

CHAPTER III

ISLAM RESEARCH METHODOLOGY

3.1 Research Object and Location

Literature-based review approach is applied to provide an overview of a research field in order to locate existing relevant peer-reviewed studies based on prior formulated research questions and to evaluate their respective contributions. The research topic is limited to emission efficiency, which papers are focusing on the topic of industry emission contribution due to findings from the main paper.

The targets of Electronic Databases were Elsevier (sciencedirect.com), Springer (link.springer.com), and Google Scholar (scholar.google.com). Since the Elsevier and Springer are few of the largest electronic database, so they are chosen to conduct the search of paper studies. Google Scholar will be used to find from another source of the electronic database. Since the limited access to conduct the research, so it only chooses Elsevier, Springer and Google Search in locating the studies. Therefore, the article types included in this analysis are delimited to peer-reviewed journal papers published in English and indexed in those site databases.

3.2 Problem Identification

Problem identification is the initial step of this research. Problem identification was obtained from literature review of several related articles to identify the problems, barriers, challenges and obstacles for the implementation of emission mitigation in industry or manufacturing. It is also addressed to find out whether it is possible to monitor or study their utilization. Regarding the results found, the methodology represents applied research, using the literature to map emerging issues related to emission efficiency. This review consisted of four steps: (1) formulating questions for the research; (2) selection and evaluation of studies; (3) analysis of the content of selected articles; and, (4) the description of the results.

3.3 Problem Formulation

Problem formulation is being used to construct the solution of the problem and as the basis to make a conclusion and recommendation. The focus of this study is to make a visual diagram framework that intended to help author gains understanding of relations among the undesirable effects and helps to pinpoint the root cause of most of the undesirable effects, solves conflicts that usually perpetuate the causes for an undesirable situation and shows the future states of the system and helps to identify possible negative outcomes of the changes and to trim them before implementing the changes.

3.4 Literature Review

The purpose of the literature reviews in this study is to find out previous studies related to research topics. The main concern of the literature analysis phase is to provide high quality and reliable insights on the topic of interest. To identify the sample articles for this study author followed three major steps. First, in-depth research was conducted of major databases;

second, the articles were screened for relevance to the research topic; and third, selected articles were comprehensively reviewed.

3.5 Data Collection

The research data were obtained from a suitable literature review such as journals, proceedings, and books. In this research, the secondary data were used to support the research hypothesis and statement. This research performed both deductive and inductive study as a literature review. The deductive study was carried out to gain relevant basis theory and to test the theory, whether suitable or not. Then it will be followed by conducting the inductive study to gain related information in previous research in order to position this research to show the distinctiveness of this research.

3.6 Data Collection Method

The author searched databases from Elsevier, Springer, and Google Scholar. Collected studies are dated from 2011 to 2018, in all fields using the terms: (Sustainable Development Goals OR “SDG 13”) AND (“Climate Change OR Climate Action) AND (Factory OR Industry OR Manufacturing) AND (Emission OR Energy OR Material OR Production)

The first step is to find the problems for SDG 13 and its relation with industry or manufacturing. Then the next step is to find the challenges and barriers through the previous journals, which resulted that emission contribution in industry is the main problem of this paper. Second, the author determines the search terms in the determined period, scientific papers and review from the journal that related to climate change, climate action, emission, industry and efficiency. Third, the author then reviews the abstract, introduction, methodology, and result to determine the relevance of papers with the main problem. Appendix A presents a list of the 33 selected articles in a bibliographic portfolio with numbers of citations for each. Frameworks were built based on state-of-the-art recommendations from the scientific literature.

3.7 Data Processing

The main idea of this process is needed to solve a problem in ensuring problems of emission contribution from the industry have reckoned. In order to answer TOC's three questions: What to change? What to change to? How to cause the change? Through the finding from the main papers, it is then decided that industry emission contribution will be the focus topic in this research. Next is addressing the constraint of the system, then the author found sufficient papers to be selected as the main resources in defining UDEs.

Then the next is to turn a set of systemic issues from 33 papers into a core conflict in order to identify the constraint or main problem in the industry emission contribution. Since this research is doing a literature review, then papers are considered the main resources of expert opinion. Based on the main findings from previous studies, the author selects industry emission contribution as the focus of the research. Industry emission contribution will be the main UDE in seeking the answer on "What to Change?" question at the same time as industry emission contribution is the UDE that want to get rid of. The result of finding root cause UDEs of industry emission contribution then will be visualized in Current Reality Tree diagram.

