Private Sales Clubs: A 21st Century Distribution Channel*

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Private Sales Clubs: A 21st Century Distribution Channel.

Private sales clubs are a novel service institution arising out of the Internet's ability to allow an exclusively online channel to distribute out of season or out of fashion inventories to a large set of customers. They have become a thriving industry in the 21st century. In this paper we enhance understanding of this technology mediated institution as a distribution channel. Furthermore, we show how to measure the impact of the distribution services it provides through the Internet on customer satisfaction and of the latter on economic performance. We rely on the technique of quantile regressions in this endeavor. The latter allows for asymmetries in the response function that have been noted as a major issue to be addressed in the analysis of both customer satisfaction and economic performance variables. Our most important empirical finding is that the distortions introduced by ignoring asymmetries in the response function with respect to customer satisfaction are extremely misleading for managers of private sales clubs.

Key words: online channels, distribution services, quantile regression, private sales clubs, customer satisfaction, intentional loyalty.

1. Introduction

Our aim in this paper is to enhance understanding of a retail institution that emerged in the 21st century which functions entirely online, namely private sales clubs (PSC). From an economic perspective, this institution is of interest because it has become a global industry with its leading firm (Vente Privée) generating over 1 billion euros in yearly revenues since at least 2012. From a marketing perspective, it is of interest because it illustrates an exclusively online external discount channel with no firm in a brick and mortar channel as a direct competitor in most geographical markets. This is in contrast, for example, to Amazon. The latter started as an exclusively online distribution channel for books with firms in a brick and mortar distribution channel as direct competitors in many geographical markets, e.g., Barnes & Noble, Borders.

This paper uses PSC to illustrate two features of online channels identified and emphasized in a recent paper (Betancourt et al. 2016: Propositions 1 and 3). Proposition 1 identifies a unique feature of online technology associated with the retailing of goods that had gone unnoticed in the literature: *"A 'typical' online channel allows separation across space and time of production, distribution and consumption for all distribution services"*. While the technology mediation literature had emphasized spatial separability between a core service product and consumption or selected aspects of distribution (Keh and Pang 2010; Schuman et al 2012; Wunderlich, Wagenheim and Bitner 2013), this emphasis did not capture the depth and extent of the phenomena identified by Proposition 1. These phenomena lead to important economic consequences of the PSC format affecting both the demand and supply of services in this channel. These consequences are discussed in the next section while presenting in more detail the main characteristics of this format.

A second feature of online channels illustrated by PSC, Proposition 3, is that *"online channels have maximum levels of outputs associated with the retailing of goods that can be substantially higher or lower than their brick and mortar counterparts"*. For instance, the marketing literature has identified technological limits for online retailing of certain types of products characterized as sensory dependent items (Degeratu, Rangaswamy and Wu 2000) and their importance for online retailing (Pauwels et al 2011). This idea was extended in Proposition 3 by also incorporating economic considerations to identify how maximum levels of output for distribution services and their aspects can differ between online and offline channels. This second feature leads to the first contribution of this paper. It provides an explicit theoretical basis for assuming the existence of maximum levels of distribution services in both offline and online retailing. Thus, for assuming any one of these maxima constant and the same across consumers in empirical analyses of customer satisfaction with survey data. This theoretical basis has been absent in prior literature (e.g., Gómez, McLaughlin and Wittink 2004, Parasuraman, Zeithaml and Berry 1988, Betancourt et al. 2007). This issue is discussed in detail in the third section where we present our modelling framework.

This conceptual framework is based on treating the distribution services provided by retailers as a set of five broadly defined outputs that accompany any retail transaction. They have to be produced at some level by any retail store or firm whether it operates offline or online. Five broad categories of these distribution services as outputs are generally identified in the marketing literature (e.g., Kopalle et al 2009): *accessibility of location, information, assortment (breadth and depth), assurance of product delivery (in time and form) and ambiance.* Their properties as outputs in retail cost functions have been analyzed (e.g., Betancourt 2004, Ch. 4) as well as their impact on consumers´ demand for retail products through their role as fixed inputs in household

production functions (e.g., Betancourt 2004, Ch. 3). They can be viewed as channel outputs (Keh 1997) following the spirit of Bucklin´s (1966) view of channels as mechanisms for providing outputs wanted by customers at minimum cost. In the third section of the paper we show how this framework easily accommodates the distinction between sensory and non-sensory dependent items mentioned in the prior paragraph.

A second contribution of the paper is methodological. We draw heavily on the attributes/satisfaction/performance chain literature for our empirical analysis. The latter has identified shortcomings of the typical OLS applications to the estimation of the impact of attributes on customer satisfaction (e.g., Vargo et al 2007) as well as in the impact of customer satisfaction on performance variables (e.g., Anderson and Mittal 2000). In both cases one of the shortcomings stressed has been the need to allow for the possibilities of asymmetries in the response of the dependent variable. That is, asymmetries in the impact of attributes on satisfaction and in the impact of satisfaction on the performance variable. We contribute to this literature by providing the first application of quantile regression to capture asymmetries in each of these links.

Empirical issues are the focus of the rest of the paper and provide the basis for our third contribution, namely the substantive results obtained. The survey and the variables measured are described in Section 4, followed by a section on estimation summarizing the essential features of quantile regression as well as its empirical specification for both links in the attributes/satisfaction/performance chain for PSC. Subsequently, a results section is subdivided into three parts: the results for customer satisfaction; the results for future patronage or loyalty intentions; and an explicit discussion of the managerial implications of quantile regressions. Our empirical analysis raises issues inconclusively addressed in the literature. A seventh section on

robustness checks to these issues confirms our main substantive results. A brief conclusion highlights an area for future research and provides perspective on our main contributions.

Succinctly put, our most important substantive result for PSC is that the distortions introduced by ignoring asymmetries in the response function matter far more in the attributes/ satisfaction link than in the satisfaction/performance link. Indeed, in the former setting OLS would mislead PSC' managers to focus on an attribute or distribution service that the quantile regression reveals not to have an effect on satisfaction. With respect to the determinants of customer satisfaction, we find attributes that matter in other online settings, i.e., accessibility of location, assortment and assurance of product delivery at the desired time, to have no impact on satisfaction with PSC. On the other hand, aspects of information, assurance of product delivery in the desired form and ambiance do matter for satisfaction with PSC just as they do in other online settings. Finally, with respect to the determinants of loyalty intentions, we find that variables identified as important determinants of loyalty intentions in other online settings have a similar impact on PSC regardless of estimation methodology.

2. Format Origins and Main Features.

Manufacturers of fashion products and seasonal household items have always faced the problem of how to deal with stocks of items left over after the main calendar period for sales is over. Before information and communication technologies (ICT) became widespread, brick and mortar periodic markets, physical discount outlets or private sales through professionals for a small number of people identified by word of mouth were the main channels to distribute out of fashion or out of season stocks. In the 21st century PSC arose as an online retail channel with

steep discounts for luxury brands open to club members who would receive information on a sale offer of limited duration.

