RETAILER – CONSUMER RELATIONSHIPS FOR DURABLE GOODS MARKET IN ROMANIA. A MULTIMETHOD ANALYSIS

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Abstract

The durable goods market in Romania has many features thanks to simultaneously: acquisition way, structure of households, retailers on this market, banking policies as regards providing consumption loans („loans with identity card only"), macroeconomic policies of tacit supporting in relation to banking policies etc. These characteristics are found in the low endowment with durable goods of households in Romania, and that generate features of the acquisition process, the decision taking process of durable goods and implicitly of retailer – consumer relationships. This paper covers the last aspect, being used a representative urban sample of 300 households, the following methods being used for data processing: χ^2 test bivariate, ANOVA, Wilcoxon test, Cronbach alpha, split – half, the goal of this paper being that to provide new results referring to retailer – consumer relationships for the durable goods market in Romania, that confirm or infirm the foreign research results..

Keywords: Durable goods; Romanian market; Socio-demographic variables; Households; Statistical methods; Retailers; Consumers.

1. Introduction

In the author's previous research have been published results related to the durable goods market in Romania (using numerous statistical methods), concerning this market, this paper being a completion with new results about this topic. Following the previous research, it has resulted that the durable goods market in Romania has many *features* thanks to simultaneously:

- To purchase durable goods, consumers in Romania use the following criteria and information sources (Gabor et al., 2009): *price, promotions, brand of the product*, the smallest influence having the provided *after sales service;*
- Acquisition way used by Romanian consumers (period, location, promotional influences etc.) according to Gabor (2011a; 2012a, 2012b, 2013);
- Significant differences statistically as regards endowment with durable goods across counties, development regions and nationally (Gabor et al., 2011);
- Information sources used by Romanian consumers in purchasing durable goods vary according to their age (Gabor et al. , 2011b) *;*

- Socio-demographic characteristics that best discriminate this preference for foreign brands being the income and studies of the household head (Gabor et. al, 2011) *;*
- Households in Romania, from urbane environment, are still endowed with black and white TV (14.3%) and non-automatic washing machines (27%) or very old or second hand goods (25%) (Gabor , 2013) *;*
- Romanian consumers are not sensitive to variables related to *brand* of durable goods, *name of shop* or *design of product* but are strongly influenced by their price (Gabor , 2012a) *;*
- Structure of households and families that represent these households respectively, and implicitly characteristics of the head of their households (Gabor , 2012a);
- Buying power is very low in Romania (*Our income is enough for a decent living, but we cannot afford buying some more expensive goods)* (Gabor , 2013)*;*
- 42% of urban households have loans or credits (Gabor , 2013). To these aspects are added those related to economy and standard of living related to households in Romania, respectively*;*
- Banking policies in Romania as regards providing consumption loans ("loans with identity card only") in order to rise the accession extent of these types of loans with direct implications on the increase of buying durable goods and therefore, standard of living and quality of life concerning households in Romania, ranked at the bottom of the list of EU member countries concerning this indicator;
- Macroeconomic policies of tacit supporting in relation to the banking policies described above;
- Compared to the other EU Member Countries [1] (according to statistical data supplied by Eurostat), *Romania occupies the first place within classification concerning the lack of some durable goods* (washing machine, landline and mobile telephone, color TV, personal computer , car*) due to the lack of financial resources.*

