1	Make scheduling Standardization	RS. 3.1 Production Scheduling activities
#2	Make material planning system	RS. 3.2 Raw material procurement activities
#3	Make material recorder	RS. 3.2 Raw material procurement activities
#4	Make the quality standard procedure	RS. 3.3 Production and test cycle time
#5	Make Maintenance planning	RS. 3.3 Production and test cycle time
#6	Make the effective and efficient layout	RS. 3.3 Production and test cycle time

According to the table above, it's been found that 6 projects have been chosen and prepared to be implemented.

CHAPTER V
DISCUSSION

5.1 Ready for Implementation

Ready for implementation is the last stage from SCOR Racetrack 12.0 before conducting implementation in a project that has been created on the last step. Here is the step of Ready for Implementation.

1. Implementation Project Charter

   Implementation project Charter is an activity of creating a document that contains specific and detailed information of an improvement project that will be run. The document contains metrics, cases, improvement plans, and benefits. In this case, the metrics used are RS. 3.1, RS. 3.2, RS. 3.3. The implementation of the table project charter for Sahara Aluminium is in the table below:

Table 34. Implementation Project Charter Table

Metrics	Case	Plan Improvement	Benefits
RS. 3.1	There is no coordination between one and another workstation, so the activity becomes less efficient because no Standardization makes it confusing for a worker to coordinate	#1 create standard scheduling for all workstations	To make better coordination so that it would make employees easier to communicate with each other, so it would need less time because there's already a standard so it's not confusing for them anymore.
RS. 3.2	There is no raw material recording	#2 material recording	Because there's no material record about what

Metrics	Case	Plan Improvement	Benefits
	data, and there is no proper procurement system	#3 create scheduling procurement system	is still on stock and not, it would confuse the procurement processes because they don't know what kind of material they need to buy . It makes the procurement processes inefficient that can decrease the profit, by creating a material recording and scheduling procurements system, it would make the procurement processes more effective and efficient.
RS. 3.3	There's a problem with the machine due to lack of maintenance, and the production layout was not well prepared, and there's no quality control or standard to conduct quality control.	#4 create a standard for quality control	Products have constant quality due to quality control.
		#5 create a well-managed layout	Optimizing time, with the layout that has been set it can save time in doing work. Efficiency and Effective in terms of and what will be issued (Funds / Investments), because it saves time and personal at work

Metrics	Case	Plan Improvement	Benefits
		#6 create a schedule for maintenance	So that the state of the tools will be maintained and avoid damage that can disrupt the production schedule.

Based on the implementation project charter above, it can be seen that the improvement in RS 3.1 would give benefit of time efficiency and effectiveness and easier coordination between one and another work station. And for RS. 3.2 gives the benefit of easier coordination and identification of raw material. And for RS. 3.3 the benefit was in the form of the effectiveness and efficiency in production.

2. Readiness Check

Readiness Check is a tool to check the readiness of suggestions to be implemented. It is used to measure the readiness before implementation, divided into 5-part, vision, incentives, resources, skill, and action plan. Based on the 6 Metrix in the Project list of Sahara Aluminium, below is the table of Readiness check:

Table 35. Readiness Table

Project	Vision	Incentives	Resource	Skill	Action Plan	Result
1	✓	✓	✓	✓	✓	Ready to be Implemented
2	✓	✓	✓	✓	✓	Ready to be Implemented
3	✓	✓	✓	✓	✓	Ready to be Implemented

4	✓	✓	✓	✓	✓	Ready to be Implemented
5	✓	✓	✓	✓	✓	Ready to be Implemented
6	✓	✓	✓	✓	✓	Ready to be Implemented

From the table above, we can see that all 6 projects that have been analyzed, and proposed are ready to be implemented. The next step is Prioritization.

3. Prioritization Metrix

Prioritization Matrix is the last step in Ready for Implementation. It is gathered from the analysis result that has been done and from interviewing the owner of Sahara Aluminium based on their effort and risk. Below is the result of the prioritization analysis Matrix:

Table 36. Prioritization table

Sahara Aluminium		Effort: Low ← → High				
		1	2	3	4	5
Risk: Low ↑ ↓ High	1	#4,#5	#1,#6		#2,#3	
	2					
	3					
	4					
	5					

From the table above, we can see that the improvement is in the projects, #4 and #5 became the first prioritization with the lowest scale of effort and risk, and in the second place there are projects 1 and 6 with the second-lowest risk and effort, and in the last prioritization is project #2 and #3 with the highest effort. So the projects that must be prioritized are projects number 4 and 5 because the risk and effort involved are small. Project #4 is

about creating a standard for quality control, while project #5 is about creating a well-managed layout.

4. Result Prediction

Result prediction here is used to find out how much impact will be obtained on internal targets when the related project is implemented. Result predictions were calculated using a simple mathematic that shows the implementation gives an impact on the company,

Table 37. Prediction Table

Priority	**Metrics**			**Total**
	RS. 3.1	**RS. 3.2**	**RS. 3.3**	
1			4,5	2
2	1		6	2
3		2,3		2
Total	1	2	3	6
Gap (days)	0.14	0.5725	0.8875	1.6

After collecting the data above then, the next step is to conduct a simple calculation that can be used to predict the result of the change that happened if the solution were implemented. Below is the calculation:

P1 = $\frac{0,8875}{1,6} x \frac{2}{3} = 37\%$

P2 = $\frac{0,14}{1,6} + \frac{\frac{0,8875}{3}}{1,6} = 27\%$

P3 = $\frac{0,5725}{1,6} x100\% = 36\%$

X = 100%

Notes: X = Change of the gap to the internal target

According to the calculation above, we can see that if the project improvement were applied in the field, then priority 1 would give an impact of 37% improvement toward the internal target, and then priority 2 would give 27% impact toward the internal target, and then if priority 3 were implemented it would give 36% impact toward the internal target if all of

the implementations were applied then the change would be 100% that's mean if it's about to implements than it would make the company achieve their internal target of 3 days for produce 10 products.

5. Example of Improvement suggestion

   According to 1st priority in the table above, the improvement that needs to be done is to create the planning on maintenance and creating production layout.

   A. Maintenance

      There is a series of activities needed to carry out the maintenance properly. For this reason, planning is carried out to monitor actual maintenance results against maintenance plans and make adjustments. With planning, maintenance to be carried out will be more focused, and the company can achieve the goal well and overcome the longer production days. Therefore, to carry out this project, a work break-down should be implemented:

Table 38 Work Breakdown Activity

No.	Work Breakdown	Activity	Product	Deadline
1.	Planning			
	Project Planning	Preparing all interests related to the program for maintenance	Make a list of things that must be maintained	≤10 weeks before the maintenance project launched.
		Preparing the requirement for maintenance	Proposal/ draft	≤10 weeks before the maintenance project launched.
	Meeting	Designing activities to be carried out starting from the	Project charter	≤9 weeks before the maintenance project launched.

No.	Work Breakdown	Activity	Product	Deadline
		time of the activity up to the cost to be used		
		Determining the person who will be in charge of the production planning	The person in charge	≤9 weeks before the maintenance project launched.
	Administration	Designing SOP for maintenance	SOP	≤8 weeks before the maintenance project launched.
2.	Requirement for the Maintenance project			
	Making draft	Making a draft for a maintenance project	Excel	≤7 weeks before the maintenance project launched.
	Training Programs Material	Preparing and making instructional materials for maintenance	Guide book	≤6 weeks before the maintenance project launched.
3.	Maintenance			
	Do maintenance	Maintenance machine	Maintenance checklist sheet	Beginning of the week
4.	Production			
	Monitoring	Monitoring the production	Report	If there is any damage on the machine or things need to be reported immediately.

No.	Work Breakdown	Activity	Product	Deadline
	Improving	Improving if there is any problem out of the machine	Improvement	Immediately.
5.	Pra-Event			
	Reporting	Reporting the maintenance	Report	End of the week.
		Giving solutions and initiation	Report	End of the week.

