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Employing Fuzzy ANP for Ranking the Personality of International Brands in the Sports Shoe Industry
Javad Khazaei Pool, S. Mohammad Arabzad, Sobhan Asian, Milad Fahimi, Reza Verij Kazemi,

Article information:

For Authors

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Abstract

Purpose – This study aims at providing a quantitative basis to analytically determine the ranking of the brand personality of Adidas, Asics, Nike, Puma and Saucony brands among Iranian customers via a conventional multi-criteria decision-making method.

Design/methodology/approach – Data for determining the importance of evaluation criteria and ranking of brands is gathered by means of distributing questionnaires among a group of Iranian customers of sport shoes, as well as some industrial experts. The Fuzzy Analytic Network Process (FANP) was used to rank the brands with regard to dependencies between criteria and alternatives.

Findings – The results indicate that FANP is a capable method which provides invaluable insights for strategic marketing decisions in the sport product industry. Results show Adidas has the best performance in the sports shoe market compared to the other four brands. In this study, it was found that expertise sophistication was the most important criterion among Aaker's five main criteria.

Originality/value – The value of this paper is applying FANP decision-making method for ranking sport shoe brands. This method has not been commonly used in the area of marketing, hence it is added to the pool of techniques utilized in ranking brands. In addition, evaluation and ranking of brands can be very useful for both academic research and practice. Researchers can benchmark the competences of each brand through evaluating them, and industrialists can extract the competitive advantages of the selected brands.

Keywords: Brand personality, Fuzzy Analytic Network Process (FANP), sports shoe industry, decision-making

1. Introduction

Industrial companies are continually looking to improve their business turnover and improve practices to achieve this objective. Vincent et al. (2013) analyzed overall performance models to allow the decision-makers to select potential actions to launch, regarding given decision criteria. The Multi Criteria Decision Making (MCDM) approaches have been developed to deal with problems such as ranking, sorting and quantification. Gurumurthy and Kodali (2012) identified the different attributes that are to be considered when making the decision to select a suitable product development methodology. For the selection of such a methodology, especially for making a strategic decision within the product design and development department of an organization, the most commonly used MCDM model is the Analytical Hierarchy Process (AHP). Goyal et al. (2015) identified and prioritized corporate sustainability practices to improve the corporate sustainability performance in the manufacturing sector. Further, these practices were being prioritized to discover the essential

practices to ensure logical allocation of limited resources. Then, AHP was used to assess the identified practices of corporate sustainability and to find their priorities for improvement of corporate sustainability performance.

Globalization has opened up new opportunities and challenges for companies and brands (Alden et al., 1999). In the past, globalization of a product was a sign of its quality and the success of the company that produced it. Nowadays, products are often globally available irrespective of their reception and quality, and customers have a chance to assess and compare the quality of products from local and international producers. In this process, a local brand may have a chance to fulfill the requirements of the customers and win their satisfaction, while a well-established global brand may fail to do so (Milberg and Sinn, 2008).

Globalization exposes customers in most countries to many foreign and local brands. Increasing competition has occurred between local and foreign brands not only in developed countries (e.g. Japan) but also in countries with newly industrialized economies (e.g. Korea and Mexico), as well as developing countries such as Iran. In this mass market, retail talent is considered a valuable resource in branding a product, and the service quality presented by retailers will add to a brand's reputation. It is possible for companies to place themselves in the mass market by providing interactions with important customers who develop a brand's values and advantages. A new trend in marketing science focuses on marketing activities in order to attract the attention and reception of local customers, and to be remembered as a quality product by them. Different studies show that the perception of potential customers of the value of a product is largely independent of its real value, i.e., the quality of the product or the services provided to the customers, rather, it relies primarily on success in branding and marketing activities (Kapferer, 2008; Keller, 2008; Kim et al., 2015).

Researchers consider brand personality as a key variable in customers' decision-making. In the classical literature of economy, labor, capital and land were considered as three main elements in production and the main sources of wealth, but this viewpoint is not able to explain how a product of equal efficiency, quality and beauty can be sold at three times the price of other products. Modern marketing trends are able to shed light upon this phenomenon as a result of the identity provided by customers of these brands. A valid brand is considered as one of the customer's preferences when choosing a product, and in many markets, brand identity imbues products with properties which identify them with a particular class of society. Psychologically viewed, besides superficial functions, such products provide customers with confidence; as a result, customers are willing to pay a higher price for them.

Moreover, a superior brand unintentionally provides customers with the concept of superior quality of product, and hence the customer who buys a branded product believes that he has acquired something worthwhile in return for his money. In fact, brands give their owners importance and are equated with their wealth. Furthermore, brands like property or elements of technology influence the emergence of an organization's added value. Both the customer and the organization benefit from the advantages of the brand. When a customer has experienced brand exploration, he will feel more comfortable and willing to use it. A brand includes information about quality, efficiency and several other aspects of a product.

In today's marketing world, brand personality has a more attractive meaning. A brand can be successfully developed by the management of good interaction with the customer and making him feel valued, through paying attention to his needs. There is a positive relationship between a company's value and reliability. An increase in a company's reliability will lead to an increase in the market share, and vice versa: an increase in the market share will bring about an increase in the company's value. However, a company's reliability results from past performance and can be related to financial and social aspects. A moral brand can increase a company's reliability, and this reliability, as a loop, can strengthen the brand (Nasiripour et al., 2010).

