



Revista de Administração da Unimep
E-ISSN: 1679-5350
gzograzian@unimep.br
Universidade Metodista de Piracicaba
Brasil

Dias da Silva Gabriel, Marcelo Luiz; da Silva, Dirceu; Silva Braga Junior, Sérgio; Lopes,
Evandro Luiz

DECISÃO DE COMPRA DE COMPUTADORES NA PERSPECTIVA FAMILIAR: UMA
PROPOSTA DE SEGMENTAÇÃO BASEADA NOS PAPÉIS DESEMPENHADOS E NO
NÍVEL DE RENDA

Revista de Administração da Unimep, vol. 13, núm. 2, mayo-agosto, 2015, pp. 142-160
Universidade Metodista de Piracicaba
São Paulo, Brasil

Disponível em: <http://www.redalyc.org/articulo.oa?id=273741070007>

- Como citar este artigo
- Número completo
- Mais artigos
- Home da revista no Redalyc

redalyc.org

Sistema de Informação Científica

Rede de Revistas Científicas da América Latina, Caribe, Espanha e Portugal

Projeto acadêmico sem fins lucrativos desenvolvido no âmbito da iniciativa Acesso Aberto

**DECISÃO DE COMPRA DE COMPUTADORES NA PERSPECTIVA FAMILIAR:
UMA PROPOSTA DE SEGMENTAÇÃO BASEADA NOS PAPÉIS
DESEMPENHADOS E NO NÍVEL DE RENDA**

***FAMILY PURCHASE DECISIONS ON PERSONAL COMPUTERS: A PROPOSAL FOR
SEGMENTATION BASED ON ROLES PERFORMED AND INCOME LEVEL***

Marcelo Luiz Dias da Silva Gabriel (UNINOVE) *mgabriel@gmail.com*

Dirceu da Silva (UNINOVE) *dirceuds@uol.com.br*

Sérgio Silva Braga Junior (UNINOVE) *segio.bragajunior@gmail.com*

Evandro Luiz Lopes (UNINOVE) *elldijo@uol.com.br*

Endereço Eletrônico deste artigo: <http://www.raunimep.com.br/ojs/index.php/regen/editor/submissionEditing/926#scheduling>

Resumo

Este estudo avalia a relação entre os níveis de renda e as atitudes em relação à aquisição de computadores por jovens consumidores com base na influência que estes indivíduos exercem sobre as decisões de compra da família. A revisão da literatura da área possibilitou a estruturação de um questionário que foi aplicado em 707 entrevistados sendo que os dados obtidos foram analisados em duas fases. Na primeira fase da análise, foi verificada a normalidade dos dados e foram analisadas as estatísticas bivariadas para explorar as diferenças entre as pontuações para cada variável categórica. Já na segunda fase, foi realizada uma análise de cluster. Com base nos resultados observados, o cluster 1 foi responsável por 35,6% dos casos (n = 231), o grupo 3 foi responsável por 32,4% da população (n = 210), o grupo 2 foi responsável por 17,7% da população (n = 115) e cluster 4 responde por 14,2% da população (n = 92) da amostra, no qual se observa a relação de tamanho entre a maior e a menor aglomeração de 2,51. Embora esse achado indique que o primeiro grupo possa ser classificado como de alto risco de crédito, também expande as possibilidades para este grupo viver experiências de consumo, aumentando seu senso de pertencimento, tanto na perspectiva de marketing quanto na perspectiva sociológica.

Palavras-chave: compra familiar, nível de renda, análise de cluster

Abstract:

This study evaluates the relationship between income levels and attitudes toward computer acquisition for young consumers based on the influence that these individuals exert on family

purchase decisions. Based on a theoretical review a structured questionnaire was administered to 707 respondents and data were analyzed in two phases. For the first phase of the analysis, data were tested based on normality, and bivariate statistics were analyzed to explore differences between scores for each categorical variable. The second phase involved a cluster analysis. From the four clusters obtained, cluster 1 accounted for 35.6% of the cases (n=231), cluster 3 accounted for 32.4% (n=210), cluster 2 accounted for 17.7% (n=115) and cluster 4 accounted for 14.2% (n=92), with a size ratio between the largest and smallest cluster of 2.51. While this effect exposes the former group to high credit risk, it also expands possibilities for this group to experience personal wealth and belonging from both a marketing and sociological perspective.

Keywords: family purchase, income level, cluster analysis

Artigo recebido em: 11/03/2015

Artigo aprovado em: 25/08/2015

1. Introduction

The importance of family roles in affecting purchase decisions is not a new concept in the field of marketing (Berey & Pollay, 1968; Pollay, 1968; Davis, 1970; Kollat, Engel & Blackwell, 1970; Sheth, 1971). A general and conceptual framework is often presented in standard textbooks on consumer behavior (Blackwel, Miniard & Engel, 2005; Sheth, Mittal & Newman, 2001; Solomon, 2009) given the role of family in shaping patterns of consumption, as analyzed by Wells & Gubar in 1966.

