Analysis of Factors Affecting Fast-Moving Consumer Goods Franchising Based on MINISO

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Abstract. In recent years, the offline retail industry has recovered under the impact of online shopping, and MINISO, as an emerging Fast-Moving Consumer Goods (FMCG) brand, has broken the price advantage of online shopping goods, while taking into account the advantages of online and offline. During the period of rapid development of MINISO, many franchisees have been attracted to join. For the franchisees, business circles, locations and store areas have become issues that need to be analyzed and selected. This thesis introduces the basic situation of MINISO firstly, analyzes the present situation of MINISO's operation and management from four aspects: customer, cost, location and communication, analyzes the feasibility of franchising and the cost factors that franchisees can control. Then, regression analysis is used to establish a mathematical model, analyze the sales situation, find out the mathematical relationship between various factors, and provide theoretical support for the choice of various conditions. Based on the analysis of the factors affecting the franchise operation of MINISO, this thesis proposes a feasible plan for the decision to open retail stores. Provide a reference for the joining of FMCG brands such as MINISO.

Keywords: MINISO; fast-moving consumer goods; regression analysis; cost; sales.

1. Introduction

In the background of the continuous development of the Internet, online shopping is gradually emerging. Although online shopping has a great advantage, offline shopping also has effects that online shopping cannot achieve. In addition, in the question of whether a retail enterprise can operate successfully, the correct choice of store opening address is particularly important [1].

Some large companies, such as Carrefour, KFC, McDonald's and other well-known international chain brands, are very cautious about the location of new retail stores, and will strictly measure the number, density and spending power of the surrounding population in the early stage. The issue of retail store location has received extensive attention from domestic scholars. Zhao Qingsong, Peng Xiuyuan and others made a specific analysis of MINISO's business strategy and franchise methods, listed the various expenses, profit margins and profit distribution methods that franchisees should bear, and affirmed MINISO's Internet finance [2]. Gao Xiaoli made a detailed introduction and analysis of MINISO franchised stores, from the selection of franchisees to daily operations. Among them, a detailed analysis of products, models and services was carried out, and the success methods of MINISO with high quality, low price, low cost, minimized investment risk, and strong store operation ability were summarized [3]. Li Guangyu first introduced the strategic positioning, location characteristics, decoration characteristics, commodity category selection, franchise methods, logistics, finance, etc. of MINISO, and then summarized the close relationship system of various advantages and conditions of MINISO [4]. Jiang Ruolin conducted research and analysis on the necessary considerations for the location of KFC franchised stores and summarized the influencing factors of store customer flow [5]. Chen Ying analyzed the aggregation effect of competing or similar brands of the three fast-moving consumer goods brands of ZARA, H&M and UNIQLO, and concluded that the aggregation effect between competing products will gradually reach a dynamic balance, and the aggregation effect between brands should also be considered when selecting store locations [6].

Foreign researchers have also conducted many studies on the factors influencing retail store operations. Revelle described the site selection problem as an integer linear programming and solved it mainly in terms of population and sphere of influence [7]. Using interviews as the primary method

for location decisions, Phelps illustrated how this intermediary-like role saves search costs and provides lesser-known opportunities for market creation and value-added by location [8]. Glaeser studied the temporal and spatial positioning of the "online purchase-pick up in-store" model, combined with demographic and economic data, business location data, and the retailer's historical sales and operation data to predict the demand for potential locations, and used random forest algorithms to improve site selection configuration and planning [9]. Olof Netzell studied the difference in retail rents at the micro level, establishing a model, showing a strong correlation with pedestrians and other types of traffic through composite values. The model has reference value in planning new urban areas and predicting retail rents [10].

In summary, researchers at home and abroad mainly use various mathematical methods to establish the location model of retail stores, conduct data processing and analysis of location problems, propose or introduce new concepts, and use customer flow as a reference to solve the location problem of stores. Most of them focus on factors such as consumer groups, traffic conditions, industry competition and future development prospects around the selected store location. There are also some scholars who separately analyzed MINISO's development strategy, business strategy and characteristics, and other aspects, as well as the innovation points and advantages and disadvantages in the same industry. Or analyze the influencing factors of a separate aspect, for example, the influencing factors of the flow of people in chain stores. However, little research has been done on the issue of cost-based site selection strategies. In addition, there are few quantitative studies on combined data such as sales and costs.

