FACTOR ANALYSIS ASSESSMENT OF THE INFLUENCE OF WHITE APPLIANCE BRAND CHARACTERISTICS ON THE PURCHASE DECISION OF CONSUMERS IN BOSNIA AND HERZEGOVINA

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Abstract

This paper aims to establish the influence of certain characteristics of white appliance brands on consumer purchasing decisions in Bosnia and Herzegovina. The primary research, with the application of a convenience sample, included 250 consumers of white appliances on the Bosnia and Herzegovina territory. The consumer questionnaire was divided into two parts. The first part of the questionnaire contained questions about respondents' attitudes towards white appliance brands that are in line with the research objectives in order to collect the necessary data. Respondents' views on the importance of 21 characteristics of white appliance brands for making a purchase decision were evaluated on a Likert scale from 1 to 5. The second part of the questionnaire included questions about the respondents' socio-demographic characteristics. The analysis showed that the following factors are the most important for consumers in Bosnia and Herzegovina when choosing a white appliance brand: quality, service and product guarantee; promotion; payment and sales services and added value of products. The first four factors explain 66.28% of the variance, while the first two factors explain 54.8% of the variance. Based on the results, recommendations were given to white appliance manufacturers for building a strong brand.

Keywords: White appliance brands, factor analysis, purchase decision

INTRODUCTION

The increase in consumer power, accelerated by the meteoric rise of social media, threatens the foundations of branding. Following the publishing of this affirmation in the Journal of Brand Call for Papers, the question we ask ourselves is twofold: on the one hand, how can interactions between a brand and its largest consumers be turned into 'bankable' shareholder value for investors; and on the other hand, how can brand management - especially supported by stimulating cooperation among consumers grouped into communities - increase or, conversely, threaten shareholder value? (Cova, Paranque 2012). Interest groups perceive the operations of corporations through a series of images; these images form part of the intangible value of a company. As the word itself emphasizes, intangible assets are firstly intangible and secondly undefined. Brands, as generated images, make up a significant part of a company's intangible value. If companies align the corporate values of their stakeholders and the brand appropriately, they can achieve a significant competitive advantage (primarily embedded in increased market value of the brand) (O. Brady 2003). Brand differentiation results in increased sales volume and gross margin for individual brands. This is achieved by creating a level of belief about a brand that can later be strengthened or weakened by generic advertising. To the extent that generic advertising influences brand-level beliefs, it can influence brand-level demand. If generic advertising affects the demand for individual brands differently, it is probably due to an increase or decrease in the perceived differentiation between them (Chakravarti, Janiszewski 2004).

However, brands with a high market value enjoy high consumer preferences, purchase intention, purchase loyalty and even higher stock returns (Aaker and Jacobson, 1994; and Cobb et al., 1995). Most marketing activities depend on the market value of the brand. Also, from the consumer's point of view, a brand with a high market value increases the credibility of the information supplied with the product, reduces the perceived risk, reduces the need for consumers to think; and overall, it improves the user's utility from the product/brand (Erdem and Swait, 1998 according to: Brahmbhatt, Shah 2017). Although the influence of a brand on consumer behavior is the subject of research by numerous authors, there is a noticeable underrepresentation of research on the influence of a brand on the purchase of a white appliance. Therefore, this paper examines the impact of certain characteristics of white appliance brands on consumer purchasing decisions in Bosnia and Herzegovina.

Overview of previous research

Brand market value is the set of brand values, which add to or subtract from the value of the product. The dimensions included under brand market value are: brand awareness (BAW),

