Czech University of Life Sciences Prague

Faculty of Economics and Management

Department of Economics

Bachelor Thesis

Application of mathematical model in consumer decisionmaking in product selection

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Application of mathematical model in consumer decision making in product selection

Abstract

The bachelor`s thesis is devoted to the study of the possibility of using multi-criterion analysis methods to help the consumer when choosing from the many offered products, the best option technically and economically advantageous, using the example of the "alza.cz" household appliances store in Prague.

The theoretical part of the dissertation describes the basic concepts of multi-criteria analysis of decision-making, methods for determining the best alternatives and deciding on the choice of goods by the consumer.

In the beginning to the practical part, describes the store and the choice problems facing the consumer. Based on the methods that were presented in the theoretical part, the necessary calculations were made. After obtaining the results, it is concluded that a consumer can use multi-criterion analysis methods when choosing a product.

All calculations are based on data taken from the real store and from consumers of this store by the survey method.

Keywords: Multi criteria analysis, decision making, customer.

1. Introduction

Humanity has faced the problem of choice since the most primitive times. Where to go hunting? Where to build a house? What to plant for a good harvest? What product is profitable to buy? And in each case, men wanted to make the best, most correct, most profitable choice. But this did not always work out.

Over time, the problem of choice has become even more relevant and influenced human life in many ways. For example, managers of various levels and ranks are forced to engage in the selection of personnel of their units, choose one or another strategic line of behavior, and make specific economic decisions. Specialists in various fields of science and technology, who are engaged in the development of various kinds of devices and appliances, design certain structures, new models and types of cars, airplanes, etc., strive constantly to choose the best engineering or design solution. Bank employees choose objects for investment, economists of enterprises and firms plan an optimal economic program, etc. [1]

The complexity of the choice has increased with the development of society. A large number of possible options with a variety of different criteria have made it difficult to make the right choice and influenced the quality of the decision more and more. Therefore, it became necessary to study this topic, and thus, decision theory began to emerge. Decision theory studies the problems of making the best choice. It can help you learn how to make more informed choices by making effective use of the information you have about preferences. This theory helps to avoid making obviously bad decisions and take into account the possible negative consequences of ill-considered choices. An extremely wide and important class of choice problems from a practical point of view is made up of multicriteria problems, in which the quality of the decision made is assessed by several criteria simultaneously.

2. Objectives and Methodology

2.1   Objectives

The main goal: Analyze the possibility of using multi-criteria analysis as a tool to help theconsumer select an item.

Goals:

- Perform theoretical research and description of methods of multi-criteria analysis.

- Identify the most appropriate multi-criteria analysis methods to use in consumerproduct selection.

- Collect real data and survey consumers of the store "alza.cz" in Prague.

- Chose the most appropriate product using the methods selected and the data obtained.

- Analyze the results and make general conclusion towards possible application ofthe multi-criterion analysis by customers.

2.2 Methodology

The thesis consists of two parts: theoretical and practical. The theoretical part is based on the study and analysis of information taken from literary sources. This part describes the concepts of multi-criteria analysis, and explains more fully the methods used in MCDA:

- Methods of determining weight coefficients of criteria;
- Multi-criteria decision-making methods for selecting the best alternatives.

In the practical part, the work is conducted to collect and analyze the necessary information from real sources, select and substantiate the most suitable methods of multi-criteria analysis for calculation and describe the situation of consumer decision-making on the selection of the best product using selected methods of multi-criteria analysis

4.4 Conclusion

The conducted studies of the possibility of using MCA methods to help the buyer in choosing a product have shown:

1. The person acting as the buyer performs actions related to the stages of the decision-making process. At the same time, the buyer goes through several stages of the decision-making process, often without realizing it.

2. At the stage of making a final decision about choosing the best alternative, studies have shown that the use of multi-criteria analysis methods can lead to better results, MCDM can be used to structure and map the decision-making process, and the user must clearly define their priorities and preferences.

3. To make a final decision, it is possible to use various methods of MCA, but in the consumer environment, when choosing a product, the simplest, fastest and not difficult to calculate methodis necessary.

4. Comparing the calculation methods, I found that the calculations performed by the TOPSIS and ELECTRE methods are the most complex in mathematical terms, time-consuming and difficult to use for the average consumer. Many MCDM methods are not very intuitive and are too complex for the client, not even readable for the company owner.

5. From the simpler methods, I chose SAW, and according to my results, this method is suitable for this purpose.

6. The SAW method can be recommended as part of the customer support system included in the eshop.

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