

Abstract Number: **007-0117**

**Measuring the Logistic Services Quality and the Retailers' Behavioral Intentions:
An Empirical Study of the Soft Drink Industry**

Cid Gonçalves Filho

Fumec University

Address: Alameda das Amendoeiras 610 / Ouro Velho / Nova Lima MG / Brasil / 34.000-000

cid@consumer.com.br

Phone: 55 31 99815195

Gustavo Quiroga Souki

Fumec University

Address: Alameda das Amendoeiras 610 / Ouro Velho / Nova Lima MG / Brasil / 34.000-000

souki@consumer.com.br

Phone: 55 31 99815195

POMS 18th Annual Conference

Dallas, Texas, U.S.A.

May 4 to May 7, 2007

Measuring the Logistic Services Quality and the Retailers' Behavioral Intentions: An Empirical Study of the Soft Drink Industry

Abstract

In a scenario of strong competition, the recent changes in the consumers markets' competitive structures, suggests that the power of the marketing channels has increased in relation to the industry. On the other hand, logistic has been referred to as the differential element, which is capable of creating a competitive advantage to a organization. However, studies that seek to explore the retailers' behavioral intentions as the result of the logistic services performed by the industry, are scarce. Considering these hypotheses, a survey was elaborated with the intention of measuring the logistic quality performed by the industry and the soft drink retailers' behavioral intentions. Seeking to validate the logistic services and behavioral intentions measuring scales, a qualitative exploratory phase and a survey with 360 respondents was developed. This paper analyzes the relations between the qualities of the logistic services and the satisfaction in the retailers' behavioral intentions, using an innovating form and organizing them in a structural nomological chain. In this way, it will contribute to the development of the knowledge in this field. It also proposes the creation of the LSQI (Logistic Service Quality Index), aimed in measuring the Quality of the Services in an aggregated form, which will permit a comparison between competitors and setting goals for management upgrading and competitiveness increase.

Keywords: Logistic, Services, Retail, Soft drinks.

1. Introduction

The constant increase of competitiveness has caused a great change in the customer-supplier relationship, with the growth of the retailers' power and of the customer's demanding level. The researches that were done by CEL (2003), confirm this new reality. According to this research's data, the price factor is a variable of extreme importance in the retailers' purchasing decision, however other variables, as the product's quality and the service offered to the customer, has been showing an increasing weight in the retailers' purchasing decision process, with reference to consumer's goods. According to Fleury (2000), the rapid development in telecommunication, transport, information processing and information diffusion, have increased the client's possibilities of choice, transforming issues like availability, after sale support, aggregated service, flexibility and reliability into issues which have a bigger impact in the purchasing decision process.

According to Dantas (2000), logistics is a fundamental tool for the industries' strategic success, for it contributes to increase flexibility, improvement in services and cost reduction, these factors being indispensable for any company that wants to compete in today's scenario. Against this new context, the companies should implement strategies that take into consideration this reality and which allows them to distinguish themselves from their competitors. According to Bowersox and Closs (2001, p. 307), the construction of a competitive advantage based on logistic competence is a possibility that should be considered in most of the markets. However, since there is not a static competitive environment, the companies should analyze their own and their competitors logistic performance under a dynamic vision, in which the clients and stakeholders' necessities and evaluations are continually changing.

According to Fawcett (1996), through the logistic processes management it is possible to obtain differentiated results of the customer's satisfaction with cost reduction. For this author, logistic represents an important option, not only because it increases operational efficiency but it also because it can increase, in a consistent form, the client's loyalty through the improvement of services. Daugherty (1992) complements declaring that it is important to customize the customer's services and to answer rapidly to their demands. However, these actions will only transform into competitive advantages if the company's margins and profitability are not sacrificed. To attend the client's expectations in an indiscriminate form and with out established standards would not necessarily be beneficial, especially if the costs are not taken into consideration.

Thus, it is relevant that the organizations understand clearly the meaning of client's service to their target public, which are the variables taken into consideration in their quality perceptions and which are the real impacts the cause in theses client's purchasing intent and attitudes. In this sense, it is necessary to have a measuring established standard that permits to manage, improve, compare and correct eventual problems in the rendering of services to these customers and in the process of managing the logistic services. It was with this reasoning that the question that directs the survey occurred: How to evaluate the quality of the logistic services rendered by the industry and which its impact in the on the retailers' behavioural intent?

2. Literature Revision

2.1 Customer Service

For LaLonde and Zinzer (1976), “Customer Service is a process which main objective is to provide the supply chain with significant gains of aggregated value, in an efficient way in cost terms”. Bowersox and Closs (2001) define aggregated value services as those additional services that exceed the basic level supplied by the industry. According to Lambert (1998), the service’s level is the best translation when meeting the customer’s expectations is in focus. The logistic service, according to the author, would be a function resulting from the management of several operational variables of the logistic systems, such as: order processing, transport and storage, outlining together with price positioning, the promotion and product and the combination of the organization’s marketing.

Sharma, Grewal and Levy (1995), declare that the high level of services, create a sustainable competitive advantage, since the improvement introduced in the distribution services of a company are not easily equalized as much as the relative improvement of the other components of the marketing mix. Ballou (2001), Bowersox and Closs (2001) and Chistopher (1997) point out that the function of the customer service is to supply the “time and place availability” in the transfer of merchandise between the purchaser and the vendor. According to the authors, the value of a determined product elapses from the moment in which it is available, or “in the hands” of the customer. Rosenbloom (2002) completes, pointing out that to make the product “available” is, in its essence, everything that one expects of the distribution function in a business.

On the other hand, for Bowersox and Closs (2001), Christopher (1999), the key factor to have success in a profitable and long lasting relation with a client, is to have a good performance in the main interface areas between the organization and its target public, which suggests the necessity of having integration between Marketing and Logistics. In this context, the customer service is an ample concept which includes the tangible and the intangible elements of the customer / supplier relationship, being that the logistics performance is a possible antecedent of the customer's satisfaction and loyalty.

Lastly, it should be pointed out that, despite the fact that two clients will never be exactly the same in terms of service necessities, it may happen with a certain frequency to have several customers creating groups or "segments", which are characterized by a large similarity in their necessities (Christopher, 1997). These groups can be visualized as being the required "service standard". The service segmentation approach, according to Christopher (1997), follows a three phase process:

1. Identify the key components of the client service, such as seen be by the customers.
2. Establish the relative importance that the customers impute to those service's components.
3. Identify the "groups" of customers, according to the similarity of their service preferences.

In this sense, it would be proper for the companies to clearly identify the attributes which are considered relevant to the clients in the rendered services and invest in attending these factors.

2.2 Elements of the Customer Service

Through the years, researchers and professionals in logistic have been worrying a lot about the customer service elements that are offered by the logistic system. Several attempts have been made to define and enumerate these elements and also to measure the performance in terms of what has been conventionally called “service standards”. According to Bowersox and Closs (2001), the survey and the evaluation of the offered service performance is consistent with the fundamental ideas, in which marketing is based on, being that:

- the customers’ necessities comes before the products and services;
- the products and services only have value when they are available and positioned, considering the customer’s perspective;
- profitability is more important than volume.

Still, according to the authors, the customer service has three basic dimensions that should be achieved, being them:

- availability: which is the capacity of having available stock in the place and in the quantity (availability percentile) requested by the client;
- performance: which is Excellency in operational performance in terms of speed, consistency, flexibility, failure and recovery;
- reliability (synonymous of quality in logistic): which is the capacity of fulfill the established standards of availability and performance.

