

Research Article

Data Fusion Model for High-Tech Products Marketing

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Product differentiation is one of the highlights of the success of today's increasingly competitive marketing. This article aims to study the construction of differentiated marketing strategies for high-tech products. This paper proposes to investigate and study customers, high-tech industry workers and leaders, etc., through the analysis of massive data, introduce the concept of data fusion and the weighting algorithm for data fusion, introduce DS evidence theory to judge the accuracy of the data on this basis, make the data more real and clean up abnormal data, perform relevant data processing on the determined data, and calculate and analyze the data differences of relevant groups. It also proposes to refer to the characteristics of high-tech products, understand the characteristics and implementation directions of differentiated marketing, draw differences between different groups, summarize customer characteristics and marketing directions, so as to trace the needs of customer groups, find customer pain points and difficulties, pinpoint product positioning, and achieve the goal of differentiated marketing. The experimental results of this paper show that big data fusion analysis can find customers in a targeted manner and polish the highlights of high-tech products. Compared with previous results, the performance is improved by more than 30%. Consumer satisfaction increased by more than 20%.

1. Introduction

High-tech enterprises are an important force in a country's national economy and a necessary and powerful pillar that cannot be ignored. High-tech companies not only provide the society with advanced products and high-quality services, but also promote technological changes and the upgrading of traditional enterprises, and provide society with a large number of employment opportunities.

With the in-depth development of the era of knowledge economy, some underdeveloped countries and regions are increasingly feeling the impact of the development of high-tech enterprises. The competitive advantages and market power of traditional enterprises and industries no longer have advantages, while the vitality and competitiveness of high-tech enterprises are becoming more prominent. Therefore, more experts and researchers are attracted to shift their research focus to the production and business models of high-tech companies and study their future development

trends based on this. At the beginning of this century, under the leadership of the State Council, a "disconnected" and "transformed" movement promoted popularization in more than 200 scientific research institutes across the country. A large number of national and local scientific research institutions gradually got rid of their institutional identity and reorganized into joint-stock companies. They quickly registered successfully in the capital market. In recent years, high-tech companies have performed well in the capital market. Many private funds have chosen to develop technology or cooperate with scientific research institutions and have joined high-tech enterprises one after another, and the domestic high-tech enterprise team has grown rapidly. From the perspective of development trends, high-tech enterprises have performed well, which to a large extent promoted the rapid development of the national economy. It also brought tremendous changes to commercial production and people's lives. However, due to the short period of birth, these domestic high-tech companies generally have strong research

potential and many technological achievements, but the potential for transforming products and technologies is very weak, and the transformation of results is very small. At the same time, to a certain extent, policies, capital, and human resources are all concentrated on research and development, and there is a lack of attention to marketing. Therefore, these companies have advanced technology, high-quality R&D talents, and high-quality results and scientific research products, but they are always accompanied by weaknesses in poor marketing capabilities.

At present, many domestic companies and experts and scholars in related fields have paid enough attention to product marketing. They have studied high-tech product marketing data acquisition, risk management, and marketing strategy formulation from different directions. Byrne et al. analyzed the relationship between high-tech products and prices, and the article elaborated that high-tech products have a profound impact on the economic growth model [1]. In fact, the speed of innovation in the science and technology sector is faster than that inferred from official statistics (not so fast outside of the high-tech field). These results will deepen the productivity problem. Sheng and He analyzed and summarized the advantages and disadvantages of export competitiveness of high-tech products. By comparing data, it is concluded that the key to the export competitiveness of my country's high-tech products lies in research and development, innovation, financing, and exports. Based on China's relevant policies, Sheng and He provided some suggestions for enterprises to reduce costs [2]. Yang and Gabriellsson's research explored the marketing decision-making process of entrepreneurs who conduct entrepreneurial marketing in International New Ventures (INV) that operate in the high-tech business-to-business market. They developed a dynamic model that showed the alternation between effective and causal processes, as well as the feedback loop of entrepreneurial marketing. This research provides enlightenment for the management of organizations operating under uncertainty, how the decision-making process of these organizations optimizes entrepreneurial marketing, how to create new markets, and how to reduce the perceived uncertainty in the industrial market [3]. Dhebar studied six dangers that marketers face: major market uncertainty, major technical uncertainty, product compatibility issues in complex multi-component systems, coordination of self-enhanced network effects, and response to the complexity of the ecosystem and competition challenges, as well as the inherent risks of making difficult choices among multiple product market options with significant path dependence. He discussed these dangers and suggested steps that marketers can and should take to reduce the risk of entering the market [4]. Lin and Narasimhan started with consumer preferences and studied the different ways in which vertically differentiated market persuasive advertising may affect consumer utility [5]. It was concluded that persuasive advertising can simply increase consumers' booking prices for product categories, persuasive advertising can enhance consumers' perception of the quality of products provided by advertising companies, and persuasive advertising can increase consumers willingness to pay for quality and value-

added. Kim took enterprises as the research object to study whether the relationship between corporate social responsibility and consumer response is symmetrical [6]. The Harrington et al.'s study aimed to examine product differences in the minds of customers and non-customers, and to solve the problem of using absolute measures, by integrating the competitive environment and the views of customers and non-customers, to better understand the marketing strategy and its impact on customer value [7]. Liao et al. reported the results related to data fusion, aiming to find a more suitable way to solve the problem through data fusion [8]. These studies have their own unique aspects, but for the marketing of high-tech products, they have never hit the point. In order to achieve the best effect in commercial marketing, it is nothing more to achieve the realm of "others don't have it, I have it, others have it but mine is better." The key lies in the difference of products.

