Codini Anna
University of Brescia
Economics Faculty
Business Administration Department
Contrada Santa Chiara 50
25122 Brescia (Italia)
Tel. +39.030.2988683
Mobile +39.335.6853735
codini@eco.unibs.it

Saccani Nicola
University of Brescia
Mechanical and Industrial Engineering Department
Supply Chain and Service Management Research Centre
Via Branze 38
25123 Brescia (Italy)
Tel. +39.030.3715723
Mobile +39.347.5630192
nicola.saccani@ing.unibs.it

Sicco Alessandro
University of Brescia
Mechanical and Industrial Engineering Department
Supply Chain and Service Management Research Centre
Via Branze 38
25123 Brescia (Italy)
Tel. +39.030.6595215
Mobile +39.347.7758587
alessandro.sicco@ing.unibs.it

Pricing policies and value for the customer: evidences from the household appliance sector

Summary

Although the customer value-based approach to pricing is widely recognized as superior to all other pricing strategies, the analysis of the pricing strategies adopted by companies reveal that this method still plays a marginal role. In particular, making reference to the household appliance sector, pricing policies seem to be very homogeneous. Although revealing the existence of specific relationships with some technical features, the pricing policies adopted by these companies do not seem to be customer-oriented.
The purpose of this paper is to test whether pricing policies adopted for durable consumer goods, in particular for household appliances, are aligned or not with the customer value assigned to the product profiles available on the market. After a literature review about the customer-based approach to pricing, a conjoint analysis is conducted in order to estimate the customer value of a selection of household appliances and to compare it with their selling prices.

Key Words

Pricing, Value for the customer, Conjoint analysis, durable Consumer goods, Multi-attribute products

1. Introduction and objectives

Despite the benefits of customer value-based approach to pricing pointed out in the literature (Monroe 2003)(Costabile 1996)(Costabile 2007)(Busacca, Costabile & Ancarani 2004), these methods still play a marginal role in the pricing strategies adopted by companies (Hinterhuber 2008). Recent empirical studies, however, evidence how companies operating in diverse businesses, such as pharmaceutical, information technology companies, wireless internet service providers, airlines, vehicle manufacturers and biotech companies have successfully adopted such strategies. Although academics and practitioners have widely recognized the advantages of value-based pricing strategies, their application seems to be limited yet, especially for some practical problems associated to their implementation. Literature focused on customer-value based pricing strategies evidenced in the last years that the obstacles are various: difficulties in value communication, in market segmentation, in top management support and so on. Among these ones, however, the main is related to value assessment (Ingenbleek 2007)(Hinterhuber 2008).

This paper aims at describing the pricing policies adopted by companies operating in the household appliance sector, in order to understand whether those pricing policies can be defined customer-oriented. The comparison among selling prices and the main technical

features which characterize the appliances actually sold on the market highlights the existence of some interesting relations, which will be further investigated with the aim to understand if they are justified by the perceived customer value. So the purpose of this paper is to test if pricing policies adopted for durable consumer goods, in particular for household appliances, are aligned or not with the customer value assigned to the product profiles available on the market.

The paper is, therefore, articulated in three parts. Section 2.1 proposes a literature review about pricing strategies, and the customer-based approach in particular, evidencing the reason why it is actually considered better than the cost-based and the competition-based ones, and focuses on the problem of its assessment. The main techniques adopted for measuring customer value are also briefly described.

The second part of the paper (§ 2.2) has the aim to analyze the relations among the pricing of the household appliances models sold on the market and their technical features. This empirical part is based on the analysis of data provided by a famous retail chain of household appliances. The database reports the selling prices of a wide range of consumer durable goods (washing-machines, dishwashers, tumble dryers, freezers, refrigerators) and their technical attributes (brand, energy class, capacity, dimensions etc…). At a first glance data do not reveal huge differences in pricing policies. Although the regression models testing the relations among prices and technical features (such as consumption) evidence – for some classes – the existence of direct relationships, we were not sure that the prices are proportional to the presence of the features which are really important for the customer and so if we can define this as a customer-based pricing policy.

As a consequence, the third part of the paper (§§ 3, 4) reports the results of a conjoint analysis, conducted with the objective to measure the value for the customer and to compare it with the market price. The virtual product profiles, designed combining the different levels of the different technical attributes of the examined durable goods reported in the original database (brand, energy consumption, water consumption, spin dryer speed etc…) were submitted to a random sample of product users. The preferences assigned to each profile were elaborated using the SPSS software in order to obtain the utility coefficients assigned to each product's attribute. This allowed us to calculate the customer value assigned to the real product profiles, using the utility coefficients corresponding to the different levels of the examined attributes and to compare it with the selling prices of the different goods as reported in the database. This empirical part allowed us to evidence the relationship between the selling price and the customer value.

After the description of the methodology adopted in the empirical part, the reporting of the main findings of the conjoint analysis and their discussion, limitations and managerial implication follow (§ 5).