Below is an example of the planning on machine maintenance in Sahara Aluminium:

Table 39. Maintenance table sheet

Tools			**No. Unit**				**Tools Bought Date**			
No	**Inspection procedure**	**Inspector**	**January**				**February**			
			1	**2**	**3**	**4**	**1**	**2**	**3**	**4**
1	Cleanness									
2	Motor, vibration, sound									
3	Lubricant									
4	Safety of the tools									
5	General machine condition									

Inspection date			
1 = Excellent	**2 = Good**	**3 = Need to be repaired**	

The following are some of the provisions in carrying out maintenance that has been designed:

- Maintenance will be carried out once a week, provided that it is carried out at the beginning of the week.
- Reporting if there is damage or something is not in accordance with the SOP. Please report it immediately to be directed to the next step by the company management, namely the owner.
- Reports related to maintenance are carried out regularly, namely every week.

The inspection form above was made according to the need and the component that needed to be inspected. Inspection programs were being held annually every 1 month; employees that have the job inspection must be the ones that understand about the machine that he's inspected. The condition of the machine that was inspected according to their classification was scored from 1 (excellent), 2(Good), and 3 (Need to be repaired).

B. Lean Management

Lean Management concentrated on eliminating or reducing waste and maximizing any activity with additional value.(Sunardi & Suef, 2019). Based on several studies that implemented Lean Management, it could reduce supply chain cycle time by up to 50% and increase the accuracy of delivery orders by up to 25%. Few things can be implemented in Sahara company using the Lean Strategies, such as:

- Layout redesign

  The next improvement is to figure out the effective and efficient working layout in Sahara Aluminium production line. Creating new production flow can be done by reducing distances of each stations and unnecessary activities. Several areas need to be improved, it

happened because there are several areas that too far away so that it would increase motion and time to do the production, below is the layout of Sahara Aluminium production line:

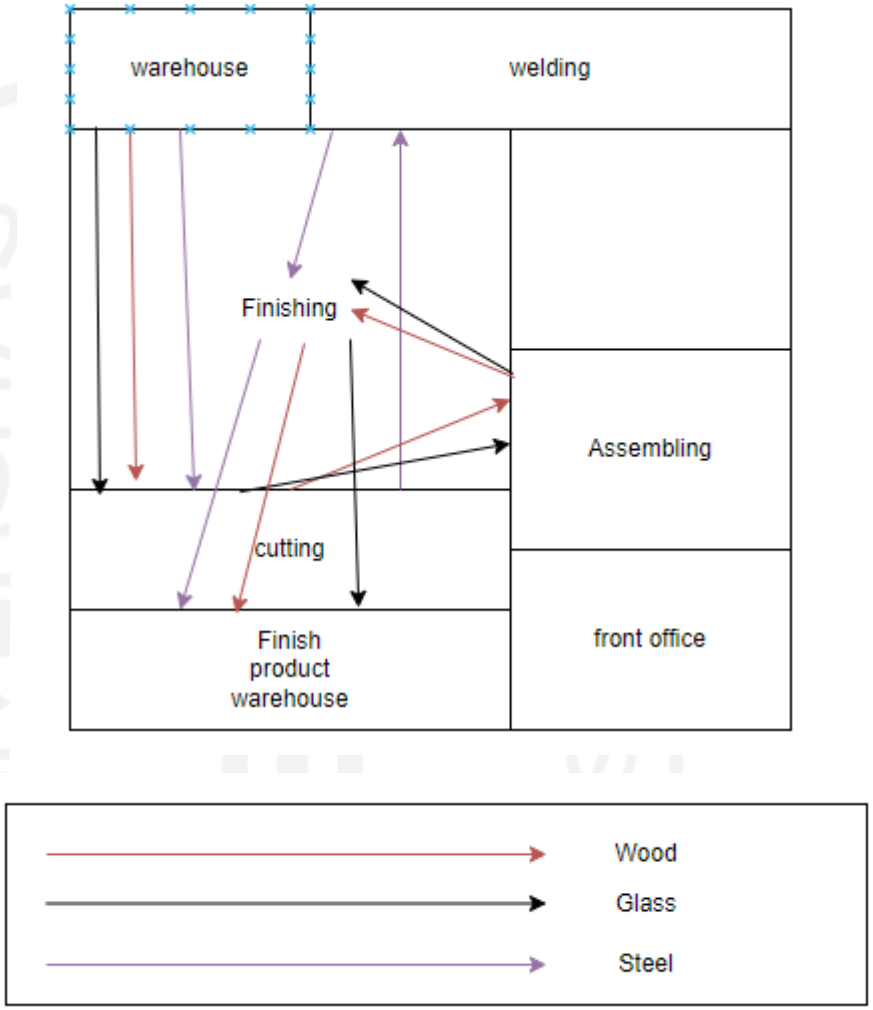

Figure 15. Initial Layout

As we can see from the above image, it shows that the warehouse where Sahara Aluminium stored its raw material was too far from the cutting work station where the first production line was being held, and then the finished product warehouse was too far from the end of the production line which assembling and the cutting workstation were too far from welding area where it after the cutting the next step is welding, from the explanation before it can be

concluded that the current production layout was not efficient, because of that creating the new efficient layout where needed.

This layout redesign considers Process-oriented Layout and Work-cell Layout techniques. It deals with low-volume and high-variety production and also deals with setting up machinery and equipment to focus on the production of single products or batches of products. Below is the new production layout for Sahara Aluminium:

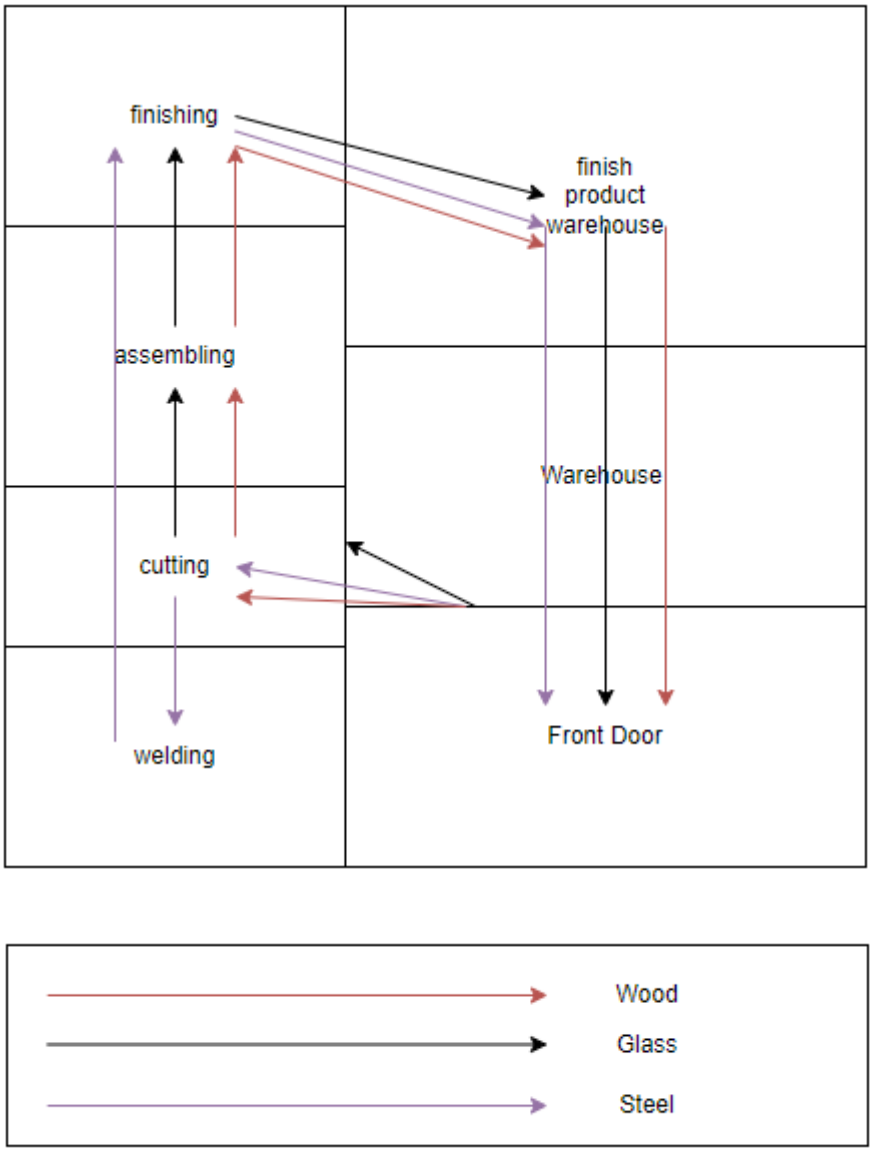

Figure 16. Suggestion Layout

Above is the purposed layout design for Sahara Aluminium. As we can see in the above image, now the warehouse is close to the cutting work station, whereas before this, the warehouse was far from the cutting work station even though cutting is the first stage of production in Sahara Aluminium, the other change that we can see is that the finish product warehouse now close to finishing workstation, it will decrease motion needed to store the finished product, wherein the first layout the finishing workstation was far from finish product warehouse, that will make it easier for the product to be loaded to the transport vehicle in the front door because they only need to go straight from the warehouse the front door so that it would increase the productivity effectiveness and efficiency.