Similar to other models or theoretical constructs, the basic, conceptual framework on family buying decisions considers external and internal sources of information in addition to another component: family life cycle. This variable, along with other socio-demographic data, is crucial in helping both academics and practitioners understand and predict specific consumption habits among particular consumer groups.

The roles performed by each family member during purchase decisions are dependent on the nature of product, family life cycles and socio-demographic variables (e.g., income, education level, etc.) with an emphasis on who performed each role. This last variable is the most cited in the literature and includes the following roles: (a) the proposer: the person in the family who proposes an idea or identifies a need, (b) the influencer or information seeker: the person who provides information on alternative options, (c) the decision-maker: the person

who makes decisions based on inputs from the proposer and influencer, (d) the buyer: the person who effectively purchases goods or services and (e) the user: the person who actively uses the goods or services acquired (Blackwel, Miniard & Engel, 2005; Sheth, Mittal & Newman, 2001; Solomon, 2009)

The majority of the theories developed over the past five decades are rooted in sociology and have evolved overtime with additions of new information (e.g., the transition from radio/newspaper to television, or from television to the Internet), new family configurations (e.g., couples without children, single parents with children, etc.) and new market scenarios (e.g., the Latin population in the U.S., Chinese consumers, etc.).

Since its first appearance in 2001, the term BRIC has drawn significant interest in the four economies that the acronym refers to: Brazil, Russia, India and China. This has spurred efforts by several scholars, journalists and market analysts to better understand and describe the term for interested audiences. From 2007 to 2013, more than 200 articles were published on BRIC countries in several journals, focusing on issues such as international business, agriculture, finance, marketing and automotive technology.

Overwhelmed by four-digit inflation rates in the late 1980's and mid 1990's, Brazil experienced a positive change on its economy in 1994 with the launch of the "Plano Real" (Real Plan), which is based on three main pillars: fiscal austerity, inflation targets and flexible exchange rates (Ferreira & Lopes, 2009; Rodrigues, 2013)

Despite the aftermath of several global downturns from 1994 to 2013, the foundational pillars of "Plano Real" and an aggressive wealth distribution program were spearheaded in 2003 (by President Lula da Silva). With the support of pro-poor growth concepts, social programs, credit grants and labor market initiatives (Kakani, Nero & Son, 2010), this led to the development of a new middle class in Brazil (Brazilian New Middle Class or BNMC). The BNMC in turn gained access to a new market of consumer goods such as luxury goods, electronic appliances and cosmetics, which were typically acquired in installments.

Despite the dynamic balance between consumption, income and interest rates (Gomes, 2010), the BNMC is responsible for an annual consumption rate of BRL 1 billion (approximately USD 443 Mio). If measured as an independent country, this population would account for the eighteenth largest consumption value in the world.

1.1. Research gap and study question

Celebrating its 20th anniversary in 2014, the Brazilian "Plano Real" spurred profound changes in the country's macroeconomic foundation and facilitated future improvements for microeconomic entities, such as individual consumers. Both plans were criticized by scholars,

politicians, market analysts and NGOs for their weakness in allowing low-income groups access to the consumption market (Real Plan) and for not ensuring autonomy for individuals when grants and support are eliminated (wealth distribution program). Despite these numerous criticisms, a real stimulus has already occurred: individuals of differing economic backgrounds are consuming more of the same products and services.

Unfortunately, most of the published articles focusing on this subject are solely concerned with the conceptual perspectives of supporters and antagonists in each political party while ignoring unique effects on consumer behavior and general implications for marketing.

Based on this background, the following research problem was formulated: **do young consumers of differing income levels vary in their attitudes toward computer acquisition according to their roles in family purchases?**

1.2. Study objectives

The following objectives will be addressed:

1. Evaluate the role performed by each family member during the acquisition of a personal computer
2. Compare the roles performed by each family member across family incomes

2. Literature Review

The model given by Engel, Blackwell and Miniard (1995) has been much discussed and employed to expose the process of purchase decision made by the consumer. The authors discuss the seven stages of the purchase-decision process and, within each, which are the highest influential aspects within each stage. It is thus possible to evaluate the precise moment the consumer is stimulated by a specific marketing issue or by external factors regardless of the market.

The process starts when consumers perceive the need for a certain product and the satisfaction that the product provides for the consumer's problem (Blackwell, Miniard & Engel, 2005).

Market-given stimulus tries to transform purchase intention into purchase attitude and behavior. According to Bagozzi (1981), attitudes will only affect behavior through behavioral intentions, or rather, intentions directly affect behavior and only indirectly attitudes affect consumer's behavior.

According to Ajzen & Fishbein (1977), attitudes are the achievements related to some aspect of the world around the individual and represent your evaluation of this aspect in

question. Attitude measurements denote the activities that consumers engage in while make purchases in retail supermarkets.

Ajzen (2001) explains that attitudes involve generating a quick evaluation of a psychological object based on attribute features of good-bad, dangerous-beneficent, pleasant-unpleasant and sympathetic-antipathetic. The above author explains further that attitudes allow individuals to adapt to social environments that they are presented with so that they can express and defend their behavior and acclimatize to the situation.