2. Conceptual framework

2.1. Customer-value based approach to pricing

The huge impact that pricing policies have in influencing the financial performances of companies is one of the reasons of the great interest of many authors in this topic. The pricing literature provides from many years useful guidelines for successful price decision-making (Anderson, Narus 1999)(Nagle, Hogan 2006), offering a helping hand to the firms in understanding customers' value perceptions and studying how firms can assess the willingness of customer to pay (Ofir 2004)(Wertenbroch, Skiera 2002).

Looking at the main studies suggesting decisional models for pricing (Monroe 2003)(Valdani 1989)(Busacca, Costabile & Pasini 1993)(Nagle, Holden, 1987) (Dolan, Simon 1996), the complexity characterising pricing decisions derives directly from the need of considering at the same time the economic, the competitive and the market dimension in the price definition. In this direction, the synthetic view adopted by Monroe appears to be very significant. In his main studies (1979; 1990) (Monroe 2003) he identifies the cost as the "floor" in pricing decisions – in order to define the minimum value below which it is not possible to go – and the customer value as the "ceiling" – in order to define the maximum value that the company should not overcome. The peculiarities of the context and the competitive dynamics influence the pricing policies, determining where the price has to be positioned within the range identified by the minimum and the maximum level.

Adopting a customer-value based approach to pricing means that the company defines the price based on the value assigned to its offering by the market, and in particular by the customer, rather than based on costs (cost-based pricing) or on competition (competition-based pricing) (Busacca, Costabile & Ancarani 2004). So, value-informed pricing is defined as the extent to which a firm uses information in the process of price determination on the perceived relative advantages that it offers and on how customers will trade off these advantages against the price (Ingenbleek 2007).

Customer value-based pricing is actually recognised in the literature as superior to the other pricing strategies (Ingenbleek et al. 2003). Monroe (2002) observes that "…the profit potential for having a value-oriented pricing strategy that works is far greater than any other pricing approach". Similarly, Cannon and Morgan (Cannon, Morgan 1990) recommend value

pricing if profit maximization is the objective and Docters et al (Docters et al. 2004) refer to value-based pricing ad “one of the best pricing methods”.

The superiority of the value-based approach is related to the recognition of the importance of market orientation in marketing. In the definition of the customer-oriented product policies (Day, 1990) (Narver, Slater 1990)(Valdani, Busacca, 1999), the customer-based approach should represent the pricing policy of the marketing oriented companies.

The increasing endorsement of customer value-based strategies among academics and practitioners is based on a general recognition that the keys to sustained profitability lie in the essential features of customer-value based pricing, including understanding the sources of value for customers, designing products, services and solutions that meet customers’ needs, setting prices as a function of value and implementing consistent pricing policies (Hinterhuber 2008).

Measuring or otherwise creating an understanding of customer value perceptions is important to firms. First, because it informs them on the customers’ willingness to pay: firms that engage in value-informed pricing will not charge prices that are lower than necessary. Second, since firms that engage in value-informed pricing are able to express perceived benefits in the price, these firms can market a coherent offering, whereby perceived price matches perceived benefits. So, when customers perceive that they pay a good price for the benefits obtained, their purchase intentions will increase (Grewal, Monroe & Krishnan 1998). This means that understanding customer value perception leads to both higher sales and higher profit margins. As suggested by Piercy et al. (Piercy, Cravens & Lane 2010) designing a value-based pricing strategy is pivotal in developing new business models, occupying a desirable position in the market and achieving higher prices.

Supporting the strategic importance of value-informed pricing for the firm Ingenbleek et al. (Ingenbleek, Frambach & Verhallen 2010), using a structural equations model, show that value-informed pricing has a strong effect on new product performance. In particular, testing the model on a cross-sectional sample of 144 firms, value-informed pricing is found to have important mediating effect in the market orientation – new product performance relationship. This and other results of the model suggest that the relationship between market orientation and new product performance is strongest if firms integrate value-informed pricing in the new product development process.

Despite the obvious benefits of customer-based approaches to pricing, a review of the literature suggests that these methods still play a relatively minor role in pricing strategies. Also looking at the pricing practices adopted by the firms, it is clear that they usually prefer

the traditional cost-plus pricing method and the competition based one rather than the value-based, maybe because of the major certainty associated to the first ones in the price definition, even if they generate some problems in the practical application (Kortge, Okonkwo 1993)(Anderson, Narus 1999).

Examining the literature about value-based pricing policies, it is actually possible to identify some works focusing on the reasons of its non-application. Hinterhuber (Hinterhuber 2004) presents a comprehensive framework for value-based pricing decisions which considers all relevant dimensions and elements for profitable and sustainable pricing decisions and he tries to identify some of the reasons of the little interest in management practice for value-based pricing. According to the Author's experience, managers seem to have fallen victim to two enormous beliefs. First, managers seem to believe that nowhere else conflict is so strong as in the field of pricing. The dominant assumption is that what is gained by the firm is lost by the consumer and vice-versa, and that pricing is, in the end, a zero-sum game. Second, managers generally do not seem to believe in their ability to significantly influence their industry's pricing structure.