- 5s Kaizen Design Improvement

  One of the improvements that need to be implemented in Sahara Aluminium is by applying the Kaizen 5s method. This is a standardized philosophy for the workplace used by 5 different Japanese corporations, all of which begin with the letter S (David, 2010). These explain how to organize a workspace efficiently through item identification, sorting, upkeep of the workspace, and maintenance of the newly established order. This is an example of a continuous improvement measure that early Japanese businesses employed (Adeodu, Kanakana-katumba, & Rendani, 2021).

  The purpose of this implementation is to improve the design to minimize waste by applying *seiri, seiso, seiton, seiketsu,* and *shitsuke* in their company.

Table 40. 5s Kaizen Table

Problem	Reason	Suggestion
The process of drying takes so	Still using a traditional method that uses the sun as the drying method	Use a dryer to minimize time

Problem	Reason	Suggestion
long time because it depends on the sun		consumption. So, the paint can dry easily.
Only can produce small number of product due to lack of good quality machine	The company only has an old and not in good condition cutting machine and lack of tools to help them improve the production capacity and decrease production time	Replacing the cutting machine with the new and high-quality one, so will decrease the production time and increase production capacity
In the production processes, there is a waste of motion	The location between one and another working station is too far away that makes the products less efficient because the warehouse where all the raw material is placed is too far from the cutting work station where cutting work station is the first work station in the production line	Carry out effective and efficient layout arrangements using Process-oriented Layout techniques and Work-cell Layout.

a. Design Seiri

Seiri design is a way to sort items that are needed and not. It intends to make the working area only contain useful items that are needed by the employee in the production processes.

Table 41. Seiri Layout

Suggestion	Strength	Weakness
Give a black tag	By giving the black tag, then the employee will acknowledge that the tools were very important for production. It will help the employee to identify and store correctly according to the importance of the tools.	Operator trouble in deciding goods/equipment still required and who does not require an area needed specifically for keeping goods/equipment who does not need.

b. Design Seiton

Seiton design is a design to determine the proper layout in the production area to make it more effective and efficient. The design was expected to reduce inefficiency and increase efficiency in the production line.

Table 42. Seiton table

Suggestion	Strength	Weakness
Moving the warehouse near the first production line that needs raw material	Reducing motion and transportation waste	It will cost money
Changing the method of drying granules that still uses sunlight to a drying machine	Reduce waste waiting/delay, because production will not be affected	It costs extra to buy a dryer and requires more energy in the production process

	by nature and also faster	
Effective and efficient layout arrangements	Reducing motion and transportation waste	It will cost money and energy

c. Design Seiso

Seiso design was meant to make the working area clean and neat which will increase the healthy and comfortable of the working area and motivate employee to do their work.

Table 41. Seiso Table

Suggestion	Strength	Weakness
Add trash bin around working place	It would make employees easier to throw away their trash so that employee would not throw their trash on the production floor, which may make the condition unhealthy	Will cost money
Add cleaning tools around employee	It will make its employee easier to reach cleaning tools to clean their working place so that the health of the working station will be good	Will cost money

Suggestion	Strength	Weakness
Checklist seiso sheet	Provide information to operators regarding what activities must be carried out to maintain the cleanliness and tidiness of the work area	Requires self-initiative to maintain cleanliness in the workplace.

d. design seiketsu

Seiketsu is a design to maintain the other 3 stages before (seiri, seiton, seiso) to make sure its continuity in the working environment by standardizing so that the previous 3 stages can run consistently.

Table 42. Seiketsu Table

Suggestion	Strength	Weakness
Make work rules	The operator will take care of the running 3S	It takes time for employees to adapt
Sticking posters 5S	The operator will always remember and always apply 5s	-
Make an evaluation every week	Evaluation can maintain and discipline the application of 5s	Operators have to adapt

e. design shitsuke

Shitsuke design is a design to make sure all other stages are continuously implemented and maintained. It can be done by using the 5s audit form.

Table 43. shitsuke table

Suggestion	Strength	Weakness
5s evaluation form	Make sure the continuity of 5s kaizen implementation so that it would make a disciplined working environment	Employees need time to adapt to their new working environment

Here is the cost estimation for doing suggestions from the Kaizen project:

No	Information	Price per Unit	Unit	Total
1	Hot gun pint dryer	Rp400,000	1	Rp400,000
2	Iron cutting machine	Rp1,700,000	1	Rp1,700,000
3	Wood cutting machine	Rp2,200,000	1	Rp2,200,000
4	Tag for goods	Rp15,000	10	Rp150,000
5	Trash bin	Rp150,000	3	Rp450,000
6	Floor broom for woods trash	Rp60,000	1	Rp60,000
7	Broomstick	Rp15,000	1	Rp15,000
8	Printing	Rp2,000	10	Rp20,000
Total Cost				Rp4,995,000

Expenditures that must be issued by the company to carry out a kaizen project is Rp 4,995,000.

By implementing lean manufacturing at a Sahara company with several techniques, namely layout redesign and 5s kaizen design improvement, it is hoped that the target production days will be achieved in no more than 6 days.

CHAPTER VI
CONCLUSION

6.1 conclusion

According to the data calculation and discussion above, it can be concluded as below:

1. Work attribute that needs to be improved according to SCOR Racetrack version 12.0 in Sahara Aluminium matrix level 1 is RS. 1.1 Supply Chain Responsiveness, level 2 2.1 Production Cycle Time, and 3 Metrix level 3 there is 3.1 Production Scheduling Activities, 3.2 Raw Material Procurements Activities, and 3.3 Production and test Cycle Time.
2. Several ways can be done to improve effectiveness and efficiencies in Production at Sahara Aluminium by using SCOR Racetrack 12.0, as follows:
    a. Pre SCOR, in Pre SCOR, researcher conducts an observation by considering and interviewing the owner of Sahara Aluminium, directly, to see the general picture and the problem in Sahara Aluminium.
    b. Setting the Scope, in this step, the problem formulation was being held to see the problem at Sahara Aluminium and the way to fix it. In this case, the problem that needs to be solved and researched is the responsiveness
    c. Configuring the supply chain, the problem will be identified to see the attribute that needs to be improved and research. In this case, the attribute that needs to be improved is Responsiveness, which IS shown in the level 3 Metrix, especially in RS. 3.1, RS. 3.2, RS. 3.2, there is a gap in as the gap is identified based on the internal target and the actual time to produce the product, after the identification process, then the best solution can be chosen.

d. Optimize Project, based on the alternative solution that has been found and chosen, then the solution will be grouped according to its character. Here researcher found 6 alternative solutions that can improve the effectiveness and efficiency of Sahara Aluminium.
e. Ready for Implementation, alternative solution is chosen and analyzed. Then, the alternative will be sent to Sahara Aluminium to be a suggestion for improvement. The solution is given in the form of prioritization based on the effort and risk that might be happened if the solution were implemented.

