

Smartphone Market Analysis Using Dynamic Multi-Criteria Decision Methods

Ruey-Chyn Tsaur, I-Fei Chen and Yin-Cheng Chen

Tamkang University

Abstract

The iPhone introduced an innovative multi-touch interface to satisfy customers' attractive requirements. Thereafter, most smartphone manufacturers begin to mimic this innovation in their new generation products for a dramatically increasing demand market. Although the smartphone market includes many types and functions of products, there are no smartphone selection methods to support customers to select an effective smartphone. In order to cope with such a problem, this paper proposes a multi-criteria selection method to evaluate operating systems and hardware and software specifications using AHP and SMART-ROC, respectively. For illustration, this paper uses the proposed methods to analyze the customer utility and benefit-cost of 24 popular smartphones in the market. The results show that the most popular smartphone does not have the best cost-benefit. This paper suggests customers select smartphones by referring to the cost-benefit approach except when they are looking for a communications product for a special purpose.

Keywords: Smartphone, AHP, SMART-ROC, cost-benefit analysis.

1. Introduction

In 2007, Apple launched the intelligent iPhone handset, which consumers lined up to purchase. With its simple and easy-to-use user interface and its strong application platform, it has forced other smartphone manufacturers to transform and be more innovative in order to be competitive. Today, smartphones have many functions that conventional personal computers used to provide, such as Web browsing, email, dynamic community updating, and even video conferencing [1]. Consequently, smartphones have greatly increased their penetration ratio and acceptability for most users. As smartphone technologies continuously evolve, the definition of a smartphone is becoming ambiguous. Hsu [8] claims that it is too narrow to define the smartphone only using hardware specifications and functions; and he suggests that the definition should be based on the degree of "smartness". Therefore, in addition to voice communication, the smartphone should be equipped with an open operating system (OS) and sufficient computational capability. The user can select application software to extend the smartphone's capacity