To understand how an attitude transform emphatically into purchase behavior, the manner in which consumers make decisions during the purchase process must be understood. Several authors, with slight variations in their explanations, have graphically demonstrated models of decision-making that are divided into stages (Howard & Sheth, 1969; Engel, Blackwell & Miniard, 2001).

These stages show how consumers construct their purchase intentions and the ways in which intentions transform into attitudes and buying behavior. It is evident that the model stages of the buying-decision process described by the authors above ultimately strive to identify client satisfaction levels triggered by an issue or by needs and desires prompted or identified through marketing.

The roles performed by each family member during purchase decisions are dependent on the nature of product, family life cycles and socio-demographic variables (e.g.: income, education level, etc.), and distinctions on which individuals performed each role have been cited most in the literature: (a) the proposer: the individuals in the family who proposes an idea or identifies a need, (b) the influencer or information seeker: the individuals who provides information on alternatives, (c) the decision-maker: the person who makes decisions based on proposer and influencer inputs, (d) the buyer: the person who effectively purchases the goods or services and (e) the user: the person who actively uses the goods or services acquired (Blackwel, Miniard & Engel, 2001; Sheth, Mittal & Newman, 2001; Solomon, 2009)

Several studies have evaluated the impact of each member on family decisions. Most recently, Chaudhary & Gupta (2012) analyzed roles performed by children in Indian family purchases, Wut & Chou (2009) studied similar effects on families in Hong Kong, Guneri, Yurt, Kaplan & Delen (2009) performed similar studies on Turkish families, Martensen & Grohnoldt (2008) studied the influence of children between five and 13 years of age on family decision-making in Denmark, and Götze, Prange & Uhrovská (2009) studied the influence of Austrian children on family purchases.

The roles performed by children in general and by sons/daughters in particular are extremely relevant to marketing scholars and practitioners as new family configurations are changing the ways in which consumption is influenced and performed (Kennedy & Datnow, 2010). O'Malley & Protero (2006) acknowledges the complexity of the family in contemporary society since the introduction of new family constellations and concludes that new roles are being defined as a direct consequence.

3. Research methodology

Based on existing theories on the effect of roles in family purchase decisions, a self-administered questionnaire was developed to collect personal data on gender, age, marital status, family position (only son, oldest son, middle son, youngest son) and family purchase roles: proposer, influencer, decision-maker, buyer and heavy user (who uses the product the most frequently), which generated a pool of categorical variables. The questions were evaluated by a panel of experts to validate structure and content. The questionnaire was then submitted to a sample target population for semantic validity.

Data were collected on 707 undergraduate students attending public and private universities in São Paulo State, Brazil, and 660 questionnaires were deemed valid after checking for missing data and inconsistent answers. For the purposes of the survey, only those respondents who owned a computer at home were considered valid.

Female respondents accounted for 61% of the total sample, and the age of the respondents ranged from 17 to 61 years of age (Mean = 24,9, SD = 7,3). Age data were re-coded in increments of five years to allow for comparisons with official data from the Brazilian Institute of Geography and Statistics. Data were analyzed using IBM SPSS 20.0.

4. Data analysis and results

Data were tested for univariate and multivariate normality using Shapiro-Wilk's test for univariate normality and Doornik-Hansen's test for multivariate normality. In both cases, the data were not normal, and thus non-metric tests were selected. The internal consistency reliability of the data was confirmed by Cronbach's alpha coefficient. Kline (2011) suggests that Cronbach's alpha values of approximately 0.70 be considered adequate and that values of approximately 0.80 be considered very good. In this study, the coefficient obtained was 0.773.

To explore differences between scores on each categorical variable, the Mann-Whitney U and Kruskal-Wallis H tests were employed. The Mann-Whitney U test offers an advantage over other tests (e.g., median test) as this test compares the number of times a score

from one of the samples is higher than a score from the other sample rather than calculating the number of scores that fall above the median (Bryman & Cramer, 2011)

The Mann-Whitney U test was employed to verify the influence of gender on roles performed during computer acquisition. The results are presented in Table 1.

Table 1 - Mann-Whitney U Test for gender

	proposer	influencer	decision	buyer	user
Mann-Whitney U	42225.5	39761	35301	43593	45890
Wilcoxon W	74356.5	71892	67432	75724	78021
Z	-3.75	-4,723	-6,775	-2,877	-2.01
Asymp. Sig. (2-tailed)	0	0	0	0.004	0.044

All statistics for Z are significant ($p < 0.05$), indicating gender differences on roles performed during computer acquisition. The categorical variable of gender was cross-tabulated with each role. Table 2 presents the results for the proposer role, Table 3 shows results for the influencer role, Table 4 presents results for the decision maker role, Table 5 presents results for the buyer role and Table 6 presents the results for the user role.

Table 2 - Cross tabulation of gender and the role of proposer

		Proposer					Total	
		myself	oldest brother/sister	youngest brother/sister	father	mother		other
sex	male	44.5%	34.9%	12.5%	36.7%	36.4%	15.1%	39,00%
	female	55.5%	65.1%	87.5%	63.3%	63.6%	84.9%	61,00%
Total		100,00%	100,00%	100,00%	100,00%	100,00%	100,00%	100,00%

As is shown in Table 2, the role of proposer is primarily performed by male students. While females are represented at nearly the same level as males when presented with a decision, this trend gradually declines as other individuals adopt the role of proposer. This trend is generally validated in consideration of the total responses summed. Table 3 presents the cross-tabulation results for gender and the role of opinion-maker.