3. The improvement suggestion for Sahara Aluminium was based on the prioritization that has been calculated, the first Prioritization that needs to be implemented is creating Maintenance planning in some sort of time, and creating the optimum production layout. In the second priority, it is designed to create the scheduling production activity and make a quality control system. The 3rd priority is to create the material procurement system and material stock recording.
4. to make a disciplined, effective, and efficient working environment. Sahara Aluminium company needs to implement 5s Kaizen program (seiri, seiton, seiketsu, shitsuke) in their company. Several suggestions for improvement were made to make Sahara Aluminium company have a good working environment, the suggestions are delivered below:
    a. Giving a black tag
    b. Moving the warehouse near the first production line that needs raw material
    c. Changing the method of drying granules that still uses sunlight to a drying machine
    d. Moving the finished product warehouse
    e. Adding trash bin around working place
    f. Adding cleaning tools around employee
    g. Checklist seiso sheet
    h. Making work rules

i. Sticking posters 5S
j. Making an evaluation every week
k. 5s evaluation form

6.2 Suggestion

Based on the analysis and discussion, the researcher can give suggestions, as follows:

1. For Sahara Aluminium

   Sahara Aluminium should have given more attention to its production area, including the material chain, layout production, activity schedule, make the raw material system procurement, raw material recording, and creating make a schedule for machine maintenance.

2. For next researcher

   It is highly suggested for the next research to conduct deeper analysis on the condition of Sahara Aluminium according to SCOR 12.0 Racetrack. So, it could give a detailed explanation of the problem that happened in Sahara Aluminium and more specific information.

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ATTACHMENT

1. Glass Product's Sales

Waktu Produksi: September - Desember 2021

Price range Aquarium Rp. 50.000 - Rp. 400.000 based on the size	Product			
	No	Date	Total Price (Rp)	Aquarium
	1	9/1/2021	150,000	1
	2	9/2/2021	75,000	1
	3	9/3/2021	-	
	4	9/4/2021	100,000	1
	5	9/5/2021		
	6	9/6/2021		
	7	9/7/2021		
	8	9/8/2021		
	9	9/9/2021		
	10	9/10/2021	200,000	2
	11	9/11/2021		
	12	9/12/2021		
	13	9/13/2021		
	14	9/14/2021		
	15	9/15/2021	400000	1
	16	9/16/2021		
	17	9/17/2021	50,000	1
	18	9/18/2021	125,000	1
	19	9/19/2021		
	20	9/20/2021	400,000	1
	21	9/21/2021		
	22	9/22/2021	140,000	1
	23	9/23/2021		
	24	9/24/2021		
	25	9/25/2021		
	26	9/26/2021		
	27	9/27/2021		
	28	9/28/2021		
	29	9/29/2021	60,000	1
	30	9/30/2021		
	Total		1,700,000	11

Product			
No	Date	Total Price (Rp)	Aquarium
1	10/1/2021	100000	1
2	10/2/2021		
3	10/3/2021		
4	10/4/2021		
5	10/5/2021		
6	10/6/2021	250,000	2
7	10/7/2021		
8	10/8/2021	100,000	1
9	10/9/2021		
10	10/10/2021	75000	1
11	10/11/2021		
12	10/12/2021		
13	10/13/2021	75,000	1
14	10/14/2021		
15	10/15/2021		
16	10/16/2021		
17	10/17/2021	50000	1
18	10/18/2021	125,000	1
19	10/19/2021		
20	10/20/2021		
21	10/21/2021		
22	10/22/2021	75,000	1
23	10/23/2021		
24	10/24/2021		
25	10/25/2021		
26	10/26/2021	100,000	1
27	10/27/2021		
28	10/28/2021		
29	10/29/2021		1
30	10/30/2021	250,000	2
Total		1200000	13

Product			
No	Date	Total Price (Rp)	Aquarium
1	11/1/2021		
2	11/2/2021		
3	11/3/2021		
4	11/4/2021	75,000	1
5	11/5/2021		
6	11/6/2021		
7	11/7/2021		
8	11/8/2021		
9	11/9/2021	200,000	2
10	11/10/2021		
11	11/11/2021		
12	11/12/2021		
13	11/13/2021		
14	11/14/2021		
15	11/15/2021	100,000	1
16	11/16/2021		
17	11/17/2021		
18	11/18/2021		
19	11/19/2021		
20	11/20/2021		
21	11/21/2021		
22	11/22/2021		
23	11/23/2021		
24	11/24/2021		
25	11/25/2021		
26	11/26/2021		
27	11/27/2021		
28	11/28/2021	75,000	1
29	11/29/2021		1
30	11/30/2021	250000	2
Total		700000	8

Product			
No	Date	Total Price (Rp)	Aquarium
1	12/1/2021	400,000	1
2	12/2/2021		
3	12/3/2021		
4	12/4/2021	200,000	1
5	12/5/2021		
6	12/6/2021		
7	12/7/2021		
8	12/8/2021		
9	12/9/2021	100,000	1
10	12/10/2021		
11	12/11/2021		
12	12/12/2021	400,000	1
13	12/13/2021		
14	12/14/2021		
15	12/15/2021		
16	12/16/2021	200,000	1
17	12/17/2021		
18	12/18/2021		
19	12/19/2021		
20	12/20/2021	100,000	1
21	12/21/2021		
22	12/22/2021		
23	12/23/2021	400,000	1
24	12/24/2021		
25	12/25/2021		
26	12/26/2021	200,000	1
27	12/27/2021		
28	12/28/2021		
29	12/29/2021		
30	12/30/2021		
Total		2,000,000	8

Display Windows

Product			
No	Date	Total Price (Rp)	Display Windows
1	9/1/2021		
2	9/2/2021		
3	9/3/2021		
4	9/4/2021		
5	9/5/2021		
6	9/6/2021		
7	9/7/2021		
8	9/8/2021		
9	9/9/2021		
10	9/10/2021		
11	9/11/2021		
12	9/12/2021		
13	9/13/2021		
14	9/14/2021		
15	9/15/2021	500,000	1
16	9/16/2021		
17	9/17/2021		
18	9/18/2021		
19	9/19/2021		
20	9/20/2021		
21	9/21/2021		
22	9/22/2021		
23	9/23/2021		
24	9/24/2021		
25	9/25/2021		
26	9/26/2021		
27	9/27/2021		
28	9/28/2021		
29	9/29/2021		
30	9/30/2021		
Total		500,000	1

Product			
No	Date	Total Price (Rp)	Display Windows
1	10/1/2021		
2	10/2/2021		
3	10/3/2021		
4	10/4/2021		
5	10/5/2021		
6	10/6/2021		
7	10/7/2021		
8	10/8/2021		
9	10/9/2021		
10	10/10/2021		
11	10/11/2021		
12	10/12/2021		
13	10/13/2021		
14	10/14/2021		
15	10/15/2021		
16	10/16/2021		
17	10/17/2021		
18	10/18/2021		
19	10/19/2021		
20	10/20/2021		
21	10/21/2021		
22	10/22/2021		
23	10/23/2021		
24	10/24/2021		
25	10/25/2021		
26	10/26/2021		
27	10/27/2021		
28	10/28/2021		
29	10/29/2021		
30	10/30/2021		
Total		0	0

Product			
No	Date	Total Price (Rp)	Display Windows
1	11/1/2021		
2	11/2/2021		
3	11/3/2021		
4	11/4/2021		
5	11/5/2021	500,000	1
6	11/6/2021		
7	11/7/2021		
8	11/8/2021		
9	11/9/2021		
10	11/10/2021		
11	11/11/2021		
12	11/12/2021		
13	11/13/2021		
14	11/14/2021		
15	11/15/2021		
16	11/16/2021		
17	11/17/2021		
18	11/18/2021		
19	11/19/2021		
20	11/20/2021		
21	11/21/2021	500,000	1
22	11/22/2021		
23	11/23/2021		
24	11/24/2021		
25	11/25/2021		
26	11/26/2021		
27	11/27/2021		
28	11/28/2021		
29	11/29/2021		
30	11/30/2021		
Total		1000000	2

