Consumer profile on electronic and traditional channels
Comparative analysis between a good and a service

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Abstract: The main objective of this work consists in exploring the differences of the consumer profile based on demographic variables (gender, age and income earned) and in individual's personal characteristics (desire for control, the hedonic value, utilitarian value, risk aversion and uncertainty avoidance). These differences are explored for both the online and offline consumer of goods and of services. A questionnaire was developed and administered to a sample of consumers. The data collected were analysed with t-tests, logistic regressions and cluster analysis. From the results it was concluded that age and hedonic value have a significant negative influence, while gender, hedonic value and utilitarian value have a significant positive influence on online purchase of goods. For the online purchasing of services, age, risk aversion and hedonic value have a significant negative influence, while gender and uncertainty avoidance influence significantly and positively the choice of the electronic channel. The data analysis carried out also showed that a model explaining the online purchase of goods online should be include only personal variables. On the other hand, a model explaining the online purchase of services should include both demographic and personal variables. The cluster analysis performed shows the existence of two main groups whose main differences are based on being or not an online consumer of both services and goods. Further, the clusters found out allow a characterization of different consumer profiles regarding online commerce. Implications and limitations were discussed.

Keywords: Consumer behavior, goods, services, electronic commerce, traditional distribution channel.

Introduction

Changes in technology and the resulting explosive growth of online direct marketing have had a profound impact on the nature and design of distribution channels. In the past, most companies used a single channel to sell their products. Today, because of the proliferation of customer segmentation and the possibilities of distribution channels, more and more companies have adopted systems of hybrid distribution channels (Moriarty and Moran, 1990). The advent of the Internet and e-commerce has introduced significant changes in the relation between consumers and companies, which led to changes in consumer behavior and, consequently, to the need for more studies focused on consumers, particularly in terms of their attitudes and their behavior. Currently, the consumer has access to more and better information about products, pricing and competitors. Electronic commerce also eliminated space and time barriers, to the extent where the purchase can be done anywhere and at anytime. This breakthrough technology allows consumers to make more purchases through a variety of channels and media (Dholakia et al., 2010). Although the literature on the psychology of buying behavior is extensive, the most recent research focuses on the reasons why or why not the

consumer purchases products in an electronic environment and in the design of the online consumer's profile based primarily on demographic variables. The complexity of consumer behavior turns quite relevant the study of the characteristics of consumers, based not only on traditional criteria for segmentation, but also on criteria related to personality traits. In addition, most previous studies deal only with one type of product for reasons of simplicity and control. Thus, it is pertinent to analyze the differences in the profiles of consumers who purchase goods and/or services, in particular, whether these differences are visible to different channels (Zhou et al., 2007).

The main objective of this consists in exploring the differences of the consumer profile based on demographic and personal characteristics to the online and traditional consumer of goods and services. The aim is to explore the differences in the consumer profile, not only in the choice of distribution channel but also to examine this possible differentiation both in the case of goods, as in the case of services. Given this objective, the main research questions are:

- *The demographic and personal traits are related to the choice of channel? Are there are significant differences in the adoption of online channels, for a good and for a service?*
- *Which variables to include in a model that best explains the acquisition of goods and services online?*
- *Is it possible to identify different segments based on the demographic and personal characteristics of consumers?*

Literature review

The most common model of retail distribution channel is the model that relies on the existence of a physical store where the provider interacts with the customer ("brick-and-mortar"). In this type of traditional channel, the merchandise is displayed in stores where customers can look at individual products, may try, touch or smell the products, buy them and then take them home immediately (Enders and Jelassi, 2000). The main distinction between traditional commerce and e-commerce lies essentially in the way information is exchanged and processed between the parties. In the case of electronic commerce, instead of having a direct personal contact between parties, the buying and selling processes are supported by electronic means, particularly the Internet (Kotler et al., 1996).

