

CHAPTER I

INTRODUCTION

This chapter is the introduction of final project. Introductory section includes background, problem formulation, research objective, scopes of problem, and outline of report.

1.1 Background

Science and technology continued to show progress each year, along with the level of demand for industrial products, especially machinery and automotive. Such improvements can see from the amount of production and sales of automotive industry from the year 2005 to 2017. **Figure 1.1** shows the data of the production and sale of automotive industry based on data from the Ministry of Industry Republic of Indonesia.

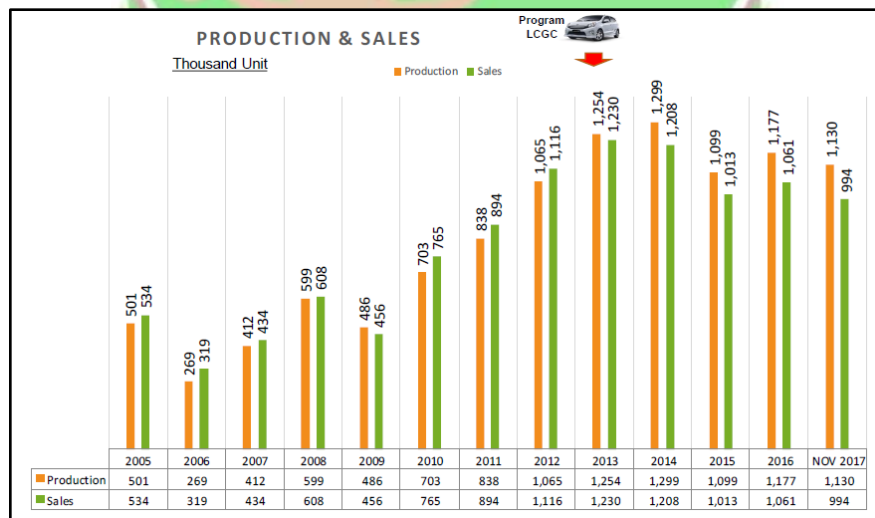


Figure 1.1 Production and Sales Data of Automotive Industry in Indonesia (Source: www.kemenperin.go.id)

Figure 1.1 describes about fluctuating along with increasing annually for production and sales of automotive industry. This is caused by a growing

consumer for automotive products both domestically and abroad. **Figure 1.2** presents the target market data of domestic industry in Indonesia from 2011 to 2020.

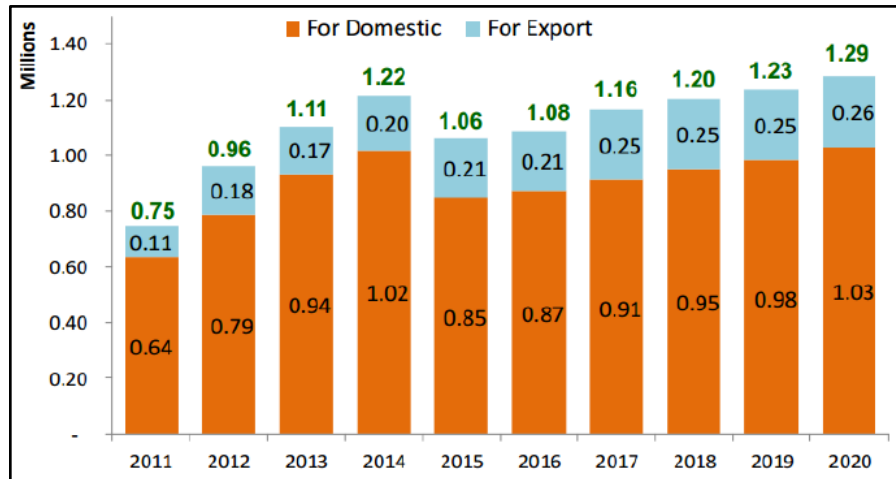


Figure 1.2 Target Market of the Automotive Industry (Source: www.kemenperin.go.id)

The target market of the automotive industry has made automotive companies increase their production numbers, including components of automotive products, one of which is car. The picture of components on the automotive industry can see in **Figure 1.3**.

