



## Assessing the impact of e-procurement on the structure of the buying centre

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### ABSTRACT

The purpose of this research is to analyse empirically how the use of Internet at the various stages of e-procurement impacts the organisational structure of the buying centre in terms of size and composition for a capital good. In this high-risk situation organisational buyers typically undertake extensive, deliberate choice processes involving numerous sequential phases. Interdepartmental coordination is required to specify, amongst others, the most suitable type of equipment in terms of capability, maintainability or costs. Information and communication technologies have changed the way we interact and communicate at different levels, amongst individuals within a single organisation as well as amongst different organisations (for example, with suppliers). A survey was performed using a questionnaire sent to a sample of industrial firms from different sectors. Results show that the size and composition of the buying centre varies at the different stages of the e-procurement process and that the use of Internet leads to an increase in the number of functional areas that intervene in the buying centre. The aims and implications for managers and researchers are discussed.

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### 1. Introduction

The Internet is present in the business strategy of practically every organisation. Of the many varied and wide-ranging applications of the Internet for management, our study focuses on its use in the procurement process (widely referred to as *e-procurement*). *E-procurement* is interpreted as the result of applying e-commerce technologies to an organisation's purchasing activities. This concept currently encompasses activities ranging from purchasing via electronic catalogues to participation in a wide array of on-line auctions and markets, all aimed at enhancing and automating as much as possible the chain of value (Boer de, Harink, & Heijboer, 2002; Essig & Arnold, 2001; Puschmann & Alt, 2005).

In addition to cutting costs (Boer de et al., 2002; Boyd & Spekman, 2001; Wu, Zsidisin, & Ross, 2007), e-procurement has an effect in organisational terms, an issue which has thus far received less attention in the literature. Organisational aspects which have been explored are: processes and organisational structure (Boer de et al., 2002; Dewett & Jones, 2001; Garrido, Gutiérrez, & San José, 2008), the boundaries of the firm – in terms of the degree of vertical integration and organisational changes – (Garrido, 2001), relationship development (Webster & Wind, 1972) and the structure of the buying centre (Boer de et al., 2002; Osmonbekov, Bello, & Gilliland, 2002). Our research also analyses the impact of Internet on the organisational structure of buying centres, or those who

are involved in the purchase decision. Our main interest, however, focuses on the functional areas involved in industrial purchases, said purchases perceived as a process and not as an isolated act or mere transaction. In the process of industrial purchasing, a series of sequential and differentiated phases may be identified in which participants (in terms of size and composition) may vary depending on the nature and needs of each phase. For traditional purchasing behaviour in industry (or off-line), empirical research concurs in highlighting that the involvement of different functional areas – engineering, production, purchasing and general management – varies throughout the purchasing process phases (Bello & Lothia, 1993; Garrido & Gutiérrez, 1997; Johnston & Bonoma, 1981b; Lilien & Wong, 1984; McMillan, 1973; Naumann, Lincoln, & McWilliams, 1984). Yet, does the same happen when dealing with e-procurement? Information and communication technologies (ICT) have changed the way we interact and communicate at different levels, amongst individuals within a single organisation (for example through the use of intranets) and amongst different organisations (for example through extranets, websites or e-mail). For this reason, we feel that exploring the effect of Internet use on industrial purchases is important, both amongst members of the buying centre within the organisation as well as in terms of relations with suppliers.

In short, our goal is to analyse empirically how the use of Internet at the various stages of e-procurement impacts the organisational structure of the buying centre in terms of size and composition (functional areas involved) for purchase of a capital good. We chose the purchase of a capital good since in this high-risk situation, organisational buyers typically undertake extensive, deliberate

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choice processes – rather than making a casual selection – to reduce decision risk (Hunter, Chickery, Celuch, & Curry, 2004). For this reason, in this kind of purchase we can identify various phases such as recognition of need, determining specifications, search for suppliers, assessing alternatives, and purchase.

Yet, beyond merely exploring the impact of the use or non-use of Internet, it is no doubt interesting to assess the organisational effects of the level of Internet tool use. Does the intensity of Internet use at each stage of the purchasing process impact the number of functional areas involved? This present work also seeks to provide an answer to this question. The use of Internet at each phase of the purchasing process refers to the number of different Internet tools used. Webpages, extranets, discussion forums, e-mail and videoconferencing are the Internet applications we deal with in our study.

This study has enabled us to progress along this particular line of research in which, as stated earlier, literature addressing the organisational consequences of Internet use in purchasing remains scarce. This is a key point since e-procurement impacts financial outcomes for those firms which make use of it, specifically in terms of an increase in efficiency in the purchasing process (Osmonbekov et al., 2002; Wu et al., 2007). Our study also provides findings allowing us to establish differences between e-procurement and procurement which does not involve use of the Internet. This is possible thanks to the numerous studies exploring the structure of the buying centre in the latter case.