Therefore, by studying the interrelationship between various factors in the real business environment, this thesis establishes a reasonable and reliable analysis model, quantitatively analyzes and predicts sales, costs and net profit, and gradually improves the model, so that it can be gradually applied to various chain retail stores. This thesis aims to provide a decision-making reference for franchisees in the early stage of franchising.

2. Research Method

2.1. Data Selection

The data of MINISO stores nationwide is obtained through the network and comes from the data reported to the headquarters by the operation managers of MINISO brands. Data includes store area, monthly sales, employee salaries, and more.

Due to the population of each region, the economic level has a certain impact on the FMCG retail industry. The location and management level of different malls, shopping centers and business districts also have a certain influence on the FMCG retail industry. This thesis will analyze the store area and sales data of MINISO opened in Wanda Plaza in third-tier cities with similar populations and economic levels, so as to explore the impact of store area on sales.

Among them, in terms of cost, franchisees need to bear the following expenses: store rent, staff salaries, water and electricity costs, logistics costs as well and brand usage fees. The rent of a store needs to refer to the local business environment, the unit price of rent varies in the different commercial districts. The salary of employees is approved by MINISO headquarters, which is mainly related to whether the city where the store is located is a first-tier city, a second-tier city, or a third-tier city, and the standard is unified. The water and electricity charges are based on the commercial electricity price of the district. The logistics fee is charged monthly by the MINISO headquarters to the franchisee. It mainly includes the transportation of goods as well as the transportation of shelves or consumables. In the stores that have already matured, the transportation of non-goods such as shelves is generally not involved. Therefore, logistics costs are about 1% of sales. Brand usage fees are charged annually and are stipulated at 80,000 yuan per year, but due to the impact of the epidemic and other realities, the exemption policy is given at this stage. The above fees constitute the cost of operating MINISO's stores.

2.2. Indicator Selection and Description

From Table 1, the descriptive statistics of each characteristic variable in the MINISO sales data set can be obtained. Due to MINISO's unique franchise method, franchisees can choose the business district and store area, and the rental cost of the store is directly related to the store area, the store area determines the basic number of employees, and there is also a connection between the store area and electricity consumption. Under a certain rental unit price level, franchisees can only control rental costs, labor costs, and water and electricity costs by controlling the store, and whether there is a relationship between store area and sales, whether there is a relationship between store area and labor costs, and water and electricity costs need to establish a mathematical model for verification, so the independent variable in the analytical model constructed in this thesis is store area. The factors influencing sales are diverse and complex, and this thesis focuses on the relationship between MINISO's retail store area and sales. In order to calculate the total monthly profit, in addition to sales, cost factors should also be accounted for, and the cost factors that vary with the choice of store include rental costs, labor costs, and utility costs. Therefore, the dependent variables in the analysis model constructed in this thesis are monthly sales, employee salaries, and electricity consumption.

Table 1. Factors Influencing MINISO'S Sales Forecast

Title	Max.	Min.	Mean	S.D.	Variance
Area	143	323	218.853	3189.703	56.477
Monthly sales	194767.62	391180.26	304604.581	3149548387	56120.837
Salary	13221.20	35081.64	25405.638	50954981.87	7138.276
Power consumption	534	2017	1287.37	260657.770	510.547

3. MINISO Franchise Business Model

3.1. Establishment of the Relationship Between Monthly Sales and Store Area

Table 2. MINISO Store Area and Monthly Sales

Number	Area (㎡)	Monthly Sales Figures (Yuan)
1	143	194767.62
2	150	215274.65
3	158.5	243988.48
4	166	263040.73
5	177.5	269467.62
6	185	273470.04
7	187	288710.23
8	194	309190.57
9	204	301284.42
10	216	298374.19
11	235.5	323056.29
12	236	333120.14
13	245	351429.59
14	281	361538.18
15	300	391180.26
16	319	385805.36
17	323	374579.5

According to the above requirements for data selection, 17 MINISO retail store area and sales data were selected nationwide as the analysis objects to explore the relationship between area and sales, as shown in Table 2. The selected MINISO stores are Wanda Plaza in Baoding City, Xingtai City, Langfang City, Shijiazhuang City, Liaocheng City, Dezhou City, Yantai City, Jining City, Heze City,

Shangqiu City, Yuncheng City, Xuchang City, Kaifeng City, Xinxiang City, Anyang City and Luoyang City. The selected MINISO store sales are September 2020 sales. Analysis using SPSS software yields a logarithmic curve fit plot for area and sales, as shown in Fig. 1. The function fitting relation is obtained.

