The Role of the Consumer in Retailing, Distribution Services and the Determinants of Customer Satisfaction

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Abstract:

This paper brings together two bodies of literature in retailing. One of them is an older literature on the special role of the consumer in retailing. The other one is a more recent one on the measurement of customer satisfaction in retailing. This joining of literatures is accomplished by identifying distribution services as outputs of retail firms and fixed inputs into the production functions of consumers. The result is a conceptual framework for the analysis of the determinants of customer satisfaction. Implementation of this framework with supermarket data shows that at least three of the five main categories of distribution services identified by the conceptual framework are economically important and statistically robust determinants of customer satisfaction with supermarkets. These results are obtained controlling for other variables typical of the customer satisfaction literature and measuring customer satisfaction following customary practice in that literature. Our most important result is that increasing the distribution service ambiance is the most effective mechanism for increasing customer satisfaction in supermarkets. For instance, it is 60 times more powerful than information and 3 times more powerful than assortment. Ambiance is characterized as the response to the following question on a scale of 0 to 10 – to what extent treatment by employees, cleanliness and orderliness of the store allow your purchase to be an agreeable experience? Using this result and the existing literature on customer satisfaction yields that a one unit increase in ambiance translates into a yearly sales increase of $3,989 if revenues per square foot in Pamplona's supermarkets are ½ of what they are in American supermarkets.

Keywords: Retailing; Customer Satisfaction; Distribution Services; Supermarkets.

In this paper we bring together two separate bodies of literature on retailing. One of them is an older strand that has asked the question of how retailing differs from other industries as a result of the role of the consumer; the other one is a more recent strand that has sought to measure customer satisfaction through the use of surveys. An important benefit of this union is that it provides a conceptual foundation for the measurement of customer satisfaction in retailing without the introduction of ambiguous or idiosyncratic concepts. Furthermore, it leads us to measure directly the impact of distribution services on customer satisfaction. This measurement provides effective managerial mechanisms for attaining different levels of customer satisfaction.

In the next section, we present a conceptual framework that ties these two strands of literature together. Subsequently, Section II, we describe the data that allows us to implement our ideas empirically. In Section III we discuss the estimation problems that arise from the first two sections and how we address them here. Section IV contains the empirical results. Section V draws the managerial implications of our analysis and in so doing relates them to the customer satisfaction literature. Finally, brief concluding remarks highlight the contributions of the paper and limitations that suggest areas for future research.

I. **Conceptual framework**.

In both the economics and marketing literature reference is often made to the ability of consumers to provide services offered by retailers for themselves. For instance, in economics Fuchs (1968) attributed productivity gains of supermarkets to their putting consumers to work. In marketing Ingene (1984) discusses productivity in terms of the

shifting functions between producers and consumers. Betancourt and Gautschi (1993) have argued that the ability to shift the costs of providing distribution services between consumers and retailers is one of two essential features of retail markets. That this process of shifting costs takes place is not a matter of controversy in either the economics or marketing literature.

What cost shifting implies for demand and supply specifications in the retail industry, however, is subject to various interpretations that are quite different in their implications. For instance, these considerations underlie Oi's (1992) argument that the consumer is an essential input into the production process alongside labor and capital. Similarly, Shaw, Nisbet and Dawson (1989) argue that demand or marketing forces are more likely determinants of store size than economies of scale. Ofer (1973) suggests that sales is not the appropriate measure of output in retailing because the consumer rather than the store owner determines the ratio between goods purchased and the services provided by the store. Berne, Mugica and Yague (1999) argue that "... the output of the retail activity is the outcome of the encounter of the retailer with their customers...".

Betancourt (2004) argues that these disparate views can be reconciled by extracting the logical implications of specifying distribution services as outputs of the retail enterprise as well as fixed inputs into the household production functions of consumers. He demonstrates that, in the general setting of estimating cost functions, the essential role of the consumer in retail supply reduces to the following implication. Both the quantity of goods sold by retailers and the level of distribution services provided to consumers are endogenous variables in the cost function. This characteristic can be accommodated by econometric procedures that are well established by modern standards.

Below we will address each of the views in the previous paragraph explicitly, but to do so we need to present the specification of cost and demand functions in Betancourt (2004).

On the production side the retailer produces subject to a standard quasi-convex transformation function, $H(x, Q^s, D^s)$, where x are the inputs of the retailer other than goods sold, Q^s is a vector of the levels of output of retail items supplied by the retailer and D^s is a vector of the levels of distribution services supplied by the retailer. Cost minimization by the retailer subject to the transformation function yields the following cost function

$$C = C(v, Q^s, D^s), \qquad (1)$$

where v are the prices of the inputs of the retailers other than goods sold and C are the costs of retailing net of the costs of goods sold.

On the demand side, the view of distribution services as fixed inputs into household production functions of consumers yields demand functions for retail items that can be written as

$$Q^d = f(p, D^s, W), \qquad (2)$$

where Q^d is a vector of the quantity of retail items demanded by consumers, p are the prices of these retail items, D^s is a vector of the levels of distribution services provided to consumers at a retailer and W is the level of wealth. Armed with these constructs we can now go back to the previous arguments in the literature on the implications of cost shifting.

In contrast to Oi's argument, equations (1) and (2) demonstrate that we don't need to specify the consumer as an input alongside labor and capital in the retail industry.

Instead, we merely need to acknowledge that distribution services are outputs of the retailer as in (1) and that they influence the demand functions of consumers in their role as fixed inputs into household production functions as in (2).

Just as in the determination of price, supply and demand play an important role in the determination of store size. In the short-run supply determines store size, since Q^s and D^s are fixed for any given store; in the long-run, however, the demand and marketing forces [Q^d , D^d][1] emphasized by Shaw, Nisbet and Dawson are likely to be more important in determining store size than economies of scale. Because higher levels of these variables [Q^d , D^d] due to demographic, economic, or technological changes, for example, will induce the building of larger stores and the provision of higher levels of distribution services, i.e., higher levels of [Q^s , D^s].

