Research Article

A Comparative Study on the Competitiveness of Knowledge-Driven Sports Brands

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Abstract
With the rapid development of science and technology, sports brands are increasingly relying on knowledge-driven technology. This study uses the competitive advantage theory, comparative advantage theory, and knowledge-driven theory, referring to the evaluation principles of scientificity, operability, and effectiveness, and selects Anta, Li Ning, and Adidas as the research objects of knowledge-driven sports brand competitiveness. Using Yaaph12.7 software and multilevel index entropy method, we assign and calculate 4 secondary indexes, 12 tertiary indexes, and 35 4th-level indexes of brand strength, brand potential, brand power, and brand vitality of three brands. In addition, Anta has strong comprehensive strength and good social resources and policy support. Li Ning’s brand potential is the greatest, and the consumer group is younger. Therefore, this study draws the following conclusions: (1) The core competitiveness of knowledge-driven sports brands is the innovation-driven model of brand technology, product R&D, intangible asset value, and brand development. (2) The competitiveness of knowledge-driven sports brands pays more attention to brand potential, brand strength, and brand vitality. (3) The competitiveness of knowledge-driven sports brands needs to be combined with the latest scientific and technological means to realize the integration of brands and information technology, “Internet +,” and big data. (4) The brand size, brand resources, and other brand advantages in the knowledge-driven sports brand competition indicators are not the main influencing factors for showing the core competitiveness. This paper draws the following inspirations from the research conclusions: it is necessary for knowledge-driven sports brands to improve the ability to transform resources and stimulate the vitality of the brand market, optimize the level of brand service to meet market consumption needs, strengthen innovation-driven development and explore innovative development paths, build brand development strategy, cultivate the development of superior technology, accelerate the development of brand quality, and build an applied talent pool.

1. Instruction

1.1. Theoretical Basis

1.1.1. Competitive Advantage Theory. The theory of competitive advantage (also known as Michael Porter’s diamond model) was put forward by American scholar Mike Porter based on the industrial theory in many fields and the actual situation of many enterprises. He believed that industrial competitiveness was composed of two conditions (government and opportunity) and four influencing factors (production, demand, support, and related industries, industrial structure strategy, and competition), later, it was optimized and improved by many scholars [1, 2]. As the main factors affecting industrial competitiveness, the four influencing factors are interrelated and affect each other to jointly build the core of industrial competitiveness [3]. The two conditions promote and change the form of competitiveness and play an important role in industrial competitiveness. Under the mutual influence and restriction of two conditions and four influencing factors, the diamond model always remains relatively stable, showing a state of dynamic balance and preserving competitiveness from being affected. The competitive relationship between sports brands can be well explained by the competitive advantage theory.
1.1.2. Law of Comparative Advantage. Comparative advantage was first put forward by the British scholar David Ricardo in the *On the Principles of Political Economy and Taxation*. This theory is analyzed on the basis of absolute advantage. Comparative advantage is both the biggest advantage in absolute advantage and the smallest disadvantage in absolute disadvantage. The law of comparative advantage is the premise of two countries, two products, and two elements. In addition, the four forms of comparative advantage include tangible advantage, intangible advantage, absolute advantage, and comparative advantage [4]. By comparing the advantages of various brands, we can well reflect the strong competitive point of brand value, which has a high reference significance for the improvement of brand strength.

1.1.3. Knowledge-Driven Theory. Knowledge-driven theory means that different subjects use new ideas, new technologies, and other originality to create or drive the generation of new things based on knowledge, and eventually produce new strategies, and other originality to create or drive the generation of knowledge innovation by means of computers is the direction of mastering development and also the key to grasp core competitiveness [5]. Knowledge-driven theory is of great significance to brand competitiveness. Brand intangible assets account for a high proportion of total assets, which determines the future development potential and sustainability of the brand.

1.2. Evaluation Principles

1.2.1. Scientifi city. The design of the knowledge-driven sports brand competitiveness evaluation system must follow the principle of scientifi city and conform to the law of objective facts [6–8]. The establishment of indexes in the research process is closely related to the scientifi city of the research. Therefore, a variety of verifi cation methods and multiple expert reviews must be adopted in the index screening. In addition, the formula, modeling, and calculation results must be tested many times in the process of brand competitiveness calculation to ensure the authenticity and accuracy of the data [9–11].