Ingenbleek (Ingenbleek 2007) – recognizing that the body of literature about value-informed pricing is quite fragmented – reviews and integrates the empirical literature on pricing practices in order to pave the road of future research. His article generates insights that may help firms to establish a value-informed pricing process. Basing on the resource-based view of the firm, the findings from this study is summarized in an integrative framework including testable research propositions, according to which value-informed pricing is the result of the deployment of informational resources such as market research, relationships and internal knowledge on customers. So, firms should not only develop these information sources, but also secure the process by which they are deployed.

In a recent study, Hinterhuber (Hinterhuber 2008) reports the results of a qualitative survey, evidencing, first of all, the adoption of alternative pricing approaches in practice and, then, the main obstacles to the implementation of value-based pricing strategies. In response to the questions about the obstacles to the implementation of value-based pricing, a wide array of answers was received, including the difficulties in communicating value, in market segmentation, sales force management and senior management support. In addition to the reasons cited above, one that is considered to be crucial and that conditioned the evolution of the studied on value-based pricing is the difficulty associated to value assessment.

The most effective way of overcoming the value-assessment problem is rigorous value measurement. All the customer-oriented approaches to pricing are, in fact, based on the

assumption that the value for the customer can be measured and that it could represent the maximum level of price defined for the market. In this regard, Nagle and Holden's (2002) definition of value to the customer is pertinent: "A product's economic value is the price of the customer's best alternative – reference value – plus the value of whatever differentiates the offering from the alternative – differentiation value". It is so clear that the measure of the customer value represents the main guideline in the price definition (Busacca, Costabile & Ancarani 2004).

The methodologies for measuring the customer value identified by the specialist literature are worthy of note. For instance, through *expert interviews*, *focus group assessment of value* and *assessment of value in use* company experts or consumers in groups of 5-15 are asked to estimate the value of new offerings or they are observed and interviewed when they are using new offerings to obtain estimates of customer value.

The estimate of customer value can also derive from the application of more specific techniques. For example the estimate of the *elasticity of demand* measures the variation of demand of a product after the variation in its price. Similarly, through the *buy-response method* the estimate of customer value derives from the customer availability to buy a product according to different levels of price.

The *Economic Value for the Customer* (EVC), in the original definitions (Forbis, Metha, 1981), derives from the comparison among total costs (purchase, start-up, management, dismissing costs etc...) and benefits related to the product in use and the costs and benefits related to a new product.

One of the best-known methodologies used to measure customer value is the *Fishbein analysis* (1963). The application of this methodology enables to calculate a synthetic index of the customer value, thanks to the weighting of the importance and of the perceived performances of every attributes composing the evaluated product.

In the end, the probably most widely used tool to measure customer value is the *conjoint analysis*. In accordance with the methodology suggested by Auty (Auty 1995), a research survey of customer's evaluations of a set of potential product offerings can be undertaken. Among the most popular techniques used for the customer value measurement, the conjoint analysis is considered to be, more than others, able to guarantee the most valid and affordable results and especially suitable for multi-attribute products (Green, Srinivasan 1978)(Green, Srinivasan 1990) (Green, Krieger & Wind 2001)(Green, Krieger 2002).

Using the conjoint analysis each offering should consist of an combination of specific attributes, with the levels of these attributes being systematically varied within the set of

offerings. Respondents are then asked to provide their purchase preference ranking for each of the offerings. Statistical analysis is then used to identify the value that the respondents place on each attribute.

2.2. Pricing policies in household appliance sector

The current trend in manufacturing consumer durables is towards a diversification of production, with wider product ranges in order to gain customer preferences, at the same time controlling internal complexity through the mass customization principles (Gilmore, Pine 1997). This behavior could be justified from the commercial point of view in terms of the need companies have to differentiate their production and gain a secure position in already saturated markets (Barbiroli, Focacci 2003). This holds true particularly in the white goods sector, that includes household appliances such as washing machines, dishwashers, dryers and refrigerators.

Barbiroli and Focacci (Barbiroli, Focacci 2003) analysed the nature of the correspondence between the commercial value (price) and the objective quality (assumed as defined by a global technical performance index) of a wide range of the most important consumer durables. They carried out a linear regression, with price as a dependent variable and the technical performance index as an independent variable. In the case of washing machines, in order to compute the technical performance index, they utilized the following technical specifications: energy consumption, water consumption, capacity, maximum spin speed, and the length of the washing cycle. Their empirical analysis over a sample of 62 models, showed that for the same company's range of products, there is no exact correspondence between the variation in technical characteristics and the variation in price although, on the overall sample, a linear regression model was generally valid.

In order to examine the relation between pricing policies and technical characteristics, we carried out an empirical analysis over a sample of 433 household appliance models. The data were gathered through the database of one the largest white goods and consumer electronics appliances retail chain in Italy. Data included: the model code, the brand name, the price, the loading capacity (kg), the energy consumption (Kwh/cycle), the water consumption (l/cycle) and the spin dryer speed (turns). Technical data in the database were derived directly from the manufacturer information sheets; on the other hand the price level was the one set by the retail chain. Although price may depend on the specific pricing policy of the retail chain considered, by using the same source for all the different brands and models, we expect to

have this effect leveled across the sample (assuming that the retailer adopts the same pricing policy for all brands, since it is a generalistic retailer).