brand association (BAS), perceived quality (PQ), brand trust (BT) and brand loyalty (BL). Aaker (2009) identified these four dimensions, to which we added BT, which has a strong influence on BL and Brand Equity. The influence of the brand's market value on the purchase intention was analyzed in the context of the purchase of household appliances. The most important results are that three of the five dimensions of brand market value: quality, brand trust and brand loyalty, significantly influence the purchase intention in the case of household appliances. In particular, it was observed that quality and brand loyalty have the strongest influence. This indicates that the respondents have a relatively high level of awareness and trust in relation to the brands they use, but they are low for BAS and BL. The multiple regression model indicates that the purchase intention is significantly influenced by four of the five dimensions of market value - BAS, PQ, BT and BL. Among them, PQ and BL have the greatest influence on purchase intention. This is a significant indicator for retailers of consumer durables and household appliances (Lakshmi, Kavida 2016). Research on the influence of the brand's market value on the end user's purchase intention in the electrical appliance industry in the city of Ahwaz, conducted on a sample of 384 people. Regression analysis and Freidman's variance analysis were used to analyze the collected data. Findings show that the components of Brand Equity (including brand awareness, quality perception, brand associations and brand loyalty) have an impact on the final consumer's purchase intention (Vazifehdust, Pakari, Ahmadvand 2017).

The key factors of brand awareness were identified and the significance of the factors for heterogeneous groups of consumers was determined. The proportion of loyal and switching consumers to other brands was estimated, using empirical data of previous, current and future refrigerator choice decisions in Taiwan. After that, it was determined how the key factors and their degree of influence differ among loyal consumers and those who switch brands. Consumers were asked to identify key factors that led to loyalty and influenced their past and current choices. Based on the factor information, brand parameters were calculated using the maximum value of the objective function of the three-choice model. Two characteristics of potential loyal groups for switching brands were tested: (1) the key decision factors in each group; (2) how factors differ across heterogeneous groups. All factors had a positive effect. After-sales services had the greatest influence on brand choice, while advertising had the least influence. Speed of repairs was more important to loyal consumers than to the switching group. To summarize: if a company cannot provide a quick fix when needed, the degree of brand loyalty will decrease. By applying factor analysis, the key factors necessary for repeat purchases were identified. The main factors influencing loyalty and behavior change are: product attributes, after-sales services, marketing capabilities, perceived quality/aesthetics, product line depth and brand recognition. These factors explain about 68.73% of the total

variance. In order to investigate the differences in the perception of factors and variables for two groups of consumers, the t-test was used. It was found that loyal consumers gave significantly higher ratings for ease of use, speed of repair, sales staff recommendations and quality reliability. The implication for a marketing strategy is that improving these factors can increase brand strength (Lin, Wu, Wang 2000).

Research conducted in India showed that the choice of refrigerators, washing machines and televisions is most influenced by advertising, then by the brand, and to a certain extent by family members, sales representatives, friends and relatives (Kumar 2015). The research by Luniya and Verghese in India was conducted to determine the determinants of home appliance purchases in the city of Bhilai. Some factors such as price, brand, payment method, location and after-sales service were analyzed using multivariate analysis. It has been established that after-sales service also has a significant impact on consumers' decisions when purchasing household appliances. In the absence of adequate after-sales consumer service, consumers are forced to get rid of their existing product and switch to a rather different one, which again is not an easy choice or option. Some brands are therefore more preferred due to their improvement and efficient after-sales service with extensive phone line services to assist in the usability and handling of their respective durable products (Luniya, Verghese 2014).

Increased costs for energy and water affect the decision-making of buyers of white appliances, such as dishwashers. For consumers, efficiency has become one of the most important determinants when purchasing any major new home appliance. Empirical data on washing dishes, that is, on consumer daily habits in four European countries, the influence of their behavior on the efficiency of the washing process and potential savings in the use of dishwashers, were collected through a survey that included a total of 1209 online interviews during the winter of 2006/2007. The analyzed data from the survey reveal the importance of various product attributes for consumers and show that the most important factors for respondents in terms of their purchase decision are low values of water and energy consumption. But this is compromised, at least in part, by using a less efficient dishwasher, for example, in pre-rinsing dishes before they are put into the dishwasher and the selected program. In addition, there are differences in hand washing practices between households with and without dishwashers, as well as between countries (Richter 2010). A survey of Vietnamese consumers was also conducted, which integrated motivational and cognitive approaches in order to better understand the consumer behavior of buyers of energy-efficient household appliances. Unique values, knowledge, attitudes and behavior model were developed, and then confirmed by obtaining data. The findings confirmed that egoistic consumers are likely to develop negative attitudes towards environmental protection, and that they tend to formulate