An appropriate brand provides its customers and employees satisfaction and confidence; furthermore, it can boost the awareness of the market about new products. It is also able to accelerate the introduction of the products into the market and cause an increase in the market share (Krishnamurthi and Raj, 1991; Nam et al., 2011; Orde et al., 2012). Customers valorize popular brands; having this knowledge, marketers try to strengthen this concept in different stages of brand positioning (Aaker, 1991). Popular brands have iconic and emotional values for their customers and thus make them prefer a special brand. Successful positioning of a brand requires evaluation models which are capable of distinguishing the special properties of a brand from properties existing in other related brands (Zajonc and Markus, 1982). Why and how do people prefer a brand with a special personality? Answering this question can be regarded as a tool for managers to create and reinforce the value of their brand. In recent years, the reasons for brand personality attractiveness for customers have been highlighted as one of the favorite fields among researchers in relation to the study of customer behavior.

Most previous research has focused on the impact of brand personality on customer behavior. However, none of these investigations explained how the decision-makers in certain sport industries are able to evaluate top sport brands and choose a particular brand from different available alternatives. There is no paper in the area of sport brands with the MCDM approach, which uses brand personality criteria to rank sport brands. Hence, a firm decision has to be made by analyzing various aspects of brand personality before the selection of a particular brand. In this paper, by conducting a study, an attempt has been made to examine this issue.

With respect to the current existing brands in the sports shoe industry, the present study considers famous brands like Adidas, Nike, Puma, Asics and Saucony. Finally, the personality of these famous sports shoe brands in Iran will be evaluated.

2. Literature Review

2.1. Brand Personality

There are several reasons for the advent of brands since 1900, modern technologies and trade issues in the era of industrial imperialism being among these reasons. This has led to a strong need for higher levels of standardization, quality and identity of the products (Woodside and Sood, 2008). Research in strategic management and marketing has shown that brands are considered as assets of organizations (Malhotra, 1981; Louro, 2001). Power and Hauge

(2008) claim that there is no absolute definition for the words "brand" or "branding", but any definition should include emotional and practical aspects. They stated that branding includes an attempt to personalize a product. Brands present guarantee for the quality and services. Today, customers have profound personal relationships with brands and their history. Brands are able to speak like a person, speaking within their own advertising framework, while eager audiences listen to them (Guthrie et al., 2008). Researchers claim that brand personality is an important issue to distinguish and develop emotional aspects, and this belief is well accepted by many researchers in the field of advertising and marketing (Diamantopoulos et al., 2004; Park et al., 2005; Bosnjak, 2007; Gupa et al., 2008).

Much research which has been carried out in the field of branding has shown that customers prefer brands which correspond to their own personalities (Bosnjak et al., 2007). Social psychologists describe "personality" as a dynamic organization which is composed of psychological systems inside the person that create their behavioral patterns, thoughts and emotions (Azoulay and Kapferer, 2003). Personality is not a detectable identity but a complex system which is made and defined by the observer (Smith and Vetter, 1991). The notion of brand personality is different from that used in psychology, for example, people's personalities are defined by multidimensional factors such as appearance, properties and behaviors. Brand is not alive; however, it possesses personality, which is defined by factors like product properties, advantages, price, distribution channels, and cognitive image.

Different studies have shown that more coordination between the brand and people makes people more willing to choose that special brand. Several studies have verified the fact that to better understand the image of a brand, we can use the metaphor of "personality" for the brand. However, not until the publication of an article named "Dimension of a brand" by Aaker (1997) was there consensus on its classification (Caprara et al., 1998). Wang and Tzeng (2012) utilized the ANP and VIKOR methods as an MCDM model combined with DEMATEL to clarify the interrelated relationships of brand marketing and find the problems or gaps. Shahin and Pourhamidi (2013) developed a comprehensive framework for assessing brands using a hierarchy of effective indicators. The proposed framework was used in prioritizing registered brands of Isfahan through the use of the AHP method. Ding (2013) developed a fuzzy MCDM approach to assess the trusted brand for container shipping companies. Zamani et al. (2014) intended to develop a novel model for selecting the most appropriate strategy in brand extension. Therefore, a MCDM model based on ANP and Additive Ratio Assessment methods was developed.

Theoretical frameworks for the classification of human personality in terms of psychology have been used in order to classify brand personality. Aaker (1997) carried out extensive research to identify characteristics which were associated with people, that could be used for brands. In her studies, she examined the dimensions of personality under 114 characteristics to describe 37 different brands. By classifying these characteristics, she introduced the pattern of "five big characteristics" in the field of brand personality. Subsequent studies verified the fact that the pattern was generalized not only in the USA but also for foreign consumers within a western culture. However, some of these dimensions are different in Latin and Asian cultures (Aaker et al., 2004; Sung and Tinkham, 2005). For example, in the Aaker model, the

brands of Levi, MTV, CNN and Campbell's were described as having the personality dimensions of ruggedness, excitement, competence and sincerity, respectively (Kotler and Keller, 2006). In an extensive piece of research, Aaker (1997) studied classification methods related to the personality traits of different brands, the results of this research, which examined nearly 200 personality traits, being mirrored in a five-dimensional mode. Today, this model is used in various studies as the only global source named "Aaker." According to the Aaker, a brand personality can be described with the same literature and words used to describe a person: brands can be described by demographic characteristics such as age, sex, social class, race, lifestyle, activities, interests, beliefs or social characteristics. A customer chooses a brand which has an attractive personality, this trend being exactly similar to the situation in which a person chooses his/her friends from among others. Consumers choose products whose brands are dependable for them; as a result, they feel loyal to such brands. The concept of brand personality has always been recognized as an acceptable aspect of the theory of branding (Freling et al., 2011). After presenting the Aaker model as regards the construct of brand personality, its concept and function were analyzed in different studies. (Eisend and Stokburger-Sauer, 2013; Sung et al., 2015).