Since the loading capacity strongly impact over the physical characteristics of the appliances, and it is concentrated over a few values (capacity in kilograms in the sample is usually 5 kg; 5,5; 6; 6,5; 7; 7,5 or 8 kg, with very few exceptions), capacity was used as a categorical variable, to divide the sample into more homogeneous classes. In particular, four capacity classes were defined: a). capacity up to 5 kg (163 models); b). capacity between 5,5 and 6,5 kg (135 models); c). capacity between 7 and 8 kg (83 models); and d). capacity of 8 kg (52 models).

For all the classes, the relation among the price and the three technical characteristics (energy consumption, water consumption, spin dryer speed) was tested through a linear regression model ($P = a + b*$*technical feature* $+ E_i$). The data analysis were carried out through the software SAS®. The analyses on the single variables highlighted a strong positive relationship between the spin dryer speed and the model price, for all the different capacity classes. As it was expected, instead, the energy consumption has a negative linear relationships with the model price. Finally, a statistically significant relationship was on the opposite not found between the price and the water consumption of the appliances.

A multiple linear regression was then performed, to relate the selling price with all the three technical features at one time. When considering the three variables altogether in a multiple linear regression model, the findings from the single regressions were confirmed, showing a positive relationship between price and spin dryer speed, a negative one between price and energy consumption, and no significant relationship between price and water consumption, except for the capacity class between 5,5 and 6,5 kg. The results of the multiple regression are summarized in table 1.

Table 1 – Results of the multiple regression over the washing machine sample

Loading capacity class 1 (up to 5 kg) – (R^2=0,3169)			
	Coefficient	F	Pr > F
Spin dryer speed	0.27444	64.59	<.0001
Energy consumption	-219.34229	7.18	0.0081
a (intercept)	314.53334	16.16	<.0001
Loading capacity class 2 (from 5,5 - 6,5 kg) – (R^2=0,4418)			
	Coefficient	F	Pr > F
Spin dryer speed	0.67832	77.03	<.0001
Energy consumption	-417.42496	4.16	0.0436
Water consumption	-7.71191	11.20	0.0011

a (intercept)	609.90317	7.68	0.0064
Loading capacity class 3 (from 7 - 7,5 kg) – (R^2=0,2422)			
	Coefficient	F	Pr > F
Spin dryer speed	0.31158	22.75	<.0001
Energy consumption	-373.21941	8.36	0.0049
a (intercept)	557.82822	13.15	0.0005
Loading capacity class 4 (8 kg) – (R^2=0,5365)			
	Coefficient	F	Pr > F
Spin dryer speed	0.55069	42.69	<.0001
Energy consumption	-517.24668	14.50	0.0004
a (intercept)	673.93987	9.85	0.0029

3. Research method

The empirical research reported in this section has the aim to compare the selling prices of some categories of household appliances sold on the market with the customer value of the same product profiles in order to evidence the existence of some relationships.

As revealed by the analysis reported in the previous paragraph (§ 2) data on selling prices do not reveal huge differences in pricing policies. When there are evident relationships between prices and technical features (for example between price and spin dryer speed and between price and energy consumption), data reported in the database cannot confirm if these pricing policies are customer oriented or not (as to say if the higher price related to a lower level of energy consumption is justified by the awareness that the energy consumption represents for the customer the most important attribute of the product and if the price level is proportional to the value assigned by the customer to this specific attribute).

While the selling prices of the durable goods sold on the market were available in the original database, for the measure of customer value we made reference to the elaboration of the output of a conjoint analysis.

In the empirical research reported in this paper, the conjoint analysis was applied to the measure of customer value of the washing machines and it followed these steps.

First of all, we proceeded with the configuration of the virtual product profiles, combining the different levels of the different technical attributes of the examined durable good.

In the application of the conjoint analysis no decision is more critical than the one that must be made about which attributes to include. In the conjoint analysis the total number of attributes is a function of the number of cards that respondents will tolerate. In this decision we have to consider the necessity of configuring a small number of cards to minimize

boredom and fatigue of the respondents. So, in the definition of a conjoint design, the decision of the number of considered attributes becomes a trade-off between the number of respondents needed to obtain a decent sample of reliable respondents versus the number of cards that each respondent is shown. As Auty (Auty 1995)(Anderson, Wouters & van Rossum 2010) says “the more cards in the survey, the more people will complete the exercise carelessly and therefore unreliably”.

In our case the decision was driven by the database, so we decided to select those attributes which were available in the database (in order to have the opportunity, after measuring the customer value, to compare it with the real features of the existing products) which were also involved in customers’ trade-off decisions. Green and Srinivasan (Green, Srinivasan 1990) recommend no more than six attributes and caution against having too few degrees of freedom. So, in our profiles’ configuration we decided to consider five attributes: the brand, the energy class, the washing class, the spin dryer speed and the price. The details of all these features were reported on the database and represented quite well the key elements in the differentiation of the product range.

In order to be sure that the attributes chosen include the ones really involved in purchasers’ trade-off decisions and to avoid spurious data on preferences, we decided to involve customers in a preliminary research. In this preliminary research we asked to a random sample of 25 customers to list the main criteria usually adopted in the purchase of a washing machine, giving no suggestions (the answer were completely free hoping that this could bring to the identification of new criteria we did not identify first). The results of this pre-test confirmed that the attributes we selected were good. The most frequently cited criteria were: the energy consumption, the price, the spin dryer speed and quality in general.

