

Challenges of Purchasing Centralization –

Empirical Evidence from Public
Procurement



Katri Karjalainen

Challenges of Purchasing Centralization – Empirical Evidence from Public Procurement

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Abstract

Centralization of purchasing activities is an escalating trend for both public and private organizations. Organizations are attempting to capture the economies of scale in purchasing prices and process costs by replacing individual purchases done throughout the organization with corporate-wide framework agreements. These benefits are achieved by the formalization of purchasing processes and channels, e.g. e-procurement, and the reduction in supplier base, developed by the central purchasing unit. But these changes may challenge the other employees used to handling purchases more informally at a local level as well as limit participation of smaller suppliers. To facilitate a scientific treatment of these challenges of centralization, this thesis has three objectives: 1) To examine how organizations can estimate and quantify the cost effects of purchasing centralization, 2) To study what kind of consequences the development of centralized purchasing and the phenomena associated with it have for the suppliers, specifically for the involvement of small and medium-sized enterprises as suppliers and 3) To conceptually and empirically analyze the forms and reasons of non-compliant purchasing behavior i.e. maverick buying and what types of measures can be used to reduce such behavior.

The thesis consists of four papers which look at the challenges of centralization primarily through the eyes of actors facing the change process, while also addressing the inherent problems of the procurement function as reflected in principal-agent theory. In the first paper of the thesis, "Value of centralization", the cost effects of centralization on purchasing prices and tendering process costs are estimated. The estimation of process costs is done by surveying the time spent on the tendering process both for the decentralized operating model and the centralized operating model in the Finnish government and estimating the costs of those times. The second type of cost effect, price difference, is estimated by comparing the central framework agreement prices to market prices. The savings potential in both process costs and purchasing prices show that the number of units centralizing their purchasing process and the purchasing volume being pooled do not need to be very high before economies of scale becoming evident.

The second paper, "The involvement of small- and medium-sized enterprises in public procurement: Impact of resource perceptions, electronic systems and enterprise size" investigates what kind of an impact the phenomena related to centralization, i.e. increased use and consolidation of e-systems in procurement and more formalized and burdensome tendering processes, have on SME involvement in public procurement. The results of hypothesis testing using data from a survey conducted among SMEs show that perceived lack of resources especially in legal expertise and administration is associated with low SME involvement in public procurement. By analyzing suppliers to municipalities and state organizations separately, it is also found that lack of electronic systems in order processing and invoicing is related with low involvement of SMEs especially in state procurement, but not in municipal procurement, which is far behind in its centralization efforts.

In the third paper, "Non-compliant work behaviour in purchasing: an exploration of reasons behind maverick buying", a systematic literature review is used to identify different forms of maverick buying, ranging from unintentional maverick buying to straightforward sabotage. These different forms and reasons are then validated and enriched through a series of in-depth interviews with purchasing professionals. These results are significant as the mere introduction of centralized

contracts will not bring the expected benefits of centralization; contract compliance is crucial to achieve these. Only by being able to identify the forms of and the reasons behind maverick buying are organizations able to attack the problem.

The last paper, “Maverick buying as an agency problem”, extends the investigation of maverick buying as an agency problem in which the principal is the purchasing department negotiating the contracts for use by the whole organization. The ordering and operative buying is then delegated to the agents i.e. various individuals in the organization. In this research paper hypotheses on maverick buying as an agency problem of ‘hidden action’ are proposed and tested with survey data from the Finnish Government. Empirical testing shows that maverick buying is related to the two conditions of agency problems: information asymmetry and goal incongruence. Based on the results, traditional governance mechanisms of principal-agent theory are efficient in reducing non-compliant behavior, while governance mechanisms to reduce honest incompetence are efficient in reducing the conditions of the agency problem, specifically information asymmetry.

Keywords: Purchasing centralization, public procurement, purchasing savings, contract compliance, maverick buying, principal-agent theory, small- and medium-sized enterprises, electronic procurement, tendering process

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Part II: Original articles

Essay 1

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Essay 2

Karjalainen, K. & Kemppainen, K. (2008) “The involvement of small-and medium-sized enterprises in public procurement: Impact of resource perceptions, electronic systems and enterprise size”, *Journal of Purchasing and Supply Management*, Vol. 14, No. 4, pp. 230-240.

Essay 3

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Essay 4

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PART I:
OVERVIEW OF THE DISSERTATION

1 Introduction

This first part of the dissertation, consisting of chapters 1 to 4, presents the motivation and background for the study and the individual research papers of the dissertation, which are presented later in part II. The research problem, objectives and position of the study are discussed. In addition, a review of the research methods used and the results attained in the individual research papers is presented. Finally, conclusions and contributions of the study are discussed.

1.1 Motivation and background

Production components, raw materials, IT systems, real estate, cleaning services, professional expertise, IT equipment for employees, office supplies, flight tickets, business gifts, mobile phones, electricity, food supplies; the list of what organizations purchase nowadays is varied and practically endless. The purchases can range from individual orders worth a few Euro to multinational contracts with billions of Euro at stake. Especially now with the increased specialization of firms and concentration on core competencies, firms are buying more and more from outside instead of producing it internally. Purchasing is typically an area where everyone has an opinion, and employees believe they can do it efficiently themselves as most people do purchasing almost daily in their lives. But organizational purchasing differs from consumer purchasing, for several reasons (Van Weele, 2002). While a consumer buys simply to satisfy his own needs, organizational purchasing ultimately has the objective of ensuring operations and competitiveness. Organizational purchasing situations more often have a cooperative orientation. Consumers encounter little price variance, while pricing for organizational customers can take complicated forms. A consumer's share of a supplier's sale is typically insignificant, while an individual organizational buyer may represent a huge sales opportunity for a supplier, and thus opportunities to influence price, product specifications and even market behavior are available. All these differences make organizational purchasing a more challenging and multidimensional effort. As purchasing is also a relatively new academic discipline, theory development and academic research do not have as long traditions as they do in for example marketing and organizational behavior.

The importance of purchasing to organizational competitiveness is increasingly being noted, and it is now considered more and more a strategic function instead of just an operative one (e.g. Carr and Smeltzer, 1997; Paulraj et al. 2006, Cousins and Spekman, 2003). This new focus on procurement is largely based on the fact that firms are slowly acknowledging the value-added capabilities of a function that is typically responsible for procuring assets that equal about 65% of the average company's sales (Cousins and Spekman, 2003). The realization that with managing supply strategically firms can save huge amounts of money has led firms to begin to invest in this area of management (Cousins and Spekman, 2003). Thus, 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). Purchasing is transforming from a part-time activity conducted by many to a more specialized function. Especially, the trend has 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). 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). According to a major study of sourcing executives, the trend toward supplier consolidation is increasing in intensity; out of 13 supply chain tools, Chief Procurement Officers selected supplier consolidation and the centralization of purchasing organizations as where they will focus the most over the next four years (Jacoby, 2005). Dimitri et al. (2006) suggest that centralization appears as a clear trend in public procurement as well.

Various topics related to purchasing centralization have been researched in the literature. Already in 1978, Corey gave managerial guidelines on purchasing centralization decision making. More recently, Faes et al. (2000) established managerial guidelines on how to achieve global purchasing synergy and Smart and Dudas (2007) developed a tool for similar purposes. Also Arnold (1999) focused on

determining the optimal degree of centralization in global sourcing. Tella and Virolainen (2005) have identified motives for forming purchasing consortiums while Nollet and Beaulieu (2005) have investigated the benefits and drawbacks of purchasing groups. Essig's (2000) study on purchasing consortiums focused on concept development, while Hendrick (1997) provided statistics on consortiums. Also some modeling studies have been conducted in the field, to investigate the agency costs of centralization (Vagstad, 2000) and to determine the optimal allocation of savings in purchasing consortia (Heijboer, 2003; Schotanus, 2007). The challenges brought along with the implementation of purchasing centralization are, however, a largely uncharted research territory. This thesis will focus on such challenges, especially in the public procurement context.

The thesis consists of four papers which look at these centralization challenges primarily through the eyes of actors facing the change process towards centralization, while also addressing the inherent problems of the procurement function as reflected in principal-agent theory. The research approach is not normative in promoting centralization as the optimal purchasing organizational form for any organization, for all purchased items or in all environmental or organizational contexts. Rather, the focus of the thesis is to study the different effects and challenges of centralizing purchasing by negotiating joint contracts for the whole organization.

Organizational problems are dominated by the question of the degree of centralization; the pendulum of centralization swings periodically towards the option of full centralization or full decentralization (Arnold, 1999). One of the enduring tensions also in contracting and procurement is between centralization and decentralization of decision-making authority (Bartle and Korosec, 2003). For some organizational functions and activities, the pendulum of centralization vs. decentralization has perhaps shifted from one end to the other many times already. As purchasing has only recently become and been recognized as a more strategic activity within organizations, and more effort is being put into managing it, the shifts between different organizational forms have not occurred that many times yet. For example Van Weele (2002) presents a purchasing and supply development model of 6 stages, where the last 3 stages are more centralized, and according to him in many industries purchasing is still highly decentralized. It can thus be argued that as most large firms

are only for the first time undergoing purchasing centralization activities in their organization after having had a decentralized structure, there are still many lessons to be learned –for both practitioners and academics - on how to implement purchasing centralization and what are the challenges related to it. This research focuses on studying especially these aspects. Motivation and background for the research topic are provided in the following.

1.1.1 The difficulty of estimating savings from centralization – and of achieving them without contract compliance

Purchasing centralization is fuelled by a drive to reduce costs and increase purchasing process efficiency. Advantages of centralization are said to be for example economies of scale (e.g. lower prices through pooled volumes), standardization of purchased products and materials, better purchasing policy deployment throughout the organization, better financial control, and common information and communications technology and systems (Cousins et al. 2008). 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 purchases done throughout the organization by individual employees, organizations are expecting to gain savings and other benefits. To achieve these goals, both private and public organizations have been moving particularly towards the use of corporate-wide framework agreements. 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.

There appears to be consensus among academics, and managers as well, that purchasing centralization will bring savings. What has been left with minor attention is research on how to quantify these cost effects, presumably savings, of centralization. The few empirical studies providing quantified cost effect estimates (Cleverley and Nutt, 1984; Hendrick, 1997) are already very outdated. Most likely one reason for

lack of these kinds of studies is that even though purchasing savings are perceived as one of the corner stones supporting any supply organization, the challenges of definition, measurement, management and reporting are daunting and the potential for understatement or overstatement of savings is huge (Leenders, 1998). According to Leenders (1998), at least five major factors influence the ability to measure savings well: inflation, volume changes, technology changes, market changes and lack of accounting interest. Also Axelsson et al. (2002) discuss problems of applying new management accounting techniques in purchasing, and remind of their potential in supporting the implementation of changes in the purchasing function. Indeed there is call for better control and tracking of purchasing related costs other than price. In addition to posing a gap in current purchasing research, the quantification of the potential savings through purchasing centralization is of great managerial importance because without being able to convince organizational units of the benefits of centralization, and to demonstrate them, the purchasing function can experience difficulties in motivating other units to use the contracts it has negotiated centrally for the whole organization.

In previous literature savings have been tied to internal compliance to negotiated contract use. According to Nollet and Beaulieu (2005), there actually would appear to be no relationship between higher volumes and lower prices in healthcare purchasing, but that the extent to which group members adhere to the contract would provide more leverage for getting better prices than simply the volumes themselves. Already in 1984, Cleverley and Nutt argued that group-purchase organizations with high levels of individual member commitment are more effective in obtaining price reductions. Also Hardt et al. (2007) suggest that mastering such issues as creating processes to restrain wasteful “maverick” spend and better management of what is purchased are such basics that companies that fail to master them typically struggle to reap substantial savings, let alone see additional benefits. Indeed, the mere introduction and tendering of centralized contracts for the use of the whole organization will not bring the expected benefits and savings of centralization: contract compliance is crucial to achieve these. If individual units and employees do not use the contracts and the preferred suppliers and specified contract terms in their daily operative purchasing, the potential savings of centralization are likely not to materialize. Nevertheless, the implementation of a centralized purchasing approach based on framework agreements

and the reduction of non-compliant purchases have not been the topic of purchasing and supply management literature. According to Faes et al. (2000), most authors limit their discussion to arguments in favor of or against centralization and to criteria to select a suitable approach but specific implementation guidelines for managers are lacking. Both in the literature and in practice there is still limited knowledge on how to realize sustainable purchasing synergy at a corporate level, while maintaining the advantages of decentralization (Rozemeijer, 2000), e.g. allowing users to order independently via the centrally negotiated contracts.

Compliance issues have been investigated in various other contexts in literature on organizational behavior although most research has focused on employees in customer service (e.g. Harris and Ogbonna, 2002, 2006; Mount et al., 2006). One area in which very little research on organizational non-compliance has been conducted is purchasing and supply management. A study by Gelderman et al. (2006) investigated the compliance of public buyers to EU tendering directives. But there are hardly any studies on internal compliance issues in purchasing, i.e. compliance to using centrally negotiated contracts in every-day operative buying. This non-compliance is present in e.g. situations where an employee purchases flights via e-bookers when a contract with a corporate travel agent is in place or when the marketing department orders promotional brochures from a local printing press while a national contract for printing services is in place with another service provider. According to Kulp et al. (2006) researchers have not thoroughly studied procurement in general and specifically the compliance and control issues associated with procurement contracting. Kulp et al. (2006) thus suggest that researchers should focus on internal compliance issues and an empirical examination of the frameworks theorists prescribe. They argue that researchers should study, both analytically and empirically, the relative effectiveness of various control mechanisms across organizations and their relationship to product and organization demographics.

It is not just the gap in current research that suggests more studies on internal contract compliance are needed. There is a managerial need for such studies as well, because purchasing benchmark reports suggest that off-contract buying is commonplace. Aberdeen studies indicate that the percentage of compliant transactions is 65% on average (Aberdeen, 2006), and maverick buying in services is on average 24%

(Aberdeen, 2003). Lonsdale and Watson (2005), investigating procurement at the National Health Service in the UK, found maverick spend to be 50%, which was said to broadly match the national average. Clearly, maverick buying is a significant problem for organizations. And studies of the phenomenon are important especially given the cost implications maverick buying can have; PricewaterHouseCoopers calculated that a firm could gain savings of 30-40% of non-direct spending if they buy only from preferred suppliers (Angeles and Nath, 2007). Also Kulp et al. (2006) estimated that 20 to 30 percent of unrealized purchasing savings are due to noncompliance.

1.1.2 Public procurement as a research context for centralization

Clearly, there are interesting and unexplored research avenues available in purchasing centralization especially regarding the quantification of potential cost effects and issues related to contract compliance, and this thesis will focus on these issues. These issues and problems are common to both private and public organizations centralizing their purchasing activities. Perhaps the issue to what extent centralization does bring the expected savings and how purchasing policies are being followed by individual buyers is even more relevant in the public sector, where tax payers' money is being spent. Also, the public sector represents about 40-50% of many economies in the developed world in terms of spend on providing services and procuring from the private sector (Knight et al. 2007). In Finland, annual public sector purchases are approximately 22,5 billion €, which corresponds to about 15 % of the GDP (Ministry of Finance, 2009). Out of this, the governmental purchases are about 4,5 billion €, out of which 3,2 billion € are purchases of products and services.

However, very little research has been conducted on public procurement across nations and even within nations to improve procurement to deliver various benefits (Knight et al. 2007). Also Johnson (1999) points out that despite the substantial total value of purchases by public sector organizations, most research in the supply area has focused on private sector issues. Public procurement still lags far behind private sector procurement in scientific analysis and accumulated knowledge (Telgen et al. 2007). According to Johnson (1999) the organizational changes that are occurring in the area of public purchasing have especially been ignored in previous research.

Telgen et al. (2007) also suggest that papers about public procurement are usually either in documentary format or limited to a specific aspect. This research takes another type of perspective. The problems researched are general to the field of purchasing and supply management, both to public and private procurement, but the empirical data will be collected from the public sector, to further not only knowledge regarding the phenomena studied but also the field of public procurement.

1.1.3 Centralization and pursuit of compliance not an isolated phenomenon – framework of purchasing behaviors and contexts

Centralization in purchasing is not an isolated change process. Centralization and increase of contract compliance can be seen to lead to and/or be connected with the following phenomena: increased use and consolidation of e-systems in procurement, more formalized processes especially in the public procurement context and ultimately supply base reduction.

Johnson et al. (2007) found that e-business technology use increases as organizational centralization increases. Also Kulp et al. (2006) suggest that companies often centralize the procurement function and implement electronic sourcing tools concurrently. According to Dimitri et al. (2006) e-procurement increases efficiency by reducing the cost of human resources in purchasing offices and administrative paper-based procedures and is thus closely linked to centralization. Dimitri et al. (2006) argue that e-procurement favours centralization as it helps central purchasing bodies successfully manage acquisition processes, while providing sufficient flexibility to local units to satisfy some specific needs. Also Subramaniam and Shaw (2002) suggest that web-enabled procurement allows firms to centralize purchasing business processes and gain such benefits as spreading administrative costs over a larger volume of purchase and motivating end users to use the software and thus, eliminate off-contract buying. According to Dimitri et al. (2006) centralization magnifies the benefits of e-procurement: web-based sourcing increases efficiency when procurement is more centralized since it affects a larger volume of transactions. Also Angeles and Nath (2007) recommend that firms centralize control of the different contracts they administer, product data, catalogs, and price updates for indirect procurement in the actual management of their e-procurement business process to

gain greater control over their sources of supply, purchase price, and inventory policies. Johnson et al. (2007) even go so far as to argue that as e-business technologies increase in use over coming years, it may become increasingly difficult for firms to completely decentralize their supply organizations without sacrificing performance benefits associated with e-business technology use and adoption. E-procurement is also largely tied to the reduction of maverick buying, which is a key issue in the successful implementation of purchasing centralization based on centrally negotiated framework agreements. In previous literature, the most often mentioned remedy for maverick buying (MB) is the implementation of electronic procurement (e.g. Angeles and Nath, 2007; Cox et al., 2005; Croom and Brandon-Jones, 2005; Cuganesan and Lee, 2006; de Boer et al., 2002; Hornyak, 1999, Michaelides et al., 2003; Puschmann and Alt, 2005). E-procurement is beneficial in increasing spend visibility to detect maverick spend (Cuganesan and Lee, 2006) and it makes compliant purchases easy for the user.

In a decentralized purchasing organizational structure, all units negotiate their own contracts, or possibly buy from the market on a need basis without a long-term contract in place. Processes used between units, and even within them may vary, and be situational and rather informal at times. However, when moving to a more centralized structure, purchasing processes and procedures tend to become more formalized (Stanley, 1993), and the approach to supplier selection, negotiations etc. is more structured. This is especially the case in public procurement, which is regulated by directives at both the national and EU levels. In order to ensure open competition and fair treatment of the suppliers, certain thresholds for public purchasing have been established. The thresholds for central government authorities according to the EU Directive 2004/18/EC for e.g. supply and service contracts are 15 000 € (national) and 137 000 € (EU) (Europa, 2008; Finlex, 2008). If the value of the purchase/contract exceeds the national threshold, the tendering should be done nationally and when a threshold for EU-wide purchasing is exceeded, the tendering must be arranged EU-wide. The Directives and national legislation prescribe rules for the award procedures of these contracts (Heijboer and Telgen, 2002). As centralization increases the contract sizes and thus the monetary values, they almost always inevitably exceed the thresholds, and thus require the formal tendering process,

whereas smaller units could have made individual purchases below thresholds with less formal approaches as volumes are lower.

Smart and Dudas (2007) draw a parallel with literature on centralization and literature on supplier reduction research, tying them both to the search of purchasing synergy. Also Angeles and Nath (2007) form a link between consolidating contracts, suppliers and also the use of e-procurement. Stump and Sriram (1997) suggest that IT investments, which above were tied to centralization, directly contribute to the reduction of supplier bases. Naturally, as a firm centralizes its contracts, it seeks for suppliers with the capacity to serve the whole organization or at least on a national or regional level, to best benefit from economies of scale, and allow for cost efficient e-procurement investments from both the buyer's and supplier's point of view. Multiple sourcing is seen to diminish advantages of scale and weaken negotiation leverage, as well as cause high transaction costs (Axelsson and Wynstra, 2002). Supplier reduction and restructuring of working routines can also make it easier to monitor purchases in categories where monitoring has typically been hard due to individual preferences having been allowed to affect purchasing strategy, such as in travel and hotel services, rental cars and computers (Axelsson and Wynstra, 2002). The existence of maverick buying of course still maintains in practice a larger number of suppliers, as end users are trying to maintain previous, e.g. local, supplier relationships and buying from suppliers not selected for central contracts.

One can consider the starting point for the centralization efforts a decentralized structure, with contracts at unit level. From this starting point, organizations start to negotiate centralized framework agreements and to reduce the amount of suppliers used. This development is associated with the phenomena discussed above (increased e-procurement usage and process formalization) as well as shifts in the internal and external coordination costs associated with purchasing (Figure 1-1). In Figure 1-1, the four different purchasing behaviors associated with the different purchasing contexts describe the behavior as it appears from a central organizational viewpoint. The vertical dimension on number of suppliers used refers to the relative number of suppliers used compared to those available in the market, not to an absolute number of suppliers.

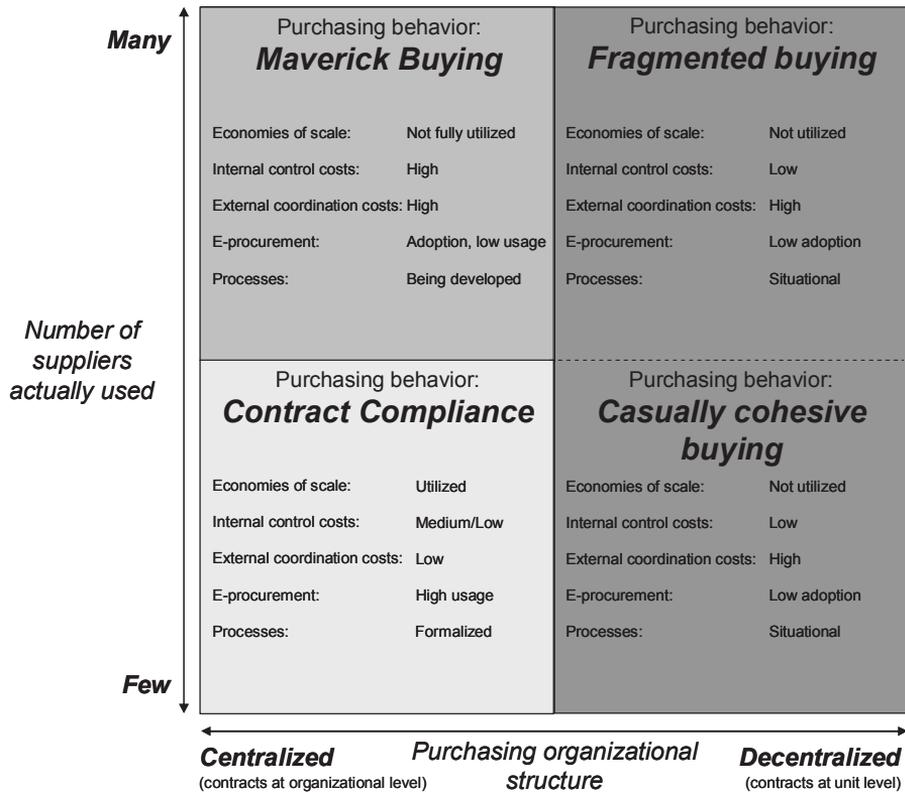


Figure 1-1 Framework of different purchasing behaviors and contexts

Typically in the decentralized situation e-procurement adoption and usage are low, as investments to e-procurement systems are not economically justifiable given the low volumes that would go through them at individual units, and the lack of coordination of purchasing efforts. Also suppliers most likely are reluctant to offer e-procurement solutions, as the volumes of a single unit do not justify investments on their part either. The purchasing company is not able to utilize potential economies of scale in e.g. lower prices, as the whole organizational purchasing volume is not used in negotiations with suppliers. Internal control costs related to purchasing are low, as there is no need to inform all units of selected suppliers and contracts, to train to use the contracts and systems chosen, nor to control for possible maverick buying. External coordination costs are high, however, as each unit maintains its own supplier contacts, negotiations and general management of suppliers. Processes used are often situational and even informal. The number of suppliers used may be few or many. Typically the supplier base is large as all units are free to choose the suppliers used themselves, but it may be rather small, if units still end up selecting mostly the same

suppliers. Purchasing behavior can be characterized as fragmented buying, and in case of units by chance selecting same suppliers as that of casually cohesive buying. Casually cohesive buying does not, however, bring the same kind of benefits as a centralized approach with contract compliance would, because economies of scale are not utilized in contracting and there is lot of duplicate effort at unit level. 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. Organizations take control of supplier selection and contracting, and these tasks are moved to a central purchasing unit. Organizations start to adopt e-procurement solutions as part of this more centralized approach, but their usage in the beginning typically remains low due to e.g. employee resistance and lack of skills to use the systems in place. Purchasing processes are being developed as purchasing maturity evolves. But typically in the early stages of centralization efforts, purchasing behavior can be characterized with high levels of maverick buying, as employees do not yet fully comply with the new organizational system, and it has not been fully implemented at user level. This leads to economies of scale being lost as the lower contract prices and better terms negotiated with the help of pooled volumes are not translated into actual savings when employees continue to buy off-contract. Internal control costs are high, as organizations are coming up with governance mechanisms to tackle maverick buying, ranging from better communication to employees of contracts in use and e-procurement training to spend monitoring systems. In addition, external coordination costs can still remain high as employees and units continue to maintain off-contract supplier relationships and even still conduct duplicate processes in e.g. supplier search, selection and negotiations. The more developed centralized purchasing is characterized by contract compliance, meaning that supplier base is reduced de facto as well: only the selected suppliers in centrally negotiated contracts are actually used by employees when ordering. E-procurement usage is high, processes are formalized and economies of scale are now utilized, as purchases flow through the contracts with low prices negotiated with the help of larger volumes, and duplicated efforts are reduced. External coordination costs are decreased by the reduction of these duplicate efforts and also by the increased use of e-procurement; Johnson et al.'s (2007) findings suggests that firms are leading their e-business technology implementation with tools that help to reduce coordination costs, such as online purchase order systems, supplier catalogues, EDI and electronic linkage with suppliers. Also Stump

and Sriram (1997) suggest that IT investments can reduce the costs of communicating and transacting. Internal control costs are now lower than in situations characterized by maverick buying, as employees have learned and accepted the new purchasing procedures as part of their ordering routines. The characteristics of each behavior and context are also explained in Table 1-1.

Table 1-1 Different purchasing behaviors and contexts.

Purchasing behavior	Contract compliance	Maverick buying	Fragmented buying	Casually cohesive buying
	<i>Few</i>	<i>Many</i>	<i>Many</i>	<i>Few</i>
Number of suppliers actually used	<i>Centralized</i>	<i>Centralized</i>	<i>Decentralized</i>	<i>Decentralized</i>
Purchasing organizational structure	Utilized	Not fully utilized	Not utilized	Not utilized
Economies of scale	Medium/Low	High	Low	Low
Internal control costs	Low	High	High	High
External coordination costs	High usage	Adoption, low usage	Low adoption	Low adoption
E-procurement	Formalized	Being developed	Situational	Situational
Processes				

Thus, as organizations move from a more informal, decentralized approach to purchasing into a formalized central approach with various mechanisms to control employee purchasing behavior, they are likely to see a shift from external coordination costs towards internal control costs associated with ensuring contract compliance. But as the centralization process becomes fully implemented and the situation stabilizes, internal control costs are expected to reduce again.

