Information Technology for Choosing the Trademark Considering the Attitude of Consumer

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Abstract. The study of the attitude of the consumer to products is an important criterion for the enterprise because timely and properly conducted analysis allows to optimize the costs of the enterprise and to make informed marketing decisions on pricing. In this paper, the structure of information technology for choosing the trademark considering the attitude of consumer, a model of the process of choosing the trademark considering the attitude of consumer based on the multi-factor model of Fishbein, the method of choosing the trademark considering the attitude of the consumer have been developed. The developed in this paper model and method differ from the known models and methods by consideration of the attitudes of consumer towards trademarks and provide an opportunity to take into account the influence of the main attributes by which consumers evaluate trademarks. During the experiment, an analysis of the functioning of the developed model and method on the example of choosing a trademark of acoustic guitar, taking into account the attitude of the consumer, was conducted. In the process of such analysis, the attitude of the consumers to the acoustic guitars trademarks (Takamine, Fender, Yamaha, Gibson, Ibanez, Taylor, Martin) was calculated on the basis of the developed model and the method of choosing the trademark considering the attitude of the consumer. In order to complete the development of information technology, it is necessary to develop a tool (for example, a web service) for choosing the trademark considering the attitude of the consumer. Further studies of the authors will be addressed the development of such a tool (as a web service).

Keywords: Information Technology, Choosing the Trademark, Attitude of Consumer, Model of Fishbein.

1   Introduction

At present, in conditions of market relations, when the supply of goods is much higher than demand, competition between producers of goods is constantly increasing, there is a constant struggle for consumers, it is important to know the attitude of consumers to the manufactured goods for the profitability and successful development of enterprises. The competitive positions of the company in the market are closely relat-

ed to the analysis of consumer perception of the trademark, the formation of attitude towards it and its products.

For enterprises whose activities involve the production and sale of products, the most important issue is the competitiveness of products. In modern conditions, the effectiveness of the enterprise on the market depends not so much on the objective properties of the product sold under a certain trademark, but on the subjective perception of the product trademark by the consumer [1]. In terms of their technical and economic characteristics, the products of the leading manufacturers are objectively little different from each other, and, according to the results of the study, more than 80% of trademarks are undifferentiated [2].

That is why the marketing strategy of leading foreign companies is aimed primarily at transforming the consciousness of potential consumers, which is based on a positioning strategy, an analysis of the consumer's attitude towards the trademarks of producers and competitors [3-5].

Evaluation of attitude of consumers to products (trademark) allows us to find the weaknesses of the object under study. Avoiding the weaknesses of the product is a key factor in improving the competitiveness of the organization, as well as improving the productivity of consumer-oriented enterprise [6].

In the competition for the consumer the company that is able as best as possible and quickly meet the needs of the buyer always wins. A deep understanding of consumers allows you to be sure that the manufacturer offers the right products to the right consumers in the right way. An enterprise that understands how consumers respond to different product properties gains a significant advantage over competitors.

Therefore, the study of the consumer's behaviour (choice) in terms of their attitude to trademarks is *the actual task* in the conditions of increased competition in the market.

2 Literature Review

Attitude is a stable tendency to respond to certain phenomena in a certain way, which persists for a long time [6]. The buyer can remember no more than seven trademarks in each product group. The position given to any product is a complex set of perceptions, impressions and feelings that the consumer has when comparing this product with the products of the competitors.

Today, there are two main theories, which are used to explain the forming of the attitude of consumers to the trademark – the theory of cognitive dissonance (a sense of dissonance is a state which the person tries to reduce) [1, 7] and attributive theory (the product is considered as a set of properties (attributes) that can solve the problem of the consumer, meet his needs) [1, 8, 9] – Fig. 1.