After the identification of the attributes another important decision refers to the definition of the levels of each attribute. For mathematical reasons, it is important to have the ratio of cards to parameters at least over 1.5. Because the number of parameters required for calculating a part-worth function is the sum of all the levels minus the number of attributes, the total number of attributes and levels need to be kept fairly low.

Moreover, the definition of the levels of each attribute depended on the articulation of the real product range.

In the definition of the levels of the first attribute, the brand, we decided to select the brands representing a large sub-sample of the entire database. This is the reason why we selected the first four brand in terms of number: Indesit, Ariston, Candy and Bosch represented globally about 50% of the total references reported in the database. After this first

selection the database was composed of 215 references, so in the identification of the minimum and of the maximum level we decided not to consider those features which characterized very few products (especially with reference to the energy class and to the water class we decided to exclude from the conjoint analysis, and consequently from the database, those products codes corresponding to the B and C energy and water class, because actually they can be considered out of date in the market). In the articulation of the specific levels within the identified range, we tried instead to create quite well-balanced classes.

As a result, the energy class was articulated in three levels, corresponding to a low, a medium and a high level of energy consumption (respectively 0,6, 1,1 and 1,6 kWatt per cycle). Looking at the database the levels of water consumption were concentrated in a range going from 40 to 70 litres per cycle. Because of the small range of values of this class we thought that the articulation on three levels (low, medium and high) could bring to some misunderstandings in the respondents, who could not perceive the real difference among three different levels of consumption. So we decided to keep only two levels (low and high, corresponding to the lowest and to the highest value indicated before). The spin dryer speed attribute was articulated in three different levels corresponding to different performances in terms of dryer efficiency (low efficiency corresponding to the washing machines with a limited number of turns per minute ranging from 600 to 800; medium efficiency corresponding to the washing machines with a medium number of turns per minute ranging from 900 to 1.100; high efficiency corresponding to the washing machines with a high number of turns per minute ranging from 1.200 to 1.600). In the end, the price was articulated in four levels, going from the lowest (149 €) to the highest (949 €) reported in the database. The specific levels (149, 299, 499, 949 €) aimed to represent the realistic pricing policies adopted by the washing machines retailers, tending to fix loss-leader price.

The selected attributes and their levels are reported in the following table (tab. 2).

Tab. 2 – Attributes and levels selected for the washing machines

Brand	Candy Bosch Indesit Ariston
Energy class (energy consumption)	0,6 kWatt per cycle 1,1 kWatt per cycle 1,6 kWatt per cycle
Washing class (water consumption)	40 litres per cycle 70 litres per cycle

Spin dryer speed	Low (600-800 turns per minute) Medium (900-1.100 turns per minute) High (1.200-1.600 turns per minute)
Price	149 € 299 € 499 € 949 €

After the identification of the attributes and of the levels these were combined to configure the virtual product profiles using the software SPSS. Because of the greater realism of the choice stimulus in the full profile method, we decided to adopt this one. One of the benefits of conjoint analysis, in fact, is precisely the ability to give respondents choices based on a possible marketplace, rather than paired comparisons that artificially isolate products or trade-off matrices that ask the respondents to consider attributes which he or she might not ever look at in a full profile. This is the reason why we decided to submit 16 full product profiles, obtained using the SPSS orthogonal design, to a random sample of 97 products' users.

The survey was administered by personal interviews. The interviewed users were asked to express a likelihood of purchase for each profile rating on a scale going from 1 (worst evaluation) to 9 (best evaluation). The questionnaire used for the interviews reported all the profiles in a single page; then, at the end of the questionnaire, some questions about socio-demographic characteristics were asked. The results of the interviews were elaborated using PASW conjoint 18 of SPSS to obtain the utility coefficients assigned to each product's attribute.

Table 3 – The product profile of the washing machines submitted

Card ID	Brand	Energy consumption (kWatt per cycle)	Water consumption (litres per cycle)	Spin dryer speed (turns per minute)	Price
1	Candy	1.6	70	low 600-800	499 euro
2	Bosch	1.1	40	low 600-800	299 euro
3	Ariston	1.6	70	high 1200-1600	299 euro
4	Bosch	0.6	70	medium 900-1100	499 euro
5	Indesit	0.6	70	low 600-800	299 euro
6	Ariston	0.6	40	low 600-800	499 euro
7	Bosch	0.6	70	high 1200-1600	149 euro
8	Indesit	1.1	40	high 1200-1600	499 euro

9	Candy	1.1	70	low 600-800	149 euro
10	Candy	0.6	40	medium 900-1100	299 euro
11	Ariston	0.6	40	low 600-800	149 euro
12	Bosch	1.6	40	low 600-800	949 euro
13	Indesit	0.6	70	low 600-800	949 euro
14	Candy	0.6	40	high 1200-1600	949 euro
15	Ariston	1.1	70	medium 900-1100	949 euro
16	Indesit	1.6	40	medium 900-1100	149 euro

4. Findings and discussion

In this paragraph we report the output of the conjoint analysis conducted on a samples of 97 interviews with reference to the washing machines. As we mentioned before, the product profiles selected using the orthogonal design were submitted to the interviews and their preferences were elaborated using the PASW conjoint 18 of SPSS. The output of their elaborations is reported in the following tables (tabb. 4, 5, 6, 7).