Table 3 - Cross tabulation of gender and the role of opinion maker

		opinion					Total	
		myself	oldest brother/sister	youngest brother/sister	father	mother		other
sex	male	47.4%	31.7%	14.3%	37.4%	35,00%	11.9%	39,00%
	female	52.6%	68.3%	85.7%	62.6%	65,00%	88.1%	61,00%
Total		100,00%	100,00%	100,00%	100,00%	100,00%	100,00%	100,00%

The data shown in Table 3 illustrate a similar pattern. Females are found not to be the major opinion makers, and the influence of oldest and/or youngest brothers/sisters is surprisingly higher than that of the parents. In cases where the major opinion maker was assigned the 'other' value, female respondents represented a smaller share of participation. Data concerning the decision-maker role cross-tabulated with gender are presented in Table 4.

Table 4 - Cross tabulation of gender and the role of decision maker

		decision maker					Total	
		myself	oldest brother/sister	youngest brother/sister	father	mother		other
sex	male	52.3%	21.3%	30.4%	36.7%	18.5%	17.6%	39,00%
	female	47.7%	78.7%	69.6%	63.3%	81.5%	82.4%	61,00%
Total		100,00%	100,00%	100,00%	100,00%	100,00%	100,00%	100,00%

In cases where the decision maker was an individual respondent, females demonstrated reverse trends to the previous patterns. Table 5 shows the cross tabulation for gender and the role of buyer.

Table 5 - Cross tabulation of gender and the role of buyer

		Buyer					Total	
		myself	oldest brother/sister	youngest brother/sister	father	mother		other
sex	male	44.9%	18.4%	30,00%	43.9%	42.5%	12.9%	39,00%
	female	55.1%	81.6%	70,00%	56.1%	57.5%	87.1%	61,00%
Total		100,00%	100,00%	100,00%	100,00%	100,00%	100,00%	100,00%

The buyer role in family purchases was not strongly attributed to females, except in cases where the individual respondent is the major player of this specific role. Table 6 depicts the cross tabulation results for gender and the role of user.

Table 6 - Cross tabulation of gender and the role of user

		User					Total	
		myself	oldest brother/sister	youngest brother/sister	father	mother		other
sex	male	41.5%	38.7%	38,00%	45.7%	36.4%	23.2%	39,00%
	female	58.5%	61.3%	62,00%	54.3%	63.6%	76.8%	61,00%
Total		100,00%	100,00%	100,00%	100,00%	100,00%	100,00%	100,00%

Here, the results show that while other roles are largely performed by males, females demonstrate stronger positions than males when the female herself is the major user. However, similar to the previous results, when a female is sharing resources with family members, the position is occupied by another person.

Similar to the Mann-Whitney test, the Kruskal-Wallis test can be used to compare scores for more than two groups. The Kruskal-Wallis H test was employed to verify the influence of age, marital status, family position and income level (measured in Minimum Wages = MWs) on roles performed during computer acquisition as presented in Tables 7, 8, 9 and 10, respectively. Table 7 shows the results of the Kruskal-Wallis H test for age.

Table 7 - Kruskal-Wallis H Test for age

	proposer	influencer	decision	buyer	user
Chi-Square	13,514	14,657	4,614	30,719	6,225
df	8	8	8	8	8
Asymp. Sig.	0.095	0.066	0.798	0,000	0.622

As is shown in Table 7, only the buyer role was found to be significant ($p < 0.05$). This indicates that age exerts an influence in the effective buy process during family computer acquisition as is shown in Table 8.

Table 8 – Indicative of age exerting an influence in the effective buy process

	myself	buyer					Total
		oldest brother/sister	youngest brother/sister	father	mother	other	
from 17 to 20 years old	15,1%	21,1%		48,6%	46,6%	10,0%	29,2%
from 21 to 24 years old	32,2%	52,6%	60,0%	41,0%	47,9%	15,7%	36,7%
from 25 to 29 years old	18,8%	13,2%	30,0%	9,9%	2,7%	17,1%	13,7%
from 30 to 34 years old	15,9%	10,5%			2,7%	22,9%	9,4%
AG_RNG from 35 to 39 years old	8,2%	2,6%		,5%		12,9%	4,8%
from 40 to 44 years old	4,5%		10,0%			14,3%	3,4%
from 45 to 49 years old	2,9%					4,3%	1,5%
from 50 to 54 years old	2,0%					2,9%	1,1%
from 60 to 64 years old	,4%						,2%
Total	100,0%	100,0%	100,0%	100,0%	100,0%	100,0%	100,0%

Table 9 presents the results for marital status. In Table 9, with the exception of the decision-maker, all other roles are significant ($p < 0.05$), suggesting that marital status has an influence on the proposer, influencer and buyer roles.