Considering the advantages and disadvantages of cognitive dissonance theory, analyzed one- and multi-factor models, the multi-factor model of Fishbein was chosen as a base model for the development of information technology for choosing the trademark considering the attitude of the consumer.
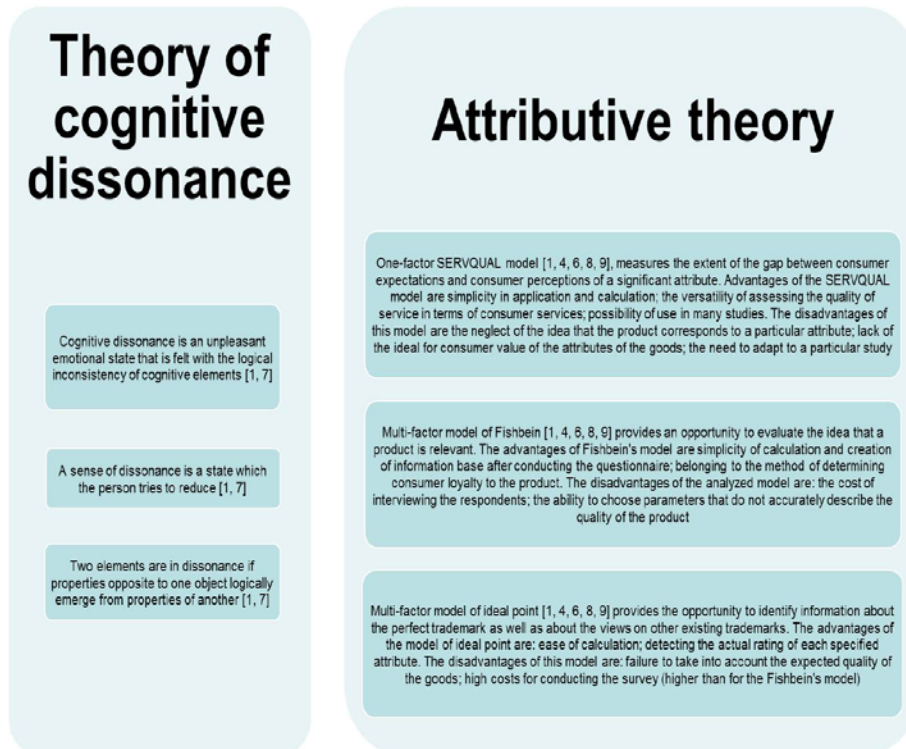
Theory of cognitive dissonance

Cognitive dissonance is an unpleasant emotional state that is felt with the logical inconsistency of cognitive elements [1, 7]

A sense of dissonance is a state which the person tries to reduce [1, 7]

Two elements are in dissonance if properties opposite to one object logically emerge from properties of another [1, 7]

Attributive theory

One-factor SERVQUAL model [1, 4, 6, 8, 9], measures the extent of the gap between consumer expectations and consumer perceptions of a significant attribute. Advantages of the SERVQUAL model are simplicity in application and calculation; the versatility of assessing the quality of service in terms of consumer services; possibility of use in many studies. The disadvantages of this model are the neglect of the idea that the product corresponds to a particular attribute; lack of the ideal for consumer value of the attributes of the goods; the need to adapt to a particular study

Multi-factor model of Fishbein [1, 4, 6, 8, 9] provides an opportunity to evaluate the idea that a product is relevant. The advantages of Fishbein's model are simplicity of calculation and creation of information base after conducting the questionnaire; belonging to the method of determining consumer loyalty to the product. The disadvantages of the analyzed model are: the cost of interviewing the respondents; the ability to choose parameters that do not accurately describe the quality of the product

Multi-factor model of ideal point [1, 4, 6, 8, 9] provides the opportunity to identify information about the perfect trademark as well as about the views on other existing trademarks. The advantages of the model of ideal point are: ease of calculation; detecting the actual rating of each specified attribute. The disadvantages of this model are: failure to take into account the expected quality of the goods; high costs for conducting the survey (higher than for the Fishbein's model)

Fig. 1. Theories to explain the formation of the attitudes of consumer towards the trademark

The conducted analysis of the literature revealed the lack of information technology for choosing the trademark considering the attitude of the consumer. Considering the actuality of the task of the study of the consumers' behaviour (choice) in the terms of their attitude to trademarks and the need to automate the processing of information to determine the attitude of the consumer (since the incompleteness, inaccuracy and distortion of such information will lead, respectively, to the fall in the veracity of conclusions about the attitude of consumers to trademark [10, 11]), *the purpose of the study* is the support of choosing the trademark considering the attitude of the consumers through the development of appropriate information technology.

