INTERNSHIP REPORT
AT PT. MEGA ANDALAN RODA DAN KASTOR, KALASAN

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14 14 07803

INTERNATIONAL INDUSTRIAL ENGINEERING

FACULTY OF INDUSTRIAL TECHNOLOGY

UNIVERSEITAS ATMA JAYA YOGYAKARTA

2017

APPROVAL

The internship report is written based on the internship at PT. Mega Andalan Roda dan Kastor during the period of July 13th, 2017 to August 16th, 2017 by:

Name : Melli Yantie

Student ID : 14 14 07803

has been approved.

Yogyakarta, August 16th, 2017

On site supervisor

Susanto Sadiro

Faculty Supervisor

The Jin Ai, ST., MT., Dr.Eng

CONFIRMATION LETTER

www.mak-techno.com

PT. MEGA ANDALAN KALASAN
(ENGINEERING & MANUFACTURING COMPANY)

Marketing Office : Rasuna Office Park SO-02, Komp. Rasuna Epicentrum,
Jl. HR. Rasuna Said, Jakarta 12960, Indonesia
Phone : (021) 83700555; Fax. : (021) 83700335; E-mail : mak@cbn.net.id

Warehouse : Jl. Gunung Sahari Raya 51/15, Jakarta 10610, Indonesia
Phone : (021) 4202118; Fax. : (021) 4205368, 4204871

CERTIFICATE OF OFFICIAL
No. : 042/MAK/KET/VIII/2017

Liaison Officer PT. Mega Andalan Kalasan officially confirms that :

Name	: Melli Yantie
Student ID	: 141407803
Program	: International Industrial Engineering
Institution	: Universitas Atma Jaya Yogyakarta

Has completed the internship in PT. Mega Andalan Kalasan as the company that offers the largest range of hospital equipments (hospital beds & accesories) in Indonesia for 1 (one) month, on July 13th - August 16th , 2017 with citation: adequate/good/satisfactory.

Hereby we declare that this certificate can be used accordingly.

Yogyakarta, 16th August 2017
Liaison Officer PT. MAK

Ir. Susanto Sudiro, M.Sc., Ph.D
MAK 0100149

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Wisma CIMB Niaga, Lantai 5 - Suite 506, Jl. Gatot Subroto No. 2, Bandung, Indonesia,Phone : (022) 7305874 Fax. : (022) 7306620
Wisma Sinar Mas Land Plaza, Lantai 16 - Suite 1616, Jl. Pemuda No. 60-70, Surabaya 60271, Indonesia,Phone : (031) 5459159 Fax. : (031) 5459267
Factory :
Jl. Tanjung Tirto 34, Tirtomartani, Kalasan Km. 13, Yogyakarta 55571, Indonesia,Phone : (0274) 497068 Fax. : (0274) 496226

ACKNOWLEDGEMENT

The internship report was written in order to provide a clear explanation about the internship experience and its results. The internship report contains the background of internship, company profile, company system, and assignment/project during the internship in PT. Mega Andalan Roda dan Kastor.

During the completion of this internship report, author gain guidances and aids from many parties. Therefore, author express deepest gratitude to Mr. Susanto Sadiro, as on-site supervisor during the internship and Mr. The Jin AI, as faculty supervisor and Mrs. Ririn Diar Astanti who gave us necessary advices and guidances. I choose this moment to acknowledge his and her contributions gratefully.

Finally, authors hope this internship report can be beneficial for many people, especially for the students so they can gain more knowledge about the internship experience.

Yogyakarta, August 14th, 2017

Author

Melli Yantie

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INTRODUCTION

This chapter explains about the background of internship, objective of internship, location and schedule of the internship which includes job placement and assignment.

1.1. Background of Internship

Department of Industrial Engineering, Universitas Atma Jaya Yogyakarta (Department of Industrial Engineering) defines the internship as an activity that enables students to apply Industrial Enginering knowledge in practice and to train them how to be a professional of Industrial Engineer. The paradigm that should be known by student was the student work in the company that has been choosen. Working in this words embrace the planning activities , design, improvement, application and problem solving. For this purpose, during the internship the students are requested to do some activities in the host company for a period of one month such as:

a. Do all the tasks that have been assigned by the host company
b. Follow all of relevant working procedures of the host company
c. Capture the big picture of the enterprise system in the host company and observe its characteristics.
d. Prepare the report in the written form.

Since Industrial Engineer is dealing with the integrated system of some elements which are Man, Machine, Material, Methods, Money, Energy, Environment and Information, therefore during the internship the students should relate all of their activities in term of system perspective. Based on the explanation above, it is clearly seen that internship is not only gathering the data.

According to the Curriculum of Department of Industrial Engineering internship is a required course in which students should register this course for 2 credits. Then, in order to fulfill the academic requirement of internship, the students are required to submit an internship report and conduct the oral presentation. The performance

of the student itself is evaluated both by on-site supervisor and by faculty supervisor.

Competencies that student and alumnus of Industrial Engineering possess are :

a. Work System Design and Ergonomic
b. Planning and Production Control
c. Inventory Management
d. Quality Control System
e. Material Handling System
f. Logistic and Supply Chain Management
g. Planning and Product Development
h. Occupational Safety and Health
i. Planning of Manufacturing Facility Layout
j. Organization Management
k. Cost Analysis
l. Industrial Expedience Analysis
m. Process Planning and CAD/CAM and so on.

1.2. Objective of Internship

The aims of the internship are:

a. Enhance the Industrial Engineering knowledge in practice by seeing the practical work in the host company
b. Enhance the knowledge of enterprise system
c. Practice adaptability in the working atmosphere
d. Practice discipline
e. Improve the interaction between student and his/her ordinate or workmate
f. Observe the daily work in the host company

1.3. Internship Location and Schedule of Internship Include the Explanation of Job Placement and Job Assignment

Internship was held in PT. Mega Andalan Roda dan Kastor. The company is located in Jalan Tanjung Tirto 34, Tirtomartani KM 13, Yogyakarta. The internship period was on July 13th ,2017 until August 18th, 2017. The authors are assigned

as interns and worked along Mr. Susanto Sadiro to implement his Matlab software in production floor.

CHAPTER II

COMPANY BACKGROUND

This chapter explains about the the company profile, organizational structure and the management of PT. Mega Andalan Roda dan Kastor.

2.1. Company Profile

PT. Mega Andalan Roda dan Kastor (MARK) is an independent company that manufactures castor and wheels. This company is located in Jalan Tanjung Tirto34, Tirtomartani Km 13, Kalasan, Yogyakarta. PT. Mega Andalan Roda dan Kastor was a member of PT. Mega Andalan Kalasan but then they decided to be an independent company. PT. Mega Andalan Roda dan Kastor still provides goods for MAK (the main company) but they also plan to export their products to abroad.

Figure 2.1. Company's Location

As for PT. Mega Andalan Kalasan, its profile can be seen as below:

a. Factory and Head Office

Jl. Tanjung Tirto No 34, Tirtomartani

Phone number : +62 274 496 393 atau +62 274 497 068

Fax : +62 274 496 226

Persons in charge : Ir. Hendy Rianto dan Ir. Buntoro (CEO)

Email : marketing@mak-techno.com

Website : http://www.mak-techno.com

b. Marketing Office

Rasuna Office Park SO-O2 Komp. Rasuna Epicentrum

Jl. H.R. Rasuna Said, Jakarta 12960

Phone number : 021-837 00 555

Fax : 021-837 00 335

Email : mak@cbn.net.id atau export@mak-techno.com

c. Representative Office

i. Wisma Lippo Suite 506

Jl. Gatot Subroto – Bandung

Phone number : +62 22 7305674

Fax : +62 22 7306620

ii. Wisma BII, Lt. 7 Suite 7123

Jl. Pemuda 60, Surabaya, Jatim

Phone number : +62 31 5459159

Fax : +62 31 5459267

iii. Jl. Dr. Sutomo No. 33, Marapalam, Padang 25125

Phone number : +62 751 778 768

Fax : +62 751 778 768

d. Warehouse

Jl. Gunung Sahari Raya 51/15, Jakarta 10610

Phone number : +62 21 420 2118

Fax : +62 21 420 5368

:

2.1.1. Mega Andalan Kalasan Company's History

Mega Andalan Kalasan was established in 1988 as an engineering and manufacturing company that provides comprehensive hospital furniture. MAK creates products that cater to customer's expectation and with good quality. Back in 1988, MAK started as a workshop and evolved into a hosptal equipment manufacturer. In 2000, MAK Office are built with kindred spirit to be a leading

example in modern chain industry. In the same year, MAK built “Mega Andalan Technopark”, a large industrial area that are functioned as the industrial development center. In 2001, a showroom was built to let customers explore more about the products directly. In 2004, training centre was built in aim to be the center of technological education of fulfilling MAK’s mission in becoming the center of excellence in mechanical technology. In 2006, MAK built “Sentra Pengembangan Industri Kecil Mega Andalan (SPIKMA)” or “Center of Development of Small Industry”an Industrial incubator in building small industries communities. In 2009, MAK integrated Welding, Painting and Assembly Unit in one plant named “Mega Andalan Center”. In 2010, MAK produces all castor wheel component in house. Caster Plant are to supply all MAK’s products that require wheels. In 2010, MAK developed “Mega Andalan Plastic Part (MAPP)” that are previosuly merged with Castor Production equipped with large plastic injection facility. In 2013, MAK built Export Oriented Production Facility to fulfil export oriented product. In the following year, MAK is preparing “Mega Andalan Komponen Logam” or “Metal Component Plant” to be the new business entity with main competence in metal components process plants.

Figure 2.2. Logo of PT. Mega Andalan Kalasan

In 2017, unit *castor* has developed to become PT. MARK (Mega Andalan Roda dan Kastor).

Figure 2.3. Logo of PT. Mega Andalan Roda dan Kastor

PT. MARK produces in house castor wheels to be distributed to the PT. MAK and they have desire to export the goods to abraod in near future.

2.1.2. Company's Certifications

MAK believes that product excellence is determined right from the start of concept in the end of manufacturing process. MAK has succesfully implemented ISO 13485, a management quality system for medical equipment, to all products they manufactured. Besides that, they also implement ISO 9001:2008, a quality management system. As for environmental management system, they have implemented ISO 14001:2004. It is for maintaining the environment such as building the industrial wastewater treatment facility, continoulsy maintaining water and air quality and keeping the noise level at its minimum level. As for occupational health and satety management system, they implement OHAS 18001:2007 to ensure safe work environment for their workers.


TÜV NORD

CERTIFICATE

Management System as per
ISO 9001 : 2008

PT. MEGA ANDALAN KALASAN

Office : Rasuna Office Park SO-02, Komp. Rasuna Epicentrum
Jl. HR Rasuna Said, Jakarta 12960 - Indonesia

Factory : Jl. Tanjung Tirto 34, Tirtonartani Kalasan Km. 13,
Yogyakarta - Indonesia

Design and Manufacturing of Hospital Beds, Stretcher, Baby Boxes, Wheel Chairs, Infusion Stand, Children Beds, Operating Tables, Castor and Wheels, and Examination Table

TÜV NORD

CERTIFICATE

Management System as per
ISO 13485 : 2003

PT. MEGA ANDALAN KALASAN

Office : Rasuna Office Park SO-02, Komp. Rasuna Epicentrum
Jl. HR Rasuna Said, Jakarta 12960 - Indonesia

Factory : Jl. Tanjung Tirto 34, Tirtonartani Kalasan Km. 13,
Yogyakarta - Indonesia

Design and Manufacturing of Hospital Beds, Stretcher, Baby Boxes, Wheel Chairs, Infusion Stand, Children Beds, Operating Tables and Examination Table

Figure 2.4. Company's Certificates (1)

Figure 2.5. Company's Certificates (2)

2.2. Organizational Structure

PT. Mega Andalan Roda dan Kastor consists of three main departments, they are Administration, Head of Producton and Marketing.