1.2.2. Operability. The construction of the knowledge-driven sports brand competitiveness evaluation system must be operable and comparable. The selected indexes can be measured and tested and calculated through accurate data to ensure the stability of the evaluation system. In addition, the selected enterprises should also be comparable, with similar comprehensive strength and little strength gap. Additionally, the evaluation indexes should be consistent. Therefore, the evaluation system of sports brand competitiveness first ensures the applicability and effectiveness of the indexes and adopts objective indexes as far as possible to reduce the subjective judgment indexes of supervisors, so as to ensure the objectivity and accuracy of the comparison [12].

1.2.3. Effectiveness. The principle of effectiveness should not only pay attention to the actual value of sports brands but also take into account the development potential of brands and highlight the advantages of brand competitiveness. According to the brand planning, expected objectives, actual value, and brand advantages, the evaluation indexes should be adjusted to show the real core competitiveness of knowledge-driven sports brands, so as to make the research more meaningful [13]. In addition, it is necessary to compare the disadvantages and deficiencies of the brand, provide certain reference and guiding significance for the future development of the brand and show the effectiveness and social signifi cance of the research.

2. Research Design

Firstly, based on scientific research methods, careful theoretical analysis, and empirical research analysis, we deeply analyze the research object, fully understand the development status of the research object, and put forward countermeasures and suggestions for the problems of the research object. Secondly, we have a comprehensive understanding of the overall situation of related brands through corporate profi les and profi nal data of knowledge-driven sports brands [14, 15]. Thirdly, we clarify the main content and research methods of the study, establish scientifically the evaluation system of brand competitiveness, fi nd out the core indexes and potential indexes that can affect the competitiveness of knowledge-driven sports brands and their competitive trends in recent years, and then analyze them. And fi nally, we put forward some suggestions and countermeasures for promoting the brand competitiveness by summarizing the experience of knowledge-driven sports brand competitiveness and combining it with the brand’s own situation. The specifi c design ideas are as follows.

2.1. Research Objects. After observing and analyzing the brand scale, brand culture and product technology of 10 brands including Nike, Adidas, PUMA, Under Armour, lululemon, Mizuno, Li Ning, Anta, Hong, and Erke, it can be concluded that Adidas, Li Ning, and Anta all specialize in sports equipment, with relatively similar brand value, brand scale, and brand strength, as well as the similarly great popularity in the Chinese market. Therefore, there is a high comparability within them. In addition, an important factor in choosing these three brands is that they have paid great attention to technology R&D and product innovation in recent years. They are all typical knowledge-driven sports brands, which contributes to their selection as the research objects.

2.2. Research Methods. This study takes the competitiveness of knowledge-driven sports brands as the research object. Three knowledge-driven sports brands, Anta, Li Ning, and Adidas, are compared and analyzed by combining normative analysis with empirical analysis, qualitative analysis with quantitative analysis, and comparative analysis with
inductive analysis. The following research methods are mainly used:

2.2.1. Literature Review. A large number of relevant research reports, papers, and other materials on the competitiveness of knowledge-driven sports brands at home and abroad are consulted through the Internet, books, and libraries. The public financial statements and relevant materials of enterprises are referred to. The aforementioned materials can provide research basis and guarantee for this study.

2.2.2. Expert Interview. In the research process, we conducted semistructured interviews with six middle and senior leaders of Anta, Li Ning, and Adidas, which provides a lot of effective interviews with six middle and senior leaders of Anta, Li Ning, and Adidas, which provides a lot of effective information and guidance for the overall research direction, ideas, and content of this study.

2.2.3. Field Research. We conducted the field survey of more than 20 physical stores of different research objects in the region and investigated the product, marketing, brand characteristics, and other aspects of the physical stores. This provides more effective data and materials for this study and provides ideas and support for the study of knowledge-driven sports brand competitiveness and provides guidance and reference for the development of the brand competitiveness of the research objects.

