INDUSTRIAL PRACTICE REPORT
IN PT. RIAU ANDALAN PULP AND PAPER

Designing Competency of Paper Warehouse Operator

Arranged by:

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INTERNATIONAL INDUSTRIAL ENGINEERING STUDY PROGRAM

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This is to certify that :

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has successfully completed internship program at **ALI Department, PT. Riau Andalan Pulp and Paper**, from **July 1st, 2019 to August 9th, 2019.**

We wish him all the success for his future.

Pangkalan Kerinci, August 9th, 2019

Muhammad Yamin
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PREFACE

Thank you for the presence of God Almighty, for the abundance of Grace and His Guidance the author can complete industrial practice and complete the report on industrial practice at PT. Riau Andalan Pulp and Paper held on July 1, 2019 until August 9, 2019. In carrying out industrial practice activities and completing industrial practice reports, the author gets a lot of help, guidance, and support from various parties. For that, the author also thanked:

1. Mr. Deddy Yandri as the main mentor who always provides explanations while undergoing industrial practice.
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5. Families who always support author both in the implementation of Industrial practice and preparation of industrial practice reports.
6. Associates in the April Learning Institute who provide explanations and assistance during the preparation of industrial practice reports.
7. Author's colleague while undergoing industrial practice activities.
8. All parties who have helped directly or indirectly in carrying out industrial practice activities and in preparing reports on industrial practice.

The author realizes that this report still has many shortcomings. However, the authors hope this Industrial practice Report can be useful for readers.

Riau, 9 August 2019

Gerri Austine

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INTRODUCTION

1.1. Industrial Practice Background

The Industrial Engineering Study Program, Faculty of Industrial Technology, Atma Jaya Yogyakarta University (PSTI UAJY) requires all students to carry out industrial practice in accordance with the curriculum at PSTI UAJY. PSTI UAJY views industrial practice as a vehicle or means for students to recognize the atmosphere in the industry as well as grow, improve, and develop a professional work ethic as a candidate for an Industrial Engineering degree.

Industrial practice can be said as an arena for professional simulation of Industrial Engineering students. The paradigm that must be instilled is that during industrial practice students work in the company they choose. Working, in this case includes the activities of planning, designing, repairing, implementing and solving problems. Therefore, in industrial practice the activities carried out by students are:

a. Recognizing the scope of the company
b. Follow the work process in the company continuously
c. Doing and working on assignments given by superiors, supervisors or field supervisors.
d. Observing system behavior
e. Prepare reports in written form
f. Carry out industrial practice exams

1.2. Objective of Industrial Practice

Things that should be achieved through this industrial practice are:

a. Train discipline.
b. Train the ability to interact with subordinates, colleagues, and superiors in the company.
c. Train the ability to adapt to the work environment.
d. Observe directly the activities of companies in producing and running a business.
e. Completing the theory obtained in lectures with existing practices in the company.
f. Add insight into production systems and business systems.

1.3. Time and Place of Conducting the Industrial Practice

This industrial practice is conducted from July 1, 2019 to August 9, 2019 at PT Riau Andalan Pulp and Paper, East Cross Road, Pangkalan Kerinci District, Pelalawan Regency, Riau 28654. Working hours are Monday to Friday starting from 08.00 to 17.00 WIB with rest hours starting at 12:00 until 13:30 WIB and on Saturdays held at 08:00 until 12:00 WIB. Implementation of industrial practice will then be continued with the preparation of industrial practice reports and assessments and industrial practice exams. As long as industrial practice takes place, the tasks is given in ALI (April Learning Institute) Department.

CHAPTER 2

COMPANY OVERVIEW

2.1. Brief History of the Company

2.1.1. Company History

PT Riau Andalan Pulp and Paper (RAPP) is one of the largest pulp and paper companies in Asia. PT Riau Andalan Pulp and Paper (RAPP) is a subsidiary of Asia Pacific Resources International Holdings Ltd (APRIL) which is engaged in the pulp and paper industry. APRIL is a member of the Royal Golden Eagle (RGE) group founded by Sukanto Tanoto in 1973. RGE manages several manufacturing companies based on natural resources in various countries such as Indonesia, China, Brazil, Spain, and Canada which are currently has assets exceeding US $ 18 billion and is based in Jakarta.

Sukanto Tanoto, who was the CEO and founder of the RGE group born on December 29, 1949, was the eldest of seven children. In 1967, he joined a family-owned company as a supplier of automobile parts from Japan. In 1973, he founded the plywood industry called RGM (now RGE), which at that time was the golden era of Indonesian plywood. In 1979, he founded a palm oil company called Asian Agri. In 1983, he built a factory for dissolving pulp in Porsea, North Sumatra under the name Indorayon (now Toba Pulp Lestari) which began operations in 1988.

PT. Riau Andalan Pulp and Paper (RAPP) is located in Pangkalan Kerinci, Langgam District, Pelalawan Regency, Riau Province, which is about 75 km from Pekanbaru, the provincial capital of Riau and the head office and administrative and cooperation affairs are on Jl. Teluk Betung No. 31 Central Jakarta. PT. RAPP is a company engaged in the pulp and paper sector, so that the location of PT. RAPP can be said to be a strategic place because it is close to the source of raw materials, namely the HTI (Industrial Plantation Forest) area with a climate suitable for tree growth which is the main raw material for pulp and paper making. Supporting raw materials in the form of water are also easily obtained because it is close to the Kampar River.

Products produced by PT. RAPP is Bleached Acacia Kraft Pulp (BAKP) and Uncoated Wood Free Paper (UCWF) commonly used in printing and photocopying ranging from 55 gsm to 150 gsm. The products produced are a mixture of several raw materials, namely wood from Acacia trees, wood from pine trees, water, and chemicals. Following is the RGE company scheme shown in Figure 2.1. (RGE, 2019)

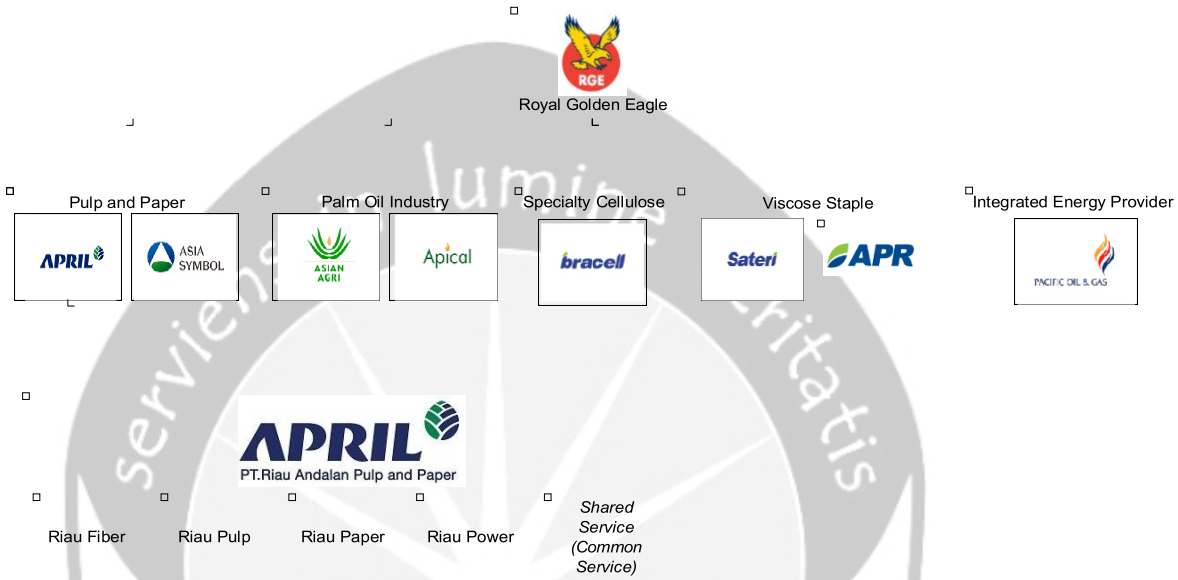

Figure 2.1. RGE Company Scheme

In Figure 2.1. indicates that PT. Riau Andalan Pulp and Paper has several subsidiary of the company, namely:

a. Riau Fiber, is a part that manages wood starting from nursery, planting, maintenance, and logging of timber for the production of raw materials as well as the development of wood species.
b. Riau Pulp, is part of producing pulp with wood raw materials from Riau Fiber.
c. Riau Paper, is a part that produces paper with pulp raw materials from Riau Pulp.
d. Riau Power, is a part that manages the energy sector, namely the generation of electrical energy and reprocessing liquor, water, and chemicals.
e. Shared Service (Common Service), is part of managing the service sector throughout the company's parts and logistics, namely supply chain management, finance, HRD, and accounting.

In addition to those shown in Figure 2.1, there are also units that manage the construction of companies, roads and other infrastructures which are managed by PT, Pec-Tech and the owners and managers of all industrial estates in PT. RAPP is PT. KIK (PT. Kampar Industrial Estate). Riau Power has a production capacity of 535 MW which distributes electrical energy to all areas of the plant as well as facilities and infrastructure in PT. RAPP and also channeled to Kerinci district. Riau Paper began operating in April 1998 by producing various brands of paper. The paper brands produced are Copy & Laser, Dunia Mas, Ixora, Lazer IT, ZAP, ZAP Premium, PP Lite, PP White, Perfect Print, Excellent Copy Paper, BMO (Bright White Multi-Purpose Office) shown in Figure 2.2. (April Group, 2019). In addition to the paper brands above, there are also superior paper brands PT. RAPP is PaperOne ™ shown in Figure 2.3. (April Group, 2019)

Figure 2.2. Products of PT. Riau Andalan Pulp and Paper

Figure 2.3. Featured Product of PT. Riau Andalan Pulp and Paper

2.1.2. Company Certificates

To make continuous improvements and products and guarantee processes to consumers, bankers, and the government, a certificate is needed which is part of the commitment of a company. PT. Riau Andalan Pulp and Paper has received various kinds of certificates both nationally and internationally which provide a comprehensive guarantee that determines the quality of the final product. (Asia Pacific Resources International Holdings Ltd, 2015). These certificates include:

a. Programme for the Endorsement of Forest Certification (PEFC)

   PEFC is one of the international forest certification systems that is recognized worldwide by having accurate standards as a mechanism to verify and improve sustainable forest management and sustainably produced timber products. This certification was obtained by the company in December 2014, so the company could guarantee that the company would take raw materials from legal sources. Below is the PEFC certification achieved by the company and also cooperates with the Indonesian Forest Certification Cooperation (IFCC). The company PEFC certification can be seen in Figure 2.4.

Figure 2.4. PEFC Company Certification

With the existence of PEFC certification, companies can convince consumers about the raw materials used in making

paper is managed by prioritizing environmental, social and economic aspects by sourced on sustainably managed forests and using safe materials. PEFC certification also shows the company's responsibility for product use as a

tangible form of the company's commitment to preserving the environment.

b. Occupational Health and Safety (OHSAS) 18001

OHSAS 18001, which is the acronym for Occupational Health and Safety is the application of an international standard safety management system. The company's operations have obtained OHSAS 18001 certification which can be shown in Figure 2.5.

Figure 2.5. OHSAS 18001 Company Certification

Companies that have obtained OHSAS 18001 certification can reduce work accidents that occur and minimize the risk of workplace accidents that occur in the company.

c. ISO 9001

ISO 9001 is the application of an international standard quality management system that guarantees product quality and production processes in the company. This company has received ISO 9001 certification which can be shown in Figure 2.6.

Figure 2.6. ISO 9001 Company Certification

ISO 9001 certification shows that companies can convince consumers of products ordered from the company.

d. ISO 14001

ISO 14001 is the application of an international standard environmental management system in terms of environmental protection. ISO 14001 indicates that every process carried out and the products produced have fulfilled commitments to the environment. This company has received ISO 14001 certification which can be shown in Figure 2.7.

Figure 2.7. ISO 14001 Company Certification

ISO 14001 certification shows that the company is committed to being responsible for the sustainability of the resource environment and minimizing environmental impacts.

e. Pengelolaan Hutan Tanaman Lestari (PHTL)

Pengelolaan Hutan Tanaman Lestari (PHTL) is an activity carried out to produce plantation forests that guarantee the sustainability of production, ecology, social, and comply with government regulations. The company has obtained PHTL certification since 2006 under the Indonesian Institute of Ecolabel (LEI) standard which can be shown in Figure 2.8.

Figure 2.8. PHTL Company Certification

f. Pengelolaan Hutan Produksi Berkelanjutan dan Verifikasi Legalitas Kayu (PHPL-SVLK)

PHPL-SVLK is a certification system for sustainable production forest management and timber legality verification for all forestry manufacturing and operational facilities that aim to ensure that the factory can only receive and use legal timber and its existence can be verified. The company received the SVLK PHPL certification in October 2012 which has been developed by the European Union with the Indonesian government.

2.2. Organization Structure

2.2.1. Organization Chart

PT. Riau Andalan Pulp and Paper has a very broad organizational structure. One part of the company's organizational structure is the department of April Learning Institute (ALI). Which functions as a training center for the employees. April Learning Institute also provides assessment activity for the employees who are up for promotion, because every employee has to pass the assessment first then said employee can be promoted. At the end of the year, April Learning Institute also conduct an analysis of what the company needs for the next year, after that a relevant training module is developed and designed. After the training modules are made, then it is also April Learning Institute's job to deliver the training to every employee who needs the training. The training result is also evaluated whether has it met the needs of the employee and the company. If not, then modifications and improvements are needed for future modules and trainings. Below is the organizational structure of April Learning Institute department which can be shown in Figure 2.9.

