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Priority Analysis of Location Factors for Food Service Store

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Abstract

Background/Objectives: Today, the food service industry is an important service industry that meets basic human needs. Location is a very important issue in the food service business, and it also has a decisive influence on consumers' choice of stores.

Methods/Statistical analysis: In this study, location factors were designed and the relative priority of each factor was measured in order to analyze the priorities of location factors of restaurants using Analytic Hierarchy Process(AHP).

Findings: The weight and priority of location factors were measured in order to measure the relative importance of restaurant owners using the AHP technique. The results are summarized as follows. First, Level 1 showed relatively high importance in order of commercial area environment (0.29), store feature (0.26), competitor (0.23), and accessibility (0.22). Second, the location factors of commercial area environments had a higher priority for floating populations. In the store feature, fixed cost was high priority. Competitors valued direct competitors, and accessibility focused on parking areas. Third, overall priority was high in order of floating population, fixed cost, and hospitality facilities.

Improvements/Applications: These results will serve as a reference model for choosing locations for those preparing for a restaurant business.

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1. Introduction

As the standard of living for the people rises, the food service industry is constantly changing and developing to meet the needs of consumers. Today, the food service industry is an important service industry that satisfies the basic needs of human beings and is a growing industry that plays a pivotal role in the health and cultural life of the people along with the economy [1]. The environment of the food service industry is constantly changing with growth, and in order to adapt to such changes, the dietary life has evolved in various and complex ways, and the pattern of eating out is changing rapidly [2]. The growth of the food service industry does not mean that many restaurants are successful. According to the IRS data, only 7.3% of restaurants

have been in business for more than 10 years, and 20% of the 600,000 restaurants nationwide that have paid VAT have continued to operate for more than 5 years, while the remaining 80% have 5. It is said to be closed in a year. In addition, 12.1% of restaurants are closed within 6 months after opening, and 25.6% of restaurants are closed within a year [3]. It is interpreted that the establishment of the restaurant business is active and many fail.

Statler, a pioneer in the modern hotel industry, had earlier emphasized the importance of being in the hotel industry [4]. In addition to hotels, the importance of location decision making in various service areas, such as dining out [5] and retail [6], and medical [7] is highlighted. Location is a very important issue in the restaurant business, and it also has a decisive influence on consumers' choice of stores [5]. This is because the restaurant is an industry in which both production and consumption can be easily accessed and can be competitive compared to other businesses, and it is the most fundamental means. Good location is imperative for a successful business [9].

Other variables are easy to apply in the short term in response to changes in the environment, whereas once a location is determined, it is not easy to change the location because a lot of capital is released. Location is the most important decision in the catering business because it is the fixed investment with the longest investment characteristics [9]. Despite the importance of location, there are few empirical studies that reveal the factors that influence store operation performance and location decision-making factors.

Therefore, this study aims to help the decision-making of restaurant start-ups through the empirical analysis of location selection by using AHP(Analytic Hierarchy Process) technique.

2. Literature Survey

Location is the location where the store is located, which means where the physical facility will be located [10]. Decision making in location selection is a long-term investment, making it difficult to respond to changes in the environment more rapidly than decision making in other sectors. Therefore, it is necessary to analyze and evaluate the location decision factors of the restaurant industry [11].

Proper location of the restaurant business is important to rationalize management and to bring about several economic effects in terms of investment value [12]. If you choose a good location, you can not only advertise the location of the store to potential customers without advertising, but also prevent the risk by compensating for the lack of experience when starting a business. On the other hand, failure to select a location can result in not only investment losses but also a deficit that eventually leads to closure of business [13].

Lee and Sul [14] reviewed from the customer's point of view what to look out for when choosing a location to best predict and reduce the risks that might arise from the restaurant business. The location preference factors of customers were analyzed by pedestrian access, clustering, and vehicle access. In Kim's research [15], the main factors to consider in selecting location are the visibility of the main access route, the accessibility of the main access route, the number of potential customers passing through the store, the distance from the main potential market, and the harmony with the surrounding environment. Kim's research [16] showed that the locational factors influenced the choice of eating out places in order of visuality, accessibility, location, and clustering. In Song's research [17], demographic variables, visibility, accessibility, prospects, floating population, distance from potential market, and surrounding environment were the main location selection factors. Kim [18] insisted that the owners of the restaurant franchise should consider the location of merchants as an important factor if they think the location of stores is good. Shin and Moon [19] analyzed the influence of

the location characteristics of 117 large coffee shops of the C coffee franchise in Seoul on sales. Sin and Choi [20] analyzed the relative importance of accessibility, marketability, competitiveness, economics, visibility, and population environment characteristics through analysis of the market location of franchise coffee shops in Busan.

