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A DECISION-MAKING FRAMEWORK FOR SMALL RESTAURANT LOCATION SELECTION USING THE ANALYTIC HIERARCHY PROCESS

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Abstract

Small restaurant businesses often encounter challenges in achieving sustainability and success. Among these, poor location selection ranks as the leading cause of failure, given that location is a strategic decision that anchors the business. The objectives of the study are to identify the most influential factor for location selection, and to determine the most suitable location type for small restaurants. Surveys were conducted with small restaurant owners from three distinct location types such as industrial, residential, and commercial. The analysis revealed that location characteristics were the most important factor in industrial areas, cost was most significant in residential areas, and demographic attributes were most critical in commercial zones. Furthermore, Decision Maker 1 and Decision Maker 3 ranked commercial zones as the most favorable for opening a small restaurant, whereas Decision Maker 2 favored residential zones. These insights provide valuable implications for entrepreneurs and urban planners involved in small restaurant development.

Keywords: decision-making, location selection, Analytic Hierarchy Process

Introduction

With the growing number of restaurants, the industry has become increasingly competitive. Among these, the choice of location stands out as a decisive factor which often determines whether a restaurant thrives or fails in its early years. A study found that young companies have a higher probability of failing ranging between 64% and 96% as early as four years before the failure [1]. The motivation for this study comes from this critical challenge of selecting a strategically sound location that aligns with market demands and customer accessibility.

Previous studies have consistently emphasized the importance of location in establishing and maintaining a restaurant brand. [2] noted that a well-situated and visible restaurant is a key contributor to brand success, especially when located in densely populated areas. Similarly, [3] and [4] highlighted that an optimal site not only attracts a steady customer base, but also improves a business's competitiveness and profitability. Location decisions are inherently strategic as they anchor a business in space and directly influence its visibility, accessibility, and long-term viability.

[5] reported that a large proportion of restaurant failures occur in the first two years of operation. This underscores the need for a robust decision-making process when se-

lecting a location. For small restaurants with limited capital and operational bandwidth, an unchosen site can be irreversible and financially devastating. Therefore, this study is timely and significant and aims to deepen the understanding of how key location factors influence success in small-scale restaurant ventures.

Specifically, the study employs the Analytic Hierarchy Process (AHP) to evaluate the importance of various factors such as cost, demographic characteristics, competition, physical features, and visibility that influence restaurant location decisions. The research focuses on three primary types of location, industrial, residential, and commercial areas, with input collected from experienced small restaurant owners in Johor and Negeri Sembilan. The objectives of this study are to identify the most influential factor for each type of location and to determine the most favorable location for small restaurant businesses based on expert evaluations.

Research Methodology

This study adopts a decision-analytic approach to understand and prioritize factors that influence the selection of small restaurant locations. To achieve this, the Analytic Hierarchy Process (AHP) was applied as a Multi-Criteria Decision Making Tool (MCDM). Given the focus of the niche on experienced small restaurant owners, a purpose-sampling was used. This method ensures that only respondents with relevant industry knowledge and experience participated in the study.

There is no general rule to determine the proper sample size for AHP, however, the selection of respondents and their understanding of the survey is essential [6]. Decision makers are selected purposefully based on their experience and knowledge of this study issue. The owners are selected based on the three different types of location which are Industrial, Residential and Commercial.

Data were collected using a structured questionnaire, adapted from the validated instrument developed by [7]. The questionnaire was divided into several pairwise comparison matrices, where decision makers compared the relative importance of five key criteria: Location Characteristics, Demography, Cost, Physical Features and Competition

Each criterion was evaluated on three potential location types, industrial, residential, and commercial. The responses were captured using the Saaty scale 1–5, ranging from equal importance (1) to extreme importance (5). To improve response rates and reduce bias, data collection was carried out using a mixed-mode approach, combining online surveys and follow-up telephone interviews [8].

Analytical Hierarchy Process (AHP) Steps

The AHP methodology was implemented as follows:
Step 1: Develop Hierarchical Structure
A hierarchy was constructed with the main goal (optimal restaurant location) at the top level, followed by the five evaluation criteria and the three alternative locations at the bottom level.

Step 2: Pairwise Comparison Matrices

Decision Makers were asked to perform pairwise comparisons of criteria and location alternatives based on their subjective judgment and practical experience.