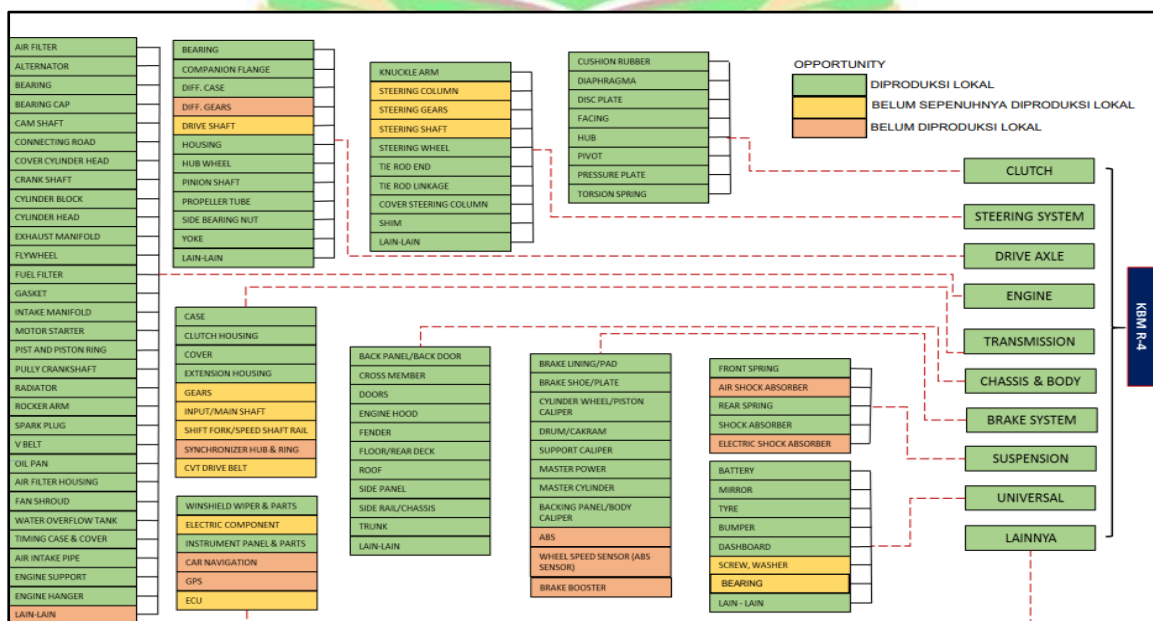


Figure 1.3 The Automotive Industry Tree (Source: www.kemenperin.go.id)

Based on **Figure 1.3**, it can be understood that the industrial automotive product requires a series of workmanship processes and several combined components to form an integrated automotive product. The process of industrial automotive production consist from ten indicators, where each indicators have sub-indicators too, if all indicators added together, the total of all these indicators or components are 111 unit. One automotive product requires that many components to finished it, especially for large-scale companies, the demand for automotive products should reach 1000 units. This causes the time needed by the automotive industry to process production also increases. Production and Engineering Director of the Karawang Plant of PT Toyota Motor Manufacturing Indonesia (TMMIN), Nandi Julyanto, said it took 22 hours to make one car, from the steel plate to completion.

Based on the statement above, the operator has an important role to achieve the target of automotive product demand. Operators are the key to make all system in industry running well. If operators make the mistake, like miscommunication or false on step of procedure production system, they will produce the defect product. So, the industry should upgrade the operators for support the production. One of method to resolve the human error is keeping the information between one operators with the other operator running well. Efforts made typically to maintain communication between operators in order to avoid misunderstanding and misinformation to one another.

Information needed for the progress of an organization in order to survive and compete with other organizations. The most important thing in an information is management, which include storage of information, development of information, collecting and updating information. The management objective is to manage an information update to be useful for the recipient of the information (Setiawan, 2015).