1.1.4 External effects of purchasing centralization – supplier access opportunities in different purchasing contexts

As companies are centralizing their purchasing and striving for compliance, they are moving to a more reduced supplier base and increased use of e-procurement as well. This represents a probable shift in the types of indirect costs resulting from purchasing. There is a move from high external coordination costs associated with decentralized efforts and large supplier base into high internal control costs associated with ensuring contract compliance. Naturally, the organizational and environmental context among other things affects which types of costs are higher for a firm to bear and where the optimal level of centralization and compliance lies. Organizations thus need to decide their objectives regarding these different types of costs and other factors tied to the decision to centralize procurement and aim for high compliance. There are trade-offs associated with the decision, and organizations must try to find the optimal point for them. This search for optimal level is an internal decision of course, but it also has

external effects that organizations should realize because these external effects on the market place can have implications to the organization itself on a longer time frame. Namely, the reduction in the number of suppliers used as a result of centralization and reduction of MB has an impact on the access opportunities of suppliers to the organizations' contracts. In three of the different purchasing behavior types mentioned in Figure 1-1, casually cohesive buying, fragmented buying and maverick buying, there are access opportunities for small and large suppliers alike. In casually cohesive buying and fragmented buying environments, where units and users choose for themselves the suppliers used, and supply capacity is required only to fulfill the volumes of one unit, both large, national or global suppliers as well as small, local enterprises have the opportunity to participate on equal grounds. They may be selected as local contract suppliers and individual purchases can be made from them. Also in situations characterized by maverick buying the door is left open for small suppliers by purchases made off-contract at unit level, although centrally negotiated contracts most likely are made with large suppliers capable of supplying the volumes needed by the whole organization. But when contracts are centralized and full or at least very high contract compliance is achieved, it is typically the small suppliers that are cut out of access. They do not have the supply capacity required in central contracts, and due to high compliance, no off-contract purchases are directed to them either. This situation is also illustrated in Figure 1-2.

Second, SMEs do not have the resources required by the formal processes in e.g. tendering and contracting brought on by centralized procurement, especially in the public procurement context. The bidding process regulated by procurement legislation is rigorous and resource consuming, and even insignificant deviations from the requirements may lead to the rejection of bids. Fee et al. (2002) also pointed out other problems such as burdensome documentation, the time and cost involved in preparing offers, and specification of standards. All these make it difficult especially for SMEs to gain access. According to Caldwell et al. (2005), there is real concern that there are too few suppliers who fulfill the requirements of the governmental invitation for tenders and are also able to provide the total volume required. This lack of supply capability is the third obstacle. Centralized contracts require larger supply capacity from the selected suppliers. For example Bovis (1998) claims that the relatively large size of contracts, the result from contract bundling driven by efforts to reduce administrative work (Clark and Moutray, 2004), inhibits SME involvement. SMEs are not able to bid for these large contracts as they do not have adequate supply capacity. They are thus easily left out of organizations' new reduced supplier bases.

Naturally, private organizations are free to search for the optimal level of centralization and compliance to minimize their total purchasing costs. And it is a valid objective also for public organizations, but also problematic given the many non-monetary objectives that public organizations have. Telgen et al. (2007) argue that public organizations have to serve many goals at the same time; the organization itself can have various internal goals (e.g. economic in terms of cost efficiency) and at the same time the general public which the organization is supposed to serve may also have different goals and in addition all of them may very well be conflicting. For example Thai (2004) and Erridge (2004) have argued that public procurement can be used for economic, social and other purposes such as supporting local and domestic firms, assisting minority and woman-owned businesses or environmental protection. One frequently mentioned governmental initiative is indeed to support SMEs in order to increase competition in the market (Chong & Callendar, 2007). Telgen et al. (2007) also discuss the external demand of transparency in relation to public procurement, and how this also implies equal opportunities for all bidders. In most developed economies public sector spending accounts for 40-50% of total expenditure, and thus how that money is spend has a fundamental impact not just on national, regional and

local economies, but on employment, social cohesion, the environment and technological change as well (Hodge, 2007). From that it ensues that the way public organizations procure goods and services has a powerful effect on supply markets, innovation and enterprise, and the increasing use of private contractors to deliver public services extends that sphere of influence (Hodge, 2007). Thus when centralizing and striving for full contract compliance and increasing e-procurement usage, public organizations also need to consider the impacts it may have on supplier base and the market, and to SMEs' potential involvement. That is why, given the public procurement context in the empirical parts of this research, the issue of SMEs' involvement in public procurement in relation to the burdensome process requirements and the increasing use of e-procurement associated with centralization is also investigated.

1.2 Research problem and objectives

The general motivation for this research emerged from the observation that while purchasing centralization seems to be an increasing trend among both public and private organizations, and while there is supply of literature on various topics related to it, certain challenges related to centralization - namely the difficulty of estimating its effects, the problems associated with gaining compliance to centralized contracts and the implications centralization has for the supplier side – have not been widely, if at all, investigated in previous literature. Deriving from this observation, the research problem of this thesis is to study *what are the challenges that an organization faces when centralizing its purchasing*. The research problem is divided into three more focused research objectives, each of which will be discussed in one or more of the individual papers.

1. To provide directions on how organizations can estimate and quantify the cost effects of purchasing centralization.
2. To study what kind of consequences does development of centralized purchasing and the phenomena associated with it have for the suppliers, specifically for the involvement of small and medium-sized enterprises as suppliers.

3. To conceptualize and empirically analyze the forms and reasons of non-compliant purchasing behaviour i.e. maverick buying and what types of measures can be used to reduce such behaviour.

Paper I is used to provide directions on how organizations can estimate and quantify the cost effects of purchasing centralization. Rough estimates for the cost effects of purchasing centralization have been suggested in previous literature, but only a few studies provide specific cost analyses on the subject. Celec et al. (2003) aimed at finding performance measures for evaluating the financial benefits of state term contracts and their survey information suggested that a performance measure should be based on a sample rather than the entire population of products. This followed from the recognition of the magnitude of the task of measuring the savings on hundreds of thousands of individual commodities. Celec et al. (2003) also claim there are two sources of savings from term contracts. First, there are administrative cost savings resulting of the ease of purchasing from these contracts relative to the high costs of the administrative process involved with repetitive tendering. The second type of savings according to Celec et al. (2003) is price concessions. These findings by Celec et al. (2003) are taken into consideration in the empirical study conducted to address the first research objective i.e. the method used to estimate the cost effects of purchasing centralization is based on sampling, and it attempts to measure cost effects both in terms of prices paid and processes used. The Finnish Government is used as the case example to estimate the effects of centralization on tendering process costs and purchasing prices.

To study what kind of consequences does the development of centralized purchasing and the phenomena associated with it have for the suppliers, specifically for the involvement of small and medium-sized enterprises as suppliers, a survey is conducted among SMEs about their involvement in public procurement and the factors affecting this. Previously (e.g. Figure 1-2), it was identified that centralization and strive for compliance are connected with increased use of e-procurement in the supplier relationship, more formal processes in negotiating contracts etc. and reduced supplier base due to selecting suppliers with capabilities and capacities to serve the whole organization. In Paper II, which addresses the second research objective of the thesis, the focus is thus on these types of factors and their influence on SME

involvement in public procurement. In the research, public procurement is divided into two sectors: state procurement and municipal procurement. This can lead to interesting added contributions in relation to the research objective as the municipal procurement in Finland is far behind the state procurement in terms of centralization efforts.

The third research objective of conceptually and empirically analyzing the forms and reasons of maverick buying and the types of measures that can be used to reduce it is addressed in the last two research papers. Maverick buying, also known as non-compliant purchasing, is defined in the research papers as the off-contract buying of goods and services for which an established procurement process is in place based on pre-negotiated contracts with selected suppliers. First, in Paper III the reasons for maverick buying are investigated through a systematic literature review and interviews to create a conceptual and thorough understanding of the topic. Second, in Paper IV, an empirical survey among governmental agencies is conducted to further and deepen the knowledge generated in Paper III and to be able to address the third research objective in even more detail. This empirical testing will take into account both the underlying conditions leading to maverick buying behavior in an organization as well as the possible organizational governance mechanisms that can help in reducing such behavior.

1.3 Positioning of the study

Motivated by the need to control costs and streamline processes, the issue of centralization versus decentralization has captured the interest of researchers and practitioners from a variety of perspectives and it is becoming increasingly important for many organizations (Dimitri et al. 2006). Given the considerable volume of resources involved, firms and governments always seek to optimize procurement in order to deliver value for money to business units and taxpayers, and in pursuing such a goal often the first important choice is to choose between centralized and decentralized purchasing (Dimitri et al. 2006). According to Dimitri et al. (2006) profitability, performance and budget control within a private company or a public institution can vary considerably according to how purchases are organized and managed. This research focuses on studying the different effects and challenges of

centralizing purchasing by negotiating joint contracts for the whole organization. This research does not, however, take a normative approach in the sense that it would promote centralization as the optimal purchasing organizational form for any organization, for all purchased items or in all environmental or organizational contexts. The objective in Paper I is, however, to demonstrate the potential savings that can be gained by centralization, when the organizational context and the products purchased appear suitable for a centralized approach to contracting.

The thesis consists of four papers which look at the challenges of centralization primarily through the eyes of actors facing the change process towards centralization, while also addressing the inherent problems of the centralized procurement function as reflected e.g. in principal-agent theory. The positioning of the individual papers in relation to their main viewpoint, approach and research methods is presented in Table 1-2 and discussed in more detail in the following.

Table 1-2 Positioning of individual papers

Paper	Main viewpoint	Approach	Research Method(s)
I	Challenges of a change process towards purchasing centralization	Empirical Mainly Descriptive	Survey, Quantitative data analysis
II	Challenges of a change process towards purchasing centralization/ Inherent organizational challenges of a centralized purchasing function	Empirical Descriptive	Survey
III	Challenges of a change process towards purchasing centralization	Mainly conceptual Descriptive	Systematic literature review, Interviews
IV	Inherent organizational challenges of a centralized purchasing function	Empirical Prescriptive	Survey

Paper I has an empirical approach, and data collection is done via surveys and other observations. The emphasis is mainly descriptive; Paper I describes the savings that can be generated by moving to a centralized model in purchasing. Paper I, however, takes a prescriptive approach in suggesting a method for these calculations on the cost effects of purchasing centralization as such methods are not available in previous

research. The viewpoint in Paper I is on the challenges of a change process towards centralization, i.e. how to estimate the changes in purchasing costs caused by such a change.

Paper II is descriptive, as it is aimed at explaining the current situation of SME involvement in public procurement and the relationships between levels of involvement and variables possibly affecting such involvement. The method used is a survey. The viewpoint can be perceived as pertaining to both the change process towards centralization as well as to the inherent problems a centralized purchasing function may observe. This is because problems with SME involvement typically begin to emerge as centralization is sought after, but the problems can remain and even be aggravated after centralization has become the status quo.

Paper II has a mainly conceptual approach, although some empirical research is carried out through interviews. The main objective of paper III is to create a conceptual framework on maverick buying to understand and describe the phenomenon. The viewpoint in paper III is more on maverick buying as a change process towards centralization, although maverick buying can remain a problem for quite a while after the centralized framework agreements have been tendered for the whole organization.

Paper IV has a prescriptive approach as it aims to compare various strategies for addressing a specific problem i.e. which governance mechanisms work best in reducing maverick buying behavior. It is an empirical paper with large scale electronic survey as the research method. As Paper IV addresses maverick buying as an agency problem, which is related to organizational situations where delegation of authority within a hierarchical relationship is necessary to complete a task, it has a viewpoint of studying it as an inherent problem of the centralized purchasing function.

Given the public procurement context in the empirical research data collected for all the individual research papers, the focus of this study inevitably is on the purchases of indirect materials, not direct materials for production usage. This is also appropriate given that the phenomenon of maverick buying is typically associated with indirect purchases (e.g. Cuganesan and Lee, 2006; De Boer et al., 2002; Kulp et al., 2006).

Two of the individual research papers in this dissertation focus on maverick buying, pointing out the possible harmful consequences of it to an organization and suggesting remedies to eliminate it. The viewpoint in this research is not, however, that maverick buying in all cases is harmful and that management should strive to total elimination of such behavior. There are situations in which purchasing off-contract may be the only option (e.g. contracted item not available from the selected supplier) or in which it may be the most effective and efficient alternative not only for the individual unit/employee but for the whole organization as well. Maverick buying can also be beneficial for the development of the supply market, or for the involvement of small suppliers, as it may give new suppliers with innovative products and services an entry point into the organization and allow for small scale testing of alternatives. Thus, this research focuses on studying maverick buying as a phenomenon, investigating its causes and the mechanisms available for reducing it, not on taking a normative approach on exactly when and to what extent companies do need to eliminate it. A normative approach to maverick buying is, however, taken in the sense that this thesis seeks to identify and suggest the mechanisms that work best in reducing maverick buying.

In this thesis, purchasing centralization is defined as centralization of activities up to and including the making of the central contract/framework agreement for the whole organization to use as well as the management of that contract during the contract period. Thus, these tasks are the responsibility of a central purchasing unit in the organization. Operative, ordering and fulfillment related tasks are considered to be decentralized activities even though the purchasing model is centralized. These tasks are delegated to the individual subunits within the organization. Figure 1-3 presents a typical purchasing process from need recognition through to order fulfillment and contract & relationship management throughout the contract period (process modified from Leenders et al., 2006). In Figure 1-3, the division between the tasks of the central purchasing unit (centralized process phases) and tasks of other organizational units (decentralized process phases) are separated.



Figure 1-3 Purchasing process phases most suited for centralization (modified from Leenders et al. 2006; 61-62)

The purchasing needs arise in all organizational units. Only those purchasing needs, which have the potential for pooling throughout the organization, are selected for the centralized approach. For the other purchasing needs, unique to the subunits in which they arise, the process is decentralized all the way through, without the exception of utilizing the purchasing unit's expertise in e.g. negotiations or contracting. The purchasing unit is in charge of turning purchasing needs to product and service specifications and communicating them onto the potential suppliers located by supplier search. They negotiate the contract and establish procedures to be used during the contract period, e.g. electronic catalogues for ordering. The operative tasks of ordering based on the contracts, order follow-up, reception and invoice handling are decentralized to all organizational units and end-users. The central purchasing unit, however, handles contract and relationship management, which entails such tasks as maintenance of records, monitoring price levels, monitoring quality levels and supplier relationship management. Naturally the process for public procurement is somewhat different due to the legal requirements on the different process phases e.g. the contents of particular process phases are more fixed and regulated and their

official terms are somewhat different, but in the end the same basic process steps are executed.

The term framework agreement is used to describe a centralized purchasing contract especially in the public procurement context. A framework agreement is an agreement between one or more contracting authorities and one or more economic operators, the purpose of which is to establish the terms governing contracts to be awarded during a given period, in particular with regard to price and, where appropriate, the quantity envisaged (Dimitri et al. 2006).

1.4 Outline of the study

This doctoral dissertation consists of two parts: Part I: *Overview of the dissertation*, which contains a summary of the research and Part II: *Original articles*.

Part I, the dissertation overview, introduces the research area and gives background for the original articles. In addition, the research problem and research objectives are presented. In chapter two of the overview, the research methods used in the original papers are presented. In chapter three, a review of the results of each paper is given. The final chapter of the overview then presents a discussion and conclusions of the research. Also, research limitations and avenues for future research are discussed in the final chapter.

Part II presents the four research papers, which this dissertation is based on. Two of the four research papers have been published / accepted for publication in refereed international scientific journals. One of the four research papers is written by the doctoral candidate alone, the other three are written with coauthors. This is in accordance with the rules and regulations of Helsinki School of Economics for doctoral dissertations.

The first research paper included in this thesis (Paper I) “Value of Centralization” has been written by the doctoral candidate alone. The paper has been accepted to the conference proceedings of the IPSERA 2009 conference.

The second paper of this thesis (Paper II) “The involvement of small-and medium-sized enterprises in public procurement: Impact of resource perceptions, electronic systems and enterprise size”, has been published in *Journal of Purchasing and Supply Management*. It has been written jointly with Dr. Katariina Kemppainen.

The third paper (Paper III) is titled “Non-Compliant Work Behaviour in Purchasing: An Exploration of Reasons Behind Maverick Buying”. It has been written together with Dr. Katariina Kemppainen and Dr. Erik M. van Raaij. This paper has been published in *Journal of Business Ethics*.

The fourth paper of this thesis (Paper IV), “Maverick buying as an agency problem”, is written together with Dr. Erik M. van Raaij. The paper has been accepted to Academy of Management 2009 conference.

2 Research methods

According to Bartezzaghi (2007), the central point in conducting research in the field of purchasing and supply management, or any other field for that matter, is not if one method is superior to the others in general, but how to choose the most appropriate method for a specific research framework. Bartezzaghi continues that quantitative methods and quantitative research are not superior by themselves; the main issue is that no matter which methods are employed, the methodological choices need to be coherent with the research design and the methods must be carefully and rigorously implemented. The papers in this dissertation represent several, both quantitative and qualitative research methodologies. The methods used in each of the articles have been chosen to provide the best fit with the phenomena and research problem studied, and to best help develop new knowledge and contributions in the field for both academics and practitioners, i.e. also the level and depth of previous information in the field of study and the methodologies used to investigate the phenomena previously has impacted the choice of methodology in each research paper. A summary of the research methods (including data collection and analysis), the respective research objects and the data i.e. key figures such as sample sizes and response rates, is presented in Table 2-1.

Table 2-1 Research methods of the individual papers

Paper	Research Method	Research objects	Methods for data collection and analysis	Data
I	Survey	Governmental employees involved in tendering processes (estimation of tendering times for 5 product categories)	Spreadsheet based survey, sent via e-mail, prenotification by phone	Decentralized model: 57 surveys sent, 21 responses (37% response rate) 5/5 responses from central purchasing unit
	Quantitative data analysis	Central framework agreements	Price data collected from central purchasing unit's contracts and the market	2 framework agreements, 4 and 5 individual products respectively
II	Survey	Finnish small and medium-sized enterprises (8 selected industries)	Electronic survey ANOVA and Chi Square using SPSS 15.0	Sample of 5091 enterprises from Federation of Finnish Enterprises members, 203 usable responses, 4% response rate
III	Systematic literature review	Previous literature on maverick buying and non-compliant work behavior (ProQuest and ScienceDirect databases)	Database search, initial analysis based on title and/or abstract, final selection based on abstract	30 search strings used, a total of 1097 articles found, 71 selected based on initial analysis, 39 carried over to literature review after final analysis
	Interviews	Purchasing professionals in Finnish government	Semi-structured interviews Transcript analysis with QSR Nvivo 2.0	12 interviews (2 with central purchasing unit, 10 with governmental agencies' representatives)
IV	Survey	Governmental agencies' users of a central frame agreement (selected category: cleaning services)	Hierarchical regression analysis with SPSS 15.0	Total sample 1475, adjusted total sample 1200, response rate 19,2%, 214 responses for data analysis

Next the research methodology of each paper as well as the conduct of the data analysis is presented and discussed in more detail.

2.1 Study on estimating cost effects of centralization

The empirical research conducted for Paper I is part of a larger research project initiated by the Finnish Government and Ministry of Finance to estimate the savings potential in centralized public procurement. In Paper I, only some illustrative examples of this research project are presented. The objective of the larger research project was to estimate the effects that centralization has on purchasing costs, specifically to product prices and tendering process costs. Readers interested in learning more about the study and the cost estimations are referred to the full research report by Karjalainen et al. (2008) available in Finnish.

The research methodology was formed based on recommendations of Celec et al. (2003) on how to measure the performance and financial benefits of state term commodity contracts, which are similar to the framework agreements used in Europe. Celec et al. (2003) argue that there are two sources of savings from these types of centralized purchasing contracts: administrative cost savings and price concessions

expected from volume purchasing. Celec et al. (2003) also give some guidelines regarding the performance measures to be used in measuring savings; the measure should be based on a sample rather than the entire population of products. Thus, in Paper I, to estimate the financial benefits from these contracts, both process costs and prices paid are estimated and only selected product categories are chosen for savings estimation.

The estimation of process costs was done by finding out the time spent on the tendering process both for the decentralized operating model and the centralized operating model and estimating the associated costs. A spreadsheet-based survey was used to gather the data. Only individuals who had tendered a contract for the selected categories in their own unit were selected for the survey population. In addition, the central purchasing unit was surveyed regarding each category to find out the time spent on tendering a contract for the whole government.

To estimate the effects of centralization on purchasing prices, the prices of the framework agreements were compared to prices of equivalent products on the market. This type of approach has been used previously in studying savings of group purchasing (Aylesworth, 2007). Several factors were found to support this method instead of comparing prices to decentralized prices from past invoices:

1. The prices compared are from the same time, removing the effect of inflation.
2. The product specifications can be controlled for.
3. It can be assumed that market prices are rather close to actual decentralized prices paid by at least smaller units, as they cannot get volume discounts.
4. Even in other cases the market prices can be very similar to the prices paid in decentralized purchases at governmental agencies. An empirical study of De Boer and Telgen (1998) suggests that proper use of EU directives is far from common practice, i.e. it is possible that contracts have not been tendered even for larger purchases and items have been bought straight from the market.
5. The Finnish government is actively pursuing a centralization strategy. Thus, in the future, when estimating the performance of the centralized

model, contract competitiveness would have to be estimated compared to market prices as decentralized purchases would not be allowed in many categories. Using this approach already now provides a foundation for longitudinal studies.

The categories selected for price comparisons were commercial flights and office supplies. For the office supplies, the lowest price on the market was compared against the lowest price in the framework agreement. Appropriate order lots were selected for each product, and the handling charges were incorporated into the comparison calculations. For the flights, two different methods were used in the price comparisons: 1) the lowest price through the framework agreement was compared to the lowest price on the market and 2) the price of the ticket with the most flexible contract terms through the framework agreement and from the market were compared. These two types of comparison methods were selected as they represent the most typical selection criteria in booking flights.

2.2 Survey for SMEs on their involvement in public procurement

The role of SMEs in public procurement has previously been discussed primarily based on empirical evidence that has been collected through qualitative interviewing and case studies (Caldwell et al., 2005). In Paper II the next step for research in this area was taken; a conceptual model with hypothesized relationships was specified, which then calls for data collection via a survey (Hak and Dul, 2007). The hypotheses were specified based on previous literature and they focused on whether SMEs' resources, perceptions and characteristics affect their involvement in public procurement. In addition, it was hypothesized that micro enterprises (with less than 10 employees) differ from other SMEs in the sense that they have stronger perceptions that their resources are inadequate for involvement in public procurement.

The empirical data was gathered with an electronic survey of Finnish small and medium-sized enterprises during autumn 2006. The respondents were identified by the Federation of Finnish Enterprises (FFE), which has over 70,000 Finnish SMEs as its members. Eight industries that were seen as relevant for public purchases were selected for the study. These industries were: printing and publishing, industrial

machinery and equipment, electronic equipment and telecommunications, construction, wholesale and retail trade, transportation and warehousing, health and social services, and technical services and upkeep of the environment. A sample of 5091 companies was drawn randomly from the database of the FFE in the chosen industries forming the population of the study. The selected SMEs were requested via email to answer the online survey available in Finnish. Motivation for respondents to answer was given by promising that the results will be reported to organizations responsible for developing public procurement practices.

The survey instrument included questions with a continuous rating scale, multiple-choice and open-ended questions. The hypothesis testing was done using two statistical methods: Pearson Chi square and Analysis of variance (ANOVA). In addition, descriptive data on the SMEs was presented.

2.3 Systematic literature review on maverick buying

The phenomenon of maverick buying (MB) has received scarce attention in previous literature. The topic has been discussed in passing in other fields of purchasing, e.g. articles on electronic procurement system implementation. In addition, maverick buying as a form of deviant/non-compliant work behavior has links to a larger base of organizational behavior literature. As the pre-existing knowledge and information of the topic is spread in bits and pieces among a large and varied field of literature, it was seen as essential to gather this knowledge into one source to help build further contributions in studying this phenomenon. Thus, a systematic literature review was chosen as the first method to study MB.

Undertaking a review of the literature to provide the best evidence for informing policy and practice is a key research objective in any discipline for the respective academic and practitioner communities (Tranfield et al. 2003). According to Denyer and Neely (2004), the literature reviews in the business and management fields have tended to present the findings of research in a descriptive or narrative form. And while good narrative reviews can provide the reader with an overview of the different perspectives in a field of study, poor narrative reviews possess the risk of only reflecting the reviewer's perspective or position and have been criticized for being

open to bias and for presenting few recommendations for policy and practice. Systematic reviews attempt to overcome the deficiencies of traditional review methods by applying the same standards to secondary research that should be applied to primary research (Denyer and Neely, 2004). According to Denyer and Neely (2004), systematic reviews are rigorous scientific investigations of the literature and procedures that limit bias and random error; they contain a methodology section to detail accurately how the study was conducted. This both reduces bias and makes decisions more transparent.

The systematic literature review method in the first paper was based on Pittaway et al. (2004) and consisted of seven steps, which are explained in more detail in the paper itself. In the end, a total of 39 articles were selected for the literature review, and they were reviewed to find answers to the following research questions: How is maverick buying defined in the literature? What reasons for the existence of MB are provided? Is MB related to certain product categories or contexts? What consequences of MB are mentioned? What remedies for lowering/ minimizing MB are suggested? The structure of the literature presentation in the article was based on these research questions, and all points of view found from literature were objectively presented to readers. The systematic review conducted thus included the traits that Tranfield et al. (2003) state they should include, i.e. clear and precise aims and objectives, pre-planned methods, a comprehensive search of all potentially relevant articles, use of explicit, reproducible criteria in the selection of articles for review and a balanced, impartial and comprehensible presentation of the results.

2.4 Interviews and Nvivo on maverick buying

The systematic literature review conducted on maverick buying in Paper III lead to the creation of a framework depicting the different forms of maverick buying and the reasons leading to them. In the same paper, these different forms of MB and their underlying reasons were validated and enriched through a series of in-depth interviews with purchasing professionals.

The case context for the interviews was the Finnish Government. This context was chosen because the State of Finland had moved to using centrally negotiated framework agreements in selected products and services, but while the government had always expressed that use of these contracts is both desired and expected the contracts have been estimated to have a usage rate of only 20–80% of the potential in the different categories. The interviews were chosen by theoretical sampling, i.e. chosen for theoretical, not statistical, reasons (Eisenhardt, 1989b). Interview subjects were selected based on them being likely to provide replications or extensions of the emergent theory on maverick buying being built, first through a systematic literature review, then through interviews and at a later stage through surveys (which were conducted in Paper IV).

The interviews conducted for the study were semi-structured, which enabled the persuasion of interesting comments and themes in more detail as they emerged during the interview, in addition to pre-specified themes of the researchers. Two of the interviewees were representatives of the central procurement unit of the Finnish state and ten were representatives of units supposed to use its contracts. Average duration of interviews was one hour. All the interviews were taped and transcribed. These transcripts were then coded and analyzed using QSR Nvivo 2.0 software. Computer assisted Qualitative Data Analysis Software is widely used in social science research to facilitate qualitative data analysis (Dean and Sharp, 2006). Analysis of qualitative data requires sensitivity to detail and ways of rigorously and carefully exploring themes and discovering patterns and NVivo is a tool to remove the rigid divisions between data and interpretation (Richards, 2006; 10-11). The use of NVivo thus helped in making the analysis of the qualitative data more systematic.

Specifically, Nvivo was used to code the interview transcripts according to themes (motivations and reasons) related to maverick buying. As themes from the framework or other, new, themes emerged in the transcripts, nodes for those themes were created in Nvivo, and these nodes were used to code the corresponding section in the transcript. All nodes used were created during the analysis of the first six interviews. By this time, all the themes that were found had emerged and in the last six interviews coding could be done using the already created nodes i.e. the last six interviews only repeated or enriched the themes already found in the first 6 interviews. This is a

strong indication that theoretical saturation was achieved within this set of twelve interviews, i.e. incremental learning was minimal after the first 6 interviews (Eisenhardt, 1989b). The interview findings were reported in the article around the five different forms of MB, and in some cases the exact number of times certain factors were mentioned in the interviews was reported. Quotes from the interviews were also used to illustrate the respondents' perceptions of MB.

