

Research Article

Enterprise Brand Competition Ability and its Application Research Based on System Dynamics

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Abstract: In this study we modeling the enterprise independent brand operation ability of the system with the method of system dynamics, have the, analysis to the relationship between R&D, production, marketing of the three subsystems, analyzes the factors that influence the brand competition risk, grasp the various factors for the competitive strategy of enterprise brand influence, implementation and algorithm by using vensim software and then through the clustering analysis, we have a study of 12 enterprises leather brand operation ability, the result has reference value for practical construction of independent brand+ -s of Chinese enterprises and we provide some suggestions to enhance the own brand operation capability of Chinese enterprises, which has important theoretical innovation and practical significance.

Keywords: Brand operation ability, brand competition ability, system dynamics

INTRODUCTION

Nowadays, many industries become more and more sophisticated technology, product homogenization serious, manufacturers in the price competition situation. Consumers often rely on a brand to distinguish between similar products, to a certain extent, the brand represents the image of the enterprise, service level and other factors and some even is a status symbol, namely the brand added value brought by the intangible value.

There are also many scholars at home and abroad have the research on the brand effect and market of enterprise operation result and consumption patterns of the relationship. Haizhong *et al.* (2006) have the research on the relationship between the brand asset consumption mode and the product market output mode, important research results have been achieved, is of vital significance for the construction of enterprise's brand assets. Xiucheng (2000) successfully on brand equity evaluation system and related factors were constructed, it has important practical significance. Yiming (2008) will be targeted in the future development of the enterprise brand, studied the brand extension strategy, which has important significance for enterprises in the future to further build the brand strategy. Hongjun *et al.* (2008), according to the actual situation of our country small and medium-sized enterprise, analyzed the development path of the assets of the brand, in-depth analysis and research and has achieved good result. Song and Zhuang (2001) analyze

and strengthen brand strategies and activation strategies, which has important practical significance. Shengbing and Taihong (2003) introduce a five-dimension model for brand personality in China and a cross-cultural comparison is made to identify the distinctiveness and uniqueness of the dimensions of brand personality under the circumstance of Chinese culture. Huajun and Yueyao (2008) establish the category demand intensity coefficient selection, price, cost and demand functions and explain that the market share decision is determined by the price mechanism and common brand mechanism. Tao (2006) study the influencing factors as well as key success factors to the development of Chinese enterprises own brand.

Chen (2009) discusses the correlation between the brand value and corporate profitability and tries to apply it in real investment. Jin (2011), according to the exploratory factn, get a comprehensive evaluation model of enterprise brand.

OPERATIONAL CAPABLITIES BRANDS

Brand, an intellectual property right, is able to be operated like capital to help businesses to achieve value. Independent brand is the enterprise's core technology through independent innovation. It represents comprehensive competitiveness on independent R&D, human resources, financial resources, management, corporate culture, product quality, marketing strategies and other elements. Independent brand refers not only to corporate

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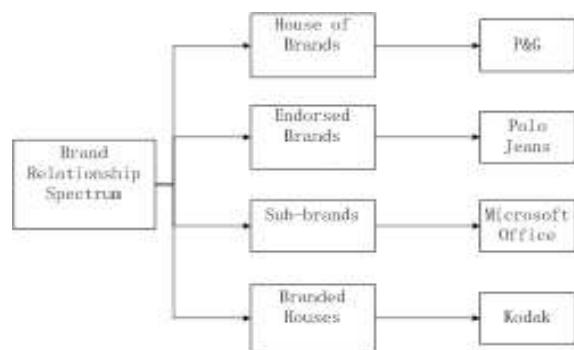


Fig. 1: Brand relationship spectrum

ownership of its own brand, but also refers to the ability to operate its own brand. It reflects the results of effective allocation of resources for their own company through a series of production and business activities.

Usually brand building only focuses on brand marketing, while analysis of technology research and development for the brand is rare. So this study aims to pursue brand strength and realize brand value, taking manage collaborative as systemic innovative means. The enterprise own brand operational capacity systemic architecture is divided into R&D, production and marketing three sub-systems.

Among them, R&D subsystem ensures the uniqueness of goods. A corporation integrates various manpower and material resources, with most advanced science and technology, conducts innovative research and development of its products, forming competitive goods having their own independent knowledge ownership. Production subsystem ensures the quality of goods. It ensures normal production of goods and the normal operation of enterprises, supplying goods in right quality and quantity timely. Marketing subsystem ensures the sale of goods. It chooses the most favorable sales channel for enterprises, delivers quickly and efficiently to the target market, thus creating a competitive advantage in the market, having access to greater benefits. The system of independent brand operation ability is based on the synergy of above three sub-systems to achieve the goal of maximizing brand added value.