3 Information Technology for Choosing the Trademark Considering the Attitude of Consumer

Concept of information technology for choosing the trademark considering the attitude of consumer is represented on Fig. 2.

Information technology for choosing the trademark considering the attitude of consumer			
Object – process of choosing the trademark considering the attitude of consumer	**Models** – model of process of choosing the trademark considering the attitude of consumer based on the multi-factor model of Fishbein	**Methods** – method of choosing the trademark considering the attitude of consumer	**Tools** – tool (web service) for choosing the trademark considering the attitude of consumer

Fig. 2. Concept of information technology for choosing the trademark considering the attitude of consumer

Model of process of choosing the trademark considering the attitude of consumer based on the multi-factor model of Fishbein. According to the model of Fishbein, the attitude of the consumer to the trademark is the sum of the products of the value of the attribute of the trademark by the relative weight of the attribute, i.e. it is determined by the formula:

$$At=\Sigma w_j \cdot a_j, \tag{1}$$

where At – the attitude of the consumer to the trademark, w_j – the relative weight of j-th attribute of the trademark, a_j – the value of j-th attribute of the trademark by the consumer, j=1..m, m – the number of significant attributes of the trademark.

Method of choosing the trademark considering the attitude of consumer consists of the following stages – Fig. 3.
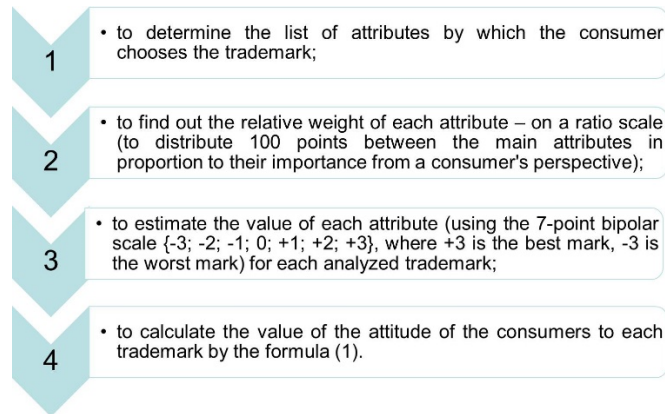

1. • to determine the list of attributes by which the consumer chooses the trademark;

2. • to find out the relative weight of each attribute – on a ratio scale (to distribute 100 points between the main attributes in proportion to their importance from a consumer's perspective);

3. • to estimate the value of each attribute (using the 7-point bipolar scale {-3; -2; -1; 0; +1; +2; +3}, where +3 is the best mark, -3 is the worst mark) for each analyzed trademark;

4. • to calculate the value of the attitude of the consumers to each trademark by the formula (1).

Fig. 3. Method of choosing the trademark considering the attitude of consumer

4 Experiment, Results and Discussions

Let's analyze the functioning of the developed model and method on the example of choosing the trademark of acoustic guitar, considering the attitude of the consumer.

It is well known that the buyer can memorize no more than seven trademarks in each product group. So that 7 trademarks of guitar manufacturers in the world were selected:

1. Takamine;
2. Fender;
3. Yamaha;
4. Gibson;
5. Ibanez;
6. Taylor;
7. Martin.

In the first stage, an analysis of publications on the Internet and posts on various rock music forums regarding the parameters for the choice of an acoustic guitar – with the purpose of determining the attributes that are most significant for consumers. As shown by the conducted analysis, the following attributes are most important for consumers when buying an acoustic guitar:

1. the material of which the acoustic guitar is made;
2. the material of which the upper deck is made;
3. thickness of metal strings;
4. material of buttons (saddles) that fix the strings;
5. guitar sounding;
6. the outward (look) of the guitar;
7. the price of the guitar.