Product			
No	Date	Total Price (Rp)	Display Windows
1	12/1/2021		
2	12/2/2021		
3	12/3/2021		
4	12/4/2021		
5	12/5/2021		
6	12/6/2021		
7	12/7/2021		
8	12/8/2021		
9	12/9/2021		
10	12/10/2021		
11	12/11/2021		
12	12/12/2021		
13	12/13/2021		
14	12/14/2021		
15	12/15/2021		
16	12/16/2021		
17	12/17/2021	500,000	1
18	12/18/2021		
19	12/19/2021		
20	12/20/2021		
21	12/21/2021		
22	12/22/2021		
23	12/23/2021		
24	12/24/2021		
25	12/25/2021		
26	12/26/2021		
27	12/27/2021		
28	12/28/2021		
29	12/29/2021		
30	12/30/2021		
Total		500,000	1

Doors

Product			
No	Date	Total Price (Rp)	Doors
1	9/1/2021		
2	9/2/2021		
3	9/3/2021		
4	9/4/2021	600,000	1
5	9/5/2021		
6	9/6/2021		
7	9/7/2021		
8	9/8/2021		
9	9/9/2021		
10	9/10/2021		
11	9/11/2021		
12	9/12/2021		
13	9/13/2021		
14	9/14/2021		
15	9/15/2021		
16	9/16/2021		
17	9/17/2021		
18	9/18/2021		
19	9/19/2021	600,000	1
20	9/20/2021		
21	9/21/2021		
22	9/22/2021		
23	9/23/2021		
24	9/24/2021		
25	9/25/2021		
26	9/26/2021		
27	9/27/2021		
28	9/28/2021		
29	9/29/2021		
30	9/30/2021		
Total		1,200,000	2

Product			
No	Date	Total Price (Rp)	Doors
1	10/1/2021		
2	10/2/2021		
3	10/3/2021		
4	10/4/2021		
5	10/5/2021		
6	10/6/2021		
7	10/7/2021		
8	10/8/2021		
9	10/9/2021		
10	10/10/2021		
11	10/11/2021		
12	10/12/2021		
13	10/13/2021	1,000,000	1
14	10/14/2021		
15	10/15/2021		
16	10/16/2021		
17	10/17/2021		
18	10/18/2021		
19	10/19/2021		
20	10/20/2021		
21	10/21/2021		
22	10/22/2021		
23	10/23/2021		
24	10/24/2021		
25	10/25/2021		
26	10/26/2021		
27	10/27/2021		
28	10/28/2021		
29	10/29/2021		
30	10/30/2021		
Total		1000000	1

Product			
No	Date	Total Price (Rp)	Doors
1	11/1/2021		
2	11/2/2021		
3	11/3/2021		
4	11/4/2021		
5	11/5/2021		
6	11/6/2021		
7	11/7/2021		
8	11/8/2021		
9	11/9/2021	500,000	1
10	11/10/2021		
11	11/11/2021		
12	11/12/2021		
13	11/13/2021		
14	11/14/2021		
15	11/15/2021		
16	11/16/2021		
17	11/17/2021		
18	11/18/2021		
19	11/19/2021		
20	11/20/2021		
21	11/21/2021		
22	11/22/2021		
23	11/23/2021		
24	11/24/2021		
25	11/25/2021		
26	11/26/2021		
27	11/27/2021		
28	11/28/2021		
29	11/29/2021		
30	11/30/2021		
Total		500000	1

Product			
No	Date	Total Price (Rp)	Doors
1	12/1/2021		
2	12/2/2021		
3	12/3/2021		
4	12/4/2021		
5	12/5/2021		
6	12/6/2021		
7	12/7/2021		
8	12/8/2021		
9	12/9/2021		
10	12/10/2021		
11	12/11/2021		
12	12/12/2021		
13	12/13/2021		
14	12/14/2021		
15	12/15/2021		
16	12/16/2021		
17	12/17/2021		
18	12/18/2021		
19	12/19/2021		
20	12/20/2021		
21	12/21/2021		
22	12/22/2021		
23	12/23/2021		
24	12/24/2021		
25	12/25/2021		
26	12/26/2021		
27	12/27/2021		
28	12/28/2021		
29	12/29/2021		
30	12/30/2021		
Total		0	0

2. Steel Product's Sales

Waktu Produksi: September - Desember 2021

Shelf Product

Product			
No	**Date**	**Total Price (Rp)**	**Shelf**
1	9/1/2021	300,000	1
2	9/2/2021	500,000	1
3	9/3/2021		
4	9/4/2021	300,000	1
5	9/5/2021		
6	9/6/2021	200,000	
7	9/7/2021	500,000	1
8	9/8/2021		
9	9/9/2021	300,000	1
10	9/10/2021		
11	9/11/2021	300,000	1
12	9/12/2021		
13	9/13/2021	300,000	
14	9/14/2021		
15	9/15/2021	700,000	1
16	9/16/2021		
17	9/17/2021		
18	9/18/2021	300,000	1
19	9/19/2021		
20	9/20/2021	300,000	1
21	9/21/2021		
22	9/22/2021		
23	9/23/2021	300,000	1
24	9/24/2021		
25	9/25/2021	300,000	1
26	9/26/2021		
27	9/27/2021	300,000	1
28	9/28/2021		
29	9/29/2021	300,000	1
30	9/30/2021		
Total		**5,200,000**	**13**

Product			
No	**Date**	**Total Price (Rp)**	**Shelf**
1	10/1/2021	300,000	1
2	10/2/2021	300,000	1
3	10/3/2021		
4	10/4/2021	600,000	1
5	10/5/2021	300,000	1
6	10/6/2021		
7	10/7/2021		
8	10/8/2021	300,000	1
9	10/9/2021		
10	10/10/2021		
11	10/11/2021		
12	10/12/2021	300,000	1
13	10/13/2021		
14	10/14/2021	400,000	1
15	10/15/2021		
16	10/16/2021		
17	10/17/2021		
18	10/18/2021		
19	10/19/2021	300,000	1
20	10/20/2021		
21	10/21/2021		
22	10/22/2021	300,000	1
23	10/23/2021		
24	10/24/2021	300,000	1
25	10/25/2021		
26	10/26/2021		
27	10/27/2021	300,000	1
28	10/28/2021		
29	10/29/2021	300,000	1
30	10/30/2021	300,000	1
Total		**4300000**	**13**

Product			
No	**Date**	**Total Price (Rp)**	**Shelf**
1	11/1/2021	200,000	1
2	11/2/2021		
3	11/3/2021	300,000	1
4	11/4/2021		
5	11/5/2021	300,000	1
6	11/6/2021		
7	11/7/2021	300,000	1
8	11/8/2021		
9	11/9/2021	300,000	1
10	11/10/2021		
11	11/11/2021		
12	11/12/2021	300,000	1
13	11/13/2021		
14	11/14/2021	300,000	1
15	11/15/2021	500,000	1
16	11/16/2021		
17	11/17/2021	500,000	1
18	11/18/2021		
19	11/19/2021		
20	11/20/2021		
21	11/21/2021		
22	11/22/2021	300,000	1
23	11/23/2021		
24	11/24/2021	300,000	1
25	11/25/2021		
26	11/26/2021		
27	11/27/2021	300,000	1
28	11/28/2021		
29	11/29/2021		
30	11/30/2021	300,000	1
Total		**4,200,000**	**13**

Product			
No	**Date**	**Total Price (Rp)**	**Shelf**
1	12/1/2021		
2	12/2/2021		
3	12/3/2021		
4	12/4/2021	500,000	1
5	12/5/2021		
6	12/6/2021	400.00	1
7	12/7/2021		
8	12/8/2021	600,000	1
9	12/9/2021		
10	12/10/2021	300,000	
11	12/11/2021		
12	12/12/2021		
13	12/13/2021	600,000	1
14	12/14/2021		
15	12/15/2021	200,000	1
16	12/16/2021		
17	12/17/2021	300,000	1
18	12/18/2021		
19	12/19/2021	700,000	1
20	12/20/2021	200,000	1
21	12/21/2021		
22	12/22/2021	500,000	1
23	12/23/2021		
24	12/24/2021		
25	12/25/2021		
26	12/26/2021	300,000	1
27	12/27/2021		
28	12/28/2021	300,000	1
29	12/29/2021		
30	12/30/2021		
Total		**4,500,000**	**11**