According to the brand relationship spectrum proposed by Asker and Erich, the enterprises to adopt the brand strategy summed up into the following four categories, as shown in Fig. 1:

- The "House of brands", every brand is completely independent of the existence of the strategy, although to a certain extent, weakened the effect of scale enterprises, but can subdivide each target market, minimize the loss.
- The "Endorsed brands" strategy, only the enterprise brand value and Lenovo successfully transplanted to the existing product brand, brand strategy to promote the new endorsement of the product brand

and endorsement of the brand to two common developments.

- The "Sub-brands" strategy, the main role of secondary brand strategy is the original the market value of brand extension to new market segments. Based on the parent brand value, the brand added new value of secondary specific.
- The "Branded Houses" refers to the enterprise to all of its products are uniform naming, each product type, type, grade, although not the same, but its brand consistency.

Our country enterprise brand strategy is the main "brand house" strategy, relying on low cost, differentiation competitive strategy to open up the market and then extended to the related field.

Different brand strategies represent the products of different enterprises operating philosophy, now more and more enterprises begin to realize, making good the additional value of brand strategy is conducive to the formation of consumer brand loyalty, influence consumer behavior, bring more profit for the enterprise, help enterprise long-term development.

SYSTEM DYNAMICS ANALYSIS OF BRAND OPERATION ABILITY

System Dynamics or SD, is proposed in 1956 by Professor Forrest in the Massachusetts Institute of Technology. It's a subject to study information feedback system, also a cross integrated discipline to discover and solve system problems. From a systemic point of view, System Dynamics is a unified method of structural, functional and historical method. It is based on the system theory, with absorption in the essence of cybernetics and information theory. It is a transverse science that integrates natural science and social science.

This study, on the basis of System Dynamics, models on the enterprise independent brand operation ability system, analyses interactive collaborative relationship between R&D, production, marketing subsystems and its formation mechanism in the process of brand equity. It discusses three subsystems' potential effects on brand added value appreciation and feedback on the three subsystems after appreciation. Causality diagram is shown in Fig. 2.

Four System Dynamics Model of Brand Competition Risk Management.

In today's market competition, the enterprise brand operation encountered more and more challenges, from the external macro environment risks, such as the government's economic policy adjustment, etc.; from micro environmental risks, such as the fierce market competition between industries, etc.; from enterprise internal risk, such as production and business operation activities, R&D technology, etc.

From a microscopic perspective, this study studies the factors affecting customer loyalty when enterprises

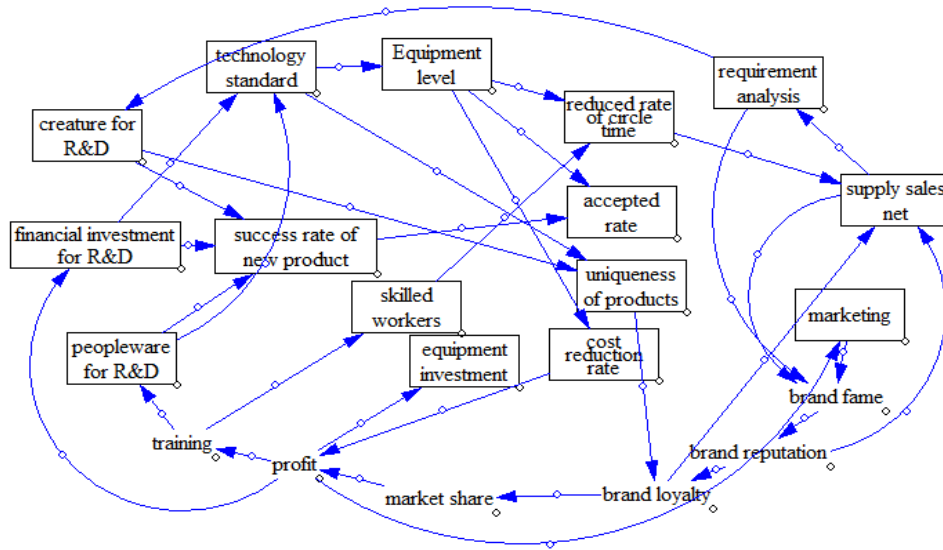


Fig. 2: Causality diagram of enterprise independent brand operation ability system