After finding the underlying causes of the industry's emission, then it is necessary to identify specific changes on conflicting needs and requirements of emission efficiency strategy. When the emission efficiency strategy is thriving and successful, then there will be an inevitable conflict that causes other goals to collide. Then the Conflict Resolution Diagram will highlight this problem to be resolved. The conflicting sides are decided between Climate Action (Goal 13) and sustainable consumption (Goal 12). By framing the problem taking both sides of climate action and sustainable consumption into account until assumptions are surfaced, then it challenges each assumption until a win-win solution is found. This will

answer the “What to Change to?” question whether the achievement of climate action affects sustainable consumption negatively or positively.

The next step is a diagram that shows the future state, called Future Reality Tree (FRT) which reflects the results of injecting changes into the emission efficiency strategy that are designed to eliminate UDEs of industry emission contribution. The last diagram of this research shows hope in the future of emission efficiency. At the last point of this research, the Thinking Process then discussed in the Islamic Point of View which related to climate action based on the sources of divine revelation in the Quran and the authentic collection of hadith.

3.8 Operational Definition

The operational definitions of the variable are used to describe the characteristic of a variable that was investigated by the research, which is mentioned as follows:

1. Literature Review

A literature review in this research is derived from academic journals on sustainable consumption topic. Journals that discuss Emission Efficiency are critically analyzed by identifying constraints in their current knowledge.

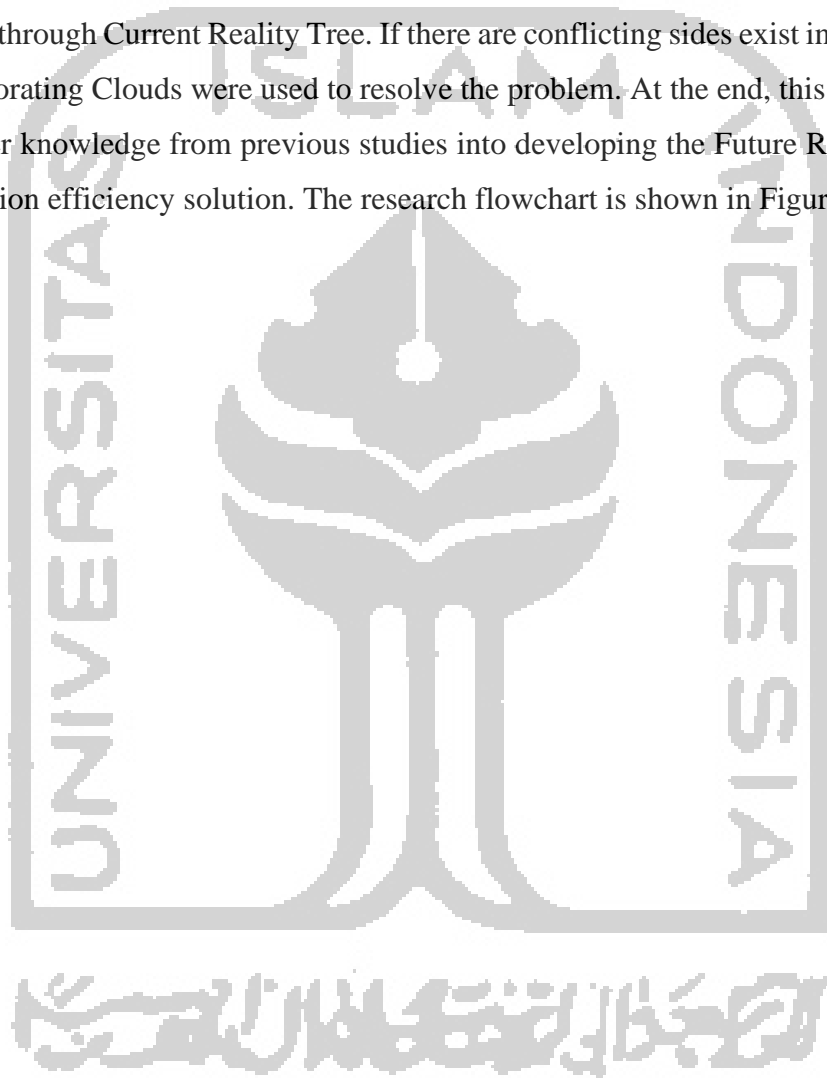
2. Constraint

Constraints, in this case, is the possible condition that hinders Emission efficiency from happening. These constraints that collected from the previous journal are defined as Undesirable Effects, which is used to interpret the problem explanation into Thinking Process diagram of Current Reality Tree.