2.5 Survey on maverick buying in governmental agencies

In the systematic literature review on maverick buying (MB) in Paper III, the agency problem was identified as a potential explanation of non-compliant behaviors. Agency theory describes the agency relationship, in which one party (the principal) delegates work to another (the agent), who performs that work (Eisenhardt 1989a). The agency problem arises when the desires or goals of the principal and agent conflict and it is difficult or expensive for the principal to verify what the agent is actually doing. This type of situation can also be found in the purchasing context related to centralized frame agreements. The principal, the purchasing department, negotiates the frame agreements for use by the whole organization. The ordering and operative buying is then delegated to employees, the agents. The agents are expected to purchase via the pre-negotiated agreements. In case of MB, the desires and goals of agent and principal may conflict if e.g. the agent has local budget responsibility and is rewarded for lowest price, which can be in conflict with corporate total cost. It is also difficult for the principal to verify the behavior of the agent, as ordering behavior is often not monitored and is only visible after the fact. Thus in Paper IV survey research was used to test whether MB could be identified as an agency problem and to find out which governance mechanisms work best in reducing it.

In Paper IV, based on the analysis of previous literature, hypotheses of maverick buying as agency problem were presented. The hypotheses focused on the conditions of the agency problem and the governance mechanisms that can be used to reduce maverick buying as an agency problem. In addition to traditional agency theory, the alternative viewpoint of Hendry (2002; 2005) suggesting honest incompetence instead of opportunistic self-seeking as the explanation behind agent behavior was

incorporated into the hypotheses. Specifically, the research was designed to seek answers to the following questions:

1. To what extent can problems of agency, i.e. goal incongruence and information asymmetry, explain the existence of maverick buying?
2. Do the traditional governance mechanisms of agency theory work to control maverick buying behavior?
3. What factors related to job and organizational context lead to the existence of agency problems (information asymmetry and goal congruence) in purchasing?
4. Can the alternative governance mechanisms of guidance and training (Hendry, 2002; 2005) be used to reduce the agency problems of information asymmetry and goal incongruence?

The model was tested with a large scale survey among employees of the Finnish government engaged in operative purchasing and ordering (the agents). The principal in this case was the central purchasing unit, whose job it is to tender centralized framework agreements for the use of the government and to advance their use. Cleaning services was selected as the category for empirical testing for several reasons, which make it prone to maverick buying. The sample for the survey was based on the central purchasing unit's contact list of people involved in purchasing cleaning services throughout the different governmental agencies in Finland. Elements and guidelines of the Tailored Design Method (Dillman, 2007) were followed in designing the survey procedure to achieve best results, e.g. a pre-notification of the survey was sent to the respondents. The survey was in Finnish, and the respondents filled it anonymously, without revealing their name, position or their agency, to reduce socially desirable answers.

The constructs and items used in the survey were formed on pre-existing scales as much as possible. Most questions were on a 7-point Likert scale with the anchors being "completely agree" and "completely disagree". Specifically, the following constructs were included in the survey: compliance, goal incongruence, information asymmetry, organizational commitment, specialization, distance to principal, guidance, training, task programmability, local cost of commitment, monitoring,

incentives, personality factors, and compliance climate. Following Lindell and Whitney's (2001) suggestion on how to reduce common method variance, a marker variable that is theoretically unrelated to at least one of the other variables was included into the survey for agents. The data analysis was conducted with SPSS 15.0 software, and the primary method was hierarchical regression analysis.

3 Review of results

In the following, the main findings of each of the four original papers are briefly presented. First, a review of the results on the study on estimating the cost effects of centralization by comparing tendering process costs and purchasing prices is presented. In the second section, the results of the survey for SMEs concerning their involvement in public procurement and the factors affecting it are discussed. Third, findings on the first study of maverick buying, i.e. the five different forms of maverick buying identified based on the systematic literature review and interviews are reviewed. Finally, the results of the survey on maverick buying, formulated here as an agency problem, are introduced.

3.1 Value of centralization

Based on survey results, the average duration of a decentralized tendering process run by an agency is approximately 167 hours, while the average duration of a centralized tendering process (i.e. tendering a contract for the use of all agencies) is approximately 1030 hours. The information on tendering times was turned into cost estimations by considering the time spent in tendering as person-years (one full person-year is 1600 hours, which in the government has a cost of 56 000 Euro on average). With this approach, the cost of the average decentralized tendering process is 5845 €. It can thus be concluded that multiple overlapping tendering processes quickly increase the process costs of purchasing in comparison to tendering one contract for the whole government, which has an average cost of approximately 20 000 Euro. Specifically, with the Finnish Government context, there are approximately 90 agencies and other units eligible to use the centrally negotiated framework agreements. In the decentralized model, it is expected that within an agency, there are on average 3 tendering processes instead of just one, as most of the agencies are divided into several, rather independent units, and are often geographically dispersed. Thus, in the decentralized model, an average of 270 tendering processes would be run for each category, and in a fully centralized model, only one. With full compliance to the centralized contracts, i.e. all units would use the centrally negotiated contracts and not run their own tendering competitions, savings

of over 1,5 million € can be achieved in Finnish public procurement by moving to a centrally tendered framework agreement in just one product or service category.

The results of the price comparisons of commercial flights indicate that the central purchasing unit provides on average a 19% lower price, when the selection criterion is lowest price, and a 37% lower price when selection is made based on most flexible contract terms. For the Finnish Government, with the 33 million € of flight purchases made via the central framework agreements in 2007, the savings from would have been at least approximately 7,7 million € (assuming prices were mostly selected based on lowest price). As for the office supplies, five most sold items were included into the price comparisons. The average savings percent varied between 8% and 37% for the different products, the total average being 25%. The composition of different products in the total volume of office supplies purchased naturally has an effect on the total savings achieved. The purchasing volume via the centralized framework agreements in 2007 was 17,8 million Euros. If the average savings across all the products within this spend is assumed to be said 25%, the price savings from office supply purchases of the Finnish government were approximately 5,9 million Euros. These sizes of savings potential in both process costs and purchasing prices show that the amount of units centralizing their purchasing process and the purchasing volume being pooled do not need to be very high before economies of scale becoming evident.

3.2 The involvement of small- and medium-sized enterprises in public procurement: Impact of resource perceptions, electronic systems and enterprise size

In Paper II, the findings on the influence of resource availability on SME participation in public procurement were reported separately for municipalities and the state sector, not for the state sector as a whole. This division into two groups had not been specified in the hypotheses a priori because previous public procurement studies have not examined the possible differences. Based on statistical analyses, support was found for several of the pre-specified hypotheses. Table 3-1 presents an overview of the results of the hypotheses testing.

Table 3-1 Results of hypotheses testing in Paper II

<i>Hypothesis</i>	<i>State procurement</i>	<i>Municipal procurement</i>
H1a: SMEs who consider their lack of legal resources as a significant obstacle for public tendering processes are less likely to be public sector suppliers.	Support**	Support*
H1b: SMEs who consider their lack of IT capabilities as a significant obstacle for involvement in public procurement are less likely to be public sector suppliers.	Not support	Not support
H1c: SMEs who consider their administrative resources inadequate for public tendering processes are less likely to be public sector suppliers.	Support*	Support**
H1d: SMEs who consider their resources inadequate for acting as central purchasing unit's contract supplier are less likely to be public sector suppliers.	Not support	Not support
H1e: SMEs who consider that they do not receive adequate information on requests for tender are less likely to be public sector suppliers.	Not support	Not support
	<i>Public procurement</i>	
H2a: Micro enterprises are more likely to consider their legal resources as a significant obstacle for public tendering processes than small or medium-sized firms.	Support**	
H2b: Micro enterprises are more likely to consider their lack of IT capabilities as a significant obstacle for involvement in public procurement than small or medium-sized firms.	Not support	
H2c: Micro enterprises are more likely to consider their administrative resources inadequate for public tendering processes than small or medium-sized firms.	Support*	
H2d: Micro enterprises are more likely to consider their resources inadequate for acting as central purchasing unit's contract supplier than small or medium-sized firms.	Support*	
H2e: Micro enterprises are more likely to consider that they do not receive adequate information on requests for tender than small or medium-sized firms.	Partial support ¹	
	<i>State procurement</i>	<i>Municipal procurement</i>
H3: SMEs with e-systems are more likely to currently be acting as suppliers for the public sector.	Support**	Not support

*Notes: hypothesis is supported at *p<0.05, hypothesis is supported at **p<0.01*

¹ Support* regarding information on municipalities' tenders

² Support* regarding information on state tenders

It was hypothesized that the perception of an SME on its resources influences its involvement in public sector procurement. The results showed that perceptions regarding certain resources do indeed influence SME involvement in public procurement. More specifically, perceptions on lack of legal resources as a significant obstacle for public tendering processes appear to be related to both SME involvement in municipal and state procurement. Perceptions on the availability of adequate administrative resources for public tendering processes also influence SME involvement. However, SMEs involved in public procurement see lack of information on request for tenders (RFTs) as an equally significant problem as those uninformed. The size of SMEs is also an influencing factor: micro enterprises (with less than 10 employees) feel more strongly that they lack administrative resources and legal expertise as well as supply capabilities required in the central purchasing unit's contracts than other SMEs. The use of electronic systems in ordering and invoicing influences SME involvement in procurement of state units; SMEs with e-systems are more likely to be involved in state procurement. With involvement in municipalities'

procurement, however, there is no statistically significant difference between SMEs with different levels of electronic systems.

3.3 Non-compliant work-behaviour in purchasing: an exploration of reasons behind maverick buying

The main result of Paper III is the identification of five different types of maverick buying (MB), and the reasons leading to them. These five forms and their underlying reasons were identified based on the systematic literature review, and validated and enriched through the interviews conducted. These forms and reasons were presented in a framework (Figure 3-1).

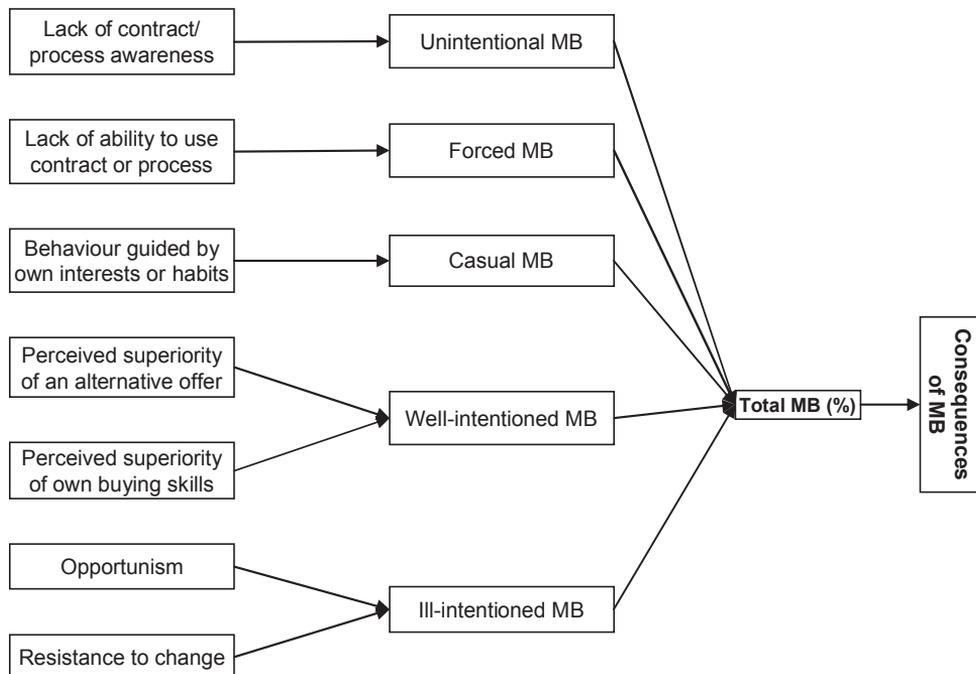


Figure 3-1 Different forms of maverick buying and their underlying reasons

Unintentional MB was recognized to manifest when employees do not know there is a frame agreement in place, i.e. they are engaging in off-contract buying without realizing it. Thus this kind of behavior is not due to some motivation on the employees' part, as the employees are unaware of the correct procedure. As the underlying intention is not to harm the organization, this type of behavior cannot be classified as deviant, although it is still non-compliant. *Forced MB* was defined as

occurring when employees are aware of the preferred process, but encounter barriers to comply with that preferred process. This means that there are practical reasons preventing contract compliance; the item may not be contracted yet, or the contract is not yet available for use. In addition, problems with a new purchasing routine as a consequence of inadequate training and/or support can also lead to employees being forced to non-compliance. *Casual MB* describes the situation when employees are aware of the preferred process, but continue to do as they please. There is no intention to harm the company; employee behavior is driven by self-interest. The employee does not feel a need to change old purchasing habits, the employee does not see the total cost of ownership effect of not complying with procedures, or there are no organizational incentives to push towards using the preferred process and suppliers. *Well-intentioned MB* occurs when employees are aware of the preferred process, the item is available from a contracted supplier, but they still think it is in the best interest of the company to ignore the preferred process. Reasons for this type of MB stem from two directions: perceived superiority of an alternative offer or perceived superiority of own purchasing skills. The last form, *Ill-intentioned MB* is defined as behavior that occurs when employees are aware of a preferred process and able to use it, but actively oppose this new process. Two motivations can lead to this: opportunism and resistance to change.

In addition to the framework for maverick buying behaviors and their underlying reasons, another contribution of Paper III is that it provides a comprehensive source of information on maverick buying, collecting scattered knowledge from various fields of literature. More specifically, definitions of MB, reasons for MB from both purchasing and supply management literature and organizational behavior literature, the typical contexts of MB (in terms of organizational environment and product categories), consequences of MB and remedies against MB are presented.

3.4 *Maverick buying as an agency problem*

The main results of paper IV are the empirical proof that maverick buying can be interpreted as an agency problem as it is caused by goal incongruence and information asymmetry, and the results on the relative strengths of the alternative governance

mechanisms that can be used to increase compliance. The results of the hypothesis testing are listed in Table 3-2.

Table 3-2 Results of hypotheses testing in Paper IV

<i>Hypothesis</i>	
H1:	The lower the goal incongruence between corporate purchasing (the principal) and operational buyers (the agents), the higher the level of contract compliance of the agents. Support***
H2:	The lower the information asymmetry between corporate purchasing (the principal) and operational buyers (the agents), the higher the level of contract compliance of the agents. Support*
H3a:	The higher the use of incentives linked to compliant behavior, the higher the level of contract compliance of the agents. Support*
H3b:	The higher the use of output monitoring related to contract compliance, the higher the level of contract compliance of the agents. Support*
H3c:	The higher the use of process monitoring related to contract compliance, the higher the level of contract compliance of the agents. Not support
H4a:	The higher the use of training in the area of purchasing and contract compliance, the lower the level of goal incongruence between principal and agent. Not support
H4b:	The higher the use of guidance, the lower the level of goal incongruence between principal and agent. Support*
H5a:	The higher the use of training in the area of purchasing and contract compliance, the lower the level of information asymmetry between principal and agent. Support***
H5b:	The higher the use of guidance, the lower the level of information asymmetry between principal and agent. Support***

*p < 0,05

** < 0,01

*** < 0,001

Both goal incongruence and information asymmetry between the principal (the purchasing function negotiating the frame agreements) and the agent (employees engaged in operative buying) were found to reduce compliance. None of the control variables used - compliance climate, conscientiousness, openness to experience and tenure – had an impact on compliance. Two of the traditional governance mechanisms suggested by agency theory, output monitoring and incentives, were found to increase compliance. Process monitoring, however, was not effective in reducing maverick buying based on the data analyses.

Regarding the alternative governance mechanisms to reduce information asymmetry and goal incongruence suggested by Hendry (2002; 2005), guidance was found to reduce both information asymmetry and goal incongruence, while training only reduces information asymmetry. Out of the control variables used, perceived organizational distance to principal, distance to principal in kilometers and local cost of compliance increase goal incongruence between the principal and the agent. Perceived organizational distance to principal and task programmability work to reduce information asymmetry, and longer tenure increases it.

The results of Paper IV show that maverick buying can be interpreted as an agency problem and it is shown that incentives and output monitoring can be used as governance mechanisms to directly reduce opportunistic behavior, while guidance and training can be used to reduce problems of honest incompetence.

4 Discussion and conclusions

The research problem of this thesis was to study what are the challenges that an organization faces when centralizing its purchasing, and it was divided further into three specific research objectives, which were answered through the individual research papers. In the following, a discussion on how the research problem and objectives were addressed in the study is conducted. The synergies of the individual papers' contributions are also addressed. Then, the theoretical and managerial contributions of the individual papers are discussed in more detail. Finally, the limitations of the study are considered and potential future research avenues are suggested.

4.1 Discussion of the findings

The first research objective was to provide directions on how organizations can estimate and quantify the cost effects of purchasing centralization. The review of literature conducted on purchasing centralization gathered together main findings and identified gaps in the research field. Specifically, it was observed that studies providing quantified estimates of the cost effects of centralization are lacking. The literature reviewed revealed many potential cost effects that purchasing centralization may have besides lowering prices through pooled volumes, such as reduced transaction and administrative costs as well as inventory costs and logistics cost savings. Based on the previous research conducted by Celec et al. (2003) regarding centralized contracts, in Paper I the focus was on estimating and quantifying two particularly relevant cost effects: the effects of differences in purchasing prices and in purchasing process costs, particularly in the contract tendering process. The empirical data was collected from the Finnish government. The methodology used to estimate the effects of centralization on tendering process costs was to survey the time spent on conducting a tendering process, both for the centralized and the decentralized model. The cost of this work was then calculated, and a formula was proposed on how this information on tendering process costs can be used to estimate the total cost effects of centralization, depending on the compliance rate to the centralized model and contracts. Price savings of centralization were estimated by comparing the central framework agreement prices to market prices. This method of estimation was deemed

most appropriate based on both previous literature and an analysis of the case context of Finnish government procurement. Empirical evidence of the cost effects was presented in selected product categories, and as a general conclusion it was stated that the sizes of savings potential in both process costs and purchasing prices demonstrated through the empirical data in this research show that the amount of units centralizing their purchasing process and the purchasing volume being pooled do not even need to be very high before economies of scale becoming evident.

The second objective was to study what kind of consequences does the development of centralized purchasing and the phenomena associated with it have for suppliers, specifically for the involvement of small and medium-sized enterprises as suppliers. It would appear that the factors connected with the development of centralization in Figure 1-1, i.e. increased use of e-procurement and more formal processes do influence the involvement of SMEs in public procurement. SMEs without e-ordering and invoicing capabilities are less likely to be involved in state procurement, where centralization efforts have been significant in the last years. The same does not, however, apply to municipal procurement, where centralization efforts are still mainly lacking as municipalities mostly handle their purchasing individually and not in e.g. consortiums. SMEs' perceived lack of legal and administrative resources for dealing with public tenders (which are needed when pooled volumes exceed the thresholds) also impact their involvement in public procurement. This appears more strongly to be the case especially for microenterprises (with less than 10 employees), who also feel they lack the supply capabilities required in the contracts of the central purchasing unit. Based on the empirical evidence, the phenomena associated with centralization do indeed appear to affect the access opportunities of small and medium-sized suppliers, as was suggested in Figure 1-2 of the overview. And as public procurement has other than pure monetary objectives as well, it is important to remember these consequences of centralization to the pool of potential suppliers. Public procurement organizations cannot continue to make internal centralization development efforts and strive for high contract compliance rates without weighing them against the external effects on the supply market.

The third objective, to conceptually and empirically analyze the forms and reasons of non-compliant purchasing behavior i.e. maverick buying and what types of measures

can be used to reduce such behavior, was addressed in two research papers. This objective was first addressed in Paper III, where the underlying reasons for maverick buying were identified through a systematic literature review and validated and enriched through in-depth interviews with purchasing professionals in the Finnish government. The different forms of maverick buying and their underlying reasons were brought together in a conceptual framework. From previous research, mechanisms to reduce maverick buying were also identified in Paper III. In Paper IV, this objective was further addressed by modeling maverick buying as an agency problem. Goal incongruence and information asymmetry were modeled as antecedents of maverick buying. Two types of governance mechanisms were tested for: measures to reduce opportunistic behavior through incentives and monitoring, which represent the traditional agency theory viewpoint of agents as opportunistic self-seekers, and measures to reduce honest incompetence through guidance and training, which represent the Hendry view of agents as boundedly rational. The results of Paper IV provide further insights on what types of organizational situations and contexts especially contribute to the existence of maverick buying behavior. In addition, the relative strengths of different governance mechanisms available for reducing maverick buying were proven by empirical research.

In total, the main contribution of this thesis was the scientific, conceptual and empirical identification and explaining of challenges related to purchasing centralization. Suggestions and directions on how to respond to these challenges were also given. In addition to the individual results of each of the four papers, the results of the four papers together bring valuable insights to the field of purchasing and supply management. These synergies are discussed in the following.

In Paper III, the different forms of maverick buying and reasons leading to them were conceptualized in a framework, providing a deeper and more detailed understanding of this challenge, while Paper IV provided empirical evidence of which governance mechanisms work best in reducing maverick buying and the conditions that lead to a situation where such behavior will take place. The use of these governance mechanisms enables organizations to increase contract compliance, i.e. to increase the volume of purchases directed to the centrally selected suppliers, products and services with the pre-negotiated prices and terms, so that the savings sought after by

centralization will materialize. In Paper I a method for estimating these savings from centralization was suggested, and empirical evidence of the positive cost effects resulting from the use of centralized framework agreements was presented. These results are also useful in reducing maverick buying behaviour, as being able to demonstrate the benefits of centralized frame agreements can help in motivating units and employees to purchase via these contracts instead of bypassing them. In Paper II, however, the phenomena associated with centralization, such as more formalized tendering processes and increased use of e-procurement systems (which was also identified as a valuable tool in decreasing maverick buying) were shown to complicate and hinder SME involvement in public procurement. Organizations thus need to consider the trade-offs, in this case the loss of potentially innovative and customized service-oriented SMEs as suppliers, when striving for centralization and high contract compliance.

In Paper I, the significant savings potential attainable through purchasing centralization was presented. But as Paper II demonstrated, centralization and all the other developments associated with it may lead to the exclusion of SMEs from public supply chains, which can have wider supply market and thus e.g. pricing impacts. Specifically, if the market of suppliers capable of entering and winning public purchasing contracts becomes very concentrated as SMEs are left out, this can affect the pricing behaviour of the remaining suppliers competing for the products; i.e. they may not offer as big discounts as before if they are aware of the reduced competition. This may reduce the savings available in centralized contracts; public sector organizations thus need to account for the impact their actions may have on the supply market.

The empirical data of Paper I attested that time and thus cost of labour spent in public procurement tendering processes is notable. Tendering is a burdensome and expensive process; thus conducting it centrally is worthwhile. And as the survey results of Paper II pointed out, the tendering process is burdensome also for the supplier side, especially for small and medium-sized enterprises, who lack the legal and administrative resources needed. Thus, when public procurement parties are centralizing their purchasing and tendering processes, they should not pay attention only to making them most efficient from their point of view, but also from the bidding

suppliers' point of view. The standardization of procedures and documents used can ease the process also for the supplier side. And easing the process and enabling SMEs access to centralized framework agreements can also be seen as a way to prevent one of the different forms of maverick buying behaviour identified in Paper III. The interview data in Paper III brought forward that feelings of injustice towards a former supplier can lead to ill-intentioned MB and with the government, this feeling of injustice towards suppliers most often stems from arguments supporting the involvement of local suppliers. If these typically small local suppliers are included in central framework agreements, local users are then more likely to comply with the agreements.

4.2 Theoretical implications

Paper I responds to a gap in research as the very few previous academic studies quantifying the cost effects of centralization are already rather outdated. It is to the author's knowledge first research providing estimates of working time spent in conducting tendering processes and estimating the costs of such work. The results thus provide a good starting point for discussions on the topic. The methodology used, i.e. using the time spent on a particular phase of a purchasing process to estimate the internal cost of that process phase, also provides a basis for further studies in the field. The sizes of savings potential in both process costs and purchasing prices shown in Paper I give empirical proof of the economies of scale available in centralized purchasing.

Prior research has investigated SMEs as buyers but knowledge on involvement of small businesses in public procurement is limited. According to Zheng et al. (2006) there is some evidence on the level of SME involvement at the aggregate level but knowledge on a disaggregated level is limited. There was a definite need and call for research to examine what factors affect SMEs' involvement in public procurement and their perceptions of their possible involvement. Paper II sought to contribute to existing literature on these issues. Specifically, Paper II contributes to the purchasing literature by presenting survey-based results concerning the involvement of SMEs in public procurement. Such research results have great novelty value, as previous surveys to SMEs have not addressed similar issues. Previous studies have also mostly been case based or aimed at the buying side. Additional contributions arise from the

separation of state and municipal sectors in the analysis, as most previous studies have either only focused on the state side or considered the public sector as a homogeneous front. Paper II also supports and contributes to prior work in the field of entrepreneurship where relationships have been established between resource perceptions and actual firm operations and performance by finding similar results in relation to SME involvement in public procurement.

The study in Paper III is to the authors' knowledge the first comprehensive review of the maverick buying phenomenon in academic literature. It thus combines together evidence from the fields of purchasing and supply management and organizational behavior and provides a unique repository of information on the phenomenon for future academics interested in the topic. In addition, based on the previous literature found through the systematic literature review, a framework of the different forms of maverick buying and the reasons leading to it was inductively derived. This framework has theoretical contributions as it provides a conceptual model based on which to discuss the phenomena among academics and practitioners. The framework also opens up new research opportunities in purchasing, such as agency theory, leadership styles and organizational culture tied to purchasing behaviors. The recognition and definition of different forms of non-compliant behavior in purchasing can also guide future research into the ethical decision-making processes underlying this type of behavior, and it will help develop measures to minimize this type of non-compliance. Ethical purchasing behavior has been researched in a few instances (e.g. Badenhorst, 1994; Cooper et al., 2000; Landeros and Plank, 1996; Razzaque and Hwee, 2002), but these studies have mostly focused on the purchasing professional and the purchasing department. Paper III has thus extended the research of deviant work behaviors in purchasing beyond the purchasing function context to other employees in the organization involved in operative purchasing tasks.

In Paper IV, empirical testing of maverick buying as an agency problem was conducted. This is the first time empirical principal-agent studies have been conducted in the purchasing field. This study was also the first empirical test of the effect of governance mechanisms in agency relationships on maverick buying. Empirical studies of the principal-agent phenomena are not common in any type of management literature either, as previous work has mostly focused on lab experiments

and theoretical modeling. This research thus has theoretical implications beyond the purchasing and supply field and to the general development of the agency theory. This research is also, to the authors' knowledge, the first empirical research where the traditional agency theory viewpoint is tested along with the alternative viewpoint present by Hendry (2002; 2005). This study is thus also the first to empirically prove the connection between guidance and training and the agency problem as suggested by Hendry (2002). Additionally, the hypotheses and empirical testing in Paper IV have unique contributions to the purchasing and supply management literature. This type of utilization of organizational and economic theories in the field of purchasing and supply management serves to develop the discipline and to integrate it further with overall management and economics sciences.

4.3 Managerial implications

In addition to advancing research in the field of purchasing, the individual papers of the thesis also have important managerial implications. In the following, these are discussed in relation to each of the individual papers separately.

