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THE ADVANTAGES OF USING BEST-WORST MODEL FOR HYBRID PRODUCTS

Abstract:

Purpose-the aim of this paper is to highlight the advantages of using Best-Worst Model to find out the importance of country of origin of hybrid products for specialists
Design/Methodology/Approach-quantitative methods: questionnaires. SPSS was used for computing the scores and to check out if the gender or age has an influence on the scores.
Findings- for specialists or consumers familiar with products, country of origin is of low importance, it is less important comparing to price or quality and it doesn't have a significant effect on buying intention.
Practical implications-the paper is very for researchers, it was proved that Best-Worst Model is more objective than other types of survey.
Originality/Value-the application of the Best-Worst Model on specific categories of goods.

Keywords:

Best-Worst Model, consumer behavior, hybrid products

JEL Classification: B41, C83

In deep knowing and understanding of the preferences of the consumers are highly complex and difficult processes and in the same time they are necessary for producers, sellers, importers and exporters of goods. There is a variety of methods for measure the preferences of the consumers, from surveys to analysis of panel data and more recently the Best-Worst model. Surveys are based on questionnaires using different ranks and scales, the Likert scale being most popular. There are significant critiques on surveys, the respondents use the scales and the ranks in different manners, and the score similar as values are quite difficult to interpretate (Cohen 2003; Cohen and Neira 2003; Finn and Louviere 1992). Another problem regarding the surveys is connected with buying behavior, meaning there is a divergence between the effective buying behavior and the buying behavior described by surveys (Barkworth, Hibbert, Horne &Tagg 2002) or in Lusk, McLaughlin & Jaeger (2007), ”there is a significant difference between what people say they will do and what they will actually do”.

The panel data are a clear evidence of what the consumers have already bought and therefore a precise indicator of the consumers' actual preferences. The analysis of the data panel is more useful for knowing and understanding what the consumers wanted and less useful for knowing and understanding of what consumers might want in the future.

The dissonance between what the respondents admit in surveys or questionnaires that they will do and what they will actually do might be explained by the *social desirable responding*(SDR) *or by positive-acquiescent response bias* (ARB). SDR means that many respondents respond in a manner that will reflect them in a favorable socio-cultural image (Baumgartner & Steenkamp, 2005; Mick, 1996). This is why surveys sometimes fail in reflecting reality with accuracy, either overestimating or underestimating reality. (Bentler, et al., 1971; McClendon, 1991; Welkenhuysen-Gybels, et al., 2003). ARB is a tendency of many respondents to answer positively rather than negatively at the questions from the questionnaires especially when reffering to new products (Baumgartner & Steenkamp, 2001; Billiet & McClendon, 2000; Rossi, Gilula, & Allenby, 2001; Watson, 1992).

The Best-Worst Model (BWM) is based on a simple idea, to present o number of products or notions with a series of features and the respondents must select only the Best of the features or the Worst of them. Best might be replaced by useful, important, attractive or other appropriate feature..(Zikmund et al., 2007). There are several Best-Worst models, BWM1- for goods, BWM2-notion, BWM3-multiprofile (Flynn, 2010).

The Best –Worst Model, also known as the Maximum Difference Scaling was introduced by Louviere and Woodworth in 1990 as o possible solution to the critiques on surveys and data panel analysis. The Best –Worst Model was then developed by Finn and Louviere in 1992 and later by Marley and Louviere in 2005. The Best-Worst Model remove the above mentioned critiques, the BWM questionnaires are faster and easier to

fill in (Finn and Louviere, 1992; Cohen and Markowitz, 2002; Auger et al. 2004), are easier to be interpreted, do not require any sophisticated and expensive soft (Goodman et al., 2005; Cohen and Markowitz, 2002). Zikmund, Ward, Lowe, Winzar & Babin(2011) have proved that choosing a single option leads to better results compared to methods based on ranks and scales. The main weakness of the Best-Worst Model is the limitation of interpretations and comments for the chosen features and the main strength is that the found results are more likely the real buying behavior. (Auger, Devinney & Louviere, 2007).