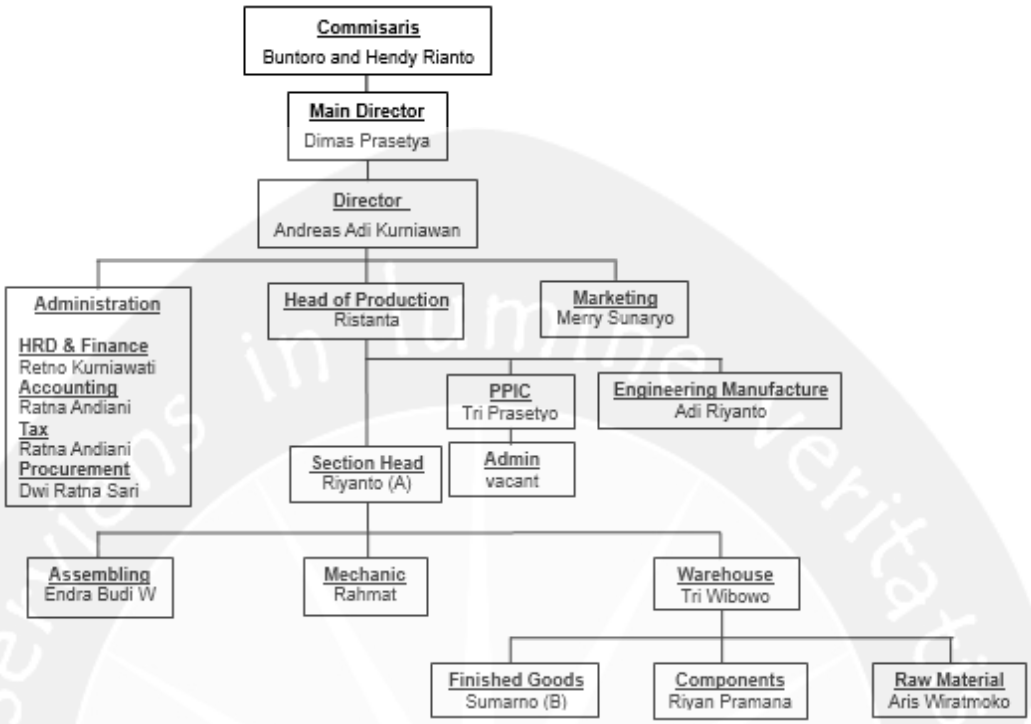

Figure 2.6. Organization Chart

2.2.1. Commisaris

Commisaris are the people who are in charge and fully responsible for the activities incurred in the company that are related within or outside the company. Commisaris determines the goals of company and its sustainability.

2.2.2. Main Director

Organization relationship:

a. Conduct observation towards all units
b. Responsible to the stakeholders

Duties and responsibilites:

a. Plan the annual operational activities as the basis for management' decisions along with managers of each of the departments
b. Determine the target of each of the units based on the weekly operational expenses
c. Determine the strategical and operational steps to be taken for each of the managers

d. Prepare the budget report and annual operational planning for third parties such as government, bank, debiture, crediture, etc.
e. Prepare report of the company's working result every year

2.2.3. Director

Director is resposble for departments such as Administration, Production and Marketing. Director will have to conduct observation towards the operational activiites in these departments. Director is also responsible in making sure that the target of the company can be achieved through daily operations.

2.2.4. Administration

This department consists of HRD and Finance, Accounting, Tax and Procurement.

a. HRD and Finance

HRD is responsible for:

i. Recruiting new human resources
ii. Provides training for new workers
iii. Handles company's permission documents
iv. Handles the salary given to workers
v. Prepares administrations and reports that should be submitted to government.

Finance is responsble for:

i. Develop annual budget
ii. Develop perodic financial reporting and monitoring
iii. Processig payments and transactions through the financial system
iv. Approving and processing budget and journal entries
v. Recording and reporting on capital assets

b. Accounting

Accounting is responsible for:

i. Paying invoices
ii. Applying customer payments and balancing accounts
iii. Bank reconciliations and payroll
iv. Mailing checks and communicating with vendors

c. Tax

Tax department is responsible for:

i. Prepare and update tax provision schedules
ii. Update the company sales tax database as tax rates change
iii. Coordinate audits by various taxation authorities
iv. Negotiate with tax authorities over tax payment issues
v. Research and correct process errors that caused incorrect tax fillings

d. Procurement

Procurement is responsible for:

i. Prepare purchase orders and send copies to suppliers and to departments originating requests
ii. Respond to PPIC and supplier inquiries about order status, changes, or cancellations
iii. Performing buying duties when necessary
iv. Contact suppliers in order to schedule or expedite deliveries and to resolve shortages, missed or late deliveries, and other problems

2.2.5. Head of Production

Head of Production is responsible for:

a. Oversee the production planning, ensure that the production is cost effective
b. Draft a timescale for the job
c. Monitor the production processes and adjust schedules as needed
d. Be responsible for the selection and maintenance of equipment
e. Monitor product standards and implement quality control programmes
f. Ensure that health and safety guidelines are followed
g. Identify training needs

2.2.6. PPIC

PPIC is responsible for:

a. Receives order from marketing
b. Order materials
c. Follow up materials so that they will arrive on time
d. Create detailed order summary for production
e. Follow up sent approval and products' samples
f. Monitor the production process that are related to material shortages or lost or damages.

2.2.7. Admin

Admin is responsible for:

a. Organizing and scheduling appointments
b. Planning meetings and taking detailed minutes
c. Prepare document needed for PPIC to be reviewed

2.2.8. Engineering Manufacture

Engineering manufacture is resposible for:

a. Evaluates manufacturing processes by designing and conducting research programs
b. Develops manufacturing processes by studying product requirements
c. Improves manufacturing efficiency by analyzing and planning work flow
d. Assures product and process quality by designing testing methods
e. Provides manufacturing decision-making information by calculating production, labor and material costs
f. Provides manufacturing engineering information by answering questions and requests

2.2.9. Section Head

Section Head is responsible for the production process activities and ensure the schedule runs according to the plan.

2.2.10. Assembly

Assembly department is responsible to assembly castors/wheels in specific design and requirements to meet company' standards/ The assembly lines are U-shaped and done manually.

2.2.11. Mechanic

Mechanic department is responsible to create some in-house components using machines.

2.2.12. Warehouse

Warehouse department is responsible to store materials, check incoming and outgoing materials, update the available stocks, and inform PPIC when should they order to fulfil the production demand.

2.2.13. Finsihed Goods

Finished goods warehouse is functioned to store finished goods that are ready to be shipped. The incoming and outgoing products are also noted.

2.2.14. Components

Components in warehouse is functioned to store the components that are needed during the assembly and/or mechanic process. The incoming and outgoing componenets are also noted.

2.2.15. Raw Materials

Raw materials in warehouse is functioned to store the raw materials that are needed during the assembly and/or mechanic process. The incoming and outgoing raw materials are also noted.

2.2.16. Marketing

Marketing is responsible for:

a. Receives order from customers and pass them to PPIC
b. Made agreement with customers related to the number of purchased products and the price
c. Determine the selling price of the products

2.3. Management of the Company

The management of the company explains about the vision and mission, human resource management, marketing and company's facilities.

2.3.1. Vision and Mission

The vision of the company is "*Making excellent products with comprehensive design and high quality standard*". This statement is what guides the workers when creating a product. Every supporting departments in the company has been making efforts to upload this vision since 1988.

The mission of the company are:

a. To become the center of excellence in mechanical technology
b. To build center of industry in the community
c. To utilize various technology capability in Indonesia
d. To promote community wealth development
e. To reinvest earnings for the latest technology

2.3.2. Company's Management System

PT. MAK applies quality, environment, safety and health integrated manageemnt system. Some of the policies related to QESH are:

a. Becoming customers' number one priority by always fulfilling their needs in term of quality, price and short delivery time through increased productivity and innovation
b. Create comfortable, safe, and healthy working environment
c. Ensure the surrounding environment is at its beauty
d. Fulfilling the products' quality according to company's standards and specifications

QESH target of PT.MAK during 2012 are these followings:

a. Quality Management System

i. Customers' complaints towards the products are not more than 1,7% every month
ii. Increase the accuracy in product delivery by 90%
iii. Total production in 2012 is estimated as 10 STB per person per month with efficiency 75% every year.

b. Environment, Health and Safety Work Environment Management System

i. Fulfilling degree of regulations related to environment, safety and health is by 85% in three years period.
ii. Pollution exposure is not allowed to be more than two days since the first day it is identified.
iii. Average of medical check of the employees in audiometry, spirometry, and general health issues are more htan 70% per year.

c. 5R

Fulfilling degree of checking list 5R(3R means: *ringkas, rapi, resik*), is by 100% by the end of 2012 for each of the production units.

d. Corporate Social Responsibility (CSR)

i. Social and environment

Green action is done by planting 1000 trees in current location in three years after it is established.

ii. Education

Providing scholarship every year to employees' children if they earn top 3 in their classes (primary school, junior high school and senior high school).

iii. Health

1. Blood transfuse activitiy is held twice per year
2. Increase the quality of sanitation by 10% in one year after it is established

2.3.3. Distribution

MAK exports their goods for more than 40 countries they are Ageria, Australia, Bahrain, Bangladesh, Bhutan, Bulgaria, China, Denmark, Egypt, France, Georgia, Germany, India, Iraq, Indonesia, Japan, South Korea, Kuwait, Libya, Malaysa, Maldives, Marshall Island, Myanmar, Morocoo, Netherland, New Zealand, Nigeria, Pakistan, Papua, New Guinea, Phillipines, Portugal, Qatar, Romania, Uganda, Saudi Arabia, Seychelles, Singapore, Sri Lanka, United Arab Emirates, United Kingdom. For PT. Mega Andalan Roda dan Kastor, their customer is only MAK but they wish to export to and sell it to other customers in the future.

CHAPTER III

COMPANY SYSTEM

3.1. Business Process

Business process is process incurred in a company in executing their daily activities. In business process, we are able to identify the process for receiving the orders from customers until those orders are finished to be processed and delivered to customers. In PT. Mega Andalan Roda and Castor, the production system applied is make to order (MTO), which means that the products are made based on customers' orders. The business process can be seen in Figure 3.1. In the flow chart, they have two types of flow: material and information flow.

