

## **CHAPTER 1**

### **INTRODUCTION**

#### **1.1. Background**

Companies nowadays, both manufacturing and services, have been already hiring hundreds even thousands operators or labors to support their business process. They are people who technically throw themselves into the companies' production or operation processes. Thus, they are indeed one of the most essential parts in companies' organizational system, beside the management level itself.

As the operators or labors have direct relationship to production or operation processes, they are also the people who have most tasks and jobs related with companies' products and services that are to be delivered to customers. They are responsible to produce and serve good and adequate outputs in order to fulfill and satisfy the needs of customers. Thus, the companies have to know how to manage and maintain their performances so the outputs always meet the companies' standards.

There are many aspects that influence operators' or labors' performance. One of them is workload distribution. In some cases, the allocation of operators or labors' workload is not equally distributed. This problem is sometimes happened in a gas station work system with multi-operators and multi-counters. Unequal workload distribution is indicated when there are some operators tend to work more, in

this case serve more vehicles, than others do. The operators with more workload assigned would feel more conflicted and fatigue even faster compared with the operators with less assigned who will feel bored of the sustained low workload index (Nachreiner, 1995). That situation could also raise a gap among operators when they feel they are assigned more works or tasks than their partners and somehow it would affect the operators' performance. With the application of an equal workload allocation, the operators would at least be assigned same amount of work with an equal workload distribution.

There are several factors that impact workload distribution in a gas station: layout of station, dynamic flow of incoming vehicles, the placement of operator in an overgrown station, and operators' work shift. However, the layout of the station will affect the flow of vehicles and it will cost much to redesign the layout. The dynamic flow of incoming vehicles will also give impact to operators' workload when they serve at overgrown station (placement of operators). Hence, even the state of an equal workload distribution could not be done where operators would exactly be assigned similar workload, this research will be focused on operators' work shift to at least achieve an equal workload allocation among them.

Eventually, there are also several conditions that support the work shift should be reorganized: time when most vehicles arrive (i.e., most vehicles arrive in daytime than after midnight) and types of vehicles

served (i.e., operators would rather be more intensive to serve motorcycles than cars).

### **1.2. Problem Statement**

The problem occurred in *Stasiun Pengisian Bahan Bakar Umum* (SPBU) 74.94205 Diponegoro, Palu, Indonesia, is the unequal workload distribution for its operators.

### **1.3. Research Objectives**

The objectives of this research are:

1. To identify the workload distribution for all operators during certain period of time, and
2. To propose a revised method in scheduling the company's work shift which have better workload distribution than previous method.

### **1.4. Scopes of Research**

The scopes of this research are:

1. The gas station has a fixed layout,
2. The research was based on the data collected from 1 January at 14.00 until 31 January 2012 at 23.59,
3. The workload definition used in this research is number of incoming vehicles served by operators multiplied with the workload unit for each type of vehicles,
4. NASA Task Load Index data was collected by using sample. Interview session was conducted with 10 operators,
5. Number of operators analyzed are 23 operators and there is no change in the future analysis,

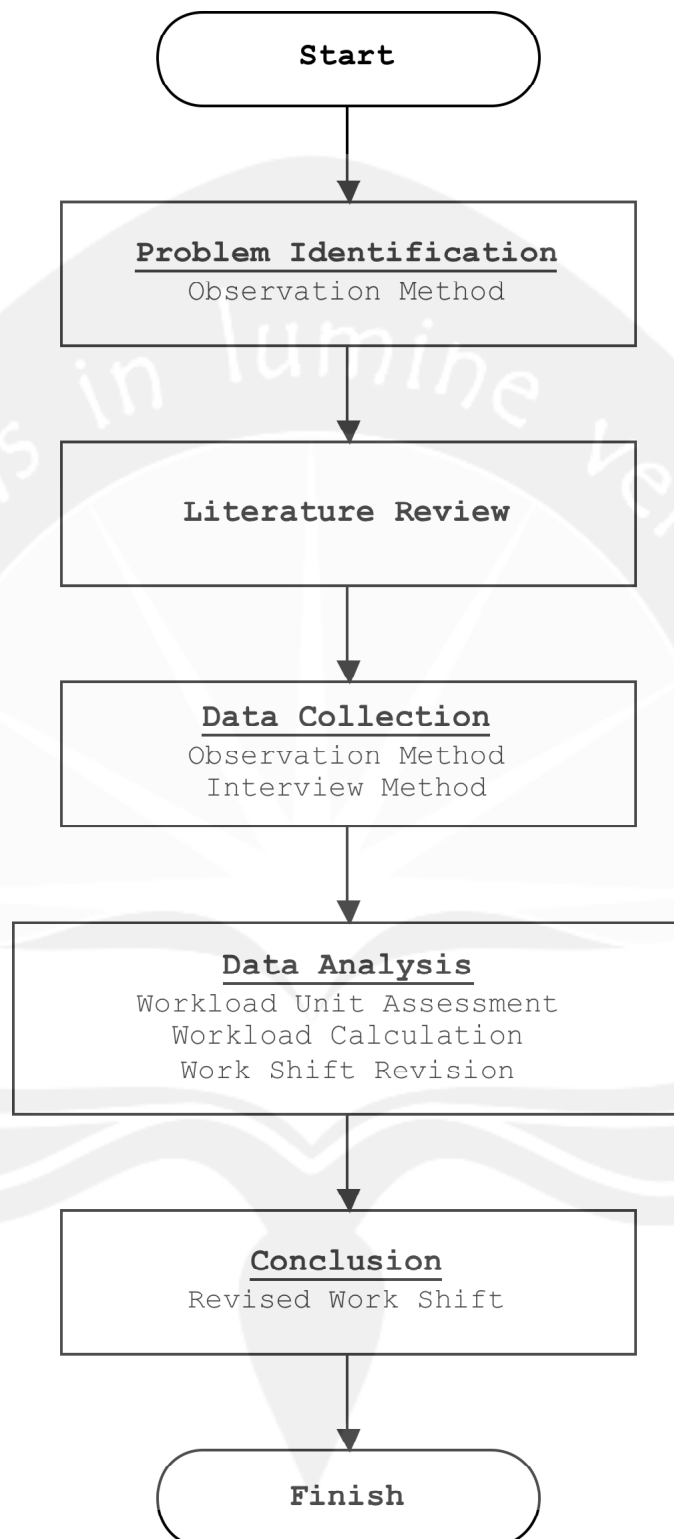
6. The different work condition between Day and Night Shift is not considered in analysis,
7. Security factor in Night Shift is not considered in analysis, and
8. Cost aspect including operators' cost is not considered for final decision.

The assumptions of this research are:

1. The out-scheduled working day(s) will be as substitution for the day(s) the respective operator does not attend,
2. The missing working shift will be as equal as the scheduled working shift (e.g., if the operator work at Morning Shift when s/he is supposed to work at Day Shift, then it will be considered the operator works at Morning. It will not affect the data analysis),
3. Station 3 and 4 are calculated as one station,
4. Workload calculated is for 100% attendance, and
5. The condition of all operators is assumed similar and is not affected by age, sex, education and working experiences.

### **1.5. Research Methodology**

The methodology of this research is shown by Figure 1.1. The methods are done sequentially. For the data collection, the researcher will collect the data directly in the gas station. The data collected are the number of vehicles that are served by all operators per month. The existed work shift of the company is also collected for the workload distribution analysis.



**Figure 1.1. Research Methodology**