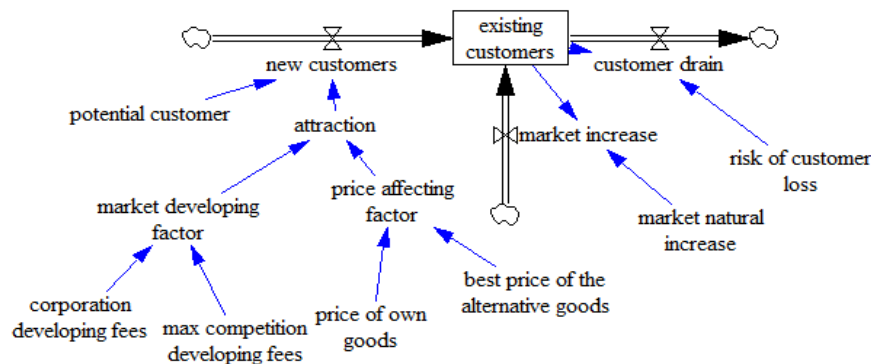


Fig. 3: Market competition risk module flow chart

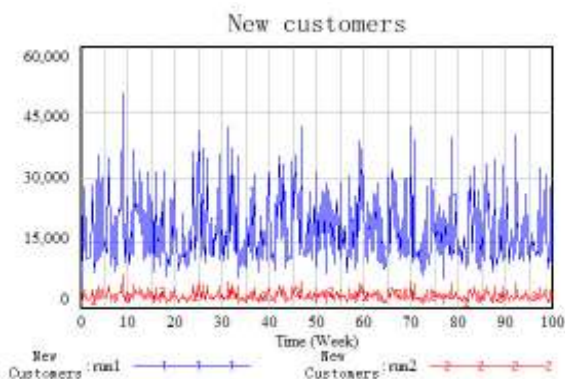


Fig. 4: New customers under the product price change

are faced with products competition in the same industry. It can make each enterprise clear their risk control points, thus is advantageous to the enterprise brand construction and operation.

Flow diagram: Competition in the market risk management system dynamics model is shown in

Fig. 3. Enterprise existing customers changes as alternative products price and competitive enterprises' market development costs change, at the same time, also faces the natural growth of market and the risk of customer churn. Changes of relevant factors can cause the change of the system as a whole. According to the different operational data of various enterprises, draw the most important factors influencing the amount of its clients. Through good risk control, make the enterprise brand operation well.

Analysis:

- **Product prices affecting new customers:** What can be found from Fig. 4 is that, when the company's own product price changes from 70 to 100, new customers of the company significantly reduces and the volatility reduces. As can be seen from Fig. 5, when the price is low, the company has a large customer base and a competitive advantage. This is because, when the company product price increases, some customers are attracted away by inexpensive products, causing the company products' competitive advantage

Table 1: Variance results of single factor analysis

ANOVA	Clustering		Error		F	Sig.
	Variance	d.f	Variance	d.f		
The main business income (¥)	6.433E20	3	2.819E18	8	228.192	0.000
Main operating cost (¥)	4.635E20	3	1.247E18	8	371.818	0.000

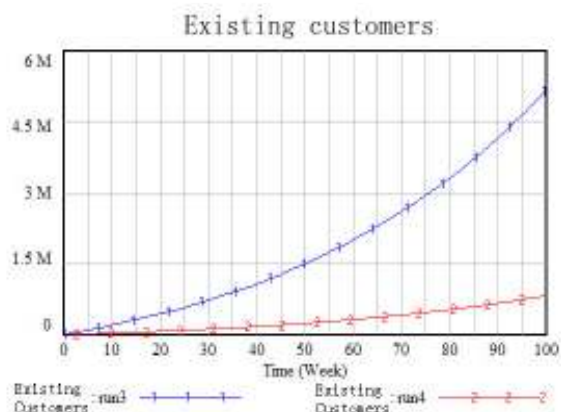


Fig. 5: Existing customers under the price change

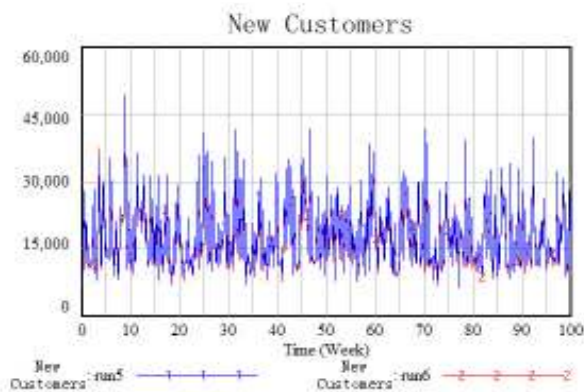


Fig. 6: New customers under the change of the market development expenses

weakened. So the new customers and total customers reduce and because of the reduced degree of competition, volatility is weakened.

