



Information procurement practices of key actors in construction supply chains

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Abstract

This paper presents a survey on the practices associated with the acquisition, use, storage and transfer of information by a sample of professionals (actors) within the construction supply chain. The role of information in construction supply chains witnessed a shift from its passive function in decision-making from the 1990s, to a strategic resource that drives both the processes and competitiveness of companies. This change presents challenges for organisations that participate in the construction supply chain. The way organisations involved in the construction supply chain manage this resource will have direct impact on their competitiveness. This is influenced by the information acquisition, processing, utilisation and transfer practices of their professional staff (actors) involved in the processes of the construction supply chain. The paper presents results from a survey that looks at some aspects of how key actors in the construction supply chain address these information-related issues. © 2001 Elsevier Science Ltd. All rights reserved.

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1. Introduction

Supply-chain management has emerged over the last two decades as an important and strategic area of management decision-making for both *profit making* and *non-profit* organisations. In Porter's value chain (Porter, 1982) the efficient performance of an organisation is associated with the effective management of its supply-chain operations. At the heart of the transactions that take place in supply chains within construction is information. It has been argued that construction largely is an information transaction process (Thorpe et al., 1998). This implies that the way information is managed by the key actors involved in the process will impinge on the effective management of construction as a supply chain (Betts et al., 1998).

This paper first describes the construction supply chain and then explores the role that information plays in bringing about efficient delivery of the products associated with the construction process. It identifies the growing importance of information as a consequence of

the changing business in construction, and argues that the way key actors in the construction supply chain acquire, manage and distribute information will not only impact on the competitiveness of their organisations, but also influence the take up of current ICT developments in improving the construction supply chain. The paper presents the results of a survey to ascertain the practices of principal actors in the construction supply chain regarding the acquisition, processing, use and transfer of information. The outcome from the survey provides insights on the potential for adopting ICT options for procuring and transferring information within the construction supply chain.

2. The construction supply chain

The 1990s have seen a trend towards greater reliance on outsourcing by organisations in order to address the intensifying element of competition (Hendry, 1995). The contracting out of services, operations and activities considered peripheral to the business of corporate establishments, and which traditionally have been provided internally has been driven by the sole aim of reducing operational costs (Davis and Austerberry, 1999). The rationale for contracting out derives from the benefit the

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organisations gain by focusing more closely on those core activities that they do best. Traditionally, the construction industry has been organised along the lines of outsourcing, thus making it amenable to the application of supply-chain principles. However, the systematic management of the whole process as a supply chain with a view to improve the delivery of the client's product or facility has become a necessity as a result of a change in the business of construction. The substantial use of subcontract arrangements facilitates work sections of a project considered outside the scope of operations for a particular construction company to be let out to other more qualifying companies. The implications of the widespread use of these subcontract arrangements in construction are two-fold:

- distribution of operational capability for delivering the client's product;
- a situation whereby the ability of larger construction companies to perform to the requirements of cost, time and quality is influenced by small and medium construction enterprise. The influences do not just relate to physical operations on site but equally to the use and management of information.

There are a number of factors that have combined to give rise to the change in the business of construction. The salient ones of these factors are discussed below.

The late 1990s have seen the emergence of a more informed client making increasing demands for quality improvement, driven by a need to minimise time to market for its developments and cost reduction, so that it can in turn pass on these gains to its customers.

Construction over the past decade has experienced intensifying competition in its industry along three dimensions. These are competition:

- within domestic strategic groups of the industry whereby construction companies of similar characteristics (for example size, turnover, number employed) compete directly against each other;
- between domestic strategic groups, due in part to the capability of smaller construction companies to behave as their larger counterparts by taking advantage of technology; and
- from emerging regional markets and globalisation.

The industry is seeing unprecedented levels of the deployment of technological options to facilitate the operations of companies (Daugherty et al., 1999). This includes availability of information and resource sourcing on a global level, and the growth in electronic publication of technical and general documentation.

Supply-chain management primarily addresses the integrative management of operations through which resources move from source of supply to the final point of use (Christopher, 1998). Reflecting on this integrative perspective of supply-chain management Lummus and

Vokurka (1999) point out that it is not just procurement, inventory management or logistics management. Spekman et al. (1998) argue that it is a combination of all these functional aspects as well as other corporate activities and relationships that impact on the way an organisation's operations and processes result in the movement of products or services from its source to the final point of use. In this respect supply-chain management in construction can be defined at two levels: the individual company level, whereby it focuses on the operations involved in the production process; and the product level, which addresses the processes involved in the delivery of the client's need. The application of supply-chain management and concepts to the construction and engineering sector is relatively new and still emerging and essentially focuses on the product level. This is not surprising considering that an integrated approach to supply-chain management from a logistic perspective is itself a relatively young field and still evolving (Gattorna and Walters, 1996, p. 79).

The presentation of construction as a supply-chain process rather than the development of a product provides the most effective approach to organising the production and business activities of the industry (Scott and Westbrook, 1991). The process commences with a client requiring a facility, be it a building, as in the case of a private or a commercial developer, or other infrastructure such as roads and railways, as in the case of central or local government. The process culminates in a product or facility that will be appropriated by the client or some other designated interest. Fig. 1 presents a schematic view of the key phases that make up the construction supply chain. The process can be cyclical whereby several iterations of the process are undertaken as facilities are say modernised or replaced, or can terminate as is the case with many one-off private developments. From an economic perspective the client's need for a construction

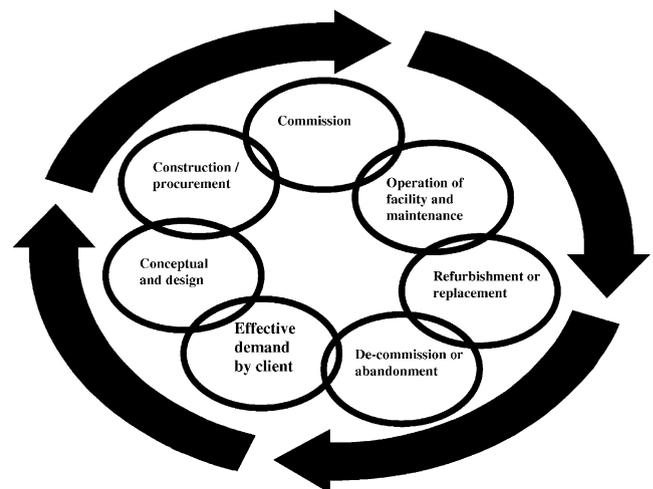


Fig. 1. Key phases of the construction supply chain.

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