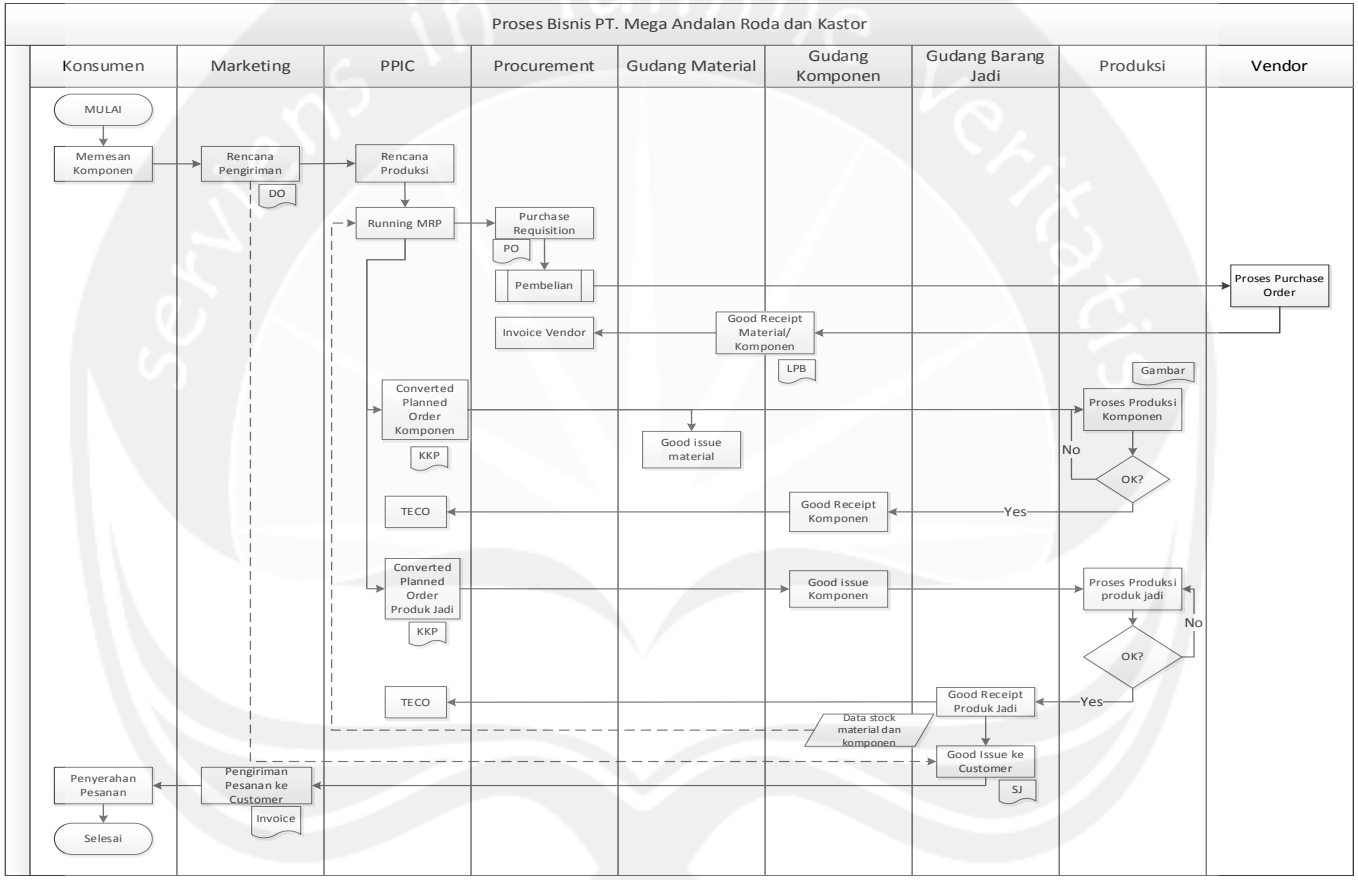

Figure 3.1. Business Process in PT. MARK

Notes:

⟶ : material flow

⇢ : information flow

Herewith is the explanation of business process incurred in PT. MARK: :

a. Business process starts with customers place orders. There are two types of customers: inside and outside customers. Inside customers are units in PT. MAK that require castors as their products' components, such as Hospital Equipment and SPIKMA. Outside customers are customers except PT.MAK.
b. Marketing receives Purchase Order from customers and starts doing shipping planning.
c. PPIC creates production planning from orders received.
d. PPIC executes MRP running. In this process, the warehouse checks the material and components data stock. If there is any shortage towards the MRP, warehouse staffs will report it to PPIC.
e. PPIC proposes Purchase Requisition to Procurement. After that, Procurement will propose Purchase Order to each of the materials and components vendor.
f. After conducting the procurement, the materials and components will be received by materials and components warehouse. Warehouse staffs will receive *LPB (Lembar Penerimaan Barang)* as a proof that they have already received the stocks.
g. Procurement will give invoice to the vendor.
h. After executing MRP running, PPIC continues with materials and components converted planned order by creating Production Work Sheet (*Kertas Kerja Produksi*). There are two types of Production Work Sheet, they are KKP Assembly and KKP Components. KKP assembly is received by components' warehouse. KKP Component is received by materials' warehouse. Production Work Sheet contains informations about how many components/products are made and list of the materials/components used.
i. For KKP Assembly, after component warehouse receives KKP, the operator will prepare the components needed and release them to assembly line.

j. For KKP Component, after component warehouse receives KKP, the operator will give KKP to material warehouse. Operator of material warehouse will prepare the mateials needed and release Goods Issue to the mechanic line..

k. Assembly line runs the production. After it is done, it will be inspected by Quality Control operator. The inspection is 100% towards all the products. Rework, reject, and accepted products will be noted in Production Work Sheet and submitted to finished goods warehouse.

l. Mechanics line runs the production. After it is done, operator of material warehouse will receive components along with components's production work sheet to be submitted to components' warehouse.

3.2. Company's Products

PT. Mega Andalan Roda dan Kastor manufactures in total of 21 products. The products are categorized to three main cateogries which are two inch castor, five inch castor and six inch castor. For the two inch castor, it consists of two type: Castor 2 inch single and castor 2 inch double wheel.

Figure 3.2. Castor 2 Inch *Single Wheel*

Figure 3.3. Castor 2 Inch *Double Wheel*

For castor 5 inch, it consists of three types, they are flens, swivel, and 5/8. For flens type, it consists of two types, flens *hidup* with brake, flens *hidup* without brake, dan flens *mati* without brake.

Figure 3.4. Castor 5 Inch Flens *Hidup* With Brake

Figure 3.5. Castor 5 Inch Flens *Hidup* Without Brake and Castor 5 Inch Flens *Mati* Without Brake

For swivel type, it consists of four types, they are:

b. Castor 5 Inch Swivel K1 Brake

Figure 3.6. Castor 5 Inch Swivel K1 Brake

c. Castor 5 Inch Swivel K1 without Brake

Figure 3.7. Castor 5 Inch Swivel K1 without Brake

d. Castor 5 Inch Swivel K9 With Brake
e. Castor 5 Inch Swivel K9 Without Brake

For 5/8 type, it consists of four types, they are:

a. Castor 5/8 Inch K1 Brake

Figure 3.8 Castor 5/8 Inch K1 Brake

b. Castor 5/8 Inch K1 Without Brake

Figure 3.9. Castor 5/8 Inch K1 Without Brake

c. Castor 5/8 Inch K9 Brake

Figure 3.10. Castor 5/8 Inch K9 Brake

d. Castor 5/8 Inch K9 Without Brake

Figure 3.11. Castor 5/8 Inch K9 Without Brake

Castor 5 inch and 6 inch also have *double wheel.*type, they are”

a. Castor 5 inch *Double Wheel*

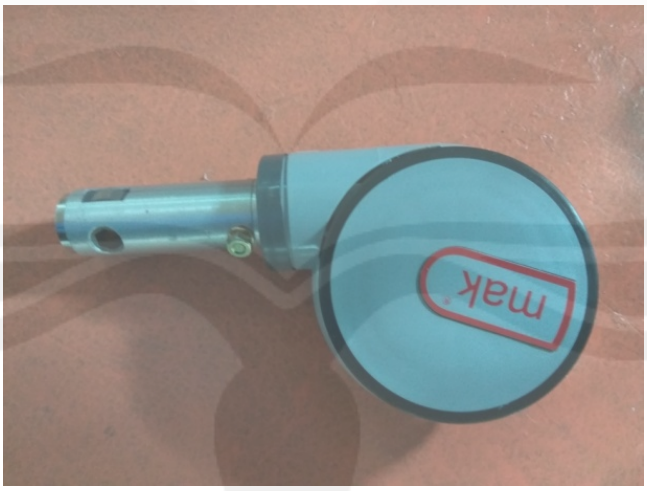

Figure 3.12.. Castor 5 Inch *Double Wheel*

b. Castor 6 inch *Double Wheel*

Figure 3.13.. Castor 6 inch Double Wheel

3.3. Production Process

a. Fork making process

i. Blanking. Blanking is the process in which the plate with measurements of 2,88 m x 1,44 m will be cut into to the intial shape of fork. This process is done punching machine. Punching machine used is the 60 ton punching machine.

Figure 3.14. Blanking Process

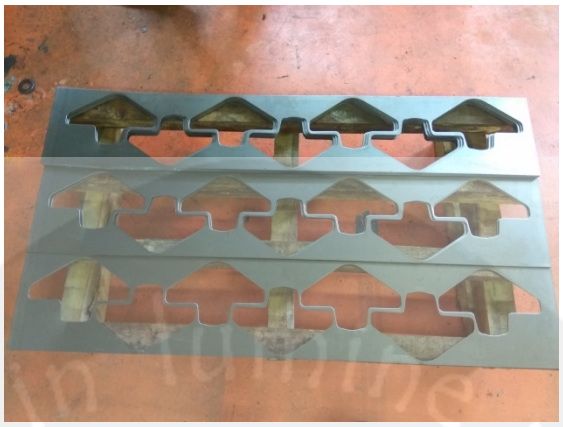

Figure 3.15. Scrap resulted from Blanking

ii. Drawing is the process in shaping the metal using pressure force to change the shape and measurements according to our requirements. In this phase, the initial shape of fork will be shaped according to our requirements. The unit in-charge with this process is PT. MAKL (PT. Mega Andalan Komponen Logam). Components that are made by this process *is* fork 2" single wheel and fork 5" single wheel. Machine used is punching machine 150 ton.

iii. After the drawing process is done, they will make holes in the plate as the access for shaft and brake. There are 3 process of making these holes, they are:.

1. Making hole with diameter of 33 mm for 3 seconds using punching machine 16 ton.
2. Making two holes with diameter of 10 mm each for 3 seconds using punching machine 25 ton.

Figure 3.16. Making holes with diameter of 33 mm and 10 mm

3. Making hole with diameter of 5,2mm for 3 seconds using punching machine 40 ton.

Figure 3.17. Making hole with diameter of 5.2 mm

iv. Stamping is cold-molding process using dies and pressing machine so that it can shape the metal according to our requirements. For castor, stamping process is used to make curve in fork 5 inch brake type. \

Figure 3.18. *Stamping*

v. Welding is one of the technique to joint the metals by melting part of initial metal and filling metal with or without pressure and with or without additional metal to create a continous joint. In this process, it joints the fork and bearing house. Besides, there are also two types of welding, such as CO_2 (carbon dioxide) welding and argon welding

(Ar). CO_2 welding is used to two types of fork such as single wheel and double wheel, Argon welding is used only for double wheel type.

Figure 3.19. Welding Process

vi. Painting is a process in which the fork is given additional layer such as special paint. This process is using oven so that the paint will last longer. This process is done by unit *Hospital Equipment* PT. MAK.

vii. Quality Control is the final process of fork making. Fork will be inspected in term of shape and design.

b. Castor House

For castor house, the process is done in three steps, they are:

i. Drill with diameter of 7 mm. In this process, castor house will be drilled with diameter of 7 mm using drilling machine.

Figure 3.20. Drill with Diameter of 7 mm

ii. Drill with diameter of 10 mm

iii. Tap. In this process, the hole will be made as thread using drilling machine.

