The Glance of an Observer on the War of Brands of Food Products

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ABSTRACT

The present work proposes a model to compare means of many constructs that evaluate competitiveness of brands of the Brazilian chilled and frozen food industry. Such a model is based on a nomological network, which was built over the concepts pointed by [4] [13] [8], and [7] by the NUME – Marketing and Strategy Research Center of the Federal University of Minas Gerais - research group. Besides the validation of the new research instrument for gauging and generalization, it will be made an evaluation of brands - the ones well-positioned at the market - using the comparison of the indexes and averages of the nomological chain built for the companies, in relation to the following concepts: Tangibility (perception of packings, flavors and smells); Reliability in the Brand; Satisfaction; Loyalty; Image of the Brand; Perceived Value and Functional Conflict.

Keywords: competitiveness, food sector, nomological chain

1. INTRODUCTION

In reason of the elevated deregulation, the Brazilian food industry is highly competitive. This deregulation is a characteristic of the ‘basic consuming goods’, along with the short life cycle, maturity and oldness of the sector.

The food industry received, in the last years, a demand increment originated from the middle class population strata. And, with the productivity increase, the food could arrive to the final consumer with smaller costs [10].

Therefore, the emphasis doesn't just sets on the costs of the food, but it also covers the purchase services, storage, cleaning, preparation and commercialization.

In Brazil, there is a great number of companies with an assorted mix of products, which harshly dispute the customers' preference in the supermarkets’ shelves.

The companies included in this research represent the leadership of the Brazilian market, they are the enterprises whose Brand names are: *Perdigão, Sadia* and *Seara*. The items appraised in these brands are the chilled and frozen meat products.

2. THE COMPANIES INVOLVED

Perdigão [16], founded in 1934, is a great manufacturer of poultry and pork byproducts. Along the years, the company has implemented a poultry and pork productive system, the so called vertical integration. Currently, the total number of integrated partners is of 6,810, and Perdigão has carried out a significant industrial expansion over these last 64 years. All in all the industrial complex comprises 12 meat and 2 soybean processing units, 6 animal-feed factories, 12 incubator units and 27 company-owned poultry and pork farms.

Sadia [19] has been taking the leadership in several activities related to the food industry. It is among the largest food processing companies of Latin America, being one of Brazil’s largest exporter. As a research - conducted by the English consulting firm Interbrand in 2001 - realizes, the brand Sadia was acclaimed as the most valuable company of the Brazilian food industry. Besides, according to the operational profile traced by the brokerage company Pilla Corretora de Valores Mobiliários e Câmbio, in the third quarter of 2002, Sadia was pointed as the national leader in the production and sale of frozen and chilled food products of poultry and pork meats, besides counting with the largest distribution network of frozen and chilled food products in the country.

Seara [20], founded in 1956, represents one of the largest national companies in the segment of poultry and processed meats (hams, sausages and salamis). Besides, it exports poultry cuts and pork meat. João Augusto Salles, responsible analyst for the sectors of banks and food products of the Brazilian consulting firm Lopes Filho e Associados, affirms that Seara is the largest exporter of pork of the country. It exports more pork meats than Sadia and Perdigão. Seara is a company of great stature and has its own seaport, in Santa Catarina, to export its production.

3. PROBLEM OF THE RESEARCH

The main question of this research is: *Are there meaningful differences between the averages of the brands? Does the one the brands occupy prominent position at all the constructs of clients’ perceptions?*

4. OBJECTIVES OF THE RESEARCH

With this research, the goal is to build a tool that could measure differences between competitive brands and prepare a new measure tool to the *commodity behavior sector.*

5. CONSTRUCTS OF THE RESEARCH

In the present research there are constructs of different models. From the Model SERVQUAL [2], the constructs Tangible Aspects and Reliability were used. From the ACSIndex - American Consumer Satisfaction Index, proposed by [4], the constructs Loyalty, Satisfaction and Perceived Value were taken. The construct Image was retrieved of the conceptualization of [1], while the Functional Conflict came from [13] Relationship Model.

5.1. Tangible Aspects and Reliability: The SERVQUAL Model

The first studies about quality of services were of authorship of [14] and had as objective to search for an integrative model in that area. Therefore, the managers and customers of four North American companies were questioned on the fundamental attributes of the service quality, being also brought up the existence of divergences between the two opinions. The following companies participated in the research: retail banks, credit card administrators, property brokers, and repair and maintenance of goods firms.