2.2. Product brand versus corporate brand

Product branding is a well-known phenomenon in marketing. A brand is a promise to the customer that goes beyond the generic product, its technical and physical attributes. When selling a branded product, the company promises that the consumer will achieve special qualities by using the product, different qualities than when using a similar non-branded or different branded product. A typical message from the company is, "When using this product you will be more attractive, become better looking and signal a higher social class." By using the branded product, the consumer can communicate their lifestyle or the lifestyle they aspire to. On the other hand, corporate branding refers to the practice of using a company's name as a product brand name, an attempt to leverage corporate brand equity to create product brand recognition, a type of family branding or umbrella brand. Corporate branding employs the same methodology and toolbox used in product branding, but it also elevates the approach a step further into the board room, where additional issues around stakeholder relations (shareholders, media, competitors, governments and many others) can help the corporation benefit from a strong and well-managed corporate branding strategy. Not surprisingly, a strong and comprehensive corporate branding strategy requires a high level of personal attention and commitment from the CEO and the senior management to become fully effective and meet the objectives (Hatch and Schultz, 2001; Urde, 2003; Berens et al., 2005). In this research, the authors focus more on "corporate brand" rather than "product brand."

2.3. Fuzzy Analytic Network Process (FANP)

Many MCDM methods have been developed; however, these methods do not take element dependencies into account. Saaty (1980) introduced AHP to consider such dependencies. The method includes all the tangible and intangible criteria involved in decision-making. ANP is a theory which develops the AHP to deal with the dependency in the feedback, and although both ANP and AHP choose the priorities by making paired comparisons, some differences

exist between them. The first difference is that AHP is a special mode of ANP because it focuses on the internal and external dependencies. The second difference is that ANP has a nonlinear structure. In general, the AHP is recognized as a decision-making framework which focuses on unidirectional and hierarchical relationships between decision levels. Instead, ANP does not need this strictly hierarchical and vertical structure.

With regard to the fact that the criteria in the real world are often interdependent, traditional approaches are not fully applicable in this case. Accordingly, Saaty (1980) introduced Fuzzy ANP (FANP), which is a developed form of AHP, in order to obtain a set of appropriate weights for the criteria (Shahin et al., 2014). Fuzzy management science can design models having the ability to process qualitative data in an intelligent way. Therefore, besides providing flexibility in the model, fuzzy management science imports data such as knowledge, experience, and human judgment into the model and offers fully functional responses.

Here, the steps to conduct a decision matrix for the ANP method in a fuzzy environment are described in detail. At first, Triangular Fuzzy Numbers (TFN) are defined as follows:

$$\tilde{a}_{ij} = \left(\alpha_{ij}, \beta_{ij}, \delta_{ij}\right) \tag{1}$$

in which $\tilde{a}_{ij}$ is the set of TFN, α_{ij} is the minimum amount of criterion j for dimension i, β_{ij} is the geometric mean of criterion j for dimension i, and δ_{ij} is the maximum amount of criterion j for dimension i.

In the developmental analytic method, the amount of S_k which is a TFN for each row of the matrix of paired comparisons is calculated as follows:

$$S_k = \sum_{j=1}^{n} M_{kj} \times \left[\sum_{i=1}^{m}\sum_{j=1}^{n} M_{ij}\right]^{-1} \tag{2}$$

in which k indicates row number and i and j indicate options and indices respectively. In the developmental analysis method, magnitude degree should be calculated.

In general, if M_1 and M_2 are two TFN, the magnitude degree of M_1 on M_2 which is indicated as $V(M_1 \geq M_2)$ is defined as follows:

$$\begin{cases} V(M_1 \geq M_2) = 1 & if M_1 \geq M_2 \\ V(M_1 \geq M_2) = hgt(M_1 \cap M_2) & otherwise \end{cases} \tag{3}$$

$$hgt(M_1 \cap M_2) = \frac{u_1 - l_2}{(u_1 - l_2) + (m_2 - m_1)} \tag{4}$$

The magnitude degree of a TFN from another TFN is obtained through Equation (5).

$$V(M_1 \geq M_2, \ldots, M_k) = V(M_1 \geq M_2), \ldots, V(M_1 \geq M_k) \tag{5}$$

To calculate the weight of indices in the paired comparison matrix, Equation (6) is used.

$$W'(x_i) = Min\{V(S_i \geq S_k)\}, \qquad k = 1,2,\ldots,n, \qquad k \neq i \tag{6}$$

As a result, the vector for the weight of indices will be as follows:

$$W'(x_i) = [W'(c_1), W'(c_2), ..., W'(c_n)]^T \qquad (7)$$

which is the same vector for abnormal coefficients of the FAHP. By using Equation (8), abnormal results obtained from Equation (7) will become normal. Normalized results from Equation (8) are called W.

$$W_i = \frac{w'_i}{\sum w'_i} \qquad (8)$$

Then the effects of the dependency between the criteria are determined.

Group members reevaluate the impact of all the criteria on each other through paired comparisons. To help simplification of the comparison process, a series of questions is asked, for example, "Which criterion has more influence on C3: C2 or C1 criterion, and how much more?" Each criterion consists of matrixes of paired comparisons. These matrixes of paired comparisons are necessary to determine the relative influences of criteria's dependency relationships. The normalized main special vectors for these matrixes are calculated and illustrated in the form of perpendicular elements in matrix B, which is related to weight dependency. In this matrix, zeroes are attributed to the weights of special vectors which lack dependency relationships with each other.

Now we can measure the relative dependency of the criteria by using Equation (9), or, in other words, by combining the results of the previous two steps. Here, combining means the influence of coefficients of interdependency matrix B on the results of FAHP W. Combining these two processes results in the same FANP.

$$W_c = B \times W \qquad (9)$$

It should be pointed out that a complete solution of ANP and even AHP is fully applicable only when the number of criteria and options is limited.

