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The impact of logistics service performance on customer satisfaction and loyalty in Brazilian chemical industry

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Abstract

This study aims to present the cross-cultural adaptation process of the constructs logistic service, satisfaction and loyalty to the Brazilian culture and to investigate their content validity and reliability. This process included the steps of translation, back translation, review by expert committee and pretesting. The final constructs were applied to 148 respondents from the chemical industry. Cronbach's alphas were 0.960 and 0.955 for the two dimensions of customer service; 0.954 for satisfaction, 0.950 and 0.906 for the two dimensions of loyalty in the total sample. Eliminating items from the initial pool resulted in 24 items for the five construct scales. To confirm construct unidimensionality, reliability, and validity, we evaluated the psychometric properties of the five constructs using CFA by means of LISREL. We evaluated one pair of factors at a time, and found that each alternate model did not demonstrate better fit, only some correlation. The study suggests that the constructs of logistics service, satisfaction and loyalty are reliable and valid measures for the Brazilian culture.

Keywords: Cultural Adaptation, Reliability and Validity; Validation Studies, customer service; satisfaction and loyalty.

1 Introduction

Companies are always looking for new ways to maintain and/or increase their competitiveness and gain market share. One of the most important initiatives in recent years is the offering of logistics service levels that help customers to achieve their goals. The objective of this research is to demonstrate the impact of logistics service on customer satisfaction and, consequently, on their loyalty. Empirical evidence is provided on the relationship between operational and relational performance, satisfaction, affective commitment, purchasing behavior and loyalty of buyers from the Brazilian chemical industry. This research demonstrates the importance of relational performance, which has direct and significant impact on customer satisfaction, as it influences directly the perception of operational performance by the buyer.

It is also shown that customer satisfaction did not directly influence the purchasing behavior, but rather indirectly did through affective commitment. In other words, satisfaction can lead to affective commitment, and this emotional connection is what influences future purchasing behavior. This research provides a more complete and complex view of the loyalty phenomenon.

2 Literature review

This section presents a literature review of the constructs: logistics service, satisfaction and loyalty.

2.1 Logistic Services

Service Logistics is a measure of how well the system behaves in providing a product to the customer in time, space and place (STERLING, and LAMBERT, 1987). Lambert et al. (1998) and Mentzer et al. (2001) noted that until the 90' logistics service was evaluated in the literature by and internal operational measures such as availability, order cycle time and on time delivery. However, customer perception of the the supplier´s performance was not considered. Since 2000, logistics service research began to investigate,

the perception of customer's aspects. In an effort to measure the quality of logistics services according to customer perception, Mentzer et al. (2001) developed a scale for the logistics service, inspired by Stank et al. (1999), considering both operational and relational aspects. The operational aspect reflects the perceptions of customers about the ability of providers deliver the right products in a timely and reliable, and includes aspects such as availability, condition of delivery and on time delivery, and also reliability. The relational aspect focuses on the ability of the supplier to understand the needs and expectations of the customer. Therefore reflects an external dimension, or market-oriented, as suggested by Collier (1991). Several previous studies have not considered the relational component of logistics services (Davis, 2006). Stank et al. (1999), Stank et al. (2003) and Davis-Sramek et al. (2008, 2009) found a significant causal relationship between operational performance and relational performance. However, the reverse causal relationship has not been identified.