- Market developing costs affecting new customers:** The market developing costs reduce from the original 10000 to 5000, it can be seen from Fig. 6, in both cases there's little change in the number of new customers and the curves are almost coincide. Compared with Fig. 4, the company's existing customer is impacted by product prices more, while by the enterprise market developing costs less.

Then we analyze the actual data in 2005 with the method of correlation clustering and obtained the following results:

Table 1 gives the single factor variance analysis results of the variables. The probability of the business income and the main business cost main is 0, far less

Table 2: Cluster member

Case	Firm	Cluster	Distance
1	Changhong	1	1.011E9
2	TCL	2	0.00000
3	Chunlan	3	1.223E9
4	Gree	4	3.441E8
5	Hisense	1	1.409E9
6	Konka	1	3.067E9
7	Kelon	1	2.950E9
8	Meidi	4	8.065E9
9	Meiling	3	1.386E9
10	Haier	4	9.248E8
11	Little Swan	3	1.811E8
12	Xoceco	1	2.517E9

Table 3: Cluster member

Case	Firm	Cluster	Distance
1	Changhong	2	3.350E9
2	TCL	2	3.350E9
3	Chunlan	3	4.240E9
4	Gree	4	1.559E9
5	Hisense	1	6.735E9
6	Konka	1	7.075E8
7	Kelon	1	1.330E9
8	Meidi	4	8.872E9
9	Meiling	3	5.279E9
10	Haier	4	8.190E9
11	Little Swan	1	6.017E9
12	Xoceco	3	1.053E9

than the significant level of 0.01, so that all two variables showed significant differences in the four categories, all two variables in the cluster analysis play a significant role in the process of. So the samples will be divided into four kinds of cluster analysis is successful, the cluster effect is more ideal.

Table 2 gives the information of category that each company belongs to, we can see the first class consists of 5 companies; second class contains 1, third and fourth contain 3 companies. At the same time, the last column in the table gives a company to the final class center distance. The clustering results according to four kinds of initial settings are divided. The first category includes Changhong, Konka, Xoceco, Hisense Kelon and company; second categories including TCL Corporation; third categories including Chunlan, Meiling and Little Swan Company; fourth category include Gree, Meidi and Haier Company.

According to the mean of each company, the 12 companies according to the degree of development is divided into four categories, which in 2005 to develop the best for TCL Corporation; development of better for Gree, beautiful and Haier company; general development for Changhong, Konka, Xoceco, Hisense Kelon and company development is Chunlan, poor; Meiling and Little Swan company.

Similarly, we analyzed related data of 12 enterprises in 2011 and compared the final result with that in 2005, to see the brand development of 12 companies in 7 years. The final results are shown in Table 3.

According to the information given in Table 3 can be concluded in 2011 that 12 enterprises brand development, which to develop the best is Gree, Meidi and Haier company; development of better is a TCL, Changhong company; development general as Hisense, Konka, Kelon, Little Swan Company; development for the poor Chunlan, Meiling and xoceco. And the main business income and the main business costs in the four class of the Division also showed apparent difference, clustering effect is successful.

CONCLUSION AND RECOMMENDATIONS

Corporate brand building has always been the weak link in the development of China's enterprises. Strengthening its own brand operation capacity is the urgent problem to solve. For a combination of the above analysis and system dynamics model, this study makes the following suggestions to enhance the own brand operation capability of Chinese enterprises:

- To reduce the competitive risk of brand operation, companies can appropriately reduce investment in the market developing costs, shift to develop new product, improve the technical level and reduce product costs, in that case retain a broad customer base. Meanwhile, the development of new markets and new customer's needs to invest more and to retain existing customers can bring greater benefits for the enterprise, on which the enterprise should focus its attention.
- The key to encourage enterprises own brand operating capability system healthy functioning is the collaboration and innovation of R&D and marketing subsystems. Collaboration between the two subsystems requires enterprise to build a suitable organizational structure, break the existing relatively limited sector boundaries, explore new value opportunities and focus on new market range, allowing companies to build their own brands more smoothly and have great progress.

- The successful enterprise brand operation is based on the synergy of its development, production and marketing systems. Three subsystems' interaction and cooperation provide a supporting role for the enterprise building its own brand. Owning independent intellectual property rights of high-tech is the guarantee for brand value, making corporate goods different from other commodities and extending product life cycle. Good quality supports brand value growth and it sets basis for the brand in a dominant position in the market competition. Last but not least, marketing is a necessary means to achieve all these.

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