

CHAPTER 1

INTRODUCTION

1.1. Background

Indonesia is an agricultural country. Most of Indonesian's people work as a farmer. The farmer usually works by using some traditional tools such as sickle. The main function of sickle is for cutting grass, twig, clump, etc. Sickle itself has many designs, because of the different function of the sickle. In this report, the sickle for cutting grass and paddy is *arit*.

In Sleman, Yogyakarta, there are still many farmer use sickle to harvest the paddy. Beside works as a farmer, they usually have side job as animal breeder. They breed cows and goats for their meat and milk to get extra income. The farmer uses sickle to cut the grass, to supply food for their animal.

The existing design of the sickle handle causes the ulnar deflection to the hand wrist. This will make the farmer get fatigue easily. The existing sickle handle is made manually from wood, because of that there are no precision size and form. While the cutting edge of the sickle is made by the blacksmith.

However using existing sickle repeatedly for a long time can make the farmer get fatigue easily because stress occurs in their hand when using the sickle.



Figure 1.1. Working Position

In figure 1.1 shows stress occurs on their hand when using the conventional sickle. Conventional sickle handle is bad design so that using for long time period can cause injury in the hand.

Base on the reason above, it is needed to redesign the sickle handle. The new design of sickle handle is made in purpose to eliminate the ulnar deflection and also give the precision size of sickle handle (based on anthropometry data).

1.2. Problem Statement

What design of the sickle handle which is able to reduce or eliminate the deflection on hand.

1.3. Objective

The objective of this research is to redesign sickle handle which is able to reduce or eliminate the deflection on hand caused by existing design.

1.4. Scope of Research

- a. The respondent for anthropometry data are farmer in Sleman, Yogyakarta.
- b. The respondents are male.
- c. The age of respondent is 30 - 50 years old.
- d. The anthropometric data just need size on finger and hand only.
- e. The redesigning process emphasizes on anthropometry point of view.
- f. Force analysis will be neglected.
- g. The results are the engineering drawing and the handle prototype.

1.5. Methodology

1.5.1. Preliminary Survey

The steps which done in this preliminary survey are:

- a. Finding and collecting information to identify the problem as the research topic.
- b. Finding and collecting information from literature study which has relationship with the research topic.

1.5.2. Data Collecting Method

After doing literature study then we need to define the method for data collection. To collect anthropometric data, we must do measurement to farmer hand and finger.

1.5.3. Data Processing and Data Analysis

There are some steps to process the data in order that according to research objective:

- a. The Uniformity Test
- b. The Sufficiently Test
- c. Calculate the Percentile value from anthropometric data.
- d. Material Selection.
- e. Process Selection.

1.5.4. Report Outline

- a. CHAPTER I: Introduction

In this chapter will be explained about general description of this research that includes background, problem, objective, scope of research and methodology.

- b. CHAPTER II: Literature Review

In this chapter will be explained about state of the art of this research and the differences between this research and previous research.

- c. CHAPTER III: Theory

In this chapter will be explained about theories found on literature that become the basic of problem solving.

d. CHAPTER IV: Data

In this chapter will be explained about existing sickle handle, anthropometry data, and questionnaire result.

e. CHAPTER V: Data Analysis and Discussion

This chapter explained about data analysis then discussing the result.

f. CHAPTER VI: Conclusion and Suggestion

These chapters are explaining about the objective of research and give some recommendation for further research.

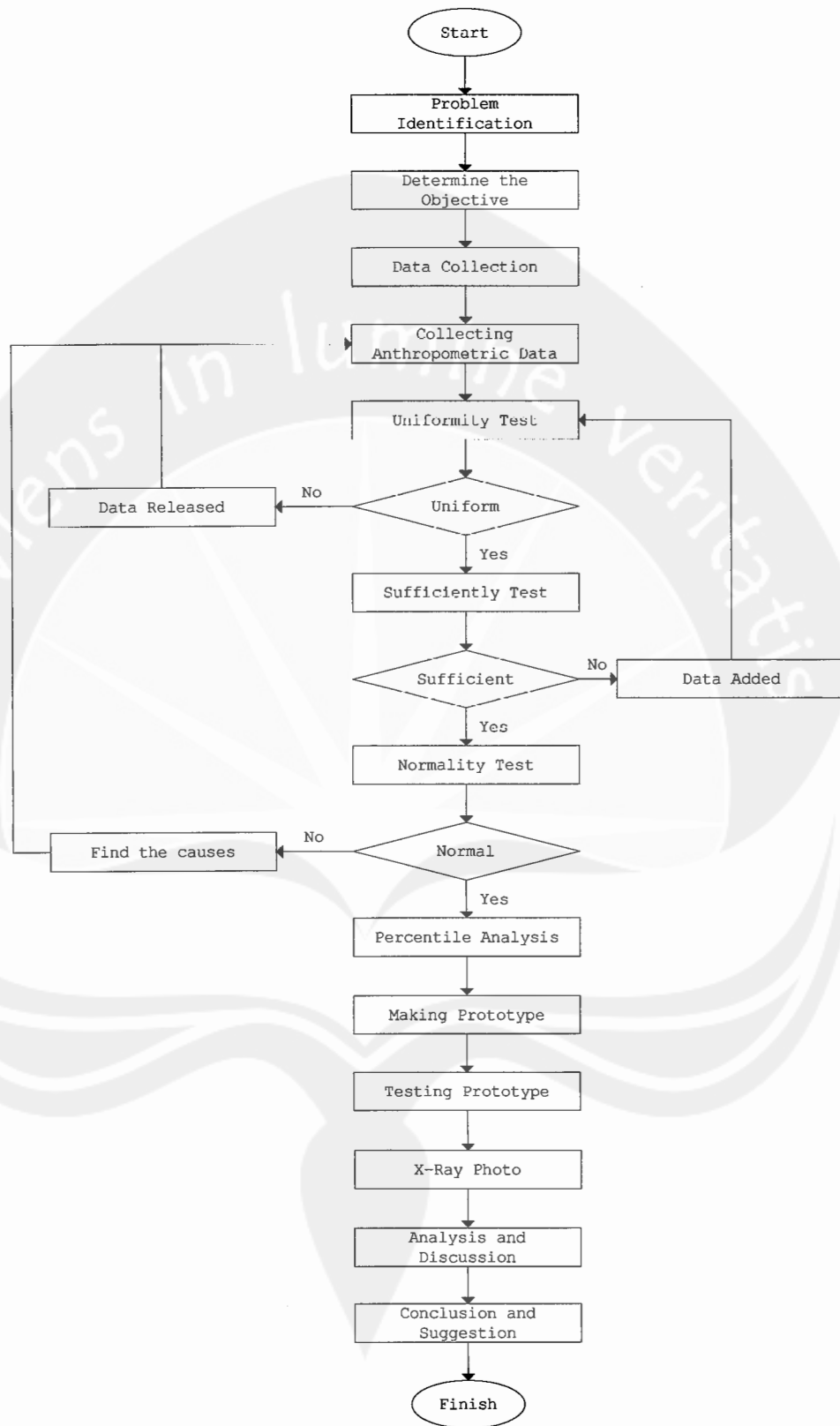


Figure 1.2. Flow Diagram of the Research