In ANP, a super-matrix is considered as a partitioned matrix whose sub matrixes are made from a set of relationships between two elements or clusters in the network structure. Regardless of the assumed dependence between the criteria, experts or decision-makers are required to evaluate all the proposed criteria by making paired comparisons. They answer questions such as "Which criterion should be more considered in evaluating the supplier?" and "How much more?"

3. Research Methodology

The research framework and its sequence are presented in four steps as Figure 1:

Please insert Figure 1 near here

Step 1: Selecting appropriate criteria
Step 2: Determining importance weights of criteria

Step 3: Conducting ANP super-matrix
Step 4: Ranking the brands

The criteria of the present study include the same characteristics employed by Aaker (1997) to study the personality of different brands. Hence, the selected brands are examined based on the five main criteria including expertise sophistication, competence, excitement, ruggedness and sincerity. 15 sub-criteria were also considered.

In the present study, a comprehensive questionnaire was developed to determine the importance weights of evaluation criteria and to identify dependencies between criteria, between criteria and alternatives, and between alternatives, based on the ANP method. Hence, questions intended to evaluate brand personality are generally divided in two parts: questions related to the relative importance of criteria and questions related to the function of brands. Due to space limitations, Appendix 1 shows only a part of the questionnaire.

A group consisting of 18 academics and individuals with industry expertise was convened to determine the importance weights of criteria and sub-criteria through pairwise comparison. Using fuzzy logic, the information was converted into TFN and the weight of each criterion was obtained. Then, questions related to the function of brands in terms of different sub-criteria were distributed in the form of a Likert scale questionnaire to a group of customers. The population in this study included Iranian sports shoes customers and other people familiar with sports brands. By using purposeful non-random sampling, some sport markets in the large cities of Iran such as Tehran, Mashhad, Esfahan, Karaj, Shiraz and Tabriz were selected as the primary statistical population. Then, 420 questionnaires were distributed using a simple random method, and 323 of those questionnaires were answered.

Finally, brands are ranked according to the survey and based on the personality model using the ANP method using Equations 1 to 9. Figure 2 shows the structure of the ANP method for ranking the brands. Statistical analysis of the study was carried out through MS Excel 2013 and MATLAB 12 software.

Please insert Figure 2 near here

The ANP method helps to determine the relative importance of criteria with regard to dependencies between criteria. Also, ANP develops more realistic situations for decision-making, regardless of the assumptions about the unidirectional hierarchy relationship between levels of decision. ANP is able to handle the interrelationships between decision levels and indices by obtaining mixed weights and by creating a super-matrix. Although experts use their competencies and mental abilities to make comparisons, it is worth noting that the conventional ANP may not fully reflect the style of human thinking. In other words, using fuzzy sets is more compatible with some vague explanations of human language. Therefore, it is highly recommended doing long-term forecasting and decision-making in the real world through using fuzzy sets.

4. Findings and Results

Given the large number of criteria and sub-criteria in this study, the steps of calculating the significance degree of dimensions are examined as follows:

Step 0: Since the used numbers consist of TFN, the fuzzy scales used in FANP are reviewed in this section.

Please insert Table 1 near here

Step 1: The combination of experts' opinions to obtain the initial matrix of ANP is shown as Table 2.

Please insert Table 2 near here

Step 2: In this step, using definitions of FANP, the coefficients that are related to each paired comparison matrix are calculated through the following equations. Then, we should calculate the magnitude degree of each element in comparison with other elements. Table 3 illustrates these results.

Please insert Table 3 near here

Step 3: The magnitude of Si in comparison with other Sis is calculated. The related calculations are done by using Equation (6). Also, based on Equation (7), the values of normalized weights related to indices C_1, C_2, C_3, C_4, and C_5 are obtained as bellow:

$$w'(x_i) = [0.203, 0.207, 0.200, 0.193, 0.197]$$

Step 4: The interdependency between the criteria must be considered. Decision-makers examine the impact of all criteria through paired comparisons. The normalized vector of this matrix is given in Table 4.

Please insert Table 4 near here

Step 5: The data in Table 4 shows the relative impact of criteria on each other. The relative significance of the criteria is obtained by considering dependency through combining the results and using Equation (8).

$$w_i = w'(x_i) = [0.244, 0.251, 0.241, 0.122, 0.142]$$

Among the five main criteria, the most important one is expertise, with an importance weight of 0.251. Other important criteria are sequenced as competence, ruggedness, excitement, and sincerity.

Please insert Table 5 near here

Based on the number of alternatives and criteria, FANP will be completely employed, as shown in the following table, whose final global weight is multiplied by the arithmetic mean of experts' preferences, and finally, the best choice is specified.

Please insert Table 6 near here

Thus the brands, Adidas, Nike, Puma, Asics and Saucony have achieved first to fifth place, respectively.

Some studies have been done in the context of brand and evaluating based on the MCDM approach. For better comparison of the findings of this research with previous studies, Table 7 is presented.

Please insert Table 7 near here
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5. Discussion and Conclusion

People prefer brands which are compatible with their own characteristics. In fact, everyone has their own ideas about themselves and the way they like to be seen in the eyes of others. People like admirable characters or ones that are similar to themselves. As a result, creating brands similar to the characteristics of some consumer groups will be a useful strategy to increase the sales rate of the company. The closer the brand identity is to the consumer, the greater will be the purchase intention and loyalty toward that brand.

The present study is intended to evaluate the personality of the selected brands of sports shoe. In other words, this research aims to rank the brands of sports shoe with regard to the indices proposed by Aaker in her evaluation of brand personality through using fuzzy ANP, in order to place the selected brands of sports shoe in the Iranian market. As can be seen from

Table 6, the results show that Adidas, Nike, Puma, Asics and Saucony were respectively ranked from first to fifth. This means that the brand Adidas, compared to the other four brands, showed the best performance in the sports shoe market. In this study, with respect to the results obtained from fuzzy ANP, we have reached the following conclusion. Among Aaker's five main criteria, the criterion of expertise sophistication, with weighing 0.241, was the most important criterion, above competence, ruggedness, excitement and sincerity.

