

IDENTIFYING CONSUMERS' PREFERRED MARKET OUTLET FOR PURCHASING VEGETABLES AMONG THE RURAL COMMUNITY USING FUZZY VIKOR

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Abstract

Vegetables play an important part in maintaining a healthy diet and are a key source of income for rural communities in Malaysia. This study aims to rank the criteria that influence rural consumers in choosing market outlets to purchase vegetables and to rank the preferred market outlets based on the selected criteria in purchasing vegetables among rural consumers. This study applied the Fuzzy VIKOR method to rank the criteria and the market outlets. The four market outlets in Langkap, Perak were evaluated by 88 primary grocery buyers on four criteria which are convenience, freshness, price and social connection. The four types of market outlets evaluated in this study included Eonsave Supermarket, Public Market, *Pasar Tani* and Fresh Mart. The result revealed that Public Market is the most preferred market outlet by the primary grocery buyers to purchase vegetables in Langkap with the smallest VIKOR index. Among the criteria, convenience was perceived as the most important by the primary buyers in choosing the market outlet to purchase vegetables that meet their needs and budgets. The findings of this study will help the retailers to improve their business and assists the farmers in making better choices for supplying their vegetables to the ideal market. It can help the local authorities to make improvement on market facilities and cleanliness, which may help increase the local economic growth.

Keywords: VIKOR, vegetables, market outlet, Langkap

1. Introduction

There is still no clear indication of which outlet best meets consumer preferences in Langkap. This causes retailers and authorities to rely on assumptions, often leading to poor planning and service inefficiencies. Such physical discomfort may create a negative impression from consumers towards the market. The objectives of this study are to rank the criteria influencing rural consumers in choosing market outlets for purchasing vegetables, and to rank the preferred market outlets based on the selected criteria. This study involved 88 primary grocery buyers representing 268 households in Langkap and included demographic factors such as gender, age, occupation, household size, and frequency of vegetable purchases. The evaluation focuses on criteria such as convenience, freshness, price, and social connection (Ha et al., 2022). This study assessed four market outlets in Langkap, which are Eonsave Supermarket, Public Market, *Pasar Tani*, and Fresh Mart.

2. Methodology

This study employs a fuzzy MCDM approach. Data were collected through a questionnaire from 88 primary grocery buyers and analysed using Fuzzy VIKOR method. The analysis involved identifying alternatives, criteria and respondents, determining linguistic variables, calculating the aggregated fuzzy weights of criteria and fuzzy ratings of alternatives, constructing a fuzzy decision matrix, determining the best and worst fuzzy values for each criterion, calculating the separation measures from fuzzy best value and fuzzy worst value, computing and defuzzifying the VIKOR index to rank the alternatives (Koppihraj et al., 2020). All calculations were performed using Microsoft Excel due

to its ease of use and practical functionality. The overall approach supports clear decision-making in identifying the most suitable market outlet for vegetable purchases.

3. Results / Findings

The implementation of Fuzzy VIKOR demonstrated its effectiveness in ranking both the criteria and market outlets based on consumer preferences. The results identified Public Market as the most preferred market outlet, followed by Econsave Supermarket, Fresh Mart and *Pasar Tani*. Convenience was perceived as the most important criterion by primary grocery buyers, followed by freshness, price, and social connection. The analysis confirmed that consumers were able to clearly identify their preferences based on the selected criteria, with criteria such as convenience, freshness, and price supporting informed decision-making. The results highlight the potential of this approach to enhance understanding of rural consumer behaviour and to guide local authorities, retailers and farmers in improving market products and services.

4. Novelty of Research / Product / Project

This study presents a novel integration of fuzzy multi-criteria decision-making techniques, specifically Fuzzy VIKOR, to evaluate rural consumer preferences for vegetable market outlets. Previous studies have often overlooked rural contexts or relied on simpler decision-making methods, limiting their ability to capture detailed and varied consumer behaviour. This study offers a more structured and adaptive approach that reflects diverse consumer priorities. By allowing fair comparison of alternatives, the Fuzzy VIKOR method incorporates both quantitative and qualitative factors in the ranking process. The findings contribute to a better understanding of rural purchasing behaviour and introduce a practical decision-making model to support local authorities, retailers and farmers in improving market services, accessibility, and supply strategies in rural areas.

5. Conclusion or Future Work

This study demonstrates the use of fuzzy VIKOR in identifying preferred market outlets based on rural consumer preferences. Future research may adopt Fuzzy TOPSIS as an alternative method, explore more relevant criteria such as distance and vegetable origin, and compare findings between rural and urban communities to enhance result applicability.

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