Ofer's argument makes two distinct points. First, sales is not a good measure of store output. This is true. For, sales capture only one dimension of output whereas store output has at least two dimensions. These are the level of turnover (Q^s) and the level of distribution services (D^s). It is impossible to capture two different dimensions with a single measure, which is why the cost function in (1) contains both dimensions of output. Second, Ofer argues that it is the consumer who determines the ratio between goods purchased or demanded and the distribution services provided by the store. This is also true, but captured in the demand function in (2). That is, in this demand function the

[1] D^d represents the level of distribution services demanded by consumers potentially or in general. In some settings it can also be thought of as the maximum provided by a particular store from a set of stores available to a consumer or to groups of consumers.

quantities of goods demanded by the consumer, Q^d , are specified as a function of retail prices and the actual distribution services provided by the store, D^s.[2]

In general the demand for retail items and the demand for distribution services [Q^d , D^d] by the consumer can differ from the supply of retail items and the supply of distribution services provided by the retailer [Q^s , D^s]. Thus, the outcome of the encounter between the retailer and the customer is a relation between the quantities demanded of these two types of output and the quantities supplied of these two types of output. One would expect this relation normally to satisfy these inequalities, $Q^d \leq Q^s$ and $D^d \geq D^s$. The first inequality rules out consumers facing stock-outs and the second inequality rules out retailers providing services that are not wanted by consumers. If we assume that quantities demanded of distribution services equal quantities supplied, i.e., [$Q^d \leq Q^s$ and $D^d = D^s$], then the outcome of this encounter is a fully satisfied customer. In this case customer satisfaction is at its maximum and, if this is the case for every customer, its measurement is irrelevant.

A more interesting case for our present purposes is one where we assume that consumers' demand for a distribution service is always greater than the level supplied by the retailer, $D^d > D^s$. It is in this case that the measurement of consumer satisfaction becomes intrinsically meaningful, since a consumer may be very close or very far from its desired or demanded level of distribution services. Furthermore, for the degree of consumer satisfaction to be economically interesting for the retailer one needs to assume

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[2] In practice researchers often assume that what is sold by the retailer is what is demanded by consumers, i.e.,$Q^s = Q^d = Q$. Under this assumption, the dimension of output represented by turnover, Q, is an endogenous variable in the cost function.

that the retailer has the capacity to satisfy increased demand by customers, $Q^d < Q^s$. Since distribution services are costly to produce, increasing the level of customer satisfaction by increasing the level of distribution services provided is of no economic benefit for the retailer unless the increase in demand for the explicit products of the store compensates for these increases in cost. We believe that this case provides the principal economically meaningful setting in which to discuss the measurement of consumer satisfaction as it relates to the provision of distribution services. Its identification is one of the contributions of this paper to the literature.

Given these considerations, a consumer's satisfaction with a store, k, is going to be given by a relation of the following form

$$S_i(k) = f\{ [D^d(i) - D^s(k)]_j , p(k), Z(i, k)\}. \qquad (3)$$

$S_i(k)$ is a measure of customer satisfaction, i.e., of consumer's i satisfaction with store k. This satisfaction is going to be a decreasing function, $f_j' < 0$, of the distance between each of the j distribution services offered by store k, $D^s(k)$, and the level of each of the j distribution services potentially demanded by consumer i, $D^d(i)$. One would also expect it to be a decreasing function of the average prices charged by store k. In addition, consumer characteristics or other store characteristics may affect the consumer's satisfaction with a store and are captured by the vector $Z(i, k)$.

In general one does not observe the level of distribution services demanded by consumers, $D^d(i)$. If one assumes consumers are never satisfied, however, one can set the demand for each of the j distribution services at its maximum, $D^d(i) = M$. When the latter is assumed the same for all consumers and distribution services, one can rewrite (3) as

$$S_i(k) = f\{ [M - D^s(k)]_j , p(k), Z(i, k)\}. \qquad (4)$$

This equation provides a fairly general basis for empirical analysis.

Both (3) and (4) follow from drawing the logical implications of specifying distribution services as outputs of retail firms and as fixed inputs into the household production functions of consumers. Furthermore, they can be used to encompass the formulations used by those emphasizing customer satisfaction as the outcome of the encounter between the consumer and the retailer, e.g., Berne, Pedraja and Rivera (1997). In addition, these equations and the framework that underlies their derivation eliminate the need to rely on distinctions such as internal and external productivity paradigms or economic engineering and marketing approaches to productivity.

II. **The Data**.

The data base for this study is a survey of supermarkets in Pamplona carried out in 1998. Traditional stores or hypermarkets were not included in the survey.[3] Eleven supermarkets were selected to have their customers interviewed. These supermarkets belonged to seven different firms and there were four firms that each had two supermarkets in our selected set.[4] A total of 874 usable customer questionnaires were generated from these interviews: the maximum number of interviews for any one supermarket was 85 and the corresponding minimum number of interviews was 79.

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[3] A supermarket in Pamplona is defined as a self-service establishment, usually having between 250 and 2500 squared meters of surface area, with an assortment predominantly oriented toward food products.

[4] Of the 18 establishments qualifying as supermarkets in the Pamplona area 14 belong to 5 chains (including one discount chain) and 4 are independent establishments. 3 of the 4 independent establishments were selected together with a large and a small establishment from each of 4 chains, including the discount chain.

Therefore, the total number of consumers was fairly evenly divided across the eleven supermarkets.[5]

Each consumer was asked the same set of questions. A critical one, since it will serve as our measure of customer satisfaction, S, was: On a scale of 0 to 10 – What is your degree of satisfaction with the services provided and the purchases made in this establishment? Similarly, consumers were asked to rate on a scale of 0 to 10 a number of items that correspond to dimensions of the five distribution services emphasized by Betancourt and Gautschi (1988). That is, accessibility of location, X_1 , was measured from the answer –To what extent the store's location facilitates your patronizing and accessibility to the retail establishment. Information, X_2 , was measured from the answer – To what extent the employees and the signs in this establishment facilitate your information needs with respect to items, their location in the store, prices, sales, etc.? Assortment, X_3 , was measured from the answer – To what extent the assortment and variety in the store products facilitate your making all your purchases at this establishment.

Assurance of product delivery in the desired form or at the desired time, X_4 , was measured as the simple average of the answers to the following two questions:– To what extent the number of registers open and the acceptance of different means of payment facilitate the speed and convenience of paying for your purchases?; – To what extent the hours and days the store is open facilitate making your purchases when you need to do

[5] For one particular week, and evenly distributed through the daily opening hours of the supermarket, consumers were selected to fill the survey upon exiting the supermarket.

so? Ambiance, X_5, was measured from the answer to the question – To what extent your treatment by employees, and the cleanliness and orderliness of the store allow your purchases to be an agreeable experience? Interestingly, there was a similarly rated question on the store prices, X_6. That is, consumers were asked – To what extent the prices in this store are high relative to other similar establishments?

