

CHAPTER I

INTRODUCTION

1.1 Problem Background

Rapid technological advances and the increasing number of needs people have contributed to the emergence of new innovations on the mobile phone, now the phone is not only used for just a communication tool but also have combined a variety of other functions such as Personal Digital Assistant (PDA), media player, camera, or GPS navigation unit. Modern mobile phones have those functions plus capabilities of a touch-screen computer including web browsing, Wi-Fi, and third party applications. A mobile phone with all those modern functions are called smartphone, a mobile phone with computing capabilities and connectivity that are more advanced than a basic mobile phone.

Android is an operating system based on Linux kernel and since its creation was designed for the purpose of touch-screen mobile devices such as smartphone and tablet computer. Android is now the most popular operating system including in Indonesia and as of 2013, sales of device that use the android operating system has exceeded the combined sales of other operating system such as windows, iOS and mac OS. Devices that use the android operating system especially android smartphone are popular in developing countries like Indonesia due to the price that is much cheaper than the iOS-based smartphone like the iPhone but with smartphone functionality that is good enough for the paid price. Along with the rapid development and penetration of mobile technology in Indonesia, android smartphone with many different specifications are also more increasingly offered in the market, make it harder for potential customers to choose one from the many options.

Each person is often faced with a situation that makes them hesitate to make a decision to choose one of the many options. To improve that situation, the priority should be made and decide which one will be taken first. In the decision making, there can appear many alternative choices that people have to choose the best among these alternatives. Data Analysis by applying both Analytic Hierarchy Process (AHP) method and Technique for Order Preference by Similarity to Ideal Solutions (TOPSIS) method can be a solution for a complex decision-making situation, by giving weight or priority for each of the desired criteria. AHP method helps solve complex problems by creating a hierarchical structure of these criteria. Whereas TOPSIS method itself is a method of decision-making comes from a concept that the chosen best alternative, beside having the shortest distance from the positive ideal solution, also has the longest distance from the negative ideal solution.

Therefore, this research will discuss the Data Analysis which is hoped to help the consumers to select the desired android smartphone with the decision-making technique utilizing both AHP method and TOPSIS method. Both of those methods can choose the best alternative from a number of alternatives based on the specified criteria. The result of its application can sort the alternatives from greatest to smallest value.

1.2 Problem Formulation

Based on the background of problem that have been described above, we can take some of the core issues to be raised, namely:

1. How to combine and apply both the AHP method and the TOPSIS method in the selection of android smartphone to suit the desires and perceptions of the customer?
2. How to design Data Analysis software to assist in the selection of android smartphone according to the prioritized criteria by the customer?

1.3 Problem Limitations

So that the discussion does not stray and remains consistent with the goal of what has been specified, the problem will be limited, as follows:

1. Criteria to determine the priority to decide ranking of the android smartphone alternatives, as follows:
 - a) Price in rupiah
 - b) Android operating system version
 - c) Screen size
 - d) Screen resolution
 - e) Primary camera
 - f) Secondary camera
 - g) Processor cores
 - h) Internal memory
 - i) RAM (Random Access Memory)
 - j) Battery capacity
2. Android smartphone alternatives data used in this research are limited to smartphones that have android as its operating system and the price range between 1 million to 3.5 million rupiah.
3. The method used is the combined method of AHP and TOPSIS. This research will not address the differences between both the AHP method and the TOPSIS method with other methods for decision-making and the level of confidence in the use of the system.
4. Main programming language used for the implementation of Data Analysis software is PHP, a server-side scripting language designed for web development, utilizing Flat File as its database.

1.4 Research Objectives

Based on the formulation of problem that has been described above, the objectives of this research are:

1. Applying a combination of two methods, namely the method of AHP and TOPSIS to Data Analysis.

2. Designing Data Analysis software to help customers choose android smartphone according to their wishes and perceptions.

1.5 Research Benefits

The hoped benefits to be had from this research are:

1. The result of this research may be one of various means of alternative decision-making technique for the customer to choose android smartphone.
2. As a reference for similar research, especially related to Data Analysis and the application of both methods of decision-making, namely AHP and TOPSIS.

1.6 Research Method

In the preparation of this research, the student perform the steps in the application of the problem-solving research method. The steps of those research method are:

1. Literature study
At this stage, the student read and study reference books or resources related to this research from the textbooks or the websites.
2. Data collection
At this stage, the student collecting data related to android smartphone data specifications.
3. System design
At this stage, the student design the user interface, data flow diagram (DFD), and algorithm of Data Analysis software.
4. Implementation
At this stage, the student realize the planned system design above.
5. Testing
At this stage, the student test the system to determine whether the system is in conformity with the requirements.
6. Make Report
The student make a report as documentation of research results.

1.7 Systematic Approach to Writing Report

Systematic approach to writing of this report consists of several chapters, namely:

I. INTRODUCTION

This chapter will explain problem background, problem formulation, problem limitations, research objectives, research benefits, research method, and systematic approach to writing report.

II. THEORETICAL BASIS

This chapter will discuss the theories related to Data Analysis, Decision Making Process, AHP, TOPSIS, System Design, PHP and Flat File.

III. ANALYSIS AND PROBLEM SOLVING

This chapter will discuss the analysis and problem-solving of android smartphone selection using the combined method of AHP and TOPSIS.

IV. SYSTEM DESIGN

This chapter will discuss the design process of software.

V. IMPLEMENTATION AND SOFTWARE TESTING

This chapter will discuss the implementation and testing of software.

VI. CONCLUSIONS AND RECOMMENDATIONS

The last chapter will include the conclusions from this report and some recommendations for further development of this research.