Table 4 – The estimate utility for the washing machines

		Utility estimate	Standard error
Brand	Ariston	-0.183	0.190
	Bosch	0.263	0.190
	Candy	0.039	0.190
	Indesit	-0.119	0.190
Spin dryer speed	low 600-800	-0.215	0.146
	medium 900-1100	-0.038	0.171
	high 1200-1600	0.253	0.171
Energy class	0.6	-0.374	0.132
	1.1	-0.748	0.264
	1.6	-1.122	0.397
Washing class	40	-0.057	0.219
	70	-0.113	0.439
Price	149 euro	-0.312	0.098
	299 euro	-0.624	0.196
	499 euro	-0.936	0.294
	949 euro	-1.247	0.392
(Costant)		7.204	0.485

Table 5 – The relative importance of the attributes of the washing machines

Brand	25.704
Spin dryer speed	19.644
Energy class	14.957
Washing class	11.416
Price	28.279

Based on the evaluations of these products, conjoint analysis programs derive estimate of each purchasers' utility function. The utility function quantifies the relation between the purchasers' overall reaction to the product and the individual attributes of the product.

So, the first table (tab. 4) reports the estimate utility for the attributes used in the conjoint analysis and the relative standard errors. To each level of the attributes corresponds a utility estimate; this utility points out the value assigned by the interviewed sample to the specific level of that attribute. The importance of a particular attribute is expressed as its "part-worth", that is the percentage of the total decision ascribed to that attribute. In other words, the gaps emerging from the different utilities give us a measure of the value perceived by the customer passing from a level to another of the same attribute.

As a consequence, the value reported in the next table (tab. 5) are calculated using the utility levels and express the relative importance of the attributes basing on the perceived value. Looking at this results we notice that the price represents the most important attribute (the one to which the highest value is assigned) (relative importance: 28,279%); the brand follows (relative importance: 25,704%). The spin dryer speed assume a relatively high level of importance (19,644%), while the energy and the washing class can be considered less important in the purchase of a washing machine (relative importance respectively 14,957% and 11,416%).

Table 6 – The coefficients

	Coefficient B
	Estimate
Energy class	-,374
Washing class	,057
Price	-,312

Table 7 – The correlations

	Value	Sig.
R of Pearson	,878	,000
Tau of Kendall	,650	,000

Data reported in table 6 and in table 7, on the other hand, represent respectively the coefficients – which will be useful in order to estimate the utility level assigned to the levels of those linear attributes which did not compare in the conjoint analysis – and the correlations. R of Pearson and Tau of Kendall are two correlation indicators. Their value vary from 0 (no correlation) to 1 (perfect correlation). High values of these indicators, as in this case, point out the existence of a high correlation among the estimate and the observed preferences. The low level of significance confirm the hypothesis of a good fit of the defined statistical model.

The results of the conjoint analysis are of course interesting, but for the aim of the paper they are functional to a second elaboration.

After data collection was completed, when the output of the conjoint analysis was definitive, we calculated the value assigned to the profiles really available on the market. In the original database – reporting for each product code the brand name, the energy consumption, the water consumption, the spin dryer speed and the selling price – we substituted to the real levels of the different attributes the utility values in order to calculate the value assigned by the market to the real product profiles.

To make this elaboration we referred to the formula generally used to calculate the global utility, that in this case will be so defined:

Global utility of the product profile = constant + *Brand utility* + *Energy class utility* + *Water class utility* + *Spin dryer speed utility*

The global utility of each product profile represents its customer value and it was compared to its selling price with the aim to understand if among these values there is congruity or not. As it can be noticed from the formula, the global utility we decided to use in this case was a utility excluding the price utility. What we tried to do in this first part of the analysis was an evaluation of the global value assigned by the customers to the real product profile, without considering the price. This gave us the opportunity to estimate which was the willingness to pay for that profile, only according to its technical features.

Thanks to the elaboration of the so defined “economic value of the unitary utility” we were then able to estimate how much the customer is willing to pay passing from a product profile to another with different levels of the attributes. The elaboration of this indicator gave us the opportunity to compare the willingness to pay for different profiles with their real price. In case the pricing policy adopted by the analyzed companies is customer-oriented, thus, we

expect that product profiles which are perceived as characterized by different value are sold on the market with different prices, and the differences in prices to be proportional to the differences in value. The definition of the global utility of each product profile and the elaboration of the "economic value of the unitary utility" enabled us to better understand if in the household appliances sector, with particular reference to washing machines, pricing policies can be defined as customer-oriented.

To test this hypothesis some product profiles were compared among each other. So, looking at two or more product profiles which are very differentiated one from the other in terms of customer value we compared them with their prices to see whether price reflects the differences in terms of value or not.