Figure 3.21. Tap Process

c. Assembly Process Castor 2 inch (castor 2 inch *Double Wheel)*

i. Put underbolt, fork, and upper cover

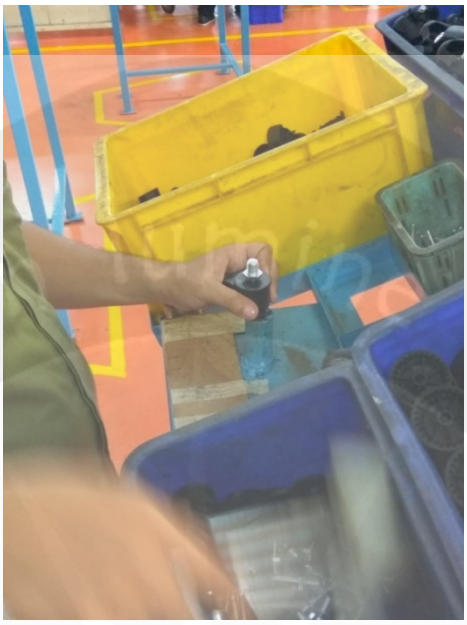

Figure 3.22. Put *Underbolt, Fork,* and Upper Cover

ii. Put the shaft and fasten it

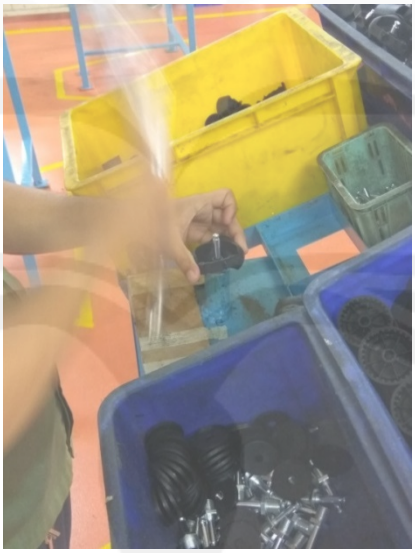

Figure 3.23. Put Shaft

iii. Put wheel and fasten

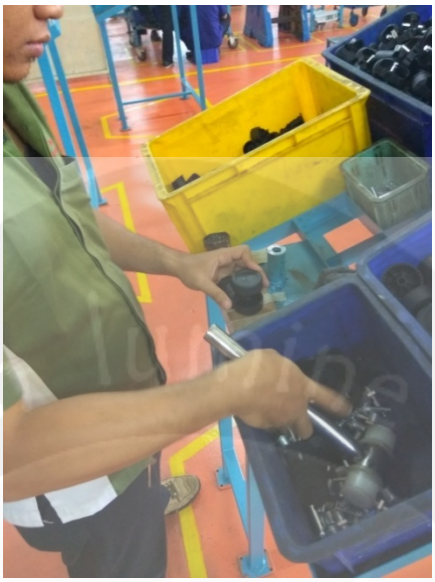

Figure 3.24. Put Wheel

d. Assembly Process *Double Wheel* (castor 5 inch *Double Wheel*)

i. Sub Assy bearing on slider using punch machine 16 ton

Figure 3.25. Assembly Process of Double Wheel

ii. Install Sub Assy slider & Upper braker to fork using punch machine 16 ton.

Figure 3.26. Install Sub Assy Slider & Upper Braker to Fork

iii. Install shaft on fork using punch machine 16 ton

Figure 3.27. Install Shaft on Fork

iv. Install plastics breaker, pear, bearing distance, and wheel to fork together. Then, the fork assembly is processed with hydrolic to combine all those parts.

Figure 3.28. Install breaker plastics, pear, Bearing Distance & Wheel on Fork

v. Install Bolt, pear Bolt, and ring, then fasten the bolt.

Figure 3.29. Install Bolt and Pear Bolt

vi. Install lever to castor house and fasten it.

vii. Install the castor house along with level to fork assembly

Figure 3.30. Install Castor House Assembly

viii. Install cover casing and upper cover assembly

Figure 3.31. Install Casing Cover & Upper Cover Assembly

ix. Install bolt M8 and ring in the bottom of castor house

Figure 3.32. Install bolt M8 and Ring in Castor House

x. Check the rotation of the wheel.

xi. Press shaft using punch machine 16 ton.

Figure 3.33. *Press Shaft*

xii. Install wheel cover

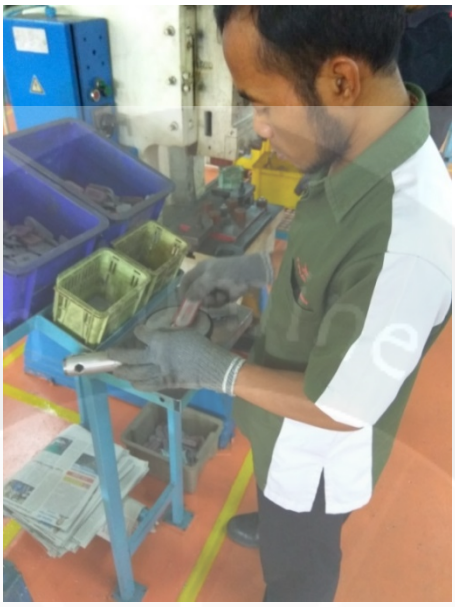

Figure 3.34. Install Wheel Cover

xiii. Final checking and cleaning

e. Assembly Process of 5 inch Swivel K1 Brake

i. Install bearing to fork, and install ring, nut, and cup using punch machine 25 ton.

Figure 3.35. Install Bearing to Fork

ii. Install ring veer, bolt and fasten using air tool, then install cover bearing.

Figure 3.36. Install Ring Veer, Bolt, and Cover Bearing

iii. Install sub assy braker to fork assembly.

Figure 3.37. Install Sub Assy Braker

iv. Install wheel & wheel cover to fork, and install shaft and nylon nut then fasten using air tool.

Figure 3.38. Install Shaft and Nylon Nit

v. Check braker and wheel rotation

vi. Press roll pin and install pin cover

Figure 3.39. Press Roll Pin and Install Pin Cover

vii. Final checking & cleaning

f. Quality Control Process

i. Check upper function. The upper functions are the rotation of bearing. If it is working properly, then the product is accepted, otherwise it will be rejected.

Figure 3.40. Check Upper Function

ii. Check the rotation of the wheel. In this process, the wheel will be tested by rotating it. If the rotation works properly, it will be processed for the next step. If the rotation is loose, it will be fastened. If it does not rotate properly, the bolt will be loosen so that it can rotate properly.

Figure 3.41. Checking the Wheel Rotation

iii. Check the display of castor. If there is any scratch in the fork, the product will be rejected. If it is thin scratch, it will be painted. If there is any stain in the fork, it will be cleaned with *opon*. (only for castor 5 inch single wheel).

Figure 3.42. Check the Display of the Castor

iv. Check the Completeness of the Component

Figure 3.43. Check the Completeness of the Component

v. Stick the QC pass. QC pass is paper that contains code showing the product is accepted.

Figure 3.44. Stick the QC Pass

3.4. Production Facilities

The production facilities in PT. Mega Andalan Roda and Kastor are as follow:

a. Mechanics Area

Mechanics area is area where all the mechanical components are made. All the processes start from raw maerials. Following figure shows mechanics area for drilling, punch and lathe. \

Figure 3.45. Mechanics Area (1)

In Figure 3.34, it shows mechanics are for welding and circle saw.

Figure 3.46. Mechanics Area (2)

b. Assembly area castor 5 inch

This area consists of punching machine 16 and 25 ton along with toolbox that helos in assemlby process. Layout applied is U-shape, in which the production facilities in the assemlby line is U-shape and operator has to walk from the beginning of U until the end to finish the assemlby process.

Figure 3.47. Assembly Area Castor 5 Inch

c. Assembly area castor 2 inch

This area consists of punching machine 16 ton and toolbox that helps in assembly process. Layout applied is U-shape.

Figure 3.48. Assembly Area Castor 2 Inch

d. Assembly area castor double wheel

This area consists of punching machine 25 yon along with toolbox that helsps during assembly process. Layout applied is U-shape.

Figure 3.49. Assembly Area Castor Double Wheel

e. QC Area (Quality Control)

This area is where all the finished products are inspected 100%. This area is handled by two operators. There are also jigs that helps to hold the products while being inspected (castor 5 inch and 6 inch DW).

Figure 3.50. QC Area

f. Material Warehouse

In this material warehouse, all the raw materials are kept in long shelf. Besides that, after the process of drawing, the inspection process towards fork is also done in this material warehouse.

Figure 3.51. Material Warehouse

g. Component Warehouse

Warehouse component keeps al the components that are ready to be processed in assembly lines. Components are kept in box and tray. Boxes are kept in the shelf. Besides that, there are also assembly place for plat braker and top ball.

Figure 3.52 Warehouse Component

h. Finished Good Warehouse

Finished Good warehouse is the warehouse to keep all the finished goods. Finished goods are kept in a basket stacked in trolley. For castor2 inch, it is kept in sacks.

Figure 3.53. Fnished Good Warehouse

i. Fork Lift

Fork lift is used to lift things that weigh more than the maximum weight that can be lifted by operator. In the production floor of PT. MARK, forklift is used in the mechanic line, and functioned to lower the fork trolley 5 inch SW from pick-up, bring the box of fork to punching machine, lift the jg to punching machine..

Figure 3.54. Fork Lift

j. Hand Truck

Hand truck is used to lift boxes contain the components made from iron. Hand truck is used in mechanics line and materials warehouse.

Figure 3.55. Hand Truck

k. Trolley

Trolley is used to carry components that will be released to production floor and carry the boxes contains finished products. There are several types of trolley used, they are:

i. Trolley with measurement of 90 x 50 x 95 cm. This trolley is used to carry the components that are just arrived from the vendor/supplier..

ii. Trolley with measurement of 130 x 60 x 120 cm. This trolley is used to carry the components to production floor.

Figure 3.56. *Trolley*

l. Basket

Basket is used to place the finished goods. The finished goods are those that are finished in production line and pass the Quality Control inspeciton.

Figure 3.57. Basket

m. Punching Machine 9 ton

Punching machine 9 ton is used only as the back up if the punching machine 16 ton is under maintenance.

Figure 3.58. Punching machine 9 ton

n. Punching machine 16 ton

Punching machine 16 ton is functioned to do pierching process to the fork.

Figure 3.59. Punching machine 16 ton

o. Punching machine 25 ton

Punching machine 25 ton has the same function, which is pierching process.

Figure 3.60. Punching machine 25 ton

p. Punching achine 40 ton

Punching machine 40 ton is used to plate blanking process for the making of fork and flens as well as cutting the plastics.

Figure 3.61. Punching machine 40 ton

q. Punching machine 60 ton

Punching machine 60 ton also has similar functions with punching machine 40 which is blanking process. But, the punching machine 60 ton will be priortized fo rusage because the pressufre force is much stronger than the punching machine 40 ton.

Figure 3.62. Punching machine 60 ton

r. Drilling machine

Drilling machine is used to make a hole and thread.

Figure 3.63. Drilling Machine

s. Lathe Machine

Lathe machine is used to make champer at the end of hexagon shaft.

Figure 3.64. Lathe Machine

t. Circle Saw Machine

Circle saw machine is used to cut “as” to smaller pieces according to the desired components, for example, hexagon shaft.

Figure 3.65. Circle Saw machine

u. Argon and CO_2 Welding

Argon welding is function to joint the fork and bearing house and make the bolt assembly.

Figure 3.66. Argon and CO_2 welding

v. Pick-up

Pick-up is the vehicle used in PT. MARK. The fucntion is to cary the plastics component from vendor, such as wheel, cover case in, wheel cover, and carry the fork to painting units. Finally, carry the finished products to Unit Hospital Equipment or customers.

Figure 3.67. Pick-up

CHAPTER IV

INTERNSHIP ASSIGNMENT

This chapter explains the authors' assignment during the internship. The explanation consists of assignment scope, rights and responsibilities in the assignment, methodology used in completing the assignment, and the results of internship assignment.

4.1. Assignment scope

This sub chapter explains the placement and task of authors during the internship.

4.1.1. Student Placement

During the internship in PT. Mega Andalan Roda and Castor, authors are placed in Research Laboratory. The research laboratory is responsible in testing the finished goods and do research for continuous improvement.

In the first week, authors were introduced to company and its regulation, products, processes and departments. Authors also learnt about the project through the Matlab software given. In the second week, authors start working on input data from production floors to the Matlab software. Authors also starts identifying the functions in each menu available in the software. In the third week, authors identified and compared current business process and the Matlab software. Though the identification, authors can identify the gap between current business process and Matlab software. In the fourth week, authors modified the Matlab software with necessary changes such as translating the Indonesian version to English version. Authors also created new function to fulfil the gap. The new function is for inputting the stocks received to the system. During this internship, authors work along Mr. Susanto Sadiro as the head of the Research Laboratory. Besides that, authors receive data from Mr. Merry as the Marketing and Mr. Tri as the PPIC.