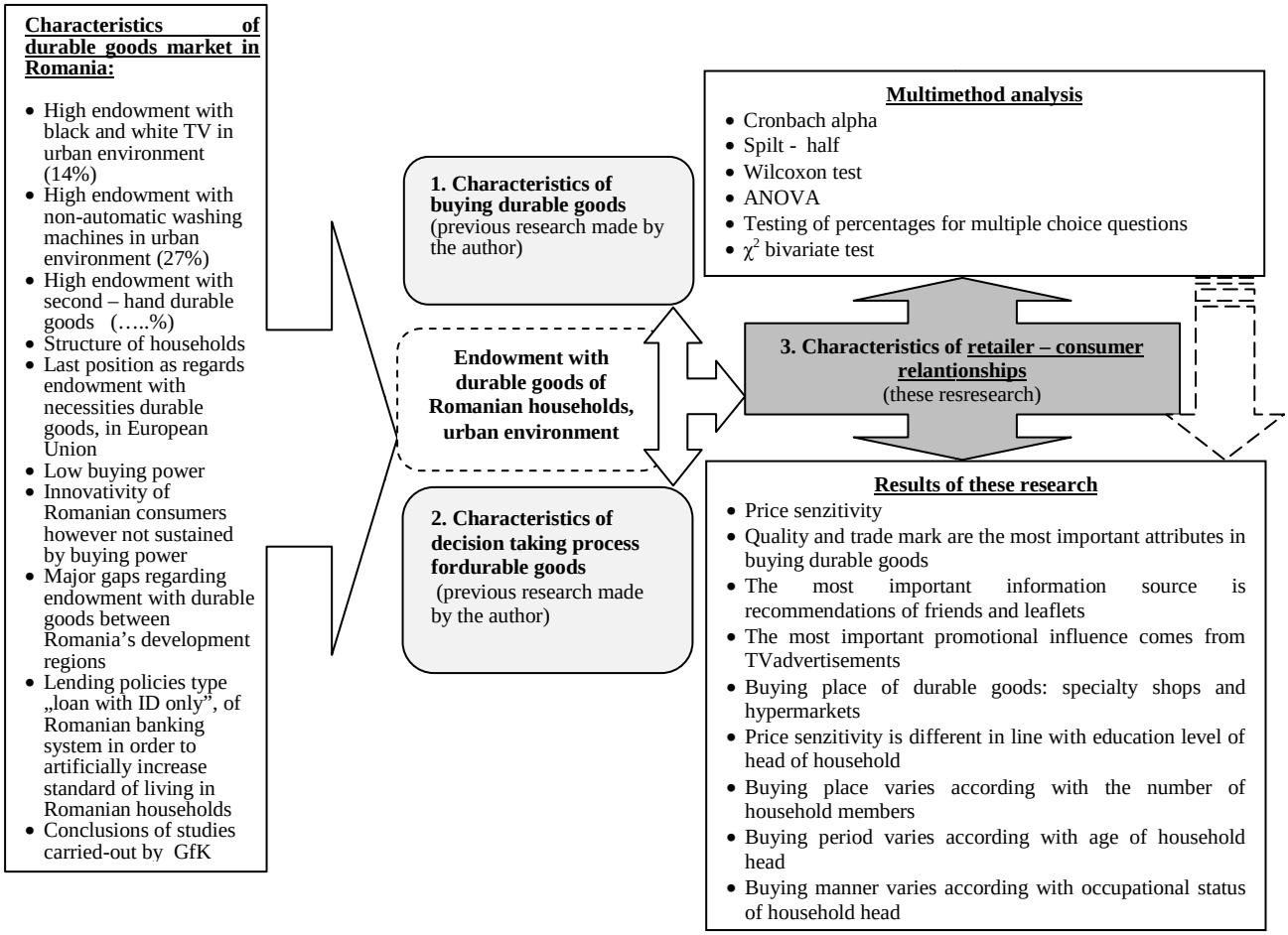
Starting from the above mentioned, the conceptual frame of this paper is summarized in figure 1.

This paper has research as *aim*, by means of statistical methods, the relation between Romanian consumers of durable goods and retailers that operate on this market. The objectives of this paper, embodied in the research hypotheses are summarized in Table 1 in the following paragraph. We mention that these results are a completion and are based on the author's previous research being the first in the specialty literature that provide results – achieved by applying the multimethod analysis – about this market.

In order to achieve the objectives of empirical research it has been used a representative sample made of 300 households in Tirgu Mures municipality, selected through a double sampling scheme to provide the sample representativeness. It has been used a questionnaire managed by a sampling operator, data being gathered in May 2011. For data processing the following statistical methods have been used: χ^2 test bivariate, ANOVA, Wilcoxon test, Cronbach alpha, split – half, multiple feedback data processing.

We shall present further a brief description of the main research carried-out in order to characterize the durable goods market, mentioning that international literature has no many research papers in this respect. Then we present – separately for each statistical method used – the main results of this research, section followed by future research directions and conclusions.

Figure 1 – Conceptual framework of the paper



2. Literature review

In the foreign literature the first research with regard to this market is since 1979, when Kasulis, Lusch & Stafford were anticipating that, from a high number of reasons (including a high population – in the '80s – with age between 18 – 34 years) the durable goods will be the fastest segment of consumer market in the '80s. The conclusions of the three authors emphasized that:

1. *Middle population will show various purchase models of durable goods, and*
2. *Order of purchase the second TV or car in the same household varies according to the quality of the buyer as being the owner or the tenant of his house.*

The authors also suggest to study this issue in different geographical areas in the future (as it is one of variables that influences this purchase – see the case of Romania: Gabor et al. 2011) and also take into consideration variables such as, *social class of consumers* (this aspect was considered in this research, this being reflected by variables such as: *net monthly income obtained in a household and household head, level of education and occupational status of household head).*

Modeling of relation between value, usefulness and holding of durable goods was studied and approached by Corfman, Lehmann & Narayanan (1991) by means of a convenience sampling on a sample of 735respondents for discretionary goods. They started in building up

assumptions for their research from the standard microeconomic theory that suggests that *budget allocation of households is carried-out according to: size of consumer budget and usefulness of validity as regards items provided by their price*. They concluded that, *when choosing durable goods, consumers cannot purchase dissimilar products and cannot compare objective or concrete objectives. Their selections are usually the result of comparisons carried-out more at abstract level and involves evaluation of products based on their ability to meet the basic values of consumers*. They invalidated the assumption that the order of purchasing durable goods is uniform in population, revealing there are differences according to the social class and the quality to be – or not – owners of endowed house. The consumption patterns carried-out by these authors showed the connection between combination of preferences, price information and budget restrictions for the household buying decision, but these patterns are not consistent for the basic utilities of durable goods, too. The two structural equations that have been tested and used in the pattern are:

- *Endowment with durable goods = f (usefulness, income, age)*
- *Usefulness = f (values of consumers, endowment with durable goods)*

The authors used as stimuli, discretionary durable goods in five categories: house entertainment, sport and exercises, pets, habits and luxury, and as processing methods of data collected by sampling, *factor analysis* and *group analysis*.