Table 9 - Kruskal-Wallis H Test for marital status

	proposer	influencer	decision	buyer	user
Chi-Square	6,068	3,282	13,146	9,536	14,54
df	2	2	2	2	2
Asymp. Sig.	0,048	0,194	0,001	0,008	0,001

Table 10 lists the family individuals that adopt each role: proposer, decision maker, buyer and user.

Table 10 - Adopt each role: proposer, decision maker, buyer and user

		proposer						
		myself	oldest brother/sister	youngest brother/sister	father	mother	other	Total
marital_status	single	71,5%	93,7%	100,0%	99,1%	100,0%	34,0%	77,0%
	married	25,9%	6,3%		,9%		64,2%	21,3%
	divorced	2,6%					1,9%	1,7%
Total		100,0%	100,0%	100,0%	100,0%	100,0%	100,0%	100,0%
		decisor						
		myself	oldest brother/sister	youngest brother/sister	father	mother	other	Total
marital_status	single	75,2%	90,7%	91,3%	99,1%	96,3%	36,3%	77,0%
	married	21,7%	9,3%	8,7%	,9%	3,7%	62,6%	21,3%
	divorced	3,1%					1,1%	1,7%
Total		100,0%	100,0%	100,0%	100,0%	100,0%	100,0%	100,0%
		buyer						
		myself	oldest brother/sister	youngest brother/sister	father	mother	other	Total
marital_status	single	64,5%	89,5%	90,0%	98,6%	97,3%	25,7%	77,0%
	married	31,4%	10,5%	10,0%	1,4%	1,4%	74,3%	21,3%
	divorced	4,1%				1,4%		1,7%
Total		100,0%	100,0%	100,0%	100,0%	100,0%	100,0%	100,0%
		user						
		myself	oldest brother/sister	youngest brother/sister	father	mother	other	Total
marital_status	single	78,3%	93,5%	100,0%	97,1%	100,0%	17,4%	77,0%
	married	19,8%	6,5%		2,9%		78,3%	21,3%
	divorced	2,0%					4,3%	1,7%
Total		100,0%	100,0%	100,0%	100,0%	100,0%	100,0%	100,0%

The results of the Kruskal-Wallis H test for family position are presented in Table 11.

Table 11 - Kruskal-Wallis H Test for position in family

	proposer	influencer	decision	buyer	user
Chi-Square	8,084	4,654	1,848	2,227	12,38
df	3	3	3	3	3
Asymp. Sig.	0,044	0,199	0,605	0,527	0,006

Family position, as shown on Table 11, is significant ($p < 0.05$) for the proposer and user roles during computer acquisition.

Table 12 - Younger brother/sister represents the main proponent and user during computer acquisition

		Proposer						
		oldest		youngest				
		myself	brother/sister	brother/sister	father	mother	Other	Total
pos_on_famly	only child	18,3%	3,2%		29,4%	24,2%	22,6%	19,1%
	oldest child	35,6%	9,5%	62,5%	29,4%	21,2%	24,5%	30,7%
	middle child	21,2%	25,4%	25,0%	12,8%	30,3%	30,2%	21,5%
	youngest child	24,9%	61,9%	12,5%	28,4%	24,2%	22,6%	28,7%
Total		100,0%	100,0%	100,0%	100,0%	100,0%	100,0%	100,0%
		User						
		oldest		youngest				
		myself	brother/sister	brother/sister	father	mother	Other	Total
pos_on_famly	only child	21,0%	4,8%	16,9%	31,4%	27,3%	15,9%	19,1%
	oldest child	29,5%	16,1%	60,6%	17,1%	27,3%	27,5%	30,7%
	middle child	17,8%	32,3%	21,1%	22,9%	18,2%	33,3%	21,5%
	youngest child	31,8%	46,8%	1,4%	28,6%	27,3%	23,2%	28,7%
Total		100,0%	100,0%	100,0%	100,0%	100,0%	100,0%	100,0%

Table 12 demonstrates that the younger brother/sister represents the main proponent and user during computer acquisition.

The results of the Kruskal-Wallis H test for income level is presented in Table 13. Income level was found to be significant ($p < 0.05$) for the buyer role only and represents the exception from the other roles.

Table 13 - Kruskal-Wallis H Test for income level

	proposer	influencer	decision	buyer	user
Chi-Square	6,472	7,324	0,169	9,09	1,647
df	3	3	3	3	3
Asymp. Sig.	0,091	0,062	0,982	0,03	0,649

The respondent income level variable was divided into four categories: (1) minimum wages of one to three (MW); (2) MW of three to five; (3) MW of five to ten; and (4) WM above ten. The distribution for this variable is as follows: 15.7% for category 1, 31.5% for category 2, 29.2% for category 3 and 23.6% for category 4. Respondents with a WM between one and five accounted for 47.2% of sample. However, Table 14 shows that families with MW values of three to five tend to have the older brother/sister in the position of computer buyer.

