SELECTION OF THE BEST LAPTOP MODEL BY THE APPLICATION OF FUZZY-AHP METHODOLOGY

By

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ABSTRACT

Multi criteria decision making is one of the important areas in decision making process that helps the decision maker to select the best option among different available alternatives having different number of criteria as well as sub-criteria. The criteria as well as sub-criteria may have different levels of preferences and some of them may be conflicting in nature among themselves with respect to the most desired decision characteristics. In this present analysis one of the MCDM tools, i.e. FUZZY-AHP is adopted to select the best laptop models among 6 different models actually, available in the market having different configurations. The objective of this paper is to propose the best model among these 6 models based on different criteria (e.g. RAM, Hard Disk Capacity, Processor, Screen Size, etc.) as well as sub-criteria (e.g. The laptop models may be available in different screen size like 14-inch, 15.6 inch, etc.). A physical market survey has been done to know the choices and preferences of the common laptop users and based on this market survey the analysis have been carried out.

Keywords: MCDM, Laptop Computers, AHP, FUZZY.

INTRODUCTION

Laptops are important gadgets that help users to complete their work very quickly and timely. It is mostly used by students, professors, service holders, and people associated with other professions also, so choosing the best laptop according to their requirements is quite a very tough task. There are lots of laptop models with different configurations available in the market and that which laptop models best suits their profession is the only objective of this research paper. The whole analysis done in this paper is based on a physical market survey of 100 people (mostly students) and the best laptop model is chosen from 6 available models in the market that are mostly chosen by the students.

Multi Criteria Decision Making (MCDM) is the sub-branch of operations research that enables the decision maker to choose the best process and strategies under certain conflicting situations that arise while purchasing or selecting the products among different available alternatives (Kang, Wei, Li, & Deng, 2012; Ayhan, 2013). For example, while purchasing a car sometimes the buyers get confused which is the best car model to select since there are lots of different criteria to be considered while purchasing a car, e.g. comfort, mileage, capacity, style, cost, etc. (Srikrishna, Sreenivasulu, & Vani, 2014). There are lots of different MCDM tools available in the market implemented for the analysis of this type of problems. Some of the common MCDM tools are AHP (Saaty, 1980), TOPSIS (Hwang & Yoon, 1981), VIKOR (Opricovic & Tzeng, 2004; Opricovic & Tzeng, 2007), PROMETHEE (Brans, 1982), SMART (Risawandi & Rahim, 2016), SAW (Fishburn, 1967), etc. All this MCDM tools works on their own principle and applied according to their field of applications. Sometimes two or more MCDM tools can be combined together to form a hybrid MCDM tools like FUZZY-TOPSIS (Büyüközkan & Çifçi, 2012; Sun, 2010), AHP-SAW (Cahyapratama & Sarno, 2018) etc., for the better result and further modification of the analysis.

In recent years, several researchers adopted different MCDM tools and applied in many areas for supplier selection (Ayhan, 2013; Venkateswarlu & Sarma, 2016),