2.2.4. Mathematical Statistics. This study makes descriptive statistics and comparative analysis on the brand competitiveness of Anta, Li Ning, and Adidas, mainly including brand scale, brand core technologies, brand structures, and brand marketing, so as to further construct the index system of knowledge-driven brand competitiveness. At the same time, this study evaluates the competitiveness development level, the core competitiveness, and potential and disadvantages of each brand, which helps reflect the problems and superiority within each brand competitiveness, and collect more intuitive quantitative data.

2.3. Index System Establishment. We searched master’s and doctoral papers, academic conferences, and papers from core journals of Peking University and above through CNKI with the keywords of knowledge-driven, sports brand, competitiveness, and index systems and borrowed books for College Library Borrow System on brand economics, management, and statistics. This was combined with the consensus reached by expert group meeting on the connotation of knowledge-driven sports brand competitiveness. Finally, a total of 4 secondary indexes, 12 tertiary indexes, and 35 fourth-level indexes were established (see Table 1). Through the discussion of experts, it is considered that the evaluation index system of knowledge-driven sports brand competitiveness basically accords with the principles of scientificity, maneuverability, and effectiveness.

A number of experts are invited to judge the effectiveness of the initially established index system and collect opinions anonymously. After modification, a new round of consultation was carried out repeatedly until the opinions of experts reached basic consensus. In this study, when the expert consultation was conducted to the fourth round, the expert opinions were basically the same, and the final evaluation index system of knowledge-driven sports brand competitiveness was constructed. By analyzing and measuring the “criterion,” “practical ability,” and “familiarity” of experts from various angles, the individual authority coefficient and collective authority coefficient of invited experts are obtained. Through calculation, the individual authority coefficient of experts is between 0.83 and 0.94 and the collective authority coefficient is 0.91, which are all greater than 0.7, an authoritative reference standard for the implementation of the Delphi method. According to the Kendall concordance coefficient (Kendall’s W) and variable coefficient (CV) to measure the coordination degree of expert correspondence, after the fourth round of expert correspondence, both the scale level and index level reached the research standard, that is, Kendall’s W exceeded 0.8 and CV was lower than 0.1. The reliability and validity were tested through four rounds of expert opinions. According to the split half reliability and internal consistency test, the reliability test of four rounds of expert correspondence is higher than 0.8, which meets the standard. The exploratory factor analysis is used to process the final data. The validity of the index system structure is good, and the expert opinions are unanimously agreed, indicating that the content validity of the index system is relatively high. The final evaluation index system of knowledge-driven sports brand competitiveness is shown (see Table 2).

2.4. Index Weight Assignment. According to the opinions and experience of many experts, the analytic hierarchy process (AHP) method is used to assign values to the competitiveness of knowledge-driven sports brands, weight the indexes at each level to the indexes at the next level, construct a judgment matrix, and finally calculate the weight results.

The calculation process is as follows:

(1) Establish a hierarchical structure

According to the hierarchical relationship of the index system, the element identification relationship is divided into multiple levels, and the upper level index influences the lower level index, forming a multilevel structure of target level and multiple sublevels.

(2) Construct a judgment matrix

The importance rating scale was designed according to Sadie’s 1-9 scale method (see Table 3), and the importance level was assigned by pair-to-pair-comparison approach, so as to realize the transformation of qualitative analysis and quantitative analysis.

Based on Table 3, specific score values are judged by comparison to provide data for the judgment matrix table and finally form the judgment matrix table (see Table 4).
Table 1: Initial index system of knowledge-driven sports brand competitiveness.

| Primary index | Secondary index | Tertiary index | Fourth-level index |
|---------------|----------------|---------------|--------------------|
| Knowledge-driven sports brand competitiveness | | | |
| Brand strength | Brand scale | | Total brand value (yuan) |
| | | | Number of offline stores (PCs.) |
| | | | Number of employees (PCs.) |
| | | | Total operating income of last year (yuan) |
| | Brand resources | | Number of brands |
| | | | Value of fixed assets (yuan) |
| | | | Value of intangible assets (yuan) |
| | Brand technology | | Patented technology (PCs.) |
| | | | Number of R&D personnel (PCs.) |
| | | | Event sponsorship (%) |
| | Brand structure | | Sporting goods manufacturing (%) |
| | | | Sports services (%) |
| | | | Brand marketing |
| | Brand management | | Brand organization management |
| | | | Brand maintenance |
| | | | Employee satisfaction |
| Brand potential | Enterprise value growth rate | | Growth rate of total brand revenue |
| | | | Growth rate of total brand profit |
| | Market share | | Online sales share (%) |
| | | | Offline sales share (%) |
| | Innovation driving force | | Proportion of R&D investment (%) |
| | | | Proportion of scientific and technological achievements (%) |
| | | | Consumer satisfaction (%) |
| | | | Customer return rate (%) |
| | | | Brand reputation |
| | | | Social value |
| | Brand power | | Local industrial planning |
| | Social driving force | | National policy dividend |
| | | | Enterprise cohesion |
| | Policy driving force | | Corporate organizational culture |
| | Brand culture | | Enterprise marketing culture |
| | | | Customer age group |
| | Brand vitality | | Customer occupation |
| | Brand audience | | Customer gender |