Due to the great variety of customer service components, Bowersox and Closs (2001) and Christopher (1997) suggest the importance of knowing that some of these components are more relevant than others, and that brings the necessity of understanding customer service in terms of requirements, which differentiate the several market segments and not the adequate universal list. Ballou (2001) completes, pointing out that in each market in which the firm competes, a different rate of importance should be attributed to each of the different service elements.

According to Christopher (1997), the main objective of any customer service strategy should be the increase of customer retention, which does not mean that the strategy does not also foresee the performance of an important function in the conquest of new customers. In this context, Christopher (1997) declares that a new approach is rapidly emerging in marketing and in logistics, focusing more in relationships, satisfaction and long term, reducing the need of the customers in considering offers from alternative suppliers during the purchasing process. Gustafsson (2003) suggests that the rendering of a logistic service to a customer, done with precision and efficiency, is a significant source of competitive advantage and for this reason, the desired result of a logistic service has to be planned in a strategic level. According to the author, there are three dimensions in the logistic service that need to be considered. The first and the most basic dimension is the functional, in the level of activity and process. The second dimension is related to performance and quantifies the specified service level. The third is related to philosophy and in the emphasis to orientation with respect to the manner and the importance of serving all of the company's customers as one.

2.3 Empirical Researches of Evaluation of the Customer Service Level

Given the importance that the service level represents to the firm's performance, the literature shows a great number of researches about the subject. These studies vary from the purely theoretical researches up to the ones that develop measuring scales of the rendered services' level. Among these researches that aim in measuring the services' levels, some stand out and will be present in the sequence of this paper (see Frame 1).

According to Gustafsson (2003), different concepts have influenced the measurement and modeling of the customer service, however two approaches can be identified. The first is the physical distribution approach, which concepts the customer service as occurring, where the orders' supply, delivery and information systems form an interface with the customers. The second is the marketing approach, which integrates the physical distribution service with a range of customer services related to marketing. The research about logistic services and its operational capacity, in a quantitative form, has been performed since the 60s, having Simon (1965) as its precursor. After an ample literature revision about logistic service, the Frame 1 was elaborated in a manner to visualize the relevant elements that form the logistic service, providing an operational research instrument:

Frame 1: Customer service elements according to several researched authors

(continuation)

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	Citations
Time to deliver pendencies								x			x				2
Control of the delivering operations							x	x							2
Regular delivering conditions								x					x		2
Available Technical information are adequate											x		x		2
Main motives of complaint								x	x						2
Percentage of failures								x	x						2
Products general quality							x							x	2
Requests for technical and maintenance information								x	x						2
Projection of delivery dates when the request is made							x								1
The delivery is quick										x					1
The stock is close to the client										x					1
The products are constantly in stock										x					1
The shipments rarely contain wrong items											x				1
The shipment rarely contain incorrect quantities											x				1
Evaluation and correction of the internal processes													x		1
Average time delay								x							1
Indexes of delays														x	1
The supplier is informed of possible demand increase, stocks are maintained										x					1
The required quantities are not modified											x				1
Periodicity of the deliveries								x							1
Quickness in unloading								x							1
The shipments rarely contain substituted items											x				1
Written Service Policy			x												1
Collecting Procedures	x														1
Organizational Structure			x												1
Product support							x								1
Price policy							x								1
Sales terms							x								1
Merchandising support								x							1
Support from the sales promoter								x							1
Correct invoice												x			1
Use of the client's packing													x		1

Frame 1: Customer Service elements according to several researched authors (continuation)

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	Citations
Use of bar codes													x		1
Electronic transfer of data													x		1
Stock Monitoring														x	1
Tracking ability			x												1
Agility in confirming								x							1

Authors legends:

- | | |
|---|--|
| A - Ballou (1995) | H - CEL (2003) |
| B - Lambert e Sterling (<i>apud</i> Moraes e Lacombe,1999) | I - Ellram, La Londe and Weber (1999) |
| C - Christopher (1997) | J - Bienstock, Mentzer and Bird (1997) |
| D - Heskett (<i>apud</i> Moraes e Lacombe,1999) | K - Mentzer, Flint and Kent (1999) |
| E - Sharma, Grewal and Levy (1995) (<i>apud</i> Moraes e Lacombe,1999) | L - Forslun (2003) |
| F - Bowersox and Closs (2001) | M - Gustafsson (2003) |
| G - Emerson and Grimm (1998) | N - Souza, Moori and Marcondes (2003) |

Source: Bibliographic Revision.

4. Methodology

To measure the level of the logistic quality in retail and the behavior intentions, specific scales were developed. The methodological procedures were the following, exhibited in

Figure 1:

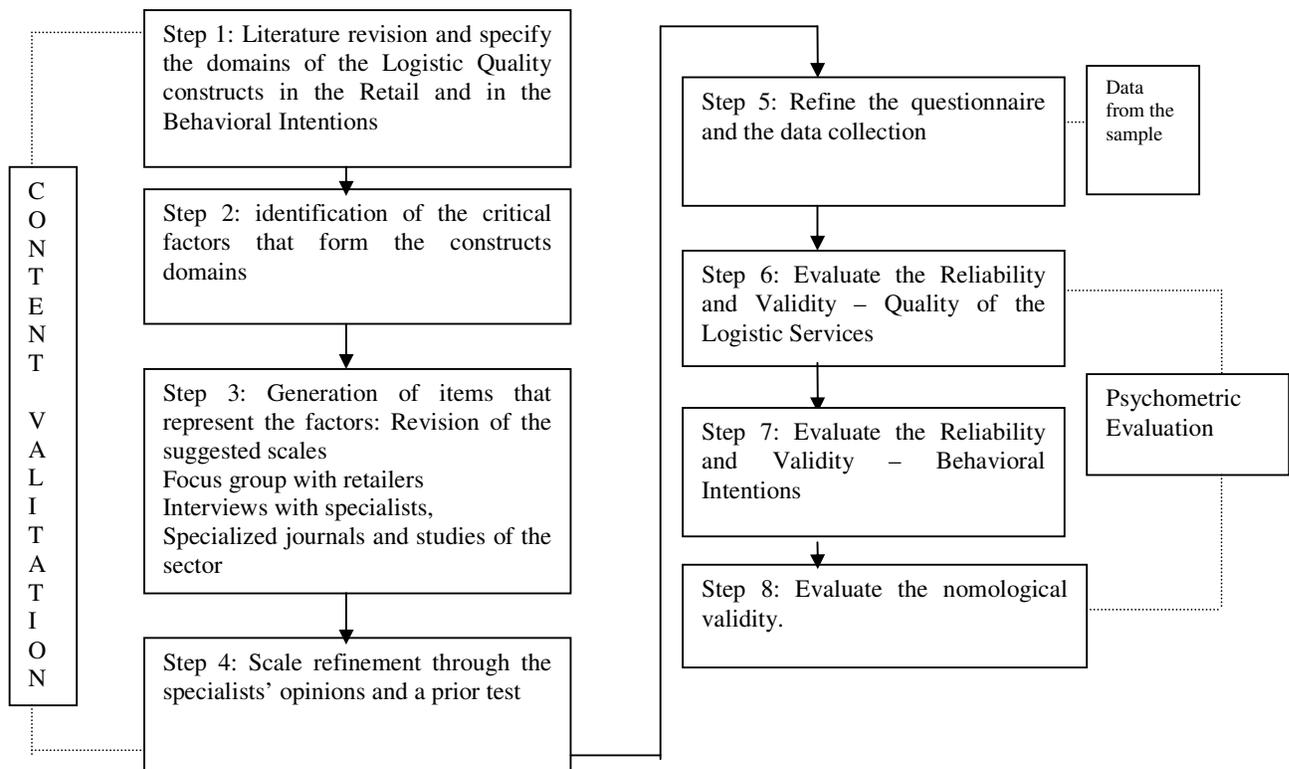


Figure 1 – Steps used to develop the scales

Source: The research, adapted from Vasquez, Del R o and Iglesias (2002)

Sample and Study Period

A total of 362 questionnaires were collected. Small retailers were interviewed (being 1 to 8 check outs) in the State of Minas Gerais, Brazil, with an average of 8 employees. This segment was chosen for, beyond representing a great number of retailers (one can say the biggest part), it is subject to have a bigger variance of service quality than the big retailers, which usually purchase big volumes and receive a priority treatment from industry. The collecting period was between August and November of 2005.

