



Estimating the cost effects of purchasing centralization—Empirical evidence from framework agreements in the public sector

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ARTICLE INFO

Article history:

Received 12 August 2009
Received in revised form
8 September 2010
Accepted 9 September 2010
Available online 24 September 2010

Keywords:

Purchasing
Centralization
Savings
Process costs
Prices
Tendering
Public procurement

ABSTRACT

There appears consensus among academics that purchasing centralization provides several synergy benefits, especially in terms of lower prices and economies of processes, but empirical evidence of the specific cost effects is scarce in literature. This paper presents empirical evidence of these cost effects from a purchasing centralization project using centralized framework agreements in the Finnish government. The empirical study is twofold: the cost effects of centralization are estimated by comparing the costs of centralized and decentralized tendering processes and potential price savings. The estimation of process costs is done by surveying the time spent on the tendering both for the decentralized operating model and the centralized operating model in the government and estimating the cost of those times. Potential price savings are estimated by comparing the central framework agreement prices to market prices in two selected product categories. The results on the price savings provide empirical evidence of the academic consensus that significant volume discounts are available from pooling. Additionally, the size of savings potential in process costs shows that the number of units centralizing their purchasing process does not need to be very high before economies of process already become evident.

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1. Introduction

Purchasing's importance to organizational competitiveness is increasingly being noted, and it is now more and more considered as a strategic function instead of just an operative one (e.g. Carr and Smeltzer, 1997; Paulraj et al., 2006). As a result, more and more attention is placed on purchasing activities in organizations, which has led to the restructuring of purchasing functions and the search for optimal purchasing processes in different product and service categories in different contexts (e.g. Parikh and Joshi, 2005; Laios and Moschuris, 2001). Many firms realize that purchasing is a key element in a supply chain management strategy, and the trend has thus been toward a stronger, more centralized function and greater participation in the firm's strategic planning process (Stanley, 1993; Cousins and Spekman, 2003; Dubois, 2003). Typically, as purchasing starts to develop, a more centralized approach is sought, as demonstrated e.g. by Van Weele's (2002) purchasing and supply development model. The combination of focusing more on collaborative relationships and the increasingly strategic role of purchasing has resulted in a rise in prominence of strategies of supply base reduction (Harland et al., 1999) and the quest for global efficiency and effectiveness has led to increased centralization and coordination of the

purchasing function (Faes et al., 2000). More and more the question prevails how to get organized at a corporate level to capture potential purchasing synergies (Rozemeijer, 2000). Dimitri et al. (2006) suggest that centralization appears as a clear trend in public procurement as well.

The importance of this type of integration is not in doubt; theory has long suggested the need for integration of internal functions and there is empirical evidence that integrating specific internal supply chain functions such as purchasing will lead to higher performance (Pagell, 2004). By taking control of scattered purchasing volumes throughout the organization, organizations are expecting to gain savings and other benefits. Specifically, many organizations, both public and private, have established framework agreements with selected suppliers to benefit from purchasing synergies (Karjalainen et al., 2009). This means that instead of each organizational unit deciding upon their own specifications, suppliers, and contractual agreements, and running the processes associated with this in parallel, or even individual employees searching for suppliers when a purchasing need arises, organization-wide agreements are made with a selection of preferred suppliers. All organizational units are then expected to use these frame agreements for their operative purchases.

Purchasing literature has introduced several synergy benefits associated with centralization of purchasing processes and the pooling of volumes, one of the most important being various forms of cost savings, attained e.g. through volume discounts and reduced overlapping work activities. Rough estimates for these

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cost savings have also been suggested but only a few studies provide specific cost analyses on the subject. Multiple articles discuss Total cost of ownership (TCO) –models, designed to develop an understanding of the true cost of purchase and aid in purchasing decision making and supplier selection (e.g. Ellram, 1993; Ferrin and Plank, 2002; Hurkens et al., 2006). But while these models include components other than price (Ellram, 1993), they are focused on comparing the costs of alternative suppliers and/or supply solutions and not focused on calculating the internal process costs (e.g. supplier selection, contracting) between different purchasing models. There is a need for research on verifying, demonstrating and measuring the effects of purchasing centralization on purchasing costs. The motivation for this research stems largely from this gap in current research, as well as managerial need for more studies on quantifying the cost effects of centralization. To justify the move to a centralized model, and convince all organizational stakeholders on its purposefulness, evidence of the synergy benefits available through centralization needs to be demonstrated.