In a second phase of the research, [15] focused their studies in the measurement of Gap 5 (gap between the perceived and the expected service), appearing the famous equation:

$$Q = P - E \qquad (1)$$

In other words, Quality = Perception - Expectations. Initially 97 items, referring to the external dimensions of the service quality, were generated. Later, the scale was refined and it came to a scale of 22 items. The grid of items contained in the research instrument reflected the following dimensions: Tangible Aspects, Reliability, Promptness, Guaranty and Empathy. Such dimensions are:

- Tangible Aspects: physical facilities, equipments and appearance of the company's personnel. When the consumer enters in contact with the atmosphere of a supplying company.

- Reliability: capacity and ability to implement the promised service in a safe and reliable way.

- Promptness: good will to aid the consumer and to provide ready attendance - to solve problems on time.

- Guaranty: employees' knowledge and courtesy and their ability to inspire credibility and trust - to assert that the service is safe and guaranteed.

- Empathy: individualized consideration and attention that the company renders to its consumers - fine-tuning of sympathy and understanding between supplier and customer.

In this study, only the Tangible and the Reliability Aspects were explored.

5.2. Loyalty, Satisfaction and Perceived Value: ACSIndex

The Model of the ACSIndex - American Consumer Satisfaction Index - is proposed by [5]. That model intends to offer a base of uniform and comparable measurement for the customer's global satisfaction, besides pointing relationships of such construct with its main antecedents and consequents. Implicit in the model is the recognition that the customer's global satisfaction cannot be directly measured, being a latent variable requesting multiples indicators in its measurement. The most immediate and tangible result of the operationalization of that model is a score of the latent variable of the customer's global satisfaction, in terms, generic enough, for a comparison among supplying organizations, branches of activities, sectors and nations.

5.2.1. Loyalty

The final relationship of the model is between the customer's complaints and their loyalty. The direction and the indication of that relationship depends on the service systems rendered to the customer and on the solution – by the supplier – of the clients complaints [4]. When the relationship is positive, the implication is that the supplier succeeded in transforming a customer that complains into a loyal customer. When the relationship is negative, the supplier worked with the situation in such a way that the negative situation became even worse, contributing to the loss of the customer's loyalty.

5.2.2. Satisfaction

The customer’s global satisfaction, as the central construct of the model is placed inside of a relationship chain that goes from its antecedents (expectations, quality and value perceived by the customer) to its consequences (complaints and the customer's loyalty). Of special interest in the model, beyond its own global satisfaction, is the explanation of the customer's loyalty, as very probable indicator of profitability [17]. With that structure, the model allows the ACSIndex to be tested under the nomological point of view. Nomological validity is the degree in that a construct behaves as predicted inside of a system of related constructs, the so-called nomological network [3].

5.2.3. Perceived Value

A second determinant of the customer's global satisfaction is the perceived value. This is the product perceived level of quality of the product in relation to its price. The factor price is incorporated to the perceived value, reinforcing the comparability of results among suppliers, branches of activities and sectors. It is supposed to be a positive association between the product's perceived value and the customer's global satisfaction.

5.3. Image: Lalande / Barich and Kotler

The author [11] defines image as being the mental repetition, usually weakened, of a sensation (or more exactly of a perception) previously experienced. Image can then, be considered, as being a certain way of appropriation of the reality for a certain subject, in other words, as perception phenomenon. Perception can be understood, according to [11], as an act in which the individual - organizing its present sensations, interpreting them, and complementing them with images and memories – opposes to an object that he/she spontaneously considers as different from itself - real and unknown.

Through the perception happens an internalization process – by the individual - of the received stimuli, that will make possible the formation of the image, through which he/she will recognize such incentives. The perception phenomenon is, according to [11], the identification of the reality; happening after the sensation phenomenon, when the individual will learn - through a selective process - some values present stimuli received and will aggregate to it other subjective values and internal objectives.

In that way, image can be considered as being the subjective vision of the objective reality. The reception of the emitted message will be formed, starting from the process of interpretation of that message, being then, modified, and acquiring its own version in the individual's conscience [11].

The image that the individual has of the real (symbolic and different vision from the reality) unchains an attitude of that individual towards the object - therefore, the image has then, the power to influence the individual's behavior [18].