Information which integrated and accumulated in coverage can form a knowledge. Knowledge is a lesson that contains ideas, experiences, sequence of

procedures and guidelines that can direct a person to act and behave towards the better, so it can be good communications with others (Darudiato, 2013). The Conclusion from knowledge is the thought that belongs to a validated person, should process to be useful, and then is used as a guide to making the right decision based on the experience that ever happened to anyone else.

Knowledge management is a series of activities that typically used to identify and explain the knowledge reused by others. Systematic development, renewal and application of knowledge to maximize the effectiveness of the company and the profit is also the role of knowledge management. Therefore it is necessary to manage much of the knowledge to be more beneficial for individuals or groups of organizations (Darudiato, 2013).

Another reason why it is needed because the current knowledge management companies attempted to improve efficiency by replacing manual work to an automatic system. This leads to reduced employee informal communication, that it lowers the likelihood of the spread of tacit knowledge grounded by experience (Sanchez, 2008). Knowledge sharing is a key element in improving innovation of an organization or company (Saenz, 2009).

Another point in production process and automotive machine components is the final stage of the machining process called finishing, because it's the last process on the machining production, so it become the critical point, if there are a mistake, its will give impact to result of product. Generally at an early stage work piece machining process, a change in a significant dimension to form the desired product output occurs. Then for the finishing phase, particular treatment carried out to create a better-quality product. Among the finishing stage of the machining process, there are three types of machines used, namely grinding, lapping and polishing. Research on the design knowledge management system on the grinding machine has been carried out by Fikri (2016), while research on the design knowledge management system on lapping machines have been conducted by Sabayu (2016). The final stage of finishing the machining process is polishing.

Polishing done to smooth the component surface as shown in **Figure 1.4** and **Figure 1.5**.

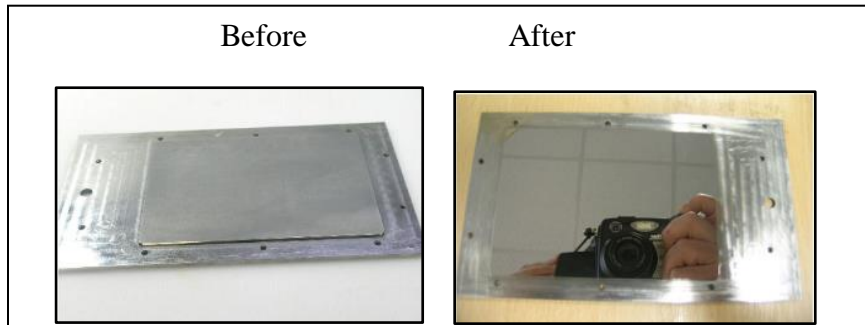


Figure 1.4 Polishing Process Results of Surface Polishing (Source: <https://www.kemet.co.uk/blog/lapping/lapping-polishing-steel>, 2018)

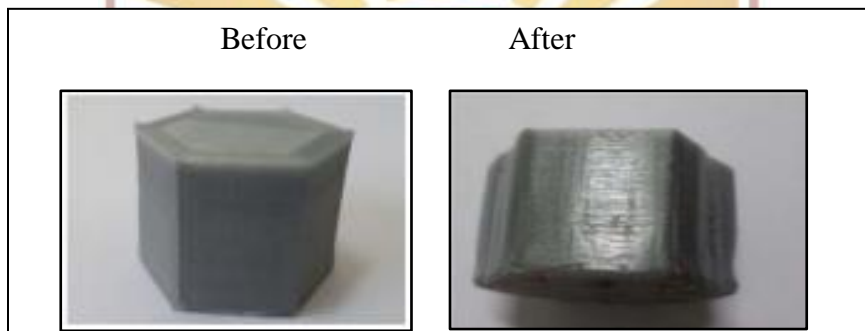


Figure 1.5 Polishing Process Results of Cylindrical Polishing (Source: <https://www.kemet.co.uk/blog/lapping/lapping-polishing-steel>, 2018)

Several forms of machinery and automotive component are surface and cylindrical. The two components mostly used in some automotive machine, such as engine, chassis and body (the Ministry of Industry of the Republic of Indonesia, 2018).

