CHAPTER 1

INTRODUCTION

This research study is to evaluate and analyze the warehouse performance from company of food manufacturing in Kuala Terengganu. The evaluation of the warehouse is to determine efficiency performance of the organization. The purpose of analyzing the performance of the warehouse is to improve the quality to become more efficient to support the market demand nowadays by using the data envelopment analysis technique which is commonly use in manufacturing and service sector. This chapter will cover the background of the study, problem background, problem statement, research objective, and research question, method of analysis, scope of study, significance of study, operational efficiency and conclusion of this chapter.

1.1 BACKGROUND OF STUDY

Our emphasis in this research is on basic DEA models for measuring the efficiency of decisions making (DMUs) when the process presented a structure of multiple inputs and outputs. The first DEA model, as this work originally presented by Charnes, Cooper, and Rhodes (CCR) in 1978. In this research, it more focus on labor performance in the food manufacturing industry. Since the labor cost is the largest cost component of general warehousing. In order to identify the best practice, a warehouse efficiency model is presented to evaluate the overall efficiency of warehouses at the enterprise level in the presence of multiple inputs and output which are involved.
It is developed by using Data Envelopment Analysis (DEA) as a multi-factor productivity model to measure the relative efficiencies of a homogenous set of Decision Making Units (DMUs). This research study used a set of warehouses where the relative efficiency score of each warehouse is calculated where multiple inputs and outputs are involved. The research begin with a general review background on efficiency and production measures, the DEA, CCR Model, warehousing, and basic terms or definitions.

The basic or unrestricted DEA model is applied to a group of homogenous warehouses which have similar inputs and outputs. Then, the model will be revised which is restricted DEA model with additional constraints is presented. Based on expert opinion in conjunction with strategic thinking, the model is revised with incorporates weight restrictions inputs from executives and decision makers who are in charge of setting the organization’s goal and objectives. Besides, the primary objective of the restricted DEA model is to move from technical efficiency towards overall efficiency. The relative efficiency of the warehouses used in the study was analyzed before and after the use of weight restrictions.

1.2 PROBLEM BACKGROUND

The goal of this research is to evaluate the performance and efficiency using Data envelopment Analysis model that support the estimating of productivity and using it for quantitative benchmarking. This method quantifies the relative efficiency of observations of warehouse productivity performance.

Technical issues are addressed related to benchmarking best practice behavior in the warehouses. First performance needs to be measured in order to identify best practice among warehouses. There are a variety of tools can be used to measure the performance efficiency. One of the most common tools that we used is data envelopment analysis (DEA) which a system that consumes inputs to generate outputs.

The issues are to identify factors why the warehouse performance is not efficient in company where the analysis of warehouse performance data have been collected over a year using DEA method. This research is to identify causal factors which limit the
warehouse to perform efficiency and to identify the best opportunities to improve warehouse performance in a general warehouse setting. This method has been used for measure warehouse technical efficiency and for evaluating warehouse performance productivity. The two type of date have been collected which are inputs and outputs where this data are decision making unit (DMU). It is an interesting research question to see if the data warehouses in certain industries are a particular disadvantage to warehouse in other industries.

There are many factors that are believed to influence performance of the warehouse efficiency which they may use the unsuitable inputs for generate the output of the operation process. The outlier of efficiency of a set of data with high density can be avoid by using the rules of thumb on the number of inputs and outputs to select and their relation to the number of DMUs. The outlier in this research can be remove by follow the rules of thumb of DMUs.

### 1.3 PROBLEM STATEMENT

The measurement of efficiency in the warehouse operation and identification of sources of their inefficiency is a condition to improve the performance of the warehouse in a competitive environment. All inputs and outputs have an impact on efficient operation of such units, although some are considered more or less important. The lacks of data entries for any of the inputs in the warehouses will reduce the warehouse performance model are excluded.

In operation of warehouse, there are a lot of problems and constraints such as, machine failure, lack of labor at peak hour and etc which cannot be avoided. However, these problems can be reduced. The benchmarking practice behavior in the warehouses is related to the technical issues. The performance of the warehouse is reduced when the warehouses operation is inefficient.

The outlier can happen if the researches in the analysis have misreported data or are not measured correctly this must be avoided in DEA which is requires all observations be measured exactly. We shall not get into the inappropriate selection of data because certain characteristics of data that may not be acceptable for the execution