positive attitudes towards individual inconveniences caused by purchasing energy-efficient appliances. In contrast, the purchasing behavior of biosphere and altruistic consumers is influenced by their attitudes towards environmental protection, and also by the reduction of their attitudes in relation to individual inconveniences. Interestingly, consumers with high knowledge about the energy efficiency of appliances believe that purchasing such products is important for environmental protection, and they are likely to deny the perception of inconvenience associated with the purchase. It has been established that attitudes are significant determinants of purchase intention and consumer behavior (Nguyen, Lobo, Greenland 2017).

METHODOLOGY

As part of the primary research, data were collected using the survey method, through a questionnaire as a data collection form. The questionnaire was structured in the form of closed-end questions with the offered number of answers, and closed-end questions with the offered answers of intensity. The questionnaire for consumers was divided into two parts. The first part of the questionnaire contained questions about respondents' attitudes towards white appliance brands that are in line with the research objectives in order to collect the necessary data. Respondents' attitudes were evaluated on a Likert scale from 1 to 5. The second part of the questionnaire included questions of a general demographic nature, as well as questions related to the amount of income, level of education of respondents, and such. The survey was conducted orally.

When selecting sample units from the basic set, which in our case represents consumers from the territory of Bosnia and Herzegovina, a convenience sample was used. The random sample represents a series of cases that we could only reach at some point or that happened to be at our disposal. In our case, these were consumers who, at a certain moment, found themselves in white appliance retail stores. The sample consisted of 250 consumers. Further in this paper, we will analyze the data collected through primary research.

ANALYSIS AND RESULTS

After conducting this research on the territory of Bosnia and Herzegovina for a month in 2019, data entry and processing began with the application of SPSS. It was found that, out of 250 questionnaires, 218 (87.2%) were validly filled out. The survey was conducted in 22 cities, with the largest percentage of respondents represented from: Sarajevo (city and surroundings), Banja Luka and Mostar, while respondents from other cities are fairly evenly represented in the overall structure. In the total number of respondents, the female gender (58.1%) was slightly more represented than the male gender (41.7%) (Figure 1).

Figure 1. Respondents' gender
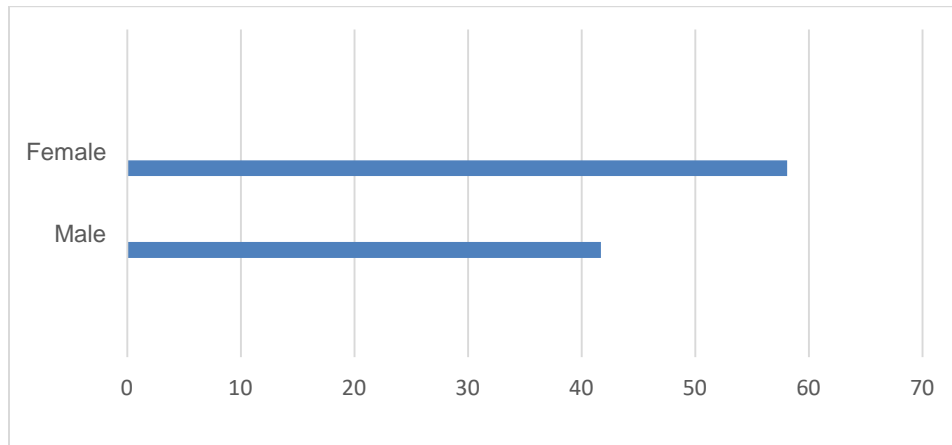
The sample included respondents from six categories of age structure, namely: under 20 years of age - 1.5%, from 21 to 30 years of age - 17.4%, from 31 to 40 years of age - 28.4%, from 41 to 50 years of age - 19 .3%, from 51 to 60 years of age - 15.1%, over 60 years of age - 11.9% (Figure 2).

