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The Construction and Response of Brand Competitiveness Evaluation Index System of Fresh Agricultural Products Supermarket under the Background of Big Data

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Abstract:

Under the background of big data, the competition becomes a kind of brand competition, and the strong brand can bring competitive advantage. With the rapid development of the fresh agricultural supermarket, the competition between which is increasingly fierce. Therefore the research of the system about the brand competitiveness' evaluation index has important significance for the development of the fresh agricultural supermarket. The conclusions is shown as follows: the elements that affect the brand competitiveness of the fresh agricultural supermarket are employees capacity, marketing ability, profitability, brand image and development potential, the profit ability and brand image are the most important. The paper established the evaluation index of the fresh agricultural supermarket's brand competitiveness, established the weight of each index, by using the analytic hierarchy process (AHP), and established the system of the evaluation index. Finally, the empirical research of the fresh Z agricultural supermarket verified the effectiveness of the system.

Keywords:

Big data, Fresh agricultural supermarket, Brand competitiveness, Evaluation index system

1. Introduction

The main purpose of this paper is to explore the evaluation index system construction and application under the background of big data, about the brand competitiveness of fresh agricultural supermarket. Under the background of big data, fresh agricultural supermarkets in China have developed rapidly. However, as far as the current situation is concerned, fresh agricultural supermarkets have only a certain status, let alone the well-known brand enterprises with international competitiveness. Therefore, it is of great significance to study and evaluate the brand competitiveness of fresh agricultural supermarket-brand to promote the development of fresh agricultural supermarket-brand. In order to improve the brand competitiveness of fresh agricultural supermarket-brand, it is necessary to make clear the index system of the brand competitiveness of fresh agricultural supermarket-brand first.

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2. Construction of Evaluation Indicators of Fresh Agricultural Supermarket Brand Competitiveness under the Background of Big Data

2.1 Initial Prototype of Evaluation Index System for Fresh Agricultural Supermarket Brand Competitiveness under the Background of Big Data

On the basis of relevant theories, combined with the opinions of experts, scholars and industry managers as well as the surreal situation of fresh-born farmers, the indexes of evaluating super-brand competitiveness of fresh-bred farmers were preliminarily determined, and then the relationship between these indexes was defined based on Analytic Hierarchy Process . The initial prototype of the evaluation index system model is constructed, as shown in Table 1.

Table 1.evaluation index system of fresh agricultural supermarket brand competitiveness

Tier One Indicators Objective level	Tier Two Indicators Factor layer	Tier Three Indicators (index layer)
Fresh agricultural supermarket brand competitiveness (Y)	（X1） Competence of staff	(X11) Education of Fresh agricultural supermarket Workers
		(X12) The Input of Fresh Agricultural Super to Staff Education
		(X13) Service Level of Fresh Farmer and Super worker
		(X14) Treatment Level of Fresh agricultural supermarket to Customers' Dissatisfaction and Demand
	（X2）Marketing capability	(X21) The Amount of Advertising Devoted to the Promotion of Fresh Agricultural Super-products
		(X22) Marketing Expenditure as a Proportion of Sales Revenue
		(X23) The Ratio of Sales Volume to Operating Area (average sales volume)
	（X3） Profitability	(X31) The History of the Establishment of Fresh agricultural supermarket
		(X32) Number of Chain Stores
		11. Business Operation Area：
		(X34) Profit Rate of Fresh Farmer Super
		Return on Net Assets
		(X36) Contribution Rate of Total Assets
	（X4）Brand image	(X41) Satisfaction with the Quality of Fresh Agricultural Super Products
		(X42) Consumers’ Satisfaction with the Rationality of Commodity Prices
		(X43)Consumers’ Satisfaction with Fresh Agriculture Service
		(X44)Consumers’ Satisfaction with Fresh Farming Shopping Environment
		(X45)Consumers’ Awareness of Fresh Agricultural Super Brands
	（X5） Development potential	(X51) Growth in Sales of Fresh agricultural supermarket over the Years
		(X52) Growth in profit margins of Fresh agricultural supermarket over the Years
		(X53) Yield per Share of Fresh agricultural supermarket

2.2 Determination of the Evaluation Index Weight of Fresh agricultural Supermarket Brand Competitiveness under the Background of Big Data

Using anonymous expert method, the evaluation index system model was emailed to 10 experts in related fields and 5 managers of fresh agricultural supermarket, who were asked to give judgment matrix and revision opinions. After four feedback adjustments, the final agreement was reached. Then it is necessary to cal-

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culate the weight, check the consistency and analyze the results.

