TRADE-OFF ANALYSIS IN A WINE MARKET RESEARCH IN HUNGARY

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ABSTRACT
Marketing managers are faced with numerous difficult tasks directed at assessing future profitability, sales, and market share for new product entries or modifications of existing products or marketing strategies. Each of the identified marketing problems may be addressed and solved using the trade-off analysis methodology. In addition, a trade-off based competitive strategy may be implemented by modifying the marketing mix, i.e., new product/concept identification, pricing, advertising and distribution.
In this article the main steps of the model is shown in a study through the research of the Hungarian wine market.
A set of wine attributes that are anticipated as the most important factors when buying wine were shown to respondents. These attributes included growing site, variety, quality and price. Each of the attributes was further divided into levels, e.g. growing site consisted of Csongrád, Mátraalja, Eger and Hajós-Baja, while other attributes had their particular levels according to their characteristics. Twenty out of the total combination of attributes were chosen and so call profile cards were made. Respondents were asked to rank order cards according to their preference, thus simulating a purchase situation. The analysis calculated the utility of each levels of attribute for all of the respondents.

Key words: trade-off analysis, wine attributes, design

INTRODUCTION

Customer satisfaction and delight are core values within the quality movement. Achieving these goals is an economic way by finding the quality attributes most valuable to customers has become a key issue in today's design activities. Trade-off analysis is considered an excellent tool for this purpose. This method is included among the seven product planning tools developed by the Union of Japanese Scientists and Engineers (JUSE) (GUSTAFFSON ET AL., 1999).
Trade-off analysis is a set of techniques designed to measure (1) the importance individual consumers attach to each attribute and (2) their degree of preference for each level of each attribute. Respondents are asked to rank the combinations of these factors as they do in the purchasing process (TULL – HAWKINS, 1990).
Further advantages of this model are that customers can not be influenced by the responder's will. Wider spread of this method in the past was due to the lack of high-tech computers. Now the advance of technology and user friendly software (SPSS, SYSTAT etc.) makes its use possible (SÁNTHA – LUKÁCS, 2000).
In this present article the use of this method is illustrated in a wine market research case study. We tried to keep the process as simple as possible to encourage other researchers to make an effort to test the technique themselves. We followed Churchill's suggestion in compiling a research schedule (GUSTAFFSON ET AL., 1999).

MATERIAL AND METHODS

Research problems and objectives

The first task is to identify the specific research problem and objectives. Attributes and their levels should be limited, because a strenuous survey can lead to improper answers. Green & Srinivasan (1990) suggest limiting the number of attributes to six or fewer. A more knowledgeable or motivated person can be exposed to a larger set of attributes (GUSTAFFSON ET AL., 1999).

The main objective of the trade-off survey is to find the ideal combination of the product attributes and their levels that are most attractive to consumers. It is essential to know before we conduct research how the market is segmented, what the competitive environment is like, and how we wish to position our product (HOFFMAN ET AL., 1999).

The basic goal of this study was to reveal the preference of those wine consumers who drink wine regularly and buy bottled wine in an average of two weeks. Social-demographic segmentation was used to further analyze preferences by means of ANOVA. The following questions emerged: What are those attributes that influence purchase decision most? We hope the derived information can cease the limit of knowledge, decision makers always faced.

Research population

Sampling procedure can be separated into two categories: probability and non-probability. Probability sampling is more common when dealing with consumer products. When using probability sampling there are different techniques to choose from: simple random, cluster, systematic and stratified sampling.

Non-probability sampling can be applied when the relationship to customer is closer. However, we must be aware of the danger that the desired population is not reached. Non-probability sampling techniques are also available in a wide range e.g. convenience, purposive, quota and snowball sampling (GUSTAFFSON ET AL., 1999).

In this study non-probability, purposive sampling method was used. Students of the College of Kecskemet helped to find those respondents who met the above mentioned criteria.

The way of communication

Among the communication forms personal interview is the most commonly used. One reason for this is that the collected data will be of higher quality since it is possible to control the situation. This is inevitably important since trade-off analysis can be strenuous and complex. Also, this way of communication generates higher response rates. Another advantage of personal interview is that it reduces the risk of misunderstandings since respondents can be guided through the survey. The down side of personal interview is cost.

The second most frequent means of collecting data is by mail surveys. First, it is cheaper and second, more respondents can be approached. In this case however, scaling method should be as simple as possible. The down side here is the low response rate (GUSTAFFSON ET AL., 1999).

In our case students communicated with respondents through questionnaires that reduced the cost of interview to zero.

The basic concepts

The attributes and the levels of each attribute should be chosen to be realistic and related to the problem. There are three basic rules that should be taken into account (GUSTAFFSON ET AL., 1999).
Attributes chosen might be important to the respondent (sometimes seemingly no meaningful attributes can be important).
Attributes are possible to alter, that is the product is in the earlier stage of design.
Attributes included should cover the core competence of the producer.

The first problem is to find the adequate number of levels. Too many levels can confuse respondents. In our case the following attributes and levels were included *(Table 1):*

Table 1. Wine attributes and their levels

Attribute	**Site**	**Taste**	**Quality**	**Variety**	**Price**
Levels	Csongrád	Sweet	Table	Sauvignon	299 HUF
	Eger	Semi-sweet	Quality	Furmint	389 HUF
	Mátraalja	Semi dry		Portugiser	599 HUF
	Hajós-Baja	Dry		Pinot n. Cabernet s.	799 HUF

The selection of the above attributes was based on our prior research and the experiences of GfK Hungary Ltd. in market research.