(1) Single sequence calculation

① Calculate the nth root of the scalar numerical product of each row of the matrix as follows:

\[
\tilde{W}_i = \sqrt[n]{\tilde{M}_i} \quad (i = 1, 2, \cdots, n) \tag{1}
\]

② Normalize the vector \( \tilde{W} = [\tilde{W}_1, \tilde{W}_2, \tilde{W}_3, \cdots, \tilde{W}_n]^T \), \( \tilde{W}_i = \tilde{W}_i / \sum_{j=1}^{n} \tilde{W}_j \), and the eigenvectors, \( W = [W_1, W_2, \cdots, W_n]^T \) value (weight) are obtained

③ Calculate the maximum characteristic roots:

\[
\lambda_{\text{max}} = \sum_{i=1}^{n} \frac{(AW^*)_i}{nW^*_i}, \tag{2}
\]

where \( A \) is the judgment matrix and \( W \) is the eigenvector

(2) Consistency test

① Calculate consistency index

\[
CI = \frac{\lambda_{\text{max}} - n}{n - 1} \tag{3}
\]
Table 2: Index system of knowledge-driven sports brand competitiveness.

| Primary index                      | Secondary index | Tertiary index                                                                 | Fourth-level index                                  |
|-----------------------------------|-----------------|--------------------------------------------------------------------------------|-----------------------------------------------------|
| Knowledge-driven sports brand     | Brand           | Total brand value (yuan)                                                       | Number of offline stores (PCs.)                      |
| competitiveness                   | scale           |                                                                             | Number of employees (PCs.)                          |
|                                   |                 |                                                                             | China market share (%)                              |
|                                   |                 |                                                                             | Number of brands (PCs.)                             |
|                                   |                 |                                                                             | Value of fixed assets (yuan)                        |
| Brand resources                   |                 | Number of sponsored events in recent three years (PCs.)                      | Patented technology (PCs.)                          |
|                                   |                 |                                                                             | R&D investment (yuan)                               |
|                                   |                 |                                                                             | Value of intangible assets (yuan)                   |
|                                   |                 |                                                                             | Event sponsorship (%)                               |
|                                   |                 |                                                                             | Sporting goods manufacturing (%)                    |
|                                   |                 |                                                                             | Sports services (%)                                 |
|                                   |                 |                                                                             | Brand marketing                                    |
|                                   | management      |                                                                             | Brand organization management                      |
|                                   |                 |                                                                             | Employee satisfaction                              |
|                                   | Enterprise value |                                                                             | Growth rate of total brand revenue (%)              |
|                                   | growth rate     |                                                                             | Growth rate of total brand profit (%)               |
|                                   | Market share    |                                                                             | Online sales share (%)                             |
|                                   | Innovation      |                                                                             | Offline sales share (%)                            |
|                                   | driving force   |                                                                             | National standards (PCs.)                           |
|                                   |                 |                                                                             | Number of trademarks                                |
|                                   | Social          |                                                                             | Consumer satisfaction (%)                          |
|                                   | power           |                                                                             | Brand reputation                                   |
|                                   | Social driving  |                                                                             | Social value                                       |
|                                   | force           |                                                                             | Local industrial planning                          |
|                                   | Policy          |                                                                             | National policy dividend                            |
|                                   | driving force   |                                                                             | Enterprise cohesion                                |
|                                   |                 |                                                                             | Corporate organizational culture                   |
|                                   | Brand           |                                                                             | Enterprise marketing culture                       |
|                                   | culture         |                                                                             | Customer age group                                 |
|                                   |                 |                                                                             | Customer occupation                                |
|                                   |                 |                                                                             | Customer gender                                    |