In order to assess the buying behavior using the Best-Worst Model, a BWM questionnaire was applied in two towns from one of the poorest EU region, namely the Vaslui county from Romania. The questionnaire was used in real buying places, like gas stations, car repair workshops, phone shops, sport shops, TV shops. The survey team chose only respondents who frequently use in their professional activity at least one of the following products: cars, TV sets, mobile phones, sport shoes and, in the same time, have in their families the above mentioned products. The questionnaires were self administrated. Out of 400 persons approached, 312 completed the questionnaires, a response rate of 78%, and out of the 312 questionnaires, only 259 were completed correctly and accordingly to instructions.

Table1: The structure of the sample

	Number	percent
female	131	50,57
male	128	49,43
People up to 40 years old	200	62,49
People over 40 years old	59	37,51
Persons using frequently car at work	75	28,57
Persons using frequently TV at work	27	10,42
Persons using frequently mobile phone at work	151	58,30
Persons using frequently sport shoes at work	40	15,44
Persons using frequently at work at least two of the above mentioned products	50	19,69

Author' table based on the results from the questionnaires

The first four sentences refer at buying behavior, the following four sentences refer at product evaluation, the next four sentences refer at the consumers' opinion toward the studied products and the last four sentences refer at buying intention. The features for each of the four products were determined in a focus-group and were the quality, the price, the brand and country of origin for every product. The chosen model was BWM1 as described above. The formula for computing the scores is: S=(TB-TW)/nf*nvq, where S= the score, TB= the total of Best choices for an item, , TW= the total of Worst choices for an item, nf= the number of features chosen in the study, nvq= the number of valid questionnaires. The results are presented in table 2 and table 3.

Table 2: The results for the Best feature

The Best feature for	Cars	TV sets	Mobile Phones	Sport Shoes
Buying behavior	The power of the engine	The quality of the image	Communication facilities	To be comfortable shoes
evaluation	To have all the facilities	A reasonable price	The quality	endurance
opinions	The quality of the finishes	Made by a top brand	The price of the subscription	The material they are made of
Buying intention	To have high quality technical equipments	To be a smart TV	A high quality	The quality of the material

Author' table based on the results from the questionnaires

Table 3: The results for the Worst feature

The Worst feature for	Cars	TV sets	Mobile Phones	Sport Shoes
Buying behavior	The color	promotions	It is fashion to have one	The color
evaluation	The model	If the maintenance is in the country	The design	Cheap price
opinions	The social status associated with	The country of fabrication	fashionable	The country of fabrication
Buying intention	Navigation facilities	Recording facilities	Special offers	Attractiveness

Author' table based on the results from the questionnaires

Therefore what matter most for the 259 respondents are the quality, the technical attributes, the facilities, the price, if it is made by a top brand. What matter least are the fashionable, the design, the social status, the low prices and the top brand. With respect to the four features we will mark (+) if the scores are positive, otherwise we will mark with (-).

Table 4: The signs of the scores for the features

	Cars	TV sets	Mobile Phones	Sport Shoes
Buying behavior	Country of provenance (+)	Quality (+)	Brand (+)	Price (+)
Evaluation	Brand (-)	Price (+)	Quality (+)	Brand (-) Country of origin (-)
Opinions	Quality (+)	Country of manufacturing (-)	Price (+)	Price (-)
Buying intention	The country of origin must be strongly developed (-)	Quality (+)	Brand (-) Quality (+)	Quality (+)