Step 3: Normalize the Matrices

Each matrix was normalized by dividing the value of each cell by the sum of its respective column, allowing for comparison across different scales.

Step 4: Calculate the Priority Vectors

The average of each row in the normalized matrix was computed to generate the priority vector, representing the relative importance of each criterion.

Step 5: Evaluate Consistency

To ensure judgment reliability, the Consistency Index (CI) and Consistency Ratio (CR) were calculated. CR values 0.10 were considered acceptable (Saaty, 1990).

Step 6: Compute Overall Priorities

Final location rankings were obtained by aggregating the criteria weights and multiplying them by the corresponding priority scores of each location alternative.

Step 7: Interpret and Compare Results

The overall scores were then used to determine the most favorable restaurant location according to each decision maker, offering a comparative perspective across different urban zones.

Results and discussion

Demographic Profile of Decision Makers

Table 1 shows the three decision makers participated in this study, each representing a distinct restaurant location types where industrial area as DM1, residential area as DM2, and commercial area as DM3. All participants were experienced female restaurant owners aged between 36 and over 56 years. Their businesses had been in operation for at least five years, with most reporting monthly sales ranging from RM10,000 to over RM20,000 and employing between 5 to 10 full-time staff. These demographic characteristics align with the SME criteria, validating their suitability as knowledgeable evaluators in the location decision-making process.

Table 1: Demographic Profile of Decision Makers

Demographic	DM 1	DM 2	DM 3
Gender	Female	Female	Female
Age group	36 - 45 years old	$>$ 56 years old	46 - 55 years old
Restaurant Operating	$>$ 15 years	5 - 10 years	$>$ 15 years
Monthly Sales	RM10K - RM15K	RM10K - RM15K	$>$ RM20K
Number of employees	5-10	5-10	5-10

Priority Factors Across Location Types

The AHP analysis allowed the identification of the most influential factors for each decision maker based on calculated priority vectors. Table 2 shows the priority vector for

each criterion where Location Characteristics (F1), Demography (F2), Cost (F3), Physical Features (F4) and Competition (F5). DM1 (Industrial area) assigned the highest weight to Location Characteristics (priority score: 0.4363). This is expected in industrial zones, where accessibility, visibility from main roads, and logistic efficiency are crucial to attract transient workers and ensure smooth supply chain operations. DM2 (Residential area) ranked Physical Features (0.3262) as most important. For restaurants in residential neighborhoods, features such as parking availability, space layout, and proximity to households can significantly influence customer convenience and retention. DM3 (Commercial area) emphasized Demography (0.4065) as the top criterion. Commercial zones typically benefit from high foot traffic and diverse customer profiles, making it essential to understand population density, income levels, and consumption behavior. These findings reflect real-world expectations and reinforce existing literature that location-related priorities vary depending on the business environment [9, 10].

Table 2: The Most Important Factor According to Each Decision Maker

Decision maker	F1	F2	F3	F4	F5	Most important factor
DM1	0.4363	0.2125	0.1232	0.1681	0.06	F1
DM2	0.1730	0.2101	0.3262	0.1159	0.1748	F3
DM3	0.2466	0.4065	0.1840	0.1151	0.0478	F2

Best Location Alternative According to Each Decision Maker

The final rankings of the three location alternatives which Industrial (L1), Residential (L2), and Commercial (L3) were derived by calculating the overall priority vector, which aggregates the weighted contributions of each factor.

Table 3: Rank Comparison for Every Alternative

Decision maker	L1	L2	L3	Rank
DM1	0.2336	0.1301	0.6363	L3, L1, L2
DM2	0.3818	0.4612	0.1569	L2, L1, L3
DM3	0.1498	0.3711	0.4891	L3, L2, L1

Table 3 shows that DM1 ranked Commercial areas (0.6363) as the most favorable, despite operating in an industrial zone. This suggests a forward-looking perception that commercial areas offer better growth potential due to higher visibility and customer base. DM2, who operates in a residential area, ranked Residential zones highest (0.4612). Her judgment aligns with her practical experience and reflects satisfaction with the residential market's cost structure and customer consistency. DM3 also favored Commercial locations (0.4891), consistent with her operational environment. This affirms the commercial zone's capacity to support customer-driven businesses, particularly in food services.

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