Table 3: Relative importance level table.

| Scale | Meaning                                                                 | Assignment |
|-------|-------------------------------------------------------------------------|------------|
| 1     | The two elements are equally important                                   | 1          |
| 3     | Compared with the two elements, the former is slightly more important than the latter | 3          |
| 5     | Compared with the two elements, the former is more important than the latter | 5          |
| 7     | Compared with the two elements, the former is quite more important than the latter | 7          |
| 9     | Compared with the two elements, the former is extremely more important than the latter | 9          |
| 2, 4, 6, 8 | Middle number of adjacent levels                                       | 2, 4, 6, 8 |
| Reciprocal | Compared with the two elements, the latter is more important than the former | Reciprocal |
It is calculated that the higher CI is, the more the matrix deviates from the consistency; conversely, the closer CI is to 0, the higher the consistency of the matrix is.

② Based on the order “n” of the judgment matrix, the corresponding average random consistency index RI was found. Combined with the 1-9 order judgment matrix, the average random consistency index (Table 5) is obtained.

③ Perform random consistency ratio calculation

If the order is above 2, the consistency ratio (CR) of the judgment matrix CI (consistency index) and RI (average random consistency index) is expressed by the formula CR = CI/RI. If CR = <0.10, the judgment matrix can be judged to have satisfactory consistency; otherwise, the judgment matrix should be adjusted until satisfactory consistency is maintained. Where \( \lambda_{max} \) represents the maximum characteristic root of the judgment matrix, if the matrix belongs to the consistent matrix, \( \lambda_{max} = n \); otherwise, \( \lambda_{max} > n(n = 1 \cdots, 10) \).

2.5. Calculation of Index Weight. In this study, 12 experts in the field of sports, management, and economy were selected for consultation to judge the obtained indexes. And we used Yaaph12 7 software to process the original data of experts’ opinions on the index system of knowledge-driven sports brands competitiveness and finally calculated the weight of each index by using multilayer indexes (see Table 6).

2.6. Data Sources. According to the index system of knowledge-driven sports brand competitiveness, this study selects relevant financial statements, annual reports, and networks of the research objects. The data mainly come from enterprises, and some data cannot be reflected and fed back through scholars’ research or other data.

2.7. Data Processing. By eliminating dimensional differences, each evaluation index has a certain comparability. At the same time, in order to eliminate the dimensional influence of the indexes, the data are normalized, so that the indexes are comparable. Through dimensionless processing, the range of results is kept between 0 and 1. The calculation process is as follows:

\[
y = \frac{x - \min x}{\max x - \min x}
\]  

After the index dimensionless quantitative processing is completed, the data are standardized, and then, the final scores of different research objects are calculated according to the index weight of data standardization processing. The formula is as follows:

\[
z = 60 + \frac{x - \min x}{\max x - \min x} \times 40,
\]

where \( x \) is the index data and \( \min x \) and \( \max x \) are the maximum and minimum values of the index between the comparison objects. The value range of index data is 60-100, which can make the results more intuitive and specific and better analyze the competitiveness gap between research objects.

3. Research Results

The competitiveness levels of Anta, Li Ning, and Adidas are mainly compared and analyzed from the competitiveness score and ranking of the three brands and further combed the performance of 4 secondary indexes and 12 tertiary indexes of competitive strength, competitive potential, competitive power, and competitive vitality.

3.1. Primary Index Analysis. From the competitiveness scores and rankings of three knowledge-driven sports brands (see Table 7), among the three brands, Li Ning ranks first, with a score of 85.37; Anta ranks second, with a score of 83.26; and Adidas ranks third, with a score of 72.51. In terms of scores and ranking, the knowledge-driven competitiveness of Li Ning is the strongest, Anta is similar to Li Ning, and Adidas knowledge-driven competitiveness is the worst.