At a first look, the pricing policies adopted with reference to the washing machines, do not seem to be aligned with the customer value. In order to classify the results of this analysis we divided the database in three different class, according to the price range of the products.

In the first class (including codes going from a minimum price of 149 € to a maximum price of 298 €), the relationship between price and value seems to be negative. Within this class the product profiles are very similar in terms of technical features (the levels of energy consumption, water consumption and spin dryer speed are quite the same), but if we look at their prices they are very similar. Passing from a profile to another the only feature that changes is the level of the energy consumption. This brings to an increase in prices, while the customer value goes down, because of the low level of utility assigned to high levels of energy consumption.

In the second class (including codes going from a price of 299 € to a price of 498 €) we can indentify two different groups: the first characterized by a medium level of spin dryer speed and the second by a high level of spin dryer speed. Passing from a group to another the water consumption does not change, while the level of energy consumption increases a bit. In both groups the price increases when the level of energy consumption goes up, contrary to the customer value that goes down.

What emerges from the analysis of this second class is that the pricing policies are not able to capture the differences in customer perceived value. As we noticed from the analysis of the utility levels emerging from the conjoint analysis, the spin dryer speed seems to be an attribute to which the customer assign a great importance (19,644%). Nonetheless, among profiles with different spin dryer speed, the price adopted on the market remain the same (comparing two profiles, with the same level of energy consumption and with the same level of water consumption the price is the same –373,65 € in the first profile and 374,03 € in the

second – even if the brand is different and even if the level of dryer speed is medium in the first profile and high in the second). This reveals that pricing policies, in some cases, are not able to capture the market opportunity: the difference in perceived value in this case amounts at 0,29 points, while the price of the two profiles remain the same, even if it could be higher, according to the higher willingness to pay revealed by the customer.

In the third class (including codes going from a price of 499 € to a price of 949 €) there are two groups: the first characterized by high spin dryer speed and the second with a low spin dryer speed. In both groups, prices have a negative relationship with customer value. In both cases the price rises when the energy consumption goes up, contrary to the customer value that decreases. Also here we can notice some paradoxes. Passing from a profile to another, where the only difference is the spin dryer speed (moving from low to high), the price remains the same, while customer value increases much. Passing from the profile with the high level of spin dryer speed to the profile with the low level of spin dryer speed the price passes from 530,56 € to 528,73 €, while the increase in customer value amounts at 0,47 points.

5. Limitations, further research, managerial implication

Even if with partial results (the data elaboration is still going on, so the considerations about the customer orientation of pricing policies in household appliance sector have to be enriched in the future) we can already recognize some limits of the empirical research.

First of all, we are aware that the conjoint analysis, on one hand, and the pricing policies analysis on the other are referred to limited samples. Although literature suggests that small samples do not invalidate the results of the conjoint analysis, 97 interviews represent a too limited number of cases. This is the reason why, in the following steps of the empirical research, we will collect a higher number of interviews in order to validate the conjoint results. The necessity of limiting the number of cards submitted to the customers, brought us to select a limited number of references from the original database. So the brands involved in this empirical part were only four – while the original database reported products codes from nine different brands – as the levels of the technical features we used for the conjoint and consequently for the next analysis were related only to the selected brands (even if these reflected the general characteristics of the global database). To overcome this limitation we are trying to understand if the conjoint design should be modified – considering a larger number of levels of the attributes but abandoning the full profile method – or if the conjoint design should remain the same but replied in order to consider the levels of the attributes we

excluded in the first application (creating other product profiles with the same levels of the attributes but with different brands to submit to another sample).

Secondly, the aim of the paper was to provide a better understanding of the pricing policies adopted in the household appliance sector. Results reported in this paper refer to a single product, that is the washing machine, so the considerations emerging from this paper should be considered limited compared to the general aim of the paper. So, we want to stress that the empirical research reported here represents only a part of a research project, where also other product categories will be considered and analysed (dishwashers, tumble dryers, freezers, refrigerators). The same analysis we conducted here will be replied for each product category and will give us the opportunity to make more considerations about the pricing policies in the household appliance sector.

Even with these limitations, the empirical research reported in this paper has important managerial implications. First of all, this research could give to household appliance manufacturers the awareness about their pricing policies, bringing them to a reflection about their level of distance from the market. Secondly, the results of the conjoint analysis could give also some suggestions about which direction should be followed in the future, not only for the price definition, but also for the launch of new products. As we remarked in the first part of the paper, one of the main obstacles to the implementation of customer-based pricing policy is represented by the difficulties in the value assessment. The diffusion of conjoint analysis, even if considered to be a valid instrument in value measurement, is actually relatively low, primarily because of the mathematical complexity of the programs and then because of the perceived difficulty in administering the survey instrument. So, this paper could also contribute to the diffusion of this method showing how it can be used and what kind of information it can give.

References

Anderson, J.C. & Narus, J.A. 1999, *Business market management: understanding, creating and delivering value,* Prentice-Hall, Upper Saddle River, NJ.

Anderson, J., Wouters, M. & van Rossum, W. 2010, "Why the Highest Price Isn't the Best Price", *MIT Sloan Management Review*, vol. 51, no. 2, pp. 69.