The issue of purchasing durable goods „on credit" was approached in 1993 by that analyzed this „tendency" (called „*consumer durable revolution*") in the '20s. The author considered that this type of credit (with direct illustration for car credits) was „created" not to help the consumer but, on the contrary, for the producers' success and their marketing strategies. If we carry out an analogy with the Romanian market in the surveyed period, what was considered luxury durable goods in the '20s [2], in Romania, as regards category of these goods, necessity goods were „placed" or purchased by credit (considered in the European Union as being part in the „basic" endowment of a household), for instance: double glazing, refrigerator, air conditioning etc. The author noticed that, after the Second World War (another analogy with Romania would be December 1989 when it shifted from the centralized economy in the communist period to the market economy) the consumption behavior of households has changed. The author noticed that one of the important reasons leading to this change is provided by *rising of advertising made to durable goods*[3]*that has as direct result* – and instant – *rising of sales as regards durable goods*. The final, general conclusion from this study is that the „*consumer durable revolution*" in the '20s, brought major changes not only to validity of credit (consumption) but to also advertising and that these changes were not the implicit results of intended endeavor of the market and affected – dramatically – consumption costs of households.

In the durable goods industry there is still a global feature namely: country where a product is designed is not the same with the country it produces, aspects related to the *impact of country of design and the country of manufacture over perceptions of durable goods consumers* was studied in 2006 by Hamzaoui & Merunka, the two authors suggesting an *empiric pattern based on the „of fit" concept of this bi – national quality of the durable goods, dividing the concept of country of origin* (COO – country of origin) *and tests the influence of country of design* (COD – country of design) *and country of manufacture* (COM – country of manufacture) *over the evaluation of bi-national durable goods consumer*. The paper providing important contributions and new insights to the judges of a consumer concerning the perception of quality for bi-national durable goods.

The specialty literature in the durable goods field, enriched in 2010 with another

research of authors Seitz, Razauk & Wells about *the importance of brand equity over the purchase of durable goods, singularized on air conditioning systems*, this study being dedicated – and useful – to producers and dealers of these durable goods, data being collected based on sampling on a random sample of 140 subjects. The surveyed variables were: *degree to which the price to be paid for this durable goods influences the brand, where information about this product is searched and demographic characteristics.* Therefore the results of research emphasized that, for this durable, *brand is a proof of product quality but it is not a characteristic criterium in selecting the product* and as *information sources* are used (in order of their importance): *friends and family, websites of producers, leaflets of producers* (but not type „golden pages"), *sellers and catalogues type„ golden pages" are not used as information sources in exchange are influenced by merchants when taking the buying decision as it helps them redefine their selection criteria and therefore choose that air conditioning system that reaches their purpose.*

The issues of modeling the durable goods market have been approached in various senses, thus in 2010, Guiltian approached *the aspects of replacement decision of these durables*, the results of his research (practically a „stocktaking" of topic in specialty literature) emphasizing as *replacement reasons: their usefulness in conjunction with the depreciation rate and the discount rate of consumers, deterioration of intrinsic performances concerning durable goods may result in their total or part replacement thus resulting the „desire of something new" or waiting the validity of some new benefits*. Guiltian starts from the scientifically established presumption that replacement decision is based on the rational choice but – according to behavior research – and on psychological costs, frequent distortions of decision costs and is required by variable situations of replacement and motivations. However, the results of Guiltian's study should be adapted as the final consumer has been taken into consideration as a decision maker of the purchase and replacement of a durable good, in our study this decision belongs to household as a decision maker represented by the household head, studies in specialty literature emphasizing this significant aspect, that the purchase decision for a durable good respectively is taken within the household and not individually.

Maintaining the expanded rate in the last years concerning the durable goods market survey, in 2011, Liberali, Gruca & Nique published the results of their research regarding *the effect of sensitivity(senzitation) to price and habituation over the purchase of durable goods*, emphasizing that product performances represent the key of consumer motivation to purchase discretionary goods for replacing a durable good, the consumer considering only those goods that provide additional performances compared to that they already have. Research conclusion is that, producers should provide products having a much higher performance with every new generation of products launched on the market when price sensitivity goes down every new purchase. The originality of this study consists in the fact that authors considered that *experienced consumers*, the issue for the market in Romania is that existence – or not – of some experienced consumers, considering that, households have adopted quite recently the replacement trend and endowment of household with new durable goods, trend that followed purchasing of second-hand durable goods (still valid on the car market as it goes on worldwide). This aspect of additional performances concerning a commodity launched on the market was also approached by Zhao, Meyer & Han in 2005 who emphasized that *consumers are often attracted by new versions of durable goods that provide additional elements; even if these new elements are never used (*have no real usefulness).

Starting from the results published in the professional literature, for this study we have worded the following hypotheses and for whose testing we will use various statistical methods, the testing methods being mentioned for each hypothesis (Table 1).