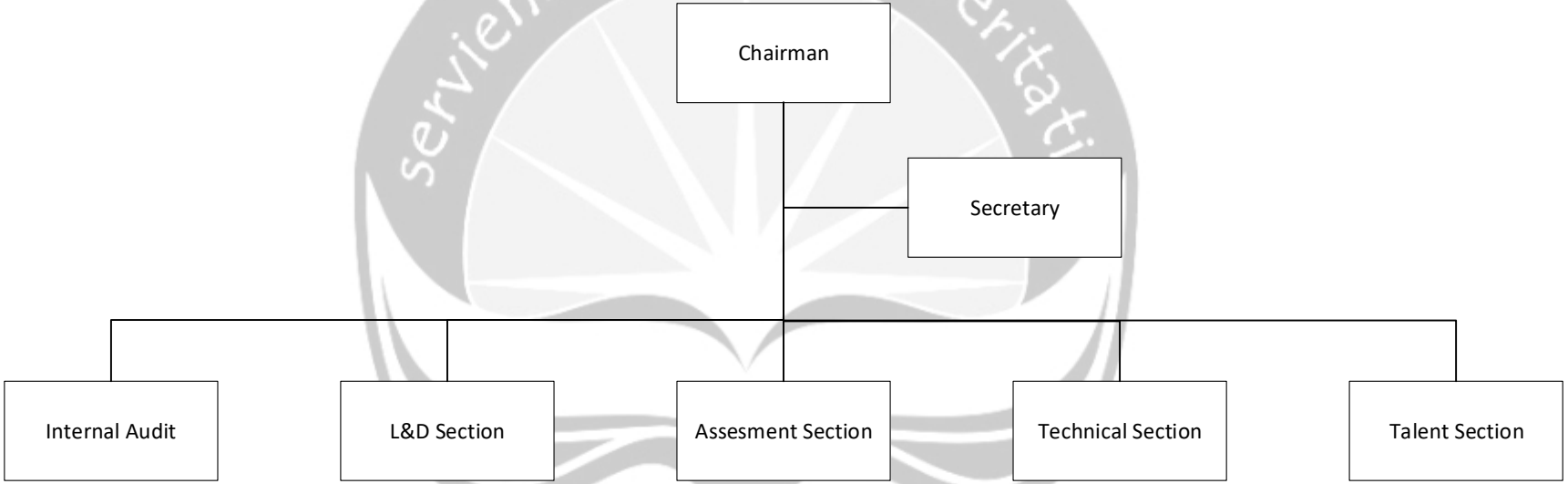

Figure 2.9. Organization Structure of April Learning Institute in PT. Riau Andalan Pulp and Paper

2.2.2. Job Description

Job Description is shown in figure 2.9. about the departments in April Learning Institute. The explanations is as follows:

a. Chairman

Chairman is the person who is responsible to the whole operation in April Learning Institute

b. Secretary

Secretary is the person who assists Chairman in ensuring the smooth function in the management of the April Learning Institute.

c. Internal Audit

Internal Audit is the part which job is to assure and consult activity designed to add more value and more improvement to the operations in April Learning Institute.

d. L&D Section

L&D Section is the part which job is to develop training modules for the employees and delivering those modules to the employees.

e. Assessment Section

Assessment Section is the part which job is to assess the performance of the employee in PT. Riau Andalan Pulp and Paper. If an employee is to have a promotion, then it is the job of the assessment section to assess said employee.

f. Technical Section

Technical Section is consisting of many mill experts which has technical knowledge for the operations in PT. Riau Andalan Pulp & Paper so when it comes to training in the technical field, the Technical Section will do their job.

g. Talent Section

Talent Section is the part of April Learning Institute which job is to take care about the recruitment of the new employee which would later would also undergo training, and also to take care of the internship program.

2.3. Company Management

2.3.1. Vision and Mission of the Company

a. Vision of the Company

Being one of the largest pulp and paper companies in the world with the best management and performance, the most profitable, sustainable and is the company of choice for consumers and employees.

b. Mission of the Company

1) Carry out sustainable growth
2) Become a leader in each industry and market segment in business area coverage
3) Maximizing reciprocal benefits to shareholders in line with contributing to the socio-economic development of local communities and their regions
4) Creating values through modern technology and influencing industry knowledge, valuable assets, networks, and human resources

2.3.2. Company Core Values

Company value at PT. Riau Andalan Pulp and Paper is the same as the RGE Group namely TOPICC. The value of this company has an understanding, namely:

a. *Complementary **T**eam*

The company unites in same goals and complements each other in teamwork.

b. ***O**wnership*

The company maintains a sense of ownership to always achieve results with the best value at all times.

c. ***P**eople*

The company develops human resources to grow together as a human being.

d. ***I**ntegrity*

The company serve with complete sense of integrity.

e. ***C**ustomer*

The company always understands and give the best for the customers.

f. ***C**ontinuous Improvement*

The company is not quickly satisfied and always strives for continuous improvement in various areas.

2.3.3. Employment

The number of employees at PT. Riau Andalan Pulp and Paper is around 6000 people. In the Riau Paper unit, the department of Production Planning and Inventory Control has 29 employees. For working hours at PT. Your fun is Pulp and Paper, there are two divisions, namely shift work hours and general working hours. For shift work hours, it is adjusted to the policies of each department and employee workdays in order to support the company's operations that run for 24 hours. The general working hours are divided into three, namely every Monday to Friday from 7.00 AM to 4.00 PM with breaks from 11.30 AM to 1.00 PM and Saturday at 7.00 AM to 11.00 AM, every Monday to Friday at 8.00 AM to 5.00 PM with breaks from 12.00 PM to 1.30 PM and Saturday at 8.00 AM to 12.00 PM, and every Monday to Friday at 7.30 AM to 6.00 PM with breaks at 12.00 PM to 1.30 PM. For those who use general working hours, on Saturday employees work once in two weeks except those using general business hours starting at 7.30 AM. The Department of April Learning Institute uses general working hours from 8.00 AM to 5.00 PM.

2.3.4. Marketing

PT. Riau Andalan Pulp and Paper markets their products domestically and abroad. All product marketing is carried out by trading agents located in Singapore and Malaysia. The company's marketing system can be shown in figure 2.10.

Figure 2.10. Company Marketing System

From Figure 2.10. indicates that the company has two trading agents, namely

April International Enterprise (AIE) located in Singapore responsible for purchases from India, Cambodia, Myanmar, Malaysia, Philippines, Singapore, Thailand, Vietnam, Africa and the Middle East and April Far East Malaysia (AFEMY) located in Malaysia is responsible for purchases from Australia, China, Hong Kong, Indonesia, Japan, Korea, New Zealand, Turkey, Taiwan, USA, Canada, Europe and Pacific Island. The number of products exported is more than the number of products marketed domestically (75% of the products produced are used to meet international market demand). The company aims to export more than 70 countries. By using the make-to-order system, PT. Riau Andalan Pulp and Paper produces according to customer needs.

Marketing process at PT. Riau Andalan Pulp and Paper uses sea (ship) and land transportation (truck) transportation. PT. Riau Andalan Pulp and Paper has two ports namely Buatan Port and Futong Port. Buatan Port is used for transportation of pulp and paper products both in domestic shipping and overseas shipping using containers. Futong Port is used to transport pulp products with overseas shipping using break bulk. PT. Riau Andalan Pulp and Paper uses the International Commercial Terms (Incoterms) system agreed upon with customers. Examples of the company's International Commercial Terms (Incoterms) system can be shown in Figure 2.11.

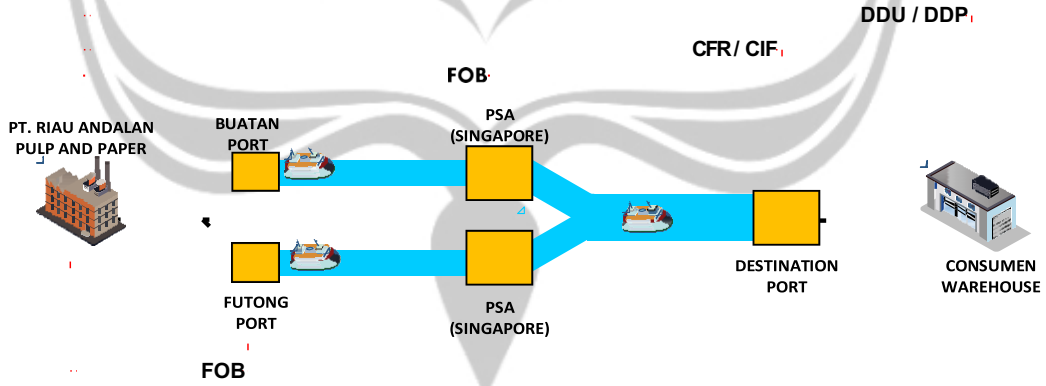

Figure 2.11. Incoterms System

The International Commercial Terms (Incoterms) system is a system used between sellers and buyers to explain the rights and obligations of shipping goods in the international trading system. These rights and obligations include the process of shipping, the person in charge of export and import, the person in charge of costs, and the risk management of goods when there is a change in the condition of the goods. The International Commercial Terms (Incoterms)

system used by companies is FOB, CFR, CIF, DDU, and DDP.

Free On Board (FOB) is a part of the term that delivers goods on board a ship in a certain place that has an impact on the buyer must bear all costs and risks that occur in loss or damage to goods starting from that place and the seller is obliged to take care of export formalities. FOB port at PT. Riau Andalan Pulp and Paper has two places, namely the Futong Port and Singapore Port (PSA) which transport goods from Buatan Ports.

Cost on Freight (CFR) and Cost, Insurance, and Freight (CIF) are destination destinations. Cost on Freight (CFR) is a term that delivers goods carried out on a ship to the destination port and the seller must take care of export formalities. After that, the risks and additional costs will be transferred to the buyer. Cost, Insurance, and Freight (CIF) is a term that delivers goods carried out on the ship to the destination port and the seller must take care of export formalities and have insurance against the risk of purchasing goods.

Delivery Duty Unpaid (DDU) and Delivery Duty Paid (DDP) for companies are carried out to the company warehouse and use of this system are usually carried out in domestic activities. Delivery Duty Unpaid (DDU) is a term that delivers goods to the destination country and the seller must take care of all costs and risks except customs, taxes and other levies. Delivery Duty Paid (DDP) is a term that delivers goods to the destination country and the seller must bear all costs and risks including customs, taxes and other levies.

Domestic shipping destinations from Buatan Ports namely Tanjung Priok Port in Jakarta, Tanjung Mas Port in Semarang, and Tanjung Perak Port in Surabaya. Tanjung Priok Port is a shipping center in several other local places, such as Kalimantan, Batam, and parts around West Java. Tanjung Perak Port is the second largest transit place after Tanjung Priok Port with lower shipping prices to be sent to other local places such as Makassar, Bali and surrounding areas. Buatan Port and Futong Port deliver 70 foreign destinations.

2.3.5. Facilities and Services

To support comfortability of the employees, PT. Riau Andalan Pulp and Paper provides services and facilities. The followings are the facilities and services that is provided by PT. Riau Andalan Pulp and Paper:

a. Housing

PT. Riau Andalan Pulp and Paper provides housing to every worker that is working in the company. The company is committed to providing the best service for employees, one of which is to increase comfort for employees so that they can support the performance of employees optimally at work. Unmarried employees will be placed in a mess that is divided into two, namely mess with rooms containing 4 people and mess with rooms containing 1 person. In addition to the distribution, the mess is also divided into mixed messes, male mess, and female mess. For employees who are married, they will be placed at a house, but can be adjusted to the requests from employees, for example, the employees who already have a high enough position and have a family can ask to be placed at the Guest House. Examples of forms of housing built by PT. Riau Andalan Pulp and Paper can be shown in Figure 2.12.

Figure 2.12. Company Housing

Inside the mess, there is also a room in the middle of the mess, which the purpose is to various activity of the mess occupants. There is also a mini market located in mess C33.

b. Transportation

Area at PT. Riau Andalan Pulp and Paper is so extensive that it requires transportation to get to the office in the factory area from the residence area. PT. Riau Andalan Pulp and Paper provides transportation in the form of

commuter buses and taxis. Image of company transportation can be shown in Figure 2.13.

Figure 2.13. Company Transportation

Bus transportation provided by the company has a variety of bus destinations, such as RAK Bus, Bus Mill, ALI Bus, Chemical Bus, and others. The bus will carry passengers at each bus stop or certain place that has a bus stop and will be dropped off according to the destination of each bus. The bus will transport employees according to the hours of entry, rest hours and hours of return according to general working hours. In addition to buses, there are also commuter taxis that have a special schedule for factory areas and areas outside of PT. Riau Andalan Pulp and Paper

c. Foodcourt

PT. Riau Andalan Pulp and Paper provides foodcourt, which is a place for the company worker to eat. The foodcourt is shown in figure 2.14.

Figure 2.14. Company Foodcourt

The foodcourt consists of several kinds of food stalls, and inside the foodcourt, there is a bakery shop, coffee shop, and minimarket so that the needs of the employees in PT. Riau Andalan Pulp and Paper can be fulfilled even though they are in the company's area.

d. Health Clinic

PT. Riau Andalan Pulp and Paper provides health clinic for the employees or nearby residents in Kerinci for regular health checking or as the first aid for the employees that experienced hazards at their work. The picture of company health clinic is shown in figure 2.15.

Figure 2.15. Company Clinic

Health clinic of the company also has a partnership with Awal Bros Hospital in Pekanbaru. For treatment at the company's clinic is free of charge for employees who work in the company and before going to the clinic must register in advance that the employee will go to the clinic.

e. Hotel

PT. Riau Andalan Pulp and Paper provides hotel with the name Hotel Unigraha that is shown on figure 2.15.. Hotel Unigraha functioned as a place that can be used by the company guest or people from outside of Kerinci to spend their night. It is also opened for public.

Figure 2.16. Unigraha Hotel

Inside the Unigraha Hotel, there are sport facilities such as fitness center and swimming pool.

f. Sports Facilities

PT. Riau Andalan Pulp and Paper provides sports facilities for workers or residents who want to do sports, which can be shown in Figure 2.17. Sports facilities provided by the company are tennis courts, soccer fields, volleyball courts, basketball courts, jogging tracks, swimming pools, fitness centers and golf courses.

Figure 2.17. Company Sport Facilities

g. School

PT. Riau Andalan Pulp and Paper provides schools for children of the employees who have sufficient age to go to school. The company has three schools namely the Global Andalan School which has levels from kindergarten to junior high school which can be shown in Figure 2.18. Mutiara International School has levels from kindergarten to high school which can be shown in Figure 2.19. The high school can be shown in Figure 2.20. The total students in the three schools are 2500 students.

Figure 2.18. Global Andalan School

Figure 2.19. Mutiara International School

Figure 2.20. Taruna Andalan School

h. Worship Facilities

PT. Riau Andalan Pulp and Paper provides worship facilities namely, mosque, church, and cetiya that is located inside the company area.

i. Additional Facilities

Additional facilities provided by the company are scholarships for high achieving children who want to continue in the higher education world. Scholarships provided are educational scholarships in the country and abroad. Tanoto Foundation is one example of scholarships given by the company.