2.2 Satisfaction

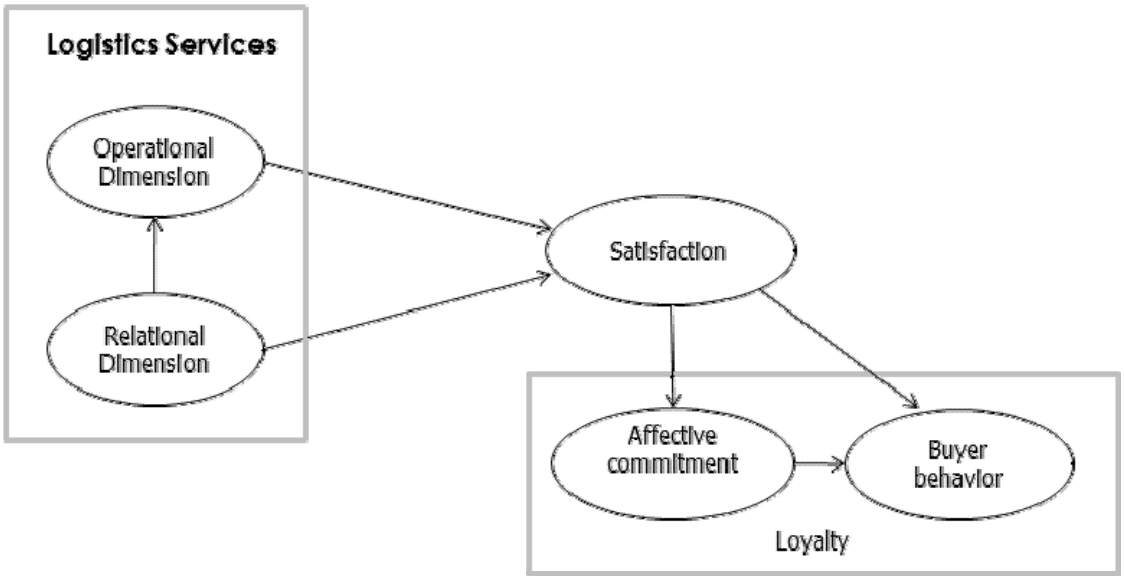
The satisfaction construct has been conceptualized, measured and tested for decades in the literature in various industries and contexts (Oliver, 1980; Parasuraman et al., 1985; SRAMEK-DAVIS et al., 2008). Usually authors use the confirmation of expectations as the basis for the operational definition of the satisfaction construct. The satisfaction construct can be classified as transactional or accumulated. The transactional dimension is the perception of the performance of most recent transaction (Oliver, 1993). Other authors such as Anderson et al. (1994), however, assert that satisfaction should be viewed as a judgment based on experience regarding a particular product or service This definition is more appropriate because some researchers (Fornell, 1992; Reichheld and Sasser, 1990) found that satisfaction accumulated correlates directly with the customer loyalty has also been identified in the literature that the logistics service is an important antecedent of satisfaction (Daugherty et al., 1998; Leuthesser and Kohli, 1995).

2.3 Loyalty

The loyalty construct, has also greatly studied in the literature, presents not only the behavioral loyalty dimension, characterized by the repetition of the purchase, but also the attitudinal loyalty dimension, that makes reference to the emotional and positive feelings about their supplier (Oliver, 1999). "According to this view, is not correct to make any inference about loyalty only based on buying patterns repeated, since the true loyalty also includes the behavior, an attitudinal response, consisting of cognitive and affective components" (Dik and Espinoza, 2004). In some cases, customers may be forced to buy due to sheer lack of options, however, can switch suppliers at any time at a more favorable time (Kumar et al., 2003). Therefore, there is a consensus that the loyalty construct has two dimensions: attitudinal and behavioral (Reynolds and Arnold, 2000).

Kandampully (1998) argues that the loyal and true relationship between companies and customers is created by the organization's ability to connect emotionally and establish long-term relationship with customers. For this reason, true loyalty should be determined not only by behavior but by feeling and emotion from the relationship (CHANDHURI and Holbrook, 2001). Dick and Basu (1994); Sramek-Davis, et al. (2008) define loyalty as the causal relationship between behavioral loyalty and attitudinal loyalty. Once analyzed the dimensions of attitudinal loyalty and behavioral loyalty, you can better understand the relationship between them. Several researchers have shown that attitudinal loyalty has a positive influence on behavioral loyalty (Ruyter et al., 2001; Wetzels et al., 1998; Sramek-Davis et al., 2008).

2.4 Conceptual Model



The hypotheses tested in the survey were:

Hypothesis 1. In chemical manufacturer supplier relationships, relational performance has a positive effect on operational performance.

Hypothesis 2. In chemical manufacturer supplier relationships, operational performance has a positive effect on satisfaction.

Hypothesis 3. In chemical manufacturer supplier relationships, relational performance has a positive effect on satisfaction.