Table 14 - Families with MW values

	buyer						
	young						
	nr yourself	oldest brother/sister	est brother/sister	f father	nr other	o ther	T otal
1	1	26,3%	30,0%	9	2	1	1
to 3 MWs	7,6%			,4%	1,9%	4,3%	5,7%
3	3	42,1%	30,0%	2	3	2	3
to 5 MWs	5,1%			6,9%	1,5%	7,1%	1,5%
5	3	15,8%	30,0%	2	2	3	2
to 10 MWs	1,0%			9,7%	3,3%	4,3%	9,2%
more than 10 MWs	1	15,8%	10,0%	3	2	2	2
	6,3%			4,0%	3,3%	4,3%	3,6%
Total	1	100,0	100,0	1	1	1	1
	00,0%	%	%	00,0%	00,0%	00,0%	00,0%

To further explore the data collected, a cluster analysis was performed. According to Hair Junior, Tatham, Anderson & Black (2006), a cluster analysis employs an assortment of

multivariate techniques to aggregate objects based on similar characteristics, and these characteristics must exhibit internal homogeneity and external heterogeneity.

The cluster analysis method chosen involved a two-step design because most clustering algorithms are not as effective when using mixed data (numeric and categorical). In addition, the two-step cluster approach defines relationships between items and minimizes the limitations inherent of single clustering algorithms. Experimental evidence shows that robust results can be achieved by applying this method to cluster, mixed-numeric and categorical data, as was demonstrated by Shih, Jheng and Lai (2010). The two-step cluster algorithm is based on a distance measure that performs well even when data have a non-normal distribution and when all variables are independent (Norusis, 2012).

Cohesion and separation measures are central to cluster analysis result quality, and one of these measures is the silhouette measure of cohesion and separation proposed by Rousseeuw (1987). In this case, the cluster quality indicated by the silhouette is comparable to a correlation coefficient (varying from -1 to +1), and a good solution is defined as a silhouette measure that is close to 1. In this analysis, the best fit achieved was four clusters with a silhouette measure of 0.30. According to Mooi & Sarstedt (2011), a measure between 0.20 and 0.50 denotes a fair result for a clustering solution.

Of the four clusters obtained, cluster 1 accounts for 35.6% of the cases (n=231), cluster 3 accounts for 32.4% (n=210), cluster 2 accounts for 17.7% (n=115) and cluster 4 accounts for 14.2% (n=92), with a size ratio of 2.51 between the largest and smallest cluster. Figure 4 depicts the profile of each cluster based on the following variables: purchase role and family position.