In the second stage, the survey (with a google form) was conducted, in which people who use acoustic guitars in their professional activities or in their spare time took part with the purpose of choosing the most important attribute for each respondent. 100 respondents took part in this survey. The results of the survey are presented in the form of a diagram – Fig. 4.
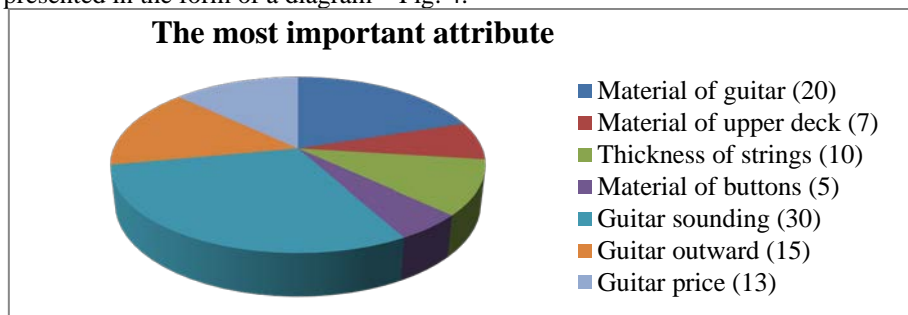

The most important attribute

- Material of guitar (20)
- Material of upper deck (7)
- Thickness of strings (10)
- Material of buttons (5)
- Guitar sounding (30)
- Guitar outward (15)
- Guitar price (13)

Fig. 4. Results of a survey of 100 respondents on the most important attribute

In the third stage, an appropriate questionnaire (google form) was developed to collect values of all the above attributes for different guitar trademarks. This questionnaire consisted of 49 questions (7 attributes for each of the 7 trademarks). A link to this questionnaire (google form) with asking to pass this survey has been sent to several rock music lovers' forums. Respondents valued the attributes by the described above 7-point bipolar scale. 120 respondents participated in the survey.

The value of each attribute for each trademark is calculated by the formula:

$$a_j =] (\Sigma a_i^j)/n [, \qquad (2)$$

where a_i^j – value of j-th attribute by i-th respondent, i=1..n, n – quantity of respondents.

In the fourth stage, the value of the attitude of the consumers to each trademark according to the formula (1) is calculated. The results of the 3-rd and 4-th stages are presented in Table 1.

Table 1. The calculation of the attitude to the trademarks of guitar manufacturers

Attributes	Weight of the attributes	Values of the attributes for different trademarks						
		Taka-mine	Fen-der	Ya-maha	Gib-son	Iba-nez	Tay-lor	Mar-tin
Material of guitar	20	3	3	3	2	2	3	1
Material of upper deck	7	3	3	3	2	1	3	1
Thickness of strings	10	3	2	2	2	1	1	1
Material of buttons	5	3	3	3	2	1	3	1
Guitar sounding	30	3	2	3	2	2	3	1
Guitar outward	15	3	3	2	3	2	1	1
Guitar price	13	-1	0	2	-2	3	0	1
At=Σw$_j$·a$_j$,		**248**	**221**	**262**	**163**	**191**	**211**	**100**

The attitude of the consumers to the trademarks of acoustic guitars' manufacturers by the developed model and method is represented on Fig. 5.

According to the results of our study, consumers consider "Yamaha" the best trademark-manufacturer of acoustic guitars. The least attractive by the consumers is the trademark-manufacturer of acoustic guitars "Martin".