Table 1 – Research hypotheses

Theoretical and practical frame from previous research (based on literature review)	Hypotheses of the research	Statistical method for hypotheses analysis
Price (8,07), followed by promotions (6.83) and product brand (6.80), post-sales service provided having the slightest influence (Gabor et al., 2009) Budget allocation of households is carried-out according to: size of consumer budget and usefulness of validity as regards items provided by their price.., when choosing durable goods, consumers cannot purchase dissimilar products and cannot compare objective or concrete objectives (Corfman, Lehmann, Narayanan , 1991). Sensitivity(senzitation) to price and habituation over the purchase of durable goods (Liberalli, Gruca&Nique, 2011)	H_1 –Price is the most important criterium in selecting durable goods H_2 – Quality is the most important criterium in selecting durable goods	Cronbach alpha Wilcoxon test
As information sources are used (in order of their importance): friends and family, websites of producers, leaflets of producers(Seitz, Razzouk, Wells, 2010) 57% of Romanians express their satisfaction following the use of a product or service in their discussions with the others (GfK, Press release, 13 Oct. 2011)	H_3 – The most important information source is provided by recommendations of friends	Cronbach alpha Wilcoxon test
Brand is a proof of product quality but it is not a characteristic criterium in selecting the product and as information sources are used (in order of their importance): friends and family, websites of producers, leaflets of producers(Seitz, Razzouk, Wells, 2010) The consumption behavior of households has changed… one of the important reasons leading to this change is provided by rising of advertising made to durable goods that has as direct result – and instant – rising of sales as regards durable goods (Hira, 1993) 61% of Romanian consumers prefer trade mark dedicated sites, while 41% prefer company sites (GfK, Press release, sept. 2011) Almost 2 thirds of urban consumers are willing to buy a product following a TV advertisement (GfK, Press release, sept. 2011) Friends' recommendations (6.58), followed closely by specialty press (6.53) and promotional leaflets (6.41), recommendations of shop assistants being the least used source but not a significant difference compared to the other sources (Gabor et al., 2009) (Gabor, 2011a)	H_4 – The most important promotion is provided by TV advertisements H_5 – the most important promotional source is provided by leaflets	Cronbach alpha Wilcoxon test
Consumers are often attracted by new versions of durable goods that provide additional elements; even if these new elements are never used(Zhao, Meyer, Han, 2005) Consumer perception of quality for bi-national durable goods (Hamzaoui&Merunka, 2006) Product performance is the „key" of motivation for discretionary buying in order to replace a durable good (Liberali et al., 2011)	H_6 – The most important attribute in purchasing durable goods is product performance and trade mark	Cronbach alpha Split half
	H_7 – The most important place of purchasing durable goods is specialty shop	Testing percentages for multiple choice questions
Sensitivity to price and habituation over the purchase of durable goods (Liberalli, Gruca&Nique, 2011)	H_8 – Occupational status and educational level of head of household directly influences price sensitivity in purchasing durable goods	ANOVA
Population with age between 18 – 34 years the durable goods will be the fastest segment of consumer market in the '80s (Kasulis, 1979) Middle population will show various purchase models of durable goods (Kasulis, 1979) Endowment with durable goods = f (usefulness, income, age) (Corfman, Lehmann, Narayanan, 1991) The purchase decision for a durable good respectively is taken within the household and not individually (Guiltinan, 2010)	H_9 – There are significant differences related to the place, period and manner of buying in line with various socio-demographic characteristics of head of household.	χ^2 bivariate

3. Sampling descriptions

In the sample formation, and consequently to ensure its representativeness, we started from national distribution of urban households according to two criteria, namely: the distribution of urban households based on occupation and level of education of the household head, he sample used in our research being illustrated in Table 2.The data was collected in May 2011, in Tirgu Mures, by filling in a questionnaire, at respondent's residence, having the quality of head of the household, filling in the questionnaire being carried-out by a previously qualified operator. Investigated population has been represented by urban households, in Tirgu Mures municipality, respectively.

Table 2 – Distribution in general population and sample according to training level and occupational status of head of household

Profession / Level of education	GENERAL POPULATION							SAMPLE				
	Total level of education	Employees	Freelancers	Agriculture workers	Unemployed persons	Retired	Total level of education	Employees	Freelancers	Agriculture workers	Unemployed persons	Retired
Primary	21	1	1	8	1	40	25	1	1	1	0	22
Secondary	228	87	11	22	10	86	224	109	11	2	12	90
Higher	51	23	1	0	1	8	51	42	1	0	0	8
Total of profession		153	12	3	12	120		152	13	3	12	120
TOTAL		300						300				

To increase the representativeness of the sample, we considered appropriate to apply a scheme of combined sampling, respectively the *quota sampling* and *stratified sampling*, using two layers as follows:

- *first layer consists of the household head occupation*, including: *employed persons*, including the following categories: *manager, employed person with higher education, employed person with high-school education, unqualified laborer, freelancers,* respectively *employers and self-employed,* farmers, unemployed, retired.
- *The second layer* consisting of *the level of training of household head*, as follows: primary level: *no school, elementary school, secondary school*, secondary level: *vocational school, high-school, technical/craftsmen school*, higher education level: *college / university, postgraduate studies*.

In applying the *quota sampling* there have been distributed to each operator the quotas to be achieved while respecting the distribution of households according to statistics at the national level.

For information gathering stage we used a questionnaire administered by trained operators, namely trained students who have practical experience in this field, questionnaire containing a broad range of scales both classical and specific to marketing data and, implicitly, identification of socio-demographic variables of the household head characteristics

Indicators of hard core trend are provided by:

- *Average size of household* in the sample is *3 people*, *variation coefficient* calculated and equal to *7.6 %* thus showing a uniform population and an average representative within the sample;

- Of households with children below 18 years, *the average number of children per household* is *1 child per household.*
- *Average age of household head* is *49.37 years*, this value is the result of a high percentage of households of pensioners in the sample, 40 % respectively, the average being representative for 70 % of population (variation coefficient is 29.7 %).