4.1.2. Student Tasks

The tasks assigned to the authors during the internship in PT. MAK are as follow:.

a. Tranfering data of realization, production, shipping and order from Ms. Excel to the Matlab Software

One of the initial tasks of authors are transferring data of realization, production, shipping, and order of PT. MARK since January 2017 to the Matlab software. By transferring those data, it then can be displayed in the production and used for further needs such as calculating the realization and target of production percentage.

b. Identifying the gap between current business process and functions provided in Matlab software

Authors compared the current business process and functions provided in Matlab software to know what are the lacking functions in Matlab software, or what should be created or improved in current Matlab software.

c. Creating a new function in Matlab software related to current business process

After identifying the gap, authors formulated a new function to fulfil one of the gap. The gap was about inputting the stocks received. The stocks consist of 159 types of materials.

d. Working on existing function in Matlab software

There is already an existing function in Matlab software related with displaying the stocks received. However, the function is not working yet, Hence, authors were working on the function to make it work.

4.2. Rights and Responsibilities in the Assignment

Rights and Responsibilities of authors during the internship in PT. MARK, are as follows:

a. Collecting the data of realization and production from the production floor
b. Collecting the data of shipping and order from the marketing
c. Observe the production floor and interview with Mr. Tri
d. Asking for permission to take pictures of products and production process
e. Interview with Mr. Tri to understand the business process
f. Exploring the functions in Matlab software and seeking for better understanding
g. Identifying the gap between the current business process and functions in Matlab software

h. Make the gap analysis report and present it to on-site supervisor

i. Fill in the related document of the project

4.3. Methodology Used to Complete the Assignment

The company gives four assignments to the authors. The assignments are the transferring data, of realization, production, shipping and order from Ms. Excel to the Matlab Software, identifying the gap between current business process and functions provided in Matlab software, creating a new function in Matlab software related to current business process and working on existing function in Matlab software

4.3.1. Methodology of Transferring Data of Realization, Production, Shipping and Order from Ms. Excel to the Matlab Software

In completing this task of transferring data of realization and production from Ms. Excel to Matlab software, authors used these following methods:

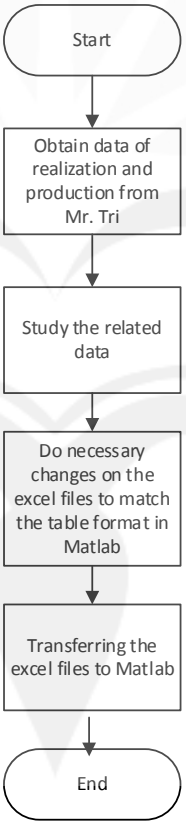

Figure 4.1. Methodology in Transferring Data of Realization and Production from Ms. Excel to Matlab Software

Authors obtained the data of realizaton and production in excel files from Mr. Tri. The data are usually categorized per month, example: Realization January 17, Realization February 17 and so on. Authors studied the related data and did some necessary changes to the table so that while transferring those data, it can match the existing table in the Matlab software. After that, authors will use functions available in Matlab software to transfer the data from Ms. Excel.

In completing this task of transferring data of shipping and order from Ms. Excel to Matlab software, authors used these following methods:

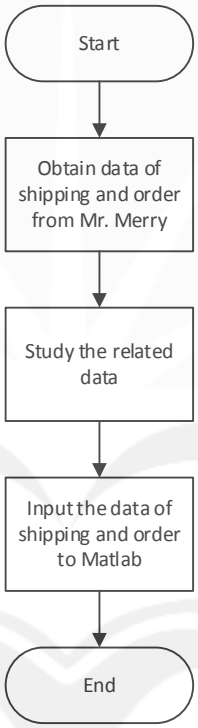

Figure 4.2. Methodology in Transferring Data of Shipping and Order from Ms. Excel to Matlab Software

Authors obtained the data of shipping and order in excel files from Mr. Merry. The data are usually integrated per year. Authors studied the related data to understand the functions of each of the given data. After that, authors will use functions available in Matlab software to input the data.

4.3.2. Methodology of Identifying the Gap Between Current Business Process

and Functions Provided in Matlab Software

In completing this task, authors used following methods:

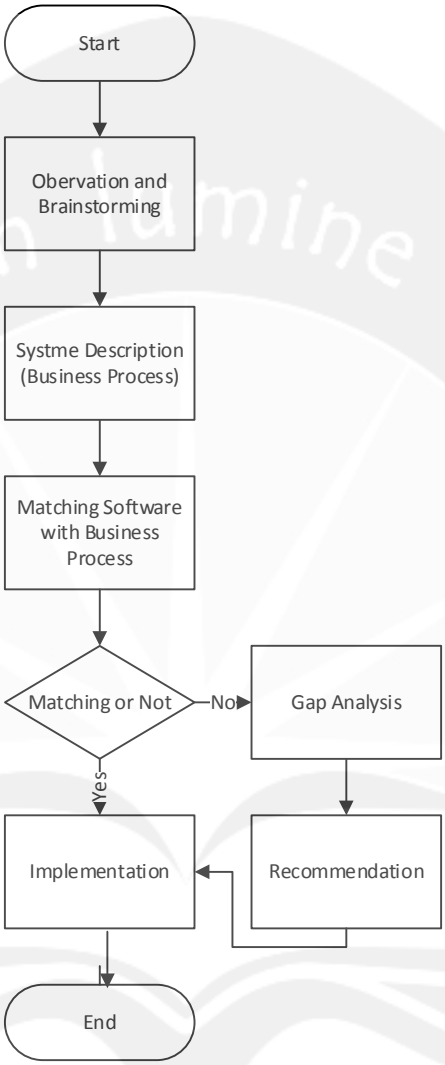

Figure 4.3. Methodology in Identifying the Gap Between Current Business Process and Functions Provided in Matlab Software

In order to complete this task, the first step is to do observation and brainstorming about the activities occured in the company. After the observation and brainstorming, the next step is describing the system in the company by mapping the business process. Business process provides information about activities done in each of the departments. The next step is to match the current business process and Matlab software. If there is no gap, it shall proceed to implementation of the

Matlab software. If there is any gap, gap analysis will be conducted and followed by recommendation.

4.3.3. Methodology of Creating New Function in Matlab Software Related to Business Process

As seen in Figure 4.3., if there is any gap, authors will do gap analysis. After that, it will be followed by recommendations. In this case, the recommendations given is by creating a new function in Matlab software that can fulfil the gap.

4.3.4. Methodology of Working on Existing Function in Matlab Software

As seen in Figure 4.3., the implementation will be done after the businesss process match with the functions in Matlab software, and also recommendations are executed. However, if there are functions that are not working yet, the implementation could not be done. Hence, authors were working on existing function in Matlab software.

4.4. Result of Internship Tasks

This section explains the result of the tasks during the internship in PT. Mega Andalan Roda and Kastor.

4.4.1. Transferring data of realization, production, shipping and order from Ms. Excel to Matlab Software

4.4.1.1. Transferring data of realization and production from Ms. Excel to Matlab Software

After obtaining data from Mr. Tri, the Excel files are modified to match the format that is provided in the Matlab software. The initial excel file will be shown as below (number of productions are censored):

NO		NAMA KOMPONEN	STk	STk TOTAL	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
1	I0001MSK1M	Castor 2"	0,166	332,580																														
2	I0043MS00M	Castor 2" M12	0,161	96,776																														
2	I0027PS19M	Castor 2" Double wheel	0,155	558,820																														
3	I0002PS19M	Castor 2" Double wheel W 1/2"	0,142	683,430																														
4	I0028PS19M	Castor 2" Double wheel(nock)	0,000	0,000																														
5	I0014MSK1M	Castor 5"-FH Rem	1,018	407,280																														
6	I0015MSK1M	Castor 5"-FH Tanpa rem	0,886	310,200																														
7	I0016MSK1M	Castor 5" FM Tanpa rem)	0,893	44,641																														
8	I0011MSK1M	Castor 5" swivel rem (k1)	1,000	3500,000																														
9	I0012MSK1M	Castor 5" swivel ↑rem (k1)	0,868	3037,469																														
10	I0029MSK9M	Castor 5" swivel rem (k9)	1,001	200,167																														
11	I0030MSK9M	Castor 5" swivel ↑rem (k9)	0,867	173,498																														
12	I0011MSR9M	Castor 5" swivel rem (R9)	1,001	100,083																														
13	I0012MSR9M	Castor 5" swivel ↑rem (R9)	0,867	86,749																														
14	I0025MSK1M	Castor 5/8" rem (k1)	1,020	0,000																														
15	I0026MSK1M	Castor 5/8" ↑ rem (k1)	0,888	0,000																														
16	I0031MSK9M	Castor 5/8" rem (k9)	1,021	0,000																														
17	I0032MSK9M	Castor 5/8" ↑ rem (k9)	0,888	0,000																														
18	I0024MS00M	Castor verzinkt	0,992	0,000																														
19	I0017MSK0M	Castor Double Wheel 5"	2,417	6768,693																														
20	IO018MSK0M	Castor double wheel 6" rem	2,724	1307,311																														

Figure 4.4. Initial Excel file

However, the format provided by the Matlab software is as below:

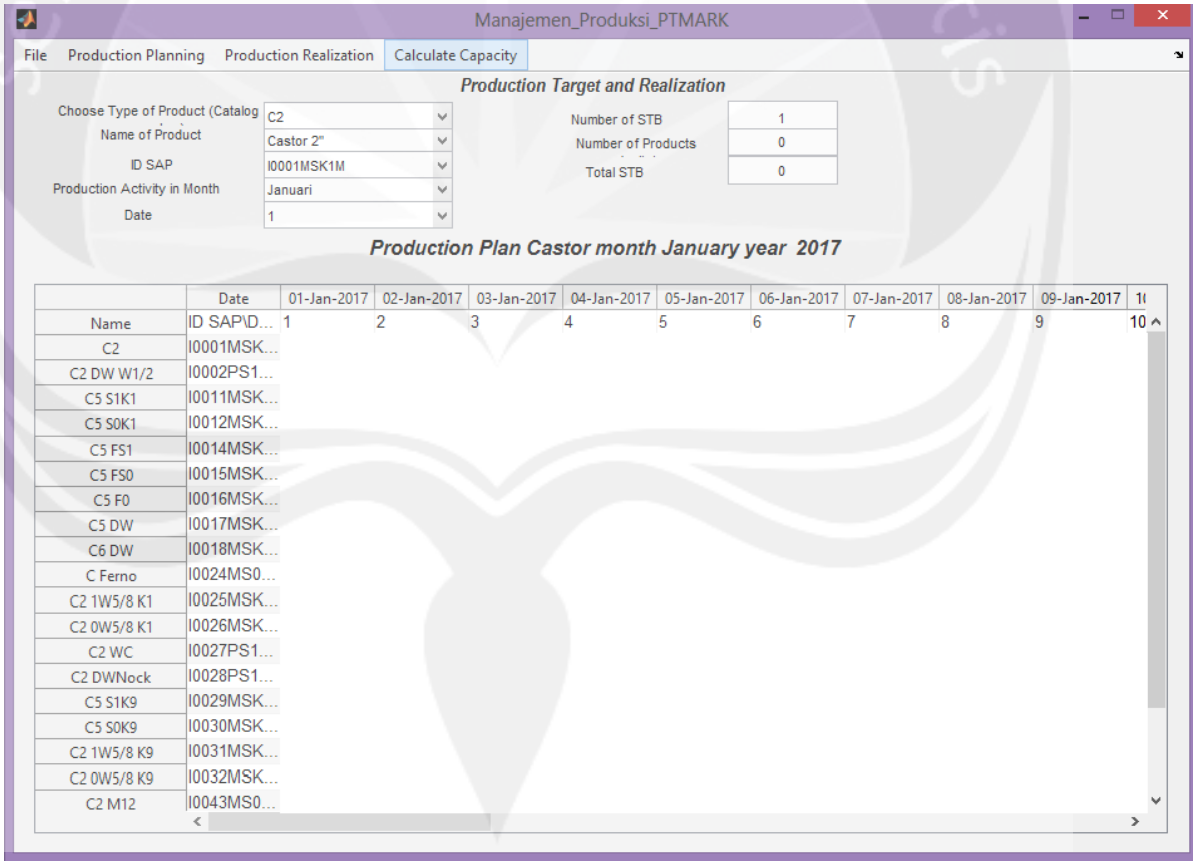

Figure 4.5. Table Format in Matlab

Hence, the initial excel file should be modified to match the table format in Matlab. After it is matched, we can start the transferring data. Herewith are the steps:

a. Run “Manajemen Produksi.m”