To our knowledge this format started with a French company, *Vente Privée*, created in 2001. The new format emphasized flash (or event) sales of designer brands at deep discounts through the Internet to members. By 2004 it was on its way to success and by 2012 was a recognized leader in Europe with 1.3 billion euros in revenues and 18 million members from operating in 8 countries (France, Spain, Germany, Italy, Belgium, Holland, Austria and the UK) (Vente Privée, 2015). Not surprisingly, several firms have entered the market with similar formats. For example, Showroomprive is its closest competitor in France. By 2012 it had revenues of 280 million euros (Adyen.com, 2014).

Similar firms in other countries have followed this lead. For instance, in Spain *Privalia* started in 2006 and has become a market leader in Spain, Italy, Brasil and Mexico (Privalia, 2013). In the US the Gilt Groupe was started as a private sales club in 2007, but it quickly transformed itself into a mixed format with a full price line and is now retrenching back to the original format (BusinessInsider, 2015). Other firms with similar formats but specific to other sectors such as interior decoration, beauty products and the travel industry have appeared in a variety of countries.

In its role as a distribution channel PSC offer producers the possibilities of far superior inventory management without damaging the brand image. For instance, in order to generate trust among producers with respect to preserving the brand image PSC devote substantial attention and resources to the provision of information on products in attractive ways. A second feature of PSC as a distribution channel is that they offer producers access to a large set of potential customers through their membership. Thus, in order to attract members and generate

trust among them, PSC offer rewards to current members for attracting new ones and devote special attention to devolution policies, payment methods and privacy policies to retain current members and facilitate the attraction of new ones. In sum, from the point of view of producers, PSC as a distribution channel represent an external discount or indirect channel that allows manufacturers to preserve brand image while reaching a larger number of customers than would be feasible through alternative channels.

From the point of view of PSC their business model eliminates the need to store the products on offer, which can remain with the producer during the few days the offers to members last, and puts a premium on expanding their network of members to increase their attractiveness to producers. By virtue of their exclusive online nature PSC provide maximum accessibility of location for the items purchased to their members, e.g., through home delivery, and they can do so at no cost to themselves by charging for this service. Similarly, they provide high levels of assortment over the year at no cost to themselves although in this case they have limited control over their assortments. For, the latter depend on decisions by manufacturers on what to make available and when throughout the year.

Both maximum accessibility of location and high levels of assortment are important economic consequences of the online nature of the channel (Betancourt et al. 2016: Proposition 1). Their economic importance stems from online channels' substantial impact on lowering the costs of providing these two services relative to offline ones: PSC can eliminate their costs of providing maximum levels of accessibility of location to any given set of customers, by charging the full cost of delivery to these customers; they can also eliminate their costs of providing any given level of assortment, by shipping directly from the manufacturers to the customers without

acquiring physical possession of items. This advantage relative to brick and mortar retailers is similar to that enjoyed by an exclusively online book distributor like Amazon.

More generally, as an online retailer PSC have to offer the same set of distribution services to consumers than brick and mortar retailers. What differs, however, is the level at which they can offer these services. This was illustrated for two of them (accessibility and assortment) in the previous paragraph. With respect to the other distribution services, it is useful in the context of the PSC' format to single out one other distribution service for further discussion: namely assurance of product delivery at the desired time.

From the PSC customer's point of view an attractive feature is the depth of discounts (up to 70%) they offer on high quality products as a result of their being out of fashion or out of season. One consequence is that consumers are willing to forego an important convenience provided by the distribution services offered by brick and mortar retailers, i.e., assurance of product delivery at the desired time through immediate physical acquisition of the product upon payment. The extent of the difference between the PSC and brick and mortar retailers in the level of this distribution service that can be provided is best seen in terms of the waiting periods involved.

The PSC' customer has to wait for delivery of the product after payment, just as any other customer of an exclusively online retailer. In contrast to typical online customers, however, the PSC' customer faces three other waiting periods before payment. First, the PSC' customer has to wait for an email offering the product. Second, PSC' customers depend on producers choosing when and how many items to offer and on the PSC deciding for how long the offers are available. Third, contracts between producers and PSC contain clauses specifying a period for a producer to send an item to a consumer upon notification of payment by the PSC.

3. Modelling Framework.

Just as noted in the introduction, we draw from the marketing literature to investigate PSC´ impact on customer satisfaction and performance. More specifically, the attributes/satisfaction/performance approach is the main modelling framework we use. It requires modelling both links in the chain. With respect to the first link, the rationale of a direct effect of distribution services on customer satisfaction is based on the general acknowledgement that satisfaction is largely influenced by the value of services provided to customers in the service-profit chain (Heskett et al 1994, p 165). Furthermore, the role of distribution services in influencing satisfaction has been modeled for offline retailing as follows: customer satisfaction is viewed as a gap between a level of distribution services or marketing outputs supplied by the retailer, D^s, and the level of distribution services desired or demanded by the customers, D^d, (e.g., Betancourt et al. 2007).

One of the advantages of this theoretical framework is that it provides a basis for the analysis of customer satisfaction in retailing that entails an encompassing characteristic. For, this framework integrates the product focused marketing perspective on satisfaction as a gap between ideal and realized features of a product with an economic one based on distribution services. This characteristic is especially suited for applications to sellers offering a large variety of products. That is, in this framework customer satisfaction is viewed as a function of the gap between the level of each of the five broad distribution services, perhaps further subdivided into a few aspects or dimensions, the consumer perceives as provided by a retailer and the level of each demanded or expected by the consumer. In practice, however, empirical implementation of this framework with survey data simply made explicit an implicit assumption in earlier literature. Namely, it followed the same standard procedure by assuming the ideal level of an attribute or distribution

service demanded or expected to be an unobserved maximum, D*, and the same for each customer. Proposition 3 (Betancourt et al. 2016) now provides a theoretical basis for this assumption.

Thus, we can describe this approach in general terms as satisfying the following relationship

$$S_i(k) = f\{[D^* - D^s(i,k)]_j, X(i,k)\}, \quad (1)$$

where $S_i(k)$ indicates customer i´s satisfaction with PSC (k). The term in square brackets measures the gap between the maximum level of a distribution service that a PSC can provide and what customer i perceives a particular PSC as supplying of each distribution service. Note that the maximum differs between distribution services (varies over j) but is the same for every customer and PSC (constant over i and k). The other term, X (i, k), captures all other potential influences on the relationship. From this perspective, satisfaction is a decreasing function ($f'_j < 0$) of the distance between the maximum of each distribution service and the level of the retailer´s supply of this distribution service as perceived by the consumer. Other potential influences on the relationship can be of either a conditioning or control type and have positive or negative influences on satisfaction. Finally, the actual functional form adopted for f in (1) is often a linear function, e.g., as in equation (4) in Section 5.

Since PSC are online retailers, the unobserved maximum for anyone distribution service is the same for all PSC according to Proposition 3 (Betancourt et al. 2016). Thus, we can progress on empirical specification and measurement without having to rely on questions about expectations with respect to ideal products or the estimation of a complete demand system for distribution services. This can be done by relying on information about the maximum levels of

distribution services attainable in online channels which have been identified on the basis of technological limits or economic ones. For empirical purposes nine distribution services or outputs of any retail organization are identified as potentially relevant to customers (Betancourt et al 2016: Table 2). Below we discuss briefly the rationale for the maximum level exhibited by each one in the context of the PSC format and relate them to the marketing literature on online channels.