Author' table based on the results from the questionnaires

Table 5: The scores for all the features and all the products

			The scores								
			Total	Female	Male	Young	Grown-up	Car	TV	Mobile phone	Sport shoes
Buying behavior	Car	promotion	0,044	0,037	0,050	0,0428	**0,048**	**0,070**	0,026	**0,066**	-0,012
		Country of origin	0,004	0,022	-0,013	0,005	0,002	-0,006	**0,044**	0,016	-0,024
		Engine power	**0,054**	**0,054**	**0,052**	**0,060**	0,043	0,030	0,008	0,037	**0,097**
		Car color	***-0,103***	***-0,115***	***-0,089***	***-0,109***	***-0,095***	***-0,093***	***-0,080***	***-0,120***	***-0,060***
	TV	Promotion	***-0,041***	***-0,051***	-0,029	***-0,063***	0	***-0,060***	0	***-0,041***	-0,024
		Image quality	**0,083**	**0,081**	**0,085**	**0,087**	**0,073**	**0,056**	**0,071**	**0,112**	**0,091**
		Screen size	-0,017	-0,028	-0,005	-0,011	-0,027	-0,010	-0,017	***-0,041***	-0,030
		Modern look	-0,024	-0,001	***-0,050***	-0,011	***-0,046***	0,013	***-0,053***	-0,029	***-0,036***
	Mobile phone	Fidelity points	-0,033	-0,022	***-0,044***	***-0,053***	0	***-0,050***	-0,026	-0,020	***-0,048***
		Tradition of the brand	-0,011	0,005	-0,027	-0,004	-0,021	-0,010	0,017	-0,012	-0,030
		fashionable	***-0,044***	***-0,054***	-0,036	-0,029	***-0,073***	-0,033	-0,026	***-0,058***	-0,018
		Facilitations of communication	**0,089**	**0,071**	**0,108**	**0,087**	**0,095**	**0,093**	**0,035**	**0,091**	**0,097**
	Sport	Price	-0,027	-0,020	-0,031	-0,044	0,008	-0,033	**0,062**	-0,029	***-0,054***
		Color	***-0,053***	-0,039	***-0,067***	***-0,045***	***-0,065***	***-0,060***	***-0,062***	-0,045	***-0,054***
		Design	-0,046	***-0,051***	-0,040	***-0,045***	-0,051	-0,026	-0,044	***-0,05***	-0,030
		comfortable	**0,126**	**0,111**	**0,139**	**0,136**	**0,108**	**0,120**	0,044	**0,125**	**0,140**