This article starts with the basic business logic and adopts differentiated marketing plans for the relevant characteristics of high-tech products. Its advantages are as follows: (1) The survey is comprehensive. The survey is not only for users and manufacturers. We include the evaluation of enterprise employees, and the data is richer and more reliable. (2) The pertinence of marketing. Marketing is not only a change in sales, but also a comprehensive differentiation of technology, thought, service, and brand. (3) Visualization of data. Through user survey data, analysis, and processing, it ensures the authenticity and observability of the number.

2. Marketing Methods under Data Fusion

2.1. Data Fusion. Data fusion, also known as information fusion, is a cutting-edge technology of multidisciplinary cross-linking, which brings together the development results of computer systems, communications, and microelectronics technology and includes almost all new research fields today [9]. Based on this, it is difficult to give a unified and acceptable definition of data fusion in all fields. At present, a broad overview of data fusion is the integrated process of using computers to process, control, and make decisions on various information sources [10]. Among them, the fusion system provides hardware support, and the data analysis is handled by the fusion method. For different fusion processes, the fusion systems can be the same or similar, but data analysis will vary greatly due to different fusion processes. Therefore, data analysis and fusion methods have become the key to the data fusion process.

2.1.1. Principles of Data Fusion. Data fusion is a common basic function in humans and other logical systems [11]. In daily life, we can collect all the information around us with our audiovisual, smell, touch, and other body sensors and analyze, process, and make decisions about it, so that we can solve all the affairs around us at will. In human integrated information processing, data aggregation simulates the human body's behavioral pattern of processing data. The principle is to integrate multiple sensor resources, analyze and process data information, and determine the target

environment and conflict information according to specific rules. This combination optimization realizes consistent interpretation or description of the measured object and correct judgment of the objective function. Through the sensor system control, the fusion processing system significantly improves the accuracy and stability [12].

2.1.2. Data Fusion Level. In a multi-sensor system, the information represented by each sensor has different characteristics: real-time or non-real-time, fuzzy or deterministic, reliable or unreliable, supportive or complementary, etc. This requires that, in the process of data fusion, the data should be processed step by step and hierarchically based on the data characteristics and application requirements. According to the different operating levels of sensor data, data fusion can be divided into three levels: data layer, feature layer, and decision-making layer.

2.1.3. Main Algorithms of Data Fusion. Multi-sensor information at different fusion levels is redundant or complementary. In order to eliminate redundant information and enhance the complementary relationship between data, a corresponding fusion algorithm is needed to process the data [13]. The division structure is shown in Figure 1.

The least square method (also known as the least square method) is a mathematical optimization technique. It finds the best function match of the data by minimizing the sum of squares of the error. The least squares method can be used to easily obtain unknown data and minimize the sum of squares of errors between the obtained data and the actual data. The least square method can also be used for curve fitting, and some other optimization problems can also be expressed by the least square method by minimizing energy or maximizing entropy. Kalman filtering is an algorithm that uses linear system state equations to optimally estimate system state through system input and output observation data. Since the observation data includes the influence of noise and interference in the system, the optimal estimation can also be regarded as a filtering process. Bayesian inference is a method of inference statistics. This method uses Bayes' theorem to update the probability of a particular hypothesis when there is more evidence and information.

2.1.4. Data Layer Fusion Algorithm. Data layer fusion algorithms mainly include weighted average algorithm, Bayes algorithm, Kalman filter method, etc., which are all classic data processing algorithms. However, they have exposed two problems in practical applications. One is that most algorithms presuppose that the data obey a normal distribution. However, a large number of experiments have shown that most of the meter measurement data does not conform to the normal distribution, but is between uniform and positive. The second is that the algorithm may not be able to eliminate individual outliers. In order to solve the above problems, a fusion algorithm based on the support matrix is proposed here, which only uses the information contained in the data itself, avoids the assumption of normal distribution, and can accurately fuse the data.

First introduce the concept of data support. For any set of measurement data $Z_1, Z_2, Z_3, \dots, Z_n$, from the perspective of Z_x , it is more likely that Z_y is the real data. Under the concept of support, the authenticity of the data is only determined by itself; that is, the higher the authenticity of Z_x , the higher the degree of support by the rest of the data. On this basis, define the relative distance between the data:

$$S_{xy} = |Z_x - Z_y|, \quad x, y = 1, 2, 3, \dots, m. \quad (1)$$

Redefine the support function:

$$a_{x,y} = 1 - \frac{S_{x,y}}{\max\{S_{x,y}\}}, \quad S_{x,y} \geq 0. \quad (2)$$

Here, $\max\{S_{x,y}\}$ is the maximum value of the relative distance between data. It can be seen from formula (2) that the degree of support $a_{x,y}$ increases with the relative.

As the distance $S_{x,y}$ increases, it decreases. This shows that the difference between the data is inversely proportional to the degree of mutual support, which is obviously in line with common sense. For data fusion problems, establish a support matrix:

$$A = \begin{bmatrix} a_{11} & \dots & a_{1m} \\ \vdots & \ddots & \vdots \\ a_{m1} & \dots & a_{mm} \end{bmatrix}. \quad (3)$$

The degree to which the m -th data is comprehensively supported by other data must be obtained from the support matrix E_m , that is, to determine its own weight coefficient A in the overall data. According to the principle of information sharing, $\sum_{m=1}^n E_m = 1$, because E_m should synthesize the overall information of $a_{m1}, a_{m2}, a_{m3}, \dots, a_{mm}$, and from the theory of probability source merging, there must be a set of non-negative real numbers $t_1, t_2, t_3, \dots, t_n$, such that

$$E_m = t_1 a_{m1} + t_2 a_{m2} + \dots + t_n a_{mm}. \quad (4)$$

We have the following:

$$E = [E_1, E_2, \dots, E_n]^i, \quad (5)$$

$$K = [K_1, K_2, \dots, K_n]^i.$$

Formula (4) is expressed as a matrix form:

$$E = AK. \quad (6)$$

Since the support matrix A is a non-negative matrix, there must be a non-negative maximum eigenvalue γ_{\max} , which can be expressed as

$$\gamma_{\max} K = AK. \quad (7)$$

The eigenvector γ_{\max} corresponding to the largest eigenvalue $K = [k_1, k_2, \dots, k_n]^i$ can be obtained; then, the weight of the l -th data Z_l itself is E_l .