Accessibility of location can attain the highest level possible in the PSC' setting, given that customers can access the webpage at any time (and from anywhere) and that online items can be delivered to the consumers´ home, or anywhere else convenient or desired by customers. Consumers appreciate this feature of online channels (Lewis, Singh and Fay 2006) even though it usually requires them to pay for the delivery part of the service explicitly through shipping fees. Higher levels of accessibility have been associated with higher levels of customer satisfaction in online settings for ordering (Finn et al 2009), and for shopping at online stores (Hung et al 2014; Chiu et al 2014).

Information has several dimensions relevant to PSC as an online channel. With respect to sensory dependent products there are obvious technological limits to the maximum amount that can be transmitted online for sensory dependent items, especially those where touch, smell, or taste are relevant features of an item and for which physical inspection matters. With respect to non-sensory dependent items the maximum amount of information on a product that can be transmitted online is much higher than offline as a result of economic or cost considerations. Moreover, other types of information not directly associated with product features but with broader issues, e.g., periods when they are available for purchases, can also be transmitted more cheaply online. Provision of different types of information have been found to be positively

associated with customer satisfaction in online channels (Finn et al 2009; Kim et al 2009; Hung et al 2014; Chiu et al 2014).

Assortment in terms of either breadth or depth can be provided at higher maximum levels online on the basis of cost considerations alone and this also applies to PSC. In the case of PSC assortment needs to be defined in the context of a relevant calendar period rather than as a time independent concept. Both the depth and the breadth of an assortment offered to members will vary with the duration of a calendar period chosen for analysis. For instance, Vente Privée interacts with as many as 2000 different producers over a given calendar year. Higher levels of assortment have been associated with higher levels of customer satisfaction in online settings for ordering (Finn et al 2009), and for shopping at stores (Chiu et al 2014). They give PSC an advantage over some other online channels due to greater variety of brands and/or product lines.

In contrast assurance of product delivery at the desired time has a far lower maximum level in the online setting than in the brick and mortar setting. Moreover, just as we saw in the previous section, the PSC' customer faces longer waiting periods than in other online settings due to the organizational structure of PSC. This aspect of distribution services is often ignored in the online literature on satisfaction although it has been included as part of shipping and handling (e.g., Bansal et al 2004, Table II).

Assurance of product delivery in the desired form differs for sensory dependent items and for non-sensory dependent ones in manners similar to information. Thus, there is a lower maximum technological limit that can be attained by an online channel than by an offline one with respect to sensory dependent items. Similarly, there is a higher maximum one for online channels that can be attained with non-sensory dependent items. A factor driving the similarity with information lies in the fact that joint provision is a feature of aspects of these two

distribution services (Betancourt et al 2016). In general, assurance of product delivery in the desired form has been found to be positively associated with customer satisfaction in online channels (Finn et al 2009; Kim et al 2009; Jaiswal et al 2010; Hung et al 2014).

Ambiance is a distribution service with special features due to the fact that it can often entail a purchasing activity jointly with a consumption activity in the offline setting. Moreover, ambiance is context dependent with respect to product, geography and customer characteristics. While some of these issues could arise in the PSC' online setting, here ambiance is associated primarily with a purchasing activity. Moreover, many aspects of ambiance in this setting are under the control of the consumer; it is also easier to identify the ones controlled by the retailer, which operate through the design and functioning of their website (Alcantara and del Barrio 2012). Finally, different aspects of ambiance have been identified as positively associated with customer satisfaction in online channels (Finn et al 2009; Kim et al 2009; Jaiswal 2010: Hung et al 2014).

For the reader's convenience, we summarize and focus the discussion of PSC as a distribution channel in table form through an explicit comparison of the maximum levels of these distribution services offered by the PSC with those of an online internal distribution channel. An entry in a cell of Table 1 indicates whether the maximum level of the service is higher or lower than a brick and mortar/offline channel. This relative maximum is the same for both online channels. The PSC' column, by definition, entails a much lower price than the internal channel's column. The different asterisks next to a cell entry indicate differences in the maximum levels of a distribution service that can be provided by either online channel. They arise due to synergies from the existence of the offline channel (*), advantages in operational procedures for the online channel (***), an advantages due to the external nature of the PSC (**).

(Insert Table 1 about here)

With respect to the second link in the chain, the relationship between satisfaction and intentional loyalty or future patronage intentions (FPI), we also rely on the marketing literature to specify our modelling framework. In this setting a recent review article (Kumar et al 2013) proves very valuable in guiding our specification of the empirical model. Our general specification explicitly captures four of their five generalizations about the relationship that can show up empirically. Their first generalization is the proposition that there is a positive relationship between customer satisfaction and attitudinal loyalty measured as loyalty intentions. Their second generalization is the proposition that the industry type affects the specific shape of the relationship. Their third generalization is that the relationship can be moderated by a variety of factors that can depend on customer, relational and market place characteristics. Their fifth generalization is that holistic models that encompass other relevant variables as a moderator mediator or antecedent are better predictors than models that incorporate just customer satisfaction. Their fourth generalization can´t explicitly show up empirically in our cross-section data set, but it is there implicitly. Namely, the relationship has the potential to change over the customer life-cycle.

Implementation of this view of the link between customer satisfaction and FPI can be described in terms of the following relationship

$$FPI_i\,(k) = g\,[S_i\,(k),\, Z\,(i,\, k)], \qquad (2)$$

where $S_i\,(k)$ indicates customer i´s satisfaction with PSC k. Z (i, k) is a vector of variables that capture moderating, mediating and antecedent factors belonging to PSC, the customers or their competitors. A particular set of variables that can play the role of antecedents and or moderators

in the case of PSC are channel policies such as privacy policy, payment methods and devolution policies. In practice the functional form adopted for g is often linear or additive as illustrated by equation (5) in Section 5.

Channel policies are structures designed to generate trust and diminish uncertainty (Pavlov and Gefen 2004; Pavlov et al 2007). These policies apply to any type of channel but are especially relevant for consumers with respect to online purchases. In the context of e-commerce consumers are very sensitive to what might be done with their data, to the perceived risk of choosing a product of uncertain fit or quality, and to the uncertainty associated with the trustworthiness of the seller.

For instance, return policies are a mechanism to ameliorate failure in providing assurance of product delivery in the desired form upon initial purchase. In online channels, however, the importance of this policy is substantially enhanced. Online customers have been found to expect a right to return the product and get their money back with no questions asked (Bower and Maxham III 2012). This attitude reflects the increased uncertainty associated with spatial separability in the case of the Internet (e.g., Darke et al 2016).