Evaluation	Car	A known brand	-0,031	-0,032	-0,032	-0,025	-0,046	0,003	-0,017	-0,029	***-0,036***
		All facilities	**0,069**	**0,062**	**0,079**	**0,065**	**0,078**	**0,053**	**0,107**	**0,070**	**0,054**
		endowments	0,027	0,022	0,031	0,016	0,051	0,036	***-0,080***	0,029	0,012
		Model	***-0,065***	***-0,053***	***-0,077***	***-0,056***	***-0,084***	***-0,093***	-0,008	***-0,070***	-0,030
	TV	Reasonable price	**0,042**	**0,035**	**0,050**	**0,036**	**0,051**	**0,046**	**0,125**	**0,045**	0
		warrant	-0,007	-0,007	-0,009	-0,020	0,019	0,006	-0,017	-0,020	**0,006**
		Repair in the country	***-0,043***	***-0,037***	***-0,048***	***-0,042***	***-0,043***	***-0,053***	***-0,062***	-0,016	***-0,012***
		Sound quality	0,008	0,009	0,007	0,025	-0,027	0	-0,053	***-0,008***	**0,006**
	Mobile	Design	***-0,072***	***-0,064***	***-0,079***	***-0,063***	***-0,089***	***-0,083***	-0,026	***-0,066***	-0,085
		quality	**0,066**	**0,073**	**0,062**	**0,068**	**0,062**	**0,066**	**0,089**	**0,054**	**0,054**
		Extra endowments	-0,028	-0,032	-0,029	-0,036	-0,016	-0,01	***-0,071***	-0,016	***-0,024***
		The quality price ratio	0,034	0,022	0,046	0,032	0,043	0,026	0,008	0,029	**0,054**
	Sport	Endurance	**0,111**	**0,102**	**0,122**	**0,110**	**0,114**	**0,113**	0,080	**0,091**	**0,134**
		Country of origin	-0,050	***-0,066***	-0,032	-0,041	***-0,065***	-0,03	***-0,071***	***-0,066***	-0,036
		Top brands	-0,007	0,009	-0,027	0,001	-0,024	-0,01	**0,026**	0,016	***-0,067***
		Cheap price	***-0,054***	-0,045	***-0,062***	***-0,071***	-0,024	***-0,073***	-0,035	-0,041	-0,030
Oppinions regarding the product	Car	Finishes quality	**0,054**	**0,056**	**0,052**	**0,056**	**0,048**	**0,096**	**0,017**	0,020	**0,024**
		Price facilities	-0,021	-0,022	-0,017	-0,031	-0,005	-0,043	0	-0,008	-0,006
		If the brand is represented in the country	0,027	0,018	0,032	0,035	0,013	0,006	0,008	**0,029**	**0,024**
		Social status	***-0,059***	***-0,053***	***-0,067***	***-0,060***	***-0,057***	***-0,06***	***-0,026***	***-0,041***	***-0,042***
	TV	Country of fabrication	***-0,035***	-0,022	***-0,050***	***-0,039***	-0,027	-0,02	***-0,053***	-0,033	***-0,054***
		Made by top brand	**0,032**	0,017	**0,048**	**0,053**	-0,008	**0,043**	0,026	**0,066**	0,006
		The size	-0,028	***-0,026***	-0,031	-0,029	***-0,029***	***-0,036***	-0,035	***-0,041***	-0,036
		Large warrant	0,031	**0,032**	0,032	0,016	**0,065**	0,013	**0,062**	0,008	**0,085**
	Mobile	The look	0	-0,011	0,011	0,002	-0,008	-0,006	**0,026**	***-0,020***	***-0,012***
		fashionable	***-0,022***	***-0,020***	***-0,025***	***-0,026***	-0,013	***-0,01***	0,008	-0,008	-0,006
		New generation	0,003	**0,020**	-0,011	**0,022**	***-0,027***	***-0,01***	***-0,053***	**0,033**	0
		The subscription price	**0,018**	0,011	**0,025**	0,001	**0,048**	**0,026**	0,017	-0,004	**0,018**
	Sport	The price	-0,018	-0,018	-0,019	-0,035	0,010	-0,016	0,053	-0,016	***-0,036***
		The material	**0,067**	**0,066**	**0,071**	**0,071**	**0,065**	**0,06**	**0,062**	**0,05**	**0,060**
		The brand	***-0,042***	***-0,043***	***-0,040***	***-0,038***	***-0,051***	***-0,05***	***-0,107***	***-0,037***	-0,012

		Their look	-0,006	-0,003	-0,011	0,002	-0,024	0,006	-0,008	0,004	-0,012
Buying intention	Car	Made in a developed country	-0,022	***-0,032***	-0,013	***-0,038***	0,010	-0,033	0	0,004	-0,006
		High quality endowments	**0,091**	**0,085**	**0,096**	**0,103**	**0,065**	**0,113**	**0,026**	**0,070**	**0,067**
		Navigation facilities	***-0,033***	-0,020	***-0,044***	-0,032	-0,035	-0,023	***-0,026***	***-0,037***	***-0,030***
		Good looking	-0,035	***-0,032***	-0,038	-0,032	***-0,040***	***-0,056***	0	***-0,037***	***-0,030***
	TV	modern	-0,012	-0,035	0,009	-0,010	-0,019	-0,016	***-0,044***	0,016	-0,018
		smart	**0,048**	**0,056**	**0,038**	**0,073**	0,005	0,006	**0,044**	**0,041**	**0,079**
		Recording facilities	***-0,062***	***-0,058***	***-0,063***	***-0,068***	***-0,054***	***-0,04***	-0,017	***-0,070***	***-0,097***
		Quality workmanship	0,027	0,037	0,015	0,004	**0,067**	**0,046**	0,017	0,012	0,036
	Mobile	Price cut	-0,002	-0,013	0,007	-0,014	0,019	-0,01	**0,062**	-0,008	-0,006
		Top brand design	-0,013	-0,001	-0,029	0,013	***-0,067***	***-0,04***	***-0,044***	0,004	-0,012
		Special offer	***-0,037***	***-0,030***	***-0,042***	***-0,047***	-0,016	-0,016	0,008	***-0,066***	***-0,018***
		High quality	**0,055**	**0,045**	**0,063**	**0,048**	**0,065**	**0,066**	-0,026	**0,070**	**0,036**
	Sport shoes	Quality material	**0,073**	**0,053**	**0,093**	**0,063**	**0,092**	**0,063**	**0,062**	**0,075**	**0,067**
		Known brand	0,015	0,011	0,019	0,026	-0,008	0,013	-0,026	0,012	0,036
		likebility	0,049	0,045	0,052	0,054	0,040	0,05	0,017	0,037	0,060
		attractiveness	***-0,138***	***-0,109***	***-0,164***	***-0,144***	***-0,125***	***-0,126***	***-0,053***	***-0,125***	***-0,164***