Kotler et al. (1996) and Lamb et al. (2002) suggest that in the traditional shopping environment, there are four unique characteristics of services which differentiate them from goods. These characteristics are: intangibility, inseparability, heterogeneity and perishability. Services cannot be seen, tasted, felt, heard or smelled before they are bought, and are also produced and consumed simultaneously. In addition, services are highly variable in quality as they depend on who provides them as well as when and where they are provided, and they cannot be stored or inventoried. However, due to the lack of social presence and product presence in the e-commerce environment, consumers may have different perceptions of the differences between goods and services, compared to the traditional shopping environment (Jahng et al., 2000). The difficulty in evaluating the services compared to goods means that consumers rely on different specifications and processes in the evaluation of goods and services. It is further understood that the services purchased in on-line channels have more risk to the consumer. Apart from the risks related to the nature of the services, there are risks associated with the

distribution channel, with the online channels being perceived as riskier (Solomon et al, 1999; Forsythe and Shi, 2003).

Consumer behavior corresponds to the processes involved when individuals select, buy, use or discard products, services, ideas or experiences to satisfy needs or desires (Solomon et al., 1999). There are several internal and external factors that influence the consumer buying behavior. Particularly, consumer behavior is strongly influenced by cultural, social, personal and psychological aspects of oneself (Kotler et al.1996). Several studies suggest that online consumers behave significantly different from offline consumers. The online consumer is characterized as being predominantly male, aged 30 to 39 years, with a high level of education and income (Hashim et al., 2009; Li et al., 1999). In addition, the online buyer is not strongly motivated to shop for fun or recreation and assigns more value to perceived control (Hoffman et al., 2000; Li et al., 1999). This type of consumer also has a greater tendency for innovation, value convenience and is characterized by a lower risk aversion (Morgado, 2003). On the other hand, the difficulty in evaluating the services in respect of goods means that consumers rely on different specifications and processes in the evaluation of goods and services. It is further understood that the services purchased on-line channels have more risk to the consumer. Apart from the risks related to the nature of the services, plus still risks associated with the distribution channel (Solomon et al, 1999). According to Zeithaml (1981) consumer behavior differs in many situations through the purchase of goods or services. Peterson et al. (1997) conducted a study that clarifies the potential impact of the internet across different products and services, positioning the internet against conventional retailing channels, and identified several differences that exist between them.

Research methodology

This study has an exploratory nature, in an attempt to indicate what factors differentiate online and traditional consumers of goods and services. Initially we proceeded to the selection of variables. In order to achieve the objectives proposed for the present work, a questionnaire was prepared as a survey instrument. Then the questionnaire was distributed to a selected convenience sample. The responses obtained through the questionnaire were subsequently analyzed by the statistical software SPSS (Statistical Package for the Social Sciences). Among all possible variables, the consumer profile analysis was carried out based on demographic variables (gender, income and age) and five distinct personality traits of the individual (the desire to control, utilitarian value, hedonic value, risk aversion and uncertainty avoidance). The specific choice of these variables is mainly due to its relevance for the differentiation of the consumer profile and their potential to help explain any differences. The questionnaire is divided into four distinct parts. To measure desire to control it was used the scale developed by Burger (1979). To measure the worth of purchase the questionnaire included the scale of Babin et al. (1994), with eleven questions related to the hedonic value and four related to the utilitarian value. The scale proposed by Quintal et al. (2006) measured risk aversion and uncertainty avoidance consisting of eleven questions, six to risk aversion and five to uncertainty avoidance. Finally, there was a set of questions about the purchasing behavior and demographic

characteristics. After the initial drafting of the questionnaire, and before its application, a pre-test was held to validate the instrument to be used for data collection. In this study, the population consists of all individuals living in Portugal, aged 18 years or more. The method of selection of the sample was convenience sampling, a non-probabilistic method.

Sample data

A total of 134 questionnaires were collected. Of this total, 55.2% are females, while the remaining 44.8% are males. The age of respondents ranges from 18 to 76 years, with the most common range from 45 to 64 years, representing 36.6% of the respondents. Regarding the earned income, the range most often cited is between 500 and € 999 per month, equivalent to 46.3% of cases. The occupations of respondents differ, pointing out the technical (21%), students (18%) and administrative (14%) positions. Concerning the purchase of goods online, 46.3% of respondents say they use this channel of distribution, with 23.7% of the respondents purchasing goods online at least once a month. Note also that only 0.7% of respondents purchase goods online three or more times per week. The types of goods purchased online more often are electronic equipment (33%), followed by clothing and consumables (26%). For the purchase of services, 64.2% of respondents said to buy services through an online channel, with 20.1% of the respondents purchasing goods online once or twice a month. The online service most widely used is banking services (65%), followed by flight and hotel booking (23%) and insurance purchasing (7%).