$$E_l = \frac{k_l}{k_1 + k_2 + \dots + k_n}. \quad (8)$$

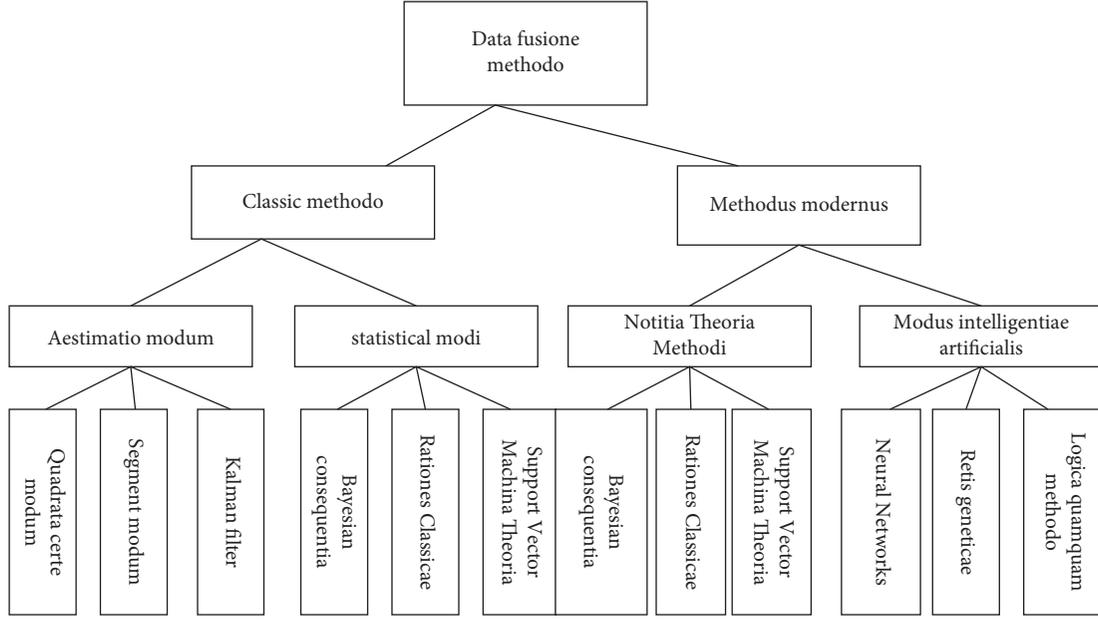


FIGURE 1: Data fusion method.

Then, the final fusion result of this group of data of Z_1, Z_2, \dots, Z_n is

$$Z = E_1 Z_1 + E_2 Z_2 + \dots + E_n Z_n. \quad (9)$$

This is the fusion of intermediate levels. In this method, each sensor observes the target, extracts representative features from the observation data, obtains feature vectors, then fuses these feature vectors, and makes an attribute description based on joint feature vectors. Feature layer fusion is to extract features from the original data provided by sensors. Therefore, a certain amount of data compression is achieved before fusion, which is conducive to real-time processing, but its accuracy is reduced due to the loss of data.

2.1.5. Decision-Level Fusion Algorithm Based on D-S Evidence Theory. D-S evidence theory is short for Dempster-Shafer theory. It was first formally proposed by Harvard University mathematician A.P. Dempster in 1967 and then supplemented and developed by his student G. Shafer, and it has now become a classic theory of uncertain reasoning. Compared with other data fusion algorithms, the outstanding advantage of DS evidence theory lies in its ability to directly express “uncertain” and “unknown,” which can make up for the limitations of Bayes algorithm when the prior probability is unknown, and it is mature in the field of uncertainty [14]. DS evidence theory believes that probability is the specific quantification of the target event, which needs to be measured from the perspective of subjective and objective combination. The interval value $[0, 1]$ should be used to judge the result to reflect the degree to which the event is close to right or wrong (or true or false), rather than generally simply classify the result as either true or false (or right or wrong).

(1) *Identification Framework.* The recognition framework is a collection of all possible results of the target event under certain conditions, and these results are mutually exclusive and mutually exclusive, usually represented by β . For example, for the event of a dice roll, the result of a dice roll can only be one of 1, 2, 3, 4, 5, and 6, and they meet the requirements of being unrelated and mutually exclusive, so the recognition framework of the event of rolling a dice can be expressed as

$$\beta = \{1, 2, 3, 4, 5, 6\}. \quad (10)$$

(2) *Basic Probability Distribution.* For the recognition framework β , all results in the problem domain should be included in the set function,

$$h: 2^\beta \longrightarrow [0, 1], \quad (11)$$

and meet

$$h(\beta) = 0, \quad (12)$$

$$\sum_{B \subset \beta} h(B) = 1. \quad (13)$$

Then, h is the basic probability distribution function on the recognition framework β , also known as the BPA function.

$H(B)$ represents the basic probability distribution of result B , that is, the degree of support for the occurrence of result B . Take the event of rolling a dice as an example; if the basic probability distribution of a piece of evidence is $h(\{1\}) = 0.3, h(\{2, 4\}) = 0.6, h(\{5\}) = 0.1$, it shows that this piece of evidence supports 1, $\{2, 4\}$, 5, and the degrees of support for them are 0.3, 0.6, 0.1.

