



# Investigating the decision criteria used in electronic components procurement

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## Abstract

Previous research has reported that the decision criteria used to evaluate suppliers differs by product category. Rather than investigating the “key buying criteria” across the entire gamut of products and services, this research takes a novel approach by investigating the evaluation criteria used in the procurement of component parts. The survey results suggest that the content and structure of the decision criteria used by business customers to assess their suppliers does not differ across an array of electronic components. The business implication is that business customers that formally track the performance of their suppliers along the critical evaluation criteria will be in a better position to gain a competitive advantage by effectively managing the inbound supply chain.

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## 1. Introduction

In light of the fact that purchasing is directly linked to overall organizational success (Carter & Narasimhan, 1996; Ellram, Zsidisin, Siferd, & Stanley, 2002; Goh, Lau, & Neo, 1999; Tan, Kannan, & Handfield, 1998), senior management directives pertaining to a firm’s procurement activity have become increasingly commonplace in today’s organization (Poirier & Bauer, 2001). Much of this attention is driven by the understanding that initiatives focusing on the inbound supply chain can assist the firm in reducing costs (Ojo & Lamb, 2001; Shirouzu, 2002), increasing velocity to market (Davis, Dibrell, & Janz, 2002; Griffin, 2002; Stalk, 1988; Suri, 1998), and enhancing the value proposition to the end user (Day, 1999; Magretta, 1998; Porter, 2001). Thus, previous writings have clearly articulated that attending to the organizational buying activity can provide a basis for securing a competitive advantage.

In an attempt to harness the gains that attending to the inbound supply chain can yield, progressive buying organizations are systematically managing their supplier base by

monitoring critical operational (task-related) metrics (Giunipero & Brewer, 1993). A recent study reports that 85% of the firms surveyed have implemented a formal monitoring system to track supplier performance so as to realize cost, time, and quality improvements (Trent & Monczka, 1998). The same study also mentions that 90% of the CEOs and presidents at these firms expressed interest in reviewing and evaluating purchasing performance measures on a regular basis. As such, the question has become one of identifying the metrics that a firm must track in order to realize the full range of benefits that can accrue from effectively managing its supplier portfolio.

The supplier selection (or organizational buying) literature has long held that product quality, delivery, price, and service are the key attributes that are used to assess the performance capabilities of vendors (Dempsey, 1978; Dickson, 1966; Evans, 1981; Lehmann & O’Shaughnessy, 1974, 1982; Matthyssens & Faes, 1985; Wilson, 1994). This body of knowledge has readily established that the “key buying criteria” used by a business customer to evaluate a supplier will vary across product categories (e.g., the content and structure of the choice criteria utilized by firms to acquire forklifts will differ in relation to the factors that will influence the purchase of MROs). Whether the content and structure of the decision criteria used to evaluate a supplier

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hold within a given product category, however, remains largely unexplored. To this point, some academics have suggested that it may be necessary to develop a theory for each of the various product classes (Choffray & Lilien, 1978). Thus, the aim of this manuscript is to answer this call by investigating whether differences exist within the decision criteria used by manufacturers to evaluate suppliers from whom they purchase an array of component parts ranging from commodities (e.g., fasteners or capacitors) to highly customized inputs (e.g., printed circuit boards).

In light of the possibility that the decision criteria used by business customers in evaluating their component parts' suppliers may vary by industry (Bennion & Redmond, 1994; Giunipero & Brewer, 1993; Jackson, 1985; Oliver, 1997; Sharma & Achabal, 1982), it is necessary to select a homogenous setting so as to reduce the unnecessary noise that may arise from situational idiosyncrasies (Cook & Campbell, 1979). Since electronics manufacturers spend anywhere from 22% to 53% of their annual sales revenues on the procurement of goods and services from suppliers (Anderson, Chu, & Weitz, 1987; Killen & Kamauff, 1995), this effort seeks to advance a purchase evaluation theory for the procurement of component parts within this context.

## 2. Theoretical development

Social exchange theory posits that a business customer is most likely to foster those exchange relations from which it derives the greatest benefits (Thibaut & Kelley, 1959). In commercial exchange relationships, this logic gets reified in the “key buying criteria” that manufacturers deploy in assessing their suppliers. The more optimally a vendor performs along these choice factors, the more likely it is to be retained by the business customer for future transactions (Anderson & Narus, 1984; Anderson & Narus, 1990; Dempsey, 1978; Wind, 1970). The supplier selection literature has traditionally held that quality, delivery, service, and price comprise the choice criteria utilized by business customers to evaluate their suppliers. As noted in one study, the importance of the respective decision criteria has changed over time (Wilson, 1994). While earlier studies reported that delivery and price were most important (Evans, 1981; Lehmann & O'Shaughnessy, 1974), later research found that quality had become most prominent (Lehmann & O'Shaughnessy, 1982; Wilson, 1994). A recent study reaffirms the diminishing importance of price in organizational buying decisions in relation to the other evaluation criteria (Simpson, Siguaw, & White, 2002) (please see Table 1).

The supplier selection literature asserts that it is imperative to understand the relative importance of the choice criteria. Although Table 1 provides some directional information regarding the ranking of the choice criteria, the content and structure of the decision criteria may differ across industries (Choffray & Lilien, 1978). For instance, while price may be the most important criterion in industries

Table 1  
Decision criteria across studies

Study	Rank order of decision criteria			
	1	2	3	4
Lehmann and O'Shaughnessy (1974)	Delivery	Price	Quality	Service
Evans (1981)	Delivery	Price	Quality	Service
Lehmann and O'Shaughnessy (1982)	Quality	Price	Service	Delivery
Wilson (1994)	Quality	Service	Price	Delivery
	Rank: 1 = <i>most important</i> to 4 = <i>least important</i>			Table adapted from Wilson (1994)

in which the inputs secured are primarily commodities (e.g., the paint industry), product quality and on-time delivery may be more important in other industries (e.g., healthcare). Furthermore, the ranking can differ across product categories. As such, this effort seeks to develop a ranking of the “key buying criteria” utilized by electronics manufacturers in the procurement of component parts (i.e., finished or nearly finished, inputs that are ready for assembly into the manufacturer's final product). In the ensuing discussion, a set of hypotheses advancing a theorized ranking for the “key buying criteria” is presented. The hypotheses are framed in light of the ability of each choice factor to assist the business customer to gain a competitive advantage through reducing costs, increasing velocity to market, and/or enhancing the value proposition to the end user. Subsequently, whether the ranking of the choice criteria differs between strategic, big-ticket components (e.g., printed circuit boards) and smaller more commodity-like inputs (e.g., fasteners or capacitors) is also investigated. Below, the hypotheses are presented.

In today's highly competitive marketplace, companies must deliver goods with a salient advantage in order to drive consumer acceptance. Since the performance and functionality of the input secured from a vendor can impact the perception that the downstream customer possesses about the business customer's goods (Deming, 1982, 1986; Juran, 1991), a vendor's product quality should have great bearing on the business customer's perception regarding the vendor's operational performance. Indeed, it is widely accepted that superior inputs can enhance how the firm's throughputs are perceived by end users (e.g., “Intel inside”). Conversely, receiving subpar inputs from suppliers may interrupt production processes, introduce unnecessary costs to the value chain, and lead to warranty-related problems (Suri, 1998). Thus, it is expected that

**H<sub>1</sub>:** A supplier's product quality will have the greatest impact among the choice criteria.

Delivery, which refers to both the supplier's logistical capabilities as well as the critical activities and processes that it performs from the time that the input is (re)ordered until it arrives at the business customer's facility (i.e., order fulfillment), can also influence a business customer's costs,

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