The type of research in Paper I, providing quantifications of the savings potential in purchasing centralization, is relevant for managerial purposes, as these demonstrations of the cost effects of centralization are needed to justify the organizational move to centralization. Without being able to convince units of the benefits of centralization, and to demonstrate them, purchasing managers can experience difficulties in motivating other units to use the contracts negotiated. From a managerial point of view, especially being able to put a cost on the process of tendering makes it easier to justify bringing the process under central control instead of letting each unit run their own process. The demonstrations of price savings compared to market prices are also valuable for purchasing managers in tackling maverick buying. As presented in Paper III, those engaged in MB often do so because of the perceived superiority of an alternative offer i.e. they have for example found a lower-priced product on the market. When centralized framework prices can be proven to be competitive compared to market prices, this information can be used to reduce maverick buying at the user level. And managers do need to remember that this reduction of maverick buying, i.e. increasing the usage rate of the centralized contracts is necessary to

achieve the estimated savings. Individual units must be made to give up on their own tendering processes to save the internal costs of such work and release the resources for other tasks. The operative purchases must also be guided to flow through the framework agreements. In addition, naturally, the purchasing function needs to monitor their price levels to ensure that they remain competitive compared to market prices, to assure that price savings are achieved as well.

The results of the study on SME involvement (Paper II) in public procurement naturally have managerial implications mainly to those working within public organizations, whether at state or municipal level. In Paper II, lack of legal expertise and administrative resources (or the perception of such) were recognized as factors hindering SME involvement in public procurement. The recognition of these factors enables involved parties to better design mechanisms to prevent SMEs from being left out of public sector framework agreements. Policymakers, as well as those in charge of running the public tendering processes should, based on the findings of Paper II, attempt to find alternative operating models that enable SMEs to prepare offers without significant financial risks e.g. lost scarce employee resources in case they end up not winning the contracts. Public parties can provide training on various legislative aspects of public procurement. Design and use of standard documentation in the bidding process should also be considered, allowing better economies of scale to form in the bidding process itself for the suppliers.

Another result of Paper II was that SMEs without e-systems are less likely to be suppliers for state organizations. Naturally, public organizations benefit from higher use of ordering and invoicing systems in purchasing, as they increase process efficiency and effectiveness. And the use of electronic systems is encouraged in elimination of maverick buying as well, as suggested in Paper III. However, the requirements for e-systems can exclude small businesses with otherwise high supplier potential. Clearly, this has managerial implications foremost to the managers and decision makers of the SMEs themselves, as they have the primary responsibility of their e-capabilities. But public sector organizations should, nevertheless, be actively involved in supporting and encouraging SMEs to develop their capabilities by offering expert knowledge on the choice of systems and by standardizing their systems so that one system is applicable to as many public sector clients as possible.

This would make the investment into e-systems more valuable to SMEs as it would allow them access to a large customer base. Naturally the increased centralization efforts in public procurement lead to larger purchasing entities being put up for tender, and this poses problems given SMEs' and especially micro enterprises' limited supply capabilities. Those responsible for managing the tendering process should as much as possible build the requests for tender so that they allow for bidding only part of the required volume, not the full volume of the contract.

As mentioned above, the managerial implications from the findings of Paper II are mostly targeted to the public sector purchasing managers and decision makers. There are, however, issues that may apply on the private sector as well. Naturally, the tendering process requirements and problems caused by them for SMEs with lacking resources do not apply similarly to SME involvement in private organization's procurement, as the rigidity and burden caused by directives are not present. But the results regarding SME involvement and e-systems most likely have implications to buyers in large private organizations as well. The private sector is typically more advanced in adoption of different electronic applications in their purchasing processes. Thus SMEs most likely will in the future have problems in becoming included in the supply chains of large private organizations as well, unless they are able to raise their e-capabilities to a higher level. And large organizations may miss on the innovativeness of SME suppliers, if they do not contribute their part on making access to their contracts possible for SMEs as well. Thus the same managerial suggestions of helping potential small suppliers develop their e-capabilities and by standardizing e.g. the systems used in e-ordering and e-invoicing within industries apply to the private sector as well.

In Paper III, five different forms of maverick buying and their underlying reasons were identified. This breakdown of the forms and reasons of MB enables managers to better tackle the issue within their organizations. Depending on the type of MB and underlying reasons encountered, managers can choose the best countermeasures for each problem. Unintentional MB is best tackled by creating awareness of contracts among the employees intended to use them. This can be done by for example internal seminars, better positioning of contract information on company intranet sites or targeted mailing campaigns to users. Different e-procurement solutions, such as easily

accessible catalogues help in getting the contracts reachable to those who need to use them. Forced MB caused by employees being unable to use the appropriate purchasing process and negotiated contracts can be reduced with training initiatives. Forced MB can also be due to certain products not being contracted, or not being contracted against the required conditions. Framework agreements can never address all possible needs that may arise in an organization, such as rarely needed products or services, or emergency situations. This type of forced MB can never be totally eliminated. Casual MB, on the other hand, occurs because employees are in a sense allowed to do as they please. This type of MB can thus be reduced by educating employees about Total cost of ownership, and in general showing strong purchasing leadership. Similar methods can be recommended in the elimination of well-intentioned MB as well. With ill-intentioned maverick buying, managers may face difficulties in just proving its existence. But if such behavior is indeed encountered or at least suspected, the mechanisms best suitable to attack it are incentives and punishments as well as early employee involvement in the contracting process to minimize resistance to change.

Paper IV adds to the knowledge created in Paper III. The results of the hypothesis testing give insights on the factors contributing to MB in organizations and on the relative strength of the governance mechanisms that can be used to create contract compliance. As output monitoring was found to reduce maverick buying, managers should invest in establishing electronic systems that provide documents on contract compliance levels and enable detailed spend analysis. In addition, management should actively use these documents to follow compliance and give feedback on employee purchasing behavior. Incentives were also shown to be positively linked to contract compliance. For the Finnish government, the incentives in place are typically related to negative performance evaluations and reprimands in case of maverick buying being detected, as the wage systems in place do not allow for performance-related pay. For private organizations, an even more effective option might be monetary incentives tied to compliance levels of individuals or units. The results of testing the alternative governance mechanisms suggested by Hendry (2002; 2005) show that in addition to directly controlling for compliance, managers can also invest in removing the conditions that were proven to lead to this agency problem, i.e. information asymmetry and goal incongruence. The purchasing department must continuously

guide and mentor those engaged in operative buying, involve them in their processes and invest in informing them of the frame agreements in place and the reasoning behind the frame agreements. Training the operative buyers on frame agreements in place, purchasing policies and purchasing procedures in use also serves to reduce the information asymmetry between the principal and the agents. Of important managerial implications is also the finding that local cost of compliance to centralized contracts proved to be a strong factor explaining goal incongruence and thus indirectly maverick buying. This means that managers need to make the content and usage of centralized contracts as advantageous for local units as possible to ensure high usage.

4.4 *Limitations and future research*

The empirical data for all the original papers was collected from Finnish public procurement. As public procurement has certain special features that cause it to differ from corporate procurement, the applicability of the empirical results may be limited in certain ways. This can, however, be seen to apply mostly in relation to papers I and II. For paper I, the empirical data regarding purchasing process costs was collected regarding public tendering processes, which typically are more burdensome procedurally than private tendering processes, and thus the time and cost estimates resulting from this survey data are only partially applicable to private organizations' purchasing processes. As for Paper II, the result that SMEs without e-invoicing and e-ordering capabilities are more likely to not be involved in public procurement, most likely translates to unlikely involvement in private organization's supply channels as well when these e-capabilities are called for. But the applicability of the results concerning the lack of legal and administrative resources as influencing involvement may not be as high, as private organizations do not have to follow the same burdensome processes as public organizations do.

In general, testing the different models and results of this thesis in the private sector context could provide additional insights to the issues discussed in the four papers of this dissertation. The process times and costs of private organizations' purchasing processes could be surveyed, and the savings attained from centralization in such contexts calculated. In addition, the principal-agent model of maverick buying was in this thesis tested empirically in the public procurement context. In the future it would

be interesting to test it in other organizational contexts as well, to see whether the effectiveness of different control mechanisms (and their relative usage) differs between public and private organizations, and whether the relative explanatory strength of traditional agency theory or the view of Hendry differs between the public and private context.

Due to the empirical case context of public procurement, all the research papers in this thesis are mostly related to indirect purchasing, as public organizations typically buy very little for own production related needs (e.g. raw materials, components or semi-finished products). Thus the applicability of the findings of the study to the purchase of direct materials is limited. Similar issues, e.g. problems with savings quantification, can naturally, however, be present also in production related purchasing environments. The applicability of the frameworks, methods and models of this study to the purchasing of direct, production related materials would pose an interesting area for further studies. Especially the phenomenon of maverick buying is typically associated with the purchase of indirect items, as these are bought by various individuals and units within an organization, as opposed to direct production related purchases. The findings related to maverick buying can thus be considered applicable to indirect purchases in other than public procurement contexts as well, but not to direct production related purchases.

All the empirical data for this research has been collected in Finland. Given the EU laws and principles governing public procurement, the results of paper II regarding SME involvement in public procurement are most likely to be similar in other EU countries as well. There are, however, other country-related differences in public procurement also within the EU area, and especially when comparing the Finnish public procurement context on a more global scale, that can affect the direct applicability of some of the results. For example the initial decentralization level before starting a process of purchasing centralization can have an impact on the scale of maverick buying that is to be expected.

In Paper I, the cost effects of centralization were quantified by comparing contract prices to market prices and by calculating the cost of tendering work based on survey results of time spent tendering various product categories. This study was, to the

author's knowledge, the first attempt to gather data empirically on the process costs of purchasing based on time spent in tendering. There are thus multiple future research opportunities related to this. The survey data relies on respondents looking back on the process they have conducted and estimating its time; in the future time-tracking studies during tendering processes could be conducted to further specify the time spent on each process phase, and how they differ e.g. based on different product categories, the criteria used in evaluating bids and the number of suppliers participating. This could be extended to other purchasing process phases as well. As many purchasing studies focus on improving or even optimizing the different phases of a purchasing process, the exact or at least approximate costs of these process phases in terms of work conducted should be known and incorporated in such studies. In addition, as the study in Paper I compared contract prices to market prices, it provides a basis for longitudinal studies on how the central purchasing agency of the Finnish government is able to maintain the price levels in its contracts competitive compared to market prices. As some cost elements were left outside of the empirical study in Paper I, such as costs of quality and ordering, the investigation of how these change between the central and decentral operating model are also potential future research avenues. In addition, as centralized purchasing may have indirect effects on e.g. purchasing skills and IT systems in use, future research should attempt to identify also the costs of training and investments when comparing the two operating models.

The empirical testing of MB as an agency problem revealed several alternative governance mechanisms to either directly control for maverick buying behavior or to attack the conditions causing it. In terms of future research it would be important to study the relative costs of these various governance mechanisms. Knowing which governance mechanisms work best in increasing compliance is the first step, but for managerial purposes the cost of increasing each governance mechanism needs to also play a role in decision-making. Additionally, comparing the costs resulting from these governance mechanisms against the costs of non-compliant purchases would give valuable information on what level of compliance organizations should strive for to minimize their total costs.

In Paper III, five different types of maverick buying were identified. The empirical testing of MB as an agency problem in Paper IV did not, however, specifically

address all of the possible types of this phenomenon, thus leaving room for further empirical testing of the different forms.

In Paper IV, cleaning services was selected as a product category for testing the maverick buying phenomenon. In previous research (e.g. Kulp et al. 2006; Cuganesan and Lee, 2006) MB has been suggested to exist in such categories as office supplies, hotel contracts and travel in general, printing, and IT hardware and software. It would be interesting to study whether a product context would have an effect on e.g. the relative strength of the different governance mechanisms, or whether the degree of information asymmetry and goal incongruence between the principal and the agent differ based on the product contracted.

This thesis mostly examined purchasing centralization from an internal organization viewpoint. Only Paper II focused on the external supplier viewpoint, i.e. involvement of SME suppliers. But as Figure 1-2 in chapter 1.1 of the introduction demonstrated, the strive for centralization and high contract compliance, and the increased use of e-procurement associated with these, has implications to the access opportunities of especially small suppliers to organizational contracts and purchases. The wider supply market implications of centralized purchasing are thus an important research avenue. Furthermore, Paper I examined the cost effects of centralization purely on the buyer side, i.e. how much savings buyers can gain by pooling volumes and reducing overlapping processes. An interesting extension from this would be to examine the cost effects of purchasing centralization on the remaining suppliers: how have the costs of supplying and especially of becoming an approved supplier changed when there is just one contact point for organizations.

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PART II:
ORIGINAL ARTICLES

Value of centralization

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Summary

The centralization of purchasing seems to be a clear trend among private and public organizations, driven by expected savings in process costs and purchase prices. There appears to be consensus among academics that centralization provides savings through economies of scale, but clear empirical evidence of the cost effects of centralization is scarce in purchasing literature. This paper provides managerial and theoretical motivations to intensify research in quantifying the cost effects of centralization. In addition, this paper presents empirical evidence of these cost effects from a purchasing centralization project 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 purchasing price savings. The estimation of process costs is done by surveying the time spent on the tendering process both for the decentralized operating model and the centralized operating model in the Finnish government and estimating the cost of those times. The second type of cost effects, potential price savings, are estimated by comparing the central framework agreement prices to market prices in two selected categories (flights and office supplies). The sizes of savings potential in both process costs and purchasing prices show that the amount of units centralizing their purchasing process and the purchasing volume being pooled do not need to be very high before economies of scale already become evident.

Keywords: purchasing, centralization, savings, process costs, prices, tendering, public procurement

Educator and practitioner summary

The centralization of purchasing seems to be a clear trend, driven by expected savings in process costs and purchase prices. Clear empirical evidence of the cost effects of centralization is however scarce in purchasing literature. There is a managerial need to demonstrate the savings of centralization, as without being able to convince units of the benefits of centralization, and to demonstrate them in reality, the purchasing function can experience difficulties in motivating other units to use the contracts it has negotiated. This paper presents empirical evidence of these cost effects from a purchasing centralization project 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 purchasing price savings. These sizes of savings potential in both process costs and purchasing prices show that the amount of units centralizing their purchasing process and the purchasing volume being pooled do not need to be very high before economies of scale already become evident.

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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). Dimitri et al. (2006) suggest that centralization appears as a clear trend in public procurement as well.

Purchasing literature has introduced several benefits associated with centralization, one of the most important being cost savings, attained e.g. through volume discounts, more effective buying processes and reduced overlapping work activities. Rough estimates for these cost savings have also been suggested but only a few studies provide specific cost analyses on the subject. There is an abundance of literature on 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 not of use in calculating the internal process costs (e.g. supplier selection, contracting) in purchasing. Nor are they of use in estimating whether the centralized purchasing model is more cost effective than the decentralized one. There is a need for research on verifying, demonstrating and measuring the effects of purchasing centralization on purchasing costs.

The research question of this study is *what kind of cost effects does centralization of purchasing have for an organization*. To begin with, prior research on purchasing centralization is presented. The focus is on definitions of centralized purchasing and benefits presented and quantified in literature. Literature on purchasing centralization in public procurement is also discussed, as the empirical data for this research is from the public sector. Rough estimates for the cost effects of purchasing centralization have been suggested, but only a few studies provide specific cost analyses on the subject. Celec et al. (2003) aimed at finding performance measures for evaluating the financial benefits of state term contracts, for which a typical justification are the savings that result from the price concessions expected from volume purchasing. Their review of literature indicated that a cost to purchase efficiency indicator was the most often cited performance measure, but the problem is that it addresses the cost rather than the savings side of the purchasing function. Their survey information, however, suggested that a performance measure should be based on a sample rather than the entire population of products. This followed from the recognition of the magnitude of the task of measuring the savings on hundreds of thousands of individual commodities. Celec et al. (2003) claim there are two sources of savings from term contracts. First, as term contracts involve commodities with high usage rates, there are administrative cost savings resulting of the ease of purchasing from these contracts relative to the high costs of the administrative process involved with repetitive tendering. They however argue that measuring these administrative cost savings would require cumbersome time and motion studies across agencies to determine the magnitude of savings. The second type of savings according to Celec et al. (2003) are price concessions. These findings by Celec et al. (2003) are taken into consideration in the empirical study conducted to answer the research question of the study i.e. the method

used to estimate the cost effects of purchasing centralization is based on sampling, and it attempts to measure cost effects both in terms of prices paid and processes used. The Finnish Government is used as the case example to estimate the effects of centralization on tendering process costs and purchasing prices. In addition, a part of this research paper is dedicated to emphasize and motivate the need for this type of research on quantifying the cost effects of centralization. Besides there being a theoretical gap in current research on quantifying the effects of centralization, there is a managerial need for these types of studies as well. Discussion and conclusions will conclude the paper.

Purchasing centralization – review of the literature

The concept of purchasing centralization

Parikh and Joshi (2005) argue that centralization is defined by the degree of hierarchy of authority. A similar view is presented by Stanley (1993), who determines buying centre 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 insuring 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 do indeed choose a hybrid between those two on some levels. In this paper, *purchasing centralization 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. This is also the situation in the empirical research context of this paper, the Finnish Government.

Centralized purchasing has many links and similarities to operating models in which different companies are pooling their purchases. Tella and Virolainen (2005) suggest that the benefits of consortium purchasing are similar to the benefits of centralizing purchasing in a company. Typically the same reasons drive companies to centralize purchasing within their own organization as between organizations, e.g. economies of scale. Similar problems, such as those of non-compliance can also be seen among the different operating models. Given the intrinsic similarities between these concepts, literature on group purchasing, purchasing consortiums and cooperative purchasing are incorporated in the following literature review.

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). Faes et al. (2000) suggest that synergy is supposed to lead to a competitive advantage as two or more units of a company share knowhow or resources, coordinate strategies, pool negotiation power, etc. In defining purchasing synergy, the terms pooling or pooled purchasing power have been widely used as well, in addition to centralised procurement (Smart and Dudas, 2007). Rozemeijer (2000) observed that purchasing synergy can be defined as the value that is added when two or more business units join their forces (e.g. combined buying) in the area of purchasing. Thus, purchasing centralization creates purchasing synergy benefits, which can take many forms. In the following, cost savings of purchasing centralization as well as other, more indirect, benefits of centralization are presented separately.

The most often mentioned benefits of centralized purchasing are those related to cost savings (e.g. Arnold, 1999, Faes et al., 2000, Heijboer, 2003, Joyce, 2006, Nollet and Beaulieu, 2005, Stanley, 1993, Tella and Virolainen, 2005). Specifically, two types of cost savings could be identified in the prior literature: lower prices due to economies of scale and other cost savings.

Centralized purchasing helps to realize economies of scale by bundling demand (Arnold, 1999). According to Joyce (2006), centralized purchasing may be able to obtain lower prices than decentralized units if the higher volume created by combining orders enables it to take advantage of quantity discounts. Faes et al. (2000) refer to this as enforced purchasing power. Many others (Arnold, 1999, Tella and Virolainen, 2005, Corey, 1978) refer to the increased negotiation power, which leads to better prices and terms. Nollet and Beaulieu (2005) suggest that search for more advantageous contractual conditions is the most frequent reason mentioned for being part of a purchasing group. They also point out that in the long run, a purchasing group normally generates additional savings, or at least controls price increases.

In addition to economies of scale in prices, other types of cost savings have also been identified. According to Heijboer (2003), transaction costs can be lowered by bundling orders. Tella and Virolainen (2005) explain that the reduction of the number of transactions is a way to explain the advantages of purchasing consortia by transaction cost economics. Also Essig (2000), Arnold (1999) and Stanley (1993) discuss less administrative work and a decrease in administration duplication in addition to reduction of purchasing organization expenses. Administrative costs are expected to be reduced in other areas of the firm as well, such as accounts payable (Johnson, 1999). Corey (1978) suggests that centralization can economize the use of scarce procurement resources. He also points out potential cost-saving benefits through the ability to economize on inventory and spare parts backup and the ability to move supplies across department lines to fill needs in different locations. Tella and Virolainen (2005) introduce lower management and logistics costs as potential benefits as well.

Some cost estimates of the savings achieved through centralized purchasing have been presented in the literature. According to Nollet and Beaulieu (2005) there is a general agreement that purchasing groups generate savings of between 10 and 15 percent, while some products can generate even larger savings. Even savings up to 20-35% have been documented in some sectors (Nollet and Beaulieu, 2003). Hendrik (1997) in his study of purchasing consortiums found that the members saved annually about 13,4 % which yielded an average savings of about \$2,3 million for each member. Cleverley and Nutt's (1984) study of hospital joint purchase organizations revealed savings ranging from 12-25 percent. Corey (1978) discussed a study made of the purchase of one supply item, work gloves, at General Motors (GM). According to Corey, GM was spending more than \$10 million on work gloves, with seven different prices being paid in the 10 divisions for the same item, ranging from \$4,88 to \$5,90. The negotiation of contracts with six suppliers for over 120 000 pairs of gloves of one particular type resulted at an estimated savings of more than 12% over prices paid earlier.

In addition to cost savings, several other benefits have been suggested in relation to centralized purchasing. Heijboer (2003) and Joyce (2006) suggest that by purchasing goods together better service and closer attention can be obtained from suppliers. Faes et al. (2000) argue that there are two other types of purchasing synergies in addition to economies of scale: economies of process and economies of information and learning. Economies of process mean the establishment of a common way of working thereby showing worldwide one line of conduct to suppliers, benchmarking procedures and results, and joint training and development. Economies of information and learning mean for example sharing all available purchasing knowledge on suppliers, new technologies, internal users, applications and the prevention of mutually incompatible negotiating strategies. Arnold (1999) suggests efficient use of available purchasing skills as a centralization benefit. This is backed up by McCue and Pitzer (2000), who argue that developing purchasing expertise, the mainstay of a central system, increases efficiency and economy and insures the integrity of the purchasing system. Joyce (2006) and Johnson (1999) point out that centralization often enables companies to assign certain categories of items to specialists, who tend to be more efficient because they are able to concentrate their efforts on relatively few categories. Other benefits mentioned are increased flexibility of inventories (Tella and Virolainen, 2005), acquisition of more profound knowledge of the market, establishment of a global supply view (Arnold, 1999), increased control over purchase commitments (Stanley, 1993), coping with supply shortages and assuring long-term availability of needed resources and responding effectively to a changing business environment (Corey, 1978). According to Munnukka and Järvi (2008), traditional manufacturing companies use purchasing centralization also to manage risks.

When to centralize?

According to Corey (1978), the basis for centralizing purchasing exists when two or more locations have common requirements; the ability to standardize is a prerequisite for centralization. In previous literature, certain purchase categories have been suggested as more suitable for centralization than others. According to Davis et al. (1974) raw materials are most likely to be suited for pooling. According to Faes et al. (2000) a centralized approach is suited for products with low site specificity and low specificity linked to assets or human resources such as standardized raw materials and components as well as MRO-items. Also Smart and Dudas (2007) suggest that MRO goods, commodities and indirect materials are the preferred items for a pooling initiative. From this one could conclude that routine and leverage items from Kraljic's (1983) purchasing portfolio are most suitable for centralization. Joyce (2006) suggests centralization for high-volume, high-value items for which discounts are applicable or specialists can provide better service than local buyers or departments. Hendrik's (1997) study of purchasing consortiums revealed that most purchases included MRO items (54% of respondents), followed by services (46%), direct materials (42%) and capital goods (35%). Corey (1978) suggests that if the supply industry is oligopolistic it may suit purchasing strategy to negotiate from a single point. Faes et al. (2000) argue that centralization is mostly considered to be a logical step in the professionalizing of the purchasing function. According to Stanley (1993) it has also been suggested that under conditions of little environmental uncertainty, the purchasing department will be more centralized. She also proposed that the degree of centralization of the purchasing function is positively related to the degree of formalization and to specialization of each department member. Faes et al. (2000) remind that the important decision is not the centralization decision itself, but the identification of the right cases in which to do it and the implementation within the company. According to them the

former depends on many, often soft, factors such as corporate cultures and overall management style. Rozemeijer (2000) proposed a model for choosing the right purchasing approach. The model suggests that business unit (BU) homogeneity and the level of maturity of the purchasing in the BU's impact the approach that can or should be used. According to the model, classical central purchasing is suited for high BU homogeneity and low purchasing maturity in the BU's (Rozemeijer, 2000).

Difficulty of quantifying cost effects of purchasing centralization

Purchasing literature has introduced several benefits associated with centralization, one of the most important being cost savings. Also the product categories and organizational contexts most suitable for centralization have received their share of attention in the literature. What has been left with minor attention is research on how to quantify the cost effects (which are assumed to be savings) of centralization. Most academic articles discussing savings still use a theoretical rather than an empirical approach, and focus on TCO (Nollet et al. 2008). Table 1 provides a brief overview of the research methods and trends of literature on purchasing centralization, clearly demonstrating this research gap. The few empirical studies quantifying the cost effects of centralization are already very outdated. Empirical research in the area is thus called for.

Table 1 Research trends and empirical methodologies in literature on purchasing centralization

	Case study	Empirical methodology/ research approach			N/A
		Survey	Interviews	Modelling	
Identifying benefits of centralization	Arnold 1999 Faes et al. 2000 Tella & Virolainen 2005	McCue & Pitzer 2000	Nollet & Beauieu 2005	Heijboer 2003	Corey 1978 Stanley 1993 Essig 2000
Quantifying benefits of centralization		Cleverley & Nutt 1984 Hendrick 1997			Corey 1978
Product categories suitable for centralization	Faes et al. 2000 Smart & Dudas 2007	Davis et al. 1974 Hendrick 1997	Davis et al. 1974 Nollet & Beauieu 2005		Kraljic 1983
Organizational contexts suitable for centralization	Arnold 1999 Faes et al. 2000 Rozemeijer 2000				Corey 1978 Stanley 1993

Why has research in the area been so limited? The reason probably is that while there often is agreement that savings can be attained by centralization, their verification and quantification can be difficult. Several reasons attribute to this difficulty. First, when units' own contracts are replaced with joint contracts, the products in the two contracts might not be exactly comparable, making it complicated to estimate possible price differences. Sometimes price data from before the centralization might be completely unavailable, if purchases have been made largely on ad hoc bases and not according to contracts. Second, comparing the purchasing process costs between the centralized and decentralized operating model is complicated. A lot of the process costs are costs of the work performed. To compare these requires detailed information on how much time is spent on the purchasing process phases in both operating models and a way to calculate a cost on that time. Finally, when the organization in question is a group operating in many countries, in multiple industries or consisting of relatively independent units, the purchasing, accounting and data collecting practices may vary considerably making it hard to find comparable data.

Centralization in public procurement context

According to Dimitri et al. (2006), the degree of centralization in public procurement has increased; centralization of public procurement appears as a clear trend in Europe, in the United States, Southern America and Asia. In Europe several countries have established central procurement agencies over the past years, e.g. UK, France, Italy, Finland, Denmark,

Sweden and Austria. Specifically, Dimitri et al. (2006) suggest that in public procurement frame agreements stipulated by central procurement agencies on behalf of public administrations appear common. In this centralized arrangement the framework agreements make several items for a given period of time at a certain price available to all public administrations, which are recommended to use these contracts. Bartle and Korosec (2003) discuss a similar concept, master contract, which is used extensively by most states in USA. The EU Directives set special requirements to public procurement. The directives require that all tenders above specified thresholds have to be advertised in the Official Journal of the European Community and the TED database (Gelderman et al. 2006). The tendering process is highly regulated, and any departures from procedures can open the door for suppliers to complain to the court. The cost to the government of running a tender competition is considerable (e.g. Gelderman et al. 2006, Johnson 1999). Also Heijboer and Telgen (2002) suggest that time spent on sending information, handling queries and reading and evaluating tenders can be enormous, increasing with the number of tenders received. To avoid repeating this burdensome process is most likely a main reason driving centralization in public procurement, in addition to expected volume discounts from pooled purchases.