CHAPTER 3
COMPANY SYSTEM OVERVIEW

3.1. Company Business Process

The company's general business process for paper production needs can be seen in Figure 3.1. which is divided into 9 parts, namely Customers, Sales, Internal Customer Service (ICS), Production Planning and Inventory Control (PPIC), Production, Finishing, Warehouse, Shipping, and Carrier. The first process starts when there is an order for goods made by consumers. Goods orders from consumers are accepted by the sales division which will then be inputted in the SAP system. SAP system is an enterprise system used by PT. Riau Andalan Pulp and Paper and functions as an application interface in each division of the company for sales transaction activities. The Sales Department will input data in the form of product codes and quantities desired by consumers. Then, the ICS department takes data from SAP to check product stock and input space availability data on SAP. When checking, there are 4 possibilities that will occur.

The first possibility is that when space and product stock are available, the ICS department will provide information to the sales department to provide information to consumers and then the product will be sent. The second possibility is that when space is not available and product stock is available, the ICS department will input the space availability request to SAP, then the Shipping department will take care of the availability of the ship. The third possibility is that when space is available, but product stock is not available, the ICS department will input the production amount data in SAP and then the product will be produced and continued by the shipping department to deliver the product. The fourth possibility is that when space and product stock are not available, the ICS department will input the space availability and production amount requests on SAP.

Then the Production Planning and Inventory Control (PPIC) department will check production requirements on SAP and input the amount

production on the PMIS (Paper Machine Information System) system. In this case the Paper Machine Planner will make a planning schedule for the production process with output in the form of data exmill that will be inputted on SAP. Exmill data is scheduling data in the form of the estimated date the product has finished being produced. Then, the Delivery Planner will plan a loading plan on the PMIS system. Furthermore, the Finishing Planner will plan the size of the roll to be cut on the winder machine from a jumbo roll to a sheeter roll and customer roll that is

inputted to the PMIS and APPS systems.

The next process is the production department receives production data planned by the Paper Machine Planner from PMIS and carries out the production process in the form of a jumbo roll, then it will be cut in the winder machine into a sheeter roll and a customer roll. After that, sheeter roll and customer roll will be classified into 4 types, namely Hot Loading, SMC, AWA (RST2), and RST3. Then the sheeter roll will be cut back according to consumer orders which are divided into 2, namely cut size and folio products. This cutting process is included in the finishing department in charge of processing the finished product. Before cutting, sheeter roll is taken from storage namely SMC and AWA (RST2), then it will be cut according to the size in the production data. After completion, the product will be packaged and labeled the product, and then it will be sent to the warehouse. After the product is finished, the warehouse division will store and arrange the pallets in the empty blocks and input into the PMIS system. When the container is ready and ready for loading, the warehouse division will look for the order to be loaded. After loading, the shipping division will make the shipping process.

After the product has been produced, the shipping department will process the shipment of the finished product by sea. Before shipping, the finished product will be put in a container. Then the shipping department will input the number and size of containers which will then be entered into the DHL system. The DHL system is a multinational company that cooperates with PT. Riau Andalan Pulp and Paper to take care of the logistics of shipping goods and shipping routes. Then, the shipping department will check the availability of ships on the DHL system. When the ship is available, the finished product can be sent to the customer. When the ship is not available, the carrier department will look for alternative vessels available. There are several factors that can cause

ships not available, i.e. less space for the finished product, there are ships that cannot be used due to national holidays, and ships that are in maintenance. After obtaining another alternative ship, the carrier department will schedule the ship according to the number and size of containers seen on the DHL system. Ship schedule data will be received by the shipping department.

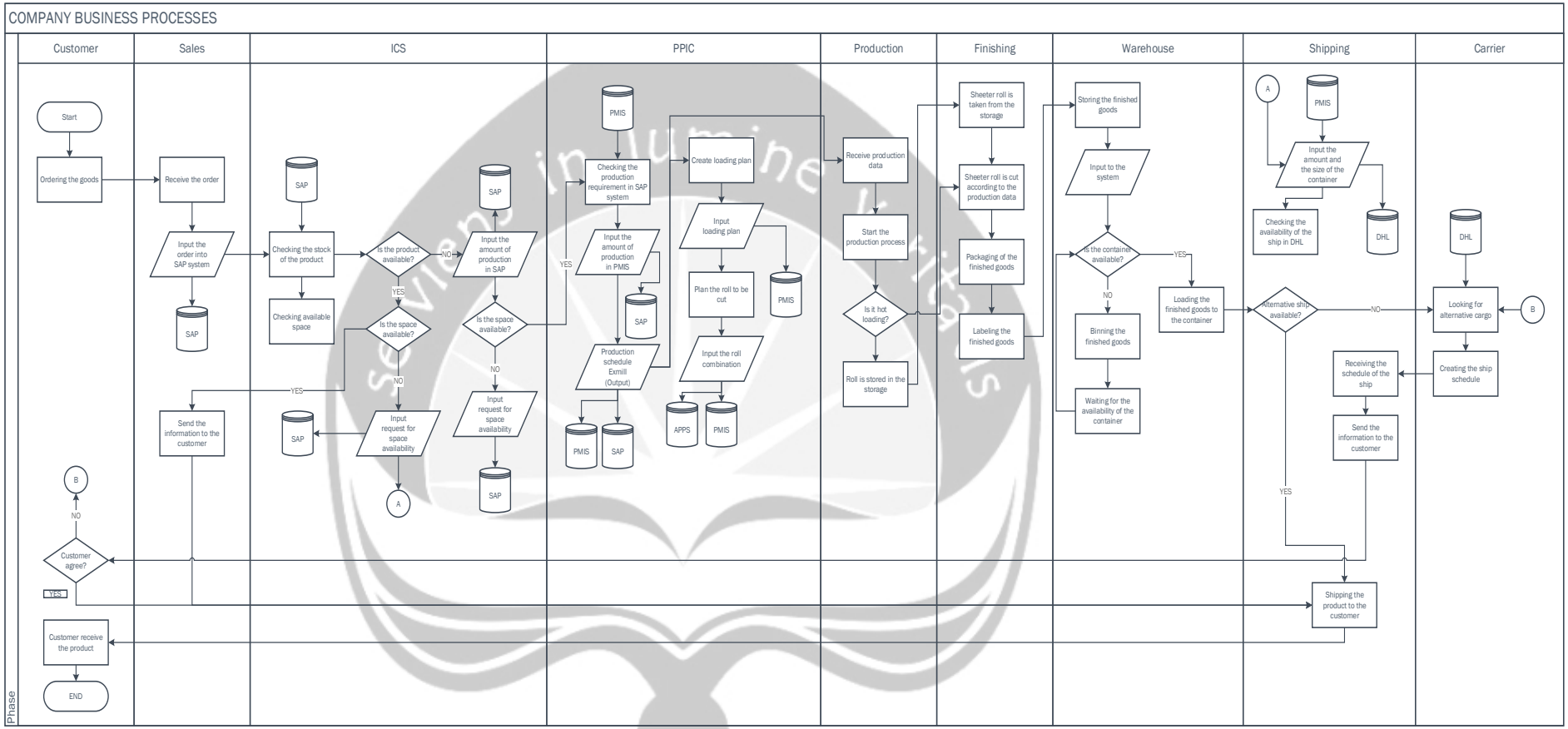

Figure 3.1. Company Business Process

3.2. Produced Products

PT. Riau Andalan Pulp and Paper produces pulp and paper products. The paper produced is a product of uncoated wood free type with consistent quality. In general, the products produced are copy paper and offset paper. In the form of paper products, divided into 3 types, namely cut size, customer roll, and folio consisting of various types of sizes, grammature, and others. Paper products produced by PT. Riau Andalan Pulp and Paper is divided into two, namely:

a. Mill Own Brand (MOB)
   Mill Own Brand (MOB) is a paper product whose brand belongs to PT. Riau Andalan Pulp and Paper including, PaperOne ™, Lazer IT, Excellent Copy, Dunia Mas, Copy & Laser Paper, and many more.

b. Customer Own Brand (COB)
   Customer Own Brand (COB) is a paper product produced by PT. Riau Andalan Pulp and Paper but the brand produced is a brand for customers. Examples are Xerox Fuji, Hansol Papers and others.

3.2.1. Pulp

Pulp is a semi-finished material in the process of making paper. PT. Riau Andalan Pulp and Paper makes pulp in the form of two types, namely sheet-shaped pulp that will be sold to consumers and pulp-shaped pulp used by the company for the paper making process. The company produces various types of pulp, including normal pulp, High Strength (HS), Extra Prime (XP), and Acacia Eucalyptus (AE).

Figure 3.2. Pulp Sheet Product

3.2.2. Cut Size

Cut size is a type of paper size that is often used in everyday life which can be shown in Figure 3.3. The size of the cut size product is an international standard paper size. Cut size products are usually used for printing and photocopying needs. The delivery of cut size products is divided into three types, namely Loose Fill which is a method of loading into containers by arranging ream boxes one by one stack, Slip Sheet which is a way of loading into containers using special paper, and Palletize which is a way of loading into container using pallets.

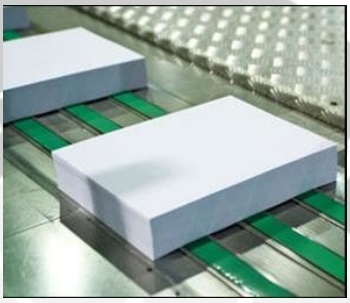

Figure 3.3. Cut Size Product

Several size of the cut-size products that is produced by PT. Riau Andalan Pulp and Paper namely:

a. A4 = 210 x 297 mm
b. Letter = 216 x 279 mm
c. F4 = 215 x 330 mm
d. A3 = 297 x 420 mm
e. B4 = 257 x 364 mm
f. B5 = 182 x 257 mm
g. A4S = 215 x 297 mm
h. Quarto = 215 x 280 mm

PT. Riau Andalan Pulp and Paper has a reliable cut size product, PaperOne ™. PaperOne ™ has 3 types, namely, PaperOne ™ All Purpose, PaperOne ™ Copier, and PaperOne ™ Digital.

a. PaperOne™ All Purpose

PaperOne ™ All Purpose is a paper product that can be used in everyday printing needs. This paper product can

Figure 3.4. PaperOne™ All Purpose

adjust to the printing machine or photocopier so that it can provide good printing results. The PaperOne ™ All Purpose product can be shown in Figure 3.4. with specifications that can be shown in Table 3.1.

Table 3.1. PaperOne™ All purpose Specification

Properties (Units)	Qualification	Tolerance	Quality Specification
Basis Weight (g/m2)	ISO 536	± 4%	80
Thickness (µm)	ISO 534	± 3	110
CIE Whiteness (#)	ISO 11475	± 2	167
ISO Brightness (%)	ISO 2470	± 2	99
ISO Opacity (%)	ISO 2471	± 2	95
Surface Roughness (ml/min)	ISO 8791-2	± 40	140

b. PaperOne™ Copier

PaperOne™ Copier is a paper product which is designed to use for the needs of bulk and high-speed printing. PaperOne™ Copier is shown on Figure 3.5. with the specification that is shown on Table 3.2..

Figure 3.5. PaperOne™ Copier

Table 3.2. PaperOne™ Copier Specification

Properties (Units)	Qualification	Tolerance	Quality Specification		
Basis Weight (g/m2)	ISO 536	± 4%	70	75	80
Thickness (µm)	ISO 534	± 3%	100	103	107
CIE Whiteness (#)	ISO 11475	± 2 %	160	160	160
ISO Brightness (%)	ISO 2470	± 2 %	96	96	96
ISO Opacity (%)	ISO 2471	± 2 %	93	94	95
Surface Roughness (ml/min)	ISO 8791-2	± 40 %	190	190	190

c. PaperOne™ Digital

PaperOne ™ Digital is a paper product used for printing needs with digital printing technology. The Digital PaperOne ™ product can be shown in Figure 3.6. with specifications that can be shown in Table 3.3 ..

Figure 3.6.PaperOne™ Digital

Table 3.3. PaperOne™ Digital Specification

Properties (Units)	Qualification	Tolerance	Quality Specification	
Basis Weight (g/m2)	ISO 536	± 4%	85	100
Thickness (µm)	ISO 534	± 3%	110	120
CIE Whiteness (#)	ISO 11475	± 2%	170	170
ISO Brightness (%)	ISO 2470	± 2%	100	100
ISO Opacity (%)	ISO 2471	± 2%	96	97
Surface Roughness (ml/min)	ISO 8791-2	± 40%	100	60

3.2.3. Customer Roll

Customer roll is a type of paper which the size can be customized based on the customer's needs. The final product for this type of paper is a roll of paper with a *Kraft* paper covering the roll. The final product is shown on figure 3.7. Kraft is a covering paper which has brown color. Customer roll will be used for the printing industry that produce their paper with high quantity.

Figure 3.7. Customer Roll Product

PT. Riau Andalan Pulp and Paper standardize the diameter of every roll to be as much as 1000 mm and the width that can be customized to the customer's request.

3.2.4. Folio

The Folio is paper that is larger than the cut size and size produced based on the request of the customer, which can be shown in Figure 3.8. Folio products are usually used for printing. Folio product specifications can be shown in Table 3.4. In shipping folio products there are two types, namely Ream Wrap, which is a way to load folio products using Kraft paper, and Bulk Order, which is a way to load folio products without using packages.