Obviously, the process of choosing the trademark considering the attitude of the consumer is a routine, time-consuming job, and at all stages – both at the stage of gathering the necessary information (survey) and at the stage of calculations. So, this process requires automation – a web service that automates both surveys and calculations is required.
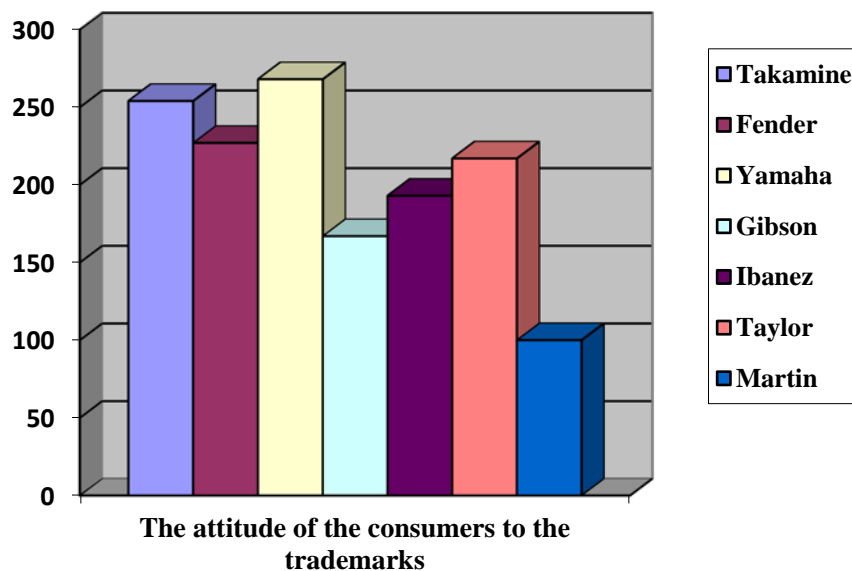
Fig. 5. The attitude of the consumers to the trademarks of acoustic guitars' manufacturers

5 Conclusions

The study of the attitude of the consumer to products is an important criterion for the enterprise because timely and properly conducted analysis allows to optimize the costs of the enterprise and contributes to acquisition a positive, lasting favour from customers. In addition, knowledge of the attitude of the consumers allows you to make informed marketing decisions to improve existing and to create new products, to forecast their success, to set pricing and to evaluate advertising effectiveness.

In this paper, the structure of information technology for choosing the trademark considering the attitude of consumer, a model of the process of choosing the trademark considering the attitude of consumer based on the multi-factor model of Fishbein, the method of choosing the trademark considering the attitude of the consumer have been developed. The developed in this paper model and method differ from the known models and methods by consideration of the attitudes of consumer towards trademarks and provide an opportunity to take into account the influence of the main attributes by which consumers evaluate trademarks.

During the experiment, an analysis of the functioning of the developed model and method on the example of choosing a trademark of acoustic guitar, taking into account the attitude of the consumer, was conducted. In the process of such analysis, the most important attributes were identified by which consumers evaluate acoustic guitars; the relative weights (importance) of such attributes were determined; the values of all the above attributes for different trademarks-acoustic guitar manufacturers were collected.

After this, the attitude of the consumers to the trademarks-manufacturers of acoustic guitars (Takamine, Fender, Yamaha, Gibson, Ibanez, Taylor, Martin) was calculated on the basis of the developed model and the method of choosing the trademark considering the attitude of the consumer – so, Yamaha is considered to be the best acoustic guitar manufacturer's trademark and the Martin is considered to be the least attractive acoustic guitar manufacturer's trademark.

In order to complete the development of information technology, it is necessary to develop a tool (for example, a web service) for choosing the trademark considering the attitude of the consumer – for automation of routine, time-consuming work – both at the stage of gathering the necessary information (survey) and at the stage of calculations.

Further studies of the authors will be addressed:

1. development of the tool (web-service) for choosing the trademark considering the attitude of consumer;
2. design and realization of information technology for choosing the trademark considering the attitude of consumer.

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