Auty, S. 1995, "Using conjoint analysis in industrial marketing: The role of judgment", *Industrial Marketing Management*, vol. 24, no. 3, pp. 191-206.

Barbiroli, G. & Focacci, A. 2003, "A techno-economic analysis of the results of product diversification in household appliance durables - evaluating concreteness", *International Journal of Production Economics*, vol. 83, no. 3, pp. 257.

Busacca, B., Costabile, M. & Ancarani, F. 2004, *Prezzo e valore per il cliente : tecniche di misurazione e applicazioni manageriali*, Etas, Milano.

Busacca, B., Costabile, M. & Pasini, P. 1993, *Decidere il prezzo : casi aziendali e software applicativi*, Etas, Milano.

Cannon, H.M. & Morgan, F.W. 1990, "A Strategic Pricing Framework", *The Journal of Services Marketing*, vol. 4, no. 2, pp. 19.

Costabile, M. 2007, "Le ricerche per la definizione e il controllo del prezzo dei prodotti" in *Ricerche di marketing*, eds. L. Molteni & G. Troilo, McGraw-Hill, Milano, pp. 565-614.

Costabile, M. 1996, *Misurare il valore per il cliente : aspetti metodologici e implicazioni per la gestione dei processi di scambio*, UTET, Torino.

Docters, R., Reopel, M., Sun, J. & Tanny, S. 2004, *Winning the profit game - smarter pricing, smarter branding*, McGraw-Hill, New York, NY.

Dolan, R.J. & Simon, H. 1996, *Power pricing. How managing price transforms the bottom line*, The Free Press, New York, NY.

Gilmore, J.H. & Pine, B.J.,II 1997, "The four faces of mass customization", *Harvard business review*, vol. 75, no. 1, pp. 91.

Green, P.E. & Krieger, A.M. 2002, "What's right with conjoint analysis?", *Marketing Research*, vol. 14, no. 1, pp. 24.

Green, P.E., Krieger, A.M. & Wind, Y. 2001, "Thirty years of conjoint analysis: Reflections and prospects", *Interfaces*, vol. 31, no. 3, pp. S56.

Green, P.E. & Srinivasan, V. 1990, "Conjoint Analysis in Marketing: New Developments with Implications for Research and Practice", *Journal of Marketing*, vol. 54, no. 4, pp. 3.

Green, P.E. & Srinivasan, V. 1978, "Conjoint Analysis in Consumer Research: Issues and Outlook", *The Journal of Consumer Research*, vol. 5, no. 2, pp. 103-123.

Grewal, D., Monroe, K.B. & Krishnan, R. 1998, "The effects of price-comparison advertising on buyers' perceptions of acquisition value, transaction value, and behavioral intentions", *Journal of Marketing*, vol. 62, no. 2, pp. 46.

Hinterhuber, A. 2008, "Customer value-based pricing strategies: why companies resist", *The Journal of business strategy*, vol. 29, no. 4, pp. 41.

Hinterhuber, A. 2004, "Towards value-based pricing—An integrative framework for decision making", *Industrial Marketing Management*, vol. 33, no. 8, pp. 765-778.

Ingenbleek, P., Frambach, R. & Verhallen, T. 2010, "The Role of Value-Informed Pricing in Market-Oriented Product Innovation Management", *The Journal of Product Innovation Management*, vol. 27, no. 7, pp. 1032.

Ingenbleek, P. 2007, "Value-informed pricing in its organizational context: literature review, conceptual framework, and directions for future research", *The Journal of Product and Brand Management*, vol. 16, no. 7, pp. 441.

Ingenbleek, P., Debruyne, M., Frambach, R.T. & Verhallen, T.M.M. 2003, "Successful New Product Pricing Practices: A Contingency Approach", *Marketing Letters*, vol. 14, no. 4, pp. 289.

Kortge, G.D. & Okonkwo, P.A. 1993, "Perceived value approach to pricing", *Industrial Marketing Management*, vol. 22, no. 2, pp. 133-140.

Monroe, K.B. 2003, *Pricing: making profitable decisions*, McGraw-Hill, New York, NY.

Nagle, T.T. & Hogan, R.K. 2006, *The strategy and tactics of pricing: a guide to profitable decision making*, Prentice Hall, Englewood Cliffs, NJ.

Narver, J.C. & Slater, S.F. 1990, "The Effect of a Market Orientation on Business Profitability", *Journal of Marketing*, vol. 54, no. 4, pp. 20.

Ofir, C. 2004, "Reexamining Latitude of Price Acceptability and Price Thresholds: Predicting Basic Consumer Reaction to Price", *The Journal of Consumer Research*, vol. 30, no. 4, pp. pp. 612-621.

Piercy, N.F., Cravens, D.W. & Lane, N. 2010, "Thinking strategically about pricing decisions", *The Journal of business strategy*, vol. 31, no. 5, pp. 38.

Valdani, E. 1989, *Pricing : tattiche e strategie per definire con successo il prezzo di vendita*, Etas, Milano.

Wertenbroch, K. & Skiera, B. 2002, "Measuring consumers' willingness to pay at the point of purchase", *JMR, Journal of Marketing Research*, vol. 39, no. 2, pp. 228.