Product			
No	Date	Total Price (Rp)	Decoration
1	9/1/2021		
2	9/2/2021		
3	9/3/2021		
4	9/4/2021		
5	9/5/2021		
6	9/6/2021		
7	9/7/2021	500,000	1
8	9/8/2021		
9	9/9/2021		
10	9/10/2021		
11	9/11/2021	500,000	1
12	9/12/2021		
13	9/13/2021		
14	9/14/2021		
15	9/15/2021		
16	9/16/2021		
17	9/17/2021		
18	9/18/2021		
19	9/19/2021		
20	9/20/2021		
21	9/21/2021		
22	9/22/2021		
23	9/23/2021		
24	9/24/2021	1,000,000	1
25	9/25/2021		
26	9/26/2021		
27	9/27/2021		
28	9/28/2021		
29	9/29/2021		
30	9/30/2021		
Total		2,000,000	3

Product			
No	Date	Total Price (Rp)	Decoration
1	10/1/2021		
2	10/2/2021		
3	10/3/2021		
4	10/4/2021		
5	10/5/2021		
6	10/6/2021		
7	10/7/2021	900,000	1
8	10/8/2021		
9	10/9/2021		
10	10/10/2021		
11	10/11/2021		
12	10/12/2021		
13	10/13/2021	500,000	1
14	10/14/2021		
15	10/15/2021		
16	10/16/2021		
17	10/17/2021		
18	10/18/2021		
19	10/19/2021		
20	10/20/2021		
21	10/21/2021	500,000	1
22	10/22/2021		
23	10/23/2021		
24	10/24/2021		
25	10/25/2021		
26	10/26/2021		
27	10/27/2021		
28	10/28/2021		
29	10/29/2021		
30	10/30/2021		
Total		1900000	3

Product			
No	Date	Total Price (Rp)	Decoration
1	11/1/2021		
2	11/2/2021		
3	11/3/2021		
4	11/4/2021		
5	11/5/2021		
6	11/6/2021		
7	11/7/2021		
8	11/8/2021		
9	11/9/2021		
10	11/10/2021		
11	11/11/2021		
12	11/12/2021		
13	11/13/2021	1,000,000	1
14	11/14/2021		
15	11/15/2021		
16	11/16/2021		
17	11/17/2021		
18	11/18/2021		
19	11/19/2021		
20	11/20/2021		
21	11/21/2021		
22	11/22/2021		
23	11/23/2021		
24	11/24/2021		
25	11/25/2021		
26	11/26/2021		
27	11/27/2021		
28	11/28/2021		
29	11/29/2021		
30	11/30/2021		
Total		1000000	1

Product			
No	Date	Total Price (Rp)	Decoration
1	12/1/2021		
2	12/2/2021		
3	12/3/2021		
4	12/4/2021		
5	12/5/2021		
6	12/6/2021		
7	12/7/2021		
8	12/8/2021		
9	12/9/2021		
10	12/10/2021		
11	12/11/2021		
12	12/12/2021		
13	12/13/2021		
14	12/14/2021		
15	12/15/2021		
16	12/16/2021		
17	12/17/2021		
18	12/18/2021		
19	12/19/2021		
20	12/20/2021		
21	12/21/2021		
22	12/22/2021		
23	12/23/2021		
24	12/24/2021		
25	12/25/2021		
26	12/26/2021		
27	12/27/2021		
28	12/28/2021		
29	12/29/2021		
30	12/30/2021		
Total		0	0

Product			
No	Date	Total Price (Rp)	Desk
1	9/1/2021		
2	9/2/2021		
3	9/3/2021		
4	9/4/2021		
5	9/5/2021		
6	9/6/2021		
7	9/7/2021		
8	9/8/2021		
9	9/9/2021		
10	9/10/2021		
11	9/11/2021		
12	9/12/2021		
13	9/13/2021		
14	9/14/2021		
15	9/15/2021		
16	9/16/2021		
17	9/17/2021		
18	9/18/2021		
19	9/19/2021		
20	9/20/2021		
21	9/21/2021		
22	9/22/2021		
23	9/23/2021		
24	9/24/2021		
25	9/25/2021		
26	9/26/2021		
27	9/27/2021		
28	9/28/2021		
29	9/29/2021		
30	9/30/2021		
Total		**0**	**0**

Product			
No	Date	Total Price (Rp)	Desk
1	10/1/2021		
2	10/2/2021		
3	10/3/2021		
4	10/4/2021		
5	10/5/2021		
6	10/6/2021		
7	10/7/2021	1,000,000	1
8	10/8/2021		
9	10/9/2021		
10	10/10/2021		
11	10/11/2021		
12	10/12/2021		
13	10/13/2021	500,000	1
14	10/14/2021		
15	10/15/2021		
16	10/16/2021		
17	10/17/2021		
18	10/18/2021		
19	10/19/2021		
20	10/20/2021		
21	10/21/2021		
22	10/22/2021		
23	10/23/2021		
24	10/24/2021		
25	10/25/2021		
26	10/26/2021		
27	10/27/2021		
28	10/28/2021		
29	10/29/2021		
30	10/30/2021		
Total		**1500000**	**2**

Product			
No	Date	Total Price (Rp)	Desk
1	11/1/2021		
2	11/2/2021		
3	11/3/2021		
4	11/4/2021	300,000	1
5	11/5/2021		
6	11/6/2021	200,000	1
7	11/7/2021		
8	11/8/2021		
9	11/9/2021		
10	11/10/2021		
11	11/11/2021		
12	11/12/2021		
13	11/13/2021		
14	11/14/2021	500,000	1
15	11/15/2021		
16	11/16/2021		
17	11/17/2021		
18	11/18/2021		
19	11/19/2021		
20	11/20/2021	500,000	1
21	11/21/2021		
22	11/22/2021		
23	11/23/2021		
24	11/24/2021		
25	11/25/2021		
26	11/26/2021		
27	11/27/2021		
28	11/28/2021	1,000,000	1
29	11/29/2021		
30	11/30/2021		
Total		**2500000**	**5**

Product			
No	Date	Total Price (Rp)	Desk
1	12/1/2021		
2	12/2/2021		
3	12/3/2021		
4	12/4/2021		
5	12/5/2021		
6	12/6/2021		
7	12/7/2021		
8	12/8/2021		
9	12/9/2021		
10	12/10/2021		
11	12/11/2021		
12	12/12/2021		
13	12/13/2021		
14	12/14/2021		
15	12/15/2021		
16	12/16/2021		
17	12/17/2021		
18	12/18/2021		
19	12/19/2021		
20	12/20/2021		
21	12/21/2021		
22	12/22/2021		
23	12/23/2021		
24	12/24/2021		
25	12/25/2021		
26	12/26/2021		
27	12/27/2021		
28	12/28/2021		
29	12/29/2021		
30	12/30/2021		
Total		**0**	**0**

3. Wood Product's Sales

Waktu Produksi: September - Desember 2021

Product			
No	**Date**	**Total Price (Rp)**	**Cup Board**
1	9/1/2021		
2	9/2/2021		
3	9/3/2021		
4	9/4/2021		
5	9/5/2021	500,000	1
6	9/6/2021		
7	9/7/2021		
8	9/8/2021		
9	9/9/2021	1,000,000	1
10	9/10/2021		
11	9/11/2021		
12	9/12/2021		
13	9/13/2021		
14	9/14/2021	200,000	1
15	9/15/2021		
16	9/16/2021		
17	9/17/2021		
18	9/18/2021		
19	9/19/2021		
20	9/20/2021		
21	9/21/2021		
22	9/22/2021		
23	9/23/2021		
24	9/24/2021		
25	9/25/2021		
26	9/26/2021		
27	9/27/2021		
28	9/28/2021		
29	9/29/2021		
30	9/30/2021		
Total		**1,700,000**	**3**