Results

The crosstabulation between the demographic and the personal variables, and the online purchasing behavior of goods and services (Table 1) shows that the online consumer of goods is mainly male, and has an average age of 36 years. The consumer of online services is also in majority male with an average age of 35 years. Both for goods and services the higher the income, the greater the likelihood of joining the electronic channel, with the exception of the level of 1000€ - 1499€. With regard to personal characteristics, both the online consumer of goods such as online consumer of service are characterized by a lower desire to control, risk aversion and hedonic value, and higher aversion to uncertainty and utilitarian value, when compared to consumers of the traditional channel. However it is noteworthy to say that the differences between the average values of personal characteristics between online and non-online buyers are higher for goods.

Table 1: Distribution of online purchase of goods and services by gender and income, and average values of age and personal characteristics in the choice of channel for the acquisition of goods and services

		Online purchase of goods		Online purchase of services	
		No	Yes	No	Yes
Gender	Female	62.2%	37.8%	43.2%	56.8%

	Male	43.3%	56.7%	26.7%	73.3%
Income	Less than 500€	58.6%	41.4%	31.0%	69.0%
	500€ - 999€	54.8%	45.2%	40.3%	59.7%
	1000€ - 1499€	70%	30%	45%	55%
	1500€ or more	30.4%	69.6%	21.7%	78.3%
Age	Mean	40	36	45	35
Desire of control		3.52	3.50	3.52	3.51
Risk aversion		4.11	3.96	4.25	3.92
Uncertainty aversion		4.01	4.11	4.01	4.08
Hedonic value		3.48	3.19	3.51	3.25
Utilitarian value		3.61	3.83	3.65	3.75

In order to compare the statistically significant differences of demographic and personal characteristics in the scenarios of online purchase / not purchase of goods and services a Student's t test for independent samples and a logistic regression were carried out.

The Student's t-test results are presented in Table 2. It can be argued that there are significant differences in gender, hedonic value, age and utilitarian value, among individuals that purchase goods online and the ones that purchase goods in traditional channels. In the case of services, statistically significant differences were found in age, gender, risk aversion and hedonic value among individuals that purchase online and the ones that purchase in traditional channels.

Table 2: Student's t-test results

	Purchase / not purchase of goods online			Purchase / not purchase of services online		
	t	df	Sig.	t	df	Sig.
Desire of control	-0.358	132	0.721	-0.157	132	0.875
Risk aversion	-1.329	132	0.186	-2.776	132	0.006*
Uncertainty aversion	0.839	132	0.403	0.563	132	0.574
Hedonic value	-2.129	132	0.035*	-1.801	132	0.074**
Utilitarian value	1.804	132	0.074**	0.780	132	0.437
Gender	2.197	132	0.030*	2.005	132	0.047*
Income	1.560	132	0.121	0.590	132	0.556
Age	-1.858	132	0.065**	-4.710	132	0.000*

* Significance level less or equal to 0.05

** Significance level less or equal to 0.1

According to the results of logistic regression model showed in Table 3, the hedonic value, utilitarian value and age revealed a significant effect on the choice of channel in the acquisition of goods. The chances of an individual to purchase goods online increase 1.936 times (93.6%) for each increase in

utilitarian value. Whereas, an increase in the hedonic value and age reduce the likelihood of using the electronic channel,, in 38.4% and 3.7%, respectively. As with the purchase of services, income, age, risk aversion and uncertainty avoidance show a significant effect on the choice of channel. The chances of an individual to acquire online services increase 1,804 times for each increment of income, and 1,861 times for each increment of the value of uncertainty avoidance. An increase in age and risk aversion reduces the likelihood of using the electronic channel, in 8.5% and 47.9%, respectively.