Figure 3.8. Folio Product

Table 3.4. Folio Paper Specification

Properties (Units)	Standard	Quality Specification							
Weight (g/m2)	ISO 536	55	60	70	75	80	90	100	120
Thickness (µm)	ISO 534	68	77	87	94	99	111	121	143
Moisture (%)	ISO 287	5	5	5	5	5	5	5	5
CIE Whiteness (#)	ISO 11475	158	158	158	158	158	158	158	158
ISO Brightness (%)	ISO 2470	94	94	94	94	94	94	94	94
ISO Opacity (%)	ISO 2471	84	88	92	93	94	94	96	97
Roughness (ml/min)	ISO 8791-2	140	140	140	140	140	140	140	140

3.3. Production Process

3.3.1. Raw Material

a. Pulp

In the production of the pulp, 2 kinds of raw materials are needed, which is wood and chemicals.

a) Wood

Wood is the main raw material in the pulping process. In the pulping process, PT. Riau Andalan Pulp and Paper uses 3 types of wood, namely, *Acacia mangium*, *Acacia crassicarpa*, and *Eucalyptus*. These three types of wood are very suitable for use in the pulp and paper industry because these three woods are classified as the fastest in their growth, which takes around 5 years in Indonesia to reach the harvest period. Within 5 years, the three types of wood can grow to reach a height of 30 meters with a diameter of 25-30 cm. The three woods have 3 fiber components, namely cellulose, hemicellulose, and lignin. During the pulping process, only cellulose fibers and hemicellulose fibers are needed.

b) Chemical Material

Chemicals in pulp production are supporting materials. Chemicals used in the process of making pulp are O2 (Oxygen), ClO2 (Chlorine Dioxide), NaOH (Sodium Hydroxide), H2O2 (Hydrogen Peroxide), and SO2 (Sulfur Dioxide). O2 and NaOH are used for the process of decreasing the levels of lignin in the pulp. ClO2, NaOH, H2O2, and SO2 are used for the bleaching process to achieve the desired degree of whiteness.

b. Paper

In the production of the paper, the company needs four kind of raw materials, such as pulp, bale pulp, rejected papers, and chemicals material too.

a) Pulp

Pulp is the main raw material in the paper production process. In the process of manufacturing the paper, there are also two different type of pulp, which is a pulp with short fiber and pulp with the long fiber. Pulp with the short fiber will be channeled to the conveyor into the mixing process.

b) Bale Pulp

Bale pulp is also the main raw material in the process of manufacturing papers. Bale pulp is a pulp that has long fibers and is obtained from New Zealand and Canada. Bale pulp will be crushed into a pulp form using bale pulper machine, and then transported to the mixing area.

c) Rejected Paper

Reject paper is one of the raw materials in the paper making process. Reject paper is divided into two, namely wet paper produced from Paper Machine which contains water and dry paper resulting from the wrong paper cutting and side trim from the winding and cutting process. The reject paper will be crushed and processed into pulp on the pulper machine and will be transported by conveyor to the mixing process.

d) Chemical Materials

Chemicals are supporting` materials in the paper making process so as to produce the desired product. Chemicals used are:

1. *Defoamer* is a chemical used when forming foam during the stock preparation process.
2. *Foam Inhibitor* is a chemical used to prevent the formation of foam during the stock preparation process.
3. Tapioca flour is a chemical used to increase the dry strength of paper and create smoothness on paper.
4. *Filler* (CaCO3) is a chemical used to fill paper pores and increase the degree of whiteness of the paper.
5. DYE is a chemical that is used to color the paper.
6. *Alkenyl Succinic* Anhydride (ASA) is a chemical used to modify the

properties of paper in the process of water absorption.

7. *Optical Brightness Agent* (ABO) is a chemical used to adjust the brightness of paper.
8. *Bentonite* is a chemical that is used to dissolve the resin.

3.3.2. Production Process

a. Pulp

The pulp production process is divided into several stages including wood handing, cooking in the digester, deknotting process, screening process, washing, oxygen delignification process, bleaching stages, and pulp dryer process.

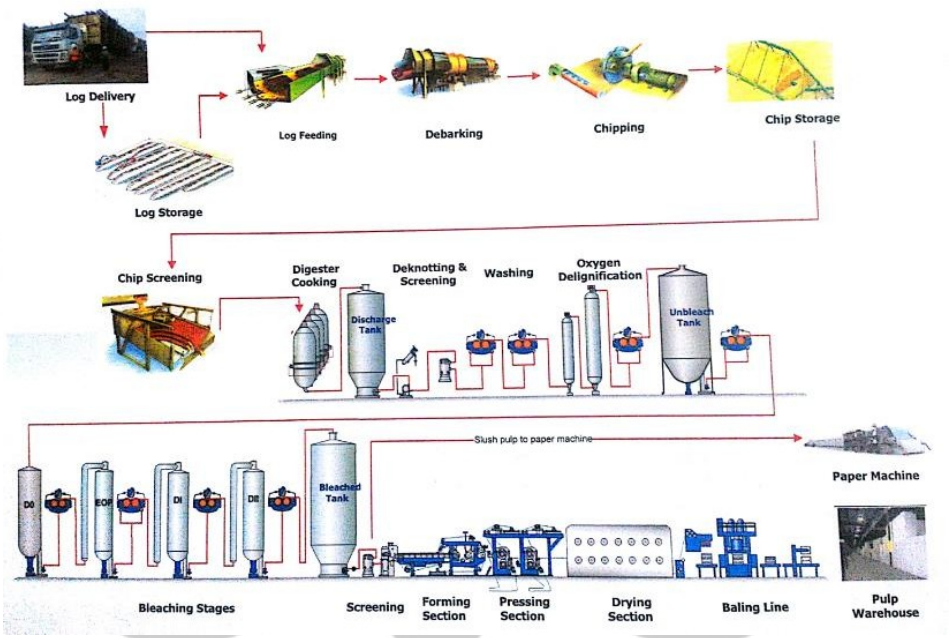

Figure 3.9. Pulp Production Process

a) Wood Handing

In Figure 3.9. log delivery process until the screening chip is included in the wood handing process. The wood handing process is the initial stage in the pulping process, which is the receiving of wood that has been harvested and sent from Riau Fiber to Riau Pulp. There are two types of wood shipped, which are un-skinned wood and skinned wood. Un-skinned wood will enter log storage and be stacked and dried for one to two months to reduce levels of lignin contained in wood. Lignin is an outer layer of wood that binds to cellulose and hemicellulose fibers. The skinned wood will enter the log feeding process. Then, wood is transported to log feeding which is the conveyor line before entering the debarking

process. The conveyor line is made so that when the wood is filled in the debarking process can take place efficiently.

The debarking process is the process of stripping the bark because the bark is hard to cook into pulp and can leave black stains on the pulp. In the debarking process, wood will be inserted into the drum filled with a capacity of 50% of the total volume of the drum and the drum will rotate at a predetermined speed so that the wood in the drum will collide with each other and cause the bark to peel off. The bark will be used as fuel in the power boiler. After the debarking process is complete, the wood will be sent to the chipping process. The transporting process uses a roller table and washing station equipped with a metal detector to detect iron which is still embedded in wood. The table roller is given serrations on each surface to peel the rest of the bark and washing station as a sprayer of water so that the wood is easier to chop and clean the remnants of the bark that is still attached to the wood.

The wood that has passed through the skinning process will enter the chipping process. The chipping process is a process of flaking so that wood is easy to cook in accordance with its specifications so that it can produce a uniform size. The chipping process has 7 lines which have a capacity of 30,000 tons of chips per day. After the chipping process is complete, the chip will be inserted into the storage chip. Storage chips serve to maintain the availability of chips before they are cooked in the digester. The storage chip in the company consists of two rectangular chip piles, one circular chip pile, and one pin pile chip. After that, the chip goes into the screening stage. Chip screening is the separation of small and large chips which aims to maintain uniformity in chip size. The chip category is divided into four, namely:

i. *Oversize* and *Over thick*

In the process of chipping, it can produce a size that is too large or too thick. Woodchip is said to be oversized if the size of the diameter is more than 45 mm and woodchip is said to be over thick if the thickness is more than 8 mm. For oversized and over thick images can be shown in Figure 3.10.

Figure 3.10. Oversize and Over thick Category of Chips

Wood chips that is oversized or over-thick will be reprocessed to be cut again and then returned to the chip screening.

ii. Accept

The process of chipping can produce an acceptable size. Acceptable wood chips are 8 mm to 45 mm in diameter and 7 mm to 8 mm thick. For the acceptable chip image can be shown in Figure 3.11..

Figure 3.11. Accept Category of Chips

iii. Pin

The chipping process can produce a variety of sizes, one of which is the size of the pin. The chip pin has a diameter of 3 mm to 7 mm. The pin category is still acceptable for the pulping process. For pin chip images can be shown in Figure 3.12 ..

Figure 3.12. Pin Category of Chips

iv. Fines

In the process of chipping it can produce a size that has a diameter of less than 3 mm which is referred to as fine. The size of fines cannot be used in the pulping process and will be sent as fuel for the power boiler. For fines image chips can be shown in Figure 3.13..

Figure 3.13. Fines Category of Chips

b) *Digester Cooking*

The wood received will be cooked using white liquor. The cooking digester process aims to destroy lignin in wood. To obtain cellulose and hemicellulose fibers, lignin needs to be destroyed using a base solution. The active compound found in white liquor is 2 Na2S and NaOH. There are three digester used, namely 2 super batch mode digester with each having 14 digester units and 1 continuous mode digester.

c) *Deknotting* and *Screening*

The cooked wood then enters the deknotting process. The deknotting process is the process of separating unripe pulp, usually in the form of large chips and wood eyes. Then the screening process is carried out by filtering based on differences in size and weight. Filtering is used as many as four levels in order to minimize reject and increase the pulp yield received. In the screening process will produce pure pulp containing fiber.

d) *Washing*

Washing is the stage of cleaning the pulp after the cooking process by separating wood fibers from unwanted impurities in the pulp production process. The dirt found during the digester process is lignin, soda, and white liquor which has turned into black liquor. The washing process is carried out repeatedly so that dirt can be separated from the pulp and the pulp is expected to contain more water than black liquor from the remaining cooking results.

e) *Oxygen Delignification*

The oxygen delignification process is a process of decreasing the lignin content in the pulp before entering the bleaching process. The chemicals used are O2 and NaOH gas. O2 functions as a decrease in lignin levels and can whiten the pulp. The result of the oxygen delignification process is that the pulp has a brightness level of 50% so that the chemicals used in the bleaching process can be minimized.

f) *Bleaching Stages*

Bleaching stages are a bleaching process that is carried out after the pulp is delignified and aims to remove the remaining lignin levels after the delignification process. Lignin can be removed by using a high-temperature reactor but the content of cellulose and hemicellulose fibers in wood is sensitive to high temperatures so it must cut the cellulose and hemicellulose chains shorter, so the pulp has a short fiber. In Figure 3.9. the bleaching stage is D0-EOP-D1-D2 which is carried out sequentially.

Stage D0 is the initial stage of the bleaching process which aims to separate the lignin levels in the pulp and increase the brightness drastically by using the reaction of ClO2 which is an environmentally friendly Element Chlorine Free (ECF) chemical. The EOP stage (Extraction, Oxidation, and Peroxide) is the stage of extracting and oxidizing lignin so that the lignin content can be removed from the pulp by using H2O2 compounds which function as bleach, NaOH which functions as a lignin solvent at D0, and O2 for the lignin oxidation process. Stage D1 is the stage of increasing brightness to reach the standard quality of pulp that is worth selling with a brightness level of 90% using ClO2 compounds.

After the bleaching stages are complete, the pulp will be sent to the storage tank to reduce the temperature and homogenization. PT. Riau Andalan Pulp and Paper has five storage tanks. Tanks 1, 2 and 5 will be sent to the pulp dryer process to be dried so that they can be sold. While tanks 3 and 4 will be sent to paper machines to be processed into paper.

g) *Pulp Dryer*

Pulp dryer is the last stage of the pulping process before being sold. Pulp dryer aims to separate water from pulp and produce sheets of pulp with a moisture content of 10%. The Pulp dryer stage starts at the screening stage which aims to clean the pulp from the dirt before entering the formation stage. Pulp that has

been cleaned will enter the forming section stage to be formed into a long (continuous) pulp sheet. Furthermore, the pulp that has been formed will be pressed so that the water content of the pulp will be reduced to 50% then the pulp will be dried on the drying section to produce a moisture content of 10%. The dried pulp will enter the baling line (finishing) process, which is the process of cutting the pulp to facilitate the delivery of pulp.

b. Paper

The paper production process is divided into several stages including stock preparation, paper machines, winders, roll wrapping, intermediate storage, and finishing products. The paper production process can be shown in Figure 3.14.

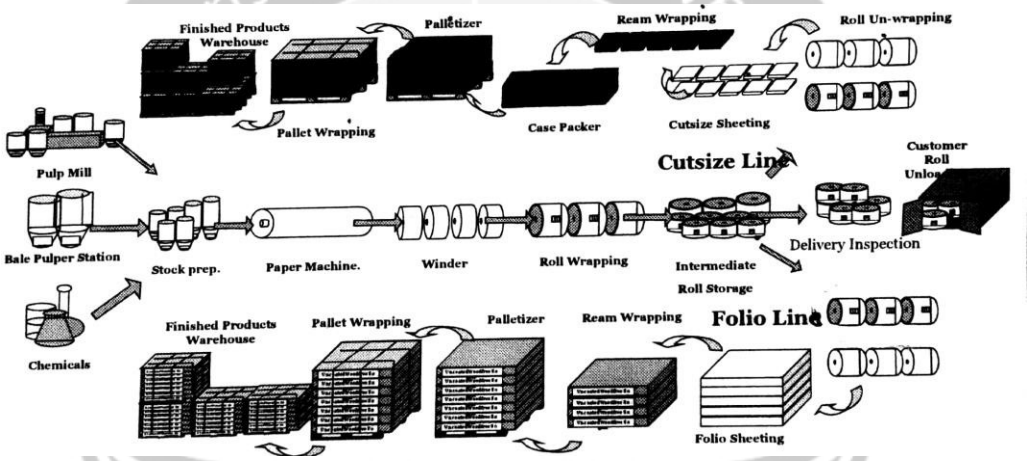

Figure 3.14. Paper Production Process

a) Stock Preparation

Stock preparation is the initial stage in producing paper. The process of stock preparation by mixing fiber and chemicals with suitable comparisons before being processed in a paper machine that serves as the supply of raw materials. To obtain the desired percentage of mixture, homogeneous mixing in the pulp mill, pulp bales, and chemicals is carried out.

b) Paper Machine

The paper machine process is divided into four parts, which is forming, pressing, drying, and rolling. After the pulp is mixed in the stock preparation process, it will enter the forming process. Forming process is the process of forming pulp into sheets of paper that are

in accordance with the size of the machine. The water content on the paper is 99% and the final consistency of paper products is due to the gravitational force of around 15-25% during the forming process. Pressing process is needed which aims to remove the moisture content by pressing the sheet of paper mechanically so that the water can come out by itself from paper fibers so that it will get the results of paper that has a low water content. The final consistency of paper products when pressing is 33-35%. Then, the paper will go through the drying evaporation process to dry the paper which aims to remove water from the sheet of paper without damaging the structure of the paper fibers that have been produced and make the final consistency of paper products at 92-95%. After the paper is dry, it will enter the rolling process. In the rolling process is also carried out the process of cutting the uneven edge of the paper which will produce a jumbo roll.

c) *Winder*

The winder process is the process of cutting paper from a jumbo roll size to a smaller size according to consumer demand. The winder process produces a customer roll and sheeter roll. The roll sheeter will be processed again in the finishing process.

d) *Roll Wrapping*

The roll wrapping process is the process of wrapping the roll produced from the winder process. Roll wrapping there are two types, namely brown kraft to wrap customer roll and plastic stretch film to wrap the sheeter roll.

e) *Intermediate Storage*

Intermediate storage is the process of storing semi-finished products and finished products. Storage at PT. Riau Andalan Pulp and Paper is divided into three, namely SMC, AWA (RST2), and RST3. SMC is a storage area for sheeter roll to produce cut sizes arranged horizontally and can accommodate as many as 2496 rolls. AWA (RST2) is a storage area for sheeter roll and a customer roll that is arranged vertically and can accommodate as many as 4618 rolls. RST3 is a storage place for customer roll with storage forms

such as AWA but stores in one cell like SMC and can accommodate as many as 7400 rolls.

f) Finishing Product

1. Cut Size

Cut size products are produced using a sheeter roll to be carried using conveyors to the finishing line cut size section. Plactic stretch film on the roll sheeter will be opened and placed on the backstand of the cut size machine. The cut size machine will cut the paper according to the size of the paper and will be wrapped per ream at the ream wrapping station then 10 reams will be collected to be wrapped according to the packaging in the case packer section. If there is damage to the packaging or product, it will be sent back for rework into a new product. After the product has passed the packaging process, it will be laid on the pallet on the palletizer machine and will be wrapped on a pallet packing machine and labeled with a production label. Then the cut size product will be stored in the warehouse and ready to be sent to the customer.