Although various criteria were addressed in the literature review to deal with the issue of evaluating brands, the criteria provided by Aaker has been referred to the most in recent articles. To employ the most suitable evaluating technique, it must be noted that ANP not only ranks the alternatives, but also determines the importance weights of criteria systematically. The method for determining importance weights is paired comparison of the importance of standards, and calculating the ratio of each criterion compared to others. Importantly, compared with the findings in the literature review, taking into account the fuzzy concept to address the ambiguities in the minds of decision-makers is significant.

5.1 Managerial applications

Brand personality increases the chance of products earning customers' loyalty. Therefore, to investigate the effect of brand personality, a true understanding of consumers' behavior as a vital factor is needed. The practical recommendations based on the findings are as follows. Companies interested in using the strategy of brand personality need to focus on the factors specified in this study and employ them for their own main brands in order to decrease the failure risk of their brands. Marketing is considered as the most useful tool in order to influence customers' perceptions of brand personality. Among five dimensions of brand personality, expertise sophistication has a direct role in the selection of athletic shoes, based on brand personality criteria. This means that many customers buy sports shoes based on the criterion of expertise. As a result, the producers of sports shoes can influence the purchase behavior of customers directly; in addition, influencing customers' perceptions of brand personality is the best way to keep loyal customers in the long term, in the competitive market of the third millennium.

In order to keep loyal customers, companies need to improve the attitude of customers toward brand personality. In fact, it is the attitude toward the brand personality of a sports shoe which has the most influence on customers' loyalty. Moreover, word of mouth advertising, which has a great influence on customers' loyalty, is strengthened by brand personality. Consequently, producers of sports shoes can expand word of mouth advertising by establishing festivals and advertising campaigns to match brand personality with customers' personality, leading to an increase in customers' loyalty. People who have recently tried to buy sports shoes, as well as those who have bought them in the past, pay more attention to the expertise sophistication aspect of brand personality. Producers of sports shoes can influence these people through more promotions and transform them into loyal customers. In the case of sports shoes which are bi-national or multinational products, customers' evaluation is mostly based on a countries' perception. If the perception of a company is negative, this stereotype can impact the brand personality of the product and prevent its sale in the market. Therefore, when multinational producers face this problem,

they should employ activities such as advertising, TQM, verifying the high quality of the products in brand personality dimensions (expertise sophistication, competence, excitement, ruggedness and sincerity) to change this negative perception into a positive perception.

Companies need to enhance their competitive advantage by creating brand personality and satisfying customers. Therefore, this research proposed the use of marketing strategies to create brand personality. The many other practices to create brand value should be addressed in the future. The present study provides an effective technique to evaluate the importance of marketing practices in terms of the improvement of brand personality.

Different marketing tactics are not equally effective in the significant improvement of brand performance. From a managerial viewpoint, proper implementation of brand practices is important to achieve competitive advantage, by identifying market priorities related to the sports industry and then developing an effective brand strategy. Marketing managers can use the prioritization of a sports brand for the development and implementation of better policies. It is recommended to emphasize the high priority of brand personality dimensions to ensure a more effective and holistic contribution toward brand development.

5.2 Limitations of the research and future directions

The main limitations of this study are as follows. Because of the constraints of time and implementation, the present study investigated the selected brand personality of sports shoes only in the geographical area of Iran. The results may be different from the results obtained from other countries due to social, cultural and economic differences. It is worth mentioning that as brands of sports products have their own customers, the results cannot be generalized to other brands in the field of brand personality, since challenges and influential factors related to brand personality vary for other products at different levels. The results in this industry are different from the findings in other industries. Finally, the present research has been carried out on a few special brands only.

The results of this study were obtained with regard to the particular conditions of the studied brand. Further research is suggested, to examine these models in the market situation with regard to the fact that other models are designed to explain brand personality. Research could be carried out to consider factors that are influential on dimensions of brand personality in order to strengthen these dimensions and favorably influence the brand personality. The present research model has been examined in order to develop the scope of research in societies with different cultures. Moreover, the study results can also be verified by applying the same FANP technique across various cultures, through which a generalized model for the evaluation of the customer viewpoint can be attained. The research model could be examined for other brands and products, and the results could be compared with each other.

The proposed FANP method in this research is a good method to rank top brand in terms of brand personality dimensions. Creating brand personality is not only important in the sports industry but also in different industries.

It is suggested that in future studies, other brand constructions such as brand identity, special brand value, brand trust, and brand preferences could be studied for brand ranking.

Examining other brand constructions using the model of this research would better determine its validity for this type of research.

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Appendix 1: Questionnaire

A) The importance of main criteria:

	Extreme importance								Equal								Extreme importance	
Sophistication	9	8	7	6	5	4	3	2	1	2	3	4	5	6	7	8	9	Competence
Ruggedness	9	8	7	6	5	4	3	2	1	2	3	4	5	6	7	8	9	Competence
Sincerity	9	8	7	6	5	4	3	2	1	2	3	4	5	6	7	8	9	Competence
Excitement	9	8	7	6	5	4	3	2	1	2	3	4	5	6	7	8	9	Competence
Ruggedness	9	8	7	6	5	4	3	2	1	2	3	4	5	6	7	8	9	Sophistication
Sincerity	9	8	7	6	5	4	3	2	1	2	3	4	5	6	7	8	9	Sophistication
Excitement	9	8	7	6	5	4	3	2	1	2	3	4	5	6	7	8	9	Sophistication
Sincerity	9	8	7	6	5	4	3	2	1	2	3	4	5	6	7	8	9	Ruggedness
Excitement	9	8	7	6	5	4	3	2	1	2	3	4	5	6	7	8	9	Ruggedness
Excitement	9	8	7	6	5	4	3	2	1	2	3	4	5	6	7	8	9	Sincerity

