



Research on Location Strategy of Service Enterprises Entering Saturated Market -Take Wuhan Sexy Tea Shop as An Example

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Abstract. With the increasing proportion of the service industry in economic contribution and the increasingly fierce competition among service enterprises, the location strategy will be an important part of the overall enterprise strategy if it wants to survive and develop in the saturated market. This paper takes Sexy Tea, a brand enterprise in Changsha, as an example to discuss its site selection strategy for entering the saturated milk tea market in Wuhan. Based on the Sexy Tea's store addresses in 13 administrative districts of Wuhan, six basic factors affecting the enterprise location were identified by using geographic information system (GIS). The conditional logit model and Stata software are used to further analyze the significance and marginal changes of the factors. Research shows that the number of subway stations and the number of buildings is the two most important factors influencing the location of the company. Finally, suggestions were made on the site selection strategy for the company's further expansion in Wuhan.

Keywords: location strategy, saturated market, GIS, conditional logit model

1 Introduction

1.1 Background and significance of the study

Competition among service-oriented companies is becoming increasingly fierce. The service market in first-and second-tier cities has become increasingly saturated, and even many big-brand milk tea companies have begun to occupy small and medium-sized cities. In this context, Changsha's local brand "Sexy Tea" has carried out its commercial layout. In addition to being opened in Changde, the branches are also opened in Wuhan and Shenzhen.

The first store in Wuhan opened on December 1, 2020. As of June 2021, Sexy Tea has a total of 15 stores in Wuhan. From the geographical distribution point of view, 14 of the 15 stores of Sexy Tea in Wuhan are located in Hankou, which is among the three

towns in Wuhan, and only one is located in Wuchang, where college students are concentrated. The article will take Sexy Tea as an example. According to the actual location of Sexy Tea, geographic information systems and other related technologies are used to analyze the location influence factors of Sexy Tea's location in Wuhan, and the conditional logit model is used to further explore the strategy of similar service-oriented enterprises to enter the saturated market.

1.2 Literature review

1.2.1 Competitive strategy for saturated markets.

There is not much literature on mature market strategy, but some experts and scholars have also given some valuable suggestions. Lin, Z., CEO of Xilan Capital Co., Ltd. mentioned that "behind the Red Sea is a deeper blue ocean." Instead of focusing on all user groups, companies should specialize in competing in saturated markets. Some experts and scholars believe that the saturation degree of a certain regional market is unbalanced, and the saturation degree of the same market is different in different regions. Therefore, companies can analyze management control variables such as the format, technology, and service of competitors in the existing market, and discover new areas in the existing saturated market from a marketing perspective.

1.2.2 Service industry location methods.

Chen, J. used 0-1 integer programming and analytic hierarchy process (AHP) to simulate the location of medical and health service centers (Chen, J. 2016). Chen, Z. use queuing theory and genetic algorithm for service efficiency-based enterprise location selection (Chen, Z. 2013). Fang, T. discuss the location characteristics and influencing factors of industrial design enterprises in Shanghai by GIS technology (Fang, T. 2017). Most of the site selection uses computer and geographic information technology, combined with mathematics-related knowledge for analysis, and is often used to analyze related factors and perform data processing and interpretation on influencing factors.

1.2.3 Conditional logit model study content.

The conditional Logit model belongs to the selection problem of (0,1), which is judged by "yes" or "no". Li, J. used nuclear density estimation and conditional logic selection model to compare the location selection of Beijing's service industry and traditional manufacturing industry (Li, J. 2018). Wang, Z. used a logit model embedded with conditions to analyze the location conditions of agricultural enterprise site selection, and discussed the impact of different influencing factors on enterprise site selection ability through classification and marginal change (Wang, Z. 2018). Ren, X. used the conditional Logit model to explore passenger seat preferences and seat utility differences to make refined recommendations (Ren, X. 2021). Li, L., Zhang, S, and Li, T. used the conditional Logit model to optimize the location model with the largest goal of profit, and combined it with related algorithms to solve the problem of market share calculation deviation in competitive location research (Li, L. 2021).

