Universiti Teknologi MARA

Selecting Supplier for An Optical Shop by Using Yuen's Fuzzy TOPSIS Method

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STUDENT'S DECLARATION

I certify that this report and the research to which it refers are the product of my own work and that any ideas or quotation from the work of other people, published or otherwise are fully acknowledged in accordance with the standard referring practices of the disciplines.

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ABSTRACT

In today's world, there exists an intensive competition between enterprises especially those in the same sector or selling similar products as others. Adenium Optical is one of the enterprises facing competition in meeting the customer needs in selling eyewear products. One of the issues that has arisen in this shop is abundant untouched products that being ignored by the customers that causing losses to the business. There are several factors that resulted in such predicament, and wrong supplier selection is one of them. Therefore, this study will assist the owner of Adenium Optical to select the best supplier who will be able to supply the right quality products with the right price and able to give services at the right time with the right quantities. Yuen's Fuzzy TOPSIS has been applied in this study to select and rank the five selected suppliers in order to handle the linguistic variables evaluated by the decision makers. Five criteria have been taken into consideration and Best Non-fuzzy Performance (BNP) method was employed in ranking these criteria; quality, price, delivery, technology, and supplier profile. Yuen's Fuzzy TOPSIS results were generated using Microsoft Excel. It shows that the first-ranked supplier is Supplier 5 with the value of closeness coefficient is 0.886. This value is chosen based on the nearest to Positive Ideal Solution (PIS) and farthest from Negative Ideal Solution (NIS) which are nearest to 1 and farthest from 0. Meanwhile, the lowest value of closeness coefficient is 0.160 and it belongs to Supplier 2 with the lowest rank. Regarding the BNP's calculation result, it is shown that there are three criteria having the same value of 0.811 which are quality, price, and technology. They were classified as the most important criteria in evaluating the supplier and the least important criteria are delivery and supplier profile which both have identical BNP value which is 0.756.

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