In the above studies, factors for location selection vary among researchers, so it is necessary to systematically arrange factors for location selection in the restaurant industry, and priority criteria for factors for decision making for location selection are required.

3. Experiment design and analysis

3.1. *AHP overview*

The AHP (Analytic Hierarchy Process) is a method of collecting subjective and qualitative opinions on unstructured, diverse criteria and attributes, and converting them into quantitative data to produce more objective and scientific results. It is a multi-criteria decision model that hierarchically expresses decision problems and prioritizes alternatives based on decision makers' decisions [21–22].

AHP is the most widely used theory of decision theory because it emphasizes the experience and intuition of decision makers, so it can handle not only quantitative information but also qualitative information that is difficult to handle in decision making but must be considered. In addition, AHP is characterized by improving the reliability of the test results through the consistency index and weighting the test criteria to analyze the sensitivity of the situation and changes related to the test results. AHP goes through four stages of analysis as shown in Figure 1 [21–22].

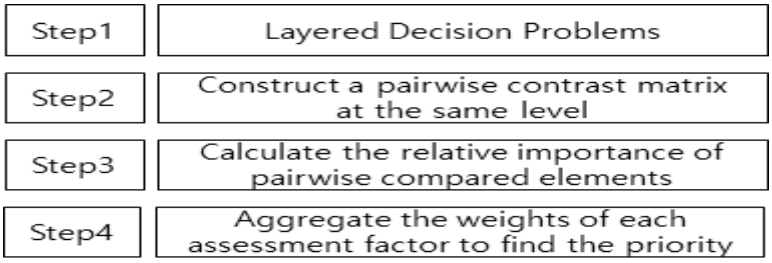

Figure 1. AHP Analysis Process

3.2.*Design of analysis model*

The priority analysis model used in this study is performed by four analysis processes as shown in Figure 1. The analysis process consists of defining factors for the analysis and structural organization of the factors, constructing a structured dual comparison matrix based on the survey results, calculating relative weights between the factors, and weighting each element to prioritize the sub-elements. It consists of a step of synthesizing. In this study, location factors are classified as commercial area environment, store feature, competitor, and accessibility, and are defined as shown in Table 1.

Table 1. Definition of location factors

Location Factors (Level 1)	Detailed Location Factors(Level 2)	Description of detailed location factors
commercial	floating population	Floating population in front of store

area environment	background population	The population behind the store
	hospitality facilities	Distribution status of hospitals, apartments, offices, schools, etc.
	commercial development potential	Future development of the commercial area
competitor	no. of direct competitors	Number of competitors in the industry
	no. of indirect competitors	Number of alternative competitors
	direct competitor competitiveness	Direct Competitor's Business Capabilities
	indirect competitor competitiveness	Business Capabilities of Indirect Competitors
accessibility	store location	Access from road to store
	public transport	Distance from subway / bus stop
	road conditions	Road condition near store
	parking area	Whether there is parking lot
store feature	building condition	New or Aging Degree
	visibility	How far you can see the store from afar
	fixed cost	Deposit and monthly rent
	store size	Store size

Table 2. Preference of pair comparisons

value	meaning
1	A and B are equally preferred
3	A is weakly favored than B
5	A is strongly more important than B
7	A is much more strongly or demonstrably important than B
9	A is absolutely more important than B

In order to measure the relative importance of AHP, a questionnaire is made to compare the relative importance between the selection attributes of the same level (layer). First, we compare the relative importance between the residents of Level 1 at the same level, and compare the relative importance between the details of Level 2 belonging to Level 1. Table 2 summarizes the criteria for indicating preference for pairwise teaching. The number of paired bridges is nC2, which is designed so that the number of questions in the questionnaire is not missed.

As a data collection method, 30 questionnaires were received through face-to-face interviews with food service workers, food service professors, and food service consultants. Among them, 3 questionnaires were removed by checking the questionnaire with missing values in the bi-contrast items and the naked eye, and AHP analysis was conducted on 27 questionnaires. The general characteristics of the experts who participated in this study are shown in Table 3.