For this study the following durable goods have been investigated (havign as starting point the official statistics of the National Institute of Statistics in Romania and EUROSTAT, to which have been added goods subject to foreign research), respectively**:** car, land telephone, mobile telephone, refrigerator, paraboloidal antenna / cable, internet access, color TV, freezer/refrigerating box, aautomatic washing machine, dish washing machine, computer, laptop, LCD monitor, camera, digital camera, video camera, hi – fi audio system, DVD player, printer / multifunction, sewing machine, microwave, hood, cooker, radio cassette player, audio tower, bicycle, motorbike / moped, vacuum cleaner, cosmetic care appliances, body care appliances, double glazing, kitchen machine, air conditioning, home cinema system.

4. Main findings of the research

4.1. Presentation of results –analysis of item validity by means of Cronbach alpha and split - half method

As the Stapel scale has been used in the questionnaire to measure criteria used in choosing durable goods (price -ALEGPRET, brand - ALEGMARC, promotions/offers - ALEGPROM, post-sale service - ALEGSERV), and also, to measure sources of information that influence them in their selection (promotional leaflets-INFPLIAN, special press – INFPRESA, recommendations of friends - INFPRET, recommendations of sellers - INFVANZA)we have shown as response versions variables whose grouping we considered it was necessary to be tested, we used, by means of the SPSS software, *analysis of validity in relation to items in the questionnaire by means of two methods that evaluate internal consistency of items*: *split – half method* and *Cronbach alpha coefficient* as indicator of scale precision (internal consistency index)

Therefore, for variables measured on the *Stapel scale* and the *Likert scale*, results for calculation of the Cronbach alpha coefficient are (Table 3):

Table 3 – Results for reliability analysis – scale. Cronbach Alpha

Item codes	Item - total statistics			
	Scale mean if item deleted	Scale variance of item deleted	Corrected item – total correlation	Alpha if item deleted
Results for Stapel scale–buying criteria				
ALEGPRET	19.3933	28.5003	.2841	**.5419**
ALEGMARC	20.6767	27.6376	.2422	.5780
ALEGPROM	20.6633	23.6421	.4225	.4306
ALEGSERV	21.6767	21.9988	.4571	.3951
Reliability Coefficients **Alpha = .5657**		N of cases= 300		N of items= 4
Results for Stapel scale – information sources used				
INFPLIAN	17.0367	31.4401	.5626	**.6888**
INFPRESA	16.9200	31.7060	.6118	.6585
INFPRET	15.8733	36.9538	.5015	.7203
INFVANZA	17.4500	35.1112	.5245	.7081
Reliability Coefficients **Alpha = .7526**		N of cases = 300		N of items= 4

NOTE for Items codes: 1) price -ALEGPRET, brand - ALEGMARC, promotions/offers - ALEGPROM, post-sale service – ALEGSERV. 2) promotional leaflets- INFPLIAN, special press – INFPRESA, recommendations of friends - INFPRET, recommendations of sellers – INFVANZA.

For criteria *used in acquiring goods*, the *alpha coefficient* of 4 item-scale validity has a value of 0.57 proving that *scale has an average precision level*. Moreover if we remove the first item (*price*), the alpha coefficient concerning validity of the three remaining items (*brand, promotions, post-sale service*) decreases to 0.54 and as long as this is a very small change, it is better to keep the first item, *price*. This issue reveals that, households in Tirgu Mures are price sensitive in the buying process of durable goods. This aspect is explainable considering that, a very high percentage (40%) of households in the study, are made of pensioners, whose income is low compared to the other types of households.

For *information sources used in acquiring goods*, the alpha coefficient concerning validity of the 4 item-scale has a value of 0.75 proving that the scale *has a good precision level*, removing the first item (promotional leaflets) leading to declining alpha coefficient to 0.69, a significant decline indicating that these sources are important in buying goods.

For variables measuring *promotional influences in buying a commodity*[4]and those measuring *attributes taken into account in purchasing durable goods*[5]we wanted to test if included variables measure in fact these promotional influences, results being shown in Table 4.

For *attributes taken into accounting acquiring goods*, we have used both analysis methods of item validity, results being shown in Table 4. As through the first method, a value of the alpha coefficient was 0.72 we conclude that variables are measured on a scale with a good precision level, issue also sustained by results of the second method, split – half, where the Spearman – Brown validity coefficient has the value of 0.66 showing a mild to good precision.

4.2. Presentation of results – Wilcoxon test

Most variables are measured on nominal or ordinal scales, and therefore we consider it is useful to test *ranks of ordinal variables* within sampling. Therefore *the Wilcoxon test* has been used for linked scores *(ranks)*.

Within the research we requested respondents to rank the "*price*" variable one on the *Stapel scale* (providing scores/ranks) with values between 1 and10 compared to other three variables (*promotions, brand, post-sale service*) considered as a criterium in selecting goods again as attribute evaluated on a scale from1 to 5 alongside other 11 attributes, aiming to notice if ,evaluated by several attributes, *price* variable still has the same rank .

In the first case, it achieved the highest score, in the second case it has been gone beyond by another attribute, namely "*quality"*. Therefore, we considered useful *to test the differences between the two mean ranks*, considered to have a relational nature as they were provided by the same respondents. Results achieved with the SPSS software as a result of applying the *Wilcoxon test* are summarized in Table 5.