2. Customer Roll

Customer Roll will be taken from storage using a conveyor and will be inspected before shipping. Products that pass will be sent to the warehouse for delivery to customers.

3. Folio

Folio products are produced using a sheeter roll to be carried using a conveyor to the folio finishing line. Plastic stretch film on the sheeter roll will be opened and placed on the folio machine backstand. The folio machine will cut paper according to paper size, and will inspect for defective paper. After passing the inspection, folio products will be brought to a folio sheeter wrapping for ream wrap and pallet packing products for bulk order products. After being wrapped in brown kraft, it will be arranged to be wrapped on pallet packing and labeled with a production label. Folio products will be stored in the warehouse and ready to be sent to customers.

3.3.3. Quality Control

Quality control is needed to guarantee the quality of a product. Quality control at PT. Riau Andalan Pulp and Paper serves to control every paper product from every paper machine that has finished production. By using an automation system, samples are taken to check the quality with a sample of the width of the paper produced by jumbo roll. Checking on paper will be measured based on roughness, thickness, stiffness, color, dust, flexibility, and size. Each of these categories has a size with a predetermined tolerance limit.

There is also a quality check with blotting that is done manually to determine absorption on paper. Paper samples will be taken and cut to the specified size. Then, the paper will be weighed and recorded the paper weight before blotting. After that, a absorption test is carried out by placing the top of the paper in a clamp container filled with water and will be counted for 45 seconds. Then, the water will be removed, and the paper will be taken from the clamp container and dried on the paper blot. After the blotting process is complete, the dried paper will be weighed again and recorded again.

3.4. Operation Facility

Operation facility's purpose is to ease the production activity so that it can be used more efficient and effective.

3.4.1. Production Process Machines

a. Chipper

Chipper is a wood cutting tool. Chipper processes cutting activity from logs into wood chips. PT. Riau Andalan Pulp and Paper has 7 chipper machines and each chipper machine is equipped with 2 cutting tools so that the total chip cutter is 14 pieces. To process skinned wood using machines 1 and 2 while processing unhulled wood using machines 3,4,5,6 and 7.

b. Digester

Digester is a tool that is used to cook the chip into a pulp. PT. Riau Andalan Pulp and Paper has 3 digester machines. Among the three, there are two super batch digester, and one continuous digester machine. Super batch digester will be used for the cooking process of the rectangular chip pile, meanwhile the continuous digester will be used for the cooking process of pin chip pile.

c. Washing Tank

Washing tank is used to filter out dust particles that is contaminating the pulp and wash the pulp so that the lignin is removed from the cooking results.

d. Oxygen Blow Tank

Oxygen blow tank is used to decrease lignin content in the pulp.

e. Main Tower Bleaching

Main tower bleaching is a place for a pulp that is used to process the bleaching activity, and to decrease lignin content from the previous processes.

f. Pulp Dryer

Pulp dryer is used to dry the pulp so it can lighten the weight of the pulp, therefore making the pulp easier to sell and transport to the customers in sheet form. Pulp dryer in PT. Riau Andalan Pulp and Paper is using VALMET branded machine.

g. Paper Machine

Paper machine is used to produce papers from the pulp. The paper machine used by PT. Riau Andalan Pulp and Paper is also from VALMET brand, and there are three machines available in the production floor.

h. Finishing Machine

Finishing machine is a machine that is used to process paper products from the sheeter roll into cut size and folio size. Cut size machine 1, 2, and 3, and also folio sheeter 1 and 3 is from Bielomatik brand, while folio sheeter machine 2 is from ECH Will brand, and the folio sheeter machine 4 is from Will Pemco Bielomatik brand.

3.4.2. Material Handling Instrument

Material handling is used in the company to ease the job for transporting the products and materials. There are several types, namely:

a. Screw Reclaimer

Screw reclaimer is a mover device to grab wood chips from the chip pile and transport it to the conveyor. In every chip pile, there are two reclaimers that serves as the transporters of the chips.

b. Conveyor

Conveyor is a machine that serves as the main transportation device that is used in the manufacturing process of the products. The conveyors that is used throughout the manufacturing site is also varied depending on the object size that is going to be transported.

c. Forklift

Forklift is a transportation instrument that is used to lift pallets from one place to another, and most of the time is used when the pallet is going to be moved from the product that is ready to be packaged to the warehouse, and also from the warehouse to the container.

d. Handlift

Handlift is a device that is used to lift pallets with the hydraulic pressure manually.

e. Pallet

Pallet is a device that is made from wood that is functioned as a place to put the products that is ready to be packed and it also eases the transporting activity of the products.

3.4.3. Facility to Assure the Quality of the Product

To get the final product with good quality, facilities in the production process, quality control, and occupational health and safety are needed. Facilities to guarantee product quality at the company, namely:

a. Autoline L&W

Autoline L&W is an automation machine used to measure and examine paper roughness, paper thickness, paper stiffness, paper color, paper dust, paper flexibility, and paper weight in the quality control area. Samples taken from the paper machine will be placed on the L & W autoline engine and the machine will measure every 30 cm. The results of the measurements will be entered into the computer so that they can be seen using the graphing method.

b. Sample *punch*

The sample punch is a conventional tool used for punching paper and taken as a sample. The principle of using the sample punch is to put the paper you want to punch and press the lever on the tool.

c. Micrometer

Micrometer is a conventional tool used to measure paper thickness. The principle of using a micrometer is by putting a paper sample on the micrometer and the size of the paper sample will be shown.

d. L&W Bendtsen Tester

L & W Bendtsen Tester is a conventional tool used to measure roughness and permeability of paper. The tester can only count one size so that the tester has to be set before making measurements. Then the L & W Bendtsen tester is placed on a paper sample that is on a flat glass surface, the machine will give a size value to one of these sizes. The size is obtained from the amount of air coming out of the paper. The rougher the paper sample, the more air that can come out of the paper and the size given will be even greater.

e. L&W Elrepho

L & W Elrepho is a conventional tool used to see the color of paper. By using an ultraviolet lamp, the color of the paper sample can be measured and determined manually.

f. L & W Internal Bond Tester

The L & W Internal Bond Tester is a conventional tool used to measure and examine the strength of paper. Paper samples will be measured and taken as many as 5 paper samples. The five samples were affixed to an iron which was glued with insulation. Then the pendulum will be dropped so that the iron functions to determine the size of the strength of the paper. The average amount of paper strength will be calculated from those five tests.

g. L&W Tensile Tester

L & W Tensile Tester is a conventional tool used to see the flexibility of paper. Paper samples will be cut according to the size specified and placed on the tester. The paper will be pulled up, then broken by the tester and will get a number of flexibility on the paper.

h. Blot Paper

Blot paper is used to dry the sample paper when the blotting test is conducted.

i. Clamp Container

The clamp container is a device that serves to test the absorption of water in paper.

3.4.4. Employee Self Protection Gears

Facilities for personal protective equipment used in companies to guarantee the health and safety of workers, namely:

a. Safety Shoes

Safety shoes are the main protective means of employees and must be used on employees who work in the area of the factory that will be given when the employee starts work. Safety shoes are equipped with iron embedded on the head of the shoe that works so that the workers' feet can be protected from workplace accidents that can occur.

b. Ear *plug* or *Ear Muff*

Ear plug is a protective device provided by the company to each worker which functions to protect from noise caused by the sound of machines or factory tools.

c. Respirator

Respirator/masker are protective gear provided by the company to each worker which functions to protect from gas and dust particles that occur as a result of the production process.

d. Helmet

Helm is a protective gear provided by the company to every worker that functions to protect from workplace accidents that have the risk of falling. The company has several helmet colors, which are white, yellow and red as markers. White helmets are used by workers, yellow helmets are used by visitors (visitors from outside), and red helmets are used by workers assigned to maintain safety.

e. Gloves

Gloves are a protective gear provided by the company to factory area workers who function as hand protectors from work accidents that can occur and must be owned or used when conducting sampling or during maintenance.

f. Glasses

Glasses are a protective device provided by the company to maintenance area workers who function as eye protection from workplace accidents that can occur that must be used when performing maintenance.

g. Body Hardness

Body hardness is a protective device provided by the company to maintenance area workers who function as body protectors from workplace accidents that can occur and must be used when at a minimum height of 1.8 meters.

CHAPTER 4
STUDENT JOB OVERVIEW:
DESIGNING COMPETENCY OF PAPER WAREHOUSE OPERATOR

4.1. Working Scope

Industrial practice carried out at PT. Riau Andalan Pulp and Paper was conducted at the April Learning Institute and Paper Warehouse departments. The April Learning Institute Department plans training and assessment for PT. Riau Andalan Pulp and Paper employees. The guide is given by Mr. Dedi Yandri who gives direction and planning during the practical work program activities take place. In addition, several colleagues also gives assistance in the department at PT. Riau Andalan Pulp and Paper, including:

a. Pak Gani Budiman, as the Paper Warehouse Supervisor who provides an explanation of the activities in the paper warehouse ranging from receiving, binning, hot loading, order picking, and the types of loading methods.
b. Yesie Meirisa Sinuhaji, as the Paper Warehouse planner team who provided an explanation of the procedures for making a good and correct questionnaire and helped in checking the questions on the compilation questionnaire.
c. Pak Fuad, as the general paper warehouse team, gave a more detailed explanation of the process of using the PMIS system on a forklift and how to choose the binning location for goods that were received properly.
d. Pak Jekson Marpaung, as the general section team at the paper warehouse, gave an explanation of the stocktake activities at the paper warehouse, and the visual content management board.
e. Other colleagues in the paper warehouse that assists the research in paper warehouse.

4.2. Responsibility and Authority at Work

While undergoing practical work at PT. Riau Andalan Pulp and Paper, the task was given to compile the Supply Chain Management module during the April Learning Institute. In addition, while in the paper warehouse, the task is also to make observations about the activities of warehouse operators and warehouse supervisors who will be used as competencies for operators and also for training purposes.

4.3. Work Implementation Methodology

When doing practical work, there is no specific task given, problems are to be found and solving the problem by discussing with mentors and coworkers as one of the requirements for the assessment of practical work. Flowcharts for the execution of work can be shown in Figure 4.1.

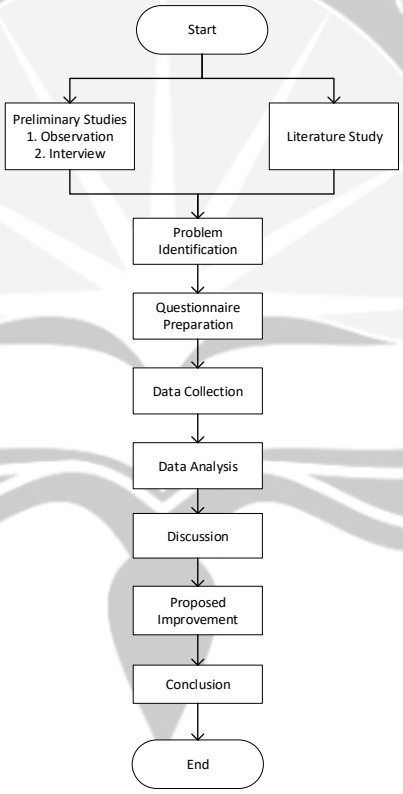

Figure 4.1. Work Flowchart

4.3.1. Preliminary Studies

At the beginning of practical work, the placement is in the April Learning Institute department, the literature of the Supply Chain Management module at the April Learning Institute is studied. The explanation on how to arrange good and correct competencies, according to the topic of Supply Chain Management is also given. In addition, consultation is done, and interview is also done about the observation material to the mentor and got a task in the form of compiling competency requirements in the paper warehouse operator.

4.3.2. Literature Study

According to Lucia and R. Lepsinger (1999) competence is a model that identifies the skills, knowledge, and characteristics needed to do a job. Competence according to Dharma (2001: 20) that the determination of the level of competence is needed in order to know the expected workplace for the category of good or average. In addition, the determination of competencies needed can be used as a basis for the process of selection, planning, performance evaluation, and human resource development.

Another understanding put forward by Spencer and Spencer (1993) is that competence is a characteristic that stands out for someone and becomes ways of behaving and thinking in all situations and lasts for a long period. From this understanding it can be concluded that competence refers to one's performance in a job that can be seen from thoughts, attitudes and behaviors.

According to Milos Vacek and Pavel Krbalek (2011) competency mapping is a technique describing organizational structure with job descriptions and individual needs. Competency mapping is used to measure the strengths and weaknesses of an employee and the organization. This mapping technique is done by identifying skills and strengths in an area such as leadership in teamwork and in making decisions. This technique has been used by companies to find out how to get the best performance from workers and how to combine the strengths of each employee to produce quality work and excellent productivity.