Firstly, through calculation, the weights of the indicators at all levels of the evaluation system at the factor and indicator levels are shown in Table 2.

Secondly, through calculation, the value of the consistency index CR of the judgment matrix of the element layer and the index layer of the evaluation system is as follows: CR element layer=0.0339, CRX1=0.0357, CRX2=0.0215, CRX3=0.0728, CRX4=0.0257, CRX5=0.0198, CR total=0.0506, all of the values are less than 0.1, which can pass the consistency test, showing that the expert's evaluation of weight is reasonable.

Finally, comparing the weight of each index in the table, we can see that the order of each factor are profitability (X3), brand image (X4), development potential (X5), marketing ability (X2) and employee ability (X1), among which, profitability (X3) and brand image (X4) are the two most important factors. Among the two important factors of profitability and brand image, the "The profit margin of fresh farm super (X34)" and "Return on Equity (X35)" in "Profitability (X3)", as well as the "Consumer Satisfaction with the Quality of Fresh Agricultural Products (X41)" in "Brand Image (X4)", are the three most influential evaluation indexes, which once again reflects the importance of profitability and brand image to brand competitiveness.

Table 2. Weight of evaluation Index of Fresh Agricultural Supermarket Brand Competitiveness

Objective Level	Element Layer	Factor Layer Weight	Index Layer	Index Layer Weight	Total Weight
Fresh agricultural supermarket brand competitiveness (*Y*)	X1	0.1162506	X11	0.210606	0.024483074
			X12	0.240909	0.028005816
			X13	0.347353	0.040379995
			X14	0.201132	0.023381716
	X2	0.1312626	X21	0.30913	0.040577208
			X22	0.49781	0.065343835
			X23	0.19306	0.025341558
	X3	0.3806536	X31	0.047696	0.018155654
			X32	0.170549	0.064920091
			X33	0.125663	0.047834073
			X34	0.256092	0.097482342
			X35	0.210645	0.080182778
			X36	0.189355	0.072078662
	X4	0.2254186	X41	0.369009	0.083181492
			X42	0.151688	0.034193297
			X43	0.137255	0.030939830
			X44	0.147059	0.033149834
			X45	0.194989	0.043954147
	X5	0.1464146	X51	0.387302	0.056706667
			X52	0.442857	0.064840731
			X53	0.169841	0.024867202

In addition, when evaluating the elements of "Employee Capability (X1)", the most influential evaluation index is "Service Level of Fresh Farmer and Super worker (X13)". The service of employees takes place at the first moment of the contact with consumers, and the level of staff's service can have a positive impact on the strength of brand competitiveness. When evaluating the elements of "Marketing Ability (X2)", the most influential index is "Marketing expenditure as a proportion of sales revenue (X22)", which shows that the promotion intensity of fresh supermarket can have a positive impact on the strength of brand competitiveness

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within a certain range. In evaluating the elements of "Development Potential (X5)", the most influential index is "Growth in Profit Margin of Fresh Farmers over the Past Year (X52)", which is an important factor to determine the sustainable development of agricultural super, especially the chain agricultural super.

2.3 Evaluation Measurement Quantitative of Fresh Agricultural Supermarket Brand Competitiveness

Based on the research data of related trade associations and third-party consulting (China Chain-Store & Franchise Association, Deloitte China, etc.) and the data published on relevant websites, combining the development status and development trend of fresh agricultural supermarket, the reference values of third-level indexes in the index system is determined. The calculation methods and reference values of the indicators are shown in table 3.