It is therefore noticed that the number of *negative differences* is 275 and those *positive* are 10 and 14 *non-existent differences*, for a significance level $\alpha < 0.05$, Z rank has the value (-14.303) it means that, the difference between the two ranks is significant and hence, together with several attributes than those taken into account *when the Stapel scale has been used, the price is not so important in buying goods but their quality.* This result is an important one for retailers, emphasizing that, though price sensitive, consumers (households respectively) in Romania gives priority to quality of durable goods, aspect due to mainly the frequency of buying these goods.

Table 4 – Results for reliability analysis – scale. Cronbach Alpha for information sources and attributes that are taken into consideration when buying durable goods

Items codes	Item - total statistics			
	Scale mean if item deleted	Scale variance of item deleted	Corrected item – total correlation	Alpha if item deleted
Results for information sources				
INFL_TV	9714	.0874	.0000	-.6346
INF_RAD	.9714	.0874	.0000	-.6346
INF_PRES	.9714	.0874	.0000	-.6346
INF_STR	.9714	.0874	.0000	-.6346
INF_PMAG	.9714	.0874	.0000	-.6346
INF_PRIE	.9429	.0555	.0422	-1.0667
INF_GARA	.9429	.0555	.0422	-1.0667
INF_PMAR	.9714	.0874	.0000	-.6346
INF_AFIS	.9714	.0874	.0000	-.6346
INF_NET	.9714	.0874	.0000	-.6346
INF_AMAR	.9714	.0874	.0000	-.6346
INF_NICI	.0571	.1143	-.5601	.5500
Reliability Coefficients	**Alpha = - .6294**	N of cases= 300		N of items= 12
Results for attributes				
ACHMARCA	40.9064	33.4140	.2872	**.7058**
ACHGARAN	40.6789	33.3865	.4049	.6900
ACHPRET	40.3445	35.2131	.2260	.7114
ACHSERVI	41.6589	31.3061	.4225	.6850
ACHNUMM	42.5284	33.3775	.3100	.7020
ACHDSCOU	41.0100	33.2046	.3230	.7001
ACHCOMPE	41.9264	31.5382	.3829	.6917
ACHCALPR	40.4013	34.2142	.3836	.6941
ACHCALIT	40.1271	35.2791	.3594	.6992
ACHPERFT	40.5819	33.0025	.4268	.6868
ACHDESIG	41.5485	31.0069	.4469	.6809
ACHCONSE	40.8227	33.7168	.2647	.7090
Reliability Coefficients	**Alpha = .7147**	N of cases= 300		N of items= 12
Split – half Method				
N of cases= 300; N of items= 12; Correlation between forms = .4937;				
Equal-length Spearman-Brown = .6611				
Guttman Split – half = .6611; Unequal-length Spearman-Brown = .6611; 6 Items in part 1.6 Items in part 2.				
Alpha for part 1 = .5484. Alpha for part 2 = .6144				

NOTE for Items codes:

1) TVcommercials – INFL_TV, radio commercials -INF_RAD, press commercials -INF_PRES, street boards - INF_STR, promotional leaflets of shop -INF_PMAG, advice of friends or acquaintances-INF_PRIE, provided warranty -INF_GARA, promotional leaflets of brands - INF_PMAR, posters in and on public means of transport -INF_AFIS, internet commercials -INF_NET, the same brand that has already been used - INF_AMAR, no influence -INF_NICI. 2) Brand -ACHMARCA, provided warranty -ACHGARAN, price - ACHPRET, post-sales service -ACHSERVI, shop name -ACHNUMM, provided discounts -ACHDSCOU, personnel competence -ACHCOMPE, quality-price ratio -ACHCALPR, product quality -ACHCALIT, product technical performances -ACHPERFT, product design -ACHDESIG, energy consumption class –ACHCONSE.

Table 5 – Results for Wilcoxon signed ranks test

Variables tested	Ranks	N	Mean rank	Sum of ranks
Price_Stapel scale variable Price_11 attributes variable	Negative ranks	275	145.89	40118.50
	Positive ranks	10	63.65	636.50
	Ties	14		
	Total	299		
Recommendations/advice of friends_ Stapel scala variable Recommendations/advice of friends variable_10 variables	Negative ranks	299	150.00	44850.00
	Positive ranks	0	0.00	0.00
	Ties	1		
	Total	300		

We have also applied the Wilcoxon test for the "*recommendations/advice of friends*" variable that, measured on the *Stapel scale* has achieved the best rank compared to other three variables (*special press, promotional leaflets,* and *recommendations of sellers*) and that, measured alongside other 10 variables has achieved the second rank, being gone beyond by "*TV commercials*", the results achieved with SPSS being shown in Table 5.It is therefore noticed that the *negative differences* are 299 and the *positive ones* are 0 and a *non-existent difference,* for a *significance level* $\alpha < 0.05$, the Z rank has a value of (-15.028) meaning that the difference between the two ranks is significant and hence, alongside several attributes than those taken into account *when the Staple scale has been used* "*advice of friends*" are not so important in buying goods but *TV commercials* have a higher influence *on the decision of buying goods*. This result emphasizes that, Romanian consumers are influenced and trust information shown in TV advertisements, thus proving their efficiency for these goods.