The Pareto diagram was created by an Italian economist named Alfredo Pareto (1848-1923). Alfredo Pareto conducted a study of the distribution of wealth in Europe. He found that there were people who had a lot of money,

and there were people who had a little money. This distribution is uneven, wealth becomes an integral part of economic theory.

Pyzdek (2003) defines pareto analysis as a process for ranking potential opportunities that must be done first without leaving other potential opportunities. According to the Pareto Principle raised by Alfredo Pareto (1906) quoted in Bass (2007), 80% of problems can be caused by 20% of the causes. Therefore, the Pareto Principle is often called the 80-20 rule. Pareto is presented in the form of a diagram. Potential opportunities that must be prioritized are the most events in one category.

4.3.3. Problem Identification

The focus is decided on the paper warehouse area which is one of the important components of the supply chain at PT. Riau Andalan Pulp and Paper. After the observations are made on the Paper Warehouse, the problem occurs in the form of a lack of clear competence in the scope of work of the operator of the Paper Warehouse, causing problems in the direction of training to be provided to the paper warehouse operator. The plan is to use the pareto chart to identify what is the critical competency for the operators.

a. Scope of Problems

i. Data are taken for 6 days on the paper warehouse due to the time constraint of the industrial practice

ii. The respondents of the questionnaire is selected from shift A, shift B, shift C, and shift D in the paper warehouse.

iii. The data is taken in the morning briefing (07.00) and afternoon briefing (15.00)

b. Assumptions

i. The data collected in this research is assumed to be enough and valid because of the time constraint of the industrial practice.

c. Purpose

i. To understand what competencies are needed by the paper warehouse operators.

ii. To understand their incapability in the competency and give suggestion to the company for their future trainings.

4.3.4. Questionnaire Preparation

After finding the existing problems, a questionnaire is compiled to find out what competencies are relevant to the activities of paper warehouse operators in the field so that the competencies are needed by the operator in order to achieve maximum performance can be found out. To find out what competencies are relevant, several operators, as well as the paper warehouse supervisor, the paper warehouse planner team are interviewed and also consulted with the superintendent paper warehouse to get a more detailed explanation of the flow of activities that exist in the paper warehouse. The superintendent paper warehouse also gives feedback to create an activity matrix to make it easier to compile the questionnaire. The questionnaire consists of 10 basic competencies, which is work health and safety, facility and equipment management, product quality knowledge, operational activity and resource planning, process recording and documentation, cargo and inventory handling, operational security, process monitoring and controlling, and operating the forklift. In the first page, there are work safety and facility management. In the second page, there are knowledge of goods quality, and also operational activity and resources planning. In the third page, there are recording and documentation activity. In the fourth page, there are operational communication, cargo and inventory handling, and also operational security. In the last page, there are monitoring and controlling process, and also forklift operations. Each of the aspects consist of several question which will represents the aspects and the workers are required to answer in yes or no manner.

KUESIONER KOMPETENSI

NAMA :

POSISI : **Supervisor / Operator ***

SHIFT : **A / B / C / D ***

*lingkari pilihan yang sesuai.

PETUNJUK: Kuesioner diisi sesuai dengan **cakupan pekerjaan saudara/i, bila tidak sesuai dikosongkan**. Bubuhkan tanda ***checklist*** (√) pada kolom yang disediakan. Besar harapan kami untuk saudara/saudari mengisi dengan sejujur-jujurnya. Data yang kami peroleh dari kuesioner ini tidak akan disebarluaskan dan hanya digunakan untuk kepentingan tugas kuliah, Terima kasih.

CODE	ELEMEN	SPESIFIKASI	Tidak	Ya
A	Keselamatan dan Kesehatan Kerja	Mampu memahami prosedur evakuasi dalam situasi darurat		
		Memahami dan menerapkan standard APD di paper warehouse		
		memahami letak dan Mampu menggunakan alat pemadam di warehouse		
		Mampu melaporkan insiden dan kecelakaan kerja kepada pihak yang terkait		
		mengidentifikasi bahaya dan mengontrolnya (contoh: susunan pallet yang kurang rapih beresiko menimpa karyawan)		
		Memahami prosedur penyusunan barang yang aman		
		Memahami cara bekerja yang aman dalam mengoperasikan forklift		
B	Manajemen Fasilitas dan Peralatan	Mampu merencanakan kebutuhan forklift dan scanner dalam gudang		
		Mampu merencanakan perawatan secara berkala pada forklift dan scanner		
		Mampu memahami dan memantau kelengkapan fitur forklift (lampu rotary, alarm mundur)		
		Memahami dan Mampu melakukan inspeksi kondisi forklift pada awal shift		
		Mampu mengidentifikasi dan melaporkan abnormalitas pada forklift		
		Mampu memeriksa kondisi scanner pada awal shift dan menggunakannya		

Figure 4.2. Page 1 of the Questionnaire

CODE	ELEMEN	SPESIFIKASI	Tidak	Ya
		Mampu memilih alat pengaman produk di dalam container yang sesuai dengan kebutuhan (strapper, air bag, cardboard, dan checking board)		
		Mampu memastikan ketersediaan alat pengaman kargo		
		Mampu melaporkan abnormalitas pada alat pengaman		
		memahami dan Mampu menerapkan 5S		
		Mampu mengidentifikasi dan melaporkan kerusakan fisik bangunan pada warehouse		
		Mampu merencanakan dan memesan kontainer yang akan digunakan untuk aktivitas stuffing		
		Mampu memastikan dan melaporkan kesiapan kontainer untuk operasi stuffing		
		Mampu mengidentifikasi dan melaporkan abnormalitas fisik yang ada pada kontainer yang digunakan		
		Mampu memantau dan mencatat kontainer yang tidak tersedia dan mengevaluasi penyebabnya		
		Mampu memeriksa kondisi radio dan memahami cara menggunakannya		
		Mampu memahami standard housekeeping di lingkungan warehouse		
		Mampu memantau abnormalitas pada lampu penerangan yang ada pada warehouse dan melaporkan abnormalitas tersebut		
		Mampu mengidentifikasi dan mengatasi apabila terjadi tumpahan oli pada area warehouse		
C	Pengetahuan Kualitas Barang	Memahami jenis jenis abnormalitas yang terjadi pada kargo		
		Mampu mengidentifikasi dan melaporkan abnormalitas pada kargo(kerusakan fisik pada kargo dan kesalahan shipping label)		
D	Aktivitas Operasional dan	Mampu merencanakan proses penerimaan barang (lokasi, operator, pengelompokan)		
		Mampu merencanakan dan melaksanakan proses pengembalian barang		
		Mampu mengidentifikasi status umur kargo yang melebihi 90 hari		

Figure 4.3. Page 2 of the Questionnaire

CODE	ELEMEN	SPESIFIKASI	Tidak	Ya
	Perencanaan Sumber Daya	Mampu mengatur dan mengelompokkan barang-barang yang akan melewati prosedur pengembalian		
		Mampu merencanakan lokasi penempatan dan jumlah barang pada binning		
		Mampu merencanakan picking order		
		mengetahui target stuffing dan mampu merencanakan cara pencapaian target tersebut		
		Mampu membuat rencana penyediaan tempat untuk kargo kembali yang mengalami cancellation customer atau kerusakan		
		Menguasai dan dapat mengoperasikan microsoft excel pada level dasar		
		Mampu mengoptimalkan beban kerja operator		
		mampu memahami detail pada load plan dan sistem PMIS		
		mampu mengidentifikasi lokasi barang/kargo di dalam warehouse		
		mampu memahami tata cara penempatan lokasi		
		Mampu melakukan pengkajuan dan umpan balik atas kinerja tim		
		Mampu membuat perencanaan stuffing 3 hari kedepan dan memilah prioritas berdasarkan kebutuhan proses selanjutnya		
E	Proses Pencatatan dan Dokumentasi	Mampu mencatat jumlah scanner yang mengalami abnormalitas dan mengevaluasi penyebabnya		
		Mampu mendokumentasikan kargo yang abnormal (kualitas/akurasi)		
		Mampu mengidentifikasi dan mencatat abnormalitas pada kontainer yang digunakan dan mengevaluasi penyebabnya		
		Mampu mencatat kontainer yang tidak tersedia dan mengevaluasi penyebabnya		
		Mampu membuat laporan kerja harian sesuai dengan standard yang diberlakukan		
		Mampu membuat berita acara mengenai kerusakan yang terjadi pada peralatan, kargo, kontainer, dan fasilitas		
		Mampu mengisi konten management visual board dengan tepat pada waktu yang ditentukan		
F		Mampu mengisi dokumen handover shift dengan benar		

Figure 4.4. Page 3 of the Questionnaire

CODE	ELEMEN	SPESIFIKASI	Tidak	Ya
	Komunikasi Operasional	Mampu melaporkan dan mengkomunikasikan abnormalitas yang terjadi kepada sesama personel		
		Mampu berkomunikasi secara efektif		
		Mampu melakukan komunikasi dengan media radio, telpon, dan email.		
		Mampu menjelaskan rencana aktivitas dan pekerjaan kepada team		
		Mampu melakukan koordinasi dengan team perencanaan produksi dan pengapalan dalam menghadapi kondisi kritis		
G	Penanganan Kargo dan Persediaan	Mampu memahami alur pergerakan barang dari proses receiving sampai proses stuffing		
		Mampu memahami surat perintah kerja yang diberikan		
		Mampu mengidentifikasi dan melaporkan abnormalitas pada produk (kerusakan fisik pada produk dan kesalahan shipping label)		
		Mampu Memahami prosedur pengembalian produk yang memiliki abnormalitas		
		Mampu melakukan scanning pada produk yang diterima		
		Mampu membedakan lokasi peletakan kargo diterima dari conveyor (hot loading atau binning)		
		Mampu merencanakan penempatan produk pada bin		
		Mampu mengupdate lokasi barang pada sistem PMIS		
		Mampu dalam mengidentifikasi barang yang hilang		
		Mampu mengidentifikasi gate yang akan dituju untuk stuffing		
		Mampu memahami prosedur stuffing slipsheet, palletize, loose fill, dan customer roll		
		Mampu memilih alat pengaman produk di dalam container yang sesuai dengan kebutuhan (strapper, air bag, cardboard, dan checking board)		
		Memahami dan mampu melakukan pengelolaan barang disaat kondisi kritis agar operasional tetap efektif dan efisien		
H	Keamanan Operasional	Mampu mencegah dan menangani konflik antar personel di warehouse		
		Mampu menjamin keamanan barang yang disimpan di warehouse		
		Mampu melaporkan setiap kasus yang dapat mengancam keamanan		
I		Mampu mengupdate dan memahami konten visual management board		

Figure 4.5. Page 4 of the Questionnaire

CODE	ELEMEN	SPESIFIKASI	Tidak	Ya
	proses monitoring dan pengendalian	Mampu mengevaluasi produk yang dikembalikan		
		Mampu mencatat abnormalitas apa saja yang terdapat pada forklift serta penanganan abnormalitas oleh team maintenance		
		Mampu melakukan evaluasi terhadap kerusakan kargo		
		Mampu mengevaluasi kargo yang tidak tercatat ke dalam sistem PMIS		
		Mampu memastikan kargo telah diamankan dengan benar di dalam kontainer		
		Mampu memonitor lokasi, exmill, dan kode pesanan barang melalui software PMIS		
		Mampu melakukan prosedur stocktake/cycle count		
		Mampu menangani masalah terkait dengan ketidakakuratan pada stocktake/cycle count		
		Mampu memonitor star location status		
		Mampu memonitor status inload		
		Mampu memonitor abnormalitas dalam pencatatan nomor container dan nomor seal		
		Mampu memastikan kargo yang distuffing sesuai dengan order		
J	pengoperasian forklift	Mampu memahami penggunaan dan mengenakan sabuk pengaman saat mengendarai forklift		
		Mampu memahami dan menaati batas kecepatan saat mengendarai forklift		
		Mampu memahami kondisi lalu lintas forklift dan jalurnya di warehouse		
		Mampu memahami dan menaati batas beban standar yang boleh diangkut		
		Mampu mengendarai forklift secara terbalik dengan memperhatikan visibilitas dan mencapai posisi yang akurat		

Figure 4.6. Page 5 of the Questionnaire

4.3.5. Data Collection

After consulting with colleagues at the paper warehouse and getting a questionnaire that is already agreed by paper warehouse superintendent, then the questionnaire is distributed to the paper warehouse operator at the beginning of the shift, and on the second shift briefing. The questionnaire is distributed on Monday, 29 July 2019, until Friday, 2 August 2019. Due to time constraints, only 20 respondent data from questionnaires distributed is able to be collected. The data that is obtained from the questionnaire is displayed on table 5.1. The name of the operators is changed due to the promise to anonymize the respondents. The score on each of the aspects are calculated into percentage.

4.3.6. Data Analysis

After getting the results of the answers of several respondents, the results of the answers were analyzed. Analysis of answers using the method of percentage scoring the answer 'Yes' to the number of questions in one basic competency, because one basic competency can have several questions. Then the average of the competencies will be calculated that is available in the questionnaire, and after calculating the average of the competencies, incapability will be calculated by using 100% subtracted by the average. After the incapability is calculated, then the pareto chart will be used to seek the vital few incapability that contributes to 80% of the operator’s performance. The result of the calculation can be seen in Table 4.2. Pareto Chart Data Table.

Table 4.1. Questionnaire Results

No	Nama	Work Health and Safety	Facility and Equipment Management	Product Quality Knowledge	Operational activity and resources processing	Process recording and documentation	Operational Communication	Cargo and Inventory handling	Operational Security	Process monitoring and controlling	Operating the forklift
1	Operator A	100%	84%	100%	47%	0%	33%	85%	100%	62%	100%
2	Operator B	100%	89%	100%	47%	86%	50%	85%	100%	54%	100%
3	Operator C	100%	68%	50%	40%	57%	17%	54%	67%	38%	100%
4	Operator D	100%	95%	100%	80%	71%	83%	100%	100%	92%	100%
5	Operator E	100%	58%	100%	73%	0%	50%	100%	100%	85%	100%
6	Operator F	100%	95%	100%	100%	100%	100%	92%	100%	85%	100%
7	Operator G	100%	95%	100%	80%	29%	83%	92%	100%	85%	100%
8	Operator H	100%	89%	100%	67%	57%	83%	69%	100%	38%	100%
9	Operator I	100%	95%	100%	73%	29%	33%	92%	100%	77%	100%
10	Operator J	71%	100%	100%	100%	100%	100%	100%	100%	100%	100%
11	Operator K	100%	84%	100%	53%	29%	50%	92%	100%	69%	100%
12	Operator L	100%	89%	100%	93%	100%	83%	100%	100%	100%	100%
13	Operator M	100%	95%	100%	73%	29%	33%	92%	67%	77%	100%
14	Operator N	86%	100%	100%	100%	100%	100%	100%	100%	100%	100%
15	Operator O	100%	58%	100%	13%	43%	67%	85%	100%	77%	100%
16	Operator P	100%	84%	100%	80%	86%	100%	100%	67%	100%	100%
17	Operator Q	100%	100%	100%	67%	86%	67%	92%	100%	92%	100%
18	Operator R	100%	53%	100%	67%	43%	83%	85%	67%	54%	80%
19	Operator S	100%	100%	100%	47%	0%	50%	62%	100%	62%	100%
20	Operator T	100%	79%	100%	40%	0%	0%	77%	67%	46%	100%
	Average	98%	86%	98%	67%	52%	63%	88%	92%	75%	99%
	Incapability	2%	14%	3%	33%	48%	37%	12%	8%	25%	1%

After calculating the percentage of the incapability, incapability will be converted into a pareto chart by first inserting the data needed to construct the pareto chart.