Table 3. Three-level Index Calculation Method and Reference Value

Third level index	Reference value
(X11) Education of employees of fresh agricultura supermarket	30%
(X12) The input of education on employees of fresh agricultural supermarket (yuan)	5000000
(X13) Service level of employees of fresh agricultural supermarket	100
(X14) Customers' unsatisfied and demand handling level of fresh agricultural supermarket	100
(X21) The amount of advertising for promotion by fresh agricultural supermarket (yuan)	30000000
(X22) Spending on marketing as a proportion of sales revenue	6%
(X23) The ratio of sales volume to operating area (average sales volume)	30000
(X31) History of the Establishment of fresh agricultural supermarket (Year)	100
(X32) Number of chain stores	340
(X33) Operating Area (ten thousand m^2)	87
(X34) Profit Rate of fresh agricultural supermarket	8%
Return on net assets	15.34%
(X36) Contribution rate of total assets	16.6%
(X41) Customer satisfaction with the commodity quality of fresh agricultural supermarket	100
(X42) Consumer satisfaction with the reasonableness of commodity prices	100
(X43) Customer satisfaction with fresh agricultural supermarket's service	100
(X44) Satisfaction with fresh agricultural supermarket's environment	100
(X45) Consumer awareness of brands of fresh agricultural supermarket	100
(X51) Growth in sales of fresh agricultural supermarket over the past years	10%
(X52) Growth in profit margins of fresh agricultural supermarket over the past years	8%
(X53) Earning per share(EPS) for fresh agricultural supermarket	30%

3. Application Example of Evaluation Index System of Brand Competitiveness of Fresh Agricultural Supermarket under the Background of Big Data

3.1 Evaluation of the Fresh Z Agricultural Supermarket Brand Competitiveness

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The above index system is used to evaluate the brand competitiveness of Fresh Z Agricultural Supermarket. The data of the quantitative index of the evaluation of Fresh Z Agricultural Supermarket brand competitiveness are from the annual report issued by Fresh Z Agricultural Supermarket in recent years. The data of qualitative index come from the questionnaire survey of consumers of Fresh Z agricultural supermarket. In the course of pre-investigation, 200 questionnaires were distributed, 182 questionnaires were collected and 169 valid questionnaires were collected through online survey. The structure and options of the questionnaires were tested and improved. In the course of formal investigation, the method of on-line survey was also adopted. 600 members were randomly sampled, 600 questionnaires were distributed and 547 questionnaires were collected and 520 valid questionnaires were collected. By calculation, the brand competitiveness Y=123.80370333.

Although the brand competitiveness score of a fresh agricultural supermarket cannot absolutely show the brand competitiveness of the fresh agricultural supermarket(it needs to be compared with other similar fresh agricultural supermarket), but this "score" and its composition can still show a lot of valuable information, specific analysis as shown below.

3.2 The Interpretation and Enlightenment of the Index Value of Brand Competitiveness

By comparing the proportion of contribution degree of the second index with the factor-layer weight of the index system, we can find out the advantages and disadvantages of Fresh Z Agricultural Supermarket. If the proportion value of the contribution degree of the second index is basically the same as the weight of the second index (factor layer weight), it indicates that the fresh agricultural supermarket level is in a steady state in all aspects. The comparison results are shown in Table 4 and Figure 1.

Table 4. Comparison between the Contribution Degree of Second Level Index and the Weight of Second Level Index

	X1	X2	X3	X4	X5
Element Layer Weight	11.62506	13.12626	38.06536	22.54186	14.64146
Second Level Index Contribution Degree (%)	10.3160314	19.6436661	23.214167	12.2762156	34.54992