The first image focuses linked to marketing appeared in the 1950s. The authors [6] verified that the consumers not only valued the physical, tangible aspect of the products they buy, but also the symbolic meanings attached to the brand of those products.

6. MODEL OF THE RESEARCH

Once the constructs have already been explicated, the adapted model is in the FIG.1.

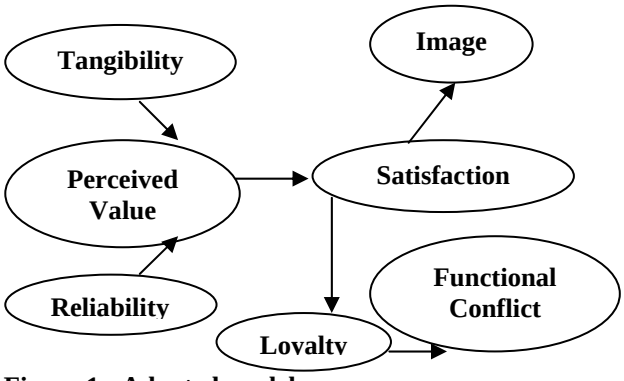

Figure 1 - Adapted model

7. ANALYSIS RESULTS

7.1. Factor Analysis

In order to analyze interrelationships among a large number of variables, Factor Analysis was chosen as the statistical approach in this work. According to [9], the aim is to explain these variables in terms of their common dimensions, called factors. Hence, factors are dimensions that try to explicit the existent correlations between a group of variables. This process enables the researcher to lose the minimum of information.

A multivariate method included in the group of Factor Analysis is the Principal Component Analysis, which derives factors that contain small proportions of unique variance [9].

This method is recommended in case the objective is to determine the minimum number of factors (principal components), that answer for the maximum variance on the data for future multivariate analysis uses [12].

It is worth to remember that in TAB. 1 and 2, only the factor loadings for each question higher than 0.5 were kept in the table, showing a good correlation with each factor [9].

TAB.1 shows the Rotated Component Matrix. It shows how many factors were built by the collected data. Six factors were found, and this is a good result, once there are 7 constructs in this research. Only the loadings over 0,5 were maintained in the matrix, according to [9].

From the TAB.1, it's able to see some well dimensioned factor and others not so much. The first factor grouped several indicators from three different constructs (Tangibility, Reliability, and Loyalty). The second factor is related again with Tangibility and Reliability, both from the SERVQUAL model of [15]. Functional Conflict is totally explained by the third factor. The fourth factor is fragmented between Image and Satisfaction, with the fifth is clearly Perceived Value. The sixth is more related to Tangibility.

In order to reach a better result, a seven-factor rotated component matrix was forced in future factor analysis, as TAB. 2 displays.

Table 1 - Rotated Component Matrix

	Factors					
	1	2	3	4	5	6
The products packages are practical and easily handled						,556
The information in the packages correspond to what the products represent						,535
I consider the products of this company flavorful		,580				
The ready foods to eat have a pleasant smell		,748				
The color of the products of this company is pleasant		,783				
I believe in the quality of the products from this company		,607				
The products are safely packaged	,612					
The company keep their promises in its products	,586					
I recommend this company's products to my family and friends	,741					
When I come across new products of this company, I do not hesitate in buying and consuming them				,533		
I feel comfortable in recommending the products of this company to other people	,734					
I defend the products of this company when somebody makes negative commentaries about them						
If the press releases good news about this company, I am immediately inclined to believe in it	,514					
The logo of the company means a serious presentation to me, and of good reputation				,512		
When I go shopping, I search in order to identify the products of this company on the shelf						
For me, this company has a positive image				,606		
I am satisfied with the existence of a company like this supplying food				,732		
If there aren't any offers of products from this company, I will not hesitate in buying products from another company						-,750
The products of this company satisfy my expectations				,722		
I believe the price charged for the products of this company is fair, considering the quality offered					,844	
The price I pay for the products from this company is within my expectations					,882	
I believe that, if I detect some problem in a product, the company will solve it promptly			,810			
I believe that my suggestions to improve the products will be Heard by the company			,823			
I believe that the company, in case I complain, will pay attention to me			,918			