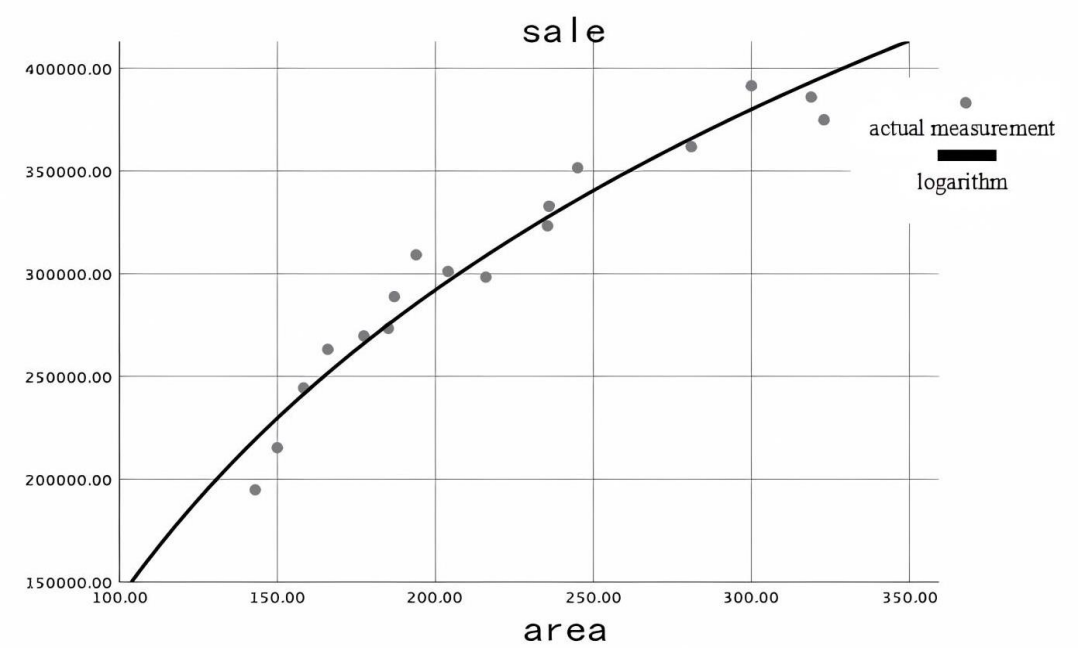


Fig. 1 Sales vs. Area Fit the Graph (Photo credit: Original)

The function relation satisfied by the data accords with the logarithmic function model. The corresponding function expression is (1):

$$\mathbf{TS = C1 + a1ln(s)} \tag{1}$$

Where TS represents sales, S represents store area, C1 is constant, and a1 is the coefficient of ln(s). The test results are shown in Table 3. where R is the coefficient of complex correlation and R2 is used to reflect the percentage of variance that can be explained by the regression equation to the variance of the dependent variable. The value of R2 is 0.949, that is the interpretation rate of the independent variable to the dependent variable is 94.9%, which means that 94.9% of the data in the model fit basically shows a logarithmic curve fitting relationship, that is, the area and sales relationship satisfies the logarithmic curve equation model.

Table 3. Model Summary

R	R^2	Adjusted R^2	Std. Error Estimate	Valid Sample
0.974	0.949	0.946	13468.612	17

In addition, to further test whether the model is meaningful, an AVOVA-based F-test is performed, which is based on the premise that the model passes the F-test, that is, the corresponding p-value is less than 0.05. In Table 4, p=0.000<0.05 indicates that the model is valid and meaningful. The summary table of the regression coefficients is shown in Table 5, i.e:

$$\mathbf{TS = -856066.800 + 216698.473 * ln(s)} \tag{2}$$

Table 4. ANOVA

Sum of squares		DOF	Mean squares	F	P
Regression	50825298763.389	1	50825298763.389	280.178	.000
Residual	2721052649.299	15	181403509.953		
Total	53546351412.687	16			

Table 5. Summary Table of Regression Coefficients

	Unstandardized Coefficients		Standardized Coefficients	T	P
	B	Std. Error	Beta		
Constant	-856066.800	69418.228	-	-12.332	.000
ln(Area)	216698.473	12946.093	0.974	16.739	.000

3.2. Establishment of the Relationship Between the Total Monthly Salary of Employees and the Area of the Store

The area and employee salary expenditure data of 11 different MINISO stores are shown in Table 6. The function fitting curve of employee salary expenditure and area is shown in Fig. 2.