The objective of this study is twofold. First, it is to provide directions on how organizations can estimate and quantify the cost effects of purchasing centralization. Second, it is to provide one demonstration of these cost effects by empirical evidence from a purchasing centralization project. The structure of the paper is the following. First, prior literature on purchasing centralization is presented. The second section of the literature review is focused on the definitions of centralized purchasing in the literature; within that discussion the definition used in this paper, based on centralized framework agreements, is presented, and its relation to hybrid purchasing models is pointed out. In addition, the advantages and disadvantages—along with the most appropriate contexts—of using such a purchasing approach are discussed. Literature on purchasing centralization in public procurement is also discussed, as the empirical data for this research is from the public sector. In this paper, the terms purchasing and public procurement are used in accordance with the suggested definitions of Murray (2009), who argues that procurement encompasses purchasing (the whole purchasing cycle). The literature review is concluded with a subsection focused on motivating additional research in the area of quantifying the cost impacts of centralization. The third section of the paper contains the conducted analyses. First, the selected research method is presented and discussed in light of previous research on the topic. Then, using the Finnish Government as a case example, the effects of centralization on tendering process costs and purchasing prices are presented through empirical data. Discussion and conclusions conclude the paper.

2. Purchasing centralization—review of the literature

2.1. The concept of purchasing centralization and centralized framework agreements

Prior research differentiates among three major sourcing organization types: centralized, decentralized and hybrid structures (Trautmann et al., 2009b). Parikh and Joshi (2005) argue that centralization of the organizational structure is defined by the degree of hierarchy of authority. A similar view is presented by Stanley (1993), who determines buying unit centralization as the degree to which authority, responsibility, and power are concentrated within an organization or buying unit; centralized purchasing implies that purchases are made from either company headquarters or some regional or divisional level. According to McCue and Pitzer (2000) in a fully articulated centralized purchasing system all essential purchasing decisions and responsibility of ensuring the integrity of the purchasing process are vested in the purchasing

agency. Also Joyce (2006) suggests that centralized purchasing means that purchasing is handled by one special department. The opposite of centralization is decentralized purchasing, where purchasing is done by individual plant or division managers (Stanley, 1993) or where individual departments or separate locations handle their own purchasing requirements (Joyce, 2006). According to Arnold (1999) centralization does not necessarily refer to all procurement functions but at least to a centralized supplier management and contract handling. Often organizations choose a hybrid model, with practices differing e.g. by product category. According to Munson and Hu (2010) most companies in fact seem to practice some combination of centralized and decentralized purchasing. In hybrid purchasing organizations, there is a division of tasks between the head office and local, for example the head office takes responsibility for the negotiation of some long term contracts and subsidiaries issue orders against these contracts (Trautmann et al. 2009a). In this paper, purchasing centralization refers to the use of centralized framework agreements and is defined as centralization of activities up to and including the completion of the central contract/framework agreement for the whole organization to use as well as the management of that contract. Tasks after contracting, such as ordering, are considered to be decentralized to local units. Munson and Hu (2010) actually call this type of a purchasing approach as an attempt to encapsulate the best aspects of both centralization and decentralization, referring to it as centralized pricing with decentralized purchasing. Typically in this type of a structure with centralized framework agreements in place, categories not suitable for standardization and/or not purchased by all or a significant number of the units in the organization are managed with a decentralized operating model where the purchasing process in its entirety is conducted by individual units (in some cases with the assistance of the centralized purchasing unit).

2.2. Why centralize?—benefits of purchasing centralization

Benefits of centralized purchasing are often referred to as synergy benefits. In the literature, synergy is frequently described as the aim of producing a combined return on resources that is greater than the sum of individual parts (Smart and Dudas, 2007) and synergy potential is the potential benefit that can be realized by exploiting interrelationships between business units (Vizjak, 1994). Synergy is often illustrated with the equation: $1+1=3$ (Rozemeijer, 2000), but in terms of savings created by purchasing synergies, a better illustration would be $1+1=1.5$. Faes et al. (2000) suggest that synergy is supposed to lead to a competitive advantage as two or more units of a company e.g. share knowhow or resources, coordinate strategies, pool negotiation power. Purchasing centralization creates purchasing synergy benefits, which, according to Trautmann et al. (2009a), can be divided into three main categories: economies of scale, economies of information and learning, and economies of process. All these three types can be gained by the use of centralized framework agreements. In the following, each of these is presented in more detail.

Economies of scale refer to attaining lower unit costs by increasing market power through volume bundling and standardization of categories (Trautmann et al., 2009a). According to Trautmann et al. (2009a) the realization of economies of scale through bundling has received much attention in prior literature and has been named a major reason for more centralized purchasing approaches. According to Joyce (2006), centralized purchasing may be able to obtain lower prices than decentralized units if the higher volume created by combining orders to a common supplier enables it to take advantage of quantity discounts. This can be achieved with centralized framework agreements where volumes of all units are combined under one agreement even though ordering still occurs at

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