B) The importance of each sub-criteria regards its related criteria:

Competence																		
Intelligent	9	8	7	6	5	4	3	2	1	2	3	4	5	6	7	8	9	Reliable
Successful	9	8	7	6	5	4	3	2	1	2	3	4	5	6	7	8	9	Reliable
Successful	9	8	7	6	5	4	3	2	1	2	3	4	5	6	7	8	9	Intelligent
Sophistication																		
Charming	9	8	7	6	5	4	3	2	1	2	3	4	5	6	7	8	9	Upper class
Ruggedness																		
Tough	9	8	7	6	5	4	3	2	1	2	3	4	5	6	7	8	9	Outdoorsy
Sincerity																		
Honest	9	8	7	6	5	4	3	2	1	2	3	4	5	6	7	8	9	Down to Earth
Wholesome	9	8	7	6	5	4	3	2	1	2	3	4	5	6	7	8	9	Down to Earth
Cheerful	9	8	7	6	5	4	3	2	1	2	3	4	5	6	7	8	9	Down to Earth
Wholesome	9	8	7	6	5	4	3	2	1	2	3	4	5	6	7	8	9	Honest
Cheerful	9	8	7	6	5	4	3	2	1	2	3	4	5	6	7	8	9	Honest
Cheerful	9	8	7	6	5	4	3	2	1	2	3	4	5	6	7	8	9	Wholesome
Excitement																		
Spirited	9	8	7	6	5	4	3	2	1	2	3	4	5	6	7	8	9	Daring
Imaginative	9	8	7	6	5	4	3	2	1	2	3	4	5	6	7	8	9	Daring
Up to date	9	8	7	6	5	4	3	2	1	2	3	4	5	6	7	8	9	Daring
Imaginative	9	8	7	6	5	4	3	2	1	2	3	4	5	6	7	8	9	Spirited
Up to date	9	8	7	6	5	4	3	2	1	2	3	4	5	6	7	8	9	Spirited
Up to date	9	8	7	6	5	4	3	2	1	2	3	4	5	6	7	8	9	Imaginative

1: Equal importance

3: Moderate importance of one over another

5: Essential or strong importance

7: Very strong importance

9: Extreme importance

2,4,6,8: Intermediate values between the two adjacent judgments

C) Compare the brand based on the sub-criteria:

					Reliable													
Nike	9	8	7	6	5	4	3	2	1	2	3	4	5	6	7	8	9	Adidas
Puma	9	8	7	6	5	4	3	2	1	2	3	4	5	6	7	8	9	Adidas
Asics	9	8	7	6	5	4	3	2	1	2	3	4	5	6	7	8	9	Adidas
Saucony	9	8	7	6	5	4	3	2	1	2	3	4	5	6	7	8	9	Adidas
Puma	9	8	7	6	5	4	3	2	1	2	3	4	5	6	7	8	9	Nike
Asics	9	8	7	6	5	4	3	2	1	2	3	4	5	6	7	8	9	Nike
Saucony	9	8	7	6	5	4	3	2	1	2	3	4	5	6	7	8	9	Nike
Asics	9	8	7	6	5	4	3	2	1	2	3	4	5	6	7	8	9	Puma
Saucony	9	8	7	6	5	4	3	2	1	2	3	4	5	6	7	8	9	Puma
Saucony	9	8	7	6	5	4	3	2	1	2	3	4	5	6	7	8	9	Asics

					Intelligent													
Nike	9	8	7	6	5	4	3	2	1	2	3	4	5	6	7	8	9	Adidas
Puma	9	8	7	6	5	4	3	2	1	2	3	4	5	6	7	8	9	Adidas
Asics	9	8	7	6	5	4	3	2	1	2	3	4	5	6	7	8	9	Adidas
Saucony	9	8	7	6	5	4	3	2	1	2	3	4	5	6	7	8	9	Adidas
Puma	9	8	7	6	5	4	3	2	1	2	3	4	5	6	7	8	9	Nike
Asics	9	8	7	6	5	4	3	2	1	2	3	4	5	6	7	8	9	Nike
Saucony	9	8	7	6	5	4	3	2	1	2	3	4	5	6	7	8	9	Nike
Asics	9	8	7	6	5	4	3	2	1	2	3	4	5	6	7	8	9	Puma
Saucony	9	8	7	6	5	4	3	2	1	2	3	4	5	6	7	8	9	Puma
																		.
																		.
																		. (Continue)

D) The importance of the relationship between variables:

Very high	high	Medium	Low	Very low	Element j	Element i
1	0.75	0.50	0.25	0	Intelligent	Reliable
1	0.75	0.50	0.25	0	Successful	Reliable
1	0.75	0.50	0.25	0	Upper class	Reliable
1	0.75	0.50	0.25	0	Charming	Reliable
1	0.75	0.50	0.25	0	Outdoorsy	Reliable
1	0.75	0.50	0.25	0	Tough	Reliable
1	0.75	0.50	0.25	0	Down to Earth	Reliable
1	0.75	0.50	0.25	0	Honest	Reliable
1	0.75	0.50	0.25	0	Wholesome	Reliable
1	0.75	0.50	0.25	0	Cheerful	Reliable
1	0.75	0.50	0.25	0	Daring	Reliable
1	0.75	0.50	0.25	0	Spirited	Reliable
1	0.75	0.50	0.25	0	Imaginative	Reliable
1	0.75	0.50	0.25	0	Up to date	Reliable
1	0.75	0.50	0.25	0	Successful	Intelligent
1	0.75	0.50	0.25	0	Upper class	Intelligent
1	0.75	0.50	0.25	0	Charming	Intelligent
1	0.75	0.50	0.25	0	Outdoorsy	Intelligent
1	0.75	0.50	0.25	0	Tough	Intelligent
1	0.75	0.50	0.25	0	Down to Earth	Intelligent
1	0.75	0.50	0.25	0	Honest	Intelligent
1	0.75	0.50	0.25	0	Wholesome	Intelligent
1	0.75	0.50	0.25	0	Cheerful	Intelligent
1	0.75	0.50	0.25	0	Daring	Intelligent
						.
						.
						. (Continue)