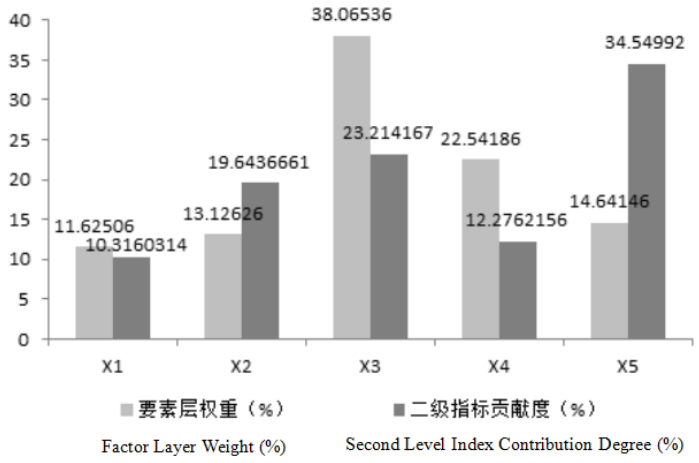


Figure 1. Comparison of Contribution Degree and Factor Layer Weight of Second Level Index in Fresh Z Agricultural Supermarket

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4. Suggestions on Promotion of Brand Competitiveness under the Background of Big Data

By constructing the index system of brand competitiveness, the importance degree of each factor was determined, and some problems were found in improving brand competitiveness of fresh agricultural supermarket. In view of these problems, the following countermeasures and suggestions are put forward.

4.1 Strengthen the Joint Efforts of Fresh Agricultural Supermarkets, and Manage Them on A Large Scale

The collectivization and scale is the magic weapon to improve the market competitiveness of fresh agricultural supermarket in the market competition. At present, there are a lot of fresh agricultural supermarkets, but many of them are not scale and cannot form a scale advantage, it is difficult to form a strong competitiveness. Fresh agricultural supermarket should actively integrate market resources and form an integrated management group. Fresh agricultural supermarket scale through mergers, acquisitions, holdings and other forms, scale expansion of fresh agricultural supermarket - can enhance market competitiveness.

4.2 Reasonable Layout of Regional Development and Moderate Expansion

Under the condition that the retail markets of the first class cities are saturated, it can move to the second class cities and the third class cities, if the capacity allows, they can go out of Shandong province and go to the whole country for market expansion. However, the scale obstacle is one of the difficult problems faced by many fresh agricultural supermarkets, such as Fresh Z agricultural supermarket which has the large size but the profit per unit area is not big. Without an efficient operating system, a huge system would be a burden on fresh agricultural supermarket. Simply by expanding the scale of the market, in the later period will only reduce the operation efficiency of fresh agricultural supermarket business. Therefore, the expansion of scale should be moderate.

4.3 Strengthen Capital Operation and Improve Profit Margin

It is beneficial to increase the profit margin and expand the super-scale of fresh agricultural supermarket to improve the capital operation ability and reduce the cost of fresh agricultural supermarket. In order to reduce the cost, it is necessary to improve the efficiency of management and operation by purchasing, logistics, warehousing and other aspects.

4.4 Build Own Brand and Develop Own Characteristics

Under the situation of fierce competition of fresh agricultural supermarket, Simple imitation is difficult to make fresh agricultural supermarket occupy the favorable market position. Fresh agricultural supermarket should be based on the geographical, market conditions, combined with their own development strategy to create their own brand, and conduct the characteristics of management. The key to building a self-owned brand is to have its own brand concept and establish a fresh agricultural supermarket-image. The fresh agricultural supermarket must start with consumer demand, fit consumer psychology, improve service quality, optimize customer's consumption experience and improve customer loyalty.

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4.5 Increase Marketing Input and Improve Market Position

Marketing means such as advertising and campaign promotion can not only increase the sales of fresh agricultural supermarket, but also promote the image of fresh agricultural supermarket and improve brand awareness. At the same time of fresh agricultural supermarket-advertises for their own products, brand image marketing should also be paid attention. Only in this way can excavate potential customers and improved market status.

4.6 Enhance Talent Reserve and Training Efforts to Improve the Overall Level of Employees

The key to the development of fresh agricultural supermarket is talent. Fresh agricultural supermarket should actively introduce talents and modern management concepts to improve the core competitiveness of fresh agricultural supermarket. At the same time, education and training of employees should be increased, and their ability and service level should be improved. The establishment of scientific human resources development plan is of vital importance to the development of employees and fresh agricultural supermarket.

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