Table 2 - Rotated Component Matrix – Forcing 7 factors

	Factors						
	1	2	3	4	5	6	7
The products packages are practical and easily handled							,555
The information in the packages correspond to what the products represent							,575
The products are safely packaged	,661						
I consider the products of this company flavorful	,539						
The ready foods to eat have a pleasant smell				,820			
The color of the products of this company is pleasant				,750			
I believe in the quality of the products from this company	,692						

	Factors						
	1	2	3	4	5	6	7
The company keep their promises in its products	,687						
I recommend this company's products to my family and friends	,606				,521		
When I come across new products of this company, I do not hesitate in buying and consuming them							
I feel comfortable in recommending the products of this company to other people	,688						
I defend the products of this company when somebody makes negative commentaries about them					,712		
If the press releases good news about this company, I am immediately inclined to believe in it					,655		
The logo of the company means a serious presentation to me, and of good reputation			,512				
When I go shopping, I search in order to identify the products of this company on the shelf							
For me, this company has a positive image			,614				
I am satisfied with the existence of a company like this supplying food			,766				
If there aren't any offers of products from this company, I will not hesitate in buying products from another company							-,742
The products of this company satisfy my expectations			,723				
I believe the price charged for the products of this company is fair, considering the quality offered						,856	
The price I pay for the products from this company is within my expectations						,893	
I believe that, if I detect some problem in a product, the company will solve it promptly		,812					
I believe that my suggestions to improve the products will be Heard by the company		,819					
I believe that the company, in case I complain, will pay attention to me		,917					

7.2 Means Comparison

For a means comparison, it was used the Analysis of Variance (ANOVA), a method to test the equality between means from three or more groups [21]. The hypothesis tested in ANOVA is related to the means between the different groups. If the calculated P Value is less than 0,05, one concludes, with 95% reliability, that at least one of the groups has the different mean compared to the others.

The ANOVA only verifies if there are significant differences between the groups; so, to point out which of them are different, it was used the Duncan's Multiple-Range Test, that compares all the pairs of involved means in a study of Analysis of Variance [22].

TAB. 3 shows that one company holds the best position in the ranking in relation to almost all the constructs, and three are tied up in the constructs Perceived Value and Functional Conflict. This shows that to invert the order it is necessary a significant investment from the company in the second position and even more from the third position, so that the company can enter the battle to be the first option of the customer. An option that the first position still has is to also be hegemonic in the two constructs where they are tied up, once the company looks for investments in this direction. Through a deep look on the TAB.3, it is easy to see that the leading company in the food sector (Sadia) has an average of perception, in almost all constructs, higher than the other companies. There was no significant difference

between Perceived Value and Functional Conflict among the three companies.

Table 3 – ANOVA

	Sadia	Perdigão	Seara	ANOVA (P Value)	Duncan's Method
TANG	**24,8231**	**26,8719**	**28,0839**	**0,000**	**Sadia > Perdigão > Seara**
RELIAB	**18,3438**	**17,6283**	**15,8081**	**0,000**	**Sadia > Perdigão > Seara**
LOYAL	**12,4431**	**11,8700**	**10,2425**	**0,000**	**Sadia = Perdigão > Seara**
IMAG	**14,5600**	**13,7001**	**12,1394**	**0,000**	**Sadia > Perdigão > Seara**
SATIS	**12,9963**	**12,4318**	**11,4378**	**0,000**	**Sadia > Perdigão > Seara**
PVAL	**6,6775**	**6,6570**	**6,4005**	**0,676**	**There isn't significant difference**
FUNCC	**13,0395**	**12,9455**	**12,1006**	**0,063**	**There isn't significant difference**

Key: Tang – Tangibility**; Reliab -** Reliability**; Loyal –** Loyalty**; Imag –** Image**; Satis –** Satisfaction**; Pval –** Perceived Value**; Funcc –** Functional Conflict**.**

7.3 Multiple Regression Analysis

Multiple Regression Analysis is a statistical tool used to measure the relationship between one dependent variable and several independent variables, called predictors [9]. The objective is to analyze the possible strong and weak relations between constructs. The regression equation's adjust quality is verified through R Square, which is the model for coefficient of determination. The method used in this analysis was Stepwise, that takes out the non-significant variables from the model.

TAB. 4 presents the regression equation with standardized coefficients, having the construct Image as the dependent variable and Tangibility, Reliability, Satisfaction and Quality as the predicting variables. In this context, it is important to observe the emphasis or major weight attributed to the predictors by the companies, in order to build the Image organization in the competitive market.