5. Data Exploratory Analyses

The data exploratory analyses followed methodologically a series of stages, which the intention of verifying the presuppositions and the data's consistency, verifying the reliability and validity of the measurements and scales: treatment of the absent data, treatment of the reverse items, analysis of the extreme univariate multivariable, normality analysis, linear analysis.

6. Verification of the Scales' Validity and Reliability

6.1 Logistic Services' Quality Scales

The items of the Logistic Service Quality Scales were initially obtained from anterior studies, especially from: Mentzer, Flint and Hunt (2001), CEL (2003), Forslund (2003), Gonçalves et. al (2005), Villela et. al (2005) and Bienstock, Mentzer and Bird (1997) among others (see Frame 1). Next, discussion groups with retailers and interviews with specialists supported the development of the preliminary research instrument. With the objective of refining the scale, a factorial exploratory analysis was initially made, having as its objective to reduce and identify the logistic services' quality measuring factors, as indicators of the KMO and of Bartlett's test. The total variance applied for the solution with 7 factors stayed in 67.96% (Main Components /Varimax. The results of the exploratory factorial (factors) analysis can be found in the Table 1):

Table 1 – Exploratory Factorial Analysis – Logistic Services’ Quality

<i>Items</i>	<i>Mistakes, pendencies and solution of the problems</i>	<i>Attending Requests</i>
17. Efficient communication with you about changes in prices, products, delays, substitutions and of new products	0.4572	
29. Adequacy of substituted or changed items by the firm	0.7221	
30. Attending capacity of the products technical specifications which are delivered by the firm	0.5036	
31. Efficiency in the firm’s procedures to correct the quality problems / quantity and mistakes	0.8132	
32. Communication Process of the problems with the firm	0.6782	
33. Action taken by the firms to solve the quality problems of the quantity of products	0.8210	
34. The firm’s capacity to solve quickly mistakes in requests, documentation and damages	0.7340	
35. Efficiency of the firm’s Policy and Procedures of return	0.7956	
37. Time that the firm takes to solve the pendencies of a request	0.7436	
18. Reliability of the given information		0.4708
20. Efficiency in the requisition procedures (request)		0.6787
21. Facility to make a request / requisition		0.7512
22. Agility to confirm a request		0.7750
23. Precision to deliver the same items and it was requested		0.7736
24. Precision with the delivery of the correct quantities, the same as shown in the request		0.7218
25. Capacity to deliver requests without changes or substitutions		0.6420
40. Punctuality in the delivery (delivery in the agreed period of time)		0.4480

Source: Data from the Survey

Table 1 – Exploratory Factorial Analysis – Logistic Services’ Quality (continuation)

<i>Items</i>	<i>Products Availability</i>	<i>Delivery without Damage</i>	<i>Request Limits</i>	<i>Time Delivery Periodicity</i>	<i>Employees</i>
11. Products availability requested for prompt delivery	0.8763				
12. Attending Capacity of urgent deliveries	0.8446				
14. Information quality in the catalogue (list of products)	0.8322				
15. Firm’s efficiency in providing a good follow up of the requests	0.5964				
16. Quality of information and answer to the client’s request of technical information	0.7923				
39. Time taken to deliver urgent requests	0.8695				
26. Capacity to deliver the products without damage / in perfect conditions		0.8475			
27. The firms capacity to deliver products with damage during the transport		0.8221			
28. Delivery of the products with perfect quality		0.7477			
8. Firms capacity to accept the exact quantities requested in the order, without bargaining or changing			0.5505		
9. Not to have difficulties in the order due to the limit of the maximum quantity			0.7830		
10. Not to have difficulties in the order due to the limit of the minimum quantity			0.8092		
36. The time between the order and the delivery by the firm				0.5823	
38. Periodicity / frequency of deliveries				0.7362	
1. Effort level of the firm’s employees to understand my problems					0.7479
2. Employees’ Capacity to solve my problems					0.8002
3. Knowledge and experience of the employees about the products / services					0.6301
4. Employees’ disposition to help customers and supply the service with agility and haste					0.7249
5. Individual and regardful attention of the employees					0.7307
6. Employees’ cordiality					0.7055
7. Physical appearance of the employees, trucks and equipments					0.4665

Source: Data from the Survey

The scale presented a smaller number of factors than Mentzer, Flint and Hunt’s (2001) proposed scale, which possible demonstrates differences between the researched sector or the size of the firms. On the other had, this study uses 11 point (0 to 10, Likert type) scales, that probably measure in a better way the 5 point scales applied by Mentzer, Flint and Hunt

(2001) and they can be considered continuous, as discussed by Nunnally and Berstein (1994). It can be observed that other possible techniques of factorial analysis were tested in the obtained data, recommended by highly considered authors, such as Malhorta (2001). The technique of main axis with an oblimin rotation, which resulted in a solution with the same 7 factors of the Main Components technique, which in a certain manner suggests a the strength of the results that were obtained. Following, it was verified the factors scales reliability through Cronbach's Alpha, according to Table 2:

Table 2 – Simple Reliability – Cronbach's Alpha

Factor	Alpha	Num. items
Mistakes, pendencies and solution of the problems	0.896	8
Order's Answer	0.912	8
Employees	0.893	7
Products' Availability	0.877	7
Delivery without damage	0.914	3
Orders' Limits	0.759	3
Delivery Term and Periodicity	0.779	2

Source: Data from the Survey

The composed reliability of the logistic quality scale stayed in 0.834 and the extracted variance in 0.451. With the elimination of the product availability factor, the composed reliability passes to 0.869 and the extracted variance to 0.519 that according to Hair *et al.* (1998) indicates adequate values (over 0.5). However, the nomological coherency with the previous studies, and by the small cut value difference, the choice was to maintain the factor for the test of the structural model and verify the nomological validity.

With the objective of verifying the constructs convergent validity, each construct was submitted to a confirming factorial analysis, aiming to observe the significance of the weight of each item in the respective constructs. These procedures are indicated by Bagozzi, Yi and Phillips (1984) as well as by Im, Grover and Sharma (1998). All the indicators weights showed themselves significant at the level of 5%, which proves the scale's convergent validity.

6.2 Logistic Services' Satisfaction Scale

The retailers' satisfaction scale was obtained originally from Oliver (1980), selecting the items with the larger factorial weight, according to the previous study of Gonçalves (2003) and Gonçalves, Leite and Souki (2005). The Cronbach Alpha's satisfaction scale was of 0.951. The composed reliability and the variance extracted from the satisfaction scale stayed above the cut values, according to Hair et. al (1998) recommendation. On the other hand, all the indicators had significant statistic weights at the level of 5% in the satisfaction construct, indicating convergent validity. Over these facts, the indicators weights in the construct were above 0.5 that according to Hair et. al (1998), indicates the reliability of the item. Now, with reference to the composed reliability and the extracted variance, one can observe that the values stayed above the cutting values of 0.5, according to Netmeyer et. al (2001) recommendation.