Variables X_1 - X_5 can be characterized as eliciting consumer's perceptions of how well the supermarket was providing a distribution service or a selected aspect or dimension of a distribution service. The information in Table 1 shows substantial variations in these perceptions across consumers despite the fact that all 11 supermarkets considered belonged to the same type or format. In addition to these variables, essential for our purposes, the survey gathered information on general characteristics of consumers and specific characteristics of their buying habits, including attitudes toward purchasing.

Variables X_7 - X_{10} measure general characteristics of consumers. X_7 identifies gender with a dummy variable that takes on the value of one if the consumer is female and zero otherwise. Age, X_8, is captured through dummy variables where the omitted category is that the consumer is less than 25. (X_{81}) takes on the value of unity if the consumer is between 25 and 40 years of age, zero otherwise. (X_{82}) takes on the value of unity if she is between 41 and 60, zero otherwise. Finally (X_{83}) takes on the value of unity if the consumer is greater than 60 years old, zero otherwise. Position in the life cycle, X_9, was captured in terms of dummy variables where the omitted category was single without children. (X_{91}) takes on the value of unity if the consumer is part of a couple without children and zero otherwise. (X_{92}) take son the value of unity if the consumer has children less than 6 years old, zero otherwise. (X_{93}) takes in the value of

unity if the consumer has children between 6 and 14 years, zero otherwise. (X_{94}) takes on the value of unity if the consumer has children over 14 years, zero otherwise. The last of these variables, X_{10}, measures the number of hours worked outside the home during the day by the consumer.

Among the specific characteristics of their buying habits consumers were asked about the following: average length of their stay in the establishment in minutes, X_{11}, average size of their basket in pesetas, X_{12}, and frequency of patronage of the establishment within the month, X_{13}. X_{12} was originally measured as a categorical variable (1 – less than 2000 pesetas (12 euros); 2 – $2000 < x < 5000$; 3 – $5000 < x <$ 10,000; and 4 greater than 10,000) and we redefined it as a dummy taking on the value of unity for large purchases (categories 3 and 4) and zero otherwise. X_{13} was also redefined by us as a dummy that took on the value of unity if the answer was more than 4 times a month and zero otherwise.

With respect to their attitudes toward purchasing in supermarkets consumers were asked the following: To what extent do you enjoy doing the purchasing of food products by yourself?, X_{14}; To what extent is it important for you to reduce the amount of time spent on this activity?, X_{15}; To what extent do you search for alternative establishments when doing this type of purchasing?, X_{16}.[6] Finally, consumers were also asked: Out of ten times that you buy fresh products, how many of them would you ask for employee help?, X_{17}; Out of ten times that you patronize the establishment, how many of them do you ask the establishment to deliver products to your home?, X_{18}; Out of ten times that

[6] Answers to these questions and the next three were also recorded on a scale of 0 to 10.

you patronize the establishment, how many of them do you do so in the company of some one?, X_{19} .

A number of questions were asked to capture a consumer's attitude toward the establishment. One of them,X_{20} , asks – To what extent do you plan to patronize this establishment in the future for your food purchases? Another one, X_{21} , asks – To what extent would you recommend this establishment to other persons? In addition information was collected from the managers of the 11 establishments on characteristics of the establishment such as surface area (X_{22}), number of registers, number of employees and number of hours the establishment was open. Table 1 provides descriptive statistics for all the variables used in the study.

III. **Estimation Procedure**.

Given the data we have, our estimating equation for customer satisfaction is the following reformulation of equation (4).

$$S_i(k) = f\{ [10 - D_i(k)]_j , p_i(k), X_i , X_k\} + \epsilon_{ik} . \qquad (5)$$

The dependent variable, S_i (k), represents consumer's i satisfaction with store k and it is a typical measure of customer satisfaction. $D_i(k)_j = X_j$,j = 1,...5, represents the consumer's perception of the level of the j th distribution service provided by the retailer at the k th establishment. Since the maximum value for any of these five variables is 10, we replace M in (4) with this maximum value. Since it is as reasonable to assume that consumers base their evaluations on their perceptions of the distribution service provided as it is to assume that they identify without fail the objective level of the service provided by the retailer, we replace $D^s(k)_j$ in (4) with $D_i(k)_j$ to arrive at the specification in (5). Notice

Table 1. Descriptive Statistics

Name	Variabl	Mean	Standard dev.	Maximun	Minimun
Satisfaction	S	7,823	1,665	10	1
Location	X_1	7,857	2,456	10	0
Information	X_2	7,343	2,254	10	0
Assortment	X_3	7,314	2,321	10	0
Assurance	X_4	7,509	1,803	10	2
Ambiance	X_5	7,860	2,004	10	0
Price	X_6	5,670	2,172	10	0
Gender (male)	X_{70}	0,192	0,394	1	0
Gender (female)	X_{71}	0,808	0,394	1	0
Age (less than 25)	X_{80}	0,169	0,375	1	0
Age (between 25 and 40)	X_{81}	0,364	0,481	1	0
Age (between 41 and 60)	X_{82}	0,335	0,472	1	0
Age (greater than 60)	X_{83}	0,132	0,338	1	0
Life cycle (single)	X_{90}	0,252	0,434	1	0
Life cycle (no children)	X_{91}	0,150	0,357	1	0
Life cycle (children less than 6 years)	X_{92}	0,118	0,323	1	0
Life cycle (children between 6 and 14 years)	X_{93}	0,118	0,323	1	0
Life cycle (children over 14 years)	X_{94}	0,363	0,481	1	0
Hours worked	X_{10}	3,593	3,801	15	0
Average length of stay (minutes)	X_{11}	17,605	10,844	90	1
Size of purchases	X_{12}	0,271	0,445	1	0
Frecuency of purchases	X_{13}	0,661	0,474	1	0
Pleasure in purchasing	X_{14}	7,960	2,235	10	0
Importance of time	X_{15}	6,210	3,301	10	0
Store search	X_{16}	5,295	3,151	10	0
Seeking help in store	X_{17}	5,262	3,755	10	0
Seeking home delivery	X_{18}	0,546	1,851	10	0
Shopping accompanied	X_{19}	2,977	3,282	10	0
Future loyalty	X_{20}	7,472	2,364	10	0
Store recommmendation	X_{21}	6,805	2,348	10	0
Store Surface (100 m2)	X_{22}	9,686	3,429	14	1,5

that the interpretation of the effects of any of these five variables on customer satisfaction remains the same. That is, an increase in $[10 - D_i(k)_j]$ implies a lowering of the level of the j th distribution service as perceived by the consumer and, thus, it should result in a lower level of customer satisfaction.