Our modelling of both links is summarized in Figure 1, where we also identify two customer characteristics that seem especially relevant in our setting: experience with PSC and experience with the Internet. Both characteristics have been previously used in other models (Jaiswal et al 2010; Chiu et al 2014) explaining intentions to repurchase. From a utilitarian perspective lowering search costs is a most basic rationale underlying the positive impact of both experiences on intentions to repurchase. Experience lowers search costs. Experience with PSC can also be given a hedonic perspective (Scarpi 2012).

4. The Survey

Our data base consists of 368 valid cross-section responses from a panel of online consumers who had undertaken online purchases in June of 2012. A firm specialized in online surveys sent the questionnaire to 400 members of its panel. It took an average of 30 minutes to fill the questionnaire and the respondents received points to participate in a contest sponsored by this firm. Our aim was to find consumers who had purchased online from PSC in the previous six months. The respondents had to name the one among PSC with which they had the most frequent interactions. This led to 32 of the 400 respondents being disqualified by naming a non-existent PSC.

The survey measures different aspects of distribution services provided by the one among PSC with which the respondent had the most frequent interactions (P_PSC). These aspects were identified on the basis of the framework developed in the previous section, and measured on a scale of 0-10. Table 2 provides descriptive statistics on all these aspects and additional relevant variables indicated there. An appendix available on the web provides the original questionnaire translated into English.

(Insert Table 2 about here)

More specifically, the distribution services measured for the P_PSC were: level of access to purchased products at a convenient location (X1), level of information on potential purchases through emails and webpage (X2), level of information provided for sensorial products (X3), level of information provided for non-sensorial products (X4), level of breadth of assortment available in any one purchase as a result of simultaneous offers (X5), depth of assortment provided for any one purchase (X6), level of assurance of product delivery at the desired time

provided by delivery policies (X7), extent of assurance of product delivery in the desired form relative to expectations for sensorial products (X8), extent of assurance of assurance of product delivery in the desired form relative to expectations for non-sensorial products (X9), level of attractiveness of web page design (X10), ease of access through web page organization to the products and services (X11). Channel policies measured for the P_PSC were: level of adequacy of return policies (X12), level of adequacy of payment methods (X13), level of confidence in privacy and security policy (X14).

In addition, the survey measures on the same scale as above our two dependent variables, cumulative satisfaction with the purchases made through P_PSC (S) and future patronage intentions or intentional loyalty with respect to P_PSC (FPI). Studies of customer satisfaction often focus on a single transaction. Instead, we focus on cumulative satisfaction. For, in the case of PSC there is too much heterogeneity in satisfaction with a single transaction. That is, PSC differ from other online retailers in that any one offer to members varies with respect to items, brands, discounts and even duration. Thus, a response to a single transaction can be a response to very different things even for a particular PSC, let alone across different PSC. Finally, there were four questions on purchase habits of the respondent: visits to PSC in the last six months (X15), number of purchases of sensorial products in the last 12 months (X16), comfort with Internet purchases (X17) and number of purchases in P_PSC out of ten purchases in PSC (X18).

5. Estimation

Recent literature indicates the need to allow for the possibility that the effect of attributes on satisfaction is asymmetric (e.g., Vargo et al. 2007). This literature also suggests a nonlinear model between attributes and satisfaction by proposing specific functional forms in the context

of e-service quality (e.g. Finn 2011). Furthermore, proponents of the satisfaction-profit chain have also argued that incorporating nonlinearities and asymmetries remedies problems experienced with standard (linear) applications in the attributes to customer satisfaction link of the chain (e.g. Anderson and Mittal 2000).

Quantile regression provides a useful mechanism to address issues raised in strands of literature on customer satisfaction and FPI that stress the possibilities of asymmetries and nonlinearities in responses by customers to either levels of distribution services or levels of customer satisfaction. Estimates for different quantiles would reveal asymmetries and functional form specification in quantile regressions would be the same as for OLS in any given quantile. Distortions in OLS results can arise from varying parameters of the response function across quantiles. Indeed, the only application of quantile regression in the marketing literature is the use of median regression (50^{th} quantile) as an indicator that the OLS finding of a longer tail for sales through the Internet channel relative to the Catalog channel is robust (Brynjolfsson, Hu, and Simester 2011).

In rigorous terms quantile regression can be thought of as generated by the following optimization problem in the linear case, choose β such that over the range $i = 1,\ldots, N$

$$\min (N^{-1})*[\ \sum \rho_\tau * \left|\ y_i - \beta' x_i\ \right|\ ] \qquad (3)$$

where $\rho_\tau = \tau$ if $y_i > \beta' x_i$ and $(1- \tau)$ if $y_i < \beta' x_i$.

More generally, this optimization problem provides an estimate of a conditional function of the x's where the parameters β are chosen to minimize the least absolute deviation about a function in a weighted fashion. Asymmetries are captured through β's dependence on τ.

If $\tau = 1/2$, the weights are symmetric and we have the conditional median function. Otherwise the weights are asymmetric. If $\tau < ½$, let us say ¼, the observations below the line that fits best the 25% percentile are weighted more heavily (by ¾) than the observations above the line that fits best the 25th percentile, which are weighted by 1/4. Similarly, if $\tau > ½$, let us say ¾, observations above the line that fits best the 75th percentile are weighted more heavily (by ¾) than the ones below the line that fits best the 75th percentile, which are weighted by 1/4. Linear programming methods are used to find the optimal solution. A thorough treatment of the topic of quantile regression and associated statistical inference is available (Koenker 2005) and software for implementation is also available, e.g., STATA, SAS and R.

Here we apply quantile regression to estimate the distribution services or attributes-customer satisfaction link at the 25th, 50th, and 75th percentiles. Thus, we focus on revealing asymmetries in the response function between these three quantiles. Given our sample size of 368 observations, estimates at more extreme points in the distribution are unwise as the number of observations below or above the line at those percentiles becomes very small. For instance, the 10th and 90th percentile generate no statistically significant coefficients at the 1% or 5% level for the same specification of the customer satisfaction relationship.

Our general specification was selected to capture any of the potentially relevant attributes that, based on the discussion in our analytical framework and measured in the survey, seem to matter when considered by themselves or in small sets of attributes. We also considered nonlinearities in functional form such as squares of attributes and interaction terms between them. Neither type of nonlinearities improved the results. Finally, we also use the same specification in OLS estimation. The resulting empirical specification corresponding to the term within absolute values in 3 that was estimated is given for the ith consumer by

$$| S_i (P\_PSC) - \Sigma_j \beta_j X_{ij} (P\_PSC)_j | , \quad (4)$$

where the X's run from j = 1 to 11 as defined in section 4.

Just as in the case of the attribute-satisfaction link, the literature also suggests the existence of asymmetries and nonlinearities in the satisfaction-performance link (e.g. Anderson and Mittal 2000). We also investigate them through quantile regression. Furthermore, the satisfaction-retention link may differ in the nonlinearities and asymmetries depending on whether retention is measured in terms of intent or repurchase behavior (Mittal and Kamakura 2001). More recently, one study relies on a cubic functional form to examine 972 product customer segments in search of functional forms for the satisfaction-intentions link (Dong et al. 2011). They found a linear relationship in 51% of their cases and they predominated in retail services.