(3) *Trust Function*. D-S evidence theory expresses the support for any hypothesis by defining an interval. The lower limit of this interval is called the trust function, also known as the reliability function. In the recognition framework β can be defined as

$$Bel(B) = \sum_{B \in A} h(B). \quad (14)$$

In particular, when the recognition framework β has only a subset, namely,

$$h(B) = \begin{cases} 1, & B = \beta, \\ 0, & B \neq \beta. \end{cases} \quad (15)$$

Then, there are

$$Bel(B) = \begin{cases} 1, & B = \beta, \\ 0, & B \neq \beta. \end{cases} \quad (16)$$

(4) *Likelihood Function*. The upper limit of the interval corresponding to the trust function is called the likelihood function. In the recognition framework β can be defined as

$$pl(B) = \sum_{B \cap A \neq \beta} h(B). \quad (17)$$

(5) *The Relationship between Trust Function and Likelihood Function*. For a certain result B on the recognition framework β , the trust function $Bel(B)$ and the likelihood function $pl(B)$ of the result B are calculated according to the probability distribution of the evidence, and then the trust interval $[Bel(B), pl(B)]$ is determined to indicate the confirmation of the result B degree. The relationship between the two is shown in Figure 2.

$$\begin{aligned} pl(B) &\geq Bel(B), \\ pl(B) &= 1 - Bel(\bar{B}). \end{aligned} \quad (18)$$

(6) *Composition Rules*. Under the recognition framework β , there are multiple evidences for an event at the same time, and each evidence has a corresponding basic probability distribution. At this time, it is necessary to synthesize multiple pieces of evidence information through the synthesis rules of DS evidence theory and finally obtain a comprehensive basic Probability distribution.

Taking two pieces of evidence as an example, the composite rule can be expressed as

$$h(B) = h_1 \oplus h_2 = \begin{cases} 0, & Q_a \cap W_c = \beta, \\ \frac{\sum_{Q_a \cap W_c = B, \forall Q_a, W_c \in \beta} h_1(Q_a) \cdot h_2(W_c)}{1 - f}, & Q_a \cap W_c \neq \beta. \end{cases} \quad (19)$$

Here, \oplus represents the direct sum, $h(B)$ is the basic probability distribution after the result B is synthesized, Q_a and W_c , respectively, represent the subset elements in the first evidence and the second evidence, h_1, Q_a, h_2, W_c is the basic probability distribution, and f is the inconsistency factor; f can be expressed as

$$f = \sum_{Q_a \cap W_c = \beta} h_1(Q_a) \cdot h_2(W_c). \quad (20)$$

When there are multiple evidences, the synthesis rule can be expressed as

$$h(B) = (((h_1 \oplus h_2) \oplus h_3) \oplus \dots) \oplus h_n. \quad (21)$$

The combination rule between the two pieces of evidence is the same as formula (21), and the final combination result has nothing to do with the combination order of each piece of evidence.

2.2. *Differentiated Marketing*. Differentiated marketing is based on market segmentation; based on its own advantages, the company produces better quality and more efficient products that surpass others, or in terms of product sales, through specific promotional activities, flexible sales

methods and unique after-sales service; the company has established a good independent image in the minds of consumers. Michael Porter proposed a non-traditional strategy, that is, a diversification strategy. It believes that differentiation refers to the differentiation of the company's products or services from the company to form its own unique things in the industry [15]. Philip Kotler put forward the concept of marketing diversification, including image diversification, service diversification, personnel diversification, and product diversification. It believes that this element can help the company create a globally differentiated marketing strategy portfolio, differentiate from competitors, create differentiation, and ultimately gain a competitive advantage. Therefore, the essence of differentiated marketing is the differentiated competitive tool provided by the market.

With the rapid economic growth, product classification has become more and more streamlined and more specialized. At the same time, product marketing models are constantly changing, and the impact of differentiated marketing has become more prominent. The innovation of differentiated marketing is not limited to improving the level of marketing, but more importantly, focusing on image innovation, product concepts, and services. The key to differentiated marketing is to do a good job of market

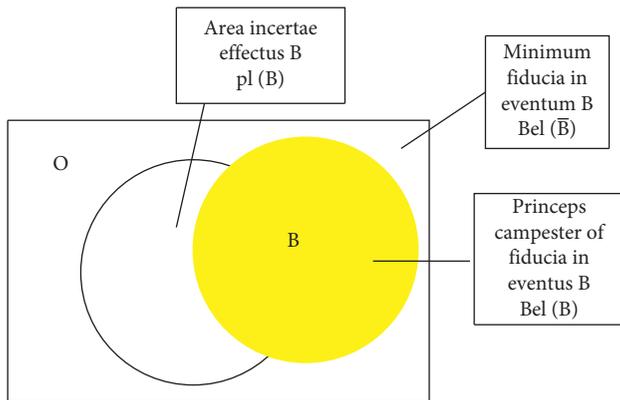


FIGURE 2: Relationship between trust function and likelihood function.

segmentation, touch different points of attraction, and then use differentiated services to meet the needs of users. Differentiation is a systematic concept, and the key lies in sales innovation.

The so-called “differentiated marketing” does not refer to innovation around a certain marketing method or a certain level of marketing, but through the integration of product value, product design, product concept, marketing methods, marketing promotion methods, and other aspects. To achieve diversified marketing innovation, in addition, it should be used as a basis to subdivide the market so that the product can get more social attention, thereby establishing an advantage in the fierce market competition. The current research on differentiated marketing strategies mainly focuses on products, services, and brands [16].