Similarly, the average price in the establishment , p(k), in (4) is replaced with $p_i(k) = X_6$ in (5) . Since this represents the perception of consumer i with respect to whether prices at the k th establishment are high relative to other supermarkets, we expect that a higher value of this variable will decrease the level of customer satisfaction. We selected a number of the variables identified in the previous section for inclusion in our estimating equation as explanatory variables associated with customer characteristics, X_i , for various reasons. For instance, the general characteristics of consumers captured in variables X_7 - X_{10} were introduced as controls. But we had no particular expectations as to how gender, age, position in the life cycle or extent of work outside the home would affect customer satisfaction.

Objective characteristics of customers buying habits were captured in variables X_{11} -X_{13} . We had no strong priors on the sign of the effect of size of the market basket (X_{12}) or length of the stay in the store (X_{11}) on customer satisfaction, and decided to include them for completeness.[7] On the other hand, frequency of purchases at this establishment within a month (X_{13}) seemed far less innocuous since one can easily argue

[7] One can argue that the bigger the basket the more likely is the consumer to be satisfied with the store, but one can also argue that the consumer buys a bigger basket to minimize exposure to a store that provides low satisfaction. Also one can argue that you stay longer in the store when you are satisfied or that you are not satisfied because you have to stay longer.

that customer satisfaction might be a determinant of frequency of purchases. Moreover, in contrast to the previous two variables, it explicitly involved choosing to go to this store as opposed to determining what to do once you are at the store. Thus, we excluded this variable in our initial preferred specification to avoid introducing a potential simultaneity bias in our specification.

Attitudes toward purchasing of food products were captured in variables X_{14} - X_{19}. The first three variables in this group, however, capture general attitudes toward purchasing food products that were relevant for any establishment. That is, do you enjoy engaging in this activity by yourself (X_{14}), how important is the time spent on this activity (X_{15}), do you search for alternative establishments while engaged on this activity (X_{16}). Since they reflect an attitude toward the activity itself regardless of the establishment, we thought anyone of them may have a systematic effect on customer satisfaction. While we have no strong priors as to their sign, we decided to include all three of these variables in our preferred initial specification.

By the same token the last three of these attitude variables capture whether at the particular establishment the consumer asks for help from employees, for delivery services to his home or for someone to accompany her or him shopping. After some experimentation, which showed that they made little difference to the results , we decided to exclude all three of these variables from our preferred initial specification. The two variables that capture the consumer's attitude toward the establishment are consequences rather than causes of customer satisfaction, and we excluded them on this basis. Two variables that capture objective characteristics of the establishment were

included: namely the surface area, X_{22} , to capture the effect of size and dummies for the firm to which the store belongs, F_k , to capture firm effects.

One econometric problem that arises in estimating equation (5) is that our dependent variable can be interpreted as censored at the top (10) and at the bottom (0).[8] The standard procedure to address censoring is Tobit analysis. In our case, however, it is not clear that the censoring interpretation applies.[9] Indeed the analysis leading to our estimating equation suggests that 10 is a true maximum. If we assume that 0 is a true minimum, there is no censoring. Incidentally, the problem is also mitigated in our case by the fact that many of our independent variables are measured on the same scale as the dependent one. Finally, the assumption of homoskedasticity is likely to be violated in our case (since our observations come from 11 different supermarkets) and this makes the use of Tobit analysis less desirable.[10] In any event we estimated our initial preferred specification of equation (5) using both Tobit analysis and ordinary least squares, but it is not clear that the former should be viewed as the preferred estimation procedure in our context.

A second estimation problem that arises is a selection problem due to the nature of our data. That is, the customers were interviewed immediately after patronizing a

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[8] It turns out there are no observations for this variable that take on the value of zero (and only one that takes on the value of 1) but there are 161 that take on the value of 10.

[9] For instance, see the discussion of censoring in Maddala (1983, Chapter 1)

[10] For example, see Greene (2003, Chapter 22). Incidentally, other estimation issues in the context of qualitative dependent variables lead Cortiňas (2004) to the use of neural networks as an estimation technique in these settings.

particular supermarket. The effect of any variable that appears both in a supermarket selection equation (e.g., equation 6 below) and in the customer satisfaction equation (5) on S could be biased if S is estimated ignoring the selection problem. Fortunately, we have a variable that is very close to a selection variable, namely X_{13} or the frequency of purchases at the supermarket where the consumer is interviewed. Hence, our first step in correcting for the selection bias was to introduce this variable as an explanatory variable. Of course, one can argue that this introduces a simultaneity problem into the estimation of (5) if customer satisfaction is one of the determinants of frequency of purchases. This led us to estimate the following equation,[11]

$$X_{13} = g(D_i(k)_j, \; p_i(k), X_i^* , X_k), \qquad (6)$$

and use predicted values from this equation, instead of actual ones, in equation (5).

We would expect the perceived level of distribution services offered by an establishment to affect the frequency of purchases, although the expected signs can vary. For instance the higher the perceived accessibility of location, X_1 , the greater one would expect to be the frequency of purchases by the consumer, but a greater perceived level of product assortment and variety, X_3 , may very well lead the consumer to a lesser frequency of purchases. Similarly, one could expect a perceived greater amount of information provided, X_2 , to lower the need for purchase occasions. On the other hand, higher perceived assurance of product delivery at the desired time and in the desired

[11] We used probit analysis as our estimation procedure for this equation since X_{13} was defined to take on the value of unity when the customer frequented the supermarket more than 4 times within a month and zero otherwise. Incidentally, X_i *, is used as a reminder that the set of explanatory variables in equation (6) differs from the one used in equation (5), X_i.

form, X_4, could increase purchase occasions, since you know you can get out quickly, but it can also reduce the need for purchase occasions. The latter occurs, for example, if extended hours allow for leisurely shopping and reduce the need to go back for items left out of the basket due to closing time coinciding with other deadlines. Finally, higher levels of perceived ambiance, X_5 , should increase the frequency of purchase occasions.