In the context of both OLS and quantile regressions it is straightforward to introduce interaction terms directly in the FPI equation to capture moderating effects. We considered interaction terms between satisfaction and three variables associated with the limitations of online channels due to their intrinsically higher levels of uncertainty discussed earlier: namely, privacy and security policy, available payments mechanisms and devolution policies. Parenthetically, only interactions with devolution policies, X12, matter statistically. Finally, we include as independent variables other likely determinants of FPI suggested by the discussion in Section 3, e.g., customer satisfaction. For each observation we used its estimated customer satisfaction for the typical (median) segment in the FPI quantile regression.

With respect to FPI the resulting empirical specification that was estimated corresponding to the expression in absolute values in 3 is given by

$$FPI_i\ (P\_PSC) - \gamma_1\ EST.S_i\ (P\_PSC) - \gamma_2\ EST.S_i\ (P\_PSC)X_{i12}\ (P\_PSC) - \Sigma_j\ \beta_j\ X_{ij}\ (P\_PSC)|, \quad (5)$$

where the X's run from j = 12 to 18 as specified in Section 4 and EST. is the estimated value of satisfaction at the median for the ith consumer. The use of the estimated value rather than the actual one eliminates the possibilities of correlated errors in both links affecting the estimates of the second link when the first link is well specified. For similar reasons we use the median value of satisfaction as opposed to other percentiles, since it is the one most likely to be estimated without bias or with least bias.

6. Results

We present the results in three subsections to facilitate the exposition. First, we focus on the role of asymmetries in the relation between attributes and customer satisfaction by discussing asymmetries in this relationship. Similarly, in the second subsection we focus on the role of asymmetries in the relationship between customer satisfaction and other influences on intentional loyalty. Finally, we focus on the managerial implications of the quantile regression approach through an explicit comparison with OLS results.

6.1 Customer Satisfaction and Asymmetries in the Case of PSC.

Table 3 presents the results of quantile regressions for the 25th, 50th and 75th quantile as well as the OLS ones for cumulative customer satisfaction with P_PSC. With respect to distribution services what our questions measure, except for assurance of product delivery in the desired form (X8 and X9), is the level at which a particular service offered by the PSC most frequently patronized (P_PSC) fulfills the needs of a particular customer. Questions X8 and X9, however, measure the extent of the difference between what consumers perceived to receive

from sensorial and non-sensorial products delivered by the P_PSC, respectively, and what they expected to receive.

Interestingly, Table 3 shows that two of our broad categories of distribution services have no impact at any of the three levels of the cumulative customer satisfaction distribution for the P_PSC. While accessibility of location (X1) is a critical aspect differentiating online and offline channels, its possible maximum level is substantially higher for online channels. The possibilities for differentiation in delivering products at the consumer's home, for example, don't generate much variation in how it is fulfilled by the P_PSC for different consumers. In the same vein, assortment is an attribute that all online channels can provide at a high level and its maximum is substantially higher than what an offline channel can provide. More specifically to the context of PSC, however, we saw that firms in this industry have limited control over breadth (X5) or depth (X6) of assortment. In sum, neither of these two broad distribution services provides sufficient differentiation possibilities in consumer's perceptions of how the P_PSC fulfills the need for these services to have an impact on satisfaction.

(Insert Table 3 about here)

By contrast two specific aspects or attributes (X3, X7) of two broad distribution services (information and assurance of product delivery) that have no impact at any of the three levels of the cumulative satisfaction function are ones in which the maximum level that the online channels can provide is always lower than the offline one. Yet, they provide limited or no opportunities for differentiation among the P_PSC in the perceptions of their customers as to the levels that can be achieved. For instance, in the case of assurance of product delivery at the desired time (X7) we saw in section 2 one reason why PSC are unable to differentiate themselves along this dimension. Namely, it is beyond their control. In the case of information on sensory

dependent products (X3), there is not much variation in what PSC can do about the lack of opportunities to transmit information relative to taste, tact or smell through the Internet.

Finally, assurance of product delivery in the desired form with respect to non-sensorial products (X9) has no impact on satisfaction. This result suggests that customers' perceptions of what they get roughly conform to their expectations of what the P_PSC offers. That is, there is limited or little variation among customers of the P_PSC in the extent to which their perceptions about what they receive with respect to non-sensorial items differ from their expectations. Recall that this variable was measured directly as a difference.

Among the distribution services or their aspects that have an impact on satisfaction some commonalities appear. Three of them are very specific to the way the P_PSC relates to its customers: namely the provision of information about campaigns (X2), and our two dimensions of ambiance: webpage appeal (X10) and web page functionality (X11). At the same time their positive impacts on satisfaction differ substantively and statistically on the level of the distribution of satisfaction at which they operate. One of them affects all three percentiles of the distribution (X11), but information about campaigns (X2) only matters for the least satisfied (25^{th} quantile) and the typically satisfied (50^{th} quantile) whereas web page appeal (X10) affects only the most typically satisfied (75^{th} quantile).

The other two aspects of distribution services having an impact on satisfaction capture dimensions of these services where online channels have a clear advantage (X4) or a clear disadvantage (X8). Their positive impact on customer satisfaction reflects differential abilities among the P_PSC to exploit an intrinsic advantage or ameliorate an intrinsic shortcoming of online channels. In the advantage case only the typically and most satisfied are impacted whereas in the disadvantage case all three groups are impacted. Incidentally, this finding for X8 suggests

that the earlier result with respect to X9 was not due to framing that question relative to expectations rather than in terms of levels fulfilled.

Summing up these substantive results, distribution services impact the satisfaction of members of PSC in differential manners. Information on campaigns (X2) and meeting the expectations on assurance of product delivery in the desired form for sensorial products (X8) have the most substantial impact for the least satisfied members. For example, a unit increase in the variable increases satisfaction by at least 1/5 or 20% of a unit of satisfaction. (X8) and web page functionality (X11) have the greatest impact for the typically satisfied member by the same criterion as above. Only web page appeal (X10) meets this criterion for the most satisfied members.

Since we are stressing as an important feature of quantile regressions the ability to capture asymmetries in the response of the dependent variable to changes in the explanatory ones, we report the results of a variety of Wald tests on the existence of these asymmetries (Koenker 2005). The joint hypotheses that all slope coefficients across the three quantiles are the same is rejected at the 1% level of significance and the same is true for comparisons between the 50^{th} and the 75^{th} quantile. Tests of equality of slopes for each variable across the three quantiles together lead to rejection of the null of equality at the 5 % level for information about campaigns (X2), assurance of product delivery in the desired form for sensorial products (X8) and web page appeal (X10). Tests of equality of slopes across the 50^{th} and the 75^{th} quantile lead to rejections of the null of equality for X2, X8, X10 and X11 at the 5% level. Thus, the joint tests on the existence of asymmetries are consistent with the individual results of Table 3.

6. 2 Future Patronage Intentions and Asymmetries in the Case of PSC.