2 Gis-based analysis of influencing factors of sexy tea site selection

This paper takes 13 administrative districts of Wuhan as the overall sample. According to the central geography theory, consumers regard the time spent and the degree of convenient transportation as important factors in choosing commercial consumption points. In this paper, the number of subway stations is selected as an indicator. According to the competition model of Willard Hoteling, in the same business environment, in addition to competition between enterprises, there is aggregation effects, mutual pull popularity, combined with the business circle theory of Chris Tyler, this paper chooses the number of commercial supermarkets as an indicator. According to the “consumer behavior space model” of American scholar Leston (Liu, X. 2014), commercial space structure and consumer behavior are interdependent and restrict each other. Different product types and price levels meet the needs of consumers in different spaces and levels. According to the analysis of the consumer characteristics of milk tea, this paper chooses the number of parks, buildings, schools, and government agencies as indicators. According to the theory of land value, commercial rent is taken as the index. In summary, there is the number of hotels and parking lots. In summary, a total of 9 indicators, including subway station sites, supermarkets, parks, buildings, schools, government agencies, hotels, parking lots, and commercial rents, were selected as the initial assumed influencing factors.

2.1 GIS Research on the Factors Affecting the Location of Sexy Tea

2.1.1 Data sources.

The data in this article comes from two aspects. One is that the coordinate data of shopping malls, buildings, schools, parks, and other areas displayed on Baidu Maps, Gaode Maps, Meituan, Lianjia and other platforms are crawled by python to form an excel table and sample inspection, to eliminate the singular values that do not conform to the actual value. Second, the coordinate data in shp format that has been summarized by related researchers has been sorted out. By comparing and supplementing the data formed by the two aspects, the final data set of this paper is formed.

2.1.2 Data collation.

In this paper the quantity and distribution data of Wuhan Sexy Tea are imported into ArcGIS to obtain the standard deviation ellipse diagram, as shown in Figure 1 , and the heat map under the influence of different location factors is obtained by the kernel density analysis through the $f(x) = \frac{1}{nh} \sum_{i=1}^n k\left(\frac{x-x_i}{h_n}\right)$. Kernel density analysis assigns different weights to points that fall into the search area, points or lines close to the center of the grid search area will be assigned larger weights (Li, W. 2017), the distribution density can be visually displayed and the standard deviation ellipse is compared with the density distribution to draw a conclusion.

Due to too many indicators and limited space, three indicators were selected for the heat map display in this article. In Figure 2, the subway stations are concentrated in Jiang'an District, Jianghan District, and Qiaokou District, which is consistent with the distribution of Sexy Tea. In Figure 3, the schools are concentrated in Hankou and Wuchang, while Wuchang has only one store, more universities are concentrated in Hongshan District and Wuchang District of Wuchang. This shows that the initial site selection did not mainly consider student groups. In Figure 4, the distribution of buildings is mainly concentrated in Jianghan District and Jiang'an District, within the standard deviation ellipse of the Sexy Tea. Hotels, parking lots, etc. are relatively evenly distributed throughout Wuhan, and cannot reflect the concentrated distribution of Sexy Tea, so they cannot be used as key influencing factors.

2.1.3 Data conclusion.

Through the above analysis, we finally screened out the 6 factors that influence the location of Sexy Tea, as shown in Table 1.

The six factors in the table below reflect the location strategy for entering mature markets. Sexy Tea Shop chose a site in a densely populated area with frequent population movement in the region, while adjacent to the business district, and serving mostly tourists, office workers, and other groups with Consumption ability.

Table 1. Factors influencing site selection

Theoretical foundation	Influencing factors	Symbol
Central geography theory	Number of metro station stops (NSO)	X_{1j}
Competitive Model and Business Circle Theory	Number of supermarkets (NSS)	X_{2j}
Spatial model of consumer behavior	Number of parks (NP)	X_{3j}
	Number of buildings (NM)	X_{4j}
	Number of Government Agencies (NGA)	X_{5j}
Land value theory	Average commercial rental price (NPP)	X_{6j}

By comparing the prices of Sexy Tea and other brands of milk tea, the average price of Sexy Tea milk tea is higher and requires higher spending power, so Sexy Tea chose to open stores in Hankou, Wuhan.