Hypothesis 4 In chemical manufacturer supplier relationships, affective commitment has a positive effect on purchasing behavior

Hypothesis 5. In chemical manufacturer supplier relationships, satisfaction has a positive effect on affective commitment.

3 Methodology

Measures for all variables were constructed first in accordance with the existing scales in the literature. After adapting the measures, a survey instrument was created and subjected to a pre-test. We also engaged in scale purification. Following basic descriptive analyses, including examination for coding errors, normality, skewness, kurtosis, means, and standard deviations, we subjected the purification data set to confirmatory factor analyses (CFA) by means of LISREL. In these analyses, items were grouped into a priori conceptualized scales. Modification indices, standardized residuals, and fit statistics were used to flag potentially problematic items (Anderson and Gerbing, 1988; MacCullum, 1986). These items were examined within the theoretical context of each scale and were deleted on substantive and statistical grounds, if appropriate (Anderson and Gerbing, 1988; MacCullum, 1986) Eliminating items from the initial pool resulted in 24 items for the five construct scales The research was conducted in a B2B context in the chemical industry, and we collect data from Brazilian chemical company buyers. The e-mail addresses provided by the manufacturer gave us that information. The final sample consisted of 148 responses, with an overall response rate of 32.5% when undeliverable surveys were removed from the total sample contacted.

4 Results

The five hypotheses were tested simultaneously in a structural equation model using LISREL. The fit statistics found are comparable to those of the measurement model, and demonstrate sound model fit (CFI = .99, AGFI =.80 and RMSEA = .051). The results show that both the operational and relational performance influence satisfaction. And satisfaction, in turn, impacts the effective commitment of the buyer and that, finally, impacts on their purchasing behavior. This result is consistent with the results of Davis-Sramek et al. (2008) and Chiou and Droge (2006), even when assessing a distinct population.

The model results indicate a strong confirmation for Hypothesis 1 (R^2= .68), supporting the contention that as the supplier's customer personnel develop working relationships with customers, the supplier can learn more about the chemical manufacturer' operational needs, and therefore align processes to meet those needs.

Hypotheses 2 and 3 (R^2= .80) suggest that both operational and relational performance have a positive influence on satisfaction. Two other studies examined this relationship and found conflicting results. Stank et al. (2003) found support for the relational component and no support for the operational component, and Stank et al. (1999) found strong support for the operational component and marginal support for the relational component. This analysis found strong support for the influence of both relational and operational performance on satisfaction.

Hypothesis 4 (R^2= .41) proposes that affective commitment has a positive influence on purchase behavior, and this constitutes loyalty. There was strong support for this hypothesis, so unlike previous research that takes a simpler view of loyalty, we maintain that loyalty is the causal relationship between affective commitment and purchase behavior.

We found support for Hypothesis 5 (R^2= .58), which indicates that satisfaction does have a significant influence on affective commitment. Greater levels of buyer satisfaction engender a stronger emotional attachment to the relationship with the supplier. Satisfaction and purchase behavior are not positively correlated. In other words, satisfaction leads to affective commitment, and this emotional attachment is what influences a customer's subsequent purchase behavior.

5 Conclusion

This research demonstrates how chemical manufacturer' perceptions of order fulfillment operations have the potential to move suppliers from ''faceless vendors'' to value-adding partners, which can play a significant role in developing chemical manufacturer loyalty. The intangible aspects (such as personal contacts and the establishment of emotional attachment) may have a more relevant than tangible and measurable aspects of the customer supplier relationship (such as operating performance) to win the loyalty of the buyer.

The research supports the existence of a more complex, mediating relationship between satisfaction, affective commitment, and purchase behavior. Just satisfying customers may not be enough to influence future behavior (Boyer and Hult, 2006); forging emotional bonds and trust in the relationship stems from first satisfying customers and consequently influences purchase behavior.

This research proves that the original model of Davis-Sramek et al. (2008) can also be applied to evaluate the relationship between customers and suppliers in the chemical industry. Finally, the research extends knowledge of how customer loyalty manifests itself in manufacturer supplier relationships. These results justify the importance of looking at the emotional and behavioral components of loyalty not only as distinctly different constructs, but as a causal relationship between affective commitment and purchase behavior

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