Managerial need for demonstration of cost effects of centralization

Why is the exact, or at least relatively accurate, quantification of the savings attained from purchasing centralization so important then? Why not settle for the common consensus that savings are likely to result? The reason is that purchasing centralization, as well as any other organizational change initiative, will encounter resistance, as units and employees do not see or believe in the benefits the change will bring. While economies of scale are often obvious, the benefits for one member are not as clear and the allocation of the benefits of joint leverage to the individual members may cause lack of commitment and hesitation to join the operating model (Heijboer, 2003). McCue and Pitzer (2000) even go as far as to argue that the centralized purchasing system inevitably results in conflicts between the central purchasing department and the line departments it is established to serve. This means that potential improvements in negotiated contract costs may never translate into improved earnings if the organization cannot motivate employees to comply (Kulp et al., 2006). Kulp et al. (2006) estimated that about 20 to 30 percent of unrealized savings are due to noncompliance to contracts. This noncompliance is also referred to as maverick buying, which Karjalainen et al. (forthcoming) define as the off-contract buying of goods and services for which an established procurement process is in place based on pre-negotiated contracts with selected suppliers. Maverick buying is a typical counter reaction to purchasing centralization and can hinder or prevent the attainment of its benefits and savings. According to Nollet and Beaulieu (2005), there actually would appear to be no relationship between higher volumes and lower prices in healthcare purchasing, but that the extent to which group members adhere to the contract would provide more leverage for getting better prices than simply the volumes themselves. Already in 1984, Cleverley and Nutt argued that it appears that group-purchase organizations with high levels of individual member commitment are more effective in obtaining price reductions. They suggested that in these situations suppliers may have realized that if they lost contact with the group they would not be able to negotiate contracts with any of the members. Tella and Virolainen (2005) also discuss this issue in cooperative purchasing suggesting that if there is no loyalty between the members, both of them will face the worse situation than if they are loyal to each other and cooperate. So it is not the centralization itself that brings the savings through economies of scale, it is how well it is driven through in the organization that

matters. And the implementation phase is where demonstrations of savings are needed. According to Faes et al. (2000) it is mainly in the start-up phase when limited synergies are matched against high diseconomies that business unit managers might show resistance. They argue that as more units cooperate, the critical mass will grow, as will its impact on the supply market, increasing the advantages thanks to a stronger negotiating position. This is accompanied with the group of outsiders getting smaller and losing impact. Faes et al. (2000) also point out that coordination cannot work unless real advantages are offered and made visible to the units involved. Faes et al. (2000) described this situation as a domino principle: one unit will be quicker than the others to believe in the advantages and to cooperate, which will have a positive impact on the other units, encouraging them to cooperate as well. If one domino falls, the second will fall more easily, then the third, etc. Also, it can be assumed that the more units join the central operating model, the more economies of scale will accumulate, and the easier it will be to demonstrate the benefits to all the units. The more visible benefits will then encourage even further compliance. This situation is also depicted in Figure 1.

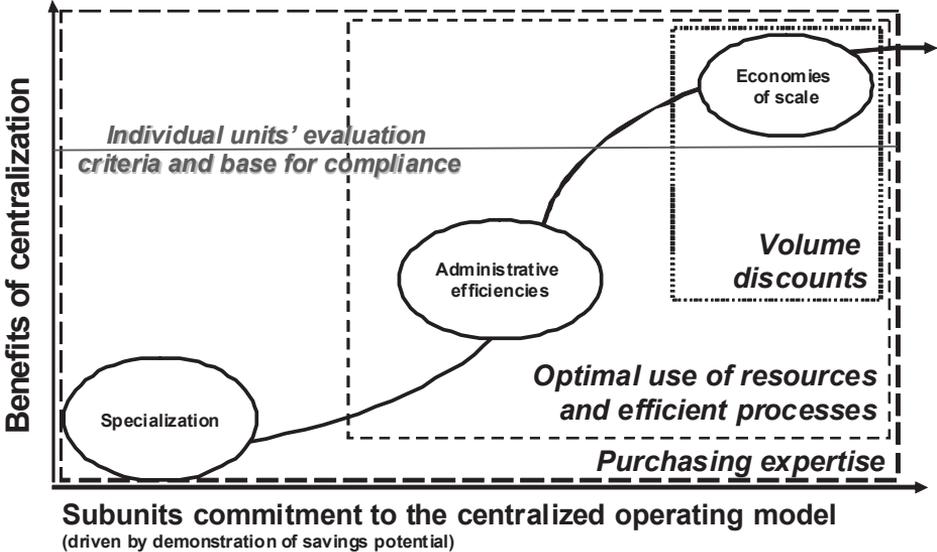


Figure 1 Difficulty of gaining benefits of purchasing centralization

Several benefits have been associated with purchasing centralization in the literature. In figure 1, these benefits are grouped into three categories: specialization (personnel able to focus on purchasing full-time, and develop e.g. category-specific knowledge or process knowledge), administrative efficiencies (referring to reduction in overlapping work and processes) and economies of scale (referring here mainly to lower prices). These benefits are all potentially attainable through centralization, but mostly likely they do not all accrue simultaneously and as fast for the organization and for individual units. The materialization of these benefits requires actions both from the central purchasing unit and from the units using the contracts. The central purchasing unit must be capable of efficient operations to provide the three types of benefits presented in Figure 1. The purchasing unit must be able to negotiate volume discounts to provide the economies of scale. Optimal use of resources and efficient processes are required for not only economies of scale but also for administrative efficiencies. In addition, purchasing expertise is required to gain all three types of benefits, including specialization. As for the subunits, they need to commit to the centralized operating model if full benefits are to be achieved. Commitment and contract compliance is especially needed to attain the economies

of scale, as volume discounts can only realistically be negotiated and maintained when purchasing volumes of all (or most) units are pooled under joint contracts. To a large extent administrative efficiencies can also only be attained when subunits relinquish from negotiating their own contracts and arranging their own tendering processes, thus reducing overlapping work within the organization and releasing resources for other tasks. The problem is, however, that subunits are reluctant to relinquish this power to the purchasing function before they observe the benefits, especially in terms of lower prices. Lack of TCO insight often leads to individual units evaluating purchases mainly based on price, not realizing other cost items. But if compliance and volumes are not attained, neither are the expected benefits and savings, including lower prices. The task is thus difficult; you need to be able to verify and demonstrate how much can be saved by centralizing purchasing, in order to be able to motivate the necessary changes within the organization, and actually gain those savings. Allocation of savings from cooperation has been investigated using cooperative game theory by e.g. Heijboer (2003) and Schotanus (2007). In cooperative game theory it is assumed that cost savings can be made when all players cooperate, and the problem studied is how to divide these savings in a fair way among all players (Heijboer, 2003). This paper will not address the issue of how the potential savings from centralization should be divided within the organization; the focus is on demonstrating the amount of savings that can be achieved.

Demonstrating the savings of centralization – the case of the Finnish government

The Finnish government has been moving to an increased use of a centralized purchasing agency, Hansel Ltd. in the past years. Hansel is a private company owned by the State, and acts as an in-house purchasing unit. Hansel negotiates framework agreements in selected products and services and these can be used by all the State's procurement units, such as ministries and ministerial offices, as well as State agencies and publicly-owned enterprises. Each of these units independently decides on the use of their budgets, allocated by their governing ministry, for purchases, and the operative day-to-day purchasing is decentralized. The government has introduced this centralization in the form of framework agreements due to a desire to gain purchasing savings by reducing overlapping tendering work and pooling the large volumes of state purchases. The government has expressed that using the framework agreements is both desired and expected. In late 2006 national legislation was also passed obliging all units to use contracts tendered by the central unit in their purchases of certain products such as office supplies and equipment, computers, vehicles, travel services and occupational health. Despite these facts, the contracts have, however, been estimated to have a usage rate of only 20-80% of the potential in the different categories (Karjalainen et al., forthcoming). A major contributing reason to this lack of compliance is that no exact quantifications of the potential savings of this operating model have been provided, which would motivate agencies to use the centralized framework agreements (Karjalainen et al., forthcoming). The Finnish government thus initiated a research project to respond to this need for estimations of the savings potential in centralized public procurement. In this paper, only some illustrative examples of the research project are presented. As mentioned previously, this empirical research follows the suggestions by Celec et al. (2003), i.e. it attempts to measure cost effects both in terms of prices paid and processes used. Specifically, the effects of centralization on prices are measured by comparing the contract prices to prices of comparable products on the market, and effects on process costs are estimated by comparing the costs of decentralized and centralized tendering procedures on a governmental level.

Process costs

The estimation of process costs was done by finding out the time spent on the tendering process both for the decentralized operating model (where each agency would tender their own contract) and the centralized operating model (where one contract is tendered for use of all agencies) and estimating the associated costs. The tendering process was defined according to the Finnish Handbook on Government procurement. A spreadsheet-based survey was used to gather the data. The spreadsheet consisted of four sheets. The first sheet contained instructions for answering the survey. The second sheet contained detailed descriptions of the purchasing process and the tasks included in each of the process phases to ensure respondents would recall all tasks, and time spent on them, of the tendering process. The third sheet was a prefilled example answer sheet. The data in the example sheet was from a previous purchasing process cost estimation project of the Finnish government, where a detailed time-study had been conducted during the tendering process of an office supply contract. The final sheet was the actual answer sheet for the respondent. In the whole research project, a total of 13 product categories were selected for the survey. Here, 5 product categories are used to illustrate the cost effects of centralizing public procurement tendering processes. The respondents had to fulfill specific criteria: they had to have had tendered a contract for the specific category in their own unit. The potential respondents were identified with the help of the Ministry of Finance and the customer managers of Hansel. The respondents were first notified of the survey by phone, after which the survey was e-mailed to them. After two weeks, those who had not responded, were reminded of the survey with another phone call, and the survey was re-emailed to those still willing to respond. The following table contains the number of surveys sent and responses received on each product category.

Table 2 Response rate for survey on tendering times in decentralized operating model

Product category	Surveys sent	Responses received	Response rate
Copy and multifunction machines	10	3	30 %
HPAC supplies	11	4	36 %
Cleaning services	11	5	45 %
Work stations, laptops and displays	11	5	45 %
Occupational health care	14	4	29 %
Total	57	21	37 %

In addition, one response for each category was received from Hansel, illustrating the time spent on tendering a contract for the whole government. The main results are in table 3.

Table 3 Results of surveys

	Decentralized model (n=21)			Centralized model (n=5)		
	Mean	Minimum	Maximum	Mean	Minimum	Maximum
Contract value (€)	1 992 287	48 490	10 000 000	83 000 000	5 000 000	200 000 000
Contract length (years)	3	1	6	4	4	4
Number of criteria used to compare bids	6	1	15	5	3	7
Number of bids received	6	3	12	7	3	12
Process duration (hours)	167	42	475	598	106	1 030

To turn the information on tendering times in the decentralized and the centralized operating model into an estimation of the cost effects of centralization, the time spent in tendering was considered as person-years (one full person-year is 1600 hours). The cost for one person-year used in the calculations was 56 000 Euro². With this approach, the cost of the average decentralized tendering process, which takes 167 working hours to complete, would be $(167/1600)*56\ 000\ € = 5845\ €$. Multiple overlapping tendering processes thus quickly increase the process costs of purchasing in comparison to tendering one contract for the whole government, which has an average cost of approximately 20 000 Euro. There are approximately 90 agencies and other units in the Finnish government eligible to use the centrally negotiated framework agreements. In the decentralized model, it is expected that within an agency, there are on average 3 tendering processes instead of just one, as most of the agencies are divided into several, rather independent units, and are often geographically dispersed. Thus, in the decentralized model, an average of 270 tendering processes would be run for each category, and in a fully centralized model, only one. However, as discussed previously, not all units are instantly fully compliant in using the centralized framework agreements, and some might not only buy outside the established contracts, but also still run their own tendering processes and make their own contracts. The gained savings are thus a result of the compliance rate as well. Thus, for an estimate of the savings from centralizing the tendering process for one product category, the following formula can be used:

$$C_{id} \times n - (C_{ic} + C_{id} \times (n - n_c)), \text{ where}$$

C_{id} = average cost of a decentralized tendering process run by a single subunit,

C_{ic} = average cost of a centralized tendering process run by the centralized purchasing unit

n = number of individual subunits and

n_c = number of units complying with the centralized operating model, i.e. not running their own tendering procedures.

With full compliance, using the results of the survey as a basis for calculating the cost of tendering, savings of over 1,5 million € can be achieved in Finnish public procurement by moving to a centrally tendered framework agreement in one category instead of individual agencies tendering their own contracts. It should be noted that the above equation only looks at the direct costs of tendering. The establishment and operating costs of a central purchasing unit must be taken into account when comparing the total costs of both alternatives. This empirical example, however, clearly demonstrates the savings potential in centralizing different purchasing processes and thus reducing overlapping work within an organization. Naturally, these types of savings will not be directly visible on the bottom line; most employees in the decentralized model have been running the tendering procedures as a part-time task and those employees will still be on the pay-roll. They can, however, focus on conducting only tasks related to the core function of their unit. On a longer time span, thus, the productivity of the units can be improved, and personnel reduced. These productivity increases are also emphasized in the productivity program of the Finnish government, where it is attempted that only 1 new recruit will be hired for every 2 retirees.

Purchasing prices

² The annual labour cost of a specialist government employee is on average 56 000 € (including salary, social security costs and other labour costs)

To estimate the effects of centralization on purchasing prices, the prices of the framework agreements were compared to prices of equivalent products on the market. This type of approach (comparing prices paid to list prices) has been used previously in studying savings of group purchasing (Aylesworth, 2007). Several reasons lead to the selection of this approach instead of comparing past prices paid in the decentralized model to those of the centralized contracts: 1. The compatibility of the products. For the centralized purchases, current prices were available, but the decentralized price would have to be found from past invoices. Getting two exactly comparable products for the comparison would be difficult, as products might have changed (e.g. mobile phones), there might be different product combinations (e.g. workstations), other contract terms might differ (e.g. flight tickets) and some products are always customized (e.g. cleaning services). 2. Market changes and inflation. Even prices for two exactly identical products would not be comparable if even just six months had passed between their purchase. These and other types of complicating factors (inflation, volume changes, technology changes, market changes and lack of accounting interest) were mentioned already in 1998 by Leenders in relation to measuring purchasing savings. Several factors, however, were found to be in favor of making the comparison to market prices: 1. The prices compared are from the same time, removing the effect of inflation. 2. The product specifications can be controlled for; the products compared are identical. 3. It can be assumed that market prices are rather close to the actual decentralized prices paid by at least smaller units, as these units do not have large purchasing volumes enabling volume discounts from market prices. 4. Even in other cases the market prices can be very similar to the prices paid in decentralized purchases at governmental agencies. An empirical study of De Boer and Telgen (1998) clearly suggests that the proper use of EU directives in public procurement is far from common practice, i.e. it is possible that contracts have not been tendered even for larger purchases but that the items have been bought straight from the market. 5. The Finnish government is actively pursuing a strategy of purchasing centralization. In the future there would not be the option to compare the decentralized prices to the centralized prices, as decentralized purchases would not be allowed in many categories. Thus, in the future, when estimating the performance of the centralized model, government would have to estimate contract competitiveness compared to market prices. Using this approach already now would provide a foundation for longitudinal studies. Thus, the prices of the centralized framework agreements were compared to prices of similar products on the market. Here, the results of price comparisons for 2 products are reported: flights and office supplies. For both of these framework agreements, 3-6 most sold individual products were identified. The source of information for the centralized prices was the centralized purchasing unit. The market prices were searched with internet search engines. Effort was made to include as many suppliers as possible in the price comparisons.

Price comparison 1 – commercial flights.

Four most frequently used destinations (by purchasing volume in Euro) were selected for the flight price comparisons. Because the price of a flight ticket is severely influenced by how far ahead it is booked, two dates were chosen for comparisons; flights on the next day and in two weeks. Depending on the destination, the time of stay varied between one and two days. Number of examined suppliers varied from two to three depending on the route. Two different price comparisons were conducted. First, the lowest price for the flight through the framework agreement and the lowest price on the market were compared. Second, the price of the ticket with the most flexible terms (in terms of e.g. cancellation and other changes) through the framework agreement and from the market was compared. These two types of comparisons were seen to represent the most typical selection criteria in booking flights: the buyers either

want the lowest price if they are certain of their traveling times or the most flexible terms if there is uncertainty regarding the trip. The results can be seen in Table 4.

Table 4 Price comparisons of commercial flights

Destination	Travel dates	Central framework agreement, lowest price	Market, lowest price	Price Difference (€)	Price Difference (%)	Central framework agreement, flexible terms	Market, flexible terms	Price difference (€)	Price Difference (%)
Foreign Destination A	Departure next day	750	770	20	3 %	809	1280	471	37 %
Foreign Destination A ¹	Departure in 2 weeks	763	915	152	17 %	763	915	152	17 %
Foreign Destination B	Departure next day	667	575	-92	-16 %	667	906	239	26 %
Foreign Destination B	Departure in 2 weeks	667	634	-33	-5 %	667	906	239	26 %
Domestic Destination A	Departure next day	255	522	266	51 %	255	522	266	51 %
Domestic Destination A ²	Departure in 2 weeks	226	363	137	38 %	255	363	107	30 %
Domestic Destination B	Departure next day	285	482	197	41 %	285	638	353	55 %
Domestic Destination B	Departure in 2 weeks	285	387	102	26 %	285	638	353	55 %
Average	Average	-	-	94	19 %	-	-	273	37 %

¹Flights booked, only one price/term combination available

²Flexible terms not available on the market, only limited ticket changing conditions

Based on these comparisons, the central purchasing unit provides on average a 19% lower price, when the selection criterion is lowest price. When selection is made based on most flexible contract terms, the prices of the framework agreements are on average 37% lower than on the market. For the Finnish Government, with the 33 million € of flight purchases made via the central framework agreements in 2007, the savings would have been at least approximately 7,7 million € (assuming prices were mostly selected based on lowest price).

Price comparison 2 – office supplies

Five most sold items were included into the price comparisons of office supplies. Twelve suppliers were included in the price search. Only the lowest price on the market was included in the final comparison to lowest price in the framework agreement from one of the 3 framework suppliers. As office supplies are typically not ordered one-at-a-time, appropriate order lots were selected for each product, and the handling charges were taken into consideration in the savings estimations. The results can be seen in Table 5.

Table 5 Price comparisons of office supplies

Product	Unit	Volume	Lowest prices						Savings	
			Framework agreement			Market			Price difference (€)	Price difference (%)
			Price	Handling fee	Total	Price	Handling fee	Total		
Copy paper	ream	200	510	6	516	705	25	730	214	29 %
Plastic folder	item	20	23	6	29	26	11	37	7	19 %
Stapler	item	5	75	6	81	117	12	129	47	37 %
Ballpoint pen	item	100	203	6	209	295	15	310	101	33 %
Toner cartridge	item	5	195	6	202	213	6	218	17	8 %
Average									25 %	

The composition of different products in the volume of office supplies purchased naturally has an effect on the savings. The purchasing volume via the central framework agreements in 2007 was 17,8 million Euros. If the average savings across all the products within this spend is

assumed to be said 25%, the price savings from these purchases of the government were approximately 5,9 million Euros.

Conclusions and discussion

The research question of this study was *what kind of cost effects does centralization of purchasing have for an organization*. The review of literature conducted on purchasing centralization gathered together main findings and identified gaps in the research field. Specifically, it was observed that studies providing quantified estimates of the cost effects of centralization are lacking. This type of research is relevant, however, for academia and especially managerial purposes, as demonstrations of the cost effects of centralization are necessary to justify the organizational move to centralization. Without being able to convince units of the benefits of centralization, and to demonstrate them, the purchasing function can experience difficulties in motivating other units to use the negotiated contracts. And without contract compliance, all the benefits of centralization most likely will not materialize (Kulp et al. 2006). A framework conceptualizing this was also created to better demonstrate the phenomenon and to motivate further studies in the field (Figure 1).

The literature reviewed revealed many potential triggers of the cost effects of centralization in addition to lower prices, such as reduced transaction and administrative costs as well as inventory costs and logistics cost savings. Based on the previous research conducted by Celec et al. (2003) regarding centralized contracts, this study focused on two particularly relevant cost effects: differences in purchasing prices and purchasing process costs, particularly in the contract tendering process. These were estimated empirically for the Finnish Government. This study is, to the author's knowledge, the first attempt to empirically gather data on the process costs of purchasing. In this study this was done by surveying the time spent conducting a tendering process. Based on survey results, the approximate cost of the average decentralized public tendering process, which takes 167 working hours to complete, was estimated to be 5845 €. As the times are estimates provided by respondents, not results of time tracking studies these figures cannot be taken as absolutes. They do, however, provide a first estimation of process costs in public procurement, and establish a basis for further studies in the field. These results have a managerial contribution as well, as being able to put a cost on the process of tendering makes it easier to justify bringing the process under central control instead of letting each unit run their own process. Price savings of centralization were estimated by comparing the central framework agreement prices to market prices in two selected categories: flights and office supplies. Both comparisons showed significant economies of scale in the central framework agreements, savings between different individual products tested ranged from 8% (toner cartridges) to 37% (flights with very flexible contract and cancellation terms). These examples can be seen as empirical verifications of the consensus among academics that centralization is expected to bring lower prices through volume discounts. Centralization thus has both a price lowering cost effect as well as effects on the internal process costs of conducting a tendering process through the cost of such work. The sizes of savings potential in both process costs and purchasing prices demonstrated through the empirical data in this research show that the amount of units centralizing their purchasing process and the purchasing volume being pooled do not even need to be very high before economies of scale already become evident. These types of savings demonstrations can also be used to tackle off-contract buying, i.e. maverick buying, which is a problem also for the Finnish government. Those engaged in it often do so because of the perceived superiority of an alternative offer i.e. they believe they can find the same products with lower prices than the

contract prices (Karjalainen et al. forthcoming). Typically this means that they have found a lower-priced product on the market. When centralized framework prices are found to be competitive compared to market prices, this information can be used to reduce maverick buying at the user level. And, as illustrated in Figure 1, reduction of maverick buying is crucial to achieving the intended benefits. This is because the higher contract utilization rate will affect supplier behavior and bring greater discounts in contract prices.

Some elements were left outside the scope of this study. First, costs of ordering and different ordering methods were not considered. This is because in most centralized purchasing operating models, the ordering operations are still decentralized. Second, possible costs of unsuitable product specifications resulting from standardization in centralized contracts were not taken into consideration. Third, costs related to quality are not considered. It is reasonable to assume, however, that all these costs can contribute to the cost differences between a centralized and a decentralized operating model, and are thus identified as important avenues for research. In addition, centralized purchasing may have indirect effects on e.g. purchasing skills and IT systems in use, so future research should attempt to identify also the costs of training and investments when comparing the two operating models.

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The involvement of small- and medium-sized enterprises in public procurement: Impact of resource perceptions, electronic systems and enterprise size

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ABSTRACT

The importance of small- and medium-sized enterprises (SMEs) as employers and suppliers is high, and there are studies that evaluate the benefits of having SMEs as suppliers. The challenges of SMEs as buyers have been explored, but there is little research on the obstacles that SMEs encounter as suppliers. This article focuses on the implications of perceived resources, electronic systems and enterprise size. It uses survey data to analyze what type of resources and characteristics in particular influence the involvement of SMEs in public procurement. The results of hypothesis testing show that perceived lack of resources especially in legal expertise and administration is associated with low SME involvement. By analyzing suppliers to municipalities and state organizations separately, it is found that lack of electronic systems in order processing and invoicing is related with low involvement of SMEs in state procurement. In short, this article contributes to the current knowledge on SMEs and public procurement by demonstrating the influence of resource perceptions and electronic systems on SME involvement and by pointing out the differences between the two levels of public sector actors (municipalities and state organizations).

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1. Introduction

This article examines why it may be difficult for small- and medium-sized companies (SMEs) to become suppliers in public procurement, a domain that has not been extensively studied before (Zheng et al., 2006; Clark and Moutray, 2004; Fee et al., 2002; Peet et al., 2002). In the European Union (EU), it is relevant to what extent SMEs should be preferred or assisted in public procurement access. This is particularly due to the legislation that defines the principles for tendering processes and supplier selection in all public organizations. In the EU, companies of all sizes are assumed to have equal opportunities to participate in public procurement because EU public procurement law has defined the principles for tendering procedures: transparency, equal treatment, genuine competition and non-discrimination. Because of these principles company size cannot be a criterion in comparisons of tenders, but it can play a role in terms of the capacity of an SME to supply to public sector organizations. Even though public sector buyers cannot favour SMEs over larger

enterprises according to the EU principles or otherwise support them, it should not be overlooked that public organizations in general may be in favour of encouraging smaller suppliers because of the potential positive impact on local economies. This is why it is important to identify possible obstacles hindering SME involvement in public procurement. Involvement refers to SMEs' participation in tendering competitions, through which they have a chance of supplying public sector organizations.

1.1. Benefits of SME involvement in public procurement

Rationally the value for money spent in purchases should be as high as possible. Both Thai (2004) and Erridge (2004) have, however, argued that public procurement can also be used for economic, social and other purposes such as supporting local and domestic firms, assisting minority and woman-owned businesses or environmental protection. The involvement of small businesses in public procurement can serve these purposes. For example, by contracting with small businesses the government gains increased innovativeness, encourages entrepreneurship and contributes to job creation and economic development (Reed et al., 2004). Small businesses also tend to have higher growth rates than large firms (Denes, 1997). Thus, by buying from SMEs the public sector can positively influence local economies, regional regeneration and

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local sourcing (Walker, 2006 in Zheng et al., 2006). These external benefits accrue to the economy and society (NERA Economic Consulting, 2005), but SMEs have some features that present high potential for public sector buyers as well. They are considered as a locus for innovation (Hoffman et al., 1998), and they produce over 10 times more patents per employee than their larger counterparts (Clark and Moutray, 2004). SMEs are also seen as a source of flexible personalized services (Zheng et al., 2006). In addition, small businesses are expected to be able to respond quickly to changing market demands, are organizationally flexible and have more efficient internal communications than large firms (Reed et al., 2004). These are the types of benefits that accrue to procurers both in the short and the long run.

1.2. Scope of the study

Prior research has investigated SMEs as buyers (e.g. Agndal, 2006; Morrissey and Pittaway, 2004; Mudambi et al., 2004; Rooks and Snijders, 2001). However, current knowledge on involving small businesses in public procurement is limited. Caldwell et al. (2005) argue that there is little empirical evidence on the role of public procurement in promoting competitive markets. According to Zheng et al. (2006) there is some evidence on the level of SME involvement at the aggregate level but knowledge on a disaggregated level, such as what types of SMEs act as suppliers to public organizations and in which public sectors, is limited. Differences between SMEs' actual involvement and their opportunities for involvement between municipal- and state-level procurement have also not been researched. Hence, there is a need to investigate what characteristics (i.e. capabilities, resources and perceptions) of SMEs influence both their actual involvement in public procurement and their perceptions of their possible involvement.

This article seeks to provide insights on those issues. This is done by identifying characteristics of SMEs affecting their involvement in public procurement and by examining whether the perceptions of SMEs on their own capabilities affect their involvement in public procurement. Furthermore, the article analyzes the factors explaining SME involvement separately in state and municipal procurement, which differ in certain aspects (e.g. level of centralization, demand and automation), although prior research has treated them as a uniform group. The research problem is centred on investigating how the resources, perceptions and characteristics of SMEs affect their access into public sector procurement. Particular attention is paid to the effects of whether the SMEs are in possession of electronic order processing and invoicing systems and to the difference between SMEs of two different sizes.