3.2. Secondary Index Analysis. The competitiveness level of knowledge-driven sports brands is compared and analyzed from the score and ranking of secondary indexes of competitive strength, competitive potential, competitive power, and competitive vitality (see Figure 1), and the performance of 12 tertiary indexes is further combed.

From the perspective of brand strength, Adidas has a brand strength score of 90.8, far exceeding Anta and Li Ning, ranking first in brand scale, brand resources, and brand technology. Anta’s brand strength score is 81.77, ranking second, whose score of brand resources and brand scale are both more than 80, slightly lower than that of Adidas. Li Ning has a weak brand strength with 69.21 points, which is more than 20 points below Adidas. Its brand scale, brand resources, and brand technology rank last, but its brand structure ranks high.

From the perspective of brand potential, among the three research objects, Li Ning has the highest brand potential, with a score of 90.49; Anta ranks second, with a score of 86.17; and Adidas is the weakest, with a score of 73.52.

From the perspective of brand power, Anta’s brand power is the strongest, with a score of 99.58; Li Ning is the second, with a score of 84.22; and Adidas is the lowest, with a score of 65.72.

| Table 4: Judgment matrix table. |
|---|---|---|---|---|
| Bk | C1 | C2 | ... | Cj |
| C1 | C11 | C12 | ... | C1j |
| C2 | C21 | C22 | ... | C2j |
| ... | ... | ... | ... | ... |
| Ci | Cn1 | Cn2 | ... | Cij |

| Table 5: Average random consistency index table. |
|---|---|---|---|---|---|---|---|---|---|
| Order | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
| RI | 0.00 | 0.00 | 0.32 | 0.74 | 0.92 | 1.08 | 1.16 | 1.31 | 1.37 |
From the perspective of brand vitality, Li Ning has the highest brand vitality, with a score of 97.56, and Adidas ranks second with a score of 78.89, whereas Anta’s brand vitality is the weakest, with a score of only 73.26.

3.3. Tertiary Index Analysis. From the result analysis of tertiary indexes of knowledge-driven sports brand competitiveness (see Figure 2), three of Anta’s 12 tertiary indexes ranks and scores first, which are brand management, innovation driving force, and policy driving force, respectively. In addition, the score and ranking of two indexes, namely, market share and brand audience, are the last. As for Li Ning, the brand structure, enterprise value growth rate, social driving

| Primary index | Secondary index | Tertiary index | Fourth-level index |
|---------------|----------------|---------------|--------------------|
| Knowledge-driven sports brand competitiveness (1.0000) | Brand strength (0.2553) | Brand scale (0.2656) | Total brand value (yuan) (0.2724) |
| | Brand resources (0.2431) | China market share (%) (0.2355) |
| | Brand technology (0.2612) | Number of offline stores (PCs.) (0.2435) |
| | | Number of employees (PCs.) (0.2486) |
| | Brand structure (0.2301) | Number of sponsored events in recent three years (PCs.) (0.3231) |
| | Brand management (0.3346) | Patented technology (PCs.) (0.3352) |
| | Brand power (0.2436) | R&D investment (yuan) (0.3327) |
| | Social driving force (0.3315) | Value of intangible assets (yuan) (0.3321) |
| | Policy driving force (0.3257) | Event sponsorship (%) (0.3369) |
| | Corporate driving force (0.5278) | Sporting goods manufacturing (%) (0.3387) |
| | Enterprise value growth rate (0.3274) | Sports services (%) (0.3244) |
| | | Brand marketing (0.2625) |
| | | Brand organization management (0.2625) |
| | | Brand maintenance (0.2439) |
| | | Employee satisfaction (0.2429) |
| | | Growth rate of total brand revenue (%) (0.5186) |
| | | Growth rate of total brand profit (%) (0.4814) |
| | | Online sales share (%) (0.5028) |
| | | Offline sales share (%) (0.4972) |
| | | National standards (PCs.) (0.3428) |
| | | Number of trademarks (0.3316) |
| | | Copyright of works (PCs.) (0.3256) |
| | | Consumer satisfaction (%) (0.3415) |
| | | Brand reputation (0.3372) |
| | | Social value (0.3213) |
| | | Local industrial planning (0.5284) |
| | | National policy dividend (0.4716) |
| | | Enterprise cohesion (0.3315) |
| | | Corporate organizational culture (0.3258) |
| | | Enterprise marketing culture (0.3427) |
| | | Customer age group (0.3419) |
| | | Customer occupation (0.3368) |
| | | Customer gender (0.3213) |