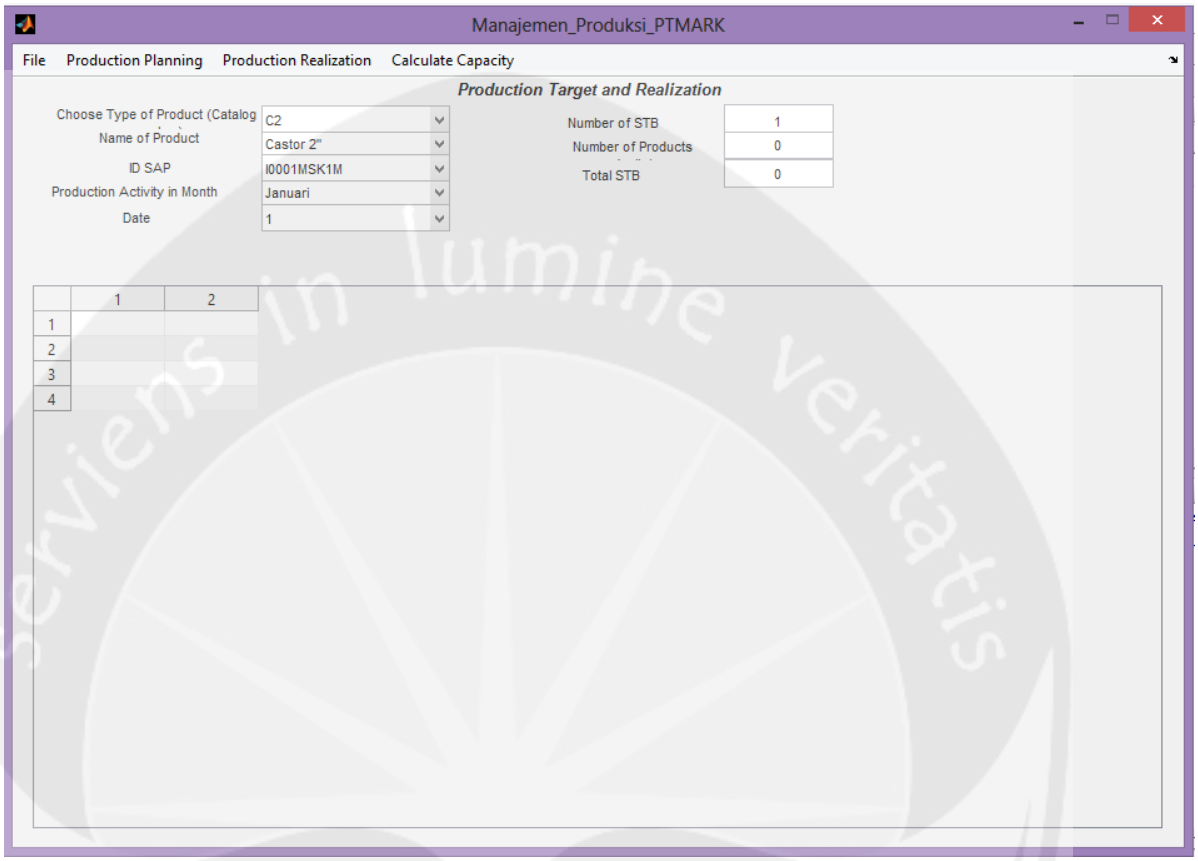

Figure 4.6. Manajemen Produksi

b. Select the desired month and date. For example, January 1st. Then choose Production Planning and then Transfer of Production Data from Excel

Figure 4.7. Choose Menu of Transfer or Production Data from Excel

c. Choose desired year of database. For example, year of 2017.

Figure 4.8. Choose Year of Database

d. Choose what kind of file you wish to transfer

Figure 4.9. Choose Kind of File

e. Type data, month and year of production. For example, for month of January 2017, you may type 01.01.2017, or March 2017, you may type 01.03.2017.

Figure 4.10. Type Date, Month, and Year of Production

f. Click “Read Excel” and it will take you to a dialogue box where you choose the file that you want to transfer. For example, you choose “Realisasi Jan ‘17’

Figure 4.11. Choose the Excel File

h. Type the Sheet Range and the Name of the sheet. Click OK.

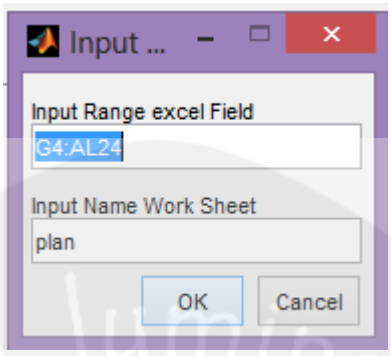

Figure 4.12. Type the Sheet Range and Name

i. Go to Production Planning then Recap of Daily Production Plan

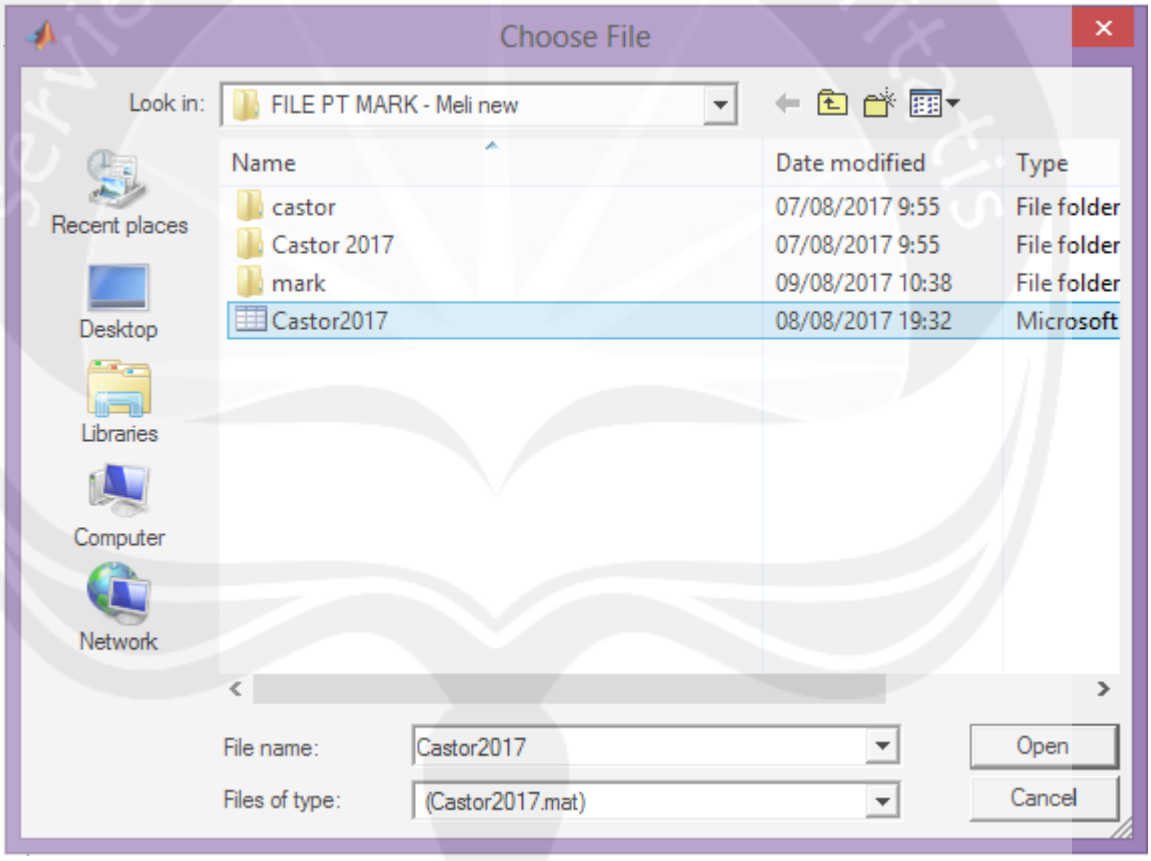

Figure 4.13. Choose the Year of Database

j. Choose what kind of recap you wish to display.

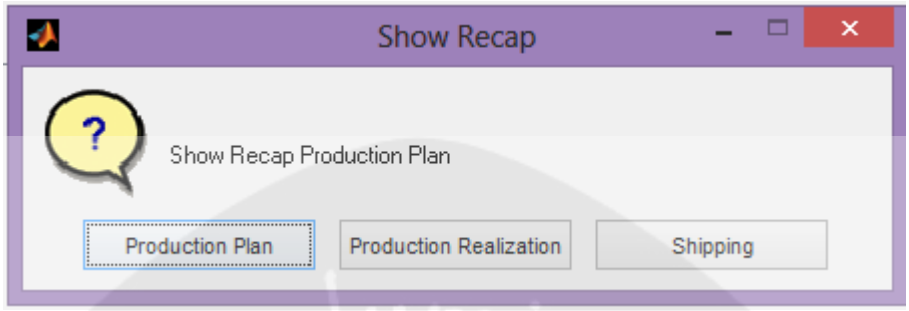

Figure 4.14. Choose Recap

j. The display will be shown as below:

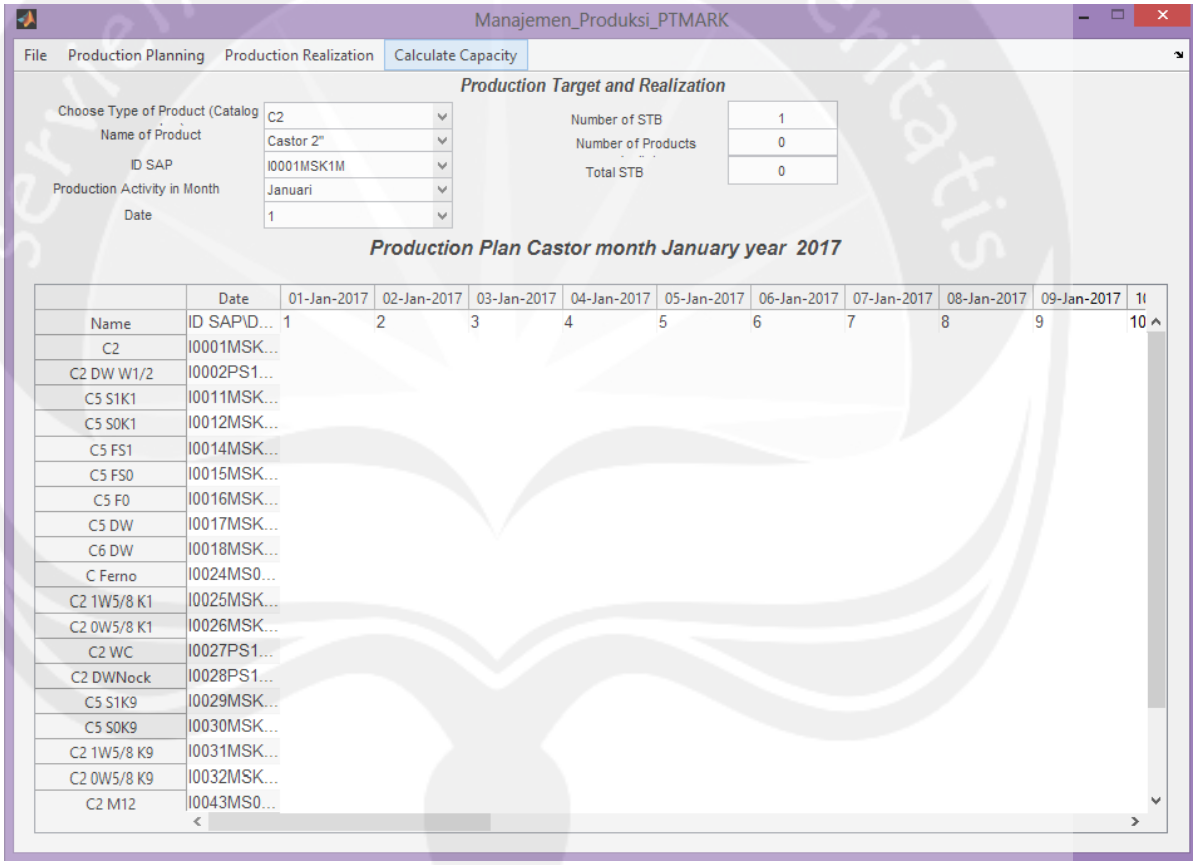

Figure 4.15. Result

4.4.1.2. Transferring data of shipping and order from Ms. Excel to Matlab Software

After obtaining data from Mr. Merry, the Excel files are studied and then input into the Matlab software. Herewith are the steps:

a. Run “entriharian1.m”