Step 1:	Selecting appropriate criteria

Step 2:	Determining importance weights of criteria

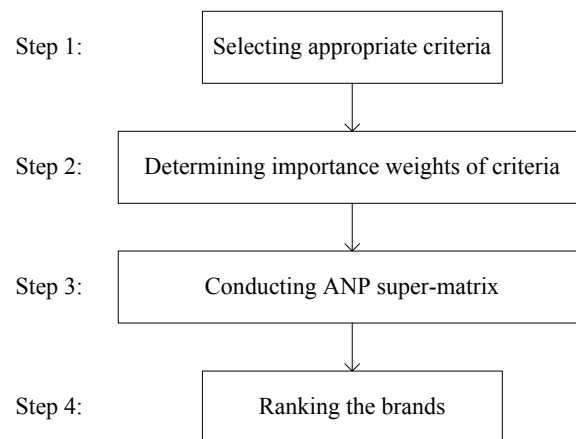| Step 3:	Conducting ANP super-matrix

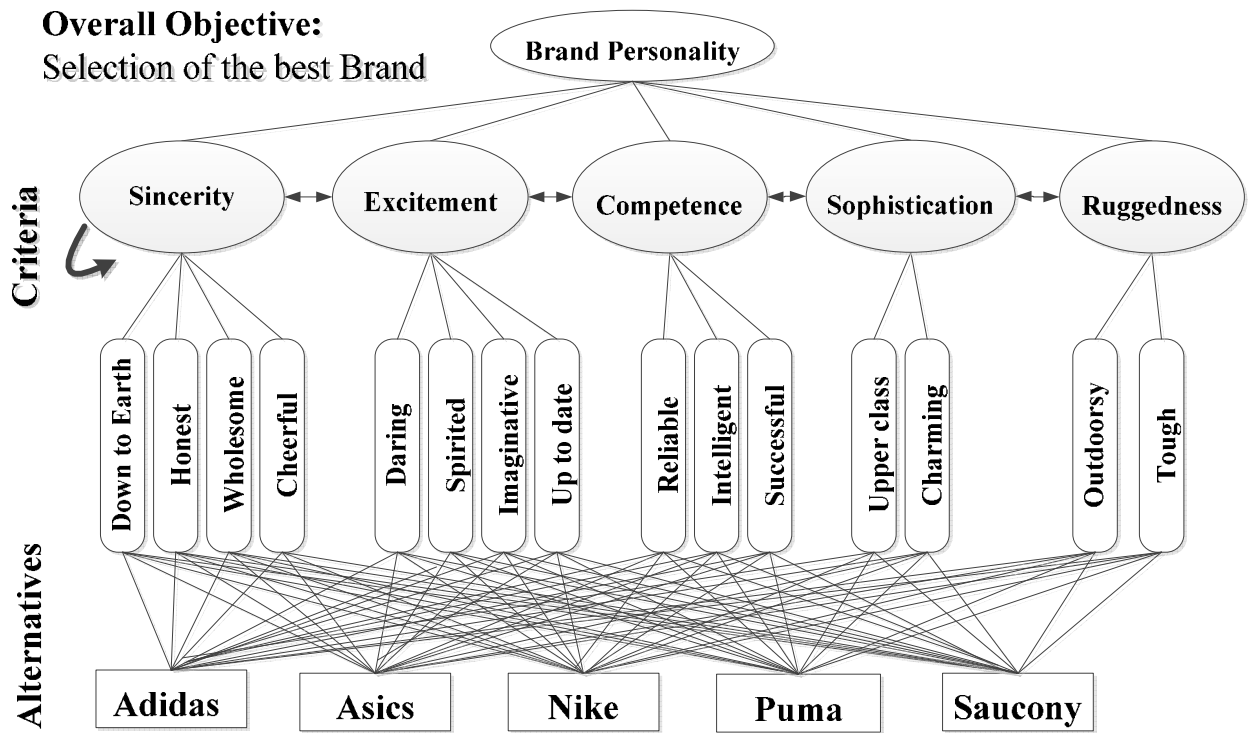| Step 4:	Ranking the brands

Figure 1. General framework for research

Figure 2. ANP model for analysis of the brands' personality

Table 1. Linguistic values and mean of fuzzy numbers

	Very low	Low	Medium	High	Very high
Sub-criteria (negative)	1	0.75	0.50	0.25	0
Sub-criteria (positive)	0	0.25	0.50	0.75	1

Table 2. Initial matrix of the ANP

	Competence	Sophistication	Ruggedness	Sincerity	Excitement
Competence	(1.000, 1.000, 1.000)	(0.200, 0.797, 8.000)	(0.200, 1.306, 8.000)	(0.167, 0.404, 7.000)	(0.167, 0.593, 8.000)
Sophistication	(0.125, 1.254, 5.000)	(1.000, 1.000, 1.000)	(0.143, 0.723, 9.000)	(0.167, 0.271, 1.000)	(0.167, 0.622, 7.000)
Ruggedness	(0.125, 0.766, 5.000)	(0.111, 1.383, 7.000)	(1.000, 1.000, 1.000)	(0.167, 0.630, 6.000)	(0.250, 0.815, 8.000)
Sincerity	(0.143, 2.477, 6.000)	(1.000, 3.689, 6.000)	(0.167, 1.587, 6.000)	(1.000, 1.000, 1.000)	(0.143, 0.771, 5.000)
Excitement	(0.111, 1.644, 6.000)	(0.143, 1.555, 6.000)	(0.125, 1.227, 4.000)	(0.200, 1.297, 7.000)	(1.000, 1.000, 1.000)