6.3 Behavioral Intentions' Scale

The behavioral intentions' scale was obtained from Zeithaml, Berry and Parasuraman (1996), as well from the interviews with the specialists. Initially the option was for an exploratory factorial analysis that generated an adequate solution of 5 factors, which explains 66.5% of variance.

Table 3: Exploratory Factorial Analysis – Behavioral Intentions’ Scale regarding Logistic Quality and Satisfaction

Factors	1	2	3	4	5
<i>Items</i>	<i>Recommend / Communicate Positively</i>	<i>Do More Business</i>	<i>Price / Priority</i>	<i>Price Change</i>	<i>Complain</i>
47. To do more business with this firm in the next years		-0.593			
48. Purchase more from the competitors, if they offer lower prices				0.874	
49. Change to another supplier if this firm presents any problems in their services				0.531	
50. Tell positive things about this firm to other people	0.883				
51. Recommend this firm to whom may ask for information	0.898				
52. Encourage other retailers to purchase from this firm	0.835				
53. Consider this firm as my first option as a soft drink supplier	0.409		0.548		
54. Continue to do business with this firm, even if the increase a bit			0.841		
55. Accept to pay a superior price that the competitors, considering the advantages that I receive nowadays from this firm			0.874		
56. Complain to other retailers and consumers if I have a problem with the firm’s services					0.754
57. Complain with the consumer’s defense agencies if there is a problem with the firm’s services					0.784
58. Complain with the firm’s employees if I have a problem with their services					0.533
59. Give more space in the shelves for this firm’s products	0.703				
60. Develop more promotions and advertisement of this firm’s products	0.655				
61. Abandon completely the shopping of this firm		0.826			
62. Fazer menos negócios com esta empresa nos próximos anos		0.844			
63. Start purchasing more from other suppliers that offer lower prices				0.780	

Extraction Method: Principal Component Analysis.
 Rotation Method: Varimax with Kaiser Normalization.
 Source: Data from the Survey

The simple reliability of the behavioral intention factors that were analyzed and can be seen in the Table 4:

Table 4: Simple Reliability Analysis – Behavioral Intention Scale

Construct	Alpha	Num. Items
Positive Communication	0.861	6
Do More Business	0.756	3
Price Prize	0.762	3
Change	0.751	2
Complain	0.691	2

Source: Data from the Survey

After withdrawing some items, despite maintaining two scales with two items, the researcher found the reliability values acceptable, over 0.6 for the exploratory studies and near to the cutting value of 0.7. It was also possible to observe that the reliability composed of these factors were above 0.5, which according to Hair et. al (1998), indicates adequate composed reliability of the constructs. The discriminating validity was done according to the procedure recommended by Bagozzi, Yi and Phillips (1991).

7. Management Analysis

With the objective of promoting a management analysis starting from the measurements that were done, tables and graphics were developed aiming in identifying the managing involvement in the logistic services quality and the retailers' satisfaction. Table 5 shows the averages of the logistic quality factors, as well as the behavioral intentions towards the brands that were surveyed. It is possible to see that the scales are from 0 to 10, thus being considered continuous, according to Nunnally and Berstein (1994).

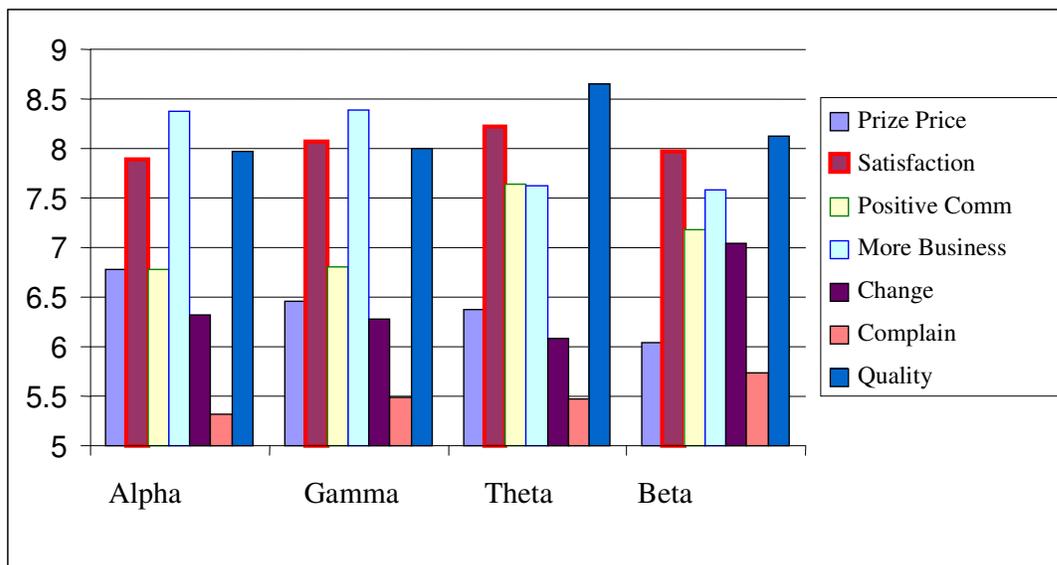
Table 5: Averages of the Logistic Quality Factors and Behavioral Intentions

<i>Manufacturer</i>	<i>Quality</i>	<i>Satisfaction</i>	<i>Pos. Com.</i>	<i>More Neg.</i>	<i>Prize Price</i>	<i>Change</i>	<i>Complain</i>
Alpha	7.965	7.894	6.773	8.382	6.780	6.317	5.319
Gamma	8.000	8.064	6.811	8.391	6.463	6.279	5.490
Theta	8.653	8.225	7.644	7.622	6.378	6.089	5.467
Beta	8.126	7.969	7.184	7.590	6.043	7.043	5.735

Source: Data from the Survey

It is possible to verify in the Graphic 1 (and in the Table 1) that the firm with the best satisfaction with logistic services and quality of logistic services (denominated Theta), has the lowest intention in changing, low intention in complaining and a high index of positive communication, despite of not being a very well known brand e in having a small market participation. The Beta firm, which also has small market participation, kept the logistic quality lower than Theta, which led it to changing supplier intentions with higher average values.

Now, with reference to the firms that are market leaders, Alpha and Beta, even that they obtained lower indexes of logistic quality (averages) and satisfaction, they had higher averages in the retailers' intentions in doing business and paying the prize price for the products. This fact maybe is the result of the high demand for these products by the customers, which, for the retailers, transforms this factor a profit creator. So it is possible to observe that possibly the market is mandatory of the purchasing intention, for the profit deriving from these suppliers, in a certain way "compensate" the transaction costs and the logistic quality perceived by the retailers. These comparisons can be observed in Graphic 1.