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Table 3. General characteristics of the professional group

	characteristic	frequency(n=27)	percent(%)
gender	male	16	59
	female	11	41
age	30 ~ 39	10	37
	40 ~ 49	11	40
	50 or more	6	23
job	food service professor	9	33
	food service consultant	8	30
	food service worker	10	37

3.3.*Experimental analysis and results*

The relative weighting of Level 1 and Level 2 as shown in Table 4 by constructing a pairwise comparison matrix based on the mean value of each individual's questionnaire and calculating the normalized weight to obtain the relative importance of each positional member.

Table 4.The relative weight and consistency ratio of the calculated location factors

Level 1			Level 2			Total	
Location Factors	Weight	Priority	Detailed Location Factors	Weight	Priority	Weight	Priority
commercial area environment	0.29	1	floating population	0.29	1	0.841	1
			background population	0.23	3	0.667	5
			hospitality facilities	0.27	2	0.783	3
			commercial development potential	0.21	4	0.609	10
competitor	0.23	3	no. of direct competitors	0.23	3	0.529	12
			no. of indirect competitors	0.21	4	0.483	14
			direct competitor competitiveness	0.29	1	0.667	6
			indirect competitor competitiveness	0.27	2	0.621	9
accessibility	0.22	4	store location	0.21	3	0.462	15
			public transport	0.23	4	0.506	13
			road conditions	0.27	2	0.594	11
			parking area	0.29	1	0.638	8
store feature	0.26	2	building condition	0.27	2	0.702	4
			visibility	0.17	4	0.442	16

			fixed cost	0.31	1	0.806	2
			store size	0.25	3	0.65	7
consistency rate			0.0839				

AHP has a device called Consistency Rate (CR) that can verify the logical consistency of the evaluator's judgment, thereby increasing the reliability of the results. If respondents responded with perfect match at the pairwise bridge, the CR would be 0, but in reality, it would not be a perfect match, and if the CR was 0.1 (less than 10%), the consistency would be considered good, and within 0.2 it would be acceptable. If it is inconsistent and is 0.2 or more, it is considered to be inconsistent and needs to be reexamined. This study proved that the weights of all the evaluation indicators are consistent because the overall consistency ratio is 0.0839, which is less than 0.1.

The weights and priorities of Level 1 and Level 2 have been measured to measure the relative importance of restaurant owners using the AHP technique. The results are summarized as follows.

First, Level 1 showed relatively high importance in order of commercial area environment (0.29), store feature (0.26), competitor (0.23), and accessibility (0.22). Second, the location factors of commercial area environments had a higher priority for floating populations. In the store feature, fixed cost was high priority. Competitors valued direct competitors, and accessibility focused on parking areas. Third, overall priority was high in order of floating population, fixed cost, and hospitality facilities.

4.Conclusion

In this study, we propose an AHP analysis model that derives the locational factors of eating out from existing research and analyzes them comprehensively. In order to analyze the priority of restaurant occupants, we designed the occupants, conducted a survey, performed relative weight analysis and consistency ratio analysis, and analyzed the results to infer the following implications.

First, Level 1 showed relatively high importance in order of commercial area environment (0.29), store feature (0.26), competitor (0.23), and accessibility (0.22). The restaurant's location favored a well-populated commercial area and a good building. There are so many car users these days that accessibility is not so important.

Second, the commercial area environment had the highest priority in order of floating population, hospitality facilities, background population, and commercial development potential. This means preferring a location with a large population around. Perhaps most dining representatives are renting out buildings, so the surrounding commercial development potential was relatively insignificant. In the store feature, priority was given in order of fixed cost, building condition, store size, and visibility. This means that shops are inexpensive and are in good condition. The development of navigation and mobile maps has shown that store visibility is relatively insignificant. In the competitor, direct competitor competitiveness, indirect competitor competitiveness, no. of direct competitors, no. The priorities were in the order of of indirect competitors. This is analyzed to be reluctant to compete competitively, which attracts more customers than the number of direct and indirect competitors. In accessibility, priority was placed on parking area, road conditions, store location, and public transport. This means that many people go to eat by car rather than public transportation, and they think that a lot of customers come when there is parking space.

Third, the place with the most floating population was the most preferred, and the place with the lowest fixed cost and the hospitality facilities were preferred. This means that they prefer a

low-cost location while having a large population and residential facilities.

In selecting the location of eating out in this study, significant factors were analyzed through empirical studies, but significant results were obtained. In order to ensure high accuracy, reliability and representativeness of the research results, a wider and more accurate sample of a nationwide range, including regional, age, gender, and technology, had to be taken into account when selecting samples. In the future, various efforts should be made to obtain a correct response.

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