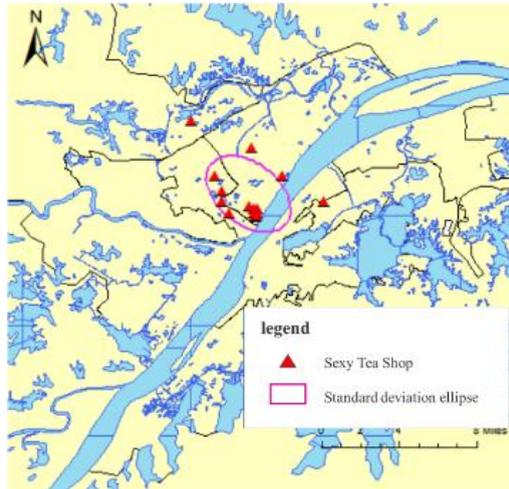


Fig. 1. Standard deviation ellipsoid

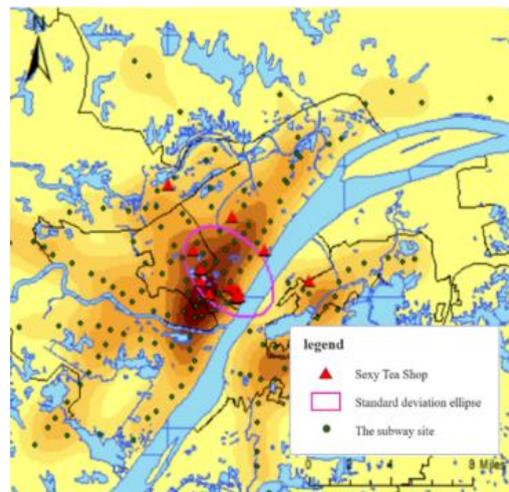


Fig. 2. Subway site heat map

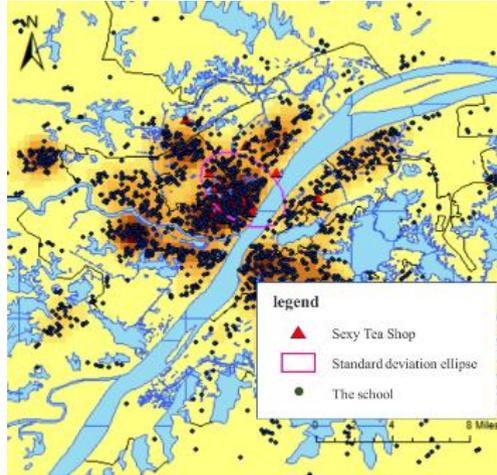


Fig. 3. School distribution heat map

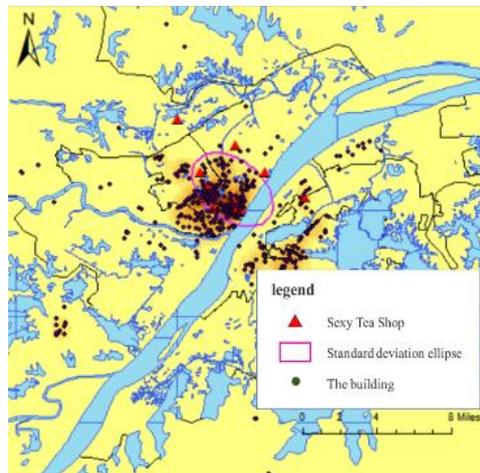


Fig. 4. building distribution heat map

3 In-depth analysis of factors influencing site selection based on conditional logit model

In order to further analyze the degree of factors affecting the location of Sexy Tea, the conditional logit model is used to conduct in-depth research from the perspective of econometrics.

3.1 Description of the problem and assumptions

As a milk tea brand, Sexy Tea has a small amount of revenue derived from the sales of peripheral products, and most of its revenue comes from its main business milk tea. Assuming that milk tea raw materials and labor costs are the same in all administrative regions of Wuhan, the cost of land rent is negatively related to corporate profits. However, the high cost of land rent is largely due to the advantages of dense population and market prosperity in this area, which will bring a lot of order income to enterprises. Therefore, this paper takes land rent as a positive factor in the location of enterprises.

3.2 Description of the model

According to Adam Smith's "theory of absolute comparative advantage", the location will be based on the local resource endowment, cost and market factors. If RA_j denotes the comparative advantage of firm m in location j , and X_j denotes the factors influencing the location in the region, then we have $RA_j = f(X_j)$. The utility of the comparative advantage is $\pi_j = g(RA_j)$. The profit of firm S in a region can be divided into the observable part and the random part, $\pi_{mj} = U_{mj} + \varepsilon$. When $\pi_{mj} > \pi_{mk}$, $k \in C$, $k \neq j$, the firm will enter region j , where C is all the regions that can be chosen. The probability that firm m enters region j is $P_{mj} = \frac{e^{x_m \beta}}{\sum_{j=1}^n e^{x_m \beta}}$.