Graphic 1: Quality and Retailers Behavioral Intentions
Source: Data from the Survey

8. Nomological Validity

With the objective of verifying the nomological validity of the constructs and observing Fornell, Johnson, Anderson, Cha and Bryant's (1996) recommendations, which suggests that the satisfaction is the result of perceived quality, and of Zeithaml, Berry and Parasuraman (1996), that argue that the behavioral intentions are originated from the quality and satisfaction, the following structural model was proposed and tested in the AMOS 5 (SEM – Structural Equation Modeling) using the M.L. estimation, as exhibited in the Figure 2:

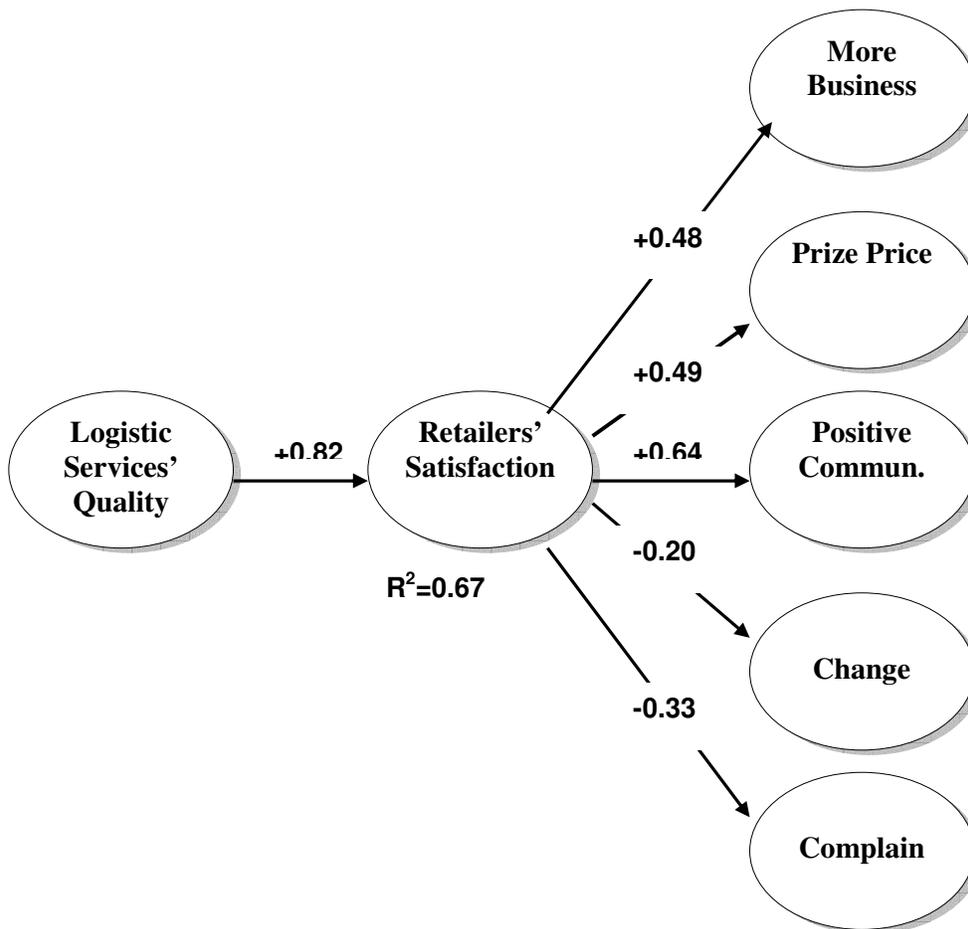


Figure 2: Estimated Structural Model with ML. Standardized Weights.
Source: Data from the Survey

It is possible to verify, as in Figure 2, the strong impact of the Logistic Services' Quality on Satisfaction, with β (standardized) = 0.82. This fact corroborates with the theory and previous studies, which confirms that quality is the strongest antecedent of satisfaction. On the other hand, Satisfaction has demonstrated to have a stronger positive impact in the desire

to make Positive Communication (recommend to other retailers, speak with other people, first purchasing option), with β (standardized) = 0.64, pay a Prize Price for the product with β (standardized) = 0.49 and Do more Business with the Firm, with β (standardized) = 0.48. These confirmations suggest a continuous measuring and investment in quality and in the retailers' satisfaction towards the industry.

On the other hand, it is possible to observe the negative impacts in a smaller scale, in the satisfaction of the retailers do Change the Supplier, with β (standardized) = - 0.20 and in Complaining, with β (standardized) = -0.33. In this sense, this study suggests that the retailers satisfaction in the logistic service contributes to the good imagine of a firm (less complains) and a higher level of loyalty.

The models adjustment, which has the relation CMIN/DF (qui-squared divided by degrees of liberty) of 3.757, being the RMSEA near to 0.08, is, in a certain way, acceptable. The variables that demonstrate the model are in the Table 6:

Table 6: The Models Adjustment

Adjustment Measure	Basic Model	Wanted Level
CMIN	1190	N.A
DF	317	N.A
P	0	>0.05
NPAR	88	N.A
CMIN/DF	3.757	< 4
Absolute Adjustment		
RMSEA	0.089	< 0.08
Probability (RMSEA <0.05)	<0.001	
Incremental Adjustment		
TLI	.826	> 0.90
CFI	0.854	> 0.90
Parsimonious Adjustment		
PRATIO	0.839	N.A

Source: Data from the Survey

9. LSQI - Logistics Service Quality Index – A Measuring Proposal

According to Fornell, Johnson, Anderson, Cha and Bryant (1996), the use of indexes that use models of structural validation have better precision and power in measuring than the indexes created through regressions or isolated indicators. The applied formula, which follows the standard recommended by Fornell et. al (1996) is the following:

$$LSQI = \frac{\sum_{i=1}^n W_i * X_i - \sum_{i=1}^n W_i * \text{Min} (X_i)}{(\sum_{i=1}^n W_i * \text{Max} (X_i) - \sum_{i=1}^n W_i * \text{Min} (X_i))} * 100$$

Caption:

- **LSQI** - Logistic Service Quality Index
- **W_i** – the non standardized weight of the i attribute (obtained from structural equations)
- **X_i** – the average of the i attribute of a manufacturer;
- **n** - number of attributes (factors) – in this case seven
- **Min (Xi)** – Minimum value of X (scale, in the case zero)
- **Max (Xi)** – Maximum value of X (scale, in the case 10)

In a simplified way for the case that was studied we will have:

$$LSQI = (\sum_{i=1}^7 (L * E) * 10) / (\sum_{i=1}^7 L)$$

L = Non standardized structural load of the factor in the Logistic Quality construct
 E = Average of the evaluated Factor by the retailer for the firm that is being evaluated

n = number of Factors (in this case seven)

The LSQI obtained values for the researched sample are in the Table 7:

Table 7: LSQI – Logistics Service Quality Index

<i>Manufacturer</i>	<i>LSQI</i>
Alpha	79.65
Gamma	79.99
Theta	86.53
Beta	81.23

Source: Data from the Survey

The advantages of the structural indexes (different from the indexes that are obtained by evaluations of isolated items and constructs), such as the one proposed above, is in its bigger precision and capacity of resuming in only one variable the information of several factors, which makes it easier to compare and manage the goals (MENDES and SARAIVA, 2002).

With the objective of testing the relations and the model's strength, Spearman's linear correlations were tested among the behavioral intentions and LSQI, as verified in Table 8:

Table 8 -: Linear Correlations

	<i>Satisfaction</i>	<i>BI complain</i>	<i>BIprizepri</i>	<i>BImoreneg</i>	<i>BIchange</i>	<i>BIrecomend</i>	<i>LSQI</i>
Satisfaction	1	-.232(**)	.460(**)	.453(**)	-.183(**)	.602(**)	.732(**)
BI Complain	-.232(**)	1	ns	-.203(**)	.126(*)	ns	-.138(*)
BIprizeprice	.460(**)	ns	1	.400(**)	-.189(**)	.513(**)	.363(**)
BImoreneg	.453(**)	-.203(**)	.400(**)	1	-.222(**)	.296(**)	.409(**)
BI change	-.183(**)	.126(*)	-.189(**)	-.222(**)	1	-.144(**)	ns
BI Positive Com	.602(**)	ns	.513(**)	.296(**)	-.144(**)	1	.521(**)
LSQI	.732(**)	-.138(*)	.363(**)	.409(**)	ns	.521(**)	1

Source: Data from the Survey

It can be observed the high correlation between the logistic qualities measured by the LSQI, satisfaction, pay the prize price, do more business and positive communication. However, one can observe that there is not a significant correlation between the LSQI and the intention of changing supplier. Maybe this intention depended more in the markets strength and the

intensity of the customers' demands, reinforcing the results which were obtained in the nomological analysis.