4.3. Presentation of results – processing of multiple choice questions

As the question in questionnaire with regards to the place where households within sample buy durable goods, contains multiple choice answers (Table 6), we consider it is necessary to test the significance of percentages obtained to this question, their distribution of the answers being found in Table 6.

Table 6 – Distribution of commodity acquisition places

Response version	Hypermarket	Supermarket	Special shops	Internet	Anywhere
Number of answers	89	20	128	9	74
Relative frequencies	29.7	6.7	42.7	3.0	25.0

Testing of proportion conformity in case of a multiple choice question–has the following formula and was the base for testing significance of percentages achieved by*hypermarkets and specialty shops,* as buying place of durable goods.

$$t_c = \frac{p_1 - p_2}{\sqrt{\frac{p_1(1-p_1)+p_2(1-p_2)+2(p_1 * p_2 - p_{12})}{n}}}$$

where p_1 = percentage achieved from specialty shops; p_2 = percentage achieved by hypermarket; p_{12} = common percentage of the two response versions

We consider the value of p_{12}equal to 0, hence it results $t_c = 2.677$ that has a higher value than its theoretical value for a probability of 95 %, 1.96 respectively, and it results that, the *difference is significant for a proportion of 95% of households, and thus special shops represent the main place of buying the durable goods for households in Tirgu Mures municipality.*

4.5. Presentation of results – ANOVA

Considered often as an extension of the t test of testing two means, ANOVA allows the testing of means in case when the independent variable shows more than three ways. Within the marketing research concerning the durable goods market in Tirgu Mures, respondents have been required to evaluate by means of the Stapel scale, built on range 1 (does not influence) – 10 (it influences very much) four criteria used in buying durable goods, *price, brand, promotions/offers and post-sale service,* respectively, mean rank related to the price variable ranking this variable to the first place. Distribution of ranks provided to the price variable – *dependent variable* – of those 300 households in the sample, differentiated

according to the education level of household head - *independent variable* –is shown in Table 7.

Table 7 – Distribution of scores according to education level of household head and descriptive statistics of ANOVA

Education level	Scores										N	Mean	St. deviation
	1	2	3	4	5	6	7	8	9	10			
Elementary school (4 classes)						1	1		3	1	6	8.33	1.51
Secondary school (8 classes)	2		1			3	1		2	10	19	7.79	3.14
Vocational school	1		1	2	2	5	7	12	13	40	83	8.60	1.89
High school/career-training school/ technical/foremen	1	1	1	5	6	12	13	36	28	37	141	8.01	1.97
College / university	1	1		5	7	1	4	6	6	10	41	7.17	2.52
Postgraduate education						1		2	4	3	10	8.80	1.23
Total	5	2	3	12	15	23	26	56	56	101	300	8.08	2.13

Starting from these data, we shall apply ANOVA with a single factor to evaluate statistically the impact of education level on providing ranks for the „*price*" criterium in acquiring durable goods; we use the SPSS software for data processing, the null hypothesis H_0 being *equality of means of the six categories of education levels*.

From data illustrated in Table 7are noticed the main *descriptive statistics*, the *number of cases, means* achieved by the *price* criterium typical to each education level and *standard deviation* on each education level and on total sample, respectively. Therefore it is noticed that, between the means of the six education levels are differences and, if these education levels would be regrouped in 3 levels, *primary*, *secondary* and *higher*, respectively so as elementary and gymnasium education corresponds to the primary level, we notice that between the two levels are differences between means (8.33 and 7.79). For the secondary level we group vocational school and high school/career-training school/ technical school/ foremen, the means of the two are different (8.01 and 7.17).The same thing being valid for the last regroup, the higher level comprises college / university and postgraduate studies, the two means being 7.17 and 8.80.

The results of ANOVA are illustrated in Table8, the F ratio being significant at 0.013 as being lower than 0.05 and is achieved by dividing the sum of deviation squares from the mean between groups to the sum of squares from the means within groups that provides us an F ratio equal with 2.928. That means that there is a significant difference between the six groups and therefore *the null hypothesis is rejected*.

Table 8 – ANOVA results

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	64.468	5	12.894	2.928	.013
Within Groups	1294.769	294	4.404		
Total	1359.237	299			

In conclusion, *the education level has a significant influence* (F = 2.928, p = 0.013) on the price as important attribute that is taken into consideration in buying durable goods.

As a result of applying ANOVA with a single factor to sampling data related to the *price* attribute as the governing attribute of buying durable goods, the conclusion is that is *not a significant group factor* and therefore the group of the 300 households according to the education level is also influenced by other attributes that have relatively high ranks that are close to the price attribute. The final conclusion being that, regardless the education level, household heads take into consideration the influence gathered by these attributes namely price, promotions, brand and post-sale service in the decision process of buying durable goods. Hence between the six education levels of household head there are perceptible differences of price as attribute they have taken into consideration when buying durable goods, issue that is explainable as people with an education over average, have functions or jobs that are paid better and hence acquisition price is not a critical factor in buying a good.

4.6. Presentation of results – χ^2 bivariate test

In order to test if there are significant differences statistically in line with the socio-demographic characteristics of household head (*age, education level, occupational status, gender*) and household (*number of people in household, households with children under 18 years or without children*) with regards to *acquisition way, acquisition place and acquisition period of durable goods*, we have used the χ^2 bivariate test, its results being shown structured in Table 9, being only retained the results with a statistical significance level lower than 0.05.