Through the results in the TAB. 4, we can observe that Seara suggests that builds its Image through its clients' Satisfaction. Besides, it emphasizes the Satisfaction perception with more emphasis than Perdigão and Sadia in building the Image construct, unlike the other companies, that give more importance to Tangibility than Seara does.

Table 4 - Regression analysis for the Image of the companies - Standardized coefficients

Companies	Tangibility Coefficients (P value – T test)	Reliability Coefficients (P value – T test)	Satisfaction Coefficients (P value – T test)	Adjust Quality	ANOVA (P value)
Perdigão	**0,241 (0,000)**	**0,325 (0,000)**	**0,118 (0,044)**	**0,987**	**0,000**
Sadia	**0,222 (0,000)**	**0,318 (0,000)**	**0,188 (0,000)**	**0,993**	**0,000**
Seara	**0,125 (0,013)**	**0,317 (0,000)**	**0,354 (0,000)**	**0,977**	**0,000**

TAB. 5 presents the regression equation with standardized coefficients, having the construct Loyalty as the dependent variable and Reliability, Perceived Value and Quality as the predicting variables. In this context, it is important to observe the emphasis or major weight attributed to the predictors by the companies, in order to build the Loyalty organization in the competitive market.

Table 5 - Regression analysis for the Loyalty of the companies - Standardized coefficients

Companies	Reliability Coefficients (P value – T test)	Perceived Value Coefficients (P value – T test)	Adjust Quality	ANOVA (P value)
Perdigão	**0,599 (0,000)**	**0,201 (0,013)**	**0,965**	**0,000**
Sadia	**0,601 (0,000)**	**0,216 (0,011)**	**0,964**	**0,000**
Seara	**0,649 (0,000)**		**0,952**	**0,000**

As we can see through the results showing in the table 5, the Loyalty to Perdigão and Sadia are based not only on Reliability, but also on Perceived Value, while Loyalty for Seara is directly linked only to Reliability.

Clients' Satisfaction for Sadia is more related to Reliability than the other companies, once Satisfaction for the others is also related to Tangibility.

Functional Conflict for Perdigão is more related to Tangibility, and for Seara is linked to Perceived Value. Only Sadia links Loyalty to Functional Conflict.

Table 6 - Regression analysis for the Satisfaction of the companies

Companies	Reliability Coefficients (P value – T test)	Tangibility Coefficients (P value – T test)	Adjust Quality	ANOVA (P value)
Perdigão	**0,497 (0,000)**	**0,132 (0,011)**	**0,969**	**0,000**
Sadia	**0,703 (0,000)**		**0,971**	**0,000**
Seara	**0,470 (0,000)**	**0,159 (0, 009)**	**0,959**	**0,000**

Table 7 - Regression analysis for the Functional Conflict of the companies

Companies	Tangibility Coefficients (P value – T test)	Perceived Value Coefficients (P value – T test)	Loyalty Coefficients (P value – T test)	Qualidade do Ajuste	ANOVA (P value)
Perdigão	**0,425 (0,000)**	**0,216 (0,028)**		**0,956**	**0,000**
Sadia	**0,324 (0,000)**	**0,196 (0,047)**	**0,207 (0,020)**	**0,957**	**0,000**
Seara	**0,322 (0,000)**	**0,624 (0,000)**		**0,944**	**0,000**

7.4. Structural Equations Modeling

SEM (*Structural Equation Modeling*) is a tool used in both academic and managerial research. According to [9], it is a multivariate technique which combines aspects of multiple regression analysis – examining dependence relations – and factorial analysis, in order to estimate several dependence relations interrelated simultaneously.

In this paper, the technique was used to verify – grouping the researched companies – the influence level of each construct in the other ones, and it also investigates stronger dependency relations from the proposed model.

FIG.2 presents the model with non-standardized coefficients which correspond to regression weights in multiple regression and they are expressed in terms of construct scale, variance in this case [9]. As scale varies from one construct to another, the comparison among coefficients becomes more difficult than using standardized coefficients (FIG. 3).