Expectations of a higher price, X_6 ,should lower the frequency of purchases. We also included firm dummies to capture any firm fixed effects that could affect the frequency of purchases. Of the general consumer characteristics the only one that had any effect upon initial experimentation, and not surprisingly , was the number of hours worked outside the home, X_{10} . The higher the number of hours the lower the frequency of purchases. We also included objective characteristics of purchase behavior: average length of stay, X_{11} , and average size of basket purchased, X_{12}. The expected sign of the latter on frequency of purchases is negative; the expected sign of the former is ambiguous.

Since attitudes with respect to the purchase activity as well as with respect to particular activities related to the store could affect the frequency of purchase, we included all attitudinal variables, X_{14} - $X_{19,}$ in the specification. Last but not least we included the two variables that capture attitudes toward the establishment, namely intention of future purchases at this establishment, X_{20}, and willingness to recommend establishment to others, X_{21}. In both cases we expected a positive sign.

IV. **Results**.

Table 2 presents the results of estimating our preferred initial specification for customer satisfaction (5) using Tobit analysis as well as ordinary least squares. An interesting aspect of these results is that the signs of the coefficients are exactly the same whether or not one uses Tobit analysis or ordinary least squares as the estimation method. This is true for coefficients that are statistically significant (at whatever level) as well as for those that are not. In addition to the constant term there are seven 'statistically significant' coefficients if we use a t- ratio greater than 2 as a rough guideline under both estimation procedures. Furthermore, even the magnitude of the coefficients are very similar under both estimation procedures. For instance, except for the constant term, all the coefficients of ordinary least squares that have a t-ratio greater than 2 are within one standard deviation of the value of the corresponding coefficient under Tobit analysis. Thus, both estimation techniques generate similar, if not the same statistical and economic results.[12]

Every one of the variables involving the distribution services identified in our analysis has the expected sign, and a t-ratio greater than 2. In terms of statistical and economic significance as determinants of customer satisfaction, however, one can say that the assortment, assurance and ambiance provided by the establishment are far more important than the accessibility of location and the information provided by the establishment. Among the last three ambiance in the form of courteous treatment, cleanliness and orderliness is three times as important from an economic perspective.

[12] Incidentally, the R^2 for the OLS procedure is .497, and the adjusted one is .481.

Table 2. Customer Satisfaction and Its Determinants: Basic Results.

	Tobit Anaysis		Regression Analysis	
Variable	Coefficient	T- Ratio	Coefficient	T- Ratio
Constant*	10,982	28,445	10,343	31,975
[10 - X_1]*	-0,050	-2,379	-0,047	-2,594
[10 - X_2]*	-0,061	-2,330	-0,045	-2,010
[10 - X_3]*	-0,152	-5,570	-0,130	-5,645
[10 - X_4]*	-0,147	-4,216	-0,118	-3,971
[10 - X_5]*	-0,439	-13,025	-0,388	-13,469
X_6*	-0,067	-2,483	-0,051	-2,228
X_{22}*	-0,039	-2,122	-0,036	-2,269
X_7	0,067	0,505	0,013	0,111
X_{81}	0,218	1,275	0,156	1,069
X_{82}	0,126	0,695	0,109	0,706
X_{83}	0,066	0,310	0,073	0,412
X_{91}	-0,102	-0,616	-0,103	-0,731
X_{92}	-0,247	-1,152	-0,193	-1,058
X_{93}	-0,141	-0,726	-0,074	-0,447
X_{94}	0,108	0,657	0,095	0,687
X_{10}	-0,023	-1,508	-0,018	-1,388
X_{11}	0,005	1,117	0,005	1,149
X_{12}	-0,151	-1,308	-0,140	-1,426
X_{14}	-0,012	-0,517	-0,013	-0,669
X_{15}	-0,020	-1,267	-0,015	-1,095
X_{16}	-0,019	-1,227	-0,008	-0,594
F1	-0,404	-1,913	-0,321	-1807
F2	0,081	0,377	0,128	705
F3	0,029	0,125	0,037	0,191
F4	0,024	0,102	-0,007	-0,037
F5	-0,394	-1,705	-0,290	-1,488
F6	0,188	0,808	0,139	0,717

* t-ratio greater than 2 with both estimation methods

Moreover its t-ratio is so much greater than the other t-ratios that it is the one most likely to survive a wide barrage of econometric adjustments. Among the other results, higher prices, as expected, lower customer satisfaction and the same is true of larger establishments.

Finally, customer characteristics seem to have little or no impact on customer satisfaction. This is true of general demographic characteristics, general attitudes toward purchase activities and attitudes toward specific features of the establishment. Similarly, objective characteristics of the purchase activity, for example the average size of the basket purchased by the customer, do not matter in explaining customer satisfaction. Finally firm dummies were included in the Tobit analysis and in the OLS regression. None of the firm dummies were statistically significant at the 1% level.

Since our samples are generated by interviewing customers at a particular establishment, as indicated before, one can argue that our coefficient estimates suffer from a selection bias of the following nature. They reflect not only the impact of a variable on customer satisfaction but also the impact of the same variable in attracting these customers to the store. In order to control for this bias, we included as an explanatory variable a dummy, $X_{13,}$ that takes on the value of unity when a customer frequents the store 4 or more times within a month and zero otherwise. The results are presented in Table 3. They are exactly the same as we found in Table 2. Indeed, in the immense majority of cases the magnitudes of the coefficient estimates in Table 2 differ from the ones in Table 3 only in the third decimal! The coefficient of the new variable is positive, as expected, but it is not statistically significant at any reasonable level of significance.

One can also argue more generally that customer satisfaction is a determinant of frequency of patronage and that the estimates from Table 3 are biased on this account. If

Table 3. Customer Satisfaction and Its Determinants: Selection Correction.

