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Managing competitive software component supplier relationships

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Abstract

This study addresses purchasing challenges faced by companies buying commercial software components. The purpose is to find out how we can understand the purchasing challenges in software component business. First we develop pre-understanding based on knowledge on competitive supplier relationships and competitive bidding. This is elaborated empirically through a qualitative case study. We contribute to prior literature by concluding that the nature of software component supplier relationships is influenced by the object and costs of exchange. We also argue that, in markets like software component business, it is essential to pay attention to the development of the whole supply market.

Keywords: Managing supplier relationships; Emerging market; Competitive purchasing

1. Introduction

For some time now industrial purchasing literature has emphasised the importance of creating close and co-operative relationships with strategic suppliers and developing supply networks composed of close relationships. The world of competitive bidding has, at least in relation to complex products and services, been abandoned and it has suggested that competitive bidding works only for very standardised and basic products. There is, however, an industry which apparently contradicts this point of view. In the software industry, a new segment has rapidly been emerging, one that is based on the idea of standard and competitive market forces: commercial software component business (Ulkuniemi, 2003).

The software industry is one of the most influential branches of business in the present growth of the global economy (Autere et al., 1999). Software as part of other products has had a great impact across several industries, and it has enabled and fuelled economic growth in many high-tech industries, such as the telecommunication, automotive and medical industries (Hoch et al., 1999). In the field of software engineering (the development of software products and software-intensive systems), one of the most recent issues has been the increasing interest in software components (Morisio et al., 2000). Estimates put the annual market for commercial software component applications to 200 million dollars worldwide (SIIA, 2003). Component-based software engineering is based on the idea that software systems are developed by pre-producing and selecting appropriate existing components and assembling them according to a well-defined architecture that supports the componentisation (Pour, 1998). There are many benefits of software components including lower development costs, higher productivity and more manageable quality of the software.

Componentisation can be seen as one type of modularisation, which has already been used in manufacturing processes of physical products. A final software system includes several software components of which some are possible to purchase from the competitive software component market. Hence, these components form modules within a software system (a product) increasing the degree to which the components of the software can be

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separated and recombined to customer oriented software product without losing functionality (Schilling, 2000; Pekkarinen and Ulkuniemi, 2005).

Manufacturers using software as a part of their products are turning to software components in the hope of reducing the risks associated with software development (Feblowitz and Greenspan, 1998). It is seen that if a specific software component is developed as a core product of a particular supplier, it will be more reliable than the same software developed in-house, beyond the competence of the buying company. Furthermore, as other customers also use the component, possibly even competitors, quality of the component is regarded as higher. One of the underlying factors behind the increasing use of software components has also been the possibility of attaining shorter time-to-market for products, simply because the buying organisations do not need to make everything themselves (Ochs et al., 2000).

However, there are also several problems associated with the use of such components. From the perspective of manufacturing companies, component-based software engineering is very different from the more traditional software engineering approach in which software systems are implemented entirely from scratch in-house or by specialised subcontractors (Xia et al., 2000). In reality, component-based software development and especially the use of commercial components has presented significant risks related to software development processes and the nature of software components, component technologies and vendors' support to customers (Kotonya and Awais, 2001). It has been cited in many sources that the software component markets are far from mature, and they lack industry standards and management guidelines (e.g. Harmon, 1999; Xia et al., 2000; Seppänen et al., 2001). This emerging industry includes many different types of players: sellers may vary from a one-man company to a large software house, and software component brokers sell a variety of different components through their websites. Buyers are typically manufacturing companies buying software components to include in their product's software system. On the other hand, some buyers may in fact also turn into selling companies as they start selling software they originally developed for their own system. All in all, the emerging software component marketplace represents a challenging field for buyers.

Despite all the difficulties currently faced in buying and using software components, many companies approach the commercial software component market in the hope of benefiting from the use of components. Apparently, for manufacturing companies, increasing the use of components is a necessary strategic decision, as software and other IT industries increasingly turn towards componentisation. This requires a thorough analysis of the purchasing problems faced by companies.

The whole process of acquiring and using software components presents many problems to manufacturers. In the field of software engineering literature, a number of models including step-by-step guidelines for buying software components have been presented. These are strongly concentrating on technical issues, describing the business issues as a simple acquisition of a standard product. In practice acquiring software has included sub-contracting and closer forms of partnering, i.e. exchange mechanisms through which manufacturers have been able to get software solutions tailored to their needs. However, the emerging software component markets represent quite different challenges in managing the supplier interface.

The traditional models for competitive supplier relationships represent contexts where the object of exchange is a more or less standard physical item, which can easily be provided by alternative supplier. In the context of software component business, however, the issue of replacing the component with another piece of software is not that clear.

This study addresses purchasing challenges faced by software companies buying commercial software components in this emerging market. The overall purpose of the paper is to find out how we can understand the challenges faced by buying companies in software component business. More specifically, the present study examines 'what are the specific characteristics of the software component supplier relationships?' and 'what implications do these have on purchasing in this context?' This aim is pursued by first developing an understanding based on existing knowledge in industrial purchasing literature. This initial understanding is elaborated empirically through a qualitative case study. The conclusion of the study suggests both theoretical and managerial implications with respect to understanding and managing competitive software component supplier relationships in the emerging market. In more general terms, the study contributes to our knowledge on industrial purchasing in emerging supply markets of technology intensive industries.

2. Existing knowledge on managing supplier interface in competitive market

Managing close business relationships has been emphasised in both marketing and purchasing literature in recent years. Currently also the notion of managing different kinds of relationships with suppliers has been discussed (Gadde and Håkansson, 2001).

Although current research on supplier relationships has been characterised by a dramatic change from transaction relationships towards relational modes of exchange, Araujo et al. (1999) suggest that companies still have, and need to have, different types of relationships with their suppliers and customers. To illustrate these different supplier interface types, Araujo et al. (1999) have presented four different resource interface types: standardised, specified, translation and interactive interfaces. In standardised interfaces the supplier and the customer organisations do not have, nor do they need to have, any knowledge of each other's contexts. Specified interfaces are those in which the product is customised and therefore the supplier