Author' table based on the results from the questionnaires

Legend: **the highest scores are in bold, *the lowest scores are in bold italic***

For hybrid products, expensive and involving high technology like cars, quality is important in the opinions of the respondents, country of origin is an important feature when the cars were bought which implies a mental analogy between the two features in the buying behavior. In the evaluation of the cars brand had a low importance and for the buying intention the level of development of the country of origin of the cars is less relevant. These results might be explained by the fact that the respondents are from one of the poorest region in EU, therefore the possibilities of purchasing a car made by a top brand or in a developed country are pretty low.

For other hybrid products also involving high technology like TV sets and mobile phones the quality and the price are important in evaluation, opinions and buying intention. The minus signs for country of fabrication in the evaluation of TV sets and for brand in buying intention for mobile phones might be explained by the fact that lately on the Romanian market a wide range of high quality TV sets made in Asian countries can be found as well

as a large offer of mobile phones made by top brands at reasonable prices. Regarding the low technology hybrid products like sport shoes the price and the quality are important for buying decision, other features are of low importance in evaluation and opinions.

SPSS was used for computing the scores and to check out if the gender or age have an influence on the scores. Due to high value of the Levene test and of significance level, homogeneity assumption of variation was not violated, therefore nor gender or age do not have a high significance on scores. The findings are similar to those in Parameswaran & Yaprak (1987) namely for specialists or consumers familiar with products, country of origin is of low importance. The results also support the results of Elliot & Cameron (1994), meaning the country of origin is less important comparing to price or quality and are congruent with the results of Kotler & Gertner (2002), namely the country of origin doesn't have a significant effect on buying intention. The findings do not support the results of Kleppe, Iversen & Stensaker (2002), the buying intention is greater for products made in developed countries.

Conclusions:

In the case of special hybrid products, expensive and with high technology, like cars, the quality is the most important feature, while the brand and the country of origin of the car are less important. The results are influenced by the fact that the respondents are from a poor region and they don't afford cars from developed countries or from top brands.

Almost the same situation in the case of hybrid products with high technology, but not as expensive as the cars, like the TV sets and the mobile phones, the quality and the price are the most important, while the brand and the country of fabrication are less important.

In the case of cheap hybrid products, with low technology, like sport shoes, the quality and the price are the most important too, while other features are of low importance.

The country of origin of all the analyzed products (cars, TV sets, mobile phones, sport shoes), country of origin is not so important in the buying intention and the gender or the age of the respondents don't have a significant effect too.

The findings are similar to those in Parameswaran & Yaprak (1987) namely for specialists or consumers familiar with products, country of origin is of low importance. The results also support the results of Elliot & Cameron (1994), meaning the country of origin is less important comparing to price or quality and are congruent with the results of Kotler & Gertner (2002), namely the country of origin doesn't have a significant effect on buying intention. The findings do not support the results of Kleppe, Iversen & Stensaker (2002), the buying intention is greater for products made in developed countries.

Best Worst model helped us to quantify the features of hybrid products from the perspective of consumers familiar with the chosen products in a transparent and accessible manner for respondents and for the test administrators.

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