Figure 1. Respondents' age structure
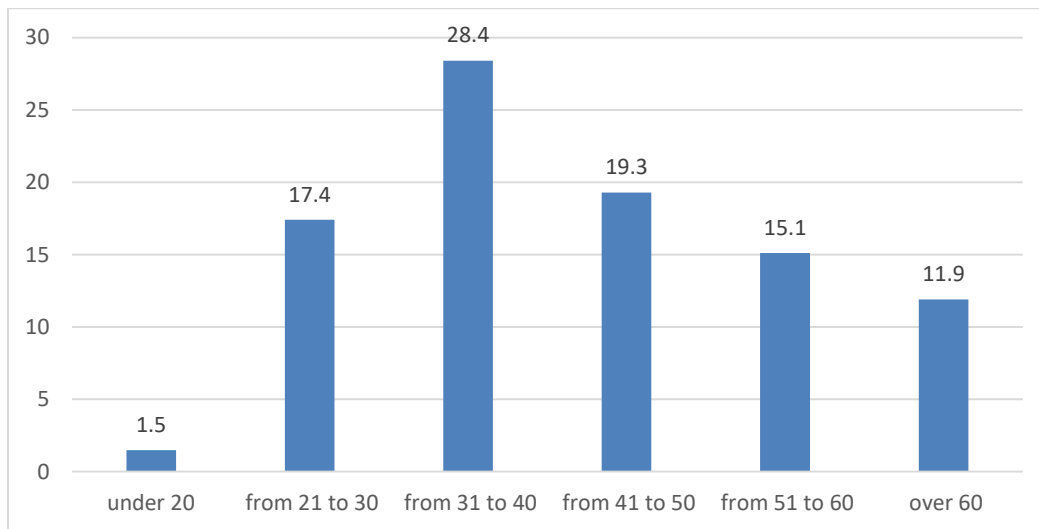
Only 1.8% of respondents have completed primary school. The rest of the respondents have the following level of education: 50.5% have completed secondary school, 17% have a higher vocational education, 28.4% have a university education, while 0.9% have a master's or doctorate degree (Figure 3).

Figure 3. Respondents' education level
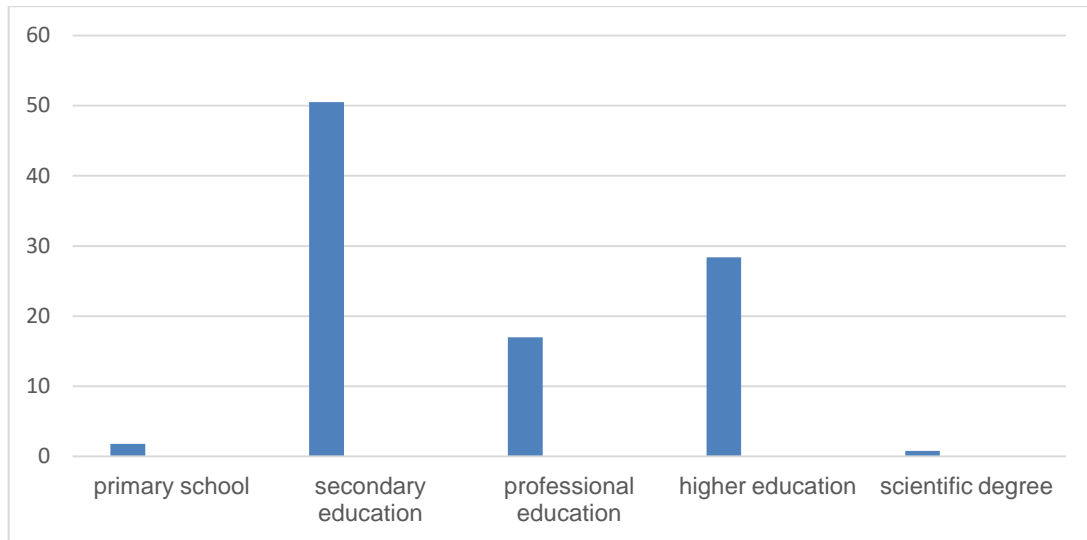
The respondents stated that their annual household income is: under 10,000 BAM - 39%, from 10,000 to 20,000 BAM - 30.7%, from 20,000 to 30,000 BAM - 13.3%, from 30,000 to 40,000 BAM - 1.4 %, over 40,000 BAM - 3.2%. At the same time, a significantly larger number of respondents own a residence (88%), while a smaller number of respondents rent (12%).

