

CHAPTER 3

METHODOLOGY

In this chapter, the discussion will be about a systematic steps in order to solve the main problem. It starts with the initial observation, problem identification, literature study until finishing the report of the research.

3.1. Initial Observation

The purpose of initial observation is to find the problems occur in the company. Brainstorming with the company's people has a role here. It starts with asking about the company's profile, its product, its system until the common error during the business activities.

3.2. Problem Identification

After collecting many issues possible, the next step is to formulate the main issue that will be solved. In order to support the definition of the main issue, the limitation of it has to be cleared out. Hence, the study will go in a certain way.

3.3. Literature study

After understanding the main problem that will be solved, the next step is to find similar study cases. The aim is to learn how the previous researchers were able to solve similar issues.

3.4. Data Collection

In this step, the main idea is to gather all information for solving the main issue. Two kinds of data will be collected, the primary through an interview and secondary by company's data. The interview will be done with the company's person in charge to gain information about the history of the company, organizational structure, production process, supply chain system and discuss the key performance indicators (KPI) for the succession of company's supply chain. The secondary data is the any written information given by the company that supports the research.

3.5. Structuring the Hierarchy of Supply Chain Performance

The main idea in this step is to structure the hierarchy of supply chain performance efficiency of the company. It starts with the goal, criteria, sub-criteria, and sub sub-criteria (if there is any).

3.6. Creating and Spreading the Questionnaire

After creating the hierarchy structure, the next step is to evaluate the necessity level of the elements. The definition of the importance level of elements will be given by the experts of the company. Hence, a questionnaire of comparative judgment will be given to a particular respondent(s) or expert(s) to see the comparison of importance level among the elements.

3.7. Processing the AHP Calculation

After collecting the experts' judgment on the elements, the next step is to translate the comparative judgment numbers by the experts into the Analytical Hierarchy Process (AHP) calculation. The aim is to see the significant level of contribution by the elements upon the goal within the structure of supply chain performance.

3.8. Deciding the Consistency Level

The idea is to validate whether the judgment of the experts are consistent or not as required by the AHP method itself. If the judgment is inconsistent there will be re-judgment, if not the judgment is acceptable. If the level of inconsistency is more than 10%, the expert has to give their judgment again until it reaches less than the tolerance level. Otherwise, the AHP structure has to be evaluated.

3.9. Calculating the Score of KPI

The main idea on in this step is to know real performance of performance indicators in the supply chain of the company. After collecting the data of KPI the first step is to equalize the units of each KPI by using Snorm DeBoer equation.

3.10. Defining the Degree of Supply Chain Performance

The next step after calculating the score of KPI is calculating the score of company's supply chain performance. This will be done in two different ways, the first one by using local weight and the second one using global weight. In local weight method, the weight will be multiplied by the performance indicators' Snorm DeBoer score and continue until criteria level. While in global weight method, the weight will be multiplied by the performance indicators' Snorm DeBoer score to find its index. By summing the final scores in local weight and global weight respectively, the evaluation result upon the company's supply chain will be gained.

3.11. Analysis and Discussion

After defining the final score of supply chain performance by local and global weight, the next step is to analyze the result from both sides. The idea is to see which of the indicators have the worst performance and need to be improved.

3.12. Final Report Creation

This step is the last one in this research paper. In this step, the activities from initial observation until its conclusion and suggestion will be written into a report.



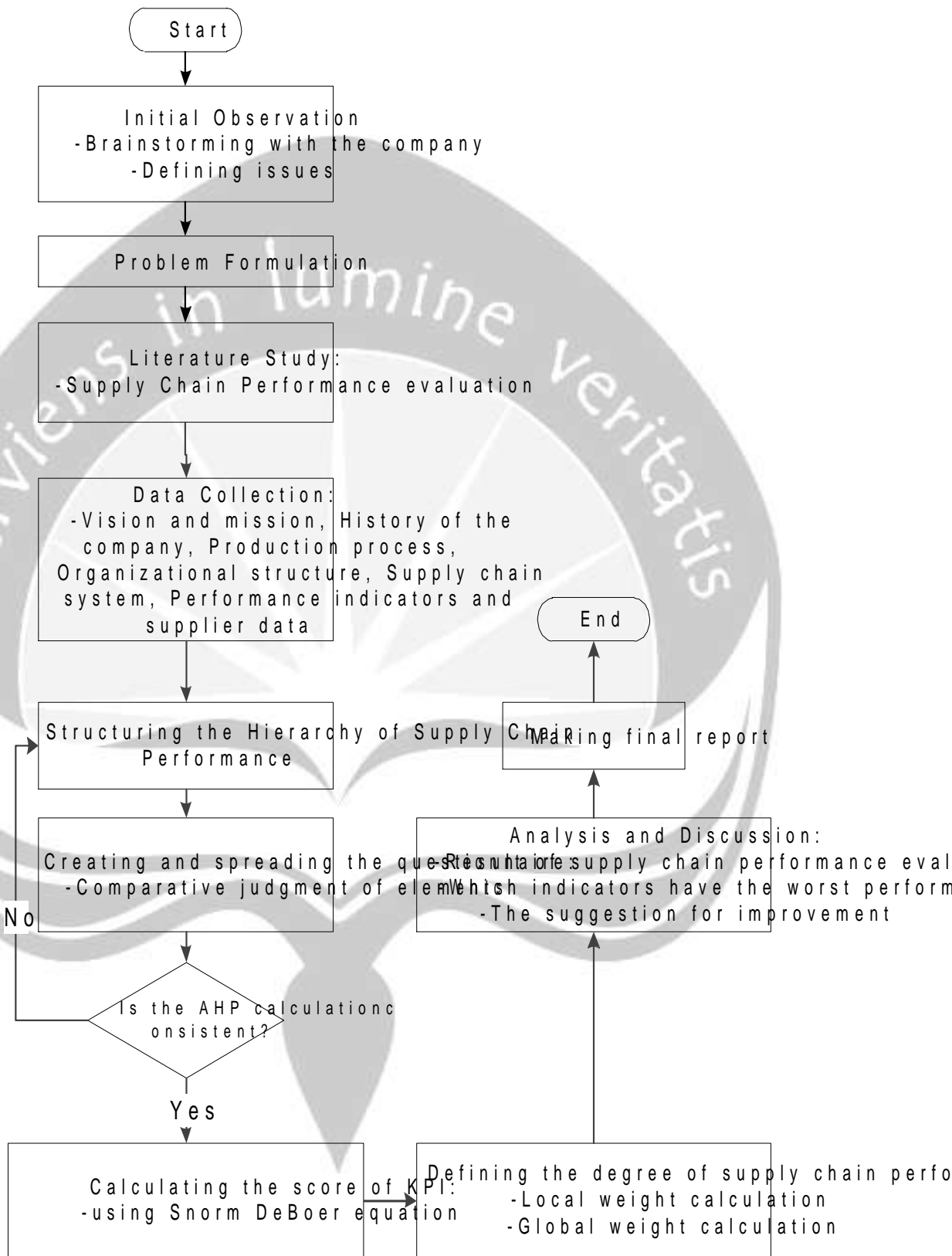


Figure 3.1. Research Methodology