Table 3: Estimates of the variables in the logistic regression model for the online purchase of goods and services, including all variables

	Purchase / not purchase of goods online				Purchase / not purchase of services online			
	B	df	Sig.	Exp(B)	B	df	Sig.	Exp(B)
Desire of control	-0.136	1	0.796	0.873	0.415	1	0.453	1.514
Risk aversion	-0.323	1	0.317	0.724	-0.652	1	0.100**	0.521
Uncertainty aversion	0.530	1	0.109	1.699	0.621	1	0.081**	1.861
Hedonic value	-0.484	1	0.092**	0.616	-0.407	1	0.200	0.666
Utilitarian value	0.661	1	0.036*	1.936	0.334	1	0.281	1.396
Gender	-0.289	1	0.488	0.749	-0.065	1	0.888	0.937
Income	0.388	1	0.105	1.474	0.590	1	0.038*	1.804
Age	-0.038	1	0.041*	0.963	-0.089	1	0.000*	0.915
Constant	-0.642	1	0.749	0.526	1.663	1	0.447	5.276

* Significance level less or equal to 0.05

** Significance level less or equal to 0.1

With the purpose of discovering which variables best explain the acquisition of goods and services online, logistic regression models for the online acquisition of goods and services were analyzed for four different situations, where they are considered all the variables studied, only the statistically significant variables by Student's t test, the personal characteristics studied and the demographic variables studied. As it is possible to observe from the Table 3, in the case of purchasing goods online, the model that includes only personal characteristics shows the value of the Hosmer and Lemeshow and overall prediction higher, compared to models that include other types of variables. The most significant improvement of the model with the addition of the respective variables (difference in -2 log likelihood value) and the highest percentage of variation in the dependent variable explained by the model (Nagelkerke R square), belong to the model that includes all the variables studied. On the other hand, in the case of services, the results of the model that integrates all the variables is always superior to models that include other types of variables. All the tests indicate a better fit of the model that includes all the variables studied, the only exception is the Hosmer and Lemeshow test, which has a higher value for the models that incorporate others variables.

Table 4: Table summary of the predictive ability of logistic regression models of the acquisition of goods and services online

		Difference in -2 log likelihood value	Nagelkerke R Square	Hosmer and Lemeshow Test (p-value)	Overall prediction of the model
Online purchase of goods	All variables	21.882	0.201	0.873	64.9%
	Only statistically significant variables	14.86	0.140	0.367	64.2%
	Personal characteristics	15.647	0.147	0.932	66.4%
	Demographic characteristics	12.93	0.122	0.428	64.2%
Online purchase of services	All variables	37.874	0.338	0.253	78.4%
	Only statistically significant variables	24.913	0.233	0.675	70.9%
	Personal characteristics	16.35	0.158	0.485	64.2%
	Socio-demographic characteristics	30.499	0.279	0.942	74.6%

In an attempt to identify different segments based on the demographic and personal characteristics of individuals a cluster analysis was carried out. The results obtained (Table 5) indicate that there are basically two groups whose main difference is based on the acquisition or not acquisition of goods and/or services in e-commerce. The demographic and personal characteristics also assume different values, depending on the cluster. The average value of the desire to control, risk aversion and hedonic value for the cluster 2 (those not using e-commerce) is superior to cluster 1 (online shoppers). On the other hand, the uncertainty aversion and utilitarian value present higher values for cluster 1. The percentage of females belonging to cluster 2 (64.4%) is much higher than the percentage of females in cluster 1 (50.6%). The average age of the cluster 1 (35 years) is lower than the average age of the cluster 2 (45 years). The higher frequency with respect to income level is situated in between € 500 and € 999 in both clusters (43.8% and 51.1% in cluster 1 and 2, respectively). Neverheless, the difference in income levels between clusters is larger for the higher income level (1500 € or more): 21.3% for cluster 1 and 8.9% for cluster 2.