Table 7: Score and ranking of primary index of knowledge-driven brand competitiveness.

| Brand name | Score | Ranking |
|------------|-------|---------|
| Anta       | 85.37 | 1       |
| Li Ning    | 83.26 | 2       |
| Adidas     | 72.51 | 3       |

From the perspective of brand vitality, Li Ning has the highest brand vitality, with a score of 97.56, and Adidas ranks second with a score of 78.89, whereas Anta’s brand vitality is the weakest, with a score of only 73.26.
Figure 1: Radar chart of secondary index score and ranking of brand competitiveness of Anta, Li Ning, and Adidas.

Figure 2: Score and ranking of tertiary indexes of brand competitiveness of Anta, Li Ning, and Adidas.
force, and brand culture rank first, but there are also four indexes ranking last, namely, brand scale, brand resources, brand technology, and innovation driving force. Last but not least, Adidas scores and ranks first in five indexes: brand scale, brand resources, brand technology, market share, and brand audience. However, it scores and ranks lowest in six indexes, which are brand structure, brand management, enterprise value growth rate, social driving force, policy driving force, and brand culture.

Comprehensive analysis shows that with longer development history, Adidas is equipped with strong brand knowledge and brand competitiveness. Its early products were highly technical and knowledge-driven and sold all over the world. On the other hand, Li Ning and Anta, as Chinese brands, taking China as their main markets, developed relatively late, but their development speed is fast, and their product technology is becoming increasingly stronger. They gradually catch up with and even surpass Adidas and other mature brands in terms of brand technology and brand structure.

From the perspective of indexes, in recent years, Li Ning and Anta have increased in value, market share, and development momentum, gradually catching up with and surpassing Adidas, Nike, and other international brands. In addition, Li Ning and Anta put the market center in China to reduce the manufacturing, transportation, and marketing costs of products and continuously improve product quality and technology while reducing product prices, resulting in Chinese people's increasing purchase willingness, which will lead to the continuous reduction of Adidas's market share in China and the narrowing of the brand gap. As a result, the brand potential of Adidas is relatively low. Anta has strong innovation driving force, policy driving force, and social driving force, and the brand pays attention to innovation and development. On the contrary, Adidas has continuously reduced its social impact and product innovation in recent years, coupled with the impact of the epidemic, which has affected the overall competitiveness of the brand. Li Ning's brand culture is strong, the products are in line with national aesthetics, the product marketing ability is strong, and the innovative level of appearance is high. The target customers of Li Ning and Adidas are more likely to be teenagers. Anta's target customers are more middle-aged and elderly groups, which is more in line with the public aesthetical standard. However, the brand culture and cohesion are weak, and the brand vitality is insufficient.

To sum up, at present, among the three brands, Anta has the strongest core competitiveness and has a good development foundation, social resources, and policy support. Li Ning has the greatest development potential and is more in line with the current social development trend and culture trend. It is the most promising knowledge-driven brand among the three brands. Adidas has the strongest brand strength and has a deep brand foundation and mass foundation. However, the degree of brand innovation continues to decline, the brand management means are old, and the product marketing model is backward.

4. Conclusions and Enlightenment

4.1. Research Conclusions. By comparing the evaluation results of the competitiveness of three knowledge-driven brands including Adidas, Li Ning, and Anta at different levels, this paper analyzed the core competitiveness of knowledge-driven sports brands, grasped the development modes of different brands, and explored new ways and models to enhance brand competitiveness. The conclusions are as follows:

1. The core competitiveness of knowledge-driven sports brand is the innovative driving mode of brand technology, product R&D, intangible asset value, and brand development. The brand paying attention to the creation and protection of intangible assets, mastering better science and technologies, and possessing product innovation methods and reliable R&D team are of great significance to the improvement of brand competitiveness.

2. To raise its competitiveness, knowledge-driven sports brand needs to pay more attention to brand potential, brand power, and brand vitality. Brand potential, brand power, and brand vitality directly affect the future development of enterprises, which can effectively improve brand efficiency, drive brand product R&D, and innovation and better find brand positioning.