Clusters

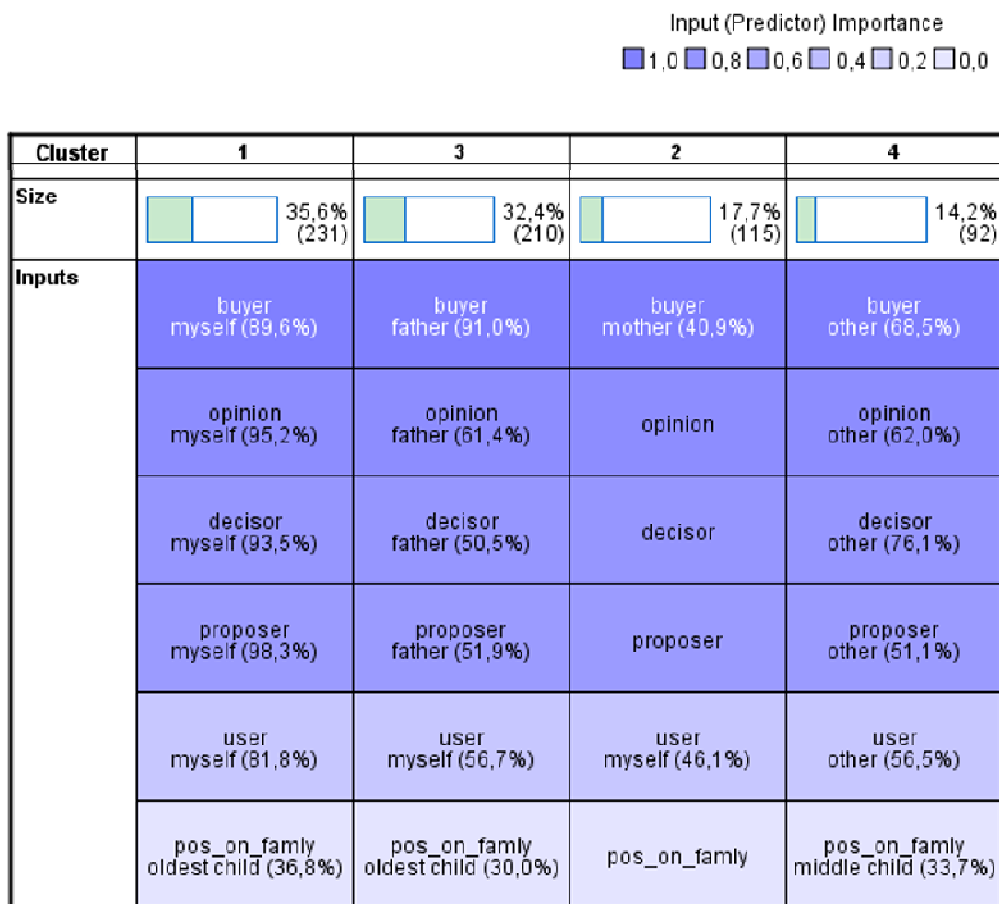


Figure 1 – Cluster's buyer roles

Figure 1 – Cluster's buyer roles

Clusters are presented in Figure 1 by frequency in ascending order. Cluster 1 is occupied most heavily by the oldest children, who perform all roles at higher frequencies during purchases. The oldest children are also heavily represented in Cluster 3, but in four out of five roles the father assumes the role of performer. Cluster 2 is occupied by families in which the mother assumes the role of buyer and the son/daughter is a user. Cluster 4 is occupied by middle children who do not perform any role during the purchase and who do not use the personal computer upon purchase. The importance of each predictor is presented in each column, in which the buyer possesses higher importance and family position is less important, with variations from cluster to cluster.

The Kruskal-Wallis H test was performed to analyze the effect of income in every cluster with a significance of ($p < 0.05$).

Table 15 - Kruskal-Wallis H Test for income level in every cluster

		Income				
		1 to 3 MWs	3 to 5 MWs	5 to 10 MWs	> 10 MWs	7 total
r_Groups	Cluster 1	4 0,20%	4 0,70%	36, 50%	2 4,80%	3 5,60%
	Cluster 3	1 9,60%	2 8,40%	31, 20%	4 7,70%	3 2,40%
	Cluster 2	2 5,50%	1 7,60%	16, 90%	1 3,70%	1 7,70%
	Cluster 4	1 4,70%	1 3,20%	15, 30%	1 3,70%	1 4,20%
Total		1 00,00%	1 00,00%	10 0,00%	1 00,00%	1 00,00%

As is shown in Table 15, the trend of Cluster 1 where the oldest children are the main purchase performers declines with an increase in income, and the prominence of the father as the main performer grows as income rises. Cluster 2, in which the mother is the main performer, presents a similar trend that is directly related to income level. In Cluster 4, the effects of these differences and dependencies on income are not as evident.

5. Implications of the study

Shifts in the Brazilian economy have allowed low-income populations to enter the consumption market and enjoy product and service benefits normally restricted to high-income classes. While this exposes low-income populations to high credit risk, it also expands this population's expectations for personal wealth and belonging from both a marketing and sociological perspective.

Meirelles (2013) emphasizes that the BNMC does not intend to become rich. Rather, this population prefers to behave like the rich in terms of consumption patterns but not in terms of behaviors. The results of this research provide evidence that supports this statement. The emerging BNMC is classified by an income bracket ranging between MWs of one to five per month. Due to changes in the economy over the last 20 years, a new cohort of students is entering higher education. This effect is evident in Cluster 1, in which the oldest children represent the main purchase performers with a high level of influence in their families. These individuals are looked up to as an example among youngest brothers/sisters and are considered by parents and relatives as a source of information on various subjects. As was

highlighted by Santos (2012), since the launching of ProUni in 2005, an official initiative promoted by the federal government to increase low-income student enrollment in higher education, the overall profile of average students is changing, and especially in technologically based programs that grant students a diploma after two to three years of study. This assists students in entering the consumption market and in achieving higher incomes than those of their parents.

The clustered solution shown in Cluster 2 is also supported by theory as most low-income families are headed by women. Perucchi & Beirão (2007) found direct implications of this trend for marketers given that men are the target audience for numerous marketing efforts, and marketing campaigns must therefore be revised to also target women as heads of households.

Cluster 4 provides an addition empirical confirmation of the middle child's position in family decision processes. Batounis-Ronner, Hunt & Mallalieu (2007) investigated this effect and found that single-child families and child-bearing at an older age significantly influence family purchases, and their findings are supported by similar studies performed by Chaudhary & Gupta (2012), Wut & Chou (2009) and Guneri, Yurt, Kaplan & Delen (2009) who focus on emerging countries.

Socio-demographic variables including gender, age and marital status may also be incorporated in comprehensive 2nd generation data analysis (e.g., SEM) to identify causal relationships between these variables and roles performed during computer and other product/service purchase processes.

References

- Ajzen, I. (2001). Nature and operation of attitudes. *Annual review of psychology*, 52(1), 27-58.
- Ajzen, I., & Fishbein, M. (1977). Attitude-behavior relations: A theoretical analysis and review of empirical research. *Psychological bulletin*, 84(5), 888.
- Bagozzi, R. P. (1981). Attitudes, intentions, and behavior: A test of some key hypotheses. *Journal of personality and social psychology*, 41(4), 607.
- Batounis-Ronner, C., Hunt, J. B., & Mallalieu, L. (2007). Sibling effects on preteen children's perceived influence in purchase decisions. *Young Consumers: Insight and Ideas for Responsible Marketers*, 8(4), 231-243.
- Berey, L. A., & Pollay, R. W. (1968). The influencing role of the child in family decision making. *Journal of Marketing Research*, 70-72.
- Blackwell, R. D., Miniard, P. W., & Engel, J. F. (2001). Consumer behavior 9th. *South-Western Thomas Learning. Mason, OH*.