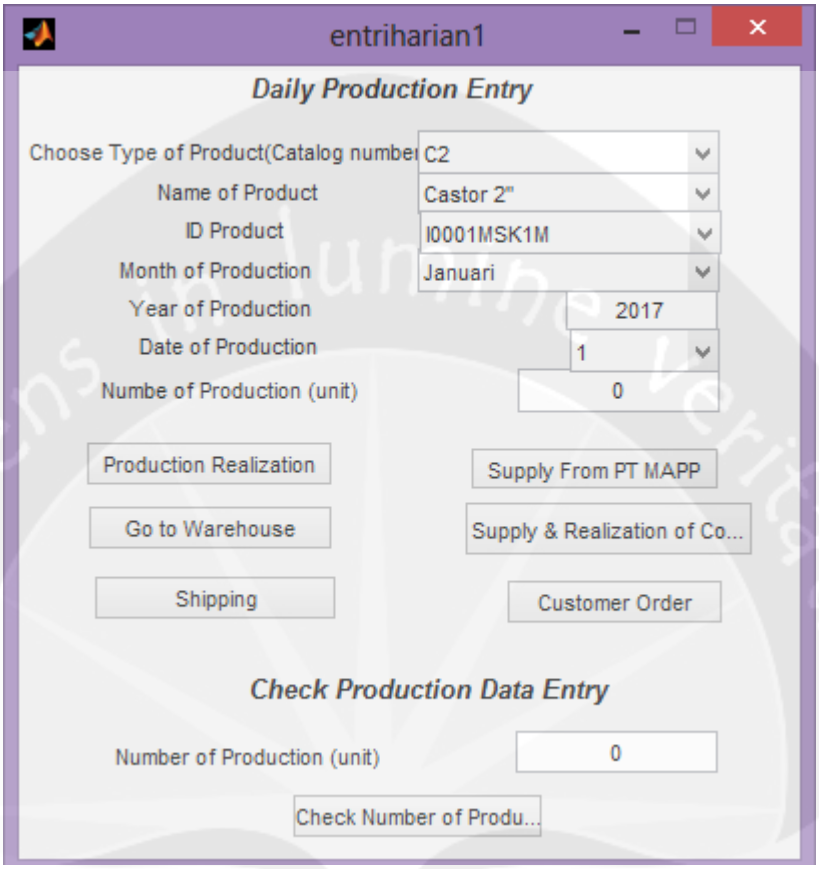

Figure 4.16. Entriharian1

b. Select Type of Product, Number of Product, ID Product, Month of Production, Year of Production, Date of Production and type Number of Production

c. Click Shipping (if the date and month of production refer to Shipping Date in the excel file). Click Customer Order (if the date and month of production refer to PO Date)

d. It will be stored to the “Castor2017.mat” database.

4.4.2. Identifying the Gap between Current Business Process and Functions Provided in Matlab Software

In order to identify the gap, first we map out the business process in the company (discussed in Chapter III). After that, we identify the functions that are provided in the Matlab software. The functions available are as follow:

Table 4.1. Functions in Matlab Software

Menu	Sub Menu	Functions	Working/Not	Department
A. FILE	Open File	Opening new file	Not working	General
	Save File	Saving working file	Working	
	Close	Closing working file	Not working	
B. Production Planning	Production Planning Activity	Displaying the production plan of certain product along with date/month/year	Working	Production & Management
	1. Calculate number of production	Displaying production plan and there will be two options to choose: initial plan and revision	Working	Production & Management
	2. See product	Displaying production plan. There are two options to choose from:: initial plan and Revision. It can be displayed in base and/or quantity basis. The results can be saved and/or printed.	Working	Production & Management

Table 4.1. Continue

	3. Recap of production plan	Displaying recap of initial production plan, revision of planning and planinng versus realization. The results can be seen in catalog and/or number of product basis. It can be saved and/or printed.	Working	Production & Management
	4. Entry Production Data	Direct entry of production. Data is added daily to production realisation, warehause, shipping, customer order and also supply & realization of components	Working	Production & Management
	Daily recap of production plan	Displaying the recap of production plan, Realization of production and shipping. The display can be done in Excel file and graphical form.	working	Production & Management

Table 4.1. Continue

	Transfer production data from excel	Excel file can be loaded to program database	working	Production & Management
C. Production Realization	1. Production Realization and Target	Display DAILY and MONTHLY production realization and target in excel and/or graphics	Working	Production and Marketing (Management Team)
	2. Production per Item	Display total output/production of certain item/product	Working	Production and Marketing (Management Team)
	3. See Product	Display the production planning of products either in DAILY or MONTHLY basis and in UNIT or STB basis	Working	Production and Marketing (Management Team)
	4. BOM Castor	Display the Bill of Materials of certain products and are able to convert the data to Excel file	Working	Production and Marketing (Management Team)
	5. Input supply from Vendor	Input supply from Vendor either from Excel or Direct Entry	Working	Warehouse

Table 4.1. Continue

	6. Display supply from Vendor	Display supply from Vendor	Not Working	Production and Warehouse
D. Calculate capacity	Entry persons work station	Assign how many people in the production line	Working	Production
	Assembly persons	Display amount of products to be produced, hours needed and persons needed in each of the production line and available capacity and time	Yes	Production
	Mechanic Persons		Not working	Production
	Calculate the capacity of the castor unit	Estimated number of work station in castor unit.	Yes	Production

After the functions are identified, we identify the input, process and output of the overall company's activities:

a. Input Production Planning from PPIC MAK

The orders are received by Mr. Merry through fax. However, the orders are in form of the finished units such as trolley, hospital beds, wheel chairs, etc (not in the form of amount of castor). Hence, Mr. Tri as the PPIC has to plan number of each type of the castor should be made. However, in planning the number of castor, Mr. Tri does not use any mathematical calculation, He uses estimation so that the number of castors produced can reach minimum target of Rp 1.000.000.000.

b. Input Production Planning for Castor Requirements

After Mr. Tri estimated number of castor that should be produced, he then plan monthly production by estimating how many produced should be produced daily so that in one month it can fulfil the demand.

c. Input Realization of Production

   Although Mr. Tri has plan for the prodution but the realization can be different. Hence, the actual number of production per day should be recorded.

d. Receiving Stocks

   To run the prodution, warehouse and production staffs should make sure they have sufficient stocks. Hence, this process is very essential to the company. When the stocks arrived, warehouse staff will record it and then submit it to PPIC (Mr. Tri).

e. Product Availability Report

   After the production is finished, there should be a report showing how many products are available to fulfil the demand.

f. Effectiveness of Production Report

   This report provides practical and effective way for managerial in decision-making and creating policies related to improve the company's performance. With this report, company is able to see the percentage or realization of production versus its target. Company can track down what is their main weakness in production whether the machines, human resources, etc.

To identify the gap, we compare the current business process and functions provided in Matlab in executing the input, process and output. It can be seen as below:

Table 4.2. Comparing Current Business Process and Functions Provided in Matlab Software

Process	Business Process		Gap
	Current	Matlab	
Input Production Planning from PPIC MAK	The input is done by Production (Mr. Tri) in Microsoft Excel. Required data for this input are: Monthly demand from PPIC MAK Demand from production floor in the previous month(s). The number of products that should be produced is estimated between the first and second data. The estimation is done without any mathematical calculation and referring to minimum target of profit (Rp 1.000.000.000,-). In certain case, Mr. Tri would have to revise the estimation due to demand changes.	This input is not provided in Matlab software.	Matlab does not provide this process although it is the initial process of converting demand data to the production planning Requiring more databases in current Matlab to accomodate the demand data

Table 4.2. Continue

Input Production Planning for Castor Requirements	The input is done by Production (Mr. Tri) in Microsoft Excel. Required data for this input are: Product Type Product ID Date Number of Products per day The estimation from previous process is used as the basis for this input. In estimating, it should consider maximum lot sizes and minimum target of profit.	The input is done by Production (Mr. Tri). Required data for this input are: Product Type Date Month Year Number of Products per day Excel file However, it will only display the Excel file in a simplified way.	Matlab software does not provide information about maximum lot sizes and minimum target of profit. Matlab software does not allow direct revision to the data To execute this process, Matlab software will have to use the existing Excel file hence it took longer time.

Table 4.2. Continue

Input Realization of Production	This input is done Mr. Tri by using Microsoft Excel when he receives Production Work Sheet from the operators. Required data for this input are: Name of Product Product ID Date Number of Products	The input is done by Mr. Tri. The input can be done in two ways: transferring excel file and direct entry. Required datas: Type of Product (Catalog number) Name of Product ID Product Date, Month, Year of Production Number of Producton	Matlab provides more options to input the realization of production One of the option still requires Excel file made in current business process hence production will have extra work to execute this process
Receiving Stocks	The input is done by Warehouse staff using Microsoft Excel. Required data for this input are: *No LPB* (Lembar Penerimaan Barang) No PO (*Purchase Order*) Vendor	The input can be done by Warehouse staff. Required steps for this input are: Go to Production Realization menu Choose "Input Supply from Vendor"	Matlab does not provide input such as No LPB, No PO, Vendor, No SPK, No Surat Jalan, Material Code, Material Name, Number of PO, Number of Products received, and PO Open If it is input through Transfer from Excel, it will consume longer time since Excel file has to be prepared in the first place

	No SPK No *Surat Jalan* Material Code Material Name Number of PO Number of Products received PO Open	Two options are available: Transfer from Excel or Direct Entry Transfer from Excel is not working at the moment As for Direct Entry, required datas to be input are: Type of Product (Catalog number) Name of Product ID Product Date, Month, and Year Number of Products Choose "Supply from PT MAPP"	
Product Availability Report	This report is resulted from the process of receiving stocks. The input will be in form of "*Laporan Penerimaan Barang*" This report is printed and attached along with Invoice from Vendor.	The report can be seen from "Display Supply from Vendor". However, the menu is not working.	Matlab should provide function that works properly to display the product availability report.

Table 4.2. Continue

Effectiveness of Production Report	Not available	Matlab provdes ways to display the production capability in many forms. They can be viewed either in Excel files or graphical away, such as: Producton Target vs Realization Total Production per Item These functions provides effective way for the managerial level to make decisions related to production in the near future,	Displaying production capability takes shorter time if using Matlab Dsplaying production capability in Excel files would be rather difficult since it consists of several Excel files

From the table above, we can conclude that there are gaps in between current business process and functions provided in Matlab software in executing the input, process and output of the company. Hence, it is our task to eliminate the gap and provide solution to execute the activity.

