

CHAPTER I PRELIMINARY

I.1 Background

PT RST is a running single agent that hold Peugeot in Indonesia. PT RST is handling the selling of cars and spare part that is completely build up from Peugeot automobile in France. Other business that run by PT RST is offering after sales service for their customer. One of after sales service that PT RST do is provide the spare parts. The sales data that shown in Figure I.1 show that PT RST have an increase and decrease of sales from 2011-2020. Even though the sales are up and down the average of increase in sales in wholesale is 26.95% and 25.98% in retail.

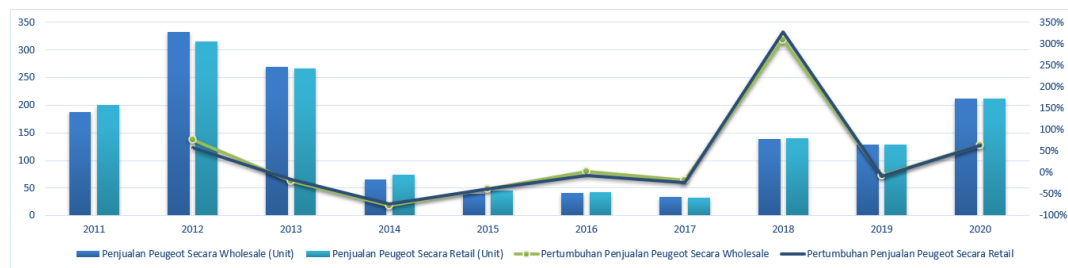


Figure I.1 Peugeot Sales Data in Wholesale and Retail

The modern car composed of round about 30.000 parts that may bust over time and need to be replace (Henkelmann, 2018). Therefore, the increasing in sales can lead to the increase of demand for spare parts because a modern car is composed of round 30.000 parts. The importance of fulfilling the spare parts demand can lead to a good after sales service and can increase the customer loyalty to the brand (Wahjudi, 2020). The after sales service can gain profit ten time larger than the sales of the car and the spare parts business can generate from 50% to 70% of the revenue (Henkelmann, 2018).

To survive in automotive industry every company need to have a profitable sale. Main focus of PT RST are in sell cars and provide spare parts to the costumer. Since as stated before spare parts sales can gain more revenue to the company rather than the sells of car itself. To be able gain profit from the spare parts sales PT RST need a good system in managing the spare parts inventory system because inventory cost can have affect to the total profit of the company from 20% to 40% (Eckert, 2012). Without a good inventory management system it can lead to out

of stock or pile up. PT RST are having a pile up inventory as shown in Figure I. 2 and can lead to overstock condition.

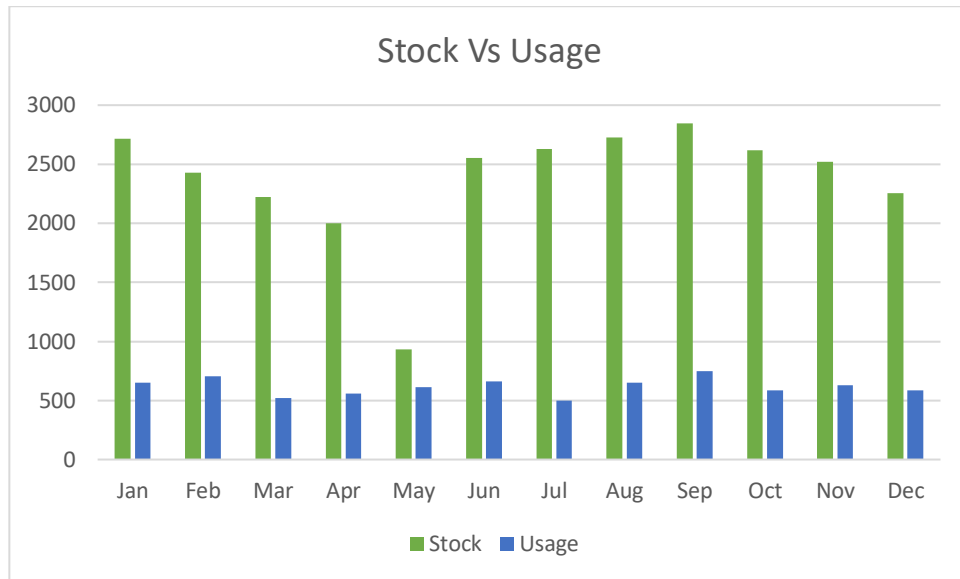


Figure I. 2 Comparison of Stock and Usage of Spare Parts

Due to the overstock problem the company also facing cost allocation problem. The inventory cost is higher than the actual company inventory cost allocation because company consider all spare parts have same importance level. High inventory cost also because the company restock their spart parts only According on the historical demand data. The cost allocation data can be seen in Figure I. 3.