When the earnings of firm m are affected by locational factors, the profit of the observable component is $U_{mj} = \beta_1 x_{mj}^1 + \beta_2 x_{mj}^2 + \dots + \beta_i x_{mj}^i$, Where β parameter estimates of the model can be obtained using the method of great likelihood estimation (Tang, R. 2018).

3.3 Empirical analysis

3.3.1 Descriptive statistics.

Python and ArcGis are used for crawling and classification statistics to obtain 6 site selection influencing factors data in thirteen districts of Wuhan City, and Stata was used to obtain observational value, mean value, standard deviation, minimum value, maximum value and other descriptive data.

3.3.2 Correlation Analysis of Factors Affecting Site Selection.

In order to understand the correlation between the factors affecting site selection, Stata was used to calculate the correlation coefficient. From the results, it can be seen that the correlation coefficient between the number of Sexy Tea shops and the number of parks is 0.832, the number of government agencies and land prices is 0.851, and the number of supermarkets and buildings is 0.898. The correlation between the above three pairs of influencing factors is slightly higher than the general standard of 0.8, and the correlation between other variables is lower than 0.8, therefore, most of the above variables show a weakly correlated relationship. The VIF test is used to find that the

variance expansion factor is less than 10, indicating that there is no serious multicollinearity problem between the variables, and the data can independently reflect its characteristics.

Table 2. Estimated results

	Model 1	Model 2	Model 3	Model 4
NP	0.182*	0.003	-0.141	-0.196
	(-0.108)	(-0.162)	(-0.171)	(-0.171)
NSO		0.241	0.241*	0.281**
		(-0.176)	(-0.137)	(-0.137)
NM			0.026	0.023**
			(-0.134)	(-0.134)
NGA				0.014
				(-0.015)
cons	-1.933*	-4.462**	-5.002*	-7.100**
	(-0.998)	(-1.927)	(-2.731)	(-3.564)
N	13	13	13	13

Standard errors in parentheses * p < 0.1, ** p < 0.05, *** p < 0.01

3.3.3 Analysis of estimation results.

When Stata is used to analyze the indicators NPP and NSS, the results cannot be displayed, so NPP and NSS are excluded. Using the conditional logit model, the remaining NP, NSO, NM, NGA and other indicators are calculated by the maximum likelihood estimation method. The results are shown in Table 2.

Use Stata to continuously add variables for estimation to get models 1-4. Among them, the number of parks (NP) in Model 1 is positive and significant at the level of 10%. It shows that the number of parks where the Sexy Tea is located is positively and significantly affected by this factor, and the number of parks also reflects the number of tourists and the degree of population concentration. The number of subway stations (NSO) and the number of buildings (NM) are both positive in Model 4 and have a 5% significance. Therefore, these two factors have a significant positive impact on the location of Sexy Tea. At the same time, observe the significance and relative chance ratio from Model 4. According to the change of marginal benefit, the number of subway stations (NSO) has a significant impact on the location of Sexy Tea, for each additional subway station, the probability of tea beauty in the area increases by 0.137 percentage points. Similarly, if the number of buildings (NM) increases by one unit, the probability of Sexy Tea’s site selection in this area will increase by 0.134 percentage point.

Table 3. The estimated resulted of adding permanent population density (AP)

	Model 1	Model 2	Model 3	Model 4	Model 5
NP	0.182*	0.003	-0.141	-0.196	-0.178
	(0.108)	(0.162)	(0.171)	(0.171)	(0.169)
NSO		0.241	0.241*	0.281**	0.301**
		(0.176)	(0.137)	(0.137)	(0.162)

NM			0.026	0.023	0.024**
			(0.034)	(0.034)	(0.036)
NGA				0.014	0.035
				(0.015)	(0.033)
AP					0.601
					(0.746)
_cons	-1.933*	-4.462**	-5.002*	-7.100**	-10.357**
	(0.998)	(1.927)	(2.731)	(3.564)	(7.276)
N	13.000	13.000	13.000	13.000	13.000

Standard errors in parentheses * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

3.3.4 Robustness test.

To further prove that the consumer groups mainly targeted by such enterprises are white-collar workers and tourists, this paper adopts the method of replacing explanatory variables to prove the robustness of the obtained results. Considering whether the resident population has an impact on site selection and testing the robustness of the model, this paper adds the resident population density (AP) of each district into the explanatory variable to obtain a new model. The results are shown in Table 3.

