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# SUPPLIER SELECTION CRITERIA IN UiTM ARAU CAFETERIA USING FUZZY AHP METHOD

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**ABSTRACT** - Supplier selection is the procedure of determining with which prospective supplier that an organization should conduct business. In this study, the most preferred supplier selection criteria were chosen using the Fuzzy AHP method. The research aim is to determine the criteria when selecting the supplier, identify sub-criteria that impact in selecting the supplier and investigate the best criteria in UiTM Arau. In this study, three decision-makers examine three criteria and six sub-criteria to determine the supplier selection criteria. The criteria are quality of product, delivery service, and performance history. At the same time, the sub-criteria are warranties and claim policies, reputation in industry, time and cost, packaging ability, communication system and technical capabilities. The data is collected through the distribution of a questionnaire to experts in the area of study. The obtained data was calculated using a formula and Microsoft Excel. Quality of Product is the most preferred criteria, with a weight of 0.7123. Delivery Service is the second-best criteria, with a score of 0.1821, while Performance History is the lowest-ranked criteria in supplier selection, with a score of 0.1056. According to the statistics, Quality of Product is the best criteria, outperforming Delivery Service and Performance History.

**Keywords:** Fuzzy AHP, supplier selection, criteria.

## 1. INTRODUCTION

There are many challenges faced by the buyer to select the best supplier. The cafeteria managers in UiTM Arau cafeteria also are not able to identify the main criteria to select their supplier. In this research, Fuzzy AHP methods are used to solve the model. By using this method, the most preferred criteria in supplier selection criteria can be decided. Fuzzy AHP method can identify the importance of sub-criteria in selecting the supplier and will be utilized in ranking the criteria and sub-criteria. This method depends on the opinions of experts in the field. AHP combined with fuzzy logic also known as Fuzzy AHP, is widely used to handle uncertainty and fuzziness to help decision makers solve difficult challenges with several competing criteria (Kubler et al., 2016). The purpose of this research is to determine the most preferred criteria in supplier selection criteria using Fuzzy AHP method.

## 2. METHODOLOGY

The purpose of our study is to use fuzzy AHP to identify the most important criteria for selecting supplier in the UiTM cafeteria. The data used in this research will be collected from three specialists who were managers at the UiTM Arau cafeteria. They were selected as decision-makers for this study. Decision making is harder when limitations are imprecise, vague, uncertain and fuzzy in nature. Multi criteria decision making (MCDM) approaches such as Fuzzy AHP method are used to handle real-world issues with several competing constraints. Fuzzy AHP is an appropriate strategy for decision-making difficulties, and it assists in achieving more accurate findings while researching and reviewing supplier selection criteria. The best-scoring option is presented as a referral to the decision-maker.

## 3. RESULTS AND DISCUSSION

Based on the results, Fuzzy AHP method can offer an accurate way to solve the model by comparing the results. This study concludes that Quality of Product is the most influential supplier selection criteria with a normalised score of 0.7123. Delivery Service comes in second place, with a normalised score of 0.1821. Finally, with a normalised score of 0.1056, Performance History is the lowest ranked of the three criteria studied. Based on this research, the results of this study shows that Fuzzy TOPSIS is a good method for ranking alternatives based on several criteria.

## 4. NOVELTY OF RESEARCH

Fuzzy Analytical Hierarchy Process (FAHP) is used to rank the most important criteria influencing the supplier selection criteria. This method enables the customer to achieve more accurate findings while researching and reviewing supplier selection criteria, resulting in a more detailed and precise evaluation of each of the criteria. Through the use of Fuzzy AHP, this study improves the current study by providing a novel approach to identifying and ranking the criteria that influence the selection supplier.

## 5. CONCLUSION

In conclusion, Fuzzy AHP was able to precisely rank the most important criteria affecting supplier selection criteria in UiTM Arau cafeteria. Among them, Quality of Product showed up as the most important factor in determining the supplier selection criteria. Therefore, we can say that Quality of Product is the best criteria for choosing supplier in UiTM Arau cafeteria, even better than Delivery Service and Performance History.

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