Table 5: Results of the cluster analysis

	Cluster 1 (66.4%)	Cluster 2 (33.6%)
	Frequency	
Online purchase of goods	96.6%	0%
Online purchase of services	69.7%	0%

Gender	Female	50.6%	64.4%
	Male	49.4%	35.6%
Income	Less than 500€	22.5%	20%
	500€ - 999€	43.8%	51.1%
	1000€ -1499€	12.4%	20%
	1500€ or more	21.3%	8.9%
Age	Mean	35 years	45 years
Desire of control		3.49	3.56
Risk aversion		3.93	4.26
Uncertainty aversion		4.09	3.99
Hedonic value		3.24	3.55
Utilitarian value		3.75	3.63

In order to compare the statistically significant differences of demographic and personal characteristics between the two clusters formed, a Student's t test for independent samples and a logistic regression (including all variables) were carried out. From the results of Student's t-test, it is possible to state that risk aversion, hedonic value and age are significantly different between clusters. And, according to the results of logistic regression model, uncertainty avoidance, age, income, risk aversion and hedonic value reveal a significant effect on the cluster to which the individual belongs. The chances of an individual belonging to a cluster, and acquiring products and/or services online, increase 2,237 times for each increment of the value of uncertainty avoidance, and 1.881 times for each increment of income. An increase in risk aversion, hedonic value and age reduce the likelihood of an individual belonging to cluster 1, from 50.3%, 43.7% and 8.5%, respectively.

Table 6: Student's t-test and logistic regression results for cluster analysis

	Student's t-test			Logistic regression			
	t	df	sig	B	df	sig	Exp(B)
Desire of control	-0.856	132	0.394	-0.125	1	0.825	0.883
Risk aversion	-2.758	132	0.007*	-0.699	1	0.092**	0.497
Uncertainty aversion	0.796	132	0.427	0.805	1	0.029*	2.237
Hedonic value	-2.120	132	0.036*	-0.574	1	0.084**	0.563
Utilitarian value	0.950	132	0.344	0.482	1	0.129	1.619
Gender	1,528	132	0.129	0.275	1	0.573	1.316
Income	0.815	132	0.416	0.632	1	0.031*	1.881
Age	-4.526	132	0.000*	-0.089	1	0.000*	0.915
Constant	-	-	-	2.889	1	0.194	17.979

* Significance level less or equal to 0.05

** Significance level less or equal to 0.1

Conclusions

The online consumer, both for goods and services, is predominantly male and has higher average income, aversion to uncertainty and utilitarian value, when compared to a traditional consumer. On the other hand, this type of consumer also presents lower average values of age, desire for control, risk aversion and hedonic value. However, from the tests' results it is possible to conclude that only gender, age, hedonic value and utilitarian value have a statistically significant influence on the online purchase of goods. At the same time, gender, age, income, risk aversion, uncertainty aversion and hedonic value have a statistically significant influence on the acquisition of online services. A model explaining the online purchase of goods should only include personal variables. On the other hand, model explaining the online purchase of services should include all variables (demographic and personal). The cluster analysis performed shows the existence of two main groups whose main differences are based on the simultaneous online purchase or non-purchase of goods and services, presenting also differences in the values taken by demographic and personal characteristics.

The present work provides information that can improve the efficiency of virtual stores and the marketing strategies used to attract, satisfy and retain online consumers. If the online consumer is a younger consumer with higher financial returns, companies must choose the means of advertising / communication that best reach this specific group of consumers. Given that individuals who purchase goods online show a higher utilitarian value compared to non-buyers, it is advisable that the websites of companies that sell goods online, contemplate the speed of access and ease of use. Once the aversion to uncertainty positively affects the choice of the electronic channel, especially for services, companies should invest in providing and disseminating information about the product in the electronic media. On the other hand, considering that the hedonic value has a negative impact on the acquisition of goods and services in electronic commerce, the site where the interaction between the company and the buyer takes place must have an attractive design in order to provide enjoyment to the user. Another recommendation relates to the fact that risk aversion negatively affects the purchase of online services:, companies should enhance the security of the site (e.g. security protocols, security, data protection, etc.) and establish return and refund policies to enable consumers' confidence.

This study is limited to three demographic variables and five personal characteristics. Future research could include other demographic and personal characteristics that can influence purchase intentions in electronic channels, as well as the influence of emotional aspects of consumer behavior in this type of purchase. It is considered that the findings of this study contribute to improve the understanding on consumer behavior, concerning the channel used and the nature of the product being bought.

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