2.2.1. Product Diversification. Product diversification means that enterprises use their own technological advantages to differentiate their products from competitive products in terms of function, design, flexibility, reliability, and stability. Product diversification marketing is an inevitable trend for enterprises in market competition. Although it seems that companies are selling the same products to different consumers, in fact, consumers will choose to buy different things. Product diversification can help companies significantly increase profitability. Product diversification can enable enterprises to not only form market power, but also form market segments, achieve the effect of creating target markets, and avoid wasting resources. Product diversification not only enhances the competitive advantage of non-price enterprises, but also enables enterprises to occupy a dominant position and form an industry monopoly to seize market share. Product diversification is an important part of diversified marketing and a necessary condition for improving product competitiveness. Product diversification includes two aspects: vertical product differentiation and horizontal product differentiation. Vertical differentiation refers to the production of products that are better than competitors; horizontal differentiation refers to the production of products with different characteristics from competitors. For example, domestic washing machines

firstly have differences in laundry capacity, secondly, there are differences between pulsators and rollers, and finally, there are differences in frequency conversion to meet the diverse needs of customers.

2.2.2. Diversified Services. The service diversification strategy refers to the exclusion of other competitors from companies providing high-quality services to consumers. When product differentiation is not obvious, service quality becomes a very critical factor for business success. Using differentiated marketing, companies can concentrate limited resources on higher-profit users at a certain speed and ultimately maximize profits. The diversification of services enables companies to conform to the characteristics of user needs and the rules of real-time evolution and build a diversified service content, method, concept, and culture, and ultimately form their own competitive advantage. In the process of distinguishing services, companies must adapt to market changes and go beyond traditional forms of information and service provision. The difference in services is reflected in whether to provide after-sales service, whether to be polite and warm to customers, whether to customize sales plans for customer needs, etc.

2.2.3. Differentiation of the Brand Image. Regarding brand differentiation strategy, first of all, on how to build a brand, we can look at it from this perspective: a brand can be a symbol, a name, a mark, a design, or a combination of the above elements. The purpose of brand setting is that it can effectively distinguish the products or services sold and can effectively show the differences between competitors. Diversification strategies can help companies play an important role in shaping and promoting brands. As the final result of differentiation, the emergence of the brand also helps the company to generate its own personality characteristics. Therefore, there is an extremely subtle connection between brand and diversification. A brand can be used as a business symbol for a company, or it can be used as a brand to help companies create differences. Just like what some experts mentioned in “Brand 22 Laws,” if you want to create a more successful brand, you must give it based on the company’s unique characteristics. Customers left a deep impression, and it is an advantage that other competitors do not have. Brand differentiation is to distinguish competitors in brand concept and character when the market cannot accept excessive segmentation. Brand differentiation is to differentiate competitors in terms of brand concept and character when the market cannot accept excessive segmentation. For example, Pepsi’s choice of a new generation to differentiate Coca-Cola is an example of brand differentiation. Brand differentiation requires enterprises to make necessary strategic transformation from terminal strategy to media strategy. This involves a concept of “giving up,” which is the key to the success or failure of a business. In order to establish a brand, it is necessary to have the massive delivery of resources, and the enterprise only has the experience of terminal competition at this time. With limited resources, the point input direction must be chosen accordingly.

2.3. Introduction to the SWOT Analysis Method. SWOT analysis method is also called situation analysis method, which is an analysis method with a wide audience. This method was proposed at the end of the last century, and it can visually display the company's current operating conditions, namely, advantages, disadvantages, opportunities, and risks in four aspects [17]. The SWOT analysis method usually starts from the corporate structure, analyzes the overall environment of the company and the company's own strengths and weaknesses, and understands the opportunities and challenges of the company. This method is often widely used in strategic business research. Through the above analysis, this business can put more energy and resources into places with more opportunities, while adjusting existing strategies to achieve expected business goals. If a company can formulate a high-level marketing strategy, it will be very beneficial to the company's long-term development, and it will encourage the company to use its own advantages to make up for its shortcomings, seize opportunities, and counter threats. Its structure is shown in Figure 3:

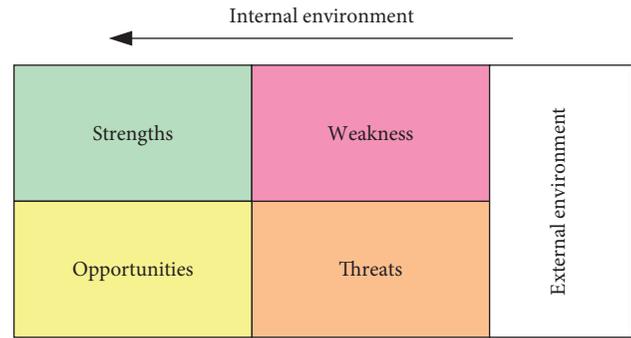


FIGURE 3: SWOT structure diagram.

Strengths: internal factors of the organization, for example, a good brand image; diversified sales channels; good economic conditions; advanced industry technology; excellent product quality; obvious competitive advantages.

Disadvantages: refers to the relative disadvantage of competition, which is also an internal factor of the organization, for example, outdated facilities or equipment; rapid turnover of personnel; complicated internal procedures and nonstandard operating manuals; lack of technical advantages; insufficient funds; excessive inventory products.

Opportunities: external factors of the organization, for example, the launch of new products, the development of new markets, changes in national policies, and the crisis of competitors.

Threats: external factors of the organization, such as the emergence of new competitors, leakage of company secrets, market tightening, and changes in relevant national policies and regulations.