Design matrix
A fundamental procedural decision in trade-off analysis is whether to use full profile or pair-wise procedure for data collection. The pair-wise procedure presents the respondents with a set of matrixes representing all possible attribute pairs, with the levels of one attribute appearing on the X axis and the levels of the other attribute appearing on the Y axis. Respondents are asked to rank-order each combination (cell) in each table to reflect their preference or purchase likelihood. The number of possible combination is N(N-1)/2, where N indicate an attribute. Although it was initially widely used, the pair-wise approach is rapidly losing favor in applied research studies (SÁNTHA – LUKÁCS 2000).
Full profile trade-off, what was applied in our study, involves presenting the respondents with a set of product descriptions such that each description contains information on the level of each attribute. The number of descriptions increases geometrically with the number of attributes. In our case it means 2^{17} = 131 072 combinations. Fortunately, a fractional orthogonal array can be used to simplify the situation. SPSS 11,5 for Windows ORTHOPLAN command selected 25 so called profile cards, five of it were dropped. The 20 cards were marked by letters A, B, C... up to T. Even number of cards makes splitting possible to two groups: preferred and not preferred. Orthogonality was distorted but this did not deteriorate the results. *Table 2.* contains the descriptions (or cards) included in the survey questionnaire.

The questionnaire
The next step was to design the questionnaire. Our first two questions regarded the frequency of wine consumption and purchase of bottled wine. Only those questionnaires were evaluated that met the criteria. In order to make the selection of cards easier we used pictorial illustration. One card represented one wine description, just like the label of wine

bottle does. Respondents were instructed to split the 20 cards into two groups: more favored and less favored. Out of the two 10-piece pack of cards respondents were asked to take the more favored pack and split them in the same way again. Thus, they could easily rank the most preferred five cards. This iteration was going on until the last card was positioned. Separately, the preference of different attributes was measured on a Likert scale. This helped us evaluate the consistency of answers. Finally, basic social-demographic questions followed.

Data analysis

There are different ways of analyzing trade-off data: MONANOVA and ordinary least square regression (OLS). Between the two the later is more frequently used.

From a strict statistical point of view OLS is not feasible for analyzing rank ordered data, since rank order scale does not include any measure of distance. This deficiency however can be mitigated by introducing gaps ("do definitely believe in" etc.) (GUSTAFFSON ET. AL., 1999). Instead of introducing gaps we checked the consistency of answers as described above.

For each individual respondent the part-worth (also known as "utilities") or relative preferences among the attributes were estimated. In addition, the part-worths of the sample mean were calculated.

Table 2. List of cards used in the full profile trade-off analysis

MARK	SITE	VARIETY	TASTE	QUALITY	PRICE (HUF)
A	Mátraalja	Sauvignon	Sweet	Quality	599
B	Mátraalja	Portugiser	Dry	Quality	299
C	Hajós-Baja	Sauvignon	Dry	Table	299
D	Csongrád	Furmint	Dry	Quality	389
E	Csongrád	Cabernet s.	Sweet	Table	299
F	Eger	Furmint	Semi-dry	Quality	599
G	Hajós-Baja	Furmint	Sweet	Quality	799
H	Hajós-Baja	Pinot n.	Semi-dry	Quality	299
I	Csongrád	Portugiser	Semi-dry	Quality	299
J	Eger	Portugiser	Sweet	Table	389
K	Eger	Cabernet s.	Dry	Quality	599
L	Eger	Sauvignon	Semi-sweet	Quality	299
M	Csongrád	Sauvignon	Dry	Quality	799
N	Eger	Sauvignon	Semi-dry	Table	389
O	Mátraalja	Pinot n.	Dry	Quality	389
P	Hajós-Baja	Cabernet s.	Semi-sweet	Quality	389
Q	Mátraalja	Furmint	Semi-sweet	Table	299
R	Eger	Furmint	Dry	Table	299
S	Hajós-Baja	Portugiser	Dry	Quality	599
T	Eger	Portugiser	Semi-sweet	Quality	799

RESULTS AND VALIDATION

The sample mean's part-worths give some indication of the relative importance of the different attributes. The actual magnitude of the part-worths is of little importance. Rather, their relative size is of interest *(Figure 1-2).*

Calculating part-worths for the sample mean is somewhat dangerous. If, for example, there are distinct segments in the sample with opposite preference regarding one attribute, the effect from each of the segments will be cancelled, giving a false result that the attribute is not considered important. To avoid this danger ANOVA was applied for the social-demographic segments for all part-worths of each attribute levels calculated. Results are shown in *Table 3.*

Apart from semi-dry taste category there are significant differences between sexes. It means that, as it is seen in the output report, men prefer dry wines to sweeter ones. Women's preference is just the reverse.

As far as varieties are concerned only Portugiser's preference differs significantly between sexes. As it is seen from also the part-worth values, men like this variety better than women. As for growing site no significant difference was found in any segments.

Almost unanimously respondents preferred quality wine to table wine regardless of sex, place of living or any other differentiating category. Price was not considered as a differentiating factor. If we were to design a new wine for both sexes than it would probably be a red, semi-dry, quality wine at the price of 599 HUF a bottle from the Hajós-Baja region.

Table 3. ANOVA Table of wine taste and variety in relation to sexes

Dry*SEX	Sum of Squares	df	Mean Squares	F	Sig.
Between groups	109,69	1	109,69	10,56	0,002
Within groups	1215,21	117	10,39		
Total	1324,90	118			
Semi-dry*SEX					
Between groups	11,77	1	11,77	1,83	0,179
Within groups	753,60	117	6,44		
Total	765,37	118			
Semi-sweet*SEX					
Between groups	50,19	1	50,19	8,18	0,005
Within groups	717,83	117	6,14		
Total	768,02	118			
Sweet*SEX					
Between groups	46,52	1	46,52	4,32	0,04
Within groups	1258,70	117	10,76		
Total	1305,22	118			

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