With the objective of verifying the correlation between the behavioral intentions and the retailers' size, the linear correlations were analyzed between the number of check outs and behavioral intentions. The results are in the Table 9:

Table 9- : Correlations between Size and Behavioral Intentions

	<i>satisfaction</i>	<i>BIcomplain</i>	<i>BIprizeprice</i>	<i>BImoreneg</i>	<i>BIChange</i>	<i>BIrecomend</i>	<i>LSQI</i>
Correlation Coefficient							
Number of boxes	ns	Ns	ns	-0.106	0.181	ns	ns
Spearman							

Source: Data from the Survey

According to Table 9, it can be verified that the bigger the retailer is, bigger are the changing supplier intentions and smaller are the intentions in doing more business with the industry, not having any significant correlation with satisfaction or with the service's quality level.

10. Competitive Advantage, Industry's Performance and its relation with the Logistic Services Level: An Exploratory Analysis

A question that emerges from the results of the survey, refers to the possibility of sustenance of the current competitive scenario, in which the big industries, that hold the leadership of the market and have a strong demand, offer a lower level of services to the retailers than that offered by the smaller producers. Therefore, it might be relevant to understand the impacts that these facts may have on the businesses of this sector in medium and long terms.

It can be observed that the purchasing intents by the retailers are quite high for the market leaders, which enjoy the ultimate consumer's preference. However, this fact creates a

possibility for the smaller competitors, which have a much positive evaluation in the behavioral intention factor, denominated “Positive Communication”. This factor consists of the following items: give more space on the shelves for this company’s products and make more promotions and advertisement of the company’s products. These findings indicate a possibility of these businesses growing, in two meanings: one, advancing over those with a bigger participation in the market, when receiving from the retailers a higher level of promotion and space on their shelves and another, yet more likely, which is to gain a share in the smaller companies and with a lower level of services, on which it is easier to advance and to gain a competitive advantage.

It is believed that the researched retailers, considered of smaller size, receive a level of service from the big manufacturers that can be classified in the minimum tolerated zone (probably just above the level that would cause a stockout). This fact brings the hypothesis that these findings represent a vulnerable situation for the big competitors. In this sense, an analytic frame was developed (Frame 1) that suggests four possible businesses combinations in the Ultimate Consumers’ Demand Level and Logistic Services Quality dimensions:

Frame 1:
A proposal of an Industry Classification by Logistic Service Level

		Demand Level / Marketing Efficiency		
		High	Medium	Low
Logistic Services' Quality	Superior	1. Winner Market Competitive Advantage and Logistic Services	4. Competitive Competitive Advantage in Logistic Services	6. Niche Services Competitive Advantage in Logistic Services
	Acceptable	2. Sustainable Market Competitive Advantage	5. Satisfactory Sub-Performance	7. Losers
	Inferior	3. Vulnerable		

Source: The authors

According to the proposed frame, in the position of the quadrant 1 are the companies classified as **Winners**, with a big demand and Marketing efficiency as well as with a superior logistic quality than the competitors. For these industries, the growth of their logistic service level creates barriers for the new participants and for the growth of the competitors, since the retailers' intentions in supplying more space in their shelves and in doing more promotions, end up being capitalized by the companies that already hold the strongest position in the market, reinforcing their competitive position. With their product, promotion, price and distribution strategies superior to the others, these companies have a competitive advantage in the market.

In the quadrant 2 were included the companies classified as **Sustainable**. These companies render logistic services in a level close to the minimum acceptable level to avoid stockout and the retailers' discontent, and have big merchandising efficiency, in other words, they operate in an efficient way in their product, promotion and price strategies in a manner that it creates a strong demand. In this sense, the retailers maintain a strong purchasing intent towards these companies, even that they have inferior logistic services than the other competitors, the reason being that the operation with this industry is profitable and the product that is offered is important to form the retailers' mix, which is greatly demanded by the customers. Despite it being an apparent sustainable position (a position defended by the managers of the leading market industry – see the interviews bellow), it suggests that there are gaps that may open space for those that practice a more efficient distribution to the retailers.

In the quadrant 3, the companies classified as **Vulnerable** have a high demand / superior marketing and inferior service level. In this case, it suggests the possibility of the existence of a vulnerable scenario for these companies, in reference to new participants and smaller industries that can try to increase their share and advance on markets, offering superior services.

In the quadrant 4, the companies were classified as **Competitive**. These companies are those that have superior quality in their logistic services when compared to their competitors and a reasonably efficient marketing strategy / demand. The competitive advantage obtained by the logistic services' quality creates possibilities to advance into the big manufacturers' market (which have lower levels) and take over the smaller competitors' market. The growth of these companies can make them more capitalized and in this way, compete in a more aggressive form with the market leaders.

Now, in the quadrant 5 are the companies with a medium demand and with their logistic services at medium level. Without competitive advantage, but being reasonable in their actions, they were classified as **Satisfactory Sub-Performance**. The companies generally do not grow because of their virtues (but only if the whole market grows) and tend to go sideways, maintaining and losing competitive positions.

In the quadrant 6, the companies were denominated **Niche Services**. These companies are only strong in logistics and distribution, so, they work in niches where other retailers that are more competitive in merchandizing, fail in delivering and attending retail.

In the quadrant 7, companies with low participation and marketing efficiency in the market are analyzed, where their service level varies from medium to low. These companies are classified as **Losers**. This denomination is related to the fact that in this situation, they will probably have reasonable difficulty in growing. Their success will depend in the other competitors' mistakes, which results in very unfavorable competitive situation.

11. Triangulation: Interviews with the Industry's Manager and Retailers

As suggested by MENON, BHARADWAJ, ADIDAM and EDISON (1999), a form of exploring the results of an empirical research, in which it is possible to verify the managing implications of your results and to search for new insights to investigate, is to examine it according to the organizations' managers and soft drink retailers points of views, how they evaluate the results and their conclusions.

In this manner, two interviews were undertaken with the industry's managers, one with the market leader and the other with another company which was well evaluated in the survey. Beyond that, three qualitative interviews with retailers were completed.

Interviews with the Industry's Logistic Managers

According to the logistic managers of the market's leading company in the country (Alpha), the results and conclusions that were obtained in the survey are feasible. It is admitted that the services levels of the big companies have failures and that they can and should improve. They accept the hypothesis that there is some level of vulnerability in the big companies, due to the low level of services offered to the retailers, as well as that there are opportunities for the smaller companies that offer superior logistic services.

However they stress that the small companies have lower prices and they associate this strategy to a superior logistic service, with regionalized distribution centers (by region), while the leader uses a centralized distribution center in one city. This fact would make the competitor Theta more agile. Together with this strategy, Theta has used lower prices, which associated the company's acceptable quality, has permitted the company to increase its participation in some of the market's segments.

The leading company uses 36 retail market segments and to confront competitors with lower prices and superior logistics, they have used aggressive and well elaborated merchandizing actions in a manner to eliminate any possible competitive advantage of the smaller companies' services. The leader's opposing strategy consists in launching returnable packing (of glass) of 200ml, 290/300ml and 1,250ml, which are cheaper. It is also part of their strategy to launch smaller cans with 250ml and pet packing of 1.5l. Doing this, they hope to

obstruct the cost/price advantages that are a big attraction to the ultimate consumers of segments that are more sensitive to price, which are the biggest part of the smaller companies' customers. On the other hand, during the week of our interview, the company's Directors were in the United States of America negotiating capital to purchase trucks and equipments.