Product			
No	**Date**	**Total Price (Rp)**	**Cup Board**
1	10/1/2021		
2	10/2/2021		
3	10/3/2021		
4	10/4/2021	1,000,000	1
5	10/5/2021		
6	10/6/2021	300,000	1
7	10/7/2021		
8	10/8/2021		
9	10/9/2021	1,500,000	1
10	10/10/2021		
11	10/11/2021		
12	10/12/2021		
13	10/13/2021		
14	10/14/2021		
15	10/15/2021		
16	10/16/2021		
17	10/17/2021		
18	10/18/2021		
19	10/19/2021		
20	10/20/2021		
21	10/21/2021		
22	10/22/2021		
23	10/23/2021		
24	10/24/2021		
25	10/25/2021		
26	10/26/2021		
27	10/27/2021		
28	10/28/2021		
29	10/29/2021		
30	10/30/2021		
Total		**2800000**	**3**

Product			
No	**Date**	**Total Price (Rp)**	**Cup Board**
1	11/1/2021		
2	11/2/2021		
3	11/3/2021		
4	11/4/2021		
5	11/5/2021		
6	11/6/2021		
7	11/7/2021		
8	11/8/2021	500,000	1
9	11/9/2021		
10	11/10/2021		
11	11/11/2021		
12	11/12/2021	200,000	1
13	11/13/2021		
14	11/14/2021		
15	11/15/2021		
16	11/16/2021		
17	11/17/2021		
18	11/18/2021		
19	11/19/2021		
20	11/20/2021		
21	11/21/2021		
22	11/22/2021		
23	11/23/2021		
24	11/24/2021		
25	11/25/2021		
26	11/26/2021		
27	11/27/2021		
28	11/28/2021		
29	11/29/2021		
30	11/30/2021		
Total		**700000**	**2**

Product			
No	**Date**	**Total Price (Rp)**	**Cup Board**
1	12/1/2021		
2	12/2/2021		
3	12/3/2021		
4	12/4/2021		
5	12/5/2021		
6	12/6/2021		
7	12/7/2021		
8	12/8/2021	300,000	1
9	12/9/2021		
10	12/10/2021		
11	12/11/2021		
12	12/12/2021		
13	12/13/2021	500,000	1
14	12/14/2021		
15	12/15/2021		
16	12/16/2021	200,000	1
17	12/17/2021		
18	12/18/2021		
19	12/19/2021		
20	12/20/2021		
21	12/21/2021	200,000	1
22	12/22/2021		
23	12/23/2021		
24	12/24/2021		
25	12/25/2021		
26	12/26/2021		
27	12/27/2021		
28	12/28/2021		
29	12/29/2021		
30	12/30/2021		
Total		**1,200,000**	**4**

Product			
No	Date	Total Price (Rp)	Decoration
1	9/1/2021		
2	9/2/2021		
3	9/3/2021		
4	9/4/2021		
5	9/5/2021		
6	9/6/2021		
7	9/7/2021		
8	9/8/2021		
9	9/9/2021		
10	9/10/2021		
11	9/11/2021		
12	9/12/2021		
13	9/13/2021		
14	9/14/2021		
15	9/15/2021		
16	9/16/2021		
17	9/17/2021		
18	9/18/2021		
19	9/19/2021		
20	9/20/2021		
21	9/21/2021		
22	9/22/2021		
23	9/23/2021		
24	9/24/2021		
25	9/25/2021		
26	9/26/2021		
27	9/27/2021		
28	9/28/2021		
29	9/29/2021		
30	9/30/2021		
Total		**0**	**0**

Product			
No	Date	Total Price (Rp)	Decoration
1	10/1/2021		
2	10/2/2021		
3	10/3/2021		
4	10/4/2021		
5	10/5/2021		
6	10/6/2021	300,000	1
7	10/7/2021		
8	10/8/2021		
9	10/9/2021		
10	10/10/2021	300,000	1
11	10/11/2021		
12	10/12/2021		
13	10/13/2021		
14	10/14/2021		
15	10/15/2021		
16	10/16/2021	300,000	1
17	10/17/2021		
18	10/18/2021		
19	10/19/2021		
20	10/20/2021		
21	10/21/2021		
22	10/22/2021		
23	10/23/2021		
24	10/24/2021		
25	10/25/2021		
26	10/26/2021		
27	10/27/2021		
28	10/28/2021		
29	10/29/2021		
30	10/30/2021		
Total		**900000**	**3**

Product			
No	Date	Total Price (Rp)	Decoration
1	11/1/2021		
2	11/2/2021		
3	11/3/2021		
4	11/4/2021		
5	11/5/2021		
6	11/6/2021	550,000	1
7	11/7/2021		
8	11/8/2021		
9	11/9/2021		
10	11/10/2021		
11	11/11/2021		
12	11/12/2021		
13	11/13/2021		
14	11/14/2021		
15	11/15/2021		
16	11/16/2021		
17	11/17/2021		
18	11/18/2021		
19	11/19/2021		
20	11/20/2021		
21	11/21/2021	550,000	1
22	11/22/2021		
23	11/23/2021		
24	11/24/2021		
25	11/25/2021		
26	11/26/2021		
27	11/27/2021		
28	11/28/2021		
29	11/29/2021		
30	11/30/2021		
Total		**1100000**	**2**

Product			
No	Date	Total Price (Rp)	Decoration
1	12/1/2021		
2	12/2/2021		
3	12/3/2021		
4	12/4/2021		
5	12/5/2021		
6	12/6/2021		
7	12/7/2021		
8	12/8/2021		
9	12/9/2021		
10	12/10/2021		
11	12/11/2021		
12	12/12/2021		
13	12/13/2021		
14	12/14/2021		
15	12/15/2021		
16	12/16/2021		
17	12/17/2021		
18	12/18/2021		
19	12/19/2021		
20	12/20/2021		
21	12/21/2021		
22	12/22/2021		
23	12/23/2021		
24	12/24/2021		
25	12/25/2021		
26	12/26/2021		
27	12/27/2021		
28	12/28/2021		
29	12/29/2021		
30	12/30/2021		
Total		**0**	**0**

Product			
No	Date	Total Price (Rp)	Desk
1	9/1/2021		
2	9/2/2021		
3	9/3/2021		
4	9/4/2021		
5	9/5/2021	1,000,000	1
6	9/6/2021		
7	9/7/2021		
8	9/8/2021		
9	9/9/2021		
10	9/10/2021		
11	9/11/2021		
12	9/12/2021		
13	9/13/2021		
14	9/14/2021		
15	9/15/2021		
16	9/16/2021		
17	9/17/2021		
18	9/18/2021		
19	9/19/2021		
20	9/20/2021		
21	9/21/2021		
22	9/22/2021		
23	9/23/2021		
24	9/24/2021		
25	9/25/2021		
26	9/26/2021		
27	9/27/2021		
28	9/28/2021		
29	9/29/2021		
30	9/30/2021		
Total		**1,000,000**	**1**

Product			
No	Date	Total Price (Rp)	Desk
1	10/1/2021		
2	10/2/2021		
3	10/3/2021		
4	10/4/2021		
5	10/5/2021		
6	10/6/2021		
7	10/7/2021		
8	10/8/2021		
9	10/9/2021		
10	10/10/2021		
11	10/11/2021		
12	10/12/2021		
13	10/13/2021		
14	10/14/2021	1,000,000	1
15	10/15/2021		
16	10/16/2021		
17	10/17/2021		
18	10/18/2021		
19	10/19/2021	1,500,000	1
20	10/20/2021		
21	10/21/2021		
22	10/22/2021		
23	10/23/2021		
24	10/24/2021		
25	10/25/2021		
26	10/26/2021		
27	10/27/2021		
28	10/28/2021		
29	10/29/2021		
30	10/30/2021		
Total		**2500000**	**2**

Product			
No	Date	Total Price (Rp)	Desk
1	11/1/2021		
2	11/2/2021		
3	11/3/2021	650,000	1
4	11/4/2021		
5	11/5/2021		
6	11/6/2021		
7	11/7/2021		
8	11/8/2021	1,000,000	1
9	11/9/2021		
10	11/10/2021		
11	11/11/2021		
12	11/12/2021		
13	11/13/2021		
14	11/14/2021		
15	11/15/2021		
16	11/16/2021		
17	11/17/2021		
18	11/18/2021		
19	11/19/2021		
20	11/20/2021		
21	11/21/2021		
22	11/22/2021		
23	11/23/2021	1,000,000	1
24	11/24/2021		
25	11/25/2021		
26	11/26/2021		
27	11/27/2021		
28	11/28/2021		
29	11/29/2021		
30	11/30/2021		
Total		**2650000**	**3**