When referring to SMEs in this article, we adhere to the EU definition that the category of micro-, small- and medium-sized enterprises is made up of enterprises that employ fewer than 250 persons and have an annual turnover not exceeding 50 million euro, and/or an annual balance sheet total not exceeding 43 million euro (European Commission, 2005). In terms of this study, however, the potentially limited resources of SMEs referred to in many previous studies (e.g. Lee et al., 1999; Nootboom, 1993; Grando and Belvedere, 2006) are more important than the criteria used in the official SME definitions, as these limitations make it difficult for SMEs to be involved in public procurement. SMEs perceive public procurement processes as too burdensome. According to Lee et al. (1999), lack of resources is very often cited as one of the major obstacles faced by SMEs. Nootboom (1993) suggests that SMEs' disadvantages most often lie in material resources, including high costs due to diseconomies of small scale, limited scope, experience and learning. In the hypotheses, a

further division is made between micro firms of less than 10 employees and other SMEs, to investigate whether there are differences among SMEs of various sizes.

The remaining part of this article is organized as follows. First, relevant prior research on obstacles of SME involvement in public procurement is discussed and hypotheses are presented. Second, research design including the choice of methodology and collection of empirical data are described. Then, results of the survey conducted among Finnish SMEs are reported. Discussion of the main findings as well as their implications for management practices and future research will conclude the article.

2. Literature review

This section defines hypotheses based on prior literature and introduces a conceptual model that is expected to explain SME involvement in public procurement. Hypotheses are related firstly to SMEs' perceptions of their resources and their electronic systems as explanatory factors for involvement in public procurement, and secondly, to the impact of enterprise size on SMEs' perceptions of resources available to support involvement in public procurement.

2.1. SMEs as public sector suppliers

Small and medium businesses have a crucial role in employment and the whole economy of the EU. They account for over 99 percent of the total number of enterprises in the area and provide jobs for over 100 million people, which is over 2/3 of total private employment (European Commission, 2004). Despite the apparent importance of SMEs, Bovis (1998) has argued that market access in public procurement is limited for SMEs and disproportionately low in relation to their number throughout the EU. Intriguingly, only a limited number of SMEs are able and willing to sell to the public sector (Smith and Hobbs, 2001). For example, in the UK only 7 percent of SMEs was interested in collaborating with the public sector (SBS Survey, 2006). One reason for the low interest in being involved in public procurement could be that bidding for government contracts is typically 10–50 percent more costly than bidding for comparable projects in the private sector (Fee et al., 2002). The buying process of public organizations is different from private sector because the principles for tendering processes and supplier selection are regulated by law. For example, within the EU both union-wide directives and national legislation govern the buying process of state and municipal organizations. All purchases above set thresholds need to be publicly announced using formal channels such as TED (Tenders Electronic Daily) database and must be subjected to competitive tendering. The threshold values depend on the type of contract and public agency (Heijboer and Telgen, 2002).

Previous literature has presented obstacles for the low level of SME involvement in public procurement in three categories: the bidding process, contract sizes and inadequate information sharing. First, the bidding process regulated by procurement legislation is rigorous and resource consuming by nature, and even insignificant deviations from the requirements may lead to the rejection of bids. According to the SBS Survey (2006), the most commonly cited barrier for selling more to the public sector was the effort involved in bidding or supplier pre-qualification. Fee et al. (2002) also pointed out other problems such as burdensome documentation, the time and cost involved in preparing offers, and specification of standards. Similar problems were noted already in 1991 by MacManus. Furthermore, SMEs may lack the language skills needed particularly in technical areas (Bovis, 1998).

Second, Bovis (1998) claims that the relatively large size of contracts, the result from contract bundling driven by efforts to reduce administrative work (Clark and Moutray, 2004), inhibits SME involvement. SMEs are not able to bid for these large contracts as they do not have adequate supply capacity. According to Morand (2003), in this way, the purchasing activities of government inevitably discriminate, albeit unwittingly, against SMEs. Thirdly, inadequate access to relevant information is argued to be by far the largest barrier of SME involvement in public procurement (Fee et al., 2002). SMEs have, for example, difficulties in getting information on forthcoming contracts (Bovis, 1998). To sum up, the obstacles for the low level of SME involvement in public procurement focus on inadequate resources, whether they are inadequate resources in searching information on upcoming contracts or in preparing the bids or in supplying the needed quantity of products, services or work.

But for SMEs, it is not just the actual resources, or lack of them, that affect their operations in supplying to public sector or otherwise. In the entrepreneurship field, there are studies focusing on how SMEs' or entrepreneurs' perceptions of their firm's resources and capabilities can affect the operations and performance of those firms. Penrose (1959) suggested that heterogeneous performances among firms are at least partially a result of the heterogeneity of entrepreneurial beliefs and the heterogeneity of other resources and capabilities of firms, as well as the subjective deployment of these resources and capabilities. Also Kor et al. (2007) highlight the causal connections between subjectivity in entrepreneurship and observed heterogeneity in firm-level economic performance: "the heterogeneity of economic performance among firms is posited to be, at least in part, a direct result of the heterogeneity of entrepreneurial beliefs and the heterogeneity of other resources and capabilities of firms, as well as the idiosyncratic deployment of these resources and capabilities" (p. 1189). Cooney and O'Connor (1996) studied perceived barriers to innovation in SMEs and found that owners/managers of many SMEs perceived the existence of many barriers to innovation. Whether such obstacles were real or merely perceived made little difference to the management and practices of these firms. Shaw and Darroch (2004) investigated barriers to internationalization as perceived by entrepreneurs. Their case studies revealed that exporters perceived the barriers to internationalization to be less important than the non-exporters, which they argue supported the findings of earlier studies that exporters and non-exporters perceive the barriers to internationalization to be different.

For the reasons discussed above, it is hypothesized that SMEs' perceptions of their resource availability and their actual involvement in public sector procurement are related. To investigate the influence of perceptions regarding different resources and obstacles, the first hypothesis is specified into five testable relationships (H1a–H1e), each of which will be examined separately for SME involvement in state and municipal purchases. These five specific resource perceptions are drawn from the literature discussed above, which identified the bidding process, large contract sizes and inadequate information as major obstacles for SMEs. In addition, IT capabilities, which will be discussed in more detail later, are added to this list.

H1a. SMEs considering their legal resources as a significant obstacle for public tendering processes are less likely to be public sector suppliers.

H1b. SMEs considering their lack of IT capabilities as a significant obstacle for public tendering processes are less likely to be public sector suppliers.

H1c. SMEs considering their administrative resources inadequate for public tendering processes are less likely to be public sector suppliers.

H1d. SMEs considering their supply capabilities inadequate for acting as the central purchasing unit's² contract supplier are less likely to be public sector suppliers.

H1e. SMEs considering that they do not receive adequate information on requests for tender (RFTs) are less likely to be public sector suppliers.

As Nooteboom (1993) noted, it is always a delicate matter to make general statements about SMEs, because their diversity may be their most important characteristic. In prior purchasing and supply management research, no distinctions have been made as to whether the resource problems mentioned are equally severe for SMEs of different sizes, i.e. micro-, small- or medium-sized firms. Levenburg (2005) has already demonstrated that among the population of small businesses, larger SMEs are likely to be better poised technology-wise than smaller ones, for example. Similar findings are presented on ERP adoption by Laukkanen et al. (2007), who consequently suggest that, instead of considering small- and medium-sized enterprises as one homogeneous group of smaller enterprises, differences between these two groups of companies should be acknowledged. It seems reasonable to assume that other factors may also vary by SME company size. Since micro firms with fewer than 10 employees often represent a major share of all businesses (e.g. in Finland 93% of all enterprises), an additional test is performed on their perceptions on resource limitations: whether micro enterprises (fewer than 10 employees) are more likely to consider the obstacles for SME involvement more significant and their resources less adequate than other SMEs (10–249 employees). This categorization to SMEs and micro firms has been used previously by e.g. Redondo and Fierro (2007). Hypothesis 2 has five sub-hypotheses because different types of resources were studied:

H2a. Micro enterprises are more likely to consider their lack of legal resources as a significant obstacle for public tendering processes than small- or medium-sized firms.

H2b. Micro enterprises are more likely to consider their lack of IT capabilities as a significant obstacle for public tendering processes than small- or medium-sized firms.

H2c. Micro enterprises are more likely to consider their administrative resources inadequate for public tendering processes than small- or medium-sized firms.

H2d. Micro enterprises are more likely to consider their supply capabilities inadequate for acting as central purchasing unit's contract supplier than small- or medium-sized firms.

H2e. Micro enterprises are more likely to consider that they do not receive adequate information on RFTs than small- or medium-sized firms.

2.2. SMES and electronic order processing and invoicing systems

According to Harland et al. (2007), governments are showing increasing interest in the adoption of e-business technologies.

² The central purchasing unit of the Finnish government clusters together the state's procurement volume and through competitive tendering establishes framework arrangements for procurement of products and services. The framework agreements of the central purchasing unit can be utilised by all state procurement units, such as ministries and ministerial offices, as well as state agencies and some publicly owned enterprises.

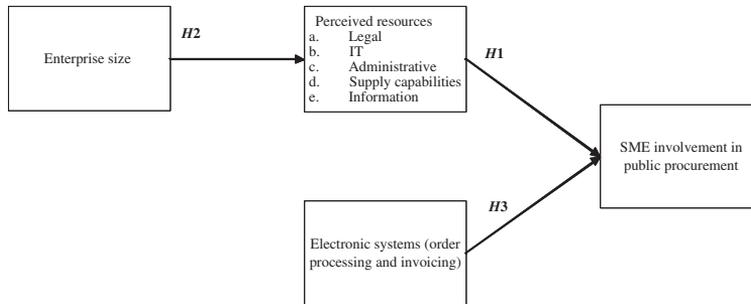


Fig. 1. Conceptual model.

Governmental purchasing parties are trying to improve their purchasing efficiency and lower their process costs through the use of different e-business tools especially for ordering and invoicing. E-business requirements, which are often required to even enter a bidding competition, may present additional obstacles for SMEs. Yet, it has not been studied if use of IT in ordering and invoicing affects SME involvement in the public sector (Zheng et al., 2006).

Grando and Belvedere (2006) claim that SMEs perform worse than large enterprises due to a lack of human and financial resources, which prevents them from adopting new technological solutions necessary to improve their overall performance. Small firms rarely have resources to train existing staff or hire technology skills in the marketplace, and they are too focused on short-term objectives to invest in long-term IT projects (Larson et al., 2005). Vaaland and Heide (2007) too point out the resource limitations of SMEs in implementing e-business and e-supply strategies. Also Smeltzer (2001) argued that SMEs are not similarly networked in e-commerce as large companies are. Stefansson (2002) presented findings from more than 20 case studies, which indicate that smaller companies may be permanently excluded from supply chains with high level of information integration for logistics operations. His results show that SMEs typically have only internal information systems, mainly to manage administration and production-oriented tasks, but that they lack advanced communication modules such as EDI (electronic data interchange), and they do not have the basic information technology to implement such tools. Their main communication methods are therefore telephone and fax. These manual information sharing methods are actually still quite common also in large companies (Auramo et al., 2005). These results are backed up by Beck and Weitzel (2005) who show that EDI solutions are still not more economical for exchange of business documents for SMEs than faxes. Overall, research shows little use of e-business tools in transactions between large customers and SME suppliers (Zheng et al., 2004). According to Zheng et al. (2004) SMEs themselves perceive the benefits of e-enablement as hard to identify or quantify, and therefore see little incentive to invest in IT. This creates an interesting tension between SMEs and, for example, public sector organizations because IT systems (e-procurement) are considered to help governments save money and provide more accountable, more effective and faster ways to manage procurement (e.g. Moon, 2005). Therefore, the relationship between electronic order processing and invoicing systems of SMEs and SMEs' involvement in public sector procurement (state units and municipalities separately) will be examined by testing Hypothesis 3.

H3. SMEs with electronic systems are more likely to currently be acting as suppliers to the public sector.

2.3. Conceptual model

Fig. 1 shows the conceptual model of this study consisting of the hypotheses defined above. It is assumed that the SMEs' perceptions of their own resources regarding legal expertise, IT systems, administration, supply capabilities and information on RFTs have an impact on the level of SME involvement in public procurement, i.e. procurement by state units and municipalities. Likewise, it is assumed that the extent of suppliers' electronic ordering and invoicing systems is associated with involvement in public procurement. In addition, it is hypothesized that enterprise size influences the SMEs' perceptions of their resources. These four constructs and their measurement are defined in detail in Section 3.

3. The survey

The role of SMEs in public procurement has previously been discussed primarily based on empirical evidence that has been collected through qualitative interviewing and case studies (Caldwell et al., 2005). In order to contribute to the existing literature this article takes the logical next step: based on prior research it specifies a conceptual model with probabilistic relationships which then calls for data collection via experiments or surveys (Hak and Dul, 2007). The survey method was chosen for investigating the perceptions of small- and medium-sized businesses supplying the public sector because experiments are not feasible. Zheng et al.'s (2006) review of empirical studies on SMEs and public procurement revealed that survey research has primarily investigated the buying side, and this further stresses the importance of this study.

3.1. Data collection

Empirical data required for testing the hypotheses were gathered with an electronic survey of Finnish SMEs with fewer than 250 employees during autumn 2006. The respondents were identified by the Federation of Finnish Enterprises (FFE), which has over 70,000 Finnish SMEs as its members. First, eight industries (printing and publishing, industrial machinery and equipment, electronic equipment and telecommunications, construction, wholesale and retail trade, transportation and warehousing, health and social services, and technical services and upkeep of the environment) were selected for the study. Then a sample of 5091 companies was drawn randomly from the database of the FFE in the chosen industries forming the population of the study. The selected SMEs were requested via email to answer the online survey available in Finnish. In an

accompanying letter, the respondents were motivated to answer the survey by promising that the results will be reported to organizations responsible for developing public procurement practices.

The survey instrument included questions with a continuous rating scale, multiple-choice and open-ended questions. Background information on the company size, turnover, location, type of product/service portfolio offered, service orientation and average value of deliveries were collected with multiple-choice and open-ended questions. The continuous rating scale questions addressed for example SMEs' perceptions of their resources in relation to public procurement and perceived benefits of supplying to the public sector from the perspective of both SMEs and

public sector organizations. Each respondent was also asked to specify their participation in tenders and their actual supply contracts with the public sector. Involvement with public procurement was queried for example by asking about SMEs' current and previous involvement in the purchases of municipalities, individual state units or the government's central purchasing unit.

Within the given response period in total 261 responses were received. A total of 58 responses were excluded due to a high number of missing answers. Thus, 203 usable responses were included in the testing, resulting in a 4.0 percent response rate. The low response rate can be explained by the length of the survey, relatively short time window for response (2 weeks) and the lack of a prior notice (e.g. via phone). Although the questions were asked in Finnish the answers to the open-ended questions were found to be of low quality (grammatical and typographical errors), especially from the micro firms. Hence it is reasonable to conclude that the low response rate may also be due to limited communication skills of the respondents.

Low response rates for surveys directed at SMEs are common. For example, both Levenburg (2005) and Wymer and Regan (2005) reported response rates below 10% in their studies, which examined e-business initiatives. Poon (2000) argued that for SMEs completing a survey is not seen as a value-adding activity, especially given that small business owners have little time for non-core activities. This suggests that non-response is not attributed to characteristics of the SMEs that might influence

Table 1
Background information of the respondents

Respondent's position	(%)	Respondent's work experience	(%)
Entrepreneur, owner, chairman of the board	32.5	Less than 5 years	16.3
CEO	51.7	5–9 years	17.2
Management	8.9	10–14 years	24.2
Operative personnel	6.9	15–19 years	16.7
		20–24 years	11.3
		25–29 years	6.9
		30 years or more	7.4

Table 2
Characteristics of the small- and medium-sized enterprises ($n = 203$)

Number of employees	(%)	Sales turnover (in euros)	(%)
Sole entrepreneur	24.1	Less than 49,999	8.4
2–3 employees	23.6	50,000–99,999	7.9
4–5 employees	18.7	100,000–199,999	16.7
6–9 employees	15.8	200,000–499,999	29.1
10–19 employees	8.9	500,000–999,999	10.3
20–49 employees	5.9	1,000,000–4,999,999	15.8
50–99 employees	2.0	More than 5 million	4.9
100–249 employees	1.0	Not available	6.9
Industry	(%)	Main operating province	(%)
Health and social services	20.7	Western Finland	23.2
Printing and publishing	14.3	Southern Finland	17.7
Transportation and warehousing	12.8	Eastern Finland	10.8
Construction	12.3	Oulu	2.5
Wholesale and retail trade	10.8	Åland	0.5
Technical and environmental services	10.8	Lapland	0.0
Industrial machinery and equipment	9.4	Entire country	15.8
Electronic equipment and telecommunications ^a	7.4	Not available	29.5
No answer	1.5		
Average value of delivery	(%)	% of service sales in turnover	(%)
Less than 50 €	7.4	Less than 10%	17.2
50–99 €	4.9	10–24%	9.9
100–249 €	11.8	25–49%	14.3
250–499 €	15.8	50–74%	9.3
500–999 €	17.7	75–100%	49.3
1000–2499 €	12.8		
2500–4999 €	9.4		
5000–9999 €	5.9		
10,000–24,999 €	4.9		
25,000–49,999 €	3.0		
50,000–99,999 €	2.5		
100,000 € or more	3.9		

^a Electronic and other electric equipment, telecommunications equipment, instruments and related products.

the results of our study and lead to non-response bias. In addition, the volume of answers (203) is sufficient for statistical testing.

3.2. Respondents

Most of the respondents hold an executive position (only 6.9 percent of respondents are operative personnel). It is reasonable to assume that they are well informed about past supply contracts since over 66 percent of them had worked for more than 10 years in the company (Table 1).

Overall, the sample represents the Finnish enterprises well when the number of employees is used as a measure. In the sample, most of the companies (82%) were micro enterprises with fewer than 10 employees, while 93% of all Finnish enterprises are micro-sized. Small companies (10–49 employees) represent 14.8% and medium-sized enterprises 3% of the sample, while they represent 5.7% and 1% of all Finnish enterprises, respectively. This means that the share of micro enterprises is slightly lower in the sample than in the entire population. It is reasonable to assume that this is caused by the length of the survey; employees of micro enterprises are less likely to have the time and resources to answer. Furthermore, the respondents are possibly more active than the non-respondents but likely the bias is not severe.

Information on the sales turnover, main operating province and the average value of a delivery is available in Table 2. There are responses from all eight industries included in the survey, but companies operating in the health and social services are more represented than expected, while industrial firms (industrial machinery and equipment and electronic equipment and telecommunications) each comprise less than 10 percent of the responses. The responding companies are service-focused; almost one-half of the companies receive more than 75 percent of their turnover from services sold.

4. Results

This section summarizes the results of statistical analyses testing the specified hypotheses. Instead of presenting findings on the influence of perceived resources on SME involvement in public procurement in general, it reports results separately for municipalities and the state sector. In Finland the state sector comprises the central purchasing unit and individual state units in different ministries. This division into municipalities and state has not been

specified in the hypotheses a priori because previous public procurement studies have not examined the possible differences.

4.1. Variables

The key variables of the conceptual model of this study are perceptions of resources, enterprise size, electronic systems for order processing and invoicing and SME involvement. Table 3 summarizes the variables that are used to form each of the concepts. It also indicates whether the continuous rating scale, when used, measured either significance (from none to high) or adequacy (from very poor to very good). Perceptions of resources for acting as a supplier to the public sector were measured with seven questions, one question for each of the following resources: legal resources, IT systems, administrative resources required for tendering, resources needed for acting as a supplier (i.e. whether they have adequate supply capacity during the contract period) and three questions about the availability of information on central purchasing unit's/state units'/municipalities' RFTs.

For the analysis, respondents are divided into two classes based on the number of employees. These two categories of enterprise size are micro enterprises (1–9 employees) and small/medium-sized firms (10–249 employees). E-systems are here defined as the availability of electronic order processing and invoicing systems. SMEs are considered to be involved in public procurement if they are currently supplying to the public sector or have recently been suppliers to municipalities, state units or the central procurement unit. Both contract-based and ad hoc supplies are considered, but it should be noted that the number of enterprises with supply contracts is currently relatively low.

4.2. Descriptive data

The descriptive statistics in Table 4 show that the SMEs themselves see the lack of IT systems as the least significant barriers and the lack of legal expertise is viewed on average as the most significant obstacle. What is more, information on public sectors' RFTs is not seen as adequate, supporting the argument of Fee et al. (2002) that lack of information is a key barrier to SME involvement. SMEs, however, seem relatively confident of their own resources being adequate to act as a contract supplier for the government's central purchasing unit.

The empirical data also gives some interesting results on SME involvement across different industries. Zheng et al. (2006) reported that relatively high SME involvement exists in defence

Table 3
Key concepts and their operationalization

Variable	Measure	Scale
Resource perceptions (in relation to acting as public sector supplier)	Lack of legal expertise required for tendering	Significance (1 none–5 high)
	Lack of IT systems	Significance (1 none–5 high)
	Lack of administrative resources required for tendering	Significance (1 none–5 high)
	Resources to act as central purchasing unit's contract supplier	Adequacy (1 very poor–5 very good)
	Information on central purchasing unit's requests for tenders	Adequacy (1 very poor–5 very good)
	Information on governmental units' requests for tenders	Adequacy (1 very poor–5 very good)
	Information on municipalities' requests for tenders	Adequacy (1 very poor–5 very good)
Enterprise size	Number of employees	Micro (1–9), small/medium (10–249)
Electronic order processing systems	Electronic ordering system	Yes/no
	Electronic invoicing system	Yes/no
SME involvement	Supplier relationship with municipalities	Yes/no
	Supplier relationship with state units	Yes/no
	Supplier relationship with Hansel	Yes/no

Table 4
Descriptive statistics on resource availability

Variable	Measure	Average	St. dev
Resource perceptions (in relation to acting as public sector supplier)	Lack of legal expertise required for public tendering processes	2.49	1.243
	Lack of IT systems	1.82	1.028
	Lack of administrative resources required	2.40	1.180
	Resources to act as central purchasing unit's contract supplier	3.06	1.209
	Information on central purchasing unit's requests for tenders	1.65	0.896
	Information on governmental units' requests for tenders	1.76	1.001
	Information on municipalities' requests for tenders	2.21	1.202

Table 5
Obstacles for acting as a supplier in public sector: state suppliers vs. other SMEs

Variable	State suppliers (n = 114)					Other SMEs (n = 72)				
	1 (%)	2 (%)	3 (%)	4 (%)	5 (%)	1 (%)	2 (%)	3 (%)	4 (%)	5 (%)
Lack of legal expertise required for public tendering processes**	29	29	28	11	3	24	26	17	18	15
Lack of IT systems	50	29	15	4	3	44	32	14	6	4
Lack of administrative resources required*	28	35	23	11	3	24	29	21	17	10
Resources to act as central purchasing unit's contract supplier [†]	13	11	32	27	17	17	22	38	19	4
Information on central purchasing unit's requests for tenders	54	29	12	3	2	60	18	19	3	0
Information on state units' requests for tenders	49	31	13	4	3	57	22	14	6	1

* $p < 0.05$, ** $p < 0.01$, [†] $p < 0.10$.

Table 6
Obstacles for acting as a supplier in public sector: municipal suppliers vs. other SMEs

Variable	Municipal suppliers (n = 142)					Other SMEs (n = 53)				
	1 (%)	2 (%)	3 (%)	4 (%)	5 (%)	1 (%)	2 (%)	3 (%)	4 (%)	5 (%)
Lack of legal expertise required for public tendering processes*	29	27	29	10	5	21	28	13	23	15
Lack of IT systems	52	28	14	3	3	42	32	17	8	2
Lack of administrative resources required**	31	35	22	8	4	15	25	25	26	9
Information on municipalities' requests for tenders [†]	31	27	18	19	5	51	23	21	4	2

* $p < 0.05$, ** $p < 0.01$, [†] $p < 0.10$.

and health-related activities, and that small businesses are more involved in selling to local government than to central government. The results here partly support their argument: involvement in municipal procurement is higher for SMEs offering health and social services (Pearson Chi square test, $p < 0.000$), but in state procurement the involvement of these SMEs is less than the statistically expected value ($p < 0.016$). Furthermore, the data show that certain industries such as construction, electronic and other electric equipment as well as health and social services have lower adoption of e-systems than the expected value ($p < 0.002$). It was also tested whether service orientation, which was measured with the share of service sales from company's total turnover, affects involvement of SMEs in public procurement. Based on the Pearson Chi square test, companies with a high service orientation are less likely to supply the state sector than companies with a low service orientation ($p < 0.02$). For municipal procurement statistically significant differences do not exist.

4.3. Hypothesis testing

4.3.1. Resource availability and SME involvement

It is hypothesized that an SME's perception of its resources influences its involvement in public sector procurement

(H1a–H1e). The Pearson Chi square test was used to test whether resource perceptions are independent of SME involvement in municipal and state procurement separately (Tables 5 and 6).³

The results show that perceptions regarding certain resources do indeed influence SME involvement in public procurement. More specifically, perceptions on lack of legal resources as a significant obstacle for public tendering processes appear to be related to both SME involvement in municipal procurement ($p < 0.05$) and state procurement ($p < 0.01$). Perceptions on the availability of adequate administrative resources for public tendering processes also influence SME involvement. This means that SMEs who consider their legal or administrative resources as a significant obstacle are less likely to be involved in public procurement. Furthermore, perceptions of supply capacity required for acting as a supplier in central purchasing unit's contracts, i.e. too large contract sizes, are not strongly associated with SME involvement (significant only with $p < 0.10$). Based on the results, all the SMEs, whether involved in public procurement or not, see lack of information on RFTs as an equally significant

³ Naturally, two variables, i.e. information on central purchasing unit's and state units' RFTs, are not tested as possible explanations for SME involvement in municipal procurement.

Table 7
ANOVA results on differences between micro- and small- and medium-sized enterprises in the perceived obstacles^a

Variable (scale 1–5)	Sig.	Size	n	Mean	St. dev
Lack of legal expertise required for tendering	0.002	Micro	164	2.62	1.23
		Small and medium	36	1.86	0.96
Lack of IT systems	0.106	Micro	164	1.89	1.07
		Small and medium	36	1.58	0.77
Lack of administrative resources required for tendering	0.019	Micro	164	2.49	1.19
		Small and medium	36	1.92	1.00
Lack of resources to act as CPU's contract supplier	0.021	Micro	164	2.95	1.23
		Small and medium	36	3.56	1.03
Lack of information on CPU's/ state units' RFTs	0.083	Micro	164	1.65	0.86
		Small and medium	36	2.00	1.01
Lack of information on municipalities' RFTs	0.043	Micro	164	2.12	1.18
		Small and medium	36	2.67	1.24

^a Only significant relationships are listed in the table.

Table 8
Relationship between electronic systems and involvement in public procurement

Supplier relationship		Electronic systems			
		Both (%)	Ordering (%)	Invoicing (%)	None (%)
With state units**	Yes (n = 109)	18	32	12	38
	No (n = 72)	8	28	1	63
Supplies to municipalities	Yes (n = 138)	17	30	8	45
	No (n = 52)	8	29	8	56

** $p < 0.01$.

problem. Based on the results it is concluded that Hypotheses 1a and 1c are supported,⁴ and other relationships (H1b, H1d and H1e) are not supported.

4.3.2. Enterprise size and SME involvement

The significance of variance of means according to company size (micro firms compared to SMEs) was tested with ANOVA. The results show statistically significant differences between the two groups of SMEs on three variables that measure their perceptions of resources for acting as a public sector supplier (Table 7): micro enterprises believe more strongly that they lack administrative resources as well as legal expertise required for tendering processes. In addition, micro enterprises feel that their capabilities are less adequate for acting as suppliers to the central purchasing unit. Thus, Hypotheses 2a, 2c and 2d are supported. Hypothesis 2e is supported only for SME involvement in municipal procurement, and Hypothesis 2b about the IT capabilities is rejected.