3. Experimental Design and Analysis

3.1. High-Tech Product Survey Questionnaire. In order to better grasp the specific marketing situation of high-tech enterprises, this paper adopts a questionnaire survey method to carefully design the content of the questionnaire on the specific situation of high-tech product marketing and conduct surveys on customers and enterprises. The focus of the questionnaire survey is mainly reflected in the high-tech enterprise product marketing, service strategy, supplier strategy, product strategy, and other issues. The design of the questionnaire mainly covers two main areas. The first piece is the basic information of the survey object, including age, gender, income level, education level, etc., and the second piece is the specific information of the survey, mainly centering on the marketing of high-tech enterprises.

This questionnaire is collected on-site. In this questionnaire survey, we randomly selected 65 customers, 45 employees of high-tech enterprises, and 10 executives of high-tech enterprises to conduct the survey, and a total of 95 valid questionnaires were collected. The design of the questionnaire is reasonable. Executives are not the recipients of high-tech products, and customers are the center of our sales. Selecting certain executives and employees also enriches data. Too much data is useless and cannot reflect the value of the marketing department. The questionnaire under this ratio is the best. The survey results of 95 questionnaires were objective, fair, and reliable. The specific data are as follows.

It can be seen from Table 1 that most of the people who use high-tech products are young people with at least high school education. They have good contact with high-tech products, and their satisfaction and sense of use are not low. But for product marketing, most of them are a little plain, and they do not feel much surprise. In this regard, when differentiated marketing, products can be subdivided, targeting people of different age groups, researching their needs, and designing products suitable for them. At the same time, they regularly return visits to investigate their experience of use and suggestions for improvement, thereby enhancing user satisfaction and brand trust.

It can be seen from Table 2 that users are more price-sensitive, and their perception of brands and channels is not obvious. They have a high degree of acceptance and recognition of various marketing plans, and they are willing to listen to brand stories and improve their experience. Based on this, the company can strengthen brand promotion, tell a good brand story, and increase user brand identity and brand value. At the same time, differentiated price marketing strategies can be designed to meet user needs.

It can be seen from Figure 4 that most users have low evaluations of current high-tech products, and they have higher expectations for the appearance, performance, battery life, and supporting equipment of high-tech products. For high-tech enterprises, more attention can be paid to the appearance and supporting facilities, positioning of different groups, differentiated marketing, and meeting the requirements of different groups to achieve the maximum effect. For the improvement of hardware equipment such as performance and battery life, it can be gradually improved and continuously upgraded and optimized.

TABLE 1: User feeling questionnaire.

	Audience	Education	Product marketing degree (%)	Sense of use (%)	Satisfaction (%)
18–25	55	High school and above	60	75	65
25–40	30	Bachelor's degree and above	65	80	60
Above 40	10	Bachelor's degree and above	70	83	80

TABLE 2: Survey on user differentiated marketing experience.

	Product differentiation (%)	Price differentiation (%)	Channel differentiation (%)
Sensitivity	70	90	80
Satisfaction	75	88	83
Propaganda perception	85	95	80
Recognition	88	93	82

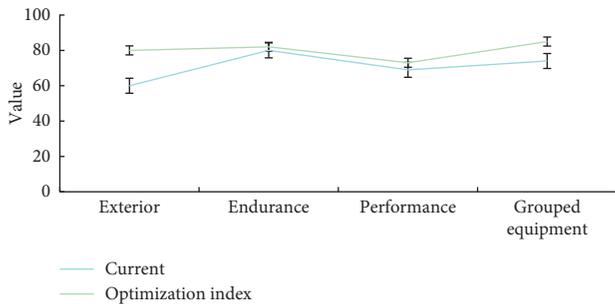


FIGURE 4: Users expect the value of high-tech products to improve.

3.2. Introduction to the Characteristics of High-Tech Products.

High-tech products are products that are based on high technology or original ideas and have a monopoly on the market. This is an inevitable result of high-tech industrialization. High-tech products have gone through various transitional stages of R&D, testing, and commercialization. Finally, they must conform to the market and integrate into market growth trends. High-tech products have the following characteristics:

- (1) *High Investment.* The prerequisite for the establishment of high-tech enterprises is that high-tech enterprises must have their own technological advantages. From technology to products, there are many links in the middle, and the investment volume is huge. If it is a self-developed high-tech enterprise, the investment is even greater. Generally speaking, compared with high-tech enterprises, the input cost of traditional enterprises is less than one-thousandth of it. In addition, high-tech enterprises are also facing a huge demand for high-tech talents.
- (2) *High Risk.* High-tech products also face multiple risks in the entire industry chain, such as the break of the capital chain, low market return, redundant management systems, and difficulty in upgrading technology. The possibility of failure is extremely high.
- (3) *High Returns.* The high-tech content of the products of high-tech enterprises can bring the greatest value to customers, and their high degree of innovation

can also easily realize the formation of technological monopoly and high returns.

- (4) *High Level of Competition.* In the process of fierce market competition, no company can avoid competition with other companies. The competition among high-tech companies is more intense, because high-tech products often have a certain monopoly in the market, and because of this nature, it can generate greater profits. Therefore, more and more companies choose high-tech industries. This has increased the pressure of competition among enterprises to some extent [18].
- (5) *High-Level Knowledge and Technology.* High technology is the product of mutual penetration and integration of many industries. It needs talents with knowledge in multiple fields to integrate multiple knowledge and carry out creative work.

3.3. *SWOT Analysis of High-Tech Products.* As shown in Figure 5, the advantages of high-tech products are reflected in the high market demand for high-tech products and a wide range of users. With the continuous development of science and technology, people's living standards are improving, and people have more time and experience to enjoy life and chase high-tech products. At the same time, high-tech products generally contain technological achievements, are strong competitors, and can easily form a sex price monopoly and obtain high returns.