	Tobit Anaysis		Regression Analysis	
Variable	Coefficient	T- Ratio	Coefficient	T- Ratio
Constant*	10,765	25,051	10,126	28,039
[10 - X_1]*	-0,044	-2,000	-0,040	-2,156
[10 - X_2]*	-0,061	-2,335	-0,045	-2,013
[10 - X_3]*	-0,153	-5,635	-0,132	-5,723
[10 - X_4]*	-0,147	-4,214	-0,118	-3,968
[10 - X_5]*	-0,434	-12,792	-0,383	-13,201
X_6*	-0,068	-2,510	-0,052	-2,271
X_{22}*	-0,039	-2,148	-0,036	-2,296
X_7	0,059	0,449	0,005	0,040
X_{81}	0,211	1,233	0,150	1,031
X_{82}	0,118	0,648	0,102	0,660
X_{83}	0,053	0,253	0,063	0,353
X_{91}	-0,105	-0,632	-0,106	-0,752
X_{92}	-0,247	-1,155	-0,195	-1,069
X_{93}	-0,145	-0,747	-0,079	-0,477
X_{94}	0,102	0,617	0,087	0,626
X_{10}	-0,022	-1,421	-0,017	-1,290
X_{11}	0,005	1,082	0,005	1,109
X_{12}	-0,132	-1,130	-0,120	-1,213
X_{14}	-0,010	-0,452	-0,011	-0,591
X_{15}	-0,020	-1,257	-0,014	-1,074
X_{16}	-0,020	-1,278	-0,009	-0,657
X_{13}	0,085	1,138	0,086	1,353
F1	-0,413	-1,957	-0,331	-1,863
F2	0,074	0,342	0,120	0,661
F3	0,014	0,061	0,021	0,108
F4	0,005	0,023	-0,027	-0,135
F5	-0,410	-1,774	-0,306	-1,565
F6	0,183	0,786	0,134	0,691

* t-ratio greater than 2 with both estimation methods

this were the case, and it mattered strongly, we would have expected the results in Table 3 to differ from those in Table 2 in visible and systematic ways. It is worth emphasizing that they don't. Nevertheless for completeness sake, we decided to estimate a frequency of patronage equation along the lines of (6) and, subsequently, to use the predicted values from this equation as an explanatory variable in the customer satisfaction equation.

First we present the results of estimating (6) by probit analysis and ordinary least squares in Table 4. Just as expected consumer's perceptions of the distribution services provided by the establishment affect the frequency of patronage. In particular, greater accessibility of location and broader assortments affect the frequency of patronage with the expected signs (positive and negative, respectively) and are statistically significant at high levels of significance. Ambiance has the expected positive sign and is statistically significant at the 5% level, but not at the 1 % level. Information and assurance have no statistically discernible effect on frequency of patronage. The same is true of prices.[13]

Working outside the home, on the other hand, is one objective characteristic of consumers that clearly decreases the frequency of patronage and the same is true of the size of their purchase basket in monetary terms. Among the attitudinal variables, none has a t-ratio greater than 2. Only one comes close, and it suggests that those consumers who value home delivery possibilities at the establishment don't patronize stores frequently. Last and perhaps most important statistically and economically, intentions of future purchases (X_{20}) have a powerful positive effect in explaining current frequency of patronage. No firm dummy was a statistically significant determinant of frequency of patronage even at the 10% level.

For completeness sake, we estimated equation 5 using the predicted value from

[13] We also tried store size at one point and it had no effect.

Table 4. The Determinants of Patronage Frequency.

	Probit Analysis		Regression Analysis	
Variable	Coefficient	T- Ratio	Coefficient	T- Ratio
Constant**	-1297	-3,002	0,090	0,714
X_1*	79	3683	0,024	3,758
X_2	-11	-0,422	-0,004	-0,508
X_3*	-84	-2,950	-0,025	-3,045
X_4	18	0,499	0,004	0,367
X_5*	75	2,204	0,022	2,138
X_6	21	0,790	0,006	0,771
X_{10}*	-46	-3,467	-0,014	-3,517
X_{11}	4	0,867	0,001	0,868
X_{12}*	-478	-4,285	-0,152	-4,414
X_{14}	-34	-1,449	-0,010	-1,506
X_{15}	19	1,222	0,006	1,382
X_{16}	-7	-0,449	-0,002	-0,343
X_{17}	-13	-0,892	-0,004	-1,002
X_{18}	-50	-1,938	-0,015	-1,779
X_{19}	-8	-0,524	-0,002	-0,526
X_{20}*	198	7,943	0,065	8,679
X_{21}	9	0,323	0,004	0,454
F1	-24	-0,112	-0,014	-0,224
F2	-47	-0,226	-0,014	-222
F3	190	0,890	0,056	904
F4	-120	-0,504	-0,040	-0,575
F5	210	0,857	0,061	0,841
F6	-101	-0,431	-0,033	-0,475

* t-ratio greater than 2 with both estimation methods

** t-ratio greater than 2 with one estimation method

equation 6 as an explanatory variable, instead of X_{13} itself. The results are presented in Table 5. All but three individual results are the same as before. First, with respect to distribution services the results are the same with one exception. Accessibility of location has no effect on customer satisfaction in Table 5 whereas before (Table 3) it had a statistically significant effect. The other coefficients of distribution services retain the same signs as before, continue to be statistically significant at similar levels and are even close in magnitude to the results in Tables 2 and 3. Second, the new included variable, the predicted value of frequency of purchases, has a positive sign, as expected, and a t-ratio around 5 or greater. Including the frequency of purchases itself did not generate statistically significant results, just as we saw in Table 3. Finally, two of the firm dummies have t-ratios greater than 2 in Table 5 but not in Table 3. The signs are the same in both tables.

We suspect that intentions of future purchases, (X_{20}) in equation 6, is determined by customer satisfaction and the correction using the predicted value of X_{13} in equation (5) is a remedy worse than the disease, because it introduces a simultaneity problem in the analysis. Even in this case, however, our earlier results with respect to all distribution services but accessibility of location go through very much the same as before. In this context it is useful to stress that, statistically, the role of accessibility of location in determining the frequency of patronage in Table 4 is very different from its role in determining customer satisfaction in Tables 2 and 3. It is the variable with the highest t-ratio (among the distribution services) in Table 4 and with either the lowest or second lowest one (again among distribution servcies) in Tables 2 and 3. Indeed, it disappears as a statistically significant variable in Table 5. These results are consistent with recent findings by Berne, Mugica and Rivera (2005) who assert "...location is an important factor in the choice of the regular store (as in the frequency of shopping at it),

Table 5. Customer Satisfaction and Its Determinants: Estimated Selection Correction.

