CHAPTER I INTRODUCTION

I.1 Research Background

Venamon Corporation is an individual-owned enterprises engaged in the production of leather shoes in Indonesia, based on Figure I.3 Companies should be able to produce according to existing demand in order to compete in the market. There are so many complaint from their reseller about their leathers shoes quality, as shown in Figure below.

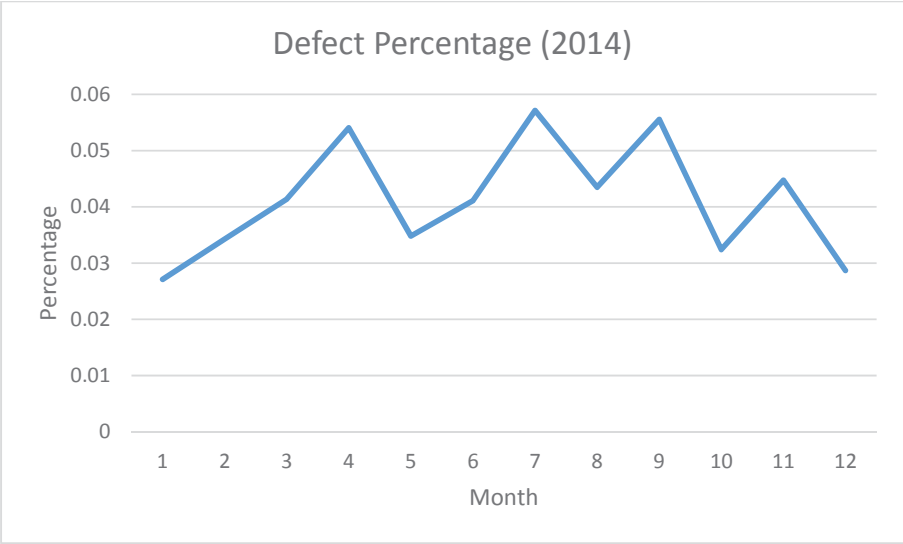

Figure I.1 Complaint Percentage for The Leather Quality

Quality standards that still doesn't fullfill yet can be caused by many factors. Figure 1.5 shows the causes that can lead to the achievement of quality standards are still not being met, including:

1. Human

   Force automation designed will minimize the role of human / operator in the process of operation so that human error factor can be avoided, such as forgetting to monitor the quality of the leather.

2. Materials

   Raw materials obtained from the supplier does not meet the standards of the company.

3. Method

Production Operational Standards are often violated by the operator

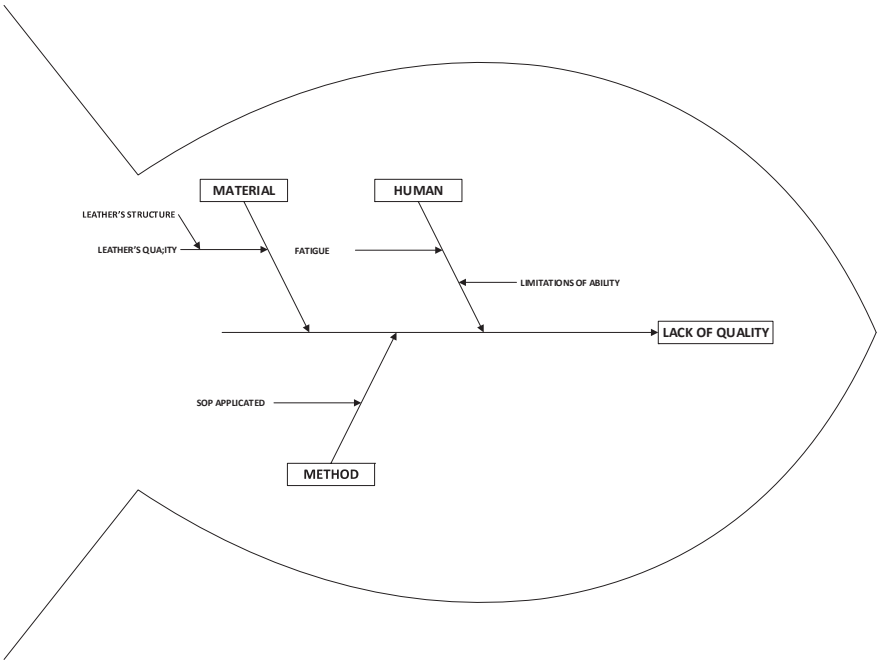

Figure I.2 Fish bone in this study

In this study will be built an image clustering application to identify the quality of the shoes by color. In the initialization clustering should normally be desired number of clusters in advance, whereas in some cases clustering, users do not even know how many clusters can be built. Therefore, in this study applied a method Valley Tracing capable of solving the problem. This method can perform clustering automatically (Automatic Clustering) to the color feature in the form of R, G, B of the shoe's leather by utilizing the Single Linkage Hierarchical Method (SLHM), which detects the movement of variants at each stage of the formation to find the global optimum cluster so that it can be built cluster automatically (automatic clustering). Value centroid of each clustering result then be used to identify the type of fruit and ripeness.

I.2 Problem Identification

How to design an automated vision system for color classification using cluster identification method to minimize processing time for identification operation and color miss identification.

I.3 Objective

The aim of the study:

1. How to identify the system needs.
2. How to design an improvement system.
3. How to design a system that integrate a flexible hardware and software.
4. How to design an experiment for some parameter in a system

I.4 Limitation of The Study

1. The design of this system to manufacture miniplant.
2. Objects are identified by color only.
3. An object will be identified to the system when the previously object has been completed identified.
4. The creation of the communication between the PLC and Matlab.
5. The leather dimension used in this sytem design are 5 x 5 cm.
6. The leather types used in this system design are only six types, which explained in the next chapter.

I.5 Benefit of Research

Research benefit in this thesis is as follows:

1. Reduce workload and minimize operator error factor-factor caused by human error for leather type identification.
2. Produce a work station monitoring automation system based SCADA
3. Minimize number of worker to identified the leather types.
4. Reduce processing time to identified leather types.

I.6 Writing Systematics

This study described the systematic writing as follows:

Chapter I Introduction

This chapter contains a description of the research background, problem formulation, research objectives, research limitations, benefits penelitain, and systematic research.

Chapter II Review of Literature

This chapter contains literature relevant to the problem under study and also discussed the results of previous studies. The study of the theory used in the present study is to use automation systems, SCADA, HMI, Visual Basic, Database, and Cluster Identification.

Chapter III Research Methodology

In this chapter the steps described in detail melitputi research: the initialization stage and the information contained therein formulation of the problem, the creative phase and the implementation phase of the design and analysis phase and system test and conclusion.

Chapter IV Design System

This chapter contains step-by-step in the creation of the system. Starting from the identification phase of the system until the system test scenarios designs.

Chapter V Analysis

This chapter contains the analysis of the study. Where the data analysis consists of the analysis of the results and analysis of the results of the test scenario design.

Chapter VI Conclusions and suggestions

This chapter contains a summary of the study and suggestions for future research development.