In the questionnaire, respondents evaluated the importance of white appliance brand characteristics on the basis of which they made a purchase decision. The characteristics of white appliance brands are presented with 21 statements. They evaluated each statement from the aspect of their agreement with a certain statement from 1 to 5 (1 – Strongly disagree; 5 – Strongly agree with the statement). Then, we conducted a factor analysis of the importance ratings of individual features of the white appliance brands. The results of Kaiser-Meyer-Olkin Measure (KMO) are 0.898, a sig. Bartlett's Test of Sphericity 0.000, justifying the factor analysis.

Table 1. KMO and Bartlett's Test- significance of certain characteristics of white appliance brands for respondents

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		0.898
	Approx. Chi-Square	2802.625
Bartlett's Test of Sphericity	df	210
	Sig.	0.000

Table 2. Total variance explanation of the significance of certain white appliance brand characteristics on respondents

| Component	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings[a]
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total
1	8.899	42.378	42.378	8.899	42.378	42.378	6.577
2	2.610	12.430	54.808	2.610	12.430	54.808	5.118
3	1.391	6.623	61.432	1.391	6.623	61.432	5.903
4	1.020	4.855	66.287	1.020	4.855	66.287	3.263
5	0.955	4.548	70.835				
6	0.811	3.863	74.698				
7	0.751	3.577	78.275				
8	0.555	2.642	80.916				
9	0.497	2.367	83.283				
10	0.465	2.216	85.499				
11	0.436	2.076	87.575				
12	0.406	1.932	89.507				
13	0.379	1.805	91.312				
14	0.321	1.528	92.840				
15	0.291	1.388	94.227				
16	0.256	1.220	95.448				
17	0.228	1.083	96.531				
18	0.223	1.062	97.593				
19	0.181	0.862	98.455				
20	0.168	0.800	99.255				
21	0.156	0.745	100.000				

Extraction Method: Principal Component Analysis.

a. When components are correlated, sums of squared loadings cannot be added to obtain a total variance.

In the Total Variance Explained table, we see that the first four factors explain 66.28% of the variance, while the first two factors explain 54.8% of the variance. This is also confirmed by the break point on the Scree Plot, which clearly shows that factors 1 and 2 explain most of the variance.

Figure 4. Screen Plot
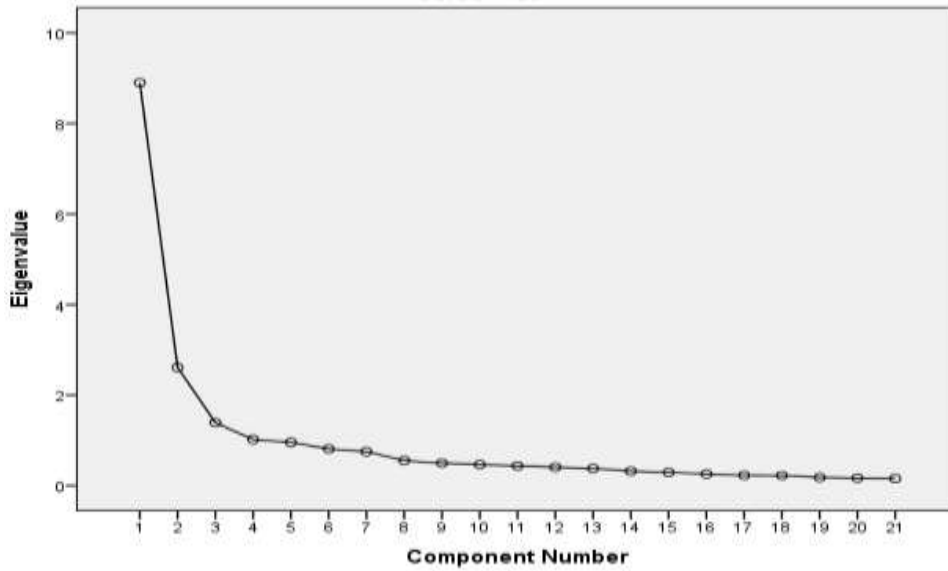
Each of the obtained components has multiple factor weights greater than 0.3. Therefore, we will accept the 4-factor solution. By rotating Oblimin, we got a table of factor weights.

