

## **A COMPARISON BETWEEN TWO TYPES OF FUZZY TOPSIS METHOD IN RANKING THE CAFETERIA IN UiTM PERLIS**

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### **ABSTRACT**

Cafeteria is the main place for students to get their daily meals inside the campus. Therefore, it plays a very important role in the university as it supplies and sell food and drinks to students, staff and outside visitors. Nowadays, the percentage of students has increased, and it contributes to the increasing demands of foodservices and consequently raises the competition among cafeterias in the university. Hence, customers are having hard time to choose which cafeteria that satisfies their wants and needs. Thus, the purpose of this study is to select the best criteria in choosing cafeteria, compared the two types of method in terms of ranking alternatives and steps and then rank the cafeteria. Therefore, in this study the classical Fuzzy Technique for Order Preferences by Similarity to Ideal Solution (TOPSIS) method proposed by Chen in 2000 and the simplified Fuzzy TOPSIS proposed extension by Sodhi in 2012 is used to solve this problem. This study is focused on the criteria of the cafeteria in Universiti Teknologi MARA (UiTM) Perlis. The criteria that are considered in this study are price and value fairness, food and beverage quality, food and beverage variety, food and beverage freshness, food and beverage appropriate temperature, environment, cleanliness of plates and glass provided, cleanliness of dining area, staff performance and service quality. Moreover, this study will give benefits to the owner of the catering business, the customers and the future researcher. The result of this study is evaluated by using Microsoft Excel spreadsheet. As a result, the criteria that are preferred in this study are price and value fairness, food and beverage variety, food and beverage freshness, environment, cleanliness of dining area and staff performance. These criteria were preferred because they get the highest BNP value among other criteria. As expected, the final ranking order of cafeteria showed the same results for both methods. The results showed that Epal Cafeteria was ranked first as it has the highest value of closeness coefficients among the four cafeterias whereas the lowest rank goes to Mangga Cafeteria as it has the smallest value of closeness coefficients among the four cafeterias. Finally, this study can be implemented by using another Fuzzy TOPSIS method which is Yuen's method and can be applied in another case study such as restaurants selection problem.

**Keywords:** Cafeteria selection problem, Customer satisfaction, Chen's Fuzzy TOPSIS method, Sodhi's Fuzzy TOPSIS method, Best Non-Fuzzy Performance (BNP), Triangular Fuzzy Number (TFN), Linguistic variable.