With respect to FPI (Table 4), it turns out that devolution policies by themselves outperform privacy and security policy and available payments mechanisms in all empirical specifications we considered. Furthermore, including interaction terms for any two of them or all three of them together substantially weakens the results for all. Hence, we present results with moderating effects on satisfaction included through interaction terms only for devolution policies (X12) as indicated in equation 5.

(Insert Table 4 about here)

Our first result on retention is that, of the channel policies that can mitigate the increased inherent uncertainty associated with the Internet for PSC, devolution policies are the only ones that interact with customer satisfaction to affect FPI in a statistically discernable fashion, i.e., estimates of γ_2 are statistically significant at the 5% level (50%) and at the 1% level (75%). Incidentally, in a table available from the authors we show the results of excluding the interaction term. They reveal substantial differences from those in Table 4. Thus, it would be misleading to ignore this term at the estimation stage or managerial implications stage.

In all three quantiles the estimates of the coefficients of estimated satisfaction (γ_1) are positive, substantial in magnitude and statistically significant at the 1% level. The same holds true for devolution policies (β_{12} at the 5% level) and privacy and security policies (β_{14} at the 1% level). Similar results hold for the share of purchases in the P_PSC (β_{18} at the10% level) but the magnitudes are substantially smaller. That is, they are at least one third smaller in magnitude than any of the other three variables for each of the three types of customers. Interestingly but not surprisingly, the greater the number of visits to PSC in the last six months the lower are future patronage intentions, i.e., estimates of β_{15} are negative. This result is substantial in magnitude and statistically significant at the 1% level for all three types of customers. Thus,

consumers who search more are willing to re-evaluate their current choice of most frequently patronized club (P_PSC) at all three levels of loyalty intentions.

The other results indicate potential asymmetries among types of customers but are less substantial in magnitude. P_PSC payment methods (X13) and comfort with the Internet (X17) have a positive and statistically significant (at the 5 and 10% level, respectively) impact for both the typically loyal (50^{th} percentile) and the most loyal (75^{th} percentile) segments. Finally, the number of purchases of sensorial products (X16) has a positive and statistically significant (at the 10% level) impact on future patronage intentions for the least loyal (25^{th} percentile) and for the typically loyal (50^{th} percentile). While this is the most substantial in magnitude of these asymmetric results, it is relatively small compared to the symmetric ones, e.g., at least half in magnitude of privacy and security policies for every type of customer.

Wald tests of the joint hypotheses of equality of all coefficients reject the null at the 1% level across the three types of customers, between the least loyal and the most loyal as well as between the typically loyal and the most loyal. It is also rejected between the least loyal and the typically loyal but only at the 5% level. On the other hand, the tests of differences among coefficients variable by variable can't reject the null of equality even at the 10 % level across the three type of customers or for any pairwise combination of two types of customers. Perhaps asymmetries here are too small to be detected by direct single variable tests, even if they show up in global tests; perhaps there are none empirically worthy of concern.

Last but not least, in order to evaluate the full impact of satisfaction or devolution policies on FPI, we have to calculate ∂FPI (P_PSC)/∂EST.S (P_PSC) or

∂FPI (P_PSC)/∂X_{12}. That is, it is necessary to estimate, respectively, $\gamma_1 + \gamma_2 X_{12}$ (P_PSC) or $\beta_{12} + \gamma_2$ EST.S (P_PSC). If we evaluate both variables at their mean values, we obtain the following pair of estimates for the least loyal [.353; .197], the typically loyal [.322; .146] and the most loyal customers [.137; .135] of the most frequently patronized PSC. In all cases the impact of a unit increase in satisfaction dominates the impact of a unit increase in devolution policies, but the differential effect is far more powerful for the least and typically loyal group than for the most loyal group. In any event, these are the numbers comparable to the coefficient estimates in Table 3 for all other variables.

Summing up the substantive results for FPI, customer satisfaction (S) and privacy and security policy (X14) have the greatest impact on future patronage intentions for the least and typically loyal members of the P_PSC in that increases in these variables by a unit increase FPI by at least 1/5 of a unit. Only privacy and security policies (X14) have this level of impact on FPI for the most loyal members of the P_PSC.

Moderating effects highlight two issues. First, ignoring them overstates the impact of both satisfaction and devolution policies on FPI for the P_PSC. That is, accounting for these effects yields the result that devolution policies don't appear among the most important variables for any of the three type of PSC members by the 1/5 criterion chosen. Second, their impact varies with the level at which one chooses to evaluate the interacting variables. Nonetheless, if we use median values rather than mean values the results would not change much, i.e., we find at the median: least loyal = [.342; .177], typically loyal = [.302; .108], and most loyal = [.121; .105].

6.3 Managerial Implications of Quantile Regression.

Succinctly put, quantile regression provides two major insights for managerial implications with respect to PSC. First, in explaining customer satisfaction and intentional

loyalty, it is desirable to allow for asymmetries. Second, in the case of customer satisfaction it is not only desirable but indispensable to do so. To wit, a comparison of median regression with OLS indicates extremely important and substantial distortionary effects in terms of magnitude that are supported by the statistical results of the Wald tests in subsection 6.1.

Capturing relevant asymmetries can yield useful managerial implications for both customer satisfaction and future patronage intentions. For instance, assurance of product delivery in the desired form for sensorial products has an impact on all three quantiles for customer satisfaction, but its impact for the least satisfied is more than two and a half times that of its impact on the most satisfied. Similarly, a unit increase in the share of purchases from P_PSC (X18) by the least loyal customers has twice the impact on future patronage intentions than the same increase by the most loyal customers. If expenditures of the different loyalty segments are very different, strategies to address this issue by managers need to be different. That is, the amount of resources devoted to a distribution service in order to increase satisfaction should vary with or be customized by both the level of satisfaction and the degree of loyalty of the member. PSC either have access to this information on their members or can easily design mechanisms to obtain the information.

With respect to distortions in OLS results, Tables 3 and 4 can be used to see their impact by comparing them to the results of the median regression. In the case of customer satisfaction, OLS results are extremely misleading. For, one would conclude that only one distribution service affects customer satisfaction with P_PSC at the 1% level: information on sensorial products. By contrast results from the median regression show three statistically significant distribution services at the 1% level. Furthermore, the statistically significant result for OLS applies to a different variable than the three for the median quantile!

On the other hand, the results for FPI indicate a much lower level of distortions, if any. For instance, of the five variables that are statistically significant with OLS at the 1% level, four are also statistically significant with median regression and the one that is not happens to be statistically significant at the 5% level. This suggests that distortions from ignoring asymmetries are not a serious problem in this context, which is also consistent with the Wald tests for individual coefficients reported in subsection 6.2. To conclude, ignoring asymmetries is far more consequential in some settings than in others.

7. Robustness Checks

Since our main results on customer satisfaction differ substantially from what is found in the literature, it is worth considering several robustness checks. The first one is the extent to which our results are affected by our asking questions referenced to the most frequently patronized sales clubs. One way to address this issue is to employ fixed effects with respect to P_PSC. We did so by introducing fixed effects for the three PSC with the greatest share of customers in our sample and the rest as a residual category [(1. Privalia, n = 155); (2. BuyVip = 88, n = 88); (3. Vente Privée, n = 45); (4. Rest, n = 80)]. The results are almost identical when we introduced these fixed effects as can be seen from Table 1 in the Appendix available on the web.