3. The competitiveness of knowledge-driven sports brand needs to integrate the latest technology means to achieve the integrated development between brand and information technology, "Internet plus", and big data platform. Knowledge-driven sports brand also needs to master the psychological needs of customers and improve the brand's information and industrialization. Moreover, it is necessary to strengthen the R&D of key core technologies and equipment in the field of digital sports, improve the manufacturing of sports equipment, optimize the brand sports manufacturing product chain, and strengthen the core competitiveness of the brand.

4. In the indexes of knowledge-driven sports brand competitiveness, brand strength such as brand scale and brand resources is not the main influencing factor to show the core competitiveness, but brand strength lays the foundation for brand technological innovation and development.

4.2. Research Enlightenment

4.2.1. Improve Resource Transformation Ability and Stimulate Brand Market Vitality. Knowledge-driven sports brands should constantly improve the scientific layout of the market industry chain, enhance the transformation ability of brand resources, optimize the industrial structure, and constantly release the deep vitality of the brand. Brands need to make reasonable use of their own resources, strengthen and transform the realization of brand resources, build.
brand resources cooperation platform, absorb the resource advantages of other brands, and realize efficient integration of resources between brands.

4.2.2. Optimize Brand Service Level to Meet Market Demand. Brand marketing and brand service are the key factors to improve brand vitality and brand power. Knowledge-driven brands should firmly grasp consumers’ consumption motivation and new demands. Strengthening brand effect and brand marketing from consumers’ perspective is one of the most favorable means. From the perspective of knowledge-driven, the brand intelligent service and brand service system should be established to provide more effective and convenient sports service products. It is of great importance to establish a four-level satisfaction feedback mechanism of customer-shop assistant-dealer-brand headquarters by means of Internet, big data, and other information technologies, and thus creating a fully functional, high-quality, and efficient smart brand service system.

4.2.3. Strengthen Innovation-Driven Construction and Explore Innovative Development Paths. Knowledge-driven brands should actively develop the driving force of brand innovation, strive to explore the paths of brand innovation, improve the construction of brand innovation strategy, and encourage scientific innovation, R&D, and design. In addition, brands should improve their innovative awareness of innovation, overcome obstacles of brand innovation, release innovative efficiency, and achieve new breakthroughs in brand technology. Knowledge-driven brands should inspire and guide new innovation paths, complete brand development plans, and help new technological breakthroughs while establishing high-end brand scientific research platforms, strengthening the collaborative development of industry, universities, and research institutes, and meeting R&D needs.

4.2.4. Build Brand Development Strategy and Cultivate Superior Technology Development. Constructing knowledge-driven sports brand development strategy and enlarging and strengthening brand technological advantage are important directions to enhance brand core competitiveness. First of all, brands should identify the brand highlights, vigorously promote brand characteristics, enhance brand influence, further transform and upgrade brand attributes, and establish brand awareness. Secondly, they need to cultivate the brand ecological system; integrate resources in the fields of economy; society and culture around brand business, brand marketing, and market development; and build brand promotion strategies. Finally, it is significant to construct the development concept and internal culture; allocate resources reasonably; strengthen the extension of brand service; enhance the integration of product culture, society, and science and technology; accelerate industrial transformation and upgrading; and form lasting memory of brand market.

4.2.5. Accelerate Brand Quality Improvement and Brand Expansion and Establish Applied Talent Pool. With the continuous progress of science and technology, brand development bottlenecks continue to appear, and brands are short of applied talents in fields of scientific R&D, design, management, marketing and other professional fields. Brands should deal with talent shortage from multiple angles. First of all, brands ought to promote and cultivate talents from within the brand, give more development space and platform to employees, and select suitable talents to become the backbone of the brand. Secondly, cooperation and talent delivery mechanism should be reached with universities and research institutes to provide enterprises with more talents with professional skills. Finally, it is advisable to build a talent pool platform to establish communication channels for talents inside and outside brands, which helps the brand quality improvement and expansion, as well as the amplification of their core competitiveness.

Data Availability

The experimental data used to support the findings of this study are available from the corresponding author upon request.

Conflicts of Interest

The authors declared that they have no conflicts of interest regarding this work.

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