Table 4.2. Pareto Chart Data Table

Notation	Competency	Average Point	Cumulative	Cumulative %
A	Process Recording and Documentation	**0.48**	0.48	19.54%
B	Operational Communication	**0.98**	1.46	59.51%
C	Operational Activity and Resource Planning	**0.33**	1.79	72.99%
D	Process Monitoring and Controlling	**0.25**	2.04	83.35%
E	Facility and Equipment Management	**0.14**	2.19	89.27%
F	Cargo and Inventory Handling	**0.12**	2.31	94.29%
G	Operational Security	**0.08**	2.39	97.70%
H	Product Quality Knowledge	**0.03**	2.42	98.72%
I	Work Health and Safety	**0.02**	2.44	99.59%
J	Operating the Forklift	**0.01**	2.45	100.00%
	Total	2.45		

After the data are inserted, the pareto chart will be constructed which can be shown below.

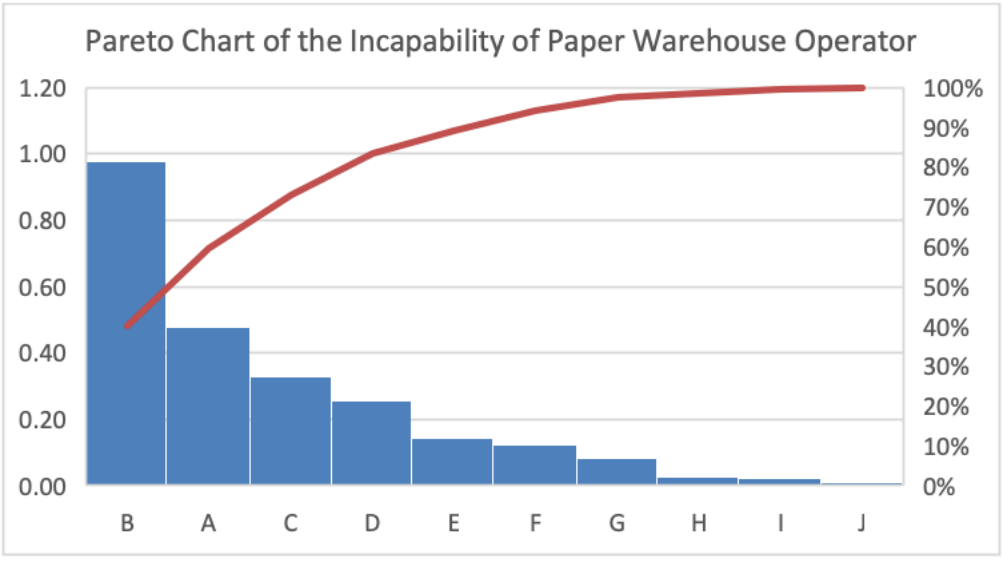

Figure 4.7. The Pareto Chart of Incapability of Paper Warehouse Operator

From the pareto chart, the vital few can be known by drawing horizontal line from the 80% Y axis and when it crosses the line graph, draw again the vertical line, then the vital few is on the left side of the vertical line, which can be shown on figure 4.8. below.

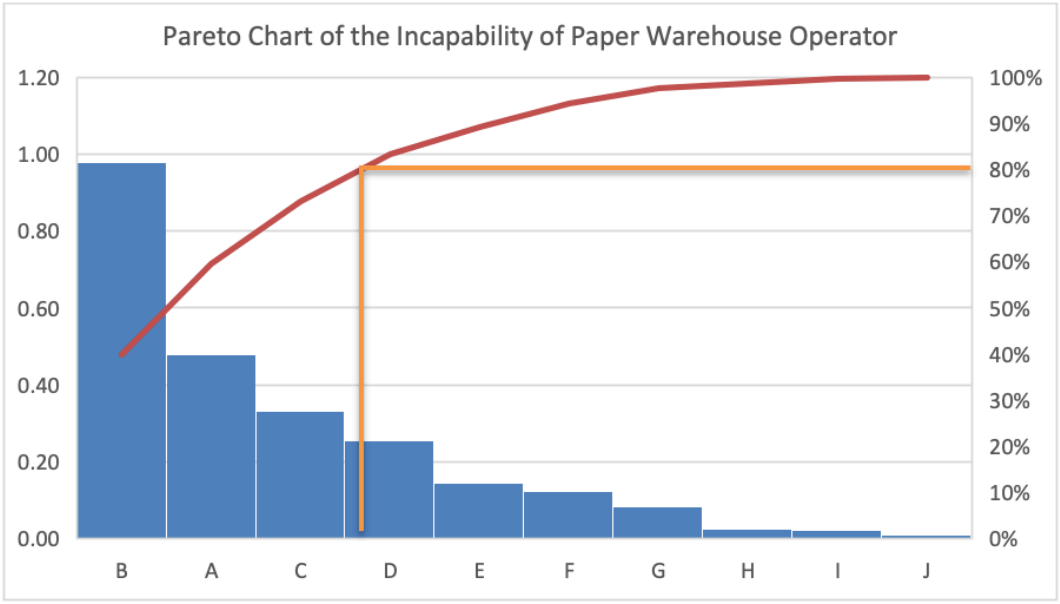

Figure 4.8. Determining the Vital Few in the Pareto Chart

As it can be seen in the pareto chart, the vital few are **the process recording and documentation**, **operational communication**, **operational activity and resource planning competencies**.

4.3.7. Result and Recommendations

a. Result

From the result of the pareto chart, it can be concluded that the vital few incapability in the warehouse is in the process recording and documentation, operational communication, operational activity and resource planning. These three competencies are critical to the performance of the operator in the paper warehouse, as lacking the capability on those competencies can cause problems to the performance of said operators. Process recording and documentation competencies means that the operator can record the activities in the warehouse and make the recordkeeping for future uses. Being incapable in that competency makes the operator unable to record what they have been doing and did not make the recordkeeping for future uses or analysis. The operational communication is also important in the paper warehouse, especially when the operators have to

communicate between the shifts about the condition of the loading target, condition of the equipment, and the location of the product in the bin. Operational activity and resource planning are also important for the operators, as they should be capable of planning where to put the product in the bin location, planning the order picking activity, and knowing the loading target and how to achieve the target.

b. Recommendation

Based on the result of the pareto chart, several recommendations can be given, those are:

1. The operator should be trained and given coaching in the process recording and documentation competency. The suggestion is to train the operator that they should record if they find abnormal cargo and container. The operator should also be trained to create a working report about how many cargos they loaded so it would be easier to keep track of their performance. They should also be coached in the visual management board, so they could understand the meaning of the contents and update the contents in a given period.
2. In the operational communication, it is suggested that there should be standard operational procedure to create a handover shift document to the next shift so they could report the condition of the facility and the equipment, also for the loading target to the next shift. It is also suggested that the operator should be given a training on how to do an effective communication so that they could speak and communicate with concise language and easier to understand to each other which eventually would reduce the miscommunication between each employee.
3. In the operational activity and resource planning competency, it is suggested that the operator should be coached on how to deal with the defect products that have to be returned, if needed the standard operation procedure should be made about the returning product so it would minimize the error in the returning product. The operator also could be given a coaching about how to distribute the product in the bin location so that the product that will be loaded is not scattered and taking less time to gather the products needed to load into the container.

CHAPTER 5

CONCLUSION AND SUGGESTION

5.1. Conclusion

During the industrial practice, several conclusions can be given, those are:

1. The competencies that are needed by the operators in the paper warehouse is divided by ten basic competencies, that is work health and safety, facility and equipment management, product quality knowledge, operational activity and resource planning, operational communication, process recording and documentation, cargo and inventory handling, operational security, process monitoring and controlling, and operating the forklift.
2. Based on the incapability calculation and pareto chart, the operators mostly incapable in three out of ten basic competencies, those are process recording and documentation, operational communication, and operational activity and resource planning.

5.2. Suggestion

There are several suggestions that is proposed to increase the capability of the warehouse operator based on the research that has been done, those are:

1. Training the operator and make the standard operation procedure to record the loading activity of each individual operators so it would be easier to track their performance and record keeping skills.
2. Create the standard operation procedure for the operator to always fill the handover shift document that will communicate the condition of the equipment, facilities, and products loading activity of the current shift to the next shift.
3. Training the operator to always scan the products that is going to be returned and create the standard operation procedure for returning the defect product. The operator also should be trained about how to distribute the received goods if it goes into binning activity so the products that is needed to be loaded to the container does not scatter.

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ATTACHMENTS

Program Studi Teknik Industri Universitas Atma Jaya Yogyakarta
Catatan Harian Pelaksanaan Kerja Praktek/ Magang

NO.	HARI, TANGGAL	JAM	KEGIATAN	TANDA TANGAN & STEMPEL PERUSAHAAN
	1 Juli 2019	08.00 – 12.00	Mendengarkan Presentasi tentang RGE	

Catatan penting harian:

Catatan dari pembimbing lapangan:

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085-OSR/Ind-FTI-UAJY/18-VIII/2017

Revisi 00

Program Studi Teknik Industri Universitas Atma Jaya Yogyakarta
Catatan Harian Pelaksanaan Kerja Praktek/ Magang

NO.	HARI, TANGGAL	JAM	KEGIATAN	TANDA TANGAN & STEMPEL PERUSAHAAN
	Selasa 2 Juli 2019	08.00 – 12.00	Tanda tangan kontrak	
		13.30 – 17.00	Presentasi setelah mengenal APRIL	

Catatan penting harian:

Catatan dari pembimbing lapangan:

Program Studi Teknik Industri Universitas Atma Jaya Yogyakarta
Catatan Harian Pelaksanaan Kerja Praktek/ Magang

NO.	HARI, TANGGAL	JAM	KEGIATAN	TANDA TANGAN & STEMPEL PERUSAHAAN
	Rabu, 3 Juli 2019	08.00	Safety Induction oleh Pak Junaidi	
		16.00	Pengenalan kerja Praktek oleh Pak Deddy	

Catatan penting harian:

Catatan dari pembimbing lapangan:

085-OSR/Ind-FTI-UAJY/18-VIII/2017

Revisi 00

Program Studi Teknik Industri Universitas Atma Jaya Yogyakarta
Catatan Harian Pelaksanaan Kerja Praktek/ Magang

NO.	HARI, TANGGAL	JAM	KEGIATAN	TANDA TANGAN & STEMPEL PERUSAHAAN
	Kamis, 4 Juli 2019	08.00	Merevisi Presentasi Supply Chain Management	
		13.30	Kunjungan ke RTC	

Catatan penting harian:

Catatan dari pembimbing lapangan:

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Revisi 00

Program Studi Teknik Industri Universitas Atma Jaya Yogyakarta
Catatan Harian Pelaksanaan Kerja Praktek/ Magang

NO.	HARI, TANGGAL	JAM	KEGIATAN	TANDA TANGAN & STEMPEL PERUSAHAAN
	Jumat, 5 Juli 2019	08.00 - 17.00	Merevisi Presentasi SCM	

Catatan penting harian:

Catatan dari pembimbing lapangan:

Program Studi Teknik Industri Universitas Atma Jaya Yogyakarta
Catatan Harian Pelaksanaan Kerja Praktek/ Magang

NO.	HARI, TANGGAL	JAM	KEGIATAN	TANDA TANGAN & STEMPEL PERUSAHAAN
	Senin, 8 Juli 2019	08.00 - 12.00	Mengerjakan Laporan	
		12.00 - 13.30	Istirahat	
		13.30 - 17.00	Mengerjakan Laporan	

Catatan penting harian:

Catatan dari pembimbing lapangan:

Program Studi Teknik Industri Universitas Atma Jaya Yogyakarta
Catatan Harian Pelaksanaan Kerja Praktek/ Magang

NO.	HARI, TANGGAL	JAM	KEGIATAN	TANDA TANGAN & STEMPEL PERUSAHAAN
	Selasa, 9 Juli 2019	08.00 - 12.00	Mengerjakan laporan	
		13.30 - 15.30	Berkunjung ke Woodyard dan Paper Warehouse	

Catatan penting harian:

Catatan dari pembimbing lapangan:

085-QSR/Ind-FTI-UAJY/18-VIII/2017

Revisi 00

Program Studi Teknik Industri Universitas Atma Jaya Yogyakarta
Catatan Harian Pelaksanaan Kerja Praktek/ Magang

NO.	HARI, TANGGAL	JAM	KEGIATAN	TANDA TANGAN & STEMPEL PERUSAHAAN
	Rabu, 10 Juli 2019	08.00 - 12.00	Mengerjakan Laporan	
		12.00 - 13.30	Istirahat	
		13.30 - 17.00	Mengerjakan Laporan	

Catatan penting harian:

Catatan dari pembimbing lapangan:

Program Studi Teknik Industri Universitas Atma Jaya Yogyakarta
Catatan Harian Pelaksanaan Kerja Praktek/ Magang

NO.	HARI, TANGGAL	JAM	KEGIATAN	TANDA TANGAN & STEMPEL PERUSAHAAN
	Kamis, 11 Juli 2019	08.00 - 12.00	Mengerjakan Laporan	
		12.00 - 13.30	Istirahat	
		14.00 - 16.00	kunjungan ke Paper Warehouse dengan Pak Gani	

Catatan penting harian:

Catatan dari pembimbing lapangan:

Program Studi Teknik Industri Universitas Atma Jaya Yogyakarta
Catatan Harian Pelaksanaan Kerja Praktek/ Magang

NO.	HARI, TANGGAL	JAM	KEGIATAN	TANDA TANGAN & STEMPEL PERUSAHAAN
	Jumat, 12 Juli 2019	08.00 - 12.00	Mengerjakan Laporan	
		12.00 - 13.30	Istirahat	
		13.30 - 17.00	Mengerjakan Laporan	

Catatan penting harian:

Catatan dari pembimbing lapangan:

Program Studi Teknik Industri Universitas Atma Jaya Yogyakarta
Catatan Harian Pelaksanaan Kerja Praktek/ Magang

NO.	HARI, TANGGAL	JAM	KEGIATAN	TANDA TANGAN & STEMPEL PERUSAHAAN
	Senin, 15 Juli 2019	08.00 - 12.00	observasi Jobdesc karyawan di paper warehouse	
		12.00 - 13.30	istirahat	
		13.30 - 16.00	Observasi Jobdesc karyawan di paper warehouse	

Catatan penting harian:

Catatan dari pembimbing lapangan:

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Revisi 00

Program Studi Teknik Industri Universitas Atma Jaya Yogyakarta
Catatan Harian Pelaksanaan Kerja Praktek/ Magang

NO.	HARI, TANGGAL	JAM	KEGIATAN	TANDA TANGAN & STEMPEL PERUSAHAAN
	Selasa, 16 Juli 2019	08.00 - 17.30	Observasi Jobdesc Kenyaman di paper warehouse	
		11.30 - 13.30	Istirahat	
		13.30 - 17.00	Observasi Jobdesc Kenyaman di paper warehouse	

Catatan penting harian:

Catatan dari pembimbing lapangan:

Program Studi Teknik Industri Universitas Atma Jaya Yogyakarta
Catatan Harian Pelaksanaan Kerja Praktek/ Magang

NO.	HARI, TANGGAL	JAM	KEGIATAN	TANDA TANGAN & STEMPEL PERUSAHAAN
	Rabu, 17 Juli 2019	08.00 - 11.30	Mengobservasi Job desc Lanjutan paper warehouse	
		11.30 - 13.30	Istirahat	
		13.30 - 17.00	Mengobservasi Jobdesc Lanjutan paper warehouse	

Catatan penting harian:

Catatan dari pembimbing lapangan:

Program Studi Teknik Industri Universitas Atma Jaya Yogyakarta
Catatan Harian Pelaksanaan Kerja Praktek/ Magang

NO.	HARI, TANGGAL	JAM	KEGIATAN	TANDA TANGAN & STEMPEL PERUSAHAAN
	Kamis, 18 Juli 2019	08.00 - 11.30	Menganalisis Jobdesc karyawan pada paper warehouse	
		11.30 - 13.30	Istirahat	
		13.30 - 17.00	Menganalisis Jobdesc karyawan pada paper warehouse	

Catatan penting harian:

Catatan dari pembimbing lapangan:

Program Studi Teknik Industri Universitas Atma Jaya Yogyakarta
Catatan Harian Pelaksanaan Kerja Praktek/ Magang

NO.	HARI, TANGGAL	JAM	KEGIATAN	TANDA TANGAN & STEMPEL PERUSAHAAN
	Jumat, 19 Juli 2019	08.00 - 11.30	Menyusun kuesioner	
		11.30 - 13.30	Istirahat	
		13.30 - 17.00	Menyusun kuesioner	

Catatan penting harian:

Catatan dari pembimbing lapangan:

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Revisi 00

Program Studi Teknik Industri Universitas Atma Jaya Yogyakarta
Catatan Harian Pelaksanaan Kerja Praktek/ Magang

NO.	HARI, TANGGAL	JAM	KEGIATAN	TANDA TANGAN & STEMPEL PERUSAHAAN
	Senin, 22 Juli 2019	08.00 - 11.30	Menyusun kuesioner	
		11.30 - 13.30	Istirahat	
		13.30 - 17.00	Menyusun kuesioner	

Catatan penting harian:

Catatan dari pembimbing lapangan:

Program Studi Teknik Industri Universitas Atma Jaya Yogyakarta
Catatan Harian Pelaksanaan Kerja Praktek/ Magang

NO.	HARI, TANGGAL	JAM	KEGIATAN	TANDA TANGAN & STEMPEL PERUSAHAAN
	Selasa, 23 Juli 2019	08.00 - 11.30	Menyusun kuesioner	
		11.30 - 13.30	Istirahat	
		13.30 16.00	Menyusun kuesioner	

Catatan penting harian:

Catatan dari pembimbing lapangan:

Program Studi Teknik Industri Universitas Atma Jaya Yogyakarta
Catatan Harian Pelaksanaan Kerja Praktek/ Magang

NO.	HARI, TANGGAL	JAM	KEGIATAN	TANDA TANGAN & STEMPEL PERUSAHAAN
	Rabu, 24 Juli 2019	08.00 - 11.30	Menyusun kuesioner	
		11.30 - 13.30	Istirahat	
		13.30 - 17.00	Menyusun kuesioner	

Catatan penting harian:

Catatan dari pembimbing lapangan:

Program Studi Teknik Industri Universitas Atma Jaya Yogyakarta
Catatan Harian Pelaksanaan Kerja Praktek/ Magang

NO.	HARI, TANGGAL	JAM	KEGIATAN	TANDA TANGAN & STEMPEL PERUSAHAAN
	Kamis, 25 Juli 2019	08.00 - 11.30	Menyusun kuesioner	
		11.30 - 13.30	Istirahat	
		13.30 - 16.00	Menyusun kuesioner	

Catatan penting harian:

Catatan dari pembimbing lapangan:

085-OSR/Ind-FTI-UAJY/18-VIII/2017

Revisi 00

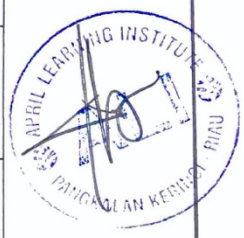
Program Studi Teknik Industri Universitas Atma Jaya Yogyakarta
Catatan Harian Pelaksanaan Kerja Praktek/ Magang

No.	Hari, Tanggal	Jam	Kegiatan	Tanda Tangan & Stempel Perusahaan
	Jumat, 26 Juli 2019	08.00 - 11.30	Mengisi kuesioner	
		11.30 - 13.30	Istirahat	
		13.30 - 17.00	Mentoring dan rekapitulasi kuesioner	

Catatan penting harian:

Catatan dari pembimbing lapangan:

Program Studi Teknik Industri Universitas Atma Jaya Yogyakarta
Catatan Harian Pelaksanaan Kerja Praktek/ Magang

No.	Hari, Tanggal	Jam	Kegiatan	Tanda Tangan & Stempel Perusahaan
	Senin, 29 Juli 2019	08.00 – 10.00	Mentoring kuesioner di ALI	
		10.00 – 11.30	Merevisi kuesioner	
		11.30 – 13.30	Istirahat	
		13.30 – 17.00	Merevisi kuesioner	

Catatan penting harian:

Catatan dari pembimbing lapangan:

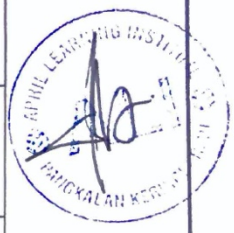
Program Studi Teknik Industri Universitas Atma Jaya Yogyakarta
Catatan Harian Pelaksanaan Kerja Praktek/ Magang

No.	Hari, Tanggal	Jam	Kegiatan	Tanda Tangan & Stempel Perusahaan
	30 Juli 2019	07.00 – 11.30	Menyebarkan kuesioner kepada Operator	
		11.30 – 13.30	Istirahat	
		13.30 – 16.00	Menyebarkan kuesioner kepada Operator	

Catatan penting harian:

Catatan dari pembimbing lapangan:

Program Studi Teknik Industri Universitas Atma Jaya Yogyakarta
Catatan Harian Pelaksanaan Kerja Praktek/ Magang

NO.	HARI, TANGGAL	JAM	KEGIATAN	TANDA TANGAN & STEMPEL PERUSAHAAN
	31 Agustus 2019	07.00 – 11.30	Menyebarkan kuesioner kepada Operator	
		11.30 – 13.30	Istirahat	
		13.30 – 16.00	Menyebarkan kuesioner kepada Operator	

Catatan penting harian:

Catatan dari pembimbing lapangan:

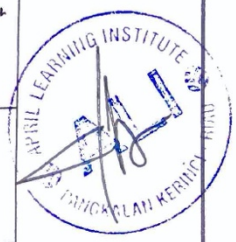
Program Studi Teknik Industri Universitas Atma Jaya Yogyakarta
Catatan Harian Pelaksanaan Kerja Praktek/ Magang

No.	Hari, Tanggal	Jam	Kegiatan	Tanda Tangan & Stempel Perusahaan
	1 Agustus 2019	07.00 – 11.30	Menyebarkan kuesioner kepada operator	
		11.30 – 13.30	Istirahat	
		13.30 – 16.00	Menyebarkan kuesioner kepada operator	

Catatan penting harian:

Catatan dari pembimbing lapangan:

Program Studi Teknik Industri Universitas Atma Jaya Yogyakarta
Catatan Harian Pelaksanaan Kerja Praktek/ Magang

NO.	HARI, TANGGAL	JAM	KEGIATAN	TANDA TANGAN & STEMPEL PERUSAHAAN
	2 Agustus 2019	07.00 – 11.30	Menyebarkan kuesioner kepada operator	
		11.30 – 13.30	Istirahat	
		13.30 – 16.00	Menyebarkan kuesioner kepada operator	

Catatan penting harian:

Catatan dari pembimbing lapangan:

Program Studi Teknik Industri Universitas Atma Jaya Yogyakarta
Catatan Harian Pelaksanaan Kerja Praktek/ Magang

NO.	HARI, TANGGAL	JAM	KEGIATAN	TANDA TANGAN & STEMPEL PERUSAHAAN
	3 Agustus 2019	07.00 – 11.00	Menyebarkan kuesioner kepada operator	

Catatan penting harian:

Catatan dari pembimbing lapangan:

Program Studi Teknik Industri Universitas Atma Jaya Yogyakarta
Catatan Harian Pelaksanaan Kerja Praktek/ Magang

No.	Hari, Tanggal	Jam	Kegiatan	Tanda Tangan & Stempel Perusahaan
	5 Agustus 2019	08.00 – 12.00	Menyiapkan Presentasi	

Catatan penting harian:

Catatan dari pembimbing lapangan:

PENILAIAN KERJA PRAKTEK OLEH PEMBIMBING/SUPERVISOR LAPANGAN
KERJA PRAKTEK PROGRAM STUDI TEKNIK INDUSTRI
UNIVERSITAS ATMA JAYA YOGYAKARTA

Nama Mahasiswa : Gerri Austine
No. Mahasiswa : 16140880
Perusahaan Tempat Kerja Praktek : PT. Riau Andalan Pulp and Paper
Divisi/Departemen/Area Kerja : Apal Learning Institute (ALI)
Waktu Pelaksanaan : 1 Juli 2019 - 9 Agustus 2019

Mohon Bapak/Ibu pembimbing lapangan memberikan penilaian atas prestasi mahasiswa peserta kerja praktek sesuai dengan aspek penilaian di bawah ini. **Nilai terendah adalah 10 dan nilai tertinggi adalah 100.**

No.	Aspek Penilaian		Nilai (10 – 100)
1.	Kedisiplinan	:	95
2.	Motivasi kerja	:	90
3.	Tanggung jawab	:	95
4.	Kerjasama dengan rekan sekerja	:	95
5.	Sopan santun dan tata krama	:	90
6.	Daya tangkap dan pemahaman terhadap tugas yang diberikan	:	90
7.	Kemampuan melaksanakan dan menyelesaikan tugas	:	95
8.	Keterampilan dalam menggunakan peralatan kerja	:	95
9.	Perawatan terhadap peralatan kerja	:	90
10.	Perhatian terhadap keselamatan kerja	:	90

Pangkalan Kerinci 5/8 - 20.19

Pembimbing/Supervisor Lapangan,

APAL LEARNING INSTITUTE PANGKALAN KERINCI - RIAU

(Heri Hendri)

Catatan:
- Nilai pada setiap aspek dikategorikan dalam peringkat **sangat baik** (nilai nominal: 90–100), **baik** (70-80), **cukup** (50-60), **kurang** (30-40), dan **sangat kurang** (10-20).
- Pembimbing/Supervisor Lapangan dimohon mengisi blanko penilaian ini apabila mahasiswa yang bersangkutan telah menyelesaikan Laporan Kerja Praktek di Perusahaan.
- Mahasiswa yang tidak menyerahkan blanko nilai yang sudah terisi oleh pembimbing lapangan tidak akan menerima nilai akhir Mata Kuliah Kerja Praktek.

Lampiran 2. Lembar Bimbingan Pelaksanaan dan Penyusunan Laporan Kerja Praktek (QSR No. 086-QSR/Ind-FTI-UAJY/18-VIII/2017)

Program Studi Teknik Industri Universitas Atma Jaya Yogyakarta
Lembar Bimbingan Pelaksanaan dan Penyusunan
Laporan Kerja Praktek/ Magang

Nama Mahasiswa : Gerri Austine
NPM : 161908800
Perusahaan tempat KP : PT. Riau Andalan Pulp & Paper
Tanggal pelaksanaan KP : 1 Juli 2019 - 9 Agustus 2019
Dosen Pembimbing : Ir. B. Kristyanto, M. Eng., Ph.D

No	Tanggal	Agenda	Tanda Tangan Dosen Pembimbing
1	21 Mei 2019	Penyerahan surat pembimbingan dan Konsultasi persiapan Kerja Praktek	
2	20/8/19	Laporan atau konsultasi penugasan dari perusahaan	
	20/8/19	Laporan pertama setelah pelaksanaan Kerja Praktek dan konsultasi penyusunan laporan	
	20/8/19		
		Penyerahan draft laporan Kerja Praktek untuk pertama kali	
	25/10/19	Pengesahan laporan Kerja Praktek	

APRIL

Certificate of Accomplishment

This is to certify that

Gerri Austine

has successfully accomplished a
Internship Program
Held in
Dept. APRIL Learning Institute, PT. Riau Andalan Pulp and Paper
from July 1st 2019 to August 9th 2019

Muhammad Yamin
Talent Management Coordinator