A second robustness check considers the impact of treating channel policies as also affecting customer satisfaction. One can argue that these policies affect customer satisfaction as conditioning or control variables, i.e., the X (i, k) in equation (1) of Section 3. Indeed, some literature on e-commerce has included security aspects as independent variables and found them to affect satisfaction in some cases (Jaswal et al. 2010: Table 1). We added all three of our channel policy variables to our specification of equation 4 in section 5 and re-estimated. The

results are presented in Table 2 of the Appendix available on the web. The only one of the three channel policies that has an impact at the 5% level for PSC is privacy and security policy. Adding channel policies as determinants of customer satisfaction, however, has no impact on our main substantive and methodological results. Accessibility of location and assortment as well assurance of product delivery at the desired time continue to have no impact on satisfaction with P_PSC. Perhaps more importantly, relying on OLS and ignoring the asymmetries revealed by quantile regression continues to be quite misleading for managers.

A final robustness check considers the impact of experience with either the Internet or a particular sales club as a determinant of customer satisfaction. Some literature suggests that web expertise or experience with a retailer affect both satisfaction and loyalty (Jaswal et al. 2010, Table 4; Kim et al. 2009). In any event, we added our two experience variables to equation 4 in section 5 and re-estimated. The results are presented in Table 3 of the Appendix available on the web. Experience with the Internet has no impact on satisfaction with PSC at the 5% level of significance. On the other hand, experience with a retailer has an impact on satisfaction at all three levels of the dependent variable response function and with OLS at this same level of significance. Nevertheless, the same main substantive and methodological results emphasized with and without the inclusion of channel policies continue to hold with the inclusion of the experience variables.

8. Concluding Remarks

Our analysis of PSC has emphasized their role as a retail format or the B2C side of what are two sided markets or platforms. Namely, ones where producers interact with consumers through an intermediary and the decisions of both producers and consumers affect the outcomes of the others through the network externality provided by the market or platform. That is, the

more members in a particular PSC the more producers benefit from using it and the more producers offering their products through this particular PSC, the greater the benefits for its members. This satisfies one definition of a two-sided market (Rysman 2009, p.125).

Hence, a limitation of our analysis is that it has not analyzed the other side of the market or platform or the B2B side in any detail. This limitation serves at the same time to suggest an interesting area for future research on PSC. In their interactions with manufacturers who distribute products through them, PSC also provide and receive a variety of distribution services. A conceptual and empirical analysis of this B2B dimension should be insightful.

In terms of what we have accomplished in the paper, we provide the first empirical analysis of PSC as an exclusively online retail format or distribution channel. It shows the same conceptual framework used to analyze the impact of distribution services on customer satisfaction in brick and mortar settings is applicable in this exclusively online channel. Furthermore, in the process of doing so we have extended the framework to provide a more solid theoretical basis for its use with survey data on consumers in both offline and online settings.

At the empirical level the measurement and estimation of the impact of distribution services in the online setting reveals that the distribution services which matter substantively and empirically in this channel are intimately related to intrinsic features of the online nature of the technology or of this particular retail format. We have also shown the importance of quantile regression as a mechanism for capturing asymmetries in the distribution of the response function for customer satisfaction and for assessing their potential impact on managerial practices in the context of PSC. These results are robust to a variety of extensions and provide a significant enhancement to the literature on customer satisfaction.

With respect to future patronage intentions our results are in line with what has been found in the literature. For instance, they confirm the desirability of allowing for moderating factors in the relationship between customer satisfaction and intentional loyalty. In the particular case of PSC return or devolution policies are the main moderating factor that needs to be included both from a statistical and a substantive point of view.

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FIGURE 1: Two-steps model of the effects of distribution services on customer satisfaction and future patronage intentions

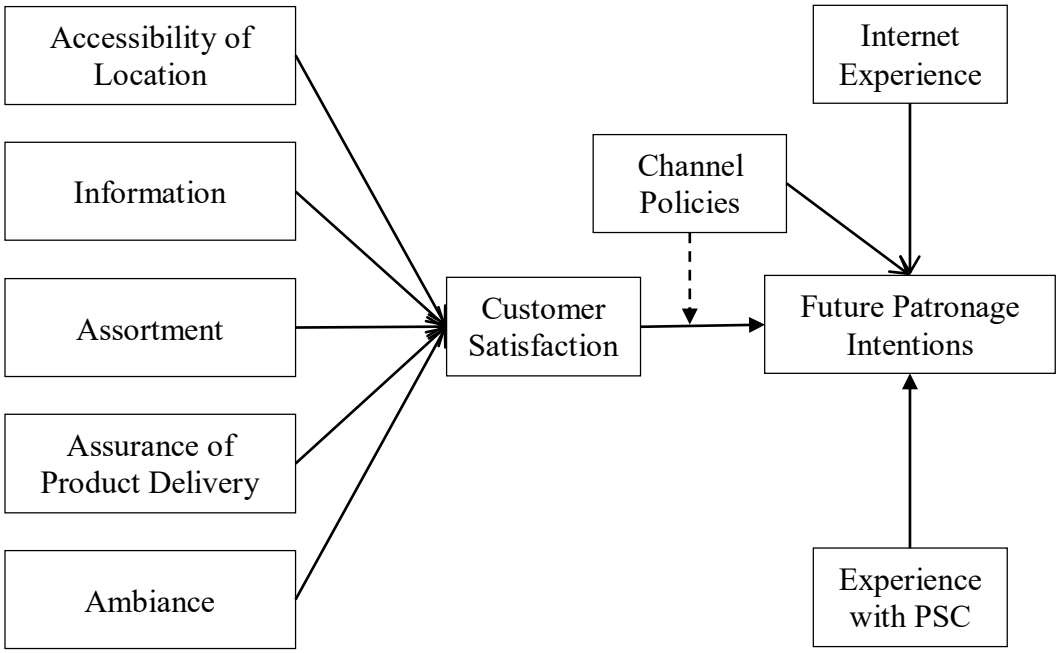

TABLE 1. Potential Levels of DS in Different Online Channels: Internal/PSC

	Internal (Full price)	**PSC (Discount)**
1. Accessibility of location	High	High
2. Information		
2.1. Sensory items	Low*	Low
2.2. Non-sensory items	High	High
3. Assortment:		
3.1. Breadth	High	High**
3.2. Depth	High	High**
4. Assurance of product delivery:		
4.1. At the desired time	Low*,***	Low
4.2. In desired form sensory	Low*	Low
4.3. In desired form non-sensory	High	High
5. Ambiance (´normal´ setting)	Low	Low

*indicates that internal online channel can attain a substantially higher maximum level of the service due to the possibility of visiting offline site to inspect or take physical possession of an item, i.e., multi-channel synergy.

**indicates that PSC can attain substantially higher maximum levels of assortment over a given period due to its being an external channel which allows distribution of a greater variety of brands and/or product lines.