As shown in Figure 6, the disadvantages of high-tech products are reflected in the high R&D costs of high-tech products and long R&D time, requiring companies to bear high risks. At the same time, there is uncertainty in the rate of return of high-tech products. It is possible that the hard-working products are not actually welcomed by the market, and the risk of failure is high. High-tech products have strong exclusivity, serious homogeneity, and fierce competition among enterprises.

As shown in Table 3, the opportunities for high-tech products are reflected in the state supports the development of high-tech products and promotes the development of high-tech industries. It has formulated a series of incentive policies to encourage the development of high-tech

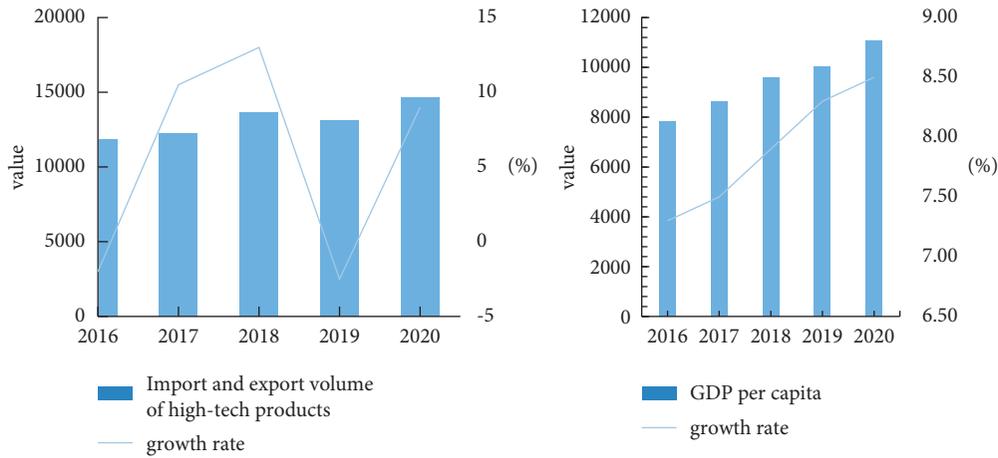


FIGURE 5: Advantages of high-tech products.

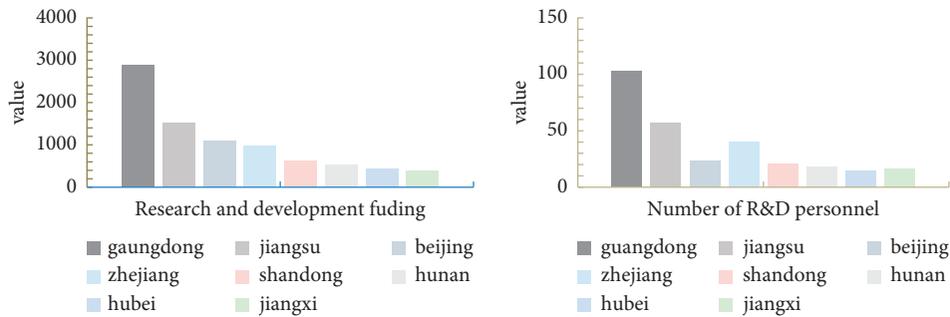


FIGURE 6: Disadvantages of high-tech products.

industries and at the same time introduced tax reduction and exemption policies and related park benefits. In addition, the government has also issued a talent recruitment conference to attract talents from home and abroad to participate in the development of high-tech industries. The future of high-tech products has a bright future.

As shown in Figure 7, the threat of high-tech products is reflected in the fierce market competition, with external capital participating in the competition before, and high-tech enterprises without core competitiveness and increasing internal friction. Insufficient capital supply for high-tech enterprises has led to slow development of enterprises. While squeezing the development of traditional enterprises, high-tech enterprises will inevitably face resistance from traditional industries, which will bring certain obstacles to the development of high-tech industries.

3.4. Difficulties in High-Tech Product Marketing. More demanding service management and channel management are required. High-tech products have high technical level and complex structure. Some technologies are unprecedented, and users are often unfamiliar with their performance and usage. In addition, high-tech products are often new to the market soon, and the technical performance needs to be further improved. In response to this situation, only relying on printing and distributing product manuals and user manuals, most users have bad senses, and a high-quality

service system should be established. Customers can feel the power of service throughout the product sales process. Let users feel the company's strong sense of responsibility, and further encourage users to rely on high-tech products to create future demand. In this regard, the key to achieving service improvement lies in the cultivation of employee service awareness. This requires companies to change their business philosophy, increase channel information input, talk to users at close range, listen to user needs, and feedback and resolve user conflicts, thereby enhancing user service experience and improving corporate reputation [19].

Stronger market pressure leads to more tolerant business vision. On the one hand, due to the characteristics of high technology, the cost of research and development of high-tech enterprises is very high, coupled with the complexity and cutting-edge of technology; it is often not enough to rely on only one enterprise. In contrast to efficiency, even if a company can develop a new product, it may have been abandoned by the market, and the market has been taken over by the company that originally developed it. In addition, high-tech products often rely on the development of interdisciplinary subjects, such as the relationship between sensors and receivers. On the other hand, high-tech products are also facing competitive pressure from traditional enterprises [20, 21]. While traditional industries hyped up high-tech to squeeze employment space, while optimizing and upgrading traditional industries, squeezing the market for high-tech products, as a result, competition in the high-tech

TABLE 3: National policy to support high-tech industries.