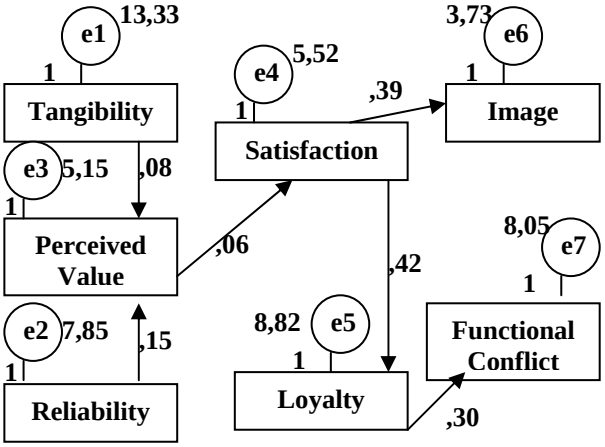

Figure 2 – Model with non-standardized coefficients

Model goodness of it was unfavorable because of the results of Chi-Square Test and P Value lower than 5% (considering as a desirable value of significance level: Chi-Square = 665,197; Degrees of Freedom = 15; P Value = 0,000). Thus, the proposed theoretical model – in theoretical nomological chain – is considered not to be adjusted with empirical measurements.

In a general way, correlation coefficients presented are low and indicate a weak adjustment of theoretical linear model to the empirical data behavior. This work understands this as a limitation that should be investigated in a deeper way including new attempts of data mining in order to rotate the model with transformed variables. In spite of this limitation, we can see that for the values presented by the arrows (FIG.2) the biggest regression coefficient is the one that goes from Satisfaction to Loyalty, it means that Satisfaction explains 42% of Loyalty. Beta coefficient non-standardized from Satisfaction to Image is also high, thus Image is explained by 39% of the first construct. From those observations, it is possible to infer, with some limitations, that clients' Satisfaction for all the three companies implies in a higher Loyalty and it also contributes to construct a better company Image.

FIG.3 presents standardized coefficients where all of them have equal variances and they are useful to determine relative importance, but they are specific to each sample, so they are not used to comparison among samples (as non-standardized coefficients).

With standardized coefficients it is possible to verify that Satisfaction explains 42% of Image constructed by clients of researched companies, important managerial information. The number above "Image" box (,18) indicates that antecedent constructs together, in a Multiple Linear Regression, explain 18% of Image.

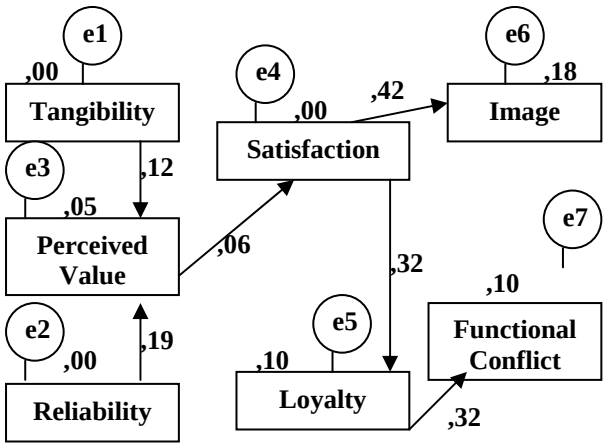

Figure 3 - Model with standardized coefficients

8. CONCLUSIONS

Analyzing all the results, it's clear that the perception of the respondents is equal to reality: Sadia continues to be the leader in the nourishing sector. This consideration is very important, once people aren't always able to differ objectively what is real in the market.

As we can see, Sadia detaches in the preference of consumers – the reasons are that Sadia has been applying resources in product development and quality in the Brazil market. Nowadays, it's becoming very difficult for the other competitors to obtain the leading position. The competitors keep launching products and innovating in a competitive market, but time has showed a stable position of Sadia in relation to the preference of consumers.

In Regression Analysis, it was confirmed that Sadia continues to be the leader in this food sector, and another information was observed (TAB. 4). This company gives more importance to Reliability to build its Image, although Perdigão, the second in ranking, has the higher coefficient in the analysis.

It was also observed that Loyalty really depends on a good level of Reliability, for all the three companies, important information to management decisions.

Structural Equations Modeling presented strong relations among constructs Satisfaction, Image and Loyalty. Thus, a satisfied client becomes loyal and builds a good company image.

In future studies, an experiment can try to measure possible unbalancing of this positioning order (commodities unbalancing).

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