Knowledge management in this study contains the proper determination of the parameters for the particular polishing machine the work piece surface and the cylinder. By applying the knowledge management engine, users can understand the best parameter selection of the previous machine use according to the experience of the tacit knowledge and some related information. With an already owned tacit knowledge, experienced workers can determine a better parameter to

perform the machining process in accordance with the desired result. Meanwhile, the new workers are still required to learn more about the machine they will use.

The functional of machine needs to know in depth by machine operator to generate an appropriate output standard. It requires designing knowledge management system using surface and cylindrical polishing machine which will be discussed in this study.

1.2 Problem Formulation

The formulation of the problem in final project is how to design a knowledge management system, to help the operation of surface and cylindrical polishing machine.

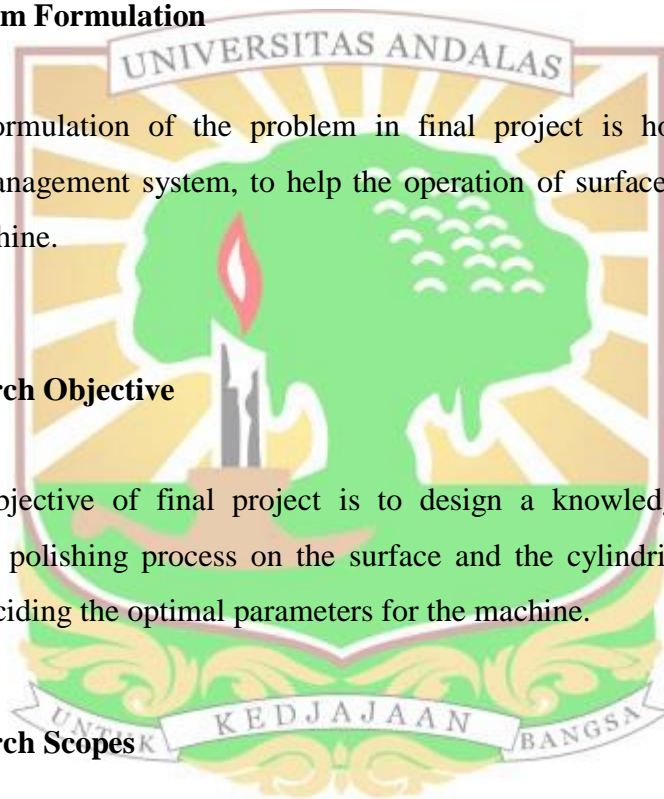
1.3 Research Objective

The objective of final project is to design a knowledge management system of the polishing process on the surface and the cylindrical used by the operator in deciding the optimal parameters for the machine.

1.4 Research Scopes

Research scopes that exist in this study are:

1. The study only conducted the material of cylinder and surface on polishing.
2. The study only done until the system design, the manufacture and testing of applications, not to the maintenance stage.
3. The study only focus on the automotive product, especially polishing process.



1.5 Outline of Report

Outline of this report described as follows:

CHAPTER I INTRODUCTION

This chapter explains the background of the underlying research, the formulation of the problem, research objectives, problem definition, and outline of report.

CHAPTER II LITERATURE REVIEW

This chapter explains the theories related to problem-solving to do research. The theory consists of theoretical knowledge management system, surface and cylindrical polishing, IDEF0, DSS and information systems theory.

CHAPTER III RESEARCH METHODOLOGY

This chapter contains the steps being taken in conducting the research. These stages consist of a collection of literature, pre-system design, system design, methods used, to the analysis of the system.

CHAPTER IV KNOWLEDGE MANAGEMENT SYSTEM DESIGN

Knowledge management system design done by applying the system design method, namely the System Development Life Cycle (SDLC) method. The steps of forming a knowledge management system that are applied in this study are a combination, Internalization, and Externalization.

CHAPTER V DISCUSSION

The Discussion carried out consisted of a knowledge management system, analysis of surface identification systems and cylindrical polishing, system modeling analysis, database design analysis and system implementation analysis.

CHAPTER VI CONCLUSION

This chapter contains conclusions from the results of the final project that has been done and suggestions for the next final project.