Product			
No	Date	Total Price (Rp)	Desk
1	12/1/2021		
2	12/2/2021		
3	12/3/2021		
4	12/4/2021		
5	12/5/2021		
6	12/6/2021		
7	12/7/2021		
8	12/8/2021		
9	12/9/2021		
10	12/10/2021		
11	12/11/2021		
12	12/12/2021		
13	12/13/2021		
14	12/14/2021		
15	12/15/2021		
16	12/16/2021		
17	12/17/2021		
18	12/18/2021		
19	12/19/2021		
20	12/20/2021		
21	12/21/2021		
22	12/22/2021		
23	12/23/2021		
24	12/24/2021		
25	12/25/2021		
26	12/26/2021		
27	12/27/2021		
28	12/28/2021		
29	12/29/2021		
30	12/30/2021		
Total		**0**	**0**

4. 10 Product Shelf Level 2

Waktu Produksi: September - Desember 2021
Jumlah Produk: 10 unit

No	Date	Raw Material Cycle Time (Days)	production Cycle Time (Days)	Delivery Cycle Time (Days)	Delivery Retail Cycle Time (Days)
1	9/2/2021	1	5	2	1
2	9/7/2021	1	5	2	1
3	9/15/2021	2	7	2	1
4	10/4/2021	1	6	2	1
5	10/14/2021	1	4	2	1
6	11/1/2021	0.5	2	2	1
7	11/17/2021	1	5	2	1
8	12/13/2021	1	6	2	1
9	12/17/2021	0.5	3	2	1
10	12/19/2021	1	7	2	1
Average (Days)		**1**	**5**	**2**	**1**

5. 10 Product Shelf Level 3

Waktu Produksi: September - Desember 2021
Jumlah Produk: 10 unit

No	Date	Production Scheduling activities (Days)	Raw material procurement activities (Days)	Production and test cycle time (Days)	Packaging Cycle Time (Days)	Quality Control Cycle Time (Days)	Delivery Cycle Time (Days)
1	9/2/2021	0.2	0.75	3	0.2	0.1	0.6
2	9/7/2021	0.2	0.7	3	0.2	0.1	0.6
3	9/15/2021	0.2	0.7	3	0.2	0.1	0.6
4	10/4/2021	0.2	0.75	3	0.2	0.1	0.6
5	10/14/2021	0.2	0.65	2.75	0.2	0.1	0.6
6	11/1/2021	0.2	0.65	2.75	0.2	0.1	0.6
7	11/17/2021	0.2	0.7	3	0.2	0.1	0.6
8	12/13/2021	0.2	0.7	2.8	0.2	0.1	0.6
9	12/17/2021	0.2	0.75	2.75	0.2	0.1	0.6
10	12/19/2021	0.2	0.75	2.75	0.2	0.1	0.6
Average (Days)		**0.2**	**0.71**	**2.88**	**0.2**	**0.1**	**0.6**

6. Hasil Interview

Data Hasil Wawancara dengan Pak Ali

1. **Jelaskan terkait perusahaan Sahara ini!**
    - Nama perusahaan saya adalah Sahara aluminium
    - Saya adalah pemiliknya
    - Nama saya adalah ali
    - Perusahaan ini adalah perusahaan milik pribadi tidak ada pembagian dengan orang lain
    - Material yang kami pakai disini adalah, aluminium, barang-barang kaca, dan kayu
    - Lokasinya ya disini mas jakal
    - Pekerja saya 5 orang
    - Perusahaan saya itu dibuat dari tahun 2015

2. **Apa yang mendorong Anda untuk mendirikan perusahaan ini?**

    Jadi saya buat perusahaan ini, soalnya saya tu liat mas banyak yang punya perusahaan las-lasan, dan perusahaan kayu kaca, tapi saya liat di sekitar sini gada yang bisa nerima pesanan mahasiswa, padahal mereka banyak tugas, jadi saya pengen buat perusahaan ini biar mereka bisa bikin barang2 custom, tapi kita disini juga bikin barang2 reguler mas, yang orderannya banyak.

3. **Untuk produk yang diproduksi ada apa saja?**

    Produk kami disini ada aquarium, rak besi, meja meja banyak mas.

4. **Perusahaan ini apakah ada visi misi? Jika ada mungkin bisa dijelaskan.**

    Visi misi dari perusahaan kami tu membuat barang yang sesuai keinginan customer dan mereka puas sama produk saya, dan juga membantu temen2 mahasiswa buat bikin deisgn mereka jadi nyata, dan saya tu selalu perhatiin kualitas biar dapat kepercayaan customer dan customer puas.

1. **Mesin apa saja yang digunakan dalam proses produksi perusahaan Sahara?**

   Jadi disini mesinnya tu ada mesin pemotong kayu, sprayer buat cat, therus mesin penghalus untuk memperhalus, dan ada meja gergaji juga, ada mesin bor dan banyak mas coba liat aja mas.

2. **Untuk kapasitas dan waktu produksi itu berapa ya pak?**

   Kapasitas produksi kami tu tergantung apa yang mau dibuat sebenernya mas, jadi kalau barangnya makin gede, ya makin lama juga mas, tapi kalau harus di kasi angka2 ya per minggu tu yaa rak besi tu kami bisa buat kurang lebih 10, terus meja-meja yang bahan2 kayu deh itu ya paling maksimal 8 perminggu, terus aquariumnya itu 15 intinya yaa yang kaca2 segituan mas.

3. **Berapa range harga dari produk yang dijual disini?**

   Kalau masalah harga sebenernya tergantung bahan ya mas, tapi ya kayak rak besi aja itu minim 175ribu sampe ada yang 4 juta tapi jarang, terus kalau meja tu yaa ada yang 50ribu juga mas, sampe 3 juta juga kami pernah nerima, terus kalau aquarium itu masnya paham juga to mas, kami ya yang 50 ribu juga kami terima sampe yang paling gede itu 4juta pernah ada mas itu yang aquarium 2 meteran lebih mas ya paham lah masnya, terus kalau produk2 besi2 an gitu yaa mulai minim 100ribu sampe 4juta, terus kalau produk katu itu ya 50ribu sampe 3juta.

4. **Bagaimana jam kerja di perusahaan? Kan ini juga semi toko langsung ya, apakah setiap hari buka?**

   Untuk jam kerja sendiri kami disini tergantung hari ya mas, kalau senin sampe jumat itu ya mulai jam 8 sampe jam 4 Cuma kadang ya masi buka Cuma ga bikin barang lagi, Cuma nerima order aja, terus kalau sabtu itu jam 8 sampe jam 4 juga tapi seringnya ga sampe.

5. **Untuk pembagian tugas disini bagaimana ya? Kan tadi ada 5 orang, apakah 5 orang ini disatu stasiun produksi atau bagaimana?**

   Jadi disini itu ada 5 orang mas, saya sendiri yang ngawasin kadang yo ngerjain juga jadi intinya dibagi 2 ada yang besi sama kayu kaca, nah yang kayu ini ini dibagi 2 ada yang cutting, sama ada yang las-lasan, terus kalau kaca kayu itu ada yang bagian lem2an sama ada pemotongan.

1. **Biasanya customer perusahaan Sahara berasal dari daerah mana saja?**

   Kalau customer utama kami tu ya dari sleman, magelang, solo tu banyak mas, kadang kita juga kirim ke Bantul, dan lampung juga kadang mesen.

2. **Untuk supplier bahan material produk itu dari mana saja ya? Mungkin ada penjelasan detail misal bahan A dari Supplier A seperti itu.**

   Kalau supplier kami di bagi bagi mas, ada yang dari Bantul kalau itu buat kayu, nah terus kalau kaca kami dapet dari godean mas, terus kalau besi ya sekitaran sleman DIY aja mas.