The leading company's managers reason that the effectiveness of their company's marketing, associated to the brand's strength, their promotion strategy, the product and communication, has increased their sales and compensated the company's logistic service level, which shows some deficiency to certain retailers' segments. Thus, they suggest that with a more effective marketing, it is possible to confront the smaller industries that offer superior logistic services and lower prices.

In an interview with the logistic manager of Theta Company, which had their level of services well evaluated by the retailers in this survey, it was revealed that this company focalizes its actions on the small retailers, the contrary from the Alpha Company, to whom these are only another segment of their mix. Since this strategy is more efficient for small companies, Theta has grown in quite a representative way, having, in the last six months, diversified its line of products, in a manner that it can now offer other products than soft drinks, like mineral water, juices and alcoholic beverage (in this case, of other brands). This growth is based on efficient logistics that permits a greater benefit and synergy with the increase of its products' mix. In this sense, logistic is making the company grow more than the product itself. The person that was interviewed does not believe that market strategies can, by themselves, solve level service problems with retailers, as declared by the Alpha Company. In his understanding, the small retailers can establish links with the company's

commercial area, favoring in this way the suppliers with which they have more empathy, and that do not leave them without products, which in the end represents more profit.

In the information obtained with the industry's specialists, who are acquainted with Beta Company's controllers, it is possible to observe that this company can be classified as Satisfactory Sub-Performance, according to criteria suggested in Frame 1. This fact can be found as result of the confirmation that their owners are satisfied with the company's current situation, which is of small size and that he can sell all of his production. At least in short terms, this company's managers are not intending to invest bigger values in marketing, in increasing production or in any other logistic actions. It is a situation where the product is highly differentiated, aimed at a regional taste (local), which has a very specific and stable market niche.

Interview with Retailers

With the objective of verifying the retailers' point of view about the results of this survey, six retailers of the target-segment were interviewed. The first retailer interviewed is in a radius of only 10 kilometers from the distribution centers of the main competitors, in a region where people belong to class C. However, being small, he only receives visits and deliveries from the market leader (Alpha) and from the leading company in logistic services (Theta – the best evaluated in this survey). Of the other companies, only (Beta and Gamma), deliver in that location; probably because of the retailer's size (has two check outs). The owner buys products with Beta and Gamma's brands from big wholesalers, having to drive to accomplish the purchase. The result of this fact is that the two companies are selling less to this retailer and losing part of the region's market. The Theta Company is selling more and in gaining more space in the market, occupying more physical space in the shop and on

the shelves. The leading brand (Alpha) has a freezer in the premises, with excellent appearance, but can not increase its sales due to its higher price (almost double than Theta's brand). The sales of Theta's brand are 5 times bigger than the Alpha brand and 16 times more than the other brands (Gamma and Beta). In an interview with this retailer's consumer, it was revealed that, in a recent child's birthday party, he bought 4 units of the Alpha brand and 12 units of the Theta brand. The reasons for this acquisition, as the consumer described, were the significant difference of prices of almost two by one. He also explained that even that there is a clear difference in quality, the children did not notice it, and the Premium soft drinks (Alpha) were only consumed by the adults.

With the second retailer that was interviewed, it was noticed a strong negative attitude towards Alpha Company. In the beginning this retailer opted in working exclusively with the Alpha Company, in exchange of freezers, an external panel and sets of tables and chairs. But since the Alpha Company did not deliver the tables and chairs after 11 months, the owner had to rent them from someone else. Her dissatisfaction is even bigger with the order problems. The week before the interview, more specifically on a Friday, the soft drink 'light' type finished. When she made the order, Alpha Company promised to deliver the order in 24 hours, but it really can only be done in 36 hours or when this supplier wishes to do so. With the lack of soft drinks, she could not sell food, which resulted in loss. The situation became so critical, that the retailer had to buy several times the needed soft drinks in a local hypermarket, in order to be able to continue her operation, due to an obvious stockout. This action reduces the retailer's profit margin and demonstrates clearly the problems that were identified in the survey. According to the owner, if the situation is not regularized in the next 15 days, they will end the exclusivity and purchase other brands. In an interview with this retailer's customer, he informed that recently he had tried a soft drink of another brand because there was not any of his favorite light soft drink. He revealed that after this

experience he has started to consume the competitor's brand and that he is purchasing it to be consumed in his home and by his family.

The third retailer that was interviewed reported problems with the Theta Company's logistics, revealing that there are gaps and serious service failures also with this firm. The information was that they are losing sales of the Theta soft drinks because of the lack of product. It was also revealed that Alpha Company has a good logistic service with their company, and that Theta Company, that does not do advertisement, could have an increase in sales if they did, for their products are cheap and with reasonable quality. This fact was confirmed by the fourth retailer that was interviewed, for whom the sales of the Theta Company are growing because their product are good with an accessible price, being that in November of 2006 the Theta Company's sales increased in thirty per cent in his establishment.

The fifth retailer that was interviewed declares that marketing and communication are not capable of compensating customer's service and deficit services, but considers them extremely important for sales. In his establishment the Alpha Company is the one with the biggest sales volume, however the Theta Company is gaining space in the market because of its price and flavor. The sixth retailer agrees and declares that he has problems with the Alpha Company, which, according to him, is losing a lot of sales and should improve its customer's service with the retailers and delivery frequency and schedules. He does not agree that marketing compensates customer service problems (including stockout) with the retailers, but thinks it is important to be able to obtain a good sales' volume.

12. Conclusions and the Study's Main Contributions

The main contributions of this paper are in the proposal of scales to measure the retailers' behavioral intentions in an innovating way, with reference to the literature in this field. On the other hand this study suggests the creation of the structural measuring index of the logistic service quality, denominated LSQI (Logistic Service Quality Index), with the objective of resuming and allowing direct comparisons among suppliers. This index can be of great value to determine goals or to control the services' quality.

The paper also analyzes the relation between the logistic service quality, satisfaction and the retailers' behavioral intentions, through a structural model, contributing to a development of knowledge in this field. Following, the possible implications of this study are resumed:

Managing Implications

It is possible to verify the strong impact of quality in the satisfaction and in the behavioral intentions (measured by the satisfaction), which suggests important managing implications. It shows that the bigger the logistic services' quality evaluations are, they can create a higher index of the retailers' satisfaction, and consequently, provoke a more positive mouth to mouth communication, more space for the producers in the shelves, less complains and a bigger intention in paying a prize price.

On the other hand, when checking the actual cases that were studied, the leading company in the Brazilian market is not the one that has the best level of services in the market segment that was studied, however, there is no intention of the retailers changing their supplier and yes to do more business. This fact is due to this brand's profitability and to the customers'

demands. Therefore, this study suggests that, if the logistic services' level is maintained in acceptable levels (above the minimum acceptable level), there will not be impacts on the purchasing intent of the brand leaders of high demand, However, with reference to the small producers, which have less demand from the customers (and in a certain manner are less profitable to the retailers), the quality of the logistic services and the satisfaction with the producers logistics seems to be determinant factors in the purchasing intention by these retailers.

The Implications to the Theory

In reference to the theory, this study suggests a Logistic Service Quality scale that is more directed to the small retailers, which are normally more sensitive to the variability in rendered services. On the other hand, the inclusion of the behavioral intentions in the logistic quality models shows a new studying possibility of the dynamic behavior of this market. The satisfaction scale that was tested had high reliability, which suggests its application. Last of all, the creation and validation of the LSQI, appears as an interesting alternative to measure the logistic services' quality.

Limitations and Recommendations for Future Studies

The main limitations of this study are with reference to its sample. As it was tested only in one sample, in one country and in a specific market, it can reflect a situation of this scenario. On the other hand, some of the composed reliability indicators were presented a little bellow of what is recommended. The models and scales were also tested with small retailers, which may not make it possible for its generalization for medium and big retailers. But this fact can recommend the use of these scales for this segment, with a bigger measuring precision.