***indicates that the difference is even greater for this distribution service as a result of the additional waiting times required for the PSC as discussed in Section 2.

TABLE 2. Descriptive statistics

Variable	N	Min.	Max.	Mean	Std. Dev-
S: Cumulative satisfaction with the purchases made through this PSC	368	0	10	7.27	1.915
FPI: Future patronage intentions with respect to this PSC	368	0	10	7.76	1.731
X1: Level of access to purchased products at a convenient location	368	0	10	8.42	1.588
X2: Level of information on potential purchases through emails and webpage	368	0	10	7.92	1.747
X3: Level of information provided for sensorial products	368	0	10	6.70	1.837
X4: Level of information provided for non-sensorial products	368	1	10	7.38	1.730
X5: Level of assortment available in any one purchase as a result of simultaneous offers	368	0	10	6.71	2.604
X6: Depth of assortment provided for any one purchase	368	0	10	6.80	1.829
X7: Level of assurance of product delivery at the desire time provided by the PSC delivery policies	368	0	10	6.28	2.232
X8: Extent of assurance of product delivery in the desired form for sensorial products	368	0	10	6.83	1.803
X9: Extent of assurance of product delivery in the desired form for non-sensorial products	368	0	10	7.73	1.670
X10: Level of attractiveness of web page design	368	2	10	7.76	1.542
X11: Ease of access through web page organization to the products and services of the PSC	368	1	10	7.74	1.485
X12: Level of adequacy of the PSC return policies	368	0	10	6.62	2.092
X13: Level of adequacy of the PSC payment methods	368	0	10	7.91	1.768
X14: Level of confidence in privacy and security policy	368	0	10	7.67	1.851
X15: Visits to PSC in the last six months: - Daily - Weekly: - Once a week, More than once a week - Monthly: Once a month, More than once a month - Every two or three months - Less frequently	368	1	8	2.33	1.325
X16: Number of purchases of sensorial products in the last 12 months - None /Once /Twice or three times/ Three or four times/ More than four times	368	1	5	3.35	1.151
X17: Extent of comfort with Internet purchases	368	0	10	7.53	2.311
X18: Number of purchases in this PSC out of ten purchases in a PSC	368	1	10	6.33	2.176

TABLE 3. Cumulative Customer Satisfaction Results

	25%			50%			75%			OLS		
S: Cumulative satisfaction	Coef.	Std. Err.	P>t	Coef.	Std. Err.	P>t	Coef.	Std. Err.	P>t	Coef.	Std. Err.	P>t
Constant term	1.207	0.994	0.225	1.071	0.407	0.009	3.193	0.373	0.000	2.616	0.605	0.000
D1 Accesibility of Location												
X1: Convenient location	-0.078	0.112	0.485	-0.043	0.05	0.388	0.016	0.049	0.735	-0.037	0.075	0.624
D2 Information												
X2: Information about campaigns	0.211	0.105	**0.044**	0.126	0.045	**0.006**	-0.001	0.036	0.979	0.092	0.067	0.173
X3: Information (sensorial products)	-0.025	0.134	0.852	0.083	0.054	0.130	0.047	0.056	0.399	0.224	0.083	**0.007**
X4: Information (non-sensorial products)	0.150	0.129	0.246	0.128	0.056	**0.022**	0.194	0.055	**0.001**	0.042	0.084	0.614
D3 Assortment												
X5 : Assortment Breadth	-0.033	0.058	0.570	0.004	0.028	0.899	0.011	0.027	0.691	0.005	0.041	0.910
X6: Depth of assortment	0.151	0.105	0.153	0.062	0.047	0.191	-0.005	0.048	0.921	0.024	0.071	0.738
D4 Assurance of product delivery												
X7: Delivery at the desire time	-0.033	0.075	0.658	0.006	0.033	0.855	-0.01	0.031	0.756	-0.030	0.049	0.543
X8: Extent Delivery in the desired form (sens. products)	0.284	0.133	**0.033**	0.215	0.051	**0.000**	0.103	0.048	**0.032**	0.108	0.077	0.163
X9: Extent Delivery in the desired form (non-sensorial products)	-0.075	0.123	0.540	-0.009	0.054	0.873	-0.044	0.053	0.415	-0.011	0.082	0.892
D5 Ambiance												
X10: Web page appeal	-0.006	0.122	0.959	0.018	0.055	0.751	0.207	0.056	**0.000**	0.065	0.083	0.437
X11: Web page functionality	0.230	0.135	**0.090**	0.303	0.06	**0.000**	0.166	0.064	**0.009**	0.163	0.089	**0.069**
Raw sum of deviations		470.500			525.000			387.500		F(11, 356)		9.530
Min sum of deviations		400.598			403.991			282.495		Prob > F		0.000
Pseudo R2=		0.149			0.231			0.271		Adjusted R2		0.204

TABLE 4: FPI Results (Median satisfaction estimation and interaction with devolution policies included)

	25%			50%			75%			OLS		
FPI: Future Patronage Intentions	Coef.	Std. Err.	P>t	Coef.	Std. Err.	P>t	Coef.	Std. Err.	P>t	Coef.	Std. Err.	P>t
Constant term	-2.171	1.206	**0.073**	-2.325	1.179	**0.049**	1.093	0.768	0.156	-1.147	1.028	0.265
$S^{\wedge}_{q50}$	0.538	0.181	**0.003**	0.666	0.181	**0.000**	0.408	0.125	**0.001**	0.567	0.157	**0.000**
$S^{\wedge}_{q50}$*X12	-0.028	0.024	0.251	-0.052	0.022	**0.020**	-0.041	0.015	**0.005**	-0.044	0.020	**0.026**
X12: P_PSC return policies	0.401	0.194	**0.039**	0.524	0.173	**0.003**	0.433	0.114	**0.000**	0.435	0.150	**0.004**
X13: P_PSC payment methods	0.082	0.060	0.173	0.140	0.052	**0.007**	0.080	0.040	**0.046**	0.079	0.045	**0.080**
X14: Privacy and security policy	0.318	0.068	**0.000**	0.304	0.058	**0.000**	0.318	0.042	**0.000**	0.292	0.050	**0.000**
X15: Visits to PSC	-0.233	0.064	**0.000**	-0.181	0.056	**0.001**	-0.167	0.044	**0.000**	-0.185	0.048	**0.000**
X16: Purchases of sensorial products	0.149	0.075	**0.049**	0.125	0.064	**0.054**	0.051	0.048	0.293	0.125	0.055	**0.024**
X17: Comfort with Internet purchases	0.051	0.035	0.153	0.058	0.033	**0.076**	0.063	0.025	**0.013**	0.066	0.029	**0.022**
X18: Share of purchases in P_PSC	0.100	0.043	**0.019**	0.071	0.035	**0.041**	0.047	0.025	**0.066**	0.100	0.030	**0.001**
Raw sum of deviations		415.500			477.000			346.500		F(9, 358)		48.960
Min sum of deviations		260.764			311.280			240.554		Prob > F		0.000
Pseudo R2=		0.372			0.347			0.306		Adjusted R2		0.552