4.3.3. Influence of electronic systems on SME involvement

It is hypothesized that SMEs with e-systems (defined as the availability of electronic order processing and invoicing systems, which are common requirements of public sector customers) are more likely to be currently acting as suppliers to the public sector. The results (Pearson Chi square test) show that SMEs with e-systems are more likely to be involved in state procurement (Table 8). However, with involvement in municipalities' procurement, there is no statistically significant difference between SMEs with different levels of electronic systems (both order processing and invoicing, order processing only, invoicing only and none). Hence, Hypothesis 3 is supported with respect to involvement in state procurement, but not in municipal procurement.

⁴ Hypothesis 1a is supported with $p < 0.01$ for state procurement and $p < 0.05$ for municipal procurement. Hypothesis 1c is supported with $p < 0.05$ for state procurement and $p < 0.001$ for municipal procurement.

4.4. Discussion of results and limitations

The hypothesis testing was aimed at identifying whether the perceived availability of resources by the SMEs, enterprise size and e-systems explains the level of SME involvement. As summarized in Table 9, the data of this study provide at least partial support to all hypotheses:

- Perceived lack of legal and administrative resources for dealing with tenders are associated with lower SME involvement in both state and municipal procurements.
- The size of SMEs is also an influencing factor: micro enterprises feel more strongly that they lack administrative resources, legal expertise and supply capabilities required for contracts with the central purchasing unit. Enterprise size also affects how SMEs perceive information received on RFTs but only in relation to municipal procurement.
- The use of electronic systems in ordering and invoicing influences SME involvement in procurement of state units, those with e-systems are more likely to be involved.

The findings of this article are based on empirical data collected from Finnish SMEs. The respondents were selected from the 92,000 members of the FFE (approximately 40% of total number of Finnish enterprises including private entrepreneurs). Random sampling covered eight industries, selected because they are the most relevant ones for public procurement. The results however cannot be generalized to the entire population of small businesses in Finland, or in the EU. The short response time allowed for the survey and not sending reminders to the selected respondents are shortcomings of this study, but these are due to the fact that the FFE could not disclose the contact details of their members to the researchers. It is noteworthy that a relatively large portion of the respondents had supplied to public sector either as a contract supplier or ad hoc, and for this reason it would be

Table 9
Summary of the results

Hypothesis	State procurement	Municipal procurement
H1a: SMEs who consider their lack of legal resources as a significant obstacle for public tendering processes are less likely to be public sector suppliers	Support**	Support*
H1b: SMEs who consider their lack of IT capabilities as a significant obstacle for involvement in public procurement are less likely to be public sector suppliers	Not support	Not support
H1c: SMEs who consider their administrative resources inadequate for public tendering processes are less likely to be public sector suppliers	Support*	Support**
H1d: SMEs who consider their resources inadequate for acting as central purchasing unit's contract supplier are less likely to be public sector suppliers	Not support	Not support
H1e: SMEs who consider that they do not receive adequate information on requests for tender are less likely to be public sector suppliers	Not support	Not support
	Public procurement	
H2a: Micro enterprises are more likely to consider their legal resources as a significant obstacle for public tendering processes than small- or medium-sized firms	Support**	
H2b: Micro enterprises are more likely to consider their lack of IT capabilities as a significant obstacle for involvement in public procurement than small- or medium-sized firms	Not support	
H2c: Micro enterprises are more likely to consider their administrative resources inadequate for public tendering processes than small- or medium-sized firms	Support*	
H2d: Micro enterprises are more likely to consider their resources inadequate for acting as central purchasing unit's contract supplier than small- or medium-sized firms	Support*	
H2e: Micro enterprises are more likely to consider that they do not receive adequate information on requests for tender than small- or medium-sized firms	Partial support ^a	
	State procurement	Municipal procurement
H3: SMEs with e-systems are more likely to currently be acting as suppliers for the public sector	Support**	Not support

Notes: hypothesis is supported at * $p < 0.05$, hypothesis is supported at ** $p < 0.01$.
^a Support* regarding information on municipalities' tenders.

interesting to examine the type of supply relationship (e.g. sales volume, length of contractual relationship and frequency of purchases) and its impact on the perceived obstacles in more detail.

5. Conclusions

The EU procurement principles of transparency, equal treatment and genuine competition are to guarantee that companies of all sizes are given equal treatment in public procurement. Yet, it is unclear what the current position of SMEs is, and therefore this study has analyzed possible reasons explaining the absence of SMEs in public procurement. Specifically, this article contributes to the purchasing literature by presenting survey-based results concerning the involvement of SMEs in public procurement. Previous studies have mostly been case based or aimed at the buying side. Additional new knowledge is created by treating state and municipal sectors separately in the analysis.

Factors influencing SME involvement in public procurement have been largely discussed on a national level in several EU countries. This article contributes to this discussion as it used a systematic approach to examine the effect of selected factors on SME involvement in public procurement and provided empirical evidence on the issues. This study also supports and contributes to prior work in the field of entrepreneurship where relationships have been established between resource perceptions and actual firm operations and performance by finding similar results in relation to SME involvement in public procurement.

This article suggested a conceptual model, and the key results concern the assumed relationships between SME involvement and resource perceptions, electronic systems and enterprise size (micro vs. small/medium).

The results of this study have managerial implications as well. By recognizing the factors hindering SME involvement, all related parties i.e. SMEs, public procurement organizations and other state officials can better design appropriate countermeasures.

The results reveal that perceptions on the lack of legal expertise and administrative resources limit the involvement of SMEs in public procurement. This was also observed from the comments of respondents in which they explained that they do not have the time to specify product prices request-by-request and write offers to RFTs. Apart from not bundling purchases into unnecessarily large volumes, there is little that the buyers of public organizations can do to solve this dilemma. However, policymakers should actively look for alternative operating models allowing SMEs to prepare offers without significant financial risks. Moreover, actors in both municipalities and government organizations can provide training on various legislative aspects of public procurement. Design and use of standard documentation in the bidding process can also be considered.

The results of the influence of e-systems can be considered either positive or negative. Public organizations benefit from higher use of ordering and invoicing systems, which lower their total process costs. Yet, the requirements for e-systems can exclude small businesses with high potential in terms of innovativeness or other factors. Clearly, implementation of IT systems is primarily the responsibility of the SMEs themselves and an issue that managers in small companies need to consider. Public sector organizations should, however, still be actively involved in supporting and encouraging SMEs to develop their capabilities, for example, by offering expert knowledge on the choice of systems and by standardizing their systems so that one system is applicable to as many public sector clients as possible.

Information on RFTs is today available through official communication channels such as TED database. The results of the survey, however, imply that many SMEs either do not know how to access the information or do not have the resources required for checking the databases on a daily basis. Policymakers could encourage and support innovative approaches for identifying relevant RFTs for each enterprise. For example, a service provider could check the databases and send information on relevant RFTs to SMEs on daily basis for a reasonable service fee.

Alternatively, SMEs within an industry could form a network in order to share information and so spread the burden of searching for information.

5.1. Recommendations for further research

This article answers some of the questions posed in the research agenda of Zheng et al. (2006): sector-specific differences seem to exist but further studies are needed to confirm their existence. Therefore, a suggestion for researchers is to focus their attention on possible differences among different EU countries. EU law on public procurement applies to all countries equally and hence it would be interesting to see if SME involvement and satisfaction are higher in some countries than others. Secondly, public procurement in different types of public organizations could be examined. Knight et al. (2003) noted that public sector consists of many different types of players and hence researchers should avoid analyzing the public sector as a whole. This study has examined the differences between municipalities and state units including the central procurement unit. In future research more accurate division of units into, for example, departments, agencies and quasi-autonomous state units could be used to investigate differences in procurement practices in detail. This study investigated how the resources and characteristics of SMEs affect their access into public sector procurement. Further research could usefully examine the obstacles faced by SMEs during an ongoing contract with the public sector.

In addition to resource perceptions, some other factors such as experience, education, communication style and general business culture may affect SMEs' readiness, capabilities and willingness to participate in public procurement. For example, Levy et al. (2003) have concluded that management structures of SMEs are flatter and less bureaucratic than in large firms, which can lead to informal planning, communications and control procedures. Formalized process could, however, be considered necessities for public procurement, given the bureaucratic and formal structure of the tendering processes. It could be useful to examine the impact of these types of business culture characteristics on SME involvement in public procurement.

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Non-Compliant Work Behaviour in Purchasing: An Exploration of Reasons Behind Maverick Buying

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ABSTRACT. Many organisations, both public and private, have established framework agreements with selected suppliers to benefit from purchasing synergies. Compliance to such contracts throughout the organisation is crucial to achieve the expected benefits. Yet, in most organisations, the purchasing of goods and services is carried out not just by the purchasing department, but by many individuals dispersed throughout the organisation. Such a situation of scattered responsibilities can easily set the scene for different types of non-compliant behaviours in terms of an organisation's purchasing policies. Very little research has been conducted on non-compliant purchasing behaviour, also known as "maverick buying". In this article, we use a systematic literature review to identify different forms of maverick buying, ranging from unintentional maverick buying to straightforward sabotage. We validate these different forms of maverick buying and enrich our understanding of underlying reasons through a series of in-depth interviews with purchasing professionals. We bring forms and reasons together in a conceptual framework and propose avenues for future research.

KEY WORDS: maverick buying, deviant behaviour, non-compliance, contract compliance

ABBREVIATIONS: IT: information technology; MB: maverick buying; MRO: maintenance, repair and operations; OB: organisational behaviour; OMB: organisational misbehaviour; PSM: purchasing and supply management; TCO: total cost of ownership

Introduction

Non-compliant work behaviours can be costly problems for organisations. There is an increasing

interest among organisation scientists and practitioners in investigating the patterns of such behaviours, the motivational factors affecting such behaviours, and the consequences of such behaviours (Vardi, 2001). Deviant work behaviours have been researched in a variety of organisational contexts, although most research has focused on employees in customer service (e.g. Harris and Ogbonna, 2002, 2006; Mount et al., 2006). One area in which very little research on organisational misbehaviours and non-compliance has been conducted is purchasing and supply management. This is surprising, as Badenhorst (1994) points out that the purchasing environment in particular can create a climate promoting unethical behaviour. This is because in the purchasing process, the purchaser and the seller are in interaction with one another attempting to gain the greatest advantage for their company, and as all means may be used to gain an advantage. Sales representatives may have little concern for ethical behaviour and purchasers may be tempted to get some personal gain from a transaction. Dishonest people in purchasing are in a position to demand or to receive personal enrichment or other personal advantages in exchange for granting a purchasing contract or placing an order. Badenhorst (1994) lists these personal advantages to include e.g. gifts (both material and non-material), money in the form of kick-backs, and even bribes (cf. Millington et al., 2005). In addition, Badenhorst (1994) suggests that a purchaser may have an invested interest in a supplier, and the purchaser may place his own interests above those of his employer.

In those instances where ethical issues in purchasing have been investigated (e.g. Badenhorst,

1994; Cooper et al., 2000; Landeros and Plank, 1996; Razzaque and Hwee, 2002), these studies have mostly focused on the purchasing professional and the purchasing department. However, purchasing activities are, at least in most large organisations, carried out throughout the organisation, not just in the purchasing unit. This article investigates the phenomenon of “maverick buying”: employees, both purchasing and non-purchasing, who buy goods and services outside of established contracts or procedures.

Fuelled by a drive to reduce costs and increase purchasing efficiency in the face of increasing competitive pressures, many organisations are looking for ways to exploit purchasing synergies (Faes et al., 2000; Smart and Dudas, 2007). In particular, organisations have been moving towards centralised purchasing and corporate-wide framework agreements. Instead of each organisational unit deciding upon their own specifications, suppliers, and contractual agreements, corporate agreements are made with a selection of preferred suppliers. All units are expected to purchase their goods and services under such framework agreements. These strategies are intended to reduce the number of suppliers, increase purchasing leverage with the remaining suppliers, and reduce purchasing costs, both in product prices and in the purchasing process. However, the introduction of these corporate-wide contracts alone will not bring the expected benefits: contract compliance is crucial to achieve these. If purchases are not channelled through these contracts to the preferred suppliers with pre-specified terms, conditions and prices, the potential savings are likely not to materialise. In many organisations, the authority to order materials and services is decentralised and dispersed throughout the organisation. Lack of awareness of corporate contracts or deliberate disregard of corporate contracts may lead to contract compliance rates being far less than 100%.

Maverick buying can hurt the organisation in a number of ways. First of all, the purchase price of off-contract purchases usually is higher because corporate contracts are based on leveraging the total spend volume to obtain discounts from preferred suppliers. It is important to note that such discounts do not necessarily accrue to the unit which makes the purchase, but may be appropriated at the corporate level. Second, even if the purchase price of

the off-contract purchase is lower, the total cost (including all transaction costs for ordering, invoicing, and payment) is usually higher for off-contract purchases. Third, off-contract purchases lead to higher costs for the organisation as a whole because relationships with an unnecessary number of suppliers need to be managed. Fourth, off-contract purchasing may lead to promised volumes with preferred suppliers not being met. This could mean the agreed price discounts are not given and/or the supplier loses interest in the buying organisation as a customer of choice. Finally, off-contract purchasing may result in unnecessary risk exposure for the buying organisation, as terms and conditions (e.g. warranties) may not be properly reviewed. Still, some off-contract purchasing is unavoidable and even desired, as it is practically impossible to have corporate contracts covering each and every good or service required by an organisation.

Purchasing benchmark reports suggest that off-contract buying is commonplace. According to recent Aberdeen studies, the percentage of compliant transactions is 65% on average (Aberdeen, 2006a), and maverick buying in services is on average 24% (Aberdeen, 2003). Lonsdale and Watson (2005), investigating procurement at the National Health Service (NHS) in the UK, found maverick spend to be 50%, which was said to broadly match the national average. Clearly, maverick buying is a significant problem for organisations.

Surprisingly, however, very little research has been conducted on this type of off-contract buying. The objective in this study is thus to understand and describe the phenomenon, and develop a model of the different forms of and reasons for maverick buying behaviour. The explicit recognition of different forms of maverick buying will help guide future research into the ethical decision-making processes underlying this type of behaviour, and it will help develop measures to minimise this type of non-compliance. We use a systematic literature review approach to build a database of publications related to maverick buying. The database consists of literature on purchasing and supply management (PSM) and organisational behaviour (OB). Based on the literature review, five forms of maverick buying are identified, as well as reasons behind these different forms. These findings are validated and enriched using twelve in-depth, exploratory

interviews with purchasing professionals in a Finnish organisation where maverick buying is a significant problem. Finally, the findings are brought together in a framework and avenues for further research are proposed.

A systematic review of the literature

We used a systematic approach to build a database of relevant publications for our literature review. A systematic review begins with the identification of keywords and search strings, and the search strategy is reported in detail to ensure it can be replicated (Tranfield et al., 2003). Only studies that meet the inclusion criteria but do not manifest the exclusion criteria are incorporated into the review. Relevant sources are evaluated in more detail and from these some will be chosen for the systematic review. Finally, a synthesis of the studies is provided. Our review method was based on Pittaway et al. (2004) and consisted of the following steps:

- (1) Exploratory search as an orientation on the subject of maverick buying (MB). Very few scientific publications were found on the phenomenon itself.
- (2) The authors identified keywords on the subject based on the exploratory search and on their prior experience. Keywords included e.g. *maverick*, *compliance* and *off-contract*.
- (3) The keywords were combined into search strings. For example, the search string [off-contract AND procur*] was used to finding articles dealing with purchases done outside existing contracts. Altogether 30 search strings were created.
- (4) The search strings were used to search for relevant articles in two databases: Proquest and ScienceDirect. With the 30 search strings, a total of 1097 unique articles were found. The search strings and number of hits generated by each search string are reported in Appendix 1.
- (5) These 1097 articles were reviewed (based on title and/or abstract) by the first author according to criteria predetermined by all three authors, such as journal quality, article content (based on the title and/or abstract),

and publication type (e.g. book reviews were excluded). Based on these criteria, 1026 articles were rejected and 71 articles proceeded to the next stage.

- (6) The two authors not involved in the first evaluation stage independently reviewed the abstracts of the 71 articles, and judged whether the articles discussed either reasons for MB, consequences of MB, or remedies against MB. The first author compared the evaluations and made the final decision of inclusion/exclusion based on the three criteria mentioned above. In the end, 39 articles were selected for the literature review.
- (7) The 39 articles were reviewed to find answers to the following questions: How is MB defined in the literature? What reasons for the existence of MB are provided? Is MB related to certain product categories or contexts? What consequences of MB are mentioned? What remedies for lowering/minimising MB are suggested?

Definitions of maverick buying

Several rather similar definitions of maverick buying (MB) have been provided in the literature. Angeles and Nath (2007) define it as the purchase of goods or services without using the firm's formally defined processes and authorised vendors. Cox et al. (2005a) define MB as buying outside the contracts that have been set up, or buying that uses procedures not compatible with optimising value for money. Lonsdale and Watson (2005) define MB as the proportion of spend standing outside of any formal process and commercial rules of the organisation, while De Boer et al. (2002) define it as purchases done not using available company contracts. According to Hornyak (1999), maverick buying "occurs when employees circumvent corporate purchasing policies by buying materials outside authorised channels –at retail prices– from noncontracted suppliers" (p.25). MB is also referred to as nonconforming purchase behaviour (Roy, 2003) and non-compliant purchasing (Kulp et al., 2006). The latter suggest that full compliance means an approved item purchased from a contracted supplier at the contracted price using the approved

purchasing process. In this article, we define maverick buying as *the off-contract buying of goods and services for which an established procurement process is in place based on pre-negotiated contracts with selected suppliers*. Examples of MB behaviour include making hotel and flight bookings directly via the web when a frame agreement with a travel agent exists, ordering spare parts from a local distributor when a corporate contract with a national supplier is in place, or buying office supplies from the corner shop when an electronic ordering system with pre-negotiated catalogues is present.

Reasons for maverick buying behaviour

The second question we address in the systematic literature review is what reasons are forwarded for maverick buying behaviour to occur. We turn to the purchasing & supply management (PSM) literature first. As there are only a few scientific publications on maverick buying in particular, we extend this review of underlying reasons with literature on deviant work behaviours.

Kulp et al. (2006), in their case study of Glaxo-SmithKline (GSK), identified five causes of internal non-compliance. 1. *Use of nonpreferred suppliers resulting from personnel's desire to maintain relationships with established but unapproved suppliers*. As employees have established relationships with local suppliers, motivating them to buy from new suppliers can be difficult. Familiarity, inertia, and unwillingness to change were all suggested as causes for this type of non-compliance. 2. *Orders with unidentified suppliers*. In some instances, the purchasing function has not yet negotiated a contract with a supplier. 3. *Products not well suited for use*. Sometimes users disagree with the product specifications in the established framework agreement. 4. *New purchase situations*. These are situations where a unit quickly needs an item, which has not been used previously and for which a preferred supplier has not been designated yet. 5. *Lack of information*. This was identified as the primary cause at GSK. Lack of information and communicating company policies and contract details was particularly difficult for indirect materials and services, which are purchased by many people throughout the GSK organisation.

Cox et al. (2005b) suggested that MB can occur because other functions are often not competent in

procurement activities and unaware of the business and commercial risks involved. Cox et al. (2005a) have also raised internal clients' personal preferences for certain products and favourite suppliers as potential causes. Lonsdale and Watson (2005) suggest that non-compliance can be a result of personal taste, for example friendship with supplier staff, or it can be an informed decision regarding functionality-cost trade-offs. They also argued that conflicts between the purchasing department and internal clients can lead to MB. MB can be seen as an instance of the principal-agent problem. In their research they noted that employees fear they have to make most of the sacrifices, yet receive only few benefits from purchasing consolidation into corporate framework agreements. Local interests may loom larger than the corporate good, i.e. interests may not be aligned. Cox et al. (2005a) raised similar issues. According to them, individuals have different and conflicting preferences in the sourcing of products and services as a result of bounded rationality, functional cultures and the principal-agent problem.

Gelderman et al. (2006) investigated compliance to EU tendering directives in public procurement. Based on their review of the literature they found four potential reasons for non-compliance: the purchaser's (un)familiarity with the rules, the perceived inefficiency of following the rules, (the lack of) organisational incentives to comply, and the expected resistance and readiness of suppliers to take action in case of non-compliance. To this, we can add the expected readiness of management to take action in case of MB.

From the PSM literature, we identify the following reasons for MB: Lack of awareness of purchasing policy; desired product or service not (yet) covered by corporate contracts; lack of insight in the benefits of the corporate contract; perceived superiority of a local deal; personal preferences for certain products and favourite suppliers; favouring local interest over corporate interest; lack of incentives to comply; and expected repercussions from supply market or management in case of non-compliance. The first six are reasons for non-compliance to be favoured over compliance, while the latter two could help explain why a preference for a non-compliant solution actually translates into non-compliant behaviour. As maverick buying can be

viewed as a particular instance of deviant work behaviour, we will now turn to this literature to investigate further reasons for MB behaviour.

Reasons from the literature on deviant work behaviour

In the organisational behaviour (OB) literature, deviance refers to intentional behaviours that depart from organisational norms that threaten the well-being of an organisation, its members, or both (Spreitzer and Sonenshein, 2004). Other terms often used to denote equivalent behaviour are organisational misbehaviour, unconventional practices at work, non-compliant behaviour, antisocial behaviour, counterproductive behaviour, or sabotage (see e.g. Ambrose et al., 2002; Lau et al., 2003; Vardi, 2001). Marcus and Schuler (2004) state that all acts of counterproductive behaviour share the feature of violating the legitimate interests of an organisation by being potentially harmful to its members or to the organisation as a whole and that this definition requires three conditions. First, the instance must be a volitional act, not mere bad luck. Second, the behaviour must be potentially and predictably harmful although it does not necessarily lead to an undesirable outcome. Thirdly it must run counter to legitimate interests but not be outweighed by potential benefits that are also legitimate. MB would fit the definition of deviant behaviour, as it is a volitional act, is potentially harmful to the organisation (as it typically leads to increased purchasing costs and lost purchasing leverage), and the potential benefits (such as a product acquired faster from a local supplier), most likely do not outweigh the legitimate interests of the organisation in terms of compliant purchasing.

Deviance is typically specified as negative, but Spreitzer and Sonenshein (2004) expand the theory to include positive behaviours: positive deviance being defined as intentional behaviours that depart from the norms of a referent group in honourable ways. They emphasise that positive deviance focuses on behaviours with honourable intentions, independent of outcomes: positive intentions do not always result in positive outcomes. Maverick buying could be seen to fit under the definition of positive deviance as well; employees engaging in MB might have positive intentions such as believing that they

are saving money by buying a low-priced product from an unapproved supplier, failing, however, to see the impact of such a purchase on the total cost of ownership (TCO) for the organisation.

Another concept closely related to MB is that of workforce resistance, described by Ferneley and Sobreperez (2006) as the negative behaviour of system users that may prevent system designers achieving their objectives, or affect the success of system implementation. In the case of MB, the system would be the purchasing process and the contracts in place. Ferneley and Sobreperez (2006) present categories of resistance and workarounds (defined as informal temporary practices for handling exceptions to workflow) ensuing from that resistance. They divide resistance into negative, where the rationale is to oppose or to deceive and positive, where it is to support or improve. MB could be seen as either; it could be to oppose the centralisation of purchasing or it could be intended to improve purchasing performance (at least in the eyes of the maverick buyer) in terms of e.g. price or quality. Ferneley and Sobreperez (2006) introduced three categories of workarounds ensuing from resistance: (1) hindrance, which is undertaken to circumvent system procedures or process perceived to be too time consuming, onerous or difficult, (2) harmless, which occur when the users do not use the system in the prescribed manner but still achieve the desired outcome, and (3) essential, where the workaround is needed to complete the task at hand. Given the situation, MB could be seen as any of these workarounds: (1) hindrance, if the process required to purchase from an approved supplier is seen as too burdensome, (2) harmless, if the employee is unaware of the correct process, but manages to buy from the preferred supplier against the correct conditions, and (3) essential, if a negotiated contract does not exist for the item required by the employee.

While these workarounds represent relatively innocent forms of resistance against corporate procedures, the sabotage literature suggests additional motives for more malevolent deviance: powerlessness, frustration, facilitation of work, boredom/fun, and injustice (Ambrose et al., 2002). All these motives can be seen as additional causes for MB. Powerlessness stems from lack of freedom or autonomy; sabotage resulting from it is an effort to attain control for its own sake (Ambrose et al.,

2002). In regard to MB, employees might not want to relinquish power to the purchasing function. Organisational frustration is the interference with goal attainment or maintenance (Ambrose et al., 2002). Users may perceive that the item specifications set by purchasing are not compatible with their needs. Facilitation of work occurs when the goal is to make the activity easier to accomplish (Ambrose et al., 2002). In relation to MB, employees might engage in it because it is perceived to be easier to buy products from any available vendor than to find out the correct company procedures. Boredom/fun is identified as the motive for sabotage when the primary goal is to cut boredom, generate excitement, or have fun (Ambrose et al., 2002). General attitudes towards shopping being fun can thus lead to maverick buying behaviour, as employees would rather search for the best deals themselves than delegate it to the purchasing function. Injustice refers to an employee's belief that he or she has been treated unfairly (Ambrose et al., 2002). Perhaps employees engaging in MB feel that their opinions and feelings (or perhaps those of the incumbent supplier) were not adequately taken into consideration in the process of purchasing centralisation and supplier selection.

Frame agreements with preferred suppliers and purchasing centralisation may represent a significant change in organisations, suggesting that reasons for MB could stem from general resistance to change. Although no studies were found on resistance to purchasing contracts, Harris (2002) has investigated sabotage in resistance to market-oriented culture change. He has made several propositions of the drivers of this type of sabotage. First, he proposed that the greater the perception that the change initiatives are politically motivated as an attempt to undermine the authority or status of other departments, the greater the likelihood that executives and managers will sabotage, tacitly co-operate in resistance to, obstruct, or otherwise deride the change. His second rationale for opposing argues that such change should be resisted since it negatively affects the resources available to particular departments. His third proposition relies on prioritisation-based rationales for resisting change; the focus is on the belief that although the change may be ultimately worthwhile in the long-term, other more pressing objectives should be given a higher priority

in the short-term. This argumentation could be adapted to give reasons for MB as a form of resistance to change: introduction of pre-negotiated contracts with selected suppliers can be perceived as reducing the purchasing authority of individuals, the introduction of pre-negotiated contracts can be seen as a way to cut a unit's purchasing budget, and employees may perceive that the need to get a certain product or service quickly supersedes the need of the organisation to achieve volume discounts by negotiating a contract for the whole organisation.

Reasons for maverick buying may also be linked to the individual and his/her situational context. Mount et al. (2006) suggest that those more dissatisfied in their work will engage in more deviance. Liao et al. (2004) concluded that employees less committed to the organisation may feel less obliged to abide by norms and are more likely to engage in deviance directed against the organisation. Social learning theory proposes that deviant role models in an organisation will influence others in the group to commit acts of deviance (Appelbaum and Shapiro, 2006). Also Wimbush and Shepard (1994) argue that supervisors' behaviour provides the model for how subordinates should act in the organisation. Supervisors formulate the source for workers' perceptions about ethics and are an important link in the organisation at each organisational level, disseminating top management's organisational policies to subordinates. Wimbush and Shepard (1994) thus argue that supervisors determine whether organisational policies are perceived similarly throughout the organisation. This would suggest that MB in different organisational units could also be influenced by the behaviour and opinions of those units managers: if managers see it as important that pre-negotiated purchasing contracts are complied with, employees are more likely to act accordingly, and vice versa, if managers do not see the benefit and/or reason in contract compliance, employees will more freely engage in MB.