The work is structured as follows. We first posit the research hypothesis, before moving on to deal with the methodology and outcomes to emerge from the empirical analysis. To conclude, we discuss the findings and implications for management and research.

## 2. Conceptual foundations and hypotheses

The buying centre forms part of the informal structure of the firm and brings together all the staff from the various departments, hierarchical levels or functional areas involved, particularly in the purchasing process. Various roles may be identified within the buying centre such as initiators, users, influencers, purchasers, decision-makers and filters (also known as *gatekeepers*). When determining the structure of the buying centre we have pinpointed the following aspects: size, hierarchical levels and functional areas (Garrido, 2001; Osmonbekov et al., 2002) which will be the focus of our research.

As with an individual's purchasing process, in an industrial purchasing process a series of phases or stages may be identified (Ozanne & Churchill, 1971; Robinson, Faris, & Wind, 1967; Webster & Wind, 1972, amongst others) which range from a recognition of need to placing the actual order, amongst others. The literature addressing industrial purchasing behaviour seems to evidence a certain controversy surrounding the number of phases involved and whether these are iterative or sequential. As regards the iterative or sequential nature, as pointed out by (Spekman & Gronhaug, 1986) organisational decision making should be understood to a certain extent as a series of non-sequential but rather overlapping phases. As to the number of phases, certain authors feel that the precise number of stages varies enormously depending on the firm and the good in question (Choffray, 1977; Johnston & Bonoma, 1981a). Other authors (Reese & Stone, 1987; Robinson et al., 1967) by contrast, view the purchasing process as independent of the kind of good and dependent on the purchasing situation – a new purchase, a modified re-purchase and a direct re-purchase – the firm faces. Several authors have also highlighted the importance of sources of information at the various stages in the decision-making process (Gronhaug, 1975; Moriarty & Spekman, 1984; Ozanne & Churchill,

1971; Schiffman et al., 1974). Depending on information needs, the research conducted by these authors establishes the following stages in the purchasing process: (1) recognition of need, (2) determining specifications, (3) search for suppliers, (4) assessing alternatives and (5) purchase. These studies have reached the following conclusions: (1) impersonal sources of information are the most important factor at the initial stages of the purchasing process; (2) efficiency of personal communication at certain stages of the purchasing process, particularly when it is necessary to establish preferences and take the decision to purchase; (3) the high level of value attached to informal sources of communication (e.g. opinion leaders) in the industrial decision process; (4) the change from external sources to internal informal sources as the purchasing process moves on from the recognition of need stage to the purchasing stage. In general, sound information allows procurement offices to identify the best suppliers and negotiate the best terms and conditions (Bray, 2008).

Some works explore in depth the use of the Internet throughout the various stages that make up the industrial purchasing process. In one study into the plastics industry (Boyle & Alwitt, 1999) evidence how the Internet is rarely used when formalizing the purchase (a phase linked to the transaction), the Internet mainly being used as a source of information throughout the previous phases. Rahman's (2003) study into Internet use in firms in India concludes that freight transport and handling of orders are the two key functions carried out over the Internet. In research work conducted into Spanish industrial firms, Garrido, Gutiérrez, and San José (2006) assess the use of various Internet tools throughout the different phases of the purchasing process. Despite the differing needs in terms of information requirements at the various phases and the particular features of each Internet tool, a common pattern in Internet use at each phase does emerge. Visits to webpages to consult company catalogues and sending e-mails, in that order, occupy the main positions, closely followed by the extranet and intranet. An inversion of the two top positions may be observed when the order is being placed.

The use of Internet in the purchasing process impacts the nature of the available information, in terms of quantity and the way such information is conveyed through the organisation, which may affect the structure of the buying centre (Garrido et al., 2008). We now posit a series of hypotheses linked to the functional areas involved in the various phases of the e-procurement process.

### 2.1. The structure of the buying centre in the e-procurement process

In the industrial purchasing process, people from differing functional areas such as purchasing, engineering, production, marketing or top management (Johnston & Bonoma, 1981b; McMillan, 1973; amongst others) may be encountered.

In the area of conventional industrial purchasing behaviour, numerous studies have analysed the structure of the buying centre in terms of the number and type of functional areas involved throughout the purchasing process phases. McMillan (1973) states that the purchasing and engineering departments together with company management play the major role in taking the decision to acquire a durable good, but that it is the influence of the engineering department which experiences a significant variation (diminishing) as the decision process advances. In their research, Johnston and Bonoma (1981b) evidence that in the case of acquiring capital goods, four areas are involved in the buying centre: engineering, production, purchasing and top management. When purchasing industrial services the main areas involved from most to least important are: purchasing, production and engineering. In both cases the impact of engineering and production is shown to be greater in the initial phases than towards the end of the purchasing

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