- Bryman, A., & Cramer, D. (2011). *Quantitative data analysis with IBM SPSS 17, 18 and 19: a guide for social scientists*. Routledge.
- Chaudhary, M., & Gupta, A. (2012). Children's influence in family buying process in India. *Young Consumers: Insight and Ideas for Responsible Marketers*, 13(2), 161-175.
- Cross, S. N., & Gilly, M. C. (2014). Consumption compromises: Negotiation and unification within contemporary families. *Journal of Business Research*, 67(4), 449-456.
- Davis, H. L. (1970). Dimensions of marital roles in consumer decision making. *Journal of Marketing Research*, 168-177.
- Ferreira, J. C. R., & Lopes, R. L. (2009). O plano real e seus efeitos sobre a estrutura produtiva do Brasil: um estudo sobre as importações. *Revista Brasileira de Estudos Regionais e Urbanos*, 1(1).
- Gomes, F. A. R. (2010). Consumo no Brasil: comportamento otimizador, restrição de crédito ou miopia?. *Revista brasileira de Economia*, 64(3), 261-275.
- Götze, E., Prange, C., & Uhrovská, I. (2009). Children's impact on innovation decision making: a diary study. *European Journal of Marketing*, 43(1-2), 264-295.
- Guneri, B., Yurt, O., Kaplan, M. D., & Delen, M. (2009). The influence of children on family purchasing decisions in Turkey. *Asian Journal of Marketing*, 3(1), 20-32.
- Hair, J. F., Tatham, R. L., Anderson, R. E., & Black, W. (2006). *Multivariate data analysis* (Vol. 6). Upper Saddle River, NJ: Pearson Prentice Hall.
- Howard, J. A., & Sheth, J. N. (1969). *Theory of buyer behavior*. New York: Wiley.
- Kakwani, N., Neri, M. C., & Son, H. H. (2010). Linkages between pro-poor growth, social programs and labor market: the recent Brazilian experience. *World Development*, 38(6), 881-894.
- Kennedy, B. L., & Datnow, A. (2010). Student involvement and data-driven decision making: Developing a new typology. *Youth & Society*, 0044118X10388219.
- Kline, R. B. (2011). *Principles and practice of structural equation modeling*. Guilford press.
- Kollat, D. T., Engel, J. F., & Blackwell, R. D. (1970). Current problems in consumer behavior research. *Journal of Marketing Research*, 327-332.
- Kotler, P., & Keller, K. L. (2006) *Marketing management*. Pearson-Prentice Hall, New Jersey.
- Martensen, A., & Gronholdt, L. (2008). Children's influence on family decision making. *Innovative Marketing*, 4(4), 14-22.
- Meirelles, R. (2013). Você sabe com quem está falando? *Revista da ESPM*, 87(2), 72-75.
- Mooi, E., & Sarstedt, M. (2011). *A concise guide to market research: The process, data, and methods using IBM SPSS statistics*. Springer.
- Norušis, M. J. (2012). *IBM SPSS statistics 19 advanced statistical procedures companion*. Prentice Hall.
- O'malley, L., & Prothero, A. (2006). *Consuming Families: Marketing, Consumption and the Role of Families in the Twenty-first Century*.
- Perucchi, J., & Beirão, A. M. (2007). New family arrangements: conceptions about paternity, parenthood and gender relations in female heads of households. *Psicologia Clínica*, 19(2), 57-69.

- Pollay, R. W. (1968). A model of family decision making. *European Journal of Marketing*, 2(3), 206-216.
- Rodrigues, M. C. P. (2013). Demandas sociais versus crise de financiamento: o papel do terceiro setor no Brasil. *Revista de Administração Pública*, 32(5), 25-a.
- Rousseeuw, P. J. (1987). Silhouettes: a graphical aid to the interpretation and validation of cluster analysis. *Journal of computational and applied mathematics*, 20, 53-65.
- Rudi, J. H., Walkner, A., & Dworkin, J. (2014). Adolescent–Parent Communication in a Digital World Differences by Family Communication Patterns. *Youth & Society*, 0044118X14560334.
- Santos, C. T. (2012). Affirmative action in higher education: an analysis of the socio-economic profile and university experience of the students benefited from the ProUni scholarships at the PUC-Rio University. *Revista Brasileira de Estudos Pedagógicos*, 93(235), 770-790.
- Sheth, J. N. (1974). A theory of family buying decisions. *Models of buyer behavior*, 17-33.
- Shih, M. Y., Jheng, J. W., & Lai, L. F. (2010). A two-step method for clustering mixed categorical and numeric data. *Tamkang Journal of science and Engineering*, 13(1), 11-19.
- Solomon, M. R. (2009). *Consumer behavior: buying, having, and being*. Pearson Education.
- Struyf, A., Hubert, M., & Rousseeuw, P. (1997). Clustering in an object-oriented environment. *Journal of Statistical Software*, 1(4), 1-30.
- Wells, W. D., & Gubar, G. (1966). Life cycle concept in marketing research. *Journal of Marketing Research*, 355-363.
- Wut, T. M., & Chou, T. J. (2009). Children's influences on family decision making in Hong Kong. *Young Consumers: Insight and Ideas for Responsible Marketers*, 10(2), 146-156.