Table 3. Magnitude degree of each element against other elements

$S2 \geq 0.983$	$S1 \geq 1$	$S1 \geq 0.985$	$S1 \geq 0.9517$	$S1 \geq 0.965$
$S3 \geq 1$	$S3 \geq 1$	$S2 \geq 0.97$	$S2 \geq 0.935$	$S2 \geq 0.952$
$S4 \geq 1$	$S4 \geq 1$	$S4 \geq 1$	$S3 \geq 0.968$	$S3 \geq 0.977$
$S5 \geq 1$	$S5 \geq 1$	$S5 \geq 1$	$S5 \geq 0.997$	$S4 \geq 1$

Table 4. Special normalized vector

	C1	C2	C3	C5	C6
C1	0.127	0.364	0.275	0.452	0.000
C2	0.461	0.171	0.243	0.381	0.000
C3	0.269	0.284	0.106	0.000	0.543
C4	0.143	0.181	0.119	0.167	0.000
C5	0.000	0.000	0.257	0.000	0.457

Table 5. Computed global weights of sub- factors

Criteria	Sub-criteria	Weight	Local weights	Global weights
Competence	Reliable	0.244	0.167	0.041
	Intelligent		0.176	0.043
	Successful		0.657	0.160
Sophistication	Upper class	0.251	0.483	0.121
	Charming		0.517	0.130
Ruggedness	Outdoorsy	0.241	0.122	0.029
	Tough		0.878	0.212
Sincerity	Down to Earth	0.122	0.220	0.027
	Honest		0.301	0.037
	Wholesome		0.376	0.046
	Cheerful		0.102	0.012
Excitement	Daring	0.141	0.418	0.059
	Spirited		0.151	0.021
	Imaginative		0.191	0.027
	Up to date		0.240	0.034

Table 6. Weights of the brands with the proposed fuzzy ANP model

Sub-criteria	Global weights	Adidas		Saucony		Nike		Puma		Asics	
Reliable	0.041	0.868	0.036	0.632	0.026	0.711	0.029	0.750	0.031	0.737	0.030
Intelligent	0.043	0.855	0.037	0.645	0.028	0.697	0.030	0.671	0.029	0.671	0.029
Successful	0.160	0.908	0.145	0.671	0.107	0.803	0.128	0.711	0.114	0.711	0.114
Upper class	0.121	0.921	0.111	0.592	0.072	0.789	0.095	0.776	0.094	0.697	0.084
Charming	0.130	0.882	0.115	0.645	0.084	0.816	0.106	0.816	0.106	0.684	0.089
Outdoorsy	0.029	0.802	0.023	0.632	0.018	0.737	0.021	0.697	0.020	0.711	0.021
Tough	0.212	0.816	0.173	0.618	0.131	0.684	0.145	0.724	0.153	0.724	0.153
Down to Earth	0.027	0.697	0.019	0.671	0.018	0.763	0.021	0.618	0.017	0.645	0.017
Honest	0.037	0.724	0.027	0.697	0.026	0.697	0.026	0.724	0.027	0.671	0.025
Wholesome	0.046	0.789	0.036	0.724	0.033	0.711	0.033	0.763	0.035	0.711	0.033
Cheerful	0.012	0.816	0.01	0.750	0.009	0.737	0.009	0.803	0.010	0.724	0.009
Daring	0.059	0.763	0.045	0.737	0.043	0.789	0.047	0.697	0.041	0.737	0.043
Spirited	0.021	0.776	0.016	0.711	0.015	0.776	0.016	0.724	0.015	0.763	0.016
Imaginative	0.027	0.829	0.022	0.776	0.021	0.789	0.021	0.618	0.017	0.750	0.020
Up to date	0.034	0.895	0.030	0.724	0.025	0.868	0.030	0.684	0.023	0.724	0.025
Sum			0.846		0.656		0.757		0.732		0.708

Table 7. Some related research on brand evaluation

Authors' names	Methodology	Research characteristics
Costa and Evangelista (2008)	AHP	Assessing brand intangible assets Criteria: financial and economic perspective, time perspective, enterprise image and growth perspective Alternatives: brand awareness, perceived quality, brand loyalty, brand associations, property assets, brand strength, brand stature and innovation
Lin and Hsu (2011)	FANP	Creating a hierarchical framework for brand image management Criteria: location convenience, shop atmosphere, price, types of merchandise, sales and service
Wang and Tzeng (2012)	DEMATEL, ANP and VIKOR	Using brand marketing to create brand value Criteria: product strategy, perceived quality, perceived value, enhanced consumer experience, price strategy, consumer's price perception, value pricing, channel strategy, direct and indirect channels, push and pull, channel support, communication strategy, advertisements, sales promotions, event marketing and sponsorship, public relations and propaganda material, personnel sales, total satisfaction and performance
Hsu and Lin (2013)	Delphi and AHP	Designing a model for selecting brand names Criteria: emotional appeal, linguistic appeal, marketing appeal and legal appeal Alternatives: brand names (A, B and C)
Liu and Chou (2016)	Fuzzy Delphi, DEMATEL and ANP	Identifying the important attributes of Kinmen tourism Criteria: band loyalty, perceived quality, brand association, brand awareness, product, place, price, promotion, travel environment, natural resources, travel intention