	Tobit Anaysis		Regression Analysis	
Variable	Coefficient	T- Ratio	Coefficient	T- Ratio
Constant*	9,650	20,631	9,160	23,132
[10 - X_1]	0,014	0,550	0,010	0,455
[10 - X_2]*	-0,065	-2,537	-0,050	-2,240
[10 - X_3]*	-0,182	-6,616	-0,157	-6,722
[10 - X_4]*	-0,134	-3,881	-0,106	-3,629
[10 - X_5]*	-0,377	-10,651	-0,334	-10,964
X_6*	-0,075	-2,795	-0,057	-2,552
X_{22}**	-0,036	-1,996	-0,033	-2,138
X_7	0,088	0,675	0,032	0,291
X_{81}	0,169	1,002	0,115	0,799
X_{82}	0,072	0,402	0,062	0,405
X_{83}	0,008	0,037	0,022	0,126
X_{91}	-0,080	-0,491	-0,084	-0,601
X_{92}	-0,235	-1,113	-0,185	-1,030
X_{93}	-0,157	-0,819	-0,093	-0,569
X_{94}	0,081	0,501	0,072	0,526
X_{10}	0,002	0,111	0,004	0,287
X_{11}	0,002	0,505	0,002	0,510
X_{12}	0,136	1,058	0,115	1,056
X_{14}	0,004	0,196	0,001	0,078
X_{15}	-0,022	-1,425	-0,017	-1,266
X_{16}	-0,021	-1,323	-0,009	-0,667
X_{13}Estimated*	1,583	4,828	1,411	5,037
F1*	-0,478	-2,290	-0,388	-2,208
F2	0,019	0,089	0,074	0,410
F3	-0,160	-0,693	-0,129	-0,664
F4	-0,106	-0,461	-0,123	-0,629
F5*	-0,525	-2,290	-0,405	-2,089
F6	0,133	0,579	0,090	0,471

* t-ratio greater than 2 with both estimation methods

** t-ratio greater than 2 with one estimation method

but it is not part of the satisfacion with the store service." Since accessibility of location is also not under the control of the retailer in the short-run, in the next section we look at the implications of our results by focusing on the results from Table 2 for the other four distribution services.

V. **Managerial Implications**.

Drawing the managerial implications of our results requires us to proceed in two steps. The first one follows somewhat closely from our empirical analysis and is most simply described by answering the following question – What is the impact on customer satisfaction of the retailer increasing the level of provision of a distribution service as perceived by the consumer? The second step requires us to rely directly on the literature on customer satisfaction but it can also be described simply in terms of a question – What is the impact on economic performance variables of an increase in customer satisfaction?

Just as indicated at the end of the previous section, conceptual grounds and the nature of our results suggest that the first question makes sense with respect to the four distribution services X_2, X_3 X_4 and X_5. In general the answer is given by

$\partial S/\partial[10 - D_i(k)]_j = b_j$, which implies

$$\partial S/\partial[D_i(k)]_j = -b_j. \quad (7)$$

For instance, using our OLS results from Table 2, a one unit increase in information, X_2, increases customer satisfaction by 0.045 units. Were we to prefer the estimates correcting for selectivity in Table 5, a one unit increase in information would increase customer satisfaction by 0.050 units. Similar experiments yield: for assortment, X_3, 0.130 (Table 2) and 0.157 (Table 5); for assurance, X_4, 0.118 (Table 2) and 0.106 (Table 5); and for ambiance, X_5, 0.388 (Table 2) and 0.334 (Table 5). If the cost per unit increase of a distribution service, c_j, was the same for all distribution services, the conclusion would be that ambiance, X_5, is far more powerful than any of the others in increasing customer

satisfaction. That is, it is about three times more powerful than assortment or assurance and 60 times more powerful than information.

What the store manager is interested in knowing, however, is – What is the impact on customer satisfaction of increasing the level of a distribution service per unit cost? Namely,

$\partial S/\partial[D_i(k)]_j \; / \; c_j = - \; b_j / \; c_j$. (8)

Our previous answer was based on the implicit assumption that the per unit cost was the same for all distribution services and equal to unity. While the actual value will vary from store to store and the manager is in a much better position to estimate it than the researcher, the relative values expected among the distribution services are likely to be more similar among stores and deducible or predictable from the questions asked in the survey.

For instance, judging from the questions the costs of producing an additional unit of information and an additional unit of ambiance should be quite similar. The information, X_2 , question asks the extent to which the employees and signs in the establishment facilitate your information needs with respect to items, their location, prices, and sales. The ambiance, X_5 , question asks the extent to which treatment by employees, cleanliness and orderliness of the store allow your purchase to be an agreeable experience. Training employees to provide information or to be courteous are similar activities. The same is the case for providing signs about items location, prices and sales and providing cleanliness and orderliness in the store. Indeed, one could argue that the skills required for the former activity are more expensive than the ones required for the latter activity.

In the case of assortment, X_3 , the question asks the extent to which the assortment allows the consumer to do all their purchases at this establishment The costs of producing an additional unit entail finding , ordering, presenting and inventorying new products and, thus, are likely to be considerably larger than the costs of information or

ambiance. Since the benefits are considerably lower than those of providing ambiance, the choice of which of these two provides the greatest relative value in attaining additional satisfaction is clear. Similarly, the two dimensions of assurance of product delivery at the desired time captured in our variable, $X_{4,}$ are expensive to change. One of them requires adding additional registers or cashiers and the other one requires keeping the store open longer with all the additional labor and energy costs that this entails. Thus ambiance is 3 times as powerful in increasing customer satisfaction as assurance and it is also likely to be far less costly to increase it by one unit than it is to increase assurance. Hence, ambiance provides far greater relative value than assurance in attaining additional satisfaction.

Summing up, there is no doubt that ambiance, as defined in this particular survey, is the distribution service that the store manager should focus on. That is, the manager should try to obtain an estimate of the monetary cost of increasing ambiance by one unit ($c_j = c_5$) so that (8) can be compared with the monetary benefit of increasing satisfaction by one unit. The latter will be given by the value of $[\partial R/\partial S]$, where R stands for revenues or sales.

Not having direct information on the impact of customer satisfaction on sales, we searched the literature on customer satisfaction to find a range of reasonable estimates for this measure of economic performance. What we found, however, was that most of the literature on customer satisfaction focuses on products and firms rather than on stores or establishments as the unit of analysis, and on profits and repurchase intentions rather than on sales as measures of economic performance.

The main strand of literature is best illustrated by Anderson and Sullivan's (1993) frequently cited paper. It stresses the role of the quality of products and expectations about this quality in determining satisfaction; it focuses on the firm at both the theoretical and empirical level; and, finally, it identifies repurchase intentions as the economic performance variable that is determined by satisfaction. Anderson, Fornell

and Lehman(1994) maintain the focus on products and firms and the role of quality and expectations in determining satisfaction but concentrate on rate of return on investment as the economic performance variable determined by satisfaction. Finally, a very recent contribution along these lines, Anderson, Fornell and Mazvansheryl(2004) extends the approach by using as it's measure of economic performance shareholder value as captured in Tobin's q.