Organisational factors such as norms, values, culture, socialisation, ethical climate, built-in opportunity and reward and control systems have also been emphasised as contributing to employee misconduct at work (Vardi, 2001). According to Wimbush and Shepard (1994) there is a substantial relationship between climate and behaviour; previous research has established that organisational climate may be

a significant factor in shaping employee behaviour. They also suggest that the ethical climate of an organisation could be used to predict not only unethical behaviour, but counterproductive behaviour as well. Badenhorst (1994) points out that the purchasing environment creates a climate promoting unethical behaviour. This is because in the purchasing process, the purchaser and the seller are in interaction with one another attempting to gain the greatest advantage for their company, and as all means are used to gain an advantage. Sales representatives have little concern for ethical behaviour and purchasers are tempted to get some personal gain from a transaction. This would suggest that the temptations created by the purchasing environment could lead to MB.

All in all, the PSM and OB literatures provide a multitude of possible reasons for MB to occur. The reasons range from very rational (i.e. no contract available, no knowledge of a contract, product not suitable for use) to highly emotional (i.e. established relations with another supplier, feelings of injustice). Rational reasons are generally associated with positive deviance, while emotional ones are associated with negative deviance.

MB in relation to certain products and contexts

In the PSM literature, MB is most often associated with the procurement of indirect materials in general, and maintenance, repair and operations (MRO) items in particular (e.g. Cox et al., 2005b; Cuganesan and Lee, 2006; De Boer et al., 2002; Kulp et al., 2006; Michaelides et al., 2003). The procurement of MRO is typically characterised by a high number of transactions of relatively low value and research has shown that MB on average accounts for 30% of all MRO expenditures (Michaelides et al., 2003). Other product categories specifically mentioned in relation to MB were office supplies and hotel contracts (Kulp et al., 2006) as well as stationery, travel, printing, and IT hardware and software (Cuganesan and Lee, 2006). Reasons as to why these items particularly suffered from MB were the following: manual, paper-based procedures prevail in their procurement (Puschmann and Alt, 2005), they receive little attention, they are seen as unimportant, inconvenient and mundane

(Cuganesan and Lee, 2006; Puschmann and Alt, 2005), there is a lack of procurement function involvement (Cox et al., 2005b), and line personnel is unaware of contracts and preferred suppliers (Cuganesan and Lee, 2006).

Not that many other special contexts have been suggested in relation to MB. Angeles and Nath (2007) suggest that lack of spend visibility makes it more difficult to ensure compliance with contracts. Also, Kulp et al. (2006) point out that as organisations increase in size, complexity, and staff, they have more difficulty tracking and enforcing compliance and that small companies typically find it easier to track and achieve contract-compliance. In sum, the literature suggests that MB is more prevalent for indirect products than for direct products, in organisations where spend visibility is lower, and in larger rather than smaller organisations.

Consequences of maverick buying

In the literature, MB is mainly seen to have only negative consequences, which can be divided into two categories: increased purchasing costs and reduced purchasing leverage. Maverick buying is claimed to lead to increased purchasing costs because it affects both the actual purchasing prices as well as the purchasing process costs. Cox et al. (2005a) suggest that the maverick buyer is unlikely to have access to the requisite supply market information and will not possess the necessary competence in contracting and negotiating. This, along with the use of non-approved suppliers will result in higher prices for the organisation (Cox et al., 2005a; Cuganesan and Lee, 2006). Excessive fragmentation can also inflate transaction costs; each separate transaction is of limited value and the organisation has to establish and execute trading relations with an unnecessarily large number of suppliers (Cox et al., 2005a; Lonsdale and Watson, 2005). Non-conforming purchases also force the organisations to make exceptions resulting in added paperwork and thus increased process costs (Roy, 2003). Some estimates of these cost increases have been given, for example Angeles and Nath (2007) suggest MB raises procurement costs for a firm by as much as 20% compared to purchases negotiated by the firm's purchasing professionals. Kulp et al. (2006)

estimated that the pharmaceutical company GSK lost between \$80 and \$120 million dollars of procurement savings because of non-compliance; that is about 20–30% of unrealised cost savings. According to Aberdeen (2006a), the average savings of compliant transactions is 22% compared to non-compliant purchases. In fact it is not only the buying side who will suffer financially from MB, a seller having agreed to lower prices for higher volumes would post losses on customers with excessive maverick purchases (Roy, 2003).

The fragmentation of spend due to MB will reduce an organisation's purchasing leverage: it undermines their ability to negotiate favourable price and service levels with suppliers (Cuganesan and Lee, 2006), and it reduces the ability to capitalise on true market position and potential buying power (Cox et al., 2005a). The attractiveness of the buyer to the supplier is significantly reduced (Cox et al., 2005a) as fragmentation of spend due to MB can lead to an organisation providing neither a high volume of demand nor an account that is easy to service, which can lead to the organisation being seen by suppliers as a 'nuisance customer' (Lonsdale and Watson, 2005). Corporate purchasing could lose credibility with suppliers who would have lower incentives to go through the effort or make the commitment of becoming an approved supplier, when expected volumes are not realised (Roy, 2003).

Remedies against maverick buying behaviour

By far, the most often mentioned remedy for MB is the implementation of electronic procurement (e.g. Angeles and Nath, 2007; Cox et al., 2005b; Croom and Brandon-Jones, 2005; Cuganesan and Lee, 2006; de Boer et al., 2002; Hornyak, 1999; Michaelides et al., 2003; Puschmann and Alt, 2005). Michaelides et al. (2003) argue that the migration from traditional methods of supply and replenishment to Internet-enabled portal applications is a way forward in realizing many benefits which in the past have challenged purchasing organisations, and one of such challenges is minimising MB. Reduction of maverick buying through e-procurement has also been documented to bring substantial savings. De Boer et al. (2002) refer to a large Dutch

transportation company, which implemented e-MRO and the ensuing reduction of maverick buying created approximate savings of 5 million euros per year. Cuganesan and Lee (2006), though not estimating any actual savings, argued in their research that introduction of e-procurement reduced maverick spend between 30 and 40% in relation to corresponding products and services. An Aberdeen (2006b) research report indicated that percentage of maverick spend reduced on average from 40 to 25% with e-procurement. E-procurement is beneficial in increasing spend visibility to detect maverick spend (Cuganesan and Lee, 2006). Another benefit of e-procurement is making compliant purchases easy for the user. According to Angeles and Nath (2007), MB could be eliminated by presenting end users with a highly efficient and easy-to-use e-procurement system that will lure them away from old purchasing habits. Also, Michaelides et al. (2003) point to the "one-stop" nature of e-procurement as an effective way to reduce MB. Hornyak (1999) suggests that with e-procurement, high levels of purchasing controls and service to employees can co-exist harmoniously.

However, according to Angeles and Nath (2007), elimination of MB even after an e-procurement solution has been implemented is difficult. They suggest that selling the benefits of new e-procurement systems to users, making them accountable for savings they purport to achieve in alignment with corporate cost savings targets, and demonstrating how e-procurement systems will help them reach such targets through intensive training and educational programmes appear to be the best solutions. Croom and Brandon-Jones (2007) find that the extent to which users are provided with support for e-procurement appears to decrease maverick spending. It is not just that e-procurement is needed to eliminate or reduce MB; reduction or elimination of MB is critical to the achievement of cost and efficiency gains from electronic procurement (Croom and Brandon-Jones, 2005), which suggests that internal customer satisfaction should be a key concern in implementing e-procurement.

Purchasing cards are another suggestion for reducing MB. Palmer et al. (1996) argued that proper planning and implementation of a card programme can control MB tendencies. Cox et al. (2005b) argued that to effectively influence internal consolidation opportunities and to reduce MB,

the development of internal indirect sourcing competence would normally require the procurement function to have some direct involvement in the design and specification process. According to recent Aberdeen research (2007), spend analysis is an effective tool for improving contract compliance, as the improvement in spend visibility gives managers knowledge of the on- and off-contract buys taking place. Spend analysis is claimed to establish a way of auditing buying behaviour to detect MB. According to the study, the average improvement in compliance with negotiated contracts was 33%. Kulp et al. (2006) proposed a three-phase process for solving problems of non-compliance: gathering data, identifying causes of non-compliance, and designing control systems to ensure compliance.

The above remedies for MB as forwarded in the PSM literature are mostly technical solutions. These solutions can make it easier to guide employees to existing contracts and pre-negotiated catalogues. They can make compliant purchasing less burdensome. They also increase spend visibility enabling management to control maverick buying. However, such technical solutions do not take away more emotional reasons, such as feelings of injustice and powerlessness, or the perception that a better deal can be achieved outside the corporate framework agreement. The OB literature points to other remedies against MB, such as involvement of contract users in the change process (Ambrose et al., 2002), exemplary leadership behaviour (Appelbaum and Shapiro, 2006; Wimbush and Shepard, 1994), ethical climate (Vardi, 2001; Wimbush and Shepard, 1994), and incentive systems (Vardi, 2001).

Five forms of maverick buying behaviour

Based on the literature review, we have identified five different forms of maverick buying as well as reasons behind these different forms. These five forms are: unintentional MB, forced MB, casual MB, well-intentioned MB and ill-intentioned MB. The reasons behind these forms stem from lack of awareness, ability and motivation on the employees part. These are typically caused by personal experiences or organisational factors.

Unintentional MB occurs when employees do not know there is a frame agreement in place, i.e. they

are engaging in off-contract buying without realising it. This type of MB is not due to some motivation on the employees' part, as the employees are unaware of the correct procedure (cf. Cuganesan and Lee, 2006). Due to unfamiliarity with corporate purchasing policies or lack of internal information provision about negotiated contracts, employees inadvertently buy off-contract. As there is no intention to harm the organisation, this type of behaviour cannot be classified as deviant, although it is still non-compliant. Kulp et al. (2006) identified this as the most common form of MB at GSK.

Forced MB occurs when employees are aware of the preferred process, but encounter barriers to comply with that preferred process. Again, it is not due to employee motivations; there are practical reasons preventing compliance. The item being purchased might not be contracted yet, due to it being a new item, or the contract is not yet available for use (cf. Kulp et al., 2006). An emergency situation may call for a workaround (Ferneley and Sobreperez, 2006), such as an immediate purchase from a local supplier when the contracted supplier is not able to deliver in time. Problems encountered with a new purchasing routine (e.g. e-procurement) as a consequence of inadequate training and/or support can also lead to employees being forced to non-compliance (cf. Croom and Brandon-Jones, 2007).

Casual MB describes the situation when employees are aware of the preferred process, but continue to do as they please. There is no intention to harm the company, but employee behaviour is simply driven by self-interest. The employee may not feel a need to change old purchasing habits, because management is not guiding towards the preferred purchasing processes, the employee does not see the total cost of ownership effect of not complying with set procedures, or there are no organisational incentives to push towards using the preferred process and suppliers (cf. Cox et al., 2005a; Gelderman et al., 2006). Within the overall framework of organisational misbehaviour (OMB) of Vardi and Wiener (1996), this would be OMB Type S: misbehaviour that intends to benefit the self.

Well-intentioned MB occurs when employees are aware of the preferred process, the item is available from a contracted supplier, but they still think it is in the best interest of the company to ignore

the preferred process (cf. Lonsdale and Watson, 2005). This is related to positive deviance introduced by Spreitzer and Sonenshein (2004). The reasons for this form of MB are twofold: perceived superiority of an alternative offer (in terms of price, service, delivery or compatibility) or perceived superiority of own purchasing skills (as opposed to the skills of those who have negotiated the existing contracts). This can stem from e.g. lack of insight in TCO, employees' product knowledge or a lack of convincing use cases. In terms of Vardi and Wiener (1996), this would be OMB Type O: misbehaviour that intends to benefit the organisation.

Ill-intentioned MB occurs when employees are aware of preferred process and able to use it, but actively oppose this new process. These are instances of negative deviance (Spreitzer and Sonenshein, 2004). Two motivations can lead to this type of deviance. The first is opportunism, i.e. self interest seeking with guile. Incompatible incentives may lead to a situation where using the preferred process and existing contracts is not in the best interest of employees or of the unit they work for (cf. Cox et al., 2005a). Resistance to change is the second motivation (cf. Harris, 2002): employees may feel that pre-negotiated contracts reduce their personal power in terms of purchasing decisions, they may feel they were not sufficiently involved in the contracting process, or there may be feelings of injustice towards oneself or to a non-contracted supplier (cf. Ambrose et al., 2002). In terms of the Vardi and Wiener (1996) framework, this type of maverick buying would be OMB Type D: misbehaviour that intends to inflict damage.

We use a series of in-depth interviews to validate these five forms of MB and to identify additional reasons for these different forms of MB to occur.

Interview method and sample

In-depth interviews were conducted with people who have experience with the MB phenomenon. All twelve interviewees were representatives of the Finnish Government. We chose this context as the State of Finland has moved to using government-wide framework agreements in selected products and services. The objective of this centralisation was to gain savings by reducing overlapping tendering

processes and utilising the large volumes of state purchases. Framework agreements are negotiated by a central procurement unit which is a private company fully owned by the State. All frame agreements tendered by this in-house unit can be utilised by all the State's procurement units, such as ministries and ministerial offices, as well as State agencies and publicly owned enterprises. The government has always expressed that use of these contracts is both desired and expected. In late 2006, national legislation was also passed obliging all units to use contracts tendered by the central unit in their purchases of certain products such as office supplies and equipment, computers, vehicles, travel services and occupational health. Despite these facts, the contracts have, however, been estimated to have a usage rate of only 20–80% of the potential in the different categories. Off-contract purchasing can thus be seen as a pressing issue in the state context.

We interviewed two representatives of the central procurement unit and ten representatives of units eligible to use its contracts. All ten users had purchasing responsibilities within their respective units, and most of them held management positions. For reasons of confidentiality, we do not report names or positions of respondents. The interviews were semi-structured. This enabled the interviewer to pursue interesting comments and themes in more detail as they emerged during the interview. Average duration of interviews was one hour. All the interviews were taped and transcribed. These transcripts were then coded and analyzed using QSR Nvivo 2.0. The codes were based on the motivations and reasons for the different forms of maverick buying. As themes from the framework or other, new, themes related to MB emerged in the interview transcript, nodes for those themes were created in Nvivo, and these nodes were used to code the corresponding section in the transcript. Nodes representing motivations and reasons were thus not created in advance but as they emerged in the analysis of the transcripts. All such nodes were created during the analysis of the first six interviews. By this time, all the themes had emerged. In the last six interviews, coding was done using the already created nodes, meaning they only repeated or enriched the themes. This is a strong indication that theoretical saturation was achieved within this set of twelve interviews (Eisenhardt, 1989b).

Interview findings

Unintentional MB

Lack of awareness regarding either the correct purchasing processes or the contracts were among the most often mentioned explanations for MB (nine and eight times, respectively). The interviewees talked about the difficulty of getting information through to the buyers in large, decentralised organisations and also about people's reluctance to receive the information. Lack of purchasing leadership specifically emerged as a reason for why people are not aware of the correct processes and contracts:

I do not want to speak ill of colleagues...but somehow I have been left with the impression, [...], that in many places there is still this traditional buying, not purchasing management. So when we get from buying around to purchasing management, a lot will change. (R3)

If you look at those ministries that have a high usage rate, they are those ministries that see purchasing as important. So it starts from the top, directly from there. Where it is centralized and they actually execute purchasing professionally. (R6)

Forced MB

The interviewees mentioned several situations where users were forced to go outside of existing contracts. One example is new items that have not been contracted yet. Another is lack of capacity at the contracted supplier. Problems with using the new centralised ordering process were also touched upon by two respondents.

And [the central procurement unit] cannot tender framework agreements to be ready for use, if it is not known what is wanted. And then if they do not have it, and you have to get it somewhere, then it leads to a certain outcome: do the tendering process yourself. (R3)

Well for example if we are booking a meeting package, and we get the request from management that they want a certain place which is not part of [the central unit's contracts]...or then that there simply is no room left, depending on the time we are booking

it...there is not always room so we have to go somewhere else. (R10)

Casual MB

Casual MB was used to describe the situation when employees are aware of preferred process, but buy both within and outside contracts, whichever serves them best. This most often arises from not wanting to change old habits, in a context where this is tolerated by the organisation. Having no urge to change old habits was mentioned altogether thirteen times by the respondents. Different reasons were touched upon by the interviewees, but perhaps most prominently this was connected to lack of purchasing leadership.

Human nature is such that everything new if you try to implement, for a while they keep asking what for? We have done this for tens of years, why suddenly change it. (R12)

But they are a bit... we have communicated these things to them...but people forget things, e-mails get deleted...that sort of thing [...]... if they wanted, they would find the information... (R6)

Well first of all that the management makes a clear strategic decision: we are part of the government, and there is this service, it is assumed that this is the path. If you wait for these buyers, who actually do the job to start using [the central procurement unit's contracts], it might never happen. And it would probably come with people retiring or changing. (R10)

Well-intentioned MB

Well-intentioned MB occurs when employees perceive an alternative offer to be superior to contracted terms, or think their own buying and negotiating skills are better than those of the central procurement unit. Both reasons were validated in the interviews. Lack of insight in TCO was the single most mentioned underlying reason (mentioned altogether sixteen times), and this was seen to cause users to (falsely) perceive an alternative offer to be better. The interviewees also gave specific examples related to certain product categories.

And then there is the fact that people who buy, they do not recognize the purchasing costs, the work, their own work. (R10)

Yes, especially in the buyer level, they look more at the price tag, they do not think about the total cost of ownership. They just look at the price of an individual item, and nothing else matters. They justify it by saying they could get it cheaper from the store next door. (R7)

The biggest thing is that they have been comparing products and services, and they are not comparable. They have not taken into consideration that our workstations for example have an on-site guarantee of three years. They just look at the price of the workstations. They are not comparable. (R6)

And then they forget the contract terms. They can be something completely different. So the products being compared are not commensurable. Flights for example, the sooner you can book it and all, it is cheaper. And a little later, the plane is almost full and it is more expensive. And then with low cost airlines, you cannot cancel. Or if you change it, it is costly. And then if you compare it to our contract that has these options, then of course the price is different. (R7)

Perceived superiority of own buying skills emerged as a theme in the interviews as well. This was seen as both stemming from the positive attitude towards shopping as well as buyers' previous perception of their own purchasing skills:

I guess we all think we are excellent buyers, businessmen... so I guess there is that belief that we know what is best for us, for some it is stronger, for some it is weaker. (R4)

If it is a very important, fine thing you are buying you prefer to do it yourself, especially if you already have experience from it, or it gives you glory or something. (R7)

Ill-intentioned MB

Based on the literature, two main motivations were identified for ill-intentioned MB. These themes emerged in the interviews as well. Opportunism, stemming from incompatible incentives, either on a personal or unit level, seemed to be the most often cited reason.

But then there are of course also those situations, where an organization joins the framework but then they do not buy accordingly. So they can...how should I put it... they sort of get a permit, this has been tendered and looks good on paper but then you can do whatever you want. (R7)

Maybe on a smaller scale if you talk about this sabotage type behaviour, buying intentionally...I think it is more of the situation that when you have the contacts to the suppliers, you have long history and all, then related to that is some sort of treatment, it is nice to get the wine bottle at Christmas and all. (R6)

Lack of trust emerged as a contributing factor to MB, and it was in this case mostly directed towards the central purchasing unit, not to a specific contract or supplier. This is understandable in the interview context of the State of Finland. The central governmental unit previously operated with a different business model, which resulted in an unacceptably high cost structure. There is still distrust related to that previous business model.

And then they do not trust [the central procurement unit]. It has had these many development phases...the mid-90's wholesale business concept, it was the wrong concept for them. (R10)

Resistance to change was also speculated to be one reason among the interviewees. In their context this resistance appeared to be deriving mainly from loss of power and lack of involvement in the process. A feeling of injustice towards oneself was also something that the interviewees touched upon. There was talk of people being hurt or insulted if they lose their say in the process.

But this is the pain, I know that if I say to this IT-person, whom I know very well, that let's do it like this, forget what you suggested, he will be insulted, that I did not believe his expertise even though he knows better. So I do not know which solution is more expensive. (R1)

A feeling of injustice towards a former supplier was also named as one cause leading to ill-intentioned MB. With the government, the feeling of injustice towards suppliers most often stems from arguments supporting the involvement of local suppliers.

And then there is the local view, which...If you are buying in [a city in Eastern Finland], then the people working there are local and they have solidarity towards their own area. When the government talks a lot about area politics, then it is a bit crazy if you are trying to keep the countryside populated and at the same time you are making contracts that force people to buy from companies that have their headquarters or all their offices in Helsinki. (R5)

Ill-intentioned MB is a sensitive topic, and it was rarely directly addressed by interviewees. The above quotes show however that respondents acknowledge it may exist and what the underlying reasons could be.

A framework of forms and reasons

We identified five different forms of MB from the literature, and all five forms were validated in the interviews. The interviews also validated and enriched the reasons underlying these forms of MB. We bring forms and reasons together in a conceptual framework (See Figure 1). The total percentage of MB is a result of the five

forms. Unintentional MB is caused by lack of contract and/or process awareness, forced MB is caused by lack of ability to use existing process or contracts, casual MB is caused by self-interest which goes unchecked by the organisation, well-intentioned MB is caused by perceived superiority of alternatives or of own skills, and ill-intentioned MB is caused by opportunism or resistance to change.

The identification of five different forms of maverick buying and their underlying reasons is helpful to practitioners in a number of ways. First, it helps break down the overall percentage of non-compliant spend into different types of non-compliance. Second, it can aid practitioners in looking for underlying causal mechanisms behind non-compliant spend. Third, it can help them to design mechanisms to reduce off-contract buying. Unintentional MB could best be reduced by creating awareness of contracts among potential users. Strong purchasing leadership is needed here. A tool like e-contract management can also help by making contracts digitally available to users. Managers will have to accept that there will always be forced MB to some extent, as new purchase

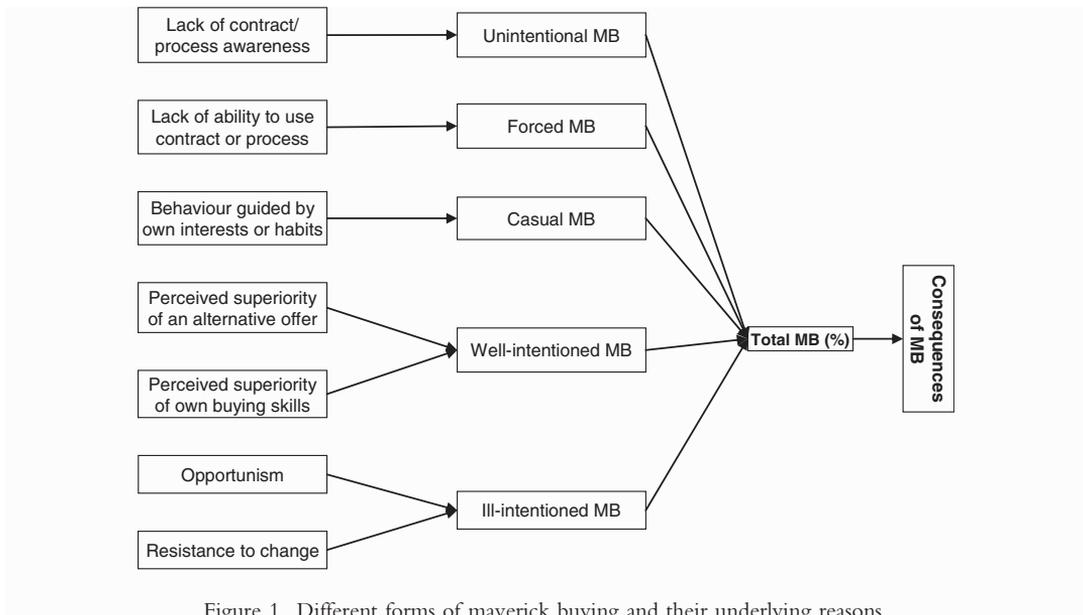


Figure 1. Different forms of maverick buying and their underlying reasons.

needs will arise for which pre-negotiated contracts are not yet in place. Forced MB due to the inability to use the prescribed process, however, can be reduced by educating the employees on the correct procedures and by providing training on the e-procurement systems in use. Casual MB occurs because the organisation allows employees to do as they please (e.g. use the contracted travel agent if it suits them, but make bookings themselves the next time if that turns out to be more convenient). Although there is no intent to harm the company with this behaviour, it does result in increased purchasing costs and lost purchasing leverage. This type of MB could be reduced by educating employees about TCO, and, again, by showing strong purchasing leadership. The same would work for well-intentioned MB. The existence of ill-intentioned MB may be hard to prove in practice. When confronted with off-contract buying, chances are that employees will claim they were not aware of a frame agreement. Ill-intentioned MB can be prevented by checking opportunistic behaviour through alignment of incentives with desired behaviour and by involving employees in the contracting process in order to minimise resistance to change.

In terms of future theoretical work, the framework points to interesting future research which relates principal-agent theory to maverick buying and other non-compliant behaviours. According to Eisenhardt (1989a), agency theory is directed at the ubiquitous agency relationship, in which one party (the principal) delegates work to another (the agent), who performs that work. The agency problem arises when the desires or goals of the principal and agent conflict and it is difficult or expensive for the principal to verify what the agent is actually doing. The principal, in this case the purchasing department, negotiates the contracts for use by the whole organisation. The ordering and operative buying is then delegated to the agents, various individuals throughout the organisation. Based on these contracts, the agents are expected to make purchases from the preferred suppliers via pre-negotiated contracts. Agency theory would raise two sets of explaining factors in relation to maverick buying as potential avenues for future research: incentives and penalties on the one hand, and monitoring

and control mechanisms, on the other. Vardi and Wiener (1996) suggest that both oppressive and lax controls may contribute to the emergence of organisational misbehaviour and control systems may have a direct impact on members' instrumental considerations whether to engage in or refrain from acts of misconduct.

The framework also points to the importance of leadership style and organisational culture and climate. Wimbush and Shepard (1994) argue that the behaviour of supervisors provides the model for how subordinates should act in the organisation. Supervisors formulate the source for workers' perceptions about ethics and are important links in the organisation at each organisational level, disseminating top management's organisational policies to subordinates. Wimbush and Shepard (1994) thus argue that supervisors determine whether organisational policies are perceived similarly throughout the organisation. This would suggest that MB in different organisational units could be influenced by the behaviour and opinions of those units managers: if managers see it as important that pre-negotiated purchasing contracts are complied with, employees are more likely to act accordingly, and vice versa, if managers do not see the benefit and/or reason in contract compliance, employees will more freely engage in MB. Future research could investigate whether a leadership style of *laissez-faire* could lead to higher levels of casual MB, while a strong directive style could lead to higher levels of resistance, and thus ill-intentioned MB. Similarly, hierarchical cultures versus empowered cultures could lead to different forms of MB in an organisation.

Conclusion

Creating purchasing synergies through centralised contracting is widely advocated to maximise purchasing efficiency in organisations. The implementation and usage of centralised contracts is, however, largely overlooked in management research despite of their promised and expected savings potential. This study is, to our knowledge, the first comprehensive review of the maverick buying phenomenon bringing together evidence from the fields of purchasing and supply management

and organisational behaviour. Based on a systematic literature review and twelve exploratory interviews we have identified five forms of maverick buying and the motivations and reasons behind those. Managerially, the identification of different forms of MB and their contributing factors enables addressing

the problem in organisations with a more targeted approach and design of correct countermeasures for each type of MB. Theoretically, the framework opens up new avenues for research, especially around agency theory, leadership styles and organisational culture.

Appendix 1

Search strings and number of articles found

Search string	Proquest	Sciencedirect	Total
maverick + buy*	31	7	38
maverick + purchas*	15	6	21
maverick + procur*	6	1	7
maverick + spend*	17	3	20
maverick + behavio*	28	19	47
off-contract + buy*	4	1	5
off-contract + purchas*	5	0	5