Preferential policy	Tax rate	Talent subsidy	Office land	Share offer transfer
Amount	25%–40%	160–320W	500–600W	180W

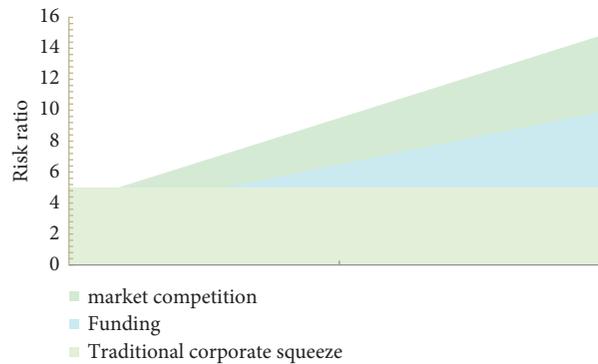


FIGURE 7: Threats to the development of high-tech products.

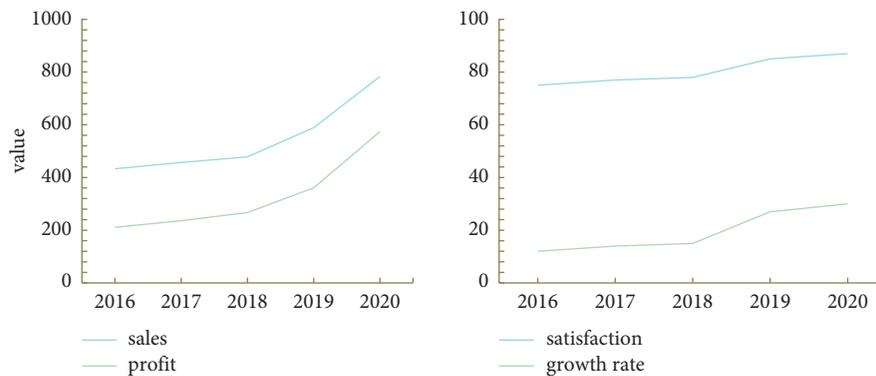


FIGURE 8: Differential marketing effect chart.

market is fierce. Therefore, high-tech companies need to open their horizons to seek cooperation opportunities. They can cooperate with other companies in complementary ways, and they can also establish alliances or mergers, so as to reduce R&D costs and jointly develop the market.

Broader market tasks. The competition among high-tech companies is more involved in the development of new markets, rather than market share. High-tech products have inherent scalability in technology; that is, mature technology can cover many industries and many countries. In addition, if a technology does not develop a new market and only stays in a smaller market, it will leave room for the development of other high-tech brands, so better companies will soon dominate the market [22]. In every high-tech field, only a few successful companies will survive. Therefore, in addition to continuously improving the performance of products, high-tech companies are also facing the huge task of rapidly developing the market.

4. Discussion

We investigate the marketing effects of relevant high-tech enterprises in accordance with the needs of users and the relevant characteristics of the products. According to

random survey and visit data analysis, it can be found that the differentiated marketing details are more eye-catching and in line with the user experience. As shown in Figure 8, compared with the past marketing performance, differentiated marketing has achieved a 30% increase in sales revenue and an 18% increase in profit compared to the previous one, which has achieved good results.

We further analyze the data, and users pay more attention to product quality and related service optimization than prices. Moreover, users' trust in high-tech products is not low, and brand loyalty is better. In the future, high-tech products should pay more attention to product optimization and follow-up service guarantee. If necessary, appropriate price marketing can be carried out during the new product period to achieve the effect of increasing the purchase volume.

During the investigation, we comprehensively compared the high-tech companies and found that their marketing strategies are similar, and the differences are not obvious. However, high-tech products are facing the reality of technological upgrades and short market life cycles. Differentiated marketing has undoubtedly become the key to solving the problem:

- (1) Strengthen its leading position in technology. Most of the differentiated advantages of high-tech products lie in the technological leadership of surpassing. Therefore, in order to occupy a leading position, it is necessary to strengthen technological innovation and make good use of patent protection policies. Technological breakthroughs are fundamental to the marketing of high-tech products, not only great breakthroughs, but also minor breakthroughs. For example, the pixels of the mobile phone are improved, the appearance is better, and the storage is larger. These are small breakthroughs that will have a great impact on life.
- (2) Increase the cost of product conversion. By increasing the cost of converting existing customers into competing (substitution) products, thereby maintaining high product premiums, the advantages of diversification of existing products can be improved to a certain extent.
- (3) Maintain various competitive advantages. Generally speaking, the more advantages of high-tech enterprises, the greater the competitiveness of their products. If the production, sales, and after-sales of products have their competitive advantages, it will be difficult for competitors to imitate, and high-tech products will occupy the leading position.
- (4) Create sustainable value. In other words, it can be promoted in multiple channels such as Weibo and WeChat through videos, graphics, and other channels to create product value and tell brand stories. If customers touch this value, the product will undoubtedly be used by more groups. Therefore, we must continue to pay attention to customer needs.

5. Summary

Through the analysis of the characteristics of high-tech products and marketing characteristics, this paper discusses the “marketing myopia” and its manifestations that may occur in the production and operation of domestic high-tech enterprises, as well as the selection of high-tech products in the marketing strategy. Finally, it is pointed out that if high-tech enterprises want to continue to maintain their competitive advantages, they should attach great importance to marketing and draw the following conclusions: the formulation of marketing strategies should focus on the core competitiveness of the enterprise and maximize the display of products in order to achieve technological innovation sustainable development. To attach importance to marketing and improve the strategic position of the marketing department, the key is to ensure that the company’s marketing strategy is truly and effectively implemented. If a company wants to ensure sustainable development, it must continue to increase its investment in high-tech research and development and the transformation of results. In order to ensure the ultimate effect of the marketing strategy, strategic control must be strengthened, and control and evaluation

measures must be established and improved to monitor the implementation process of the strategy in real time.

Data Availability

No data were used to support this study.

Conflicts of Interest

The authors declare no conflicts of interest.

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