3.9 Research Flowchart

Research flowchart will show the step-in conducting research, with the thinking process of Theory of Constraints were used in the middle of the process to visualize the research. In this

paper, the author illustrates the steps of TOC by identifying the current condition of the problem and designing the solutions. Research flowchart explains the steps of researching from the beginning until the end of the research. It starts by identifying the problem in emission efficiency. Then by locating the academic journals from the electronic database, the possible Undesirable Effects can be found. The UDEs are important in rectifying the current situation through Current Reality Tree. If there are conflicting sides exist in the problem, then the Evaporating Clouds were used to resolve the problem. At the end, this paper objective is to transfer knowledge from previous studies into developing the Future Reality Tree design for emission efficiency solution. The research flowchart is shown in Figure 3.1 below:



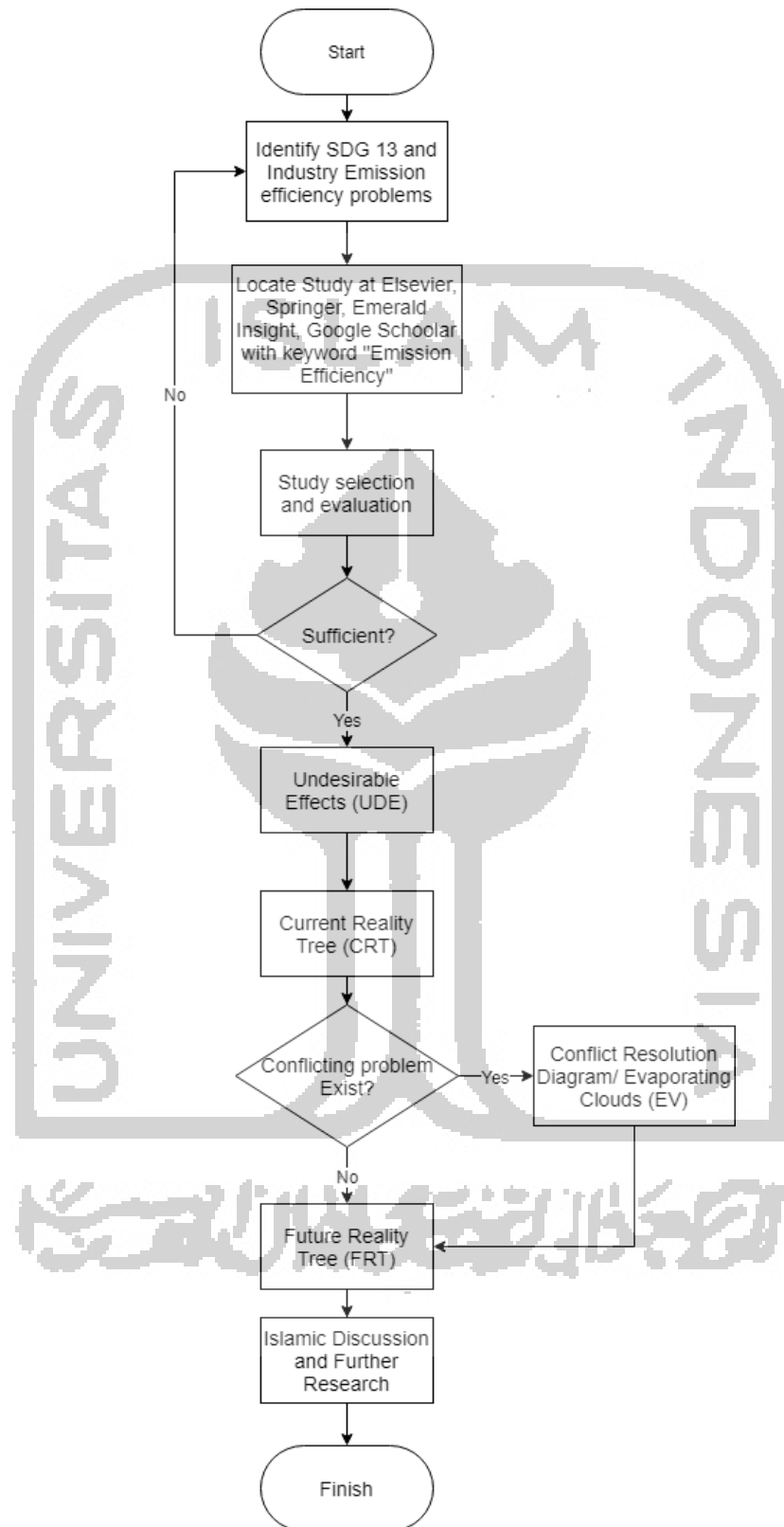


Figure 3.1 Research Flowchart

3.10 Result and Discussion

After data processing finished, the next step is analysis and discussion from the result of the visual diagram of Current Reality Tree, Evaporating Cloud, and Future Reality Tree. Besides, there is also an Islamic point of view to discuss climate action. This section explains in detail how the theory that applied in the selected object could generate a visual representation of the problem and solution. Moreover, this section is the initial suggestion in the conclusion and recommendation section.

3.11 Conclusion and Recommendation

This section would provide the answers to all the problem formulations that have been made at the beginning of the research. Furthermore, there are several suggestions from the researcher to the future research of Sustainable Development Goals, especially in ensuring emission efficiency in the industry.