There are two fundamental differences between our approach and the above strand of literature. Anderson Fornell and Lehman (1994), for example, note the distinction between transaction- specific customer satisfaction, evaluation of a specific experience, and cumulative customer satisfaction, overall evaluation based on total purchase and consumption experience. In their context of analyzing long-run profitability or repurchase intentions, the latter concept is the sensible one to use. In our data context, transaction-specific customer satisfaction is the only feasible concept of customer satisfaction to analyze. A second important difference is our focus on the store as the unit of analysis. Their emphasis on quality and expectations about a particular product provided by a firm corresponds to our emphasis on the measurement of distribution services provided by a store relative to the potential demand by the store customers. These services correspond to quality elements, except that they act as independent outputs of a store instead of being embedded in a product.

Mention should also be made of an important study by Rust and Zahoric (1993) that analyzes the impact of customer satisfaction on customer retention while viewing "...the terms 'service quality' and 'customer satisfaction' almost interchangeably...". They construct several dimensions of customer satisfaction, by using factor analysis to reduce a set of nine service elements to three service factors or dimensions of satisfaction, that are then used to determine retention rates using logit analysis. This procedure could be interpreted to imply that the effect of these reduced factors or dimensions on overall satisfaction is the same as their effect on retention rates. Our

empirical analysis suggests that this interpretation may not be warranted in all applications. For, the effects of our dimensions of distribution services on an overall index of customer satisfaction (Tables 2, 3 or 5) are quite different from their effects on the probability of patronizing the store 4 or more times a month (Table 4). The latter probability can be viewed as closely related to the probability of retention. These effects differ with respect to magnitude, statistical significance and even signs![14]

Last but not least, we come to the one study in the literature that is closest to answering the question we are interested in for our second step. Gomez, McLaughlin and Wittink (2003) focus on supermarkets and relate changes in customer satisfaction to changes in sales performance. They use six waves of surveys directed at evaluating customer satisfaction with a supermarket for 250 supermarkets of a publicly held supermarket company together with sales data to construct a statistical model of the satisfaction sales link over the period 1998-2001. Their unit of analysis is the store, so they aggregate their customer satisfaction results for each store. They assume the impact of satisfaction on sales takes place three months later and this generates a panel of stores with observations on average customer satisfaction every six months (the length of time between consumer surveys) and sales data, which is available monthly, three months later for every wave.

Their surveys contain 20 questions on store attributes to be answered on a scale of 1 to 6 , including one on customer satisfaction itself (CS). These measures are collapsed to three dimensions or factors that explain customer satisfaction through the use of factor analysis. Among these three the one that corresponds more closely to our concept of

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[14] Incidentally, these authors also provide a variety of mechanisms, relying on judgements and analyses, to obtain a numerical assessment of whether devoting resources to the service factors in their analysis is optimal in terms of the value of their effects on retention rates and of the latter on market share. These procedures, which are the focus of their contribution, provided useful guidance in our somewhat different context.

ambiance is a measure they call customer service (CU) that contains seven attributes, including cleanliness of parking and friendliness of cashiers. Incidentally, in their statistical estimates this measure turns out to be a far more powerful determinant of customer satisfaction than the other two factors. Following the main objective of their analysis, the authors estimate the effect of customer satisfaction on sales and use these estimates to calculate the impact on sales of increasing customer satisfaction under various assumptions. In one of their scenarios, they increase customer satisfaction by 0.3 by increasing customer service by 0.5 while leaving the other determinants of satisfaction at the same level.[15] The impact on sales evaluated at the average level of customer satisfaction in the sample is $113,000 (1996 dollars) of annual sales for a supermarket with 45,000 square feet and $25 of sales per square feet.

Since our scale is 0 to 10, the 0.5 increase in the 1 to 6 scale for customer service should be roughly equivalent to a one unit increase in ambiance. The average size of our stores is (968.6 x3.28 =) 3,177 square feet. Hence, the impact on sales in our case would be $113,000 x(3,177/ 45,000) = $7,978. Even if sales per square foot in Pamplona's supermarkets were half of what they are in the American supermarkets, the managers of the stores in Pamplona would increase profits by increasing effort to increase ambiance as long as the cost per unit (c_5) of doing so was less than the increase in sales of $ 3,989 per year. Based on the authors other results one would expect that for stores with lower than average levels of customer satisfaction, the impact on sales would be greater and for stores with higher than average levels of customer satisfaction the impact would be smaller.

VI. **Concluding remarks**

[15] In their model doing nothing along the other two dimensions reduces customer satisfaction by 0.1 each.

Our main contributions in this paper are the following. First, we have integrated the literature on the role of the consumer in retailing with the literature on the measurement of customer satisfaction. We have done so by drawing the implications of viewing distribution services as outputs or retail firms and as fixed inputs in the household production functions of consumers. Second, empirical implementation of this conceptualization with data typical of that used in customer satisfaction surveys of consumers has led to strong empirical results. These results support the view that variables corresponding to distribution services are important, if not the main determinants of customer satisfaction at the store level for supermarkets. Third, our empirical results also indicate in a fairly conclusive manner that the role of distribution services as determinants of customer satisfaction is different than as determinants of frequency of patronage. Fourth, we have also shown how store managers can use this information to determine whether or not it is worth their while to devote additional resources to increasing a particular distribution service.

All research has limitations and often these limitations point to areas of further research. Ours is no exception. First, the operational implementation of our approach is to a large extent dependent on the ability of managers to estimate the costs of increasing effort in the provision of different distribution services. In our case, we had the good fortune of being able to identify the most effective distribution service for increasing costumer satisfaction without managerial input. But this is unlikely to be the case in all or even most situations. Hence, it suggest the desirability of devoting research efforts in this direction. Second, our results apply to the level of the store. Often one is interested in results at the level of the firm. In this case, our approach provides a basis for building those results from the ground up. That is by estimating the impact of distribution services on customer satisfaction per store and aggregating across stores. This is a very different procedure than what has been used in the literature on cumulative customer satisfaction. Third, our analysis was based on a single cross section. This prevented us

from looking at dynamic issues and asymmetric responses which are obviously worthy topics for further research. Finally, we have followed a conceptual approach rather than a statistical approach to the identification of the distribution services that determine customer satisfaction. Both approaches have strengths and weaknesses and identifying them in is an interesting area for future research.

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