Table 9 – Results for χ^2 bivariate test

Tested null hypothesis H_0	χ^2 **calculated**	df	Asymp. Sig. (2-sided)	χ^2 **theoretical**	Conclusions
1. *There are no significant differences, statistically, as regards* ***acquisition place****, according to:*					
1.1. Number of people in household	11.357	6	.078	10.64	$H_0$is rejected
1.2. Gender of household head	11.490	1	.001	10.83	H_0 is rejected
1.3. Education level of household head	13.827	5	.017	12.83	H_0 is rejected
2. There are no significant differences, statistically, as regards ***acquisition way,*** *according to:*					
2.1. Education level of household head	14.615	10	.047	18.31	H_0 is accepted
2.2. Occupational status of household head	53.778	16	.000	39.25	H_0 is rejected
2.3. Age of household head	17.185	8	.028	17.53	H_0 is accepted
2.4. Households with children and those without children	15.986	8	.043	15.51	H_0 is rejected
3. There are no significant differences, statistically, as regards ***acquisition period****, according to:*					
3.1. Number of people in household	28.655	18	.053	28.87	H_0 is accepted
3.2. Age of household head	19.624	12	.075	18.55	H_0 is rejected
3.3. Occupational status of household head	49.726	24	.002	51.18	H_0 is accepted
3.4. Education level of household head	19.617	15	.087	22.31	H_0 is accepted

The final conclusion obtained as a result of applying theχ^2 bivariate test for testing differences related to acquisition place, acquisition period and acquisition way concerning durable goods in line with various socio-demographic characteristics of households in the sample and of household head, emphasized that:

- There are differences related to acquisition place (supermarket, hypermarket, special shops and from internet, respectively) according to the number of people in household, gender and education level of household head;

- There are differences related to acquisition way(full when buying or by installments, respectively) according to the occupational status of household head and by having or not children under 18 years who are under family sustenance;
- There are significant differences related to acquisition period (festive season, promotional periods, any other period of the year, respectively) according with the age of household head.

5. Conclusions and future research directions

We have therefore emphasized through this research, by means of various statistical methods, that, in the relation between Romanian consumer - retailer, exogenous factors provided by social factors such as: income of household, social status (quantified in this research by means of education level and occupational status) have a major influence, both as regards acquisition of durable goods inwardly, as well as perception of this relation, quantified in research through variables such as: post-sale service and advice or recommendations of sellers.

However, on the other hand, in the relation consumer – retailer, promotion policy is an exogenous factor that is as important as in influencing the buying decision of these goods. Thus, we have emphasized a paradox, in fact another feature of Romanian consumer behavior and especially immaturity of Romanian market on one hand distrust of consumers in sales personnel, and on the other hand, the confidence in commercials used on various carriers. Moreover about this feature, the previous research of author outlined and emphasized the innovative character of Romanian durable goods consumer but….unsupported by its buying power.

Also, according to Eurostat data related to countries retail volume annual growth rate 2000 – 2010, if within EU – 27 countries, the growth rates have registered values between (-1.7) in 2009 and (+3.3) in 2000, in Romania these growth rates have registered values that are tenfold than average in EU – 27, (9.9) in 2009 and values between (+8.3) in 2003 and (+21.1) in 2007, respectively. Thus we conclude that the retail market in Romania has not maturated yet as well as the markets from the other EU Member Countries, extending, the same is with the durable goods market.

Financial implications of the loans made by Romanian households in order to buy durable goods have consequences on the financial-banking system in Romania that are visible in the economic recession period.

For the marketing researcher it is important to sample the consumers' opinions in order to discover what kind of problems and needs have consumers, how they occurred and especially how they will lead them to the goal of buying a consumer durable. By gathering such information, *stimuli* that are interesting for a certain product can be identified and marketing programs focused on these stimuli can be carried-out.

This research has some limits. One of them would be the period of research, year 2011 respectively, when the economic crisis effects felt in Romania due to the international Eastern-Western gap. Another limit is that research had as location a city in the Centre development area in Romania, area that is more developed economically and hence perceptions are significantly different compared to less developed areas in Romania. As a result, research should be started again and extended (or applied simultaneously) in another development area in Romania.

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[1] According to EUROSTAT quoted by the National Institute of Statistics in Living conditions of population in Romania – year 2009, p. 220.

[2]As a matter of fact the author considers that the '20s also had a major influence in economy, that apart the significant rise of household expenses for durable goods also led to an „instauration" of family income reallotment for durable and non-durable goods.

[3]T. Hira mentions as a sustaining source of this issue the study carried-out by the "Ladies Home Journal" in 1901 – 1941. In that time, the publication concerned increased both the number of pages dedicated to durable goods advertising and the size of advertising space related to durable goods.

[4]TV commercials, radio commercials, press commercials, street boards, promotional leaflets of shops, advice of friends or acquaintances, provided warranty, promotional leaflets of brands, posters in and on public means of transport, internet commercials, the same brand that has already been used, no influence.

[5]brand, provided warranty, price, post-sales service, shop name, provided discounts, personnel competence,quality-price ratio, product quality, product technical performances, product design, energy consumption class .