4.4.3. Creating New Function in Matlab Software Related to Busness Process

From the table 4.2., we select one of the core activity that contains gap between current business process and functions provided in Matlab software. The activity is receiving stocks. The gap exists are:

a. Matlab does not provide input such as No LPB, No PO, Vendor, No SPK, No Surat Jalan, Material Code, Material Name, Number of PO, Number of Products received, and PO Open.

b. If it is input through Transfer from Excel, it will consume longer time since Excel file has to be prepared in the first place

Hence, the idea is to create a new function to fulfil the gap. Herewith are the steps:

1. Create a new GUI with all the inputs mentioned above

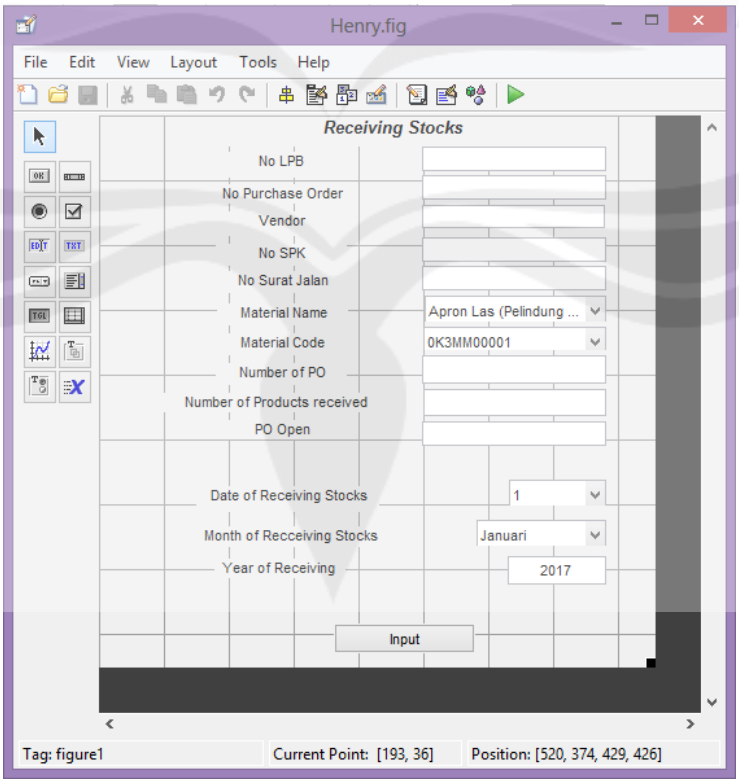

Figure 4.17. Create a new GUI

2. Change the Tag name

3. Click “Run Figure” or Ctrl + T. It will appear .m file in the Matlab.

4. In the .m file, click “Show Functions” then choose material_name (Tag name for Material Name). The idea is to choose certain material name in the material name pop-up menu and the material code will follow. To perform this task, the coding should be:

```
n1 = get(handles.material_name,'Value');
load receive_stock;
MeName = Material(:,2);
set(handles.material_code,'String',MeName(n1));
```

Material is the main database we created. The second column in the database is the material code.

5. In the “Show Functions”, choose inputData_Callback. In here we can write the coding for the “input” pushbutton. The idea is to store the information to the database of Castor_ID. Hence, the coding is as follow:

```
n2 = get(handles.material_name,'Value');
n3 = get(handles.vendor,'String');
n4 = get(handles.no_LPB,'String');
n5 = get(handles.PO_code,'String');
n6 = get(handles.no_SPK,'String');
n7 = get(handles.no_surat_jalan,'String');
n8 = get(handles.noPO,'String');
n9 = get(handles.no_product_receive,'String');
n10 = get(handles.PO_open,'String');
n11 = get(handles.date,'Value');
n12 = get(handles.month,'Value');
n13 = get(handles.year,'String');
file = strcat('Castor',n13);
file = strcat(file,'.mat');
load(file);
switch n12
    case 1
        switch n11
            case 1
                stock(1,1).one(n2,1) = cellstr(n4);
                stock(1,1).one(n2,2) = cellstr(n5);
                stock(1,1).one(n2,3) = cellstr(n3);
                stock(1,1).one(n2,4) = cellstr(n6);
                stock(1,1).one(n2,5) = cellstr(n7);
                stock(1,1).one(n2,6) = cellstr(n8);
                stock(1,1).one(n2,7) = cellstr(n9);
                stock(1,1).one(n2,8) = cellstr(n10);

      .....

      end
```

```
selection = questdlg('Want to save Data,  Check again the Entry ',
'Check Entry','Yes','No','Yes');
      if strcmp(selection,'Yes')
save(file,'Castor_ID','produksi','revisi','realisasi','minta','kir
im','stok_FG','Material','stock');
      end
```

N2 until n13 is to get the value of the information we input. The inputs from pop-up menu will result in value. The inputs from text box will result in string. While choosing the database file, we set according to the year we have chosen at the first place. Switch n12 means we switch the possibilties of choosing the months. Hence, there will 12 cases. In each of the cases there will be switch n11 which means possibilities in choosing the dates, hence there will be 31 cases (maximum). At the end, we put up dialogue box asking to save the data and then the data will be stored in main database of Castor2017.

6. To make sure the display will work, in "ManajemenProduksi.m", choose input_pasokan_vendor_menu_item_Callback. This is where the GUI we created will be displayed. Hence, we write the code as follow:

```
selection = questdlg('Mau Entri Data ', 'Entri Data','Transfer
Dari Excel','Entri Langsung','Transfer Dari Excel');
if strcmp(selection,'Transfer Dari Excel')
transfer_data_realisasi_vendor;
elseif strcmp(selection,'Entri Langsung')
Henry;
end
```

"Henry" is the name of the GUI.

4.4.4. Working on Existing Function in Matlab Software

After we finished with the function above, we can work on existing function that is supposed to display the stocks received. However, the existing function is not working yet. Hence, herewith are the steps taken:

a. Open the editor of "ManajemenProduksi.m"
b. Choose the function of "tampilan_pasokan_vendor_menu_item.Callback"
c. Write the code as follow:

```
[file,alamat] =
uigetfile({'Castor2017.mat';'Castor2016.mat';'Castor2015.mat'},'Ch
oose File');
if ~isequal(file, alamat)
    if isequal(file,'Castor2017.mat')
        file=[alamat file];
        load(file);
```

```
        year=2017;
    elseif isequal(file,'Castor2016.mat')
       file=[alamat file];
       load(file);
       year=2016;
    else
    file=[alamat file];
    load(file);
    year=2015;
    end
end
date = get(handles.date,'Value');
nbl=get(handles.bulan1, 'Value');
load namabulan;
month=namabulan(nbl);
year=num2str(year);
Totaldata = cell(159,8);
switch nbl
    case 1
        switch date
            case 1
                Totaldata = stock(1,1).one;

      .....

      end
      Totaldata;
textjudul{1}=[sprintf('Shipping Castor date %2d month %5.15s
year %5.10s ', date, char(month),char(year))];
      [barang hari]=size(Totaldata);
       %kp=1:1:nt;
      a1=Material(:,1); %Material name
      a2=Material(:,2); %Material code
      pa=length(a1);
      totalth1=cell(pa,hari+1);
      totalth1(:,1)=[a2];
      totalth1(1:pa,2:hari+1)=[Totaldata];
      rowname={a1{:,1}};
colname = {'Material code','No LPB', 'No Purchase Order',
'Vendor', 'No SPK', 'No Surat Jalan', ......
    'Number of PO', 'Number of Products received', 'PO Open'};
      set(handles.judul,'String',textjudul);
      set(handles.uitable1,'RowName',rowname);
      set(handles.uitable1,'Data',totalth1);
      set(handles.uitable1,'ColumnName',colname);
```

The first part of the coding functions to obtain the database file. Date and nb1 functions to get the information of the input. Load namabulan functions to display month of production to the screen. Year functions to determine which year will be displayed according to what we input, but it is a number hence num2str functions to display the number. Totaldata is to generate cell array that contains total of material name and inputs needed. Switch nb1 functions to display the

possibilities of months. Hence, there will be 12 cases. Switch date functions to display the possibilites of dates. Hence, there will be 31 cases (maximum). Text judul is to display the title of the table. Barang functions to display the number of rows. Hari functions to display the number of days (dates). A1 and A2 function to display the material name and material code from the database Material. PA equals to the length of A1 (number of materials name). Totalth1 functions to make the A1 and A2 visible in the application. Row name functions to display the material name. Column name functions to display the name of the column of the table.

d. Run “ManajemenProduksi.m”, it will be display as below:

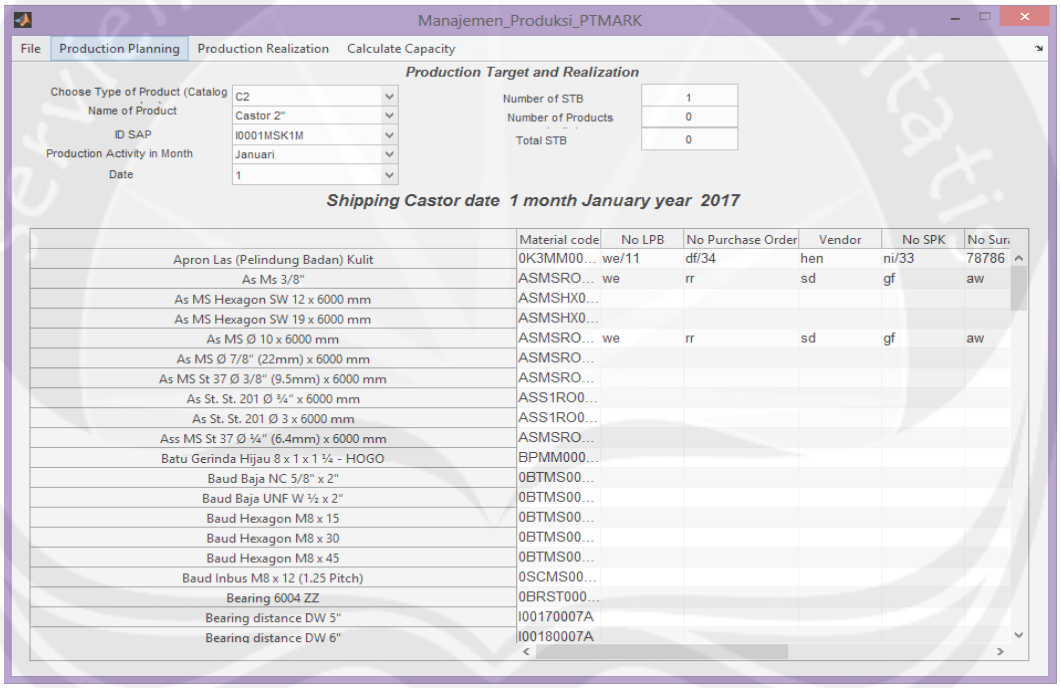

Figure 4.18. Displaying the Stocks Received

4.5. Impact of the Tasks to the Company

a. Receiving stocks process can now use the application to execute the process hence it does not require a lot of Excel files

b. Provides company easier and practical way to view the realization, production, realization vs target, shipping and order informations despite using a lot of Excel files.

c. The company can display the stocks received easily.

CHAPTER V
CLOSING REMARK

The internship report was written in order to provide a clear explanation about the internship experience and its results. Author hopes that the report can be source of learning for students and used for future research.

Author would like to express her deepest gratitude to every parties who have involved during the internship and the making of the internship report.

Finally, authors apologized if there are any errors in this internship report. Author is looking forward for critics and advices so that the report can be improved.