After adding the new indicator AP, although the impact of AP in Model 5 is positive, the impact is not significant. Therefore, the resident population density is not an important factor affecting the location selection of enterprises. Mainly consider the consumption of resident residents. At the same time, the number of subway stations (NSO) and the number of buildings (NM) still maintain a positive influence after adding the population (AP), and the difference between the marginal changes is small. Therefore, from the above data analysis, it can be concluded that the number of subway stations and the number of buildings is still the main factors affecting the location of enterprises, and the whole model shows stability, which can pass the robustness test.

4 Suggestions

4.1 Suggestions on site selection for expansion of Sexy Tea in Wuhan

The above research results show that when Sexy Tea entered the saturated milk tea market in Wuhan, it concentrated its target market on white-collar workers and tourist groups who had the willingness and ability to consume. Using the "hunger marketing" approach, stores are concentrated in a small area (Hankou in Wuhan), and a huge amount of online discussion is generated. The core element of the site selection consideration is the relatively concentrated area of subway stations and office buildings.

At present, Sexy Tea has basically opened stores in Wuhan Hankou's subway stations and the concentrated areas of office buildings. According to its location strategy, the next expansion will be infamous business districts and tourist attractions such as Wuchang or Hongshan. The site selection of the first station in Wuchang, which opened

in April 2021, at Xiaopinmao, proves the above-mentioned research results of this article. According to the company's strategic positioning and location strategy, this article suggests that the following locations should be considered for subsequent location selection:

- The area between the Yellow Crane Tower and the Xinhai Revolution Memorial Hall and Shouyi Park can be used for shop location selection. Specifically, it can be located at the Fanyuehui next to the Xinhai Revolution Memorial Hall, where has a dense volume of visitors, complete commercial facilities, and is close to Fuxing Road and Shuyi Road subway stations, with a large population flow.
- Chu River Han Street, near Chu River Han Street, is a famous business district in Wuhan, equipped with a subway station, Wanda Plaza, and CapitalLand 1818 nearby. The entire business district has a large radiation area, complete supporting facilities, and many tourists come here to check-in. At the same time, there are large office buildings where E-Travel Investment and Founder Securities are located nearby.

4.2 Strategic suggestions for similar companies to enter the saturated market

Service companies similar to Sexy Tea enter a relatively saturated market, and appropriate strategies need to be adopted in order to gain a relative competitive advantage in the competition with the original companies.

- Focusing strategy can establish a clear corporate image, increase contact with consumers, and then seek outward development on this basis (Zhang, D. 2021). Therefore, companies should serve specific groups of people in a targeted manner based on the characteristics of their products and gain marketing advantages in order to survive and develop in a saturated market.
- The modern service industry wants to achieve a leading position in the market, daily operating cost management must be upgraded to the level of strategic cost management, and long-term cost planning must be carried out from a strategic perspective (Qin, Y. 2021). For service-oriented companies such as milk tea shops. In a certain area, the size of the flow of people and the land price show a positive correlation, and the price of the land has a positive effect on the income of service companies that rely on the flow of people. Therefore, the land price cannot be blindly regarded as a negative influencing factor, and service companies must weigh the relationship between land price and income when selecting a location.
- When an enterprise enters a saturated market, it should not blindly compete with mature enterprises in a wide range of shops, but should cultivate in-depth in a small area, and build its brand in terms of product quality, innovation, and service. For example, the Sexy Tea can keep the discussion hot after opening the store, so that the store has a national marketing influence in the small area of Hankou.

5 Conclusion

Sexy Tea entered the Wuhan milk tea market, and its operation became a hot issue of concern. This article analyzes the location strategy of Sexy Tea in Wuhan through a geographic information system and conditional logit model. The results show that the number of subway stations and the numbers of buildings are the two most important factors for the company's location selection. The company's location strategy effectively supports the realization of the company's target clustering strategy. Enterprise site selection has always been a hot issue, the influence of service enterprises entering saturated market site selection on enterprise operation and industry competition can be further studied quantitatively.

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