

# Strategic management of logistics service: A fuzzy QFD approach

Eleonora Bottani\*, Antonio Rizzi

*Department of Industrial Engineering, viale delle Scienze 181/A, Campus Universitario, University of Parma, 43100 Parma, Italy*

Received 20 April 2005; accepted 15 November 2005

Available online 3 March 2006

---

## Abstract

Logistics and Supply Chain Management literature indicates that customer service management has become a strategic issue for companies in the new millennium. By improving logistics performances, companies increase customer satisfaction and gain market shares.

The aim of this paper is to propose an original approach for the management of customer service. The approach is based on the quality function deployment (QFD), a methodology which has been successfully adopted in new products development. Specifically, the paper addresses the issue of how to deploy the house of quality (HOQ) to effectively and efficiently improve logistics processes and thus customer satisfaction. Fuzzy logic is also adopted to deal with the ill-defined nature of the qualitative linguistic judgments required in the proposed HOQ.

The methodology has been tested by means of a real case application, which refers to an Italian company operating in the mechanical industry.

© 2006 Elsevier B.V. All rights reserved.

*Keywords:* Logistics service; Customer service management; Fuzzy QFD; House of quality

---

## 1. Introduction

The importance of customer service as a strategic issue has emerged in particular during the last decade, due to a twofold reason. First, brand power has progressively decreased, making products almost undifferentiated in terms of trademarks. Customers do not rely on brands except in a few market niches, such as fashion. Second, due to technology diffusion, the functionalities and technological features of products tend to be the same (Franceschini and Rossetto, 1997). Today, new

customers cannot be acquired counting only on brands or on technical characteristics of products. On the contrary, the breath of logistics services related to products may play a significant role in the competitive scenario (Vandermerwe and Rada, 1988; Bailey, 1996). As a consequence of this shift towards service, customers have become more and more exacting about logistics performances (Lee-Kelley et al., 2002).

Customer service, hereafter understood to be the service performance perceived by customers as a result of logistics processes and activities, has been widely recognized as a mean to gain competitive advantage. Through customer satisfaction, companies retain their customers and gain new market shares (Zeithaml, 1988; Christopher, 1998).

---

\*Corresponding author. Tel.: +39 521 905872;  
fax: +39 521 905705.

E-mail address: [e.bottani@ied.unipr.it](mailto:e.bottani@ied.unipr.it) (E. Bottani).

However, even though new customers are welcomed almost in every line of business, the main objective of companies is to maintain customers for a long-time period. The total value of a lifetime customer is almost unquantifiable, and allows firms to achieve a competitive advantage against competitors (Christopher, 1998; Bailey, 1996). Bailey (1996), stresses the significant role of service quality in achieving competitive advantage, and, conversely, the weak importance of sales and profits.

According to the so-called “disconfirmation paradigm” (Philip and Hazlett, 1996; Zeithaml et al., 1990), customer satisfaction is achieved when logistics performances delivered by the supply chain meet customer requirements. To this extent, Robledo (2001), states that customers evaluate service by comparing their perceptions of the service received with their expectations; thus, the gap between customer expectations and perceptions is a synthetic measure of customer satisfaction. Since customers will be satisfied when perceptions exceed their expectations, understanding these requirements is an imperative for firms.

In addition, when speaking about service management, a dynamic perspective should be adopted. Customer service is not a steady concept, but is continually in a state of change, and evolves through a continuous improvement cycle (Morris, 1996; Baines, 1996). Therefore, the quantitative measure of logistics performances delivered and expected has to be repeated over time, periodically auditing gaps between expectations and perceptions. When a lack of correspondence occurs, viable logistics areas and factors of intervention have to be identified, pondered and ranked in terms of efficiency and effectiveness. Since interventions imply costs, before taking steps toward implementation, a costs/benefits analysis is appropriate, in order to undertake actions starting from those factors with the highest impact on customer service.

To conclude, providing logistics service which meets customer expectations is a continuous process, which can be summarized in the following steps:

- understanding the customer’s voice, that is requirements and expectations in terms of relevant logistics performances;
- assessing customer’s service perception;
- if a gap between perception and requirements occurs, identifying viable steps that can be implemented to improve customer satisfaction;

- identifying costs and benefits related to each step; and
- implementing the most efficient actions for customer satisfaction by means of a cost/benefit analysis.

A similar process is followed in new products development, where customer requirements have to be engineered into products features. The quality function deployment (QFD) methodology has been found as a viable tool which can be successfully applied for this purpose (Akao, 1990). QFD has been defined by the American Supplier Institute as “*A system for translating consumer requirements into appropriate company requirements at each stage from research and product development to engineering and manufacturing to marketing/sales and distribution*”. As detailed in the next section, by assessing how each “how” (engineering characteristics) impacts on each “what” (customer requirements), QFD makes it possible to rank “hows” in terms of efficiency to reach the required “whats”.

A preliminary review of the literature has highlighted only few references where QFD has been associated to service assessment, none of which can be directly related to logistics issues. Lapidus and Schibrowsky (1994), illustrate the QFD applicability as a method for improving service starting from customer complaints. In their approach, customer complaints become the “whats” to be considered in the house of quality (HOQ). Conversely, we propose a proactive approach to be adopted before complaints occur: thus, “whats” do not emerge from complaints but from logistics and supply chain management literature.

Behara and Chase (1993), illustrate the QFD process in matching customer requirements to specific topic areas in service management. However, these applications do not provide a general methodology to plan and manage the trade-offs and correlations associated with customer requirements and firm viable actions.

Stuart and Tax (1996), propose the QFD application to manage the service design phase. They suggest the use of HOQ as an effective mean to plan processes for a successful execution of services. Their approach is of general purpose and depicts the general traits of a QFD approach to design service strategies. However, the authors do not detail how the approach may be deployed for a practical in-field application. In conclusion, the works cited above deal with service management

متن کامل مقاله

دریافت فوری ←

**ISI**Articles

مرجع مقالات تخصصی ایران

- ✓ امکان دانلود نسخه تمام متن مقالات انگلیسی
- ✓ امکان دانلود نسخه ترجمه شده مقالات
- ✓ پذیرش سفارش ترجمه تخصصی
- ✓ امکان جستجو در آرشیو جامعی از صدها موضوع و هزاران مقاله
- ✓ امکان دانلود رایگان ۲ صفحه اول هر مقاله
- ✓ امکان پرداخت اینترنتی با کلیه کارت های عضو شتاب
- ✓ دانلود فوری مقاله پس از پرداخت آنلاین
- ✓ پشتیبانی کامل خرید با بهره مندی از سیستم هوشمند رهگیری سفارشات