Thus, it is suggested to reapply this study in other market segments, with companies with different sizes and in other countries. It also suggests refining the behavioral intention scales, exploring the possibility of including more items.

References:

- BAGOZZI, Richard P., YI, Youjae, LYNN W. Philips. Assessing construct validity in organizational research. **Administrative Science Quarterly**. v. 36, p. 421-458, 1991.
- BALLOU, R. H. **Logística Empresarial**. São Paulo: Atlas, 1995.
- BALLOU, R. H. **Gerenciamento da cadeia de suprimentos**. São Paulo: Bookman, 2001.
- BIENSTOCK, Carol C.; MENTZER, John T.; BIRD, Monroe Murphy. **Measuring physical distribution service quality**. Journal of the Academy of Marketing Science, 1997.
- BOWERSOX, D.J., DAUGHERTY, P.J. **Achieving and maintaining logistics leadership: logistics organizations of the future**, in Annual Conference Proceedings, Council of Logistics Management. Volume I, 1989.
- BOWERSOX, Donald J., DAUGHERTY et. Al. **Logistical Excellence: it's not business as usual**. Digital Press, 1992.
- BOWERSOX, Donald J., CLOSS, David J. **Logística Empresarial**. São Paulo: Atlas, 2001.
- CEL. **Pesquisa de Benchmark – Serviço ao Cliente 2003**. Available in www.cel.coppead.ufrj.br. Access on the 26 fev. 2004.
- CHRISTOPHER, Martin. **Logística e gerenciamento da cadeia de suprimentos**. São Paulo: Pioneira, 1997
- CHRISTOPHER, Martin. **O Marketing da logística**. São Paulo: Futura, 1999
- DANTAS, E. M. A. **Estágio da organização logística em três empresas do setor de bebidas: um estudo de caso**. Rio de Janeiro: UFRJ/COPPEAD, 2000.
- DAUGHERTY, P.J., SABATH, R.E., ROGERS, D.S. **Competitive Advantage through customer responsiveness**. The Logistics and Transportation Review, v.28, n.3, 1992.
- ELLRAM Lisa M., LA LONDE, Bernard J., WEBER, Mary Margaret. **Retail logistics** International **Journal of Physical Distribution and Logistics**. Management. Bradford: 1999. Vol. 29, Iss. 7/8; pg. 477

- EMERSON C. J., GRIMM C. M. **The relative importance of logistics and marketing – customer service: a strategic perspective.** Journal of business Logistics, v. 19, n.1, 1998.
- FAWCETT, S. E., Clinton, S. R. **Enhancing Logistics Performance to improve the competitiveness of manufacturing organizations.** Production and Inventory management journal, p.40-66. Jan./Mar., 1996.
- FLEURY, P. F., WANKE, P.; FIGUEIREDO, K. F.; **Logística Empresarial.** São Paulo: Atlas, 2000.
- FLEURY, P.F., LAVALLE, C.R. **Avaliação do Serviço de Distribuição Física: Gestão e Produção,** vol, 4, n.º 2, August, 1997.
- FORSLUND, Helena. **Assessing Customers’ logistics quality gaps in the order fulfillment process.** In: Annals of the 1st EurOMA and POMS.
- GONÇALVES FILHO, Cid; GUERRA, Renata Souza; MOURA, Alexandre Inácio. **Mensuração de Satisfação, Qualidade, Lealdade, Valor e Expectativa em Instituições de Ensino Superior: um estudo do modelo ACSI através de Equações Estruturais.** In: ENANPAD 2003, 2003, Atibaia SP. Annals of Enanpad 2003.
- GONÇALVES FILHO, Cid; LEITE, Ramon Silva; SOUKI, Gustavo Quiroga. **Measuring Perceived Quality and Satisfaction of ERP Systems: an Empirical Study in Software Company.** In: POMS 2005, 2005, Chicago. POMS 2005. 2005
- GUSTAFSSON A. Retail’ requirements on logistic service. In: EurOMA and POMS joint international Conference, 2003. Annals of the 1st EurOMA and POMS.
- HESKETT, J. **Controlling Customer Logistics Service.** International Journal of Physical Distribution, Vol. 1, No3, p.140-145, 1971.
- HAIR Joseph F. ANDERSON, Rolph E. TATHAN, Ronald L. BLACK, William C. **Multivariate Data Analysis.** New Jersey: Prentice Hall, 1998.
- IM, Shin Kun, GROVER, Varun, SHARMA, Subhash. **The use of structural equation modeling in research.** Columbia: University of South Carolina, 1998. (Report).

- KOTLER, Philip. **Administração de Marketing**. São Paulo: Atlas, 2000.
- LALONDE, Bernard J., ZINSZER, Paul H.. **Customer Service: Meaning and Measurement**. Chicago: National Council of Physical Distribution Management, 1976.
- LAMBERT, D. M., STOCK, J.R., VANTINE, J.G. **Administração Estratégica da Logística**. São Paulo: Vantine, 1998.
- MALHOTRA, N. **Pesquisa de Marketing: uma orientação aplicada**. 3 ed. Porto Alegre: Bookman, 2001.
- MENON, A. BHARADWAJ, S.G. ADIDAM, P.T. EDISON S.W. Antecedents and consequences of marketing strategy making: a model and test. **Journal of Marketing**. v. 63, n.2 Apr., 1999.
- MENTZER, John, GOMES, KRAPPFEL Jr., Robert E. **Physical Distribution service: a fundamental market concept?** Journal of the Academy of Market Science, p.55, Winter 1989.
- MORAES, Mauro Neves, LACOMBE, André. **Medição de Qualidade em Serviços de Distribuição: Um Estudo de Caso**. In: Enanpad, 1999. Annals of the 23rd Enanpad.
- NETEMEYER, R. G. BEARDEN, W. O. SHARMA, S. **Scaling procedures: Issues and Applications**. SAGE, 2003.
- NUNNALLY, Jum. C., BERSTEIN, Ira H. **Psychometric Theory**. New York: McGraw Hill, 1994.
- OLIVER, R.L. A Cognitive Model of The Antecedents and Consequences of Satisfaction Decisions, **Journal of Marketing Research**, vol. XVII, November 1980, pp. 460-469.
- RITTER, J. G. S. F., MARCHETTI R. Z., PRADO, P. H. **Busca de Informações em Compras Industriais Complexas** In: Enanpad, 2002. Annals of the 26th Enanpad.
- ROSENBLOOM, Bert. **Canais de Marketing**. São Paulo: Atlas, 2002.
- SIMCHI-LEVI, David, KAMINSKY, Philip, SIMCHI-LEVI, Edith. **Cadeia de Suprimentos, projeto e gestão**. Porto Alegre: Bookman, 2003.

SHARMA, A., GREWAL, D., LEVY, M. **The Breakthrough Thinking in Logistics.** In Journal of Business Logistics, vol. 16, n° 2, 1995.

SOUZA, M. F. S., MOORI R. G., MARCONDES R. C. **Sincronização das Expectativas dos Clientes com a Prática dos Fornecedores Quanto a Custos, Confiabilidade e Qualidade.** In: Enanpad, 2003. Annals of the 27th Enanpad.

VILLELA, José Ignácio; GONÇALVES FILHO, Cid; SANTOS, Washington Camilo. **The Measurement of Logistics Service Quality: An Empirical Case Study from the Pharmaceutical Sector.** In: POM 2006, 2006, Boston. 2006.

ZEITHMAL Valarie A., PARASURAMAN, A., BERRY, Leonard L. **Delivering Quality Service.** New York: The Free Press, 1990.