Table 3. Pattern Matrix components of significance of white appliance brand characteristics on respondents

	Component			
	1	2	3	4
High quality of products	0.858			
Excellent product service	0.824			
Excellent product warranty	0.813			
Excellent product characteristics	0.689			
Products are reliable	0.645			-0.342
Products are innovative	0.447	0.315		-0.351
Fast product delivery	0.431		-0.345	
Professional product assembly	0.409			-0.408
Products often advertised on the Internet		0.909		
Products often advertised on the radio		0.835		
Prize games often organized		0.774		
Products often advertised on television		0.773		
Consumers are often given prizes		0.563		0.357
Products may be ordered online		0.437		

Various discounts are often given		-0.902	
Products may be paid for in installments (with no interest)		-0.888	
Sales staff is friendly		-0.634	
Sales staff are professional and provide useful information	0.310	-0.530	
Product price is favorable		-0.487	-0.448
Products are available in many retail stores	0.317	-0.354	-0.316
Excellent product design			-0.732
Extraction Method: Principal Component Analysis.			
Rotation Method: Oblimin with Kaiser Normalization.			
a. Rotation converged in 16 iterations.			

By factor analysis of the ratings relating to the importance of individual features of white appliance brands, we singled out four factors that explain 66.28% of the variance. The main factor weights of component 1 are: high quality of products, excellent product service, excellent warranty for products. The main factor weights of component 2 are: products are often advertised on the Internet, products are often advertised on the radio, prize games are often organized. The main factor weights of component 3 are: product price is often given various discounts; products may be purchased in installments (without interest). The main factor weights of component 4 are: products have excellent design, product price is very favorable, product assembly is professional. We named factor 1: Quality, service and product guarantee. We named factor 2: Promotion. We named factor 3: Payment and sales services. We named factor 4: Added value of the product.

CONCLUSION

Growing competition and attitude towards brand image means that white appliance brands will greatly influence consumers' decisions. White appliance manufacturers and retailers should understand the consumer's attitude towards the factors that determine brand positioning. This is essential for a better understanding of white appliance brand loyalty. It is also necessary to segment the market based on brand loyalty and on understanding the needs of loyal consumers, as well as their relationship to the key attributes of the white appliance brand. Based on such findings, manufacturers can find ways to increase their market share by meeting the needs of repeat consumers. In addition, white appliance manufacturers can gain loyal consumers by focusing on certain key brand factors. Related theories of brand choice argue

that in order to increase the sales volume or marketing share of a particular product brand, it is necessary to either strengthen the brand loyalty of existing consumers or to try to persuade consumers of other brands to switch brands. These are important aspects that should be taken into account in order to build a strong position on the white appliance market.

Based on the research results analysis of the results, we offer the following recommendations to white appliance manufacturers:

➢ A strong white appliance brand can only be built with adequate quality. Therefore, it is necessary to constantly work on improving the quality of white appliances, in order to have a certain advantage over the competition.

➢ It is necessary to provide an adequate guarantee and service, which are important for placement on the target market.

➢ It is necessary to advertise the characteristics of the white appliance brand on the Internet, radio and TV.

Given that the research was conducted with certain limitations, we believe that further research could refer to the following:

➢ Analyze whether socio-demographic characteristics such as gender, level of education and level of income influence the assessment of the importance of the characteristics of white appliance brands when making a purchase decision.

➢ In the study of the significance of the characteristics of white appliance brands, regarding the purchase decision, include several target groups of the public, such as: the board of directors, shareholders, management, employees and distributors.

➢ Apply other models in white appliance brand research, such as the DAD framework and Keller's model.

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