Table 6. MINISO Store Area and Employee Expenditure

Number	Area (㎡)	Employee Expenditure (Yuan)
1	143	13221.20
2	158.5	17540.82
3	166	18116.38
4	177.5	19182.54
5	187	23732.80
6	204	27123.2
7	235.5	28875.64
8	245	30696.44
9	281	31330.55
10	300	34560.81
11	323	35081.64

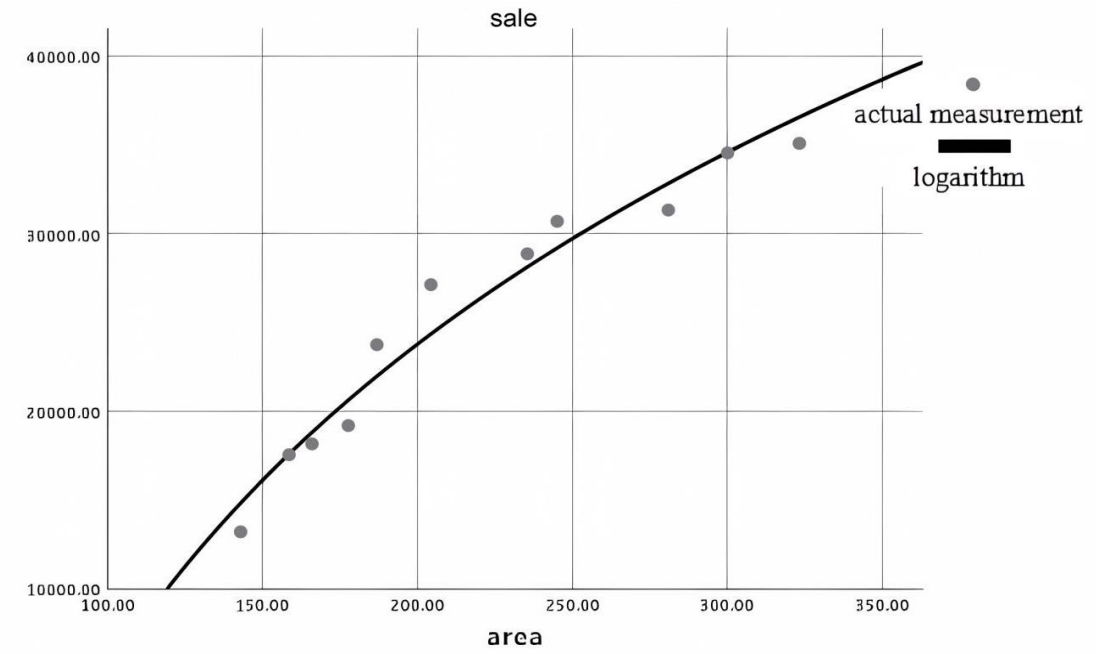


Fig. 2 Gross Employment Expenditure vs. Area Fit the Graph (Photo credit: Original)

Logarithmic function analysis of this group of data shows that the set of data conforms to the logarithmic function model, and its function manifestation is:

$$\mathbf{L = C2 + a2ln(s)} \quad (3)$$

In Equation (3), L represents the monthly salary expenditure of employees, s represents the store area, C2 is constant, and a2 is the coefficient of ln(s). Using SPSS software to test the data as a logarithmic function can be obtained as shown in Table 7. The value of R2 in the table is 0.958, that is, the independent variable has an explanatory rate of 95.8% for the dependent variable, which means that 95.8% of the data in the model fit basically show a logarithmic curve fitting relationship, that is, the relationship between area and employee salary expenditure satisfies the logarithmic curve equation model.