Figure I. 3 Inventory Cost Condition

To face the inventory cost problem the previous author proposed an inventory management system by using ABC-XYZ classification and make inventory policy using periodic review. The ABC-XYZ classification are to classify the spare parts based on their cost consumption and demand variability. The company have an agreement with their parent company to order based on their batch or once a month, this condition makes PT RST always order each spare part once a month. Because of that PT RST have an increasing on inventory cost due to the increasing of order cost, purchase cost, and holding cost. To face that problem the R,s,S and R,S periodic review so that the company doesn't have to order once a month and hoped that it can decrease the inventory cost.

From the calculation of periodic review (R,s,S) and (R,s) the result of category 1 are reduction of order cost by 50,38%, holding cost by 16,53%. Even though there an increase in shortage the total inventory cost is reduce by 39,44%. For category 2 the result are decreasing in order cost by 50,38%, holding cost by 16,53%. Even though there an increase in shortage cost the total inventory cost is reduce by 34,94%. For the overall total inventory cost it is reduced by 37,78%.

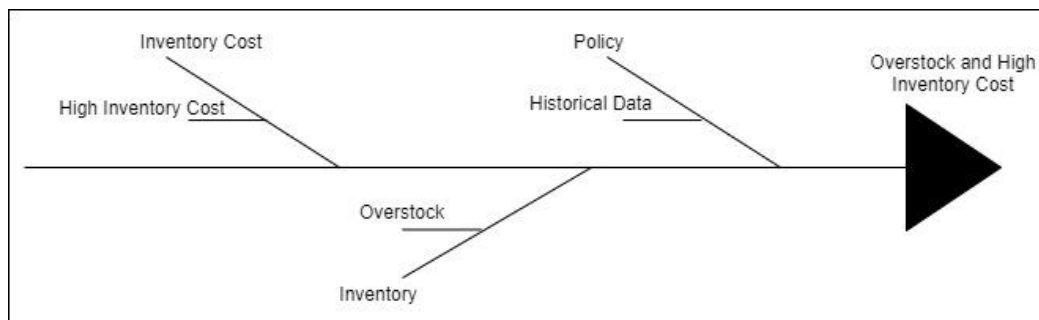


Figure I. 4 Fishbone Diagram

According on Figure I. 4, the problem that occur is an overstock inventory that caused in high total inventory cost. The previous author already done an ABC-XYZ and periodic review. The periodic review is not able to capture the dependencies within the variable. In this final project a simulation is conducted to validate a certain decision to evaluate and improve the policy (R.C. Harrell, 2004).

The simulation that will be used in this final project to solve the problem is system dynamic modelling. The reason of using system dynamic is because by using simulation we can conduct apply trial and error to the system to improve and analyze the performance of the policy (Widodo et al., 2012).

I.2 Problem Formulation

According on the background, the problem formulation in this final project is:

1. How dynamic system model can evaluate the inventory policy to reduce overstock that caused high total inventory cost?

I.3 Purpose

According on the problem formulation the purpose of this final project is:

1. Evaluate the inventory policy.

I.4 Limitation

According on the purpose, limitation of this final project are:

1. Final project conduct in inventory system at PT RST.
2. Data that is used in this final project are from January 2019 – December 2019.
3. The data is obtained from previous researcher and not directly from the company.
4. The simulation will be done in twelve-month period

I.5 Benefits

The benefits of this final project are to solve the problems of overstock inventory and high total inventory cost in PT RST using system dynamics method.

I.6 Writing Systematic

Chapter I Preliminary

In this chapter, the background of the research will be stated. Other information that is stated in this chapter is problem formulation, the purpose of this research, the limitation of this research, the benefits of this research and the writing systematic of this research.

Chapter II Theoretical Baseline

In this chapter, the theory that will be used in this research are gathered. To support this research will state also the previous research that is correlated to this research.

Chapter III Research methodology

In this chapter a conceptual model of this research are stated. Other data that is stated as the detailed step on how to solve the problem in this research.

Chapter IV Integrated System Design

All activity that related with design the integrated system are done in this chapter. The activity such as data collection, data processing, and designing the solution.

Chapter V Result Analysis and Evaluation

In this chapter the result of previous data will be stated. Beside that in this chapter also include the process of validation and verification to the solution.

Chapter VI Conclusion and Recommendation

In this chapter will be stated the conclusion of the result of this research. Recommendation for next research is also stated.