Table 7. Table Summary

R	R^2	Adjusted R^2	Std. Error Estimate	Valid Sample
0.979	0.958	0.954	1161.102	11

The ANOVA test results are shown in Table 8 p = 0.000<0.05, indicating that the model is valid and meaningful. The summary table of regression coefficients is shown in Table 9, namely:

$$\mathbf{L = -117318.718 + 26631.497 * ln(s)} \quad (4)$$

Table 8. ANOVA

Sum of squares		DOF	Mean Squares	F	P
Regression	537143953.200	1	537143953.200	206.940	.000
Residual	23360846.400	9	2595649.600		
Total	560504799.600	10			

Table 9. Summary Table of Regression Coefficients

	Unstandardized Coefficients		Standardized Coefficients	T	P
	B	Std. Error	Beta		
Constant	-117318.718	9933.349	-	-11.811	.000
ln(Area)	26631.497	1851.285	0.979	14.385	.000

3.3. Establishment of the Relationship Between Monthly Electricity Consumption and Store Area

Table 10 shows the area and monthly power consumption data of 10 retail stores in different areas. The fitting curve of employee payroll as a function of area is shown in Fig. 3.

Table 10. MINISO Store Area and Electric Quantity

Number	Area(㎡)	Electric Quantity(kw/h)
1	50	534
2	73	732
3	106	876.3
4	143	917
5	177.5	1068.9
6	204	1377.5
7	245	1533.4
8	281	1868
9	300	1949.6
10	323	2017

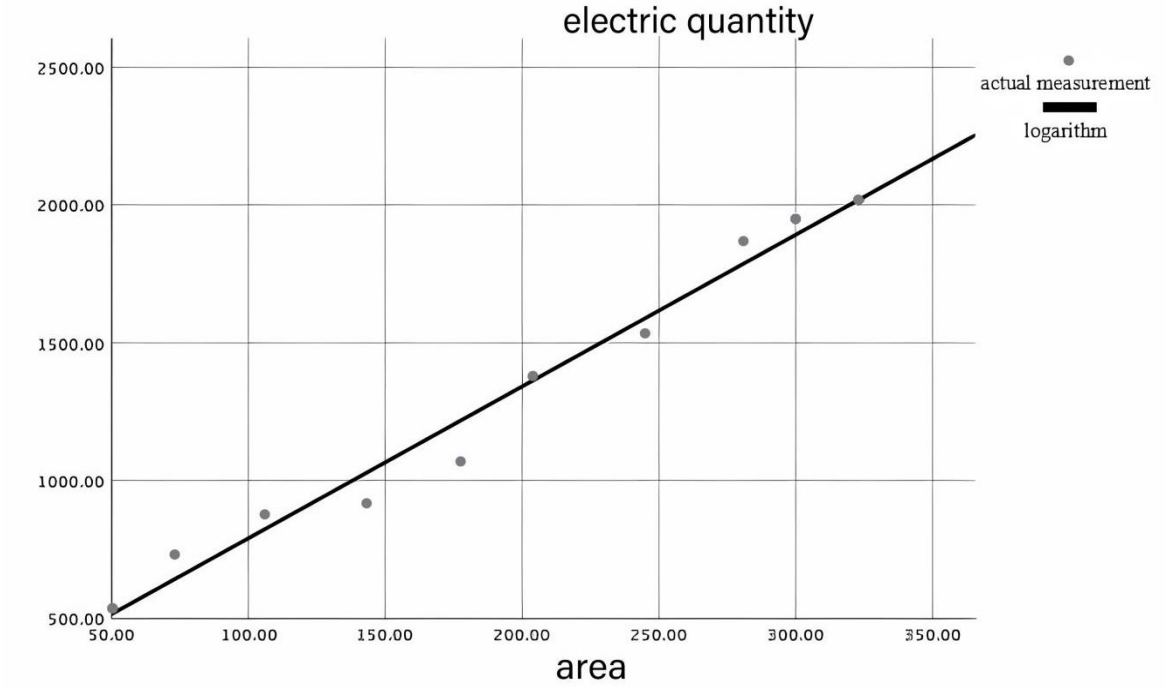


Fig. 3 Area vs. Electric Quantity Fit the Graph (Photo credit: Original)

The logarithmic function analysis of this group of data shows that the group of data conforms to the linear function model, and its function manifestation is:

$$\mathbf{E = a3s + C3} \tag{5}$$

In Equation (5), E represents the monthly electricity consumption of the retail store, s represents the store area, C3 is constant, and a3 is the coefficient of the variable s. The value of R2 in Table 11 is 0.978, that is, the interpretation rate of the independent variable to the dependent variable is 97.8%, which means that 97.8% of the data in the model fit basically shows a linear function fitting relationship, that is, the relationship between area and employee salary expenditure meets the linear equation model.

Table 11. Table Summary

R	R^2	Adjusted R^2	Std. Error Estimate	Valid Sample
0.989	0.978	0.975	85.590	10

Table 12 ANOVA shows p = 0.000<0.05, indicating that the model is valid and meaningful. The summary table of the regression coefficients is shown in Table 13, namely:

$$\mathbf{E = 5.508 * s + 239.564} \tag{6}$$

Table 12. ANOVA

Sum of squares		DOF	Mean squares	F	P
Regression	2547972.219	1	2547972.219	347.813	.000
Residual	58605.482	8	7325.685		
Total	2606577.701	9			

Table 13. Summary Table of Regression Coefficients

	Unstandardized Coefficients		Standardized Coefficients	T	P
	B	Std. Error	Beta		
Constant	239.564	62.363	-	3.841	.000
ln(Area)	5.508	0.295	0.989	18.650	.000

3.4. Establishment of the Relationship Between the Store Area And The Monthly Rent Amount of the Store

From shop rent = Shop Area * monthly rent unit price, it can be obtained that the monthly rent of a shop is R, the shop area is S, and the monthly rent unit price of a shop is A4(unit is yuan/month/m²). The following conclusions can be drawn:

$$\mathbf{R = a4 * s} \tag{7}$$

3.5. Establishment of Monthly Profit Amount Model

This thesis studies the effect of store area on sales and operating costs, and obtains the best choice of store area. According to profit = sales-cost, in this study, profit = sales * profit margin-rental cost-labor cost-water and electricity cost-logistics cost-brand usage fee. According to the above, MINISO'S profit margin is 37%, and logistics cost is 1% of sales, therefore, the combined profit margin is 37% -1% = 36%. The brand usage fee is 80,000 yuan per year, which is about 6666.67 yuan per month.

$$\mathbf{P = TS * 36\% - L - E - R - 6666.67} \tag{8}$$

Among them, P is the monthly profit and a4 is the unit rent of the shop. Combined with equations (2), (4), (6), (7), (8), it can be seen that:

$$\mathbf{P = [-856066.800 + 216698.473 * \ln(s)] * 36\% - [-117318.718 + 26631.497 * \ln(s)] - [5.508 * s + 239.564] - [a4 * s] - 6666.67} \tag{9}$$

$$\mathbf{P' = \frac{51379.953}{s} - 5.508 - a4} \tag{10}$$

According to the above functions, in Equation (10), a4 is the unit price of rent, and when p' is 0, the value of s is the maximum value of the P function, that is, the maximum monthly profit, and the store area at this time is the best choice.

4. Conclusion

This thesis takes MINISO as the research object, uses the mathematical model to study the relationship between retail store area, sales and various costs, and uses the obtained mathematical model to analyze the profit, so as to provide a reference for the franchise decision-making of the retail stores operated by MINISO. From the perspective of franchisees, this thesis analyzes the controllable costs of franchisees and concludes that the controllable costs of franchisees are mainly labor costs, water and electricity costs, logistics costs and store rental costs. Secondly, in terms of sales, based on the accurate store area and turnover data obtained from the market research, by controlling the impact of other influencing factors on the research problem, screening out the store business data with other influencing factors as similar as possible except for the store area for analysis, obtaining the analysis of the function fitting curve graph of the group of data, select the most appropriate mathematical function, and use SPSS to analyze to obtain the best function relationship. In terms of cost, by studying the relationship between shop area and rent cost, labor cost, water and electricity cost, using SPSS software to get the most suitable relationship with the above data fitting curve, and the correlation function relationship is obtained.

This thesis uses literature research and mathematics to study the franchising of MINISO. Through reviewing, evaluating, analyzing and sorting out the literature related to MINISO's franchise, the advantages and disadvantages of MINISO brands are explored. In addition, through mathematical methods, that is, excluding other characteristics of the research object, objectively and scientifically using mathematical tools to process data, making reasonable explanations and correct judgments of the relationship between the number of research objects, so as to correctly discover the characteristics and essence of the research object. Although the model obtained in this thesis is based on the actual

business environment and has a certain reference value for the franchise of MINISO, there are still obvious shortcomings and problems that require further research. First of all, most of the existing models are static and deterministic, while many practical problems are dynamic and random, and how to properly characterize these characteristics to make the model stable and reliable is still the direction of future research. Moreover, MINISO has a large number of stores nationwide, but due to constraints, the range of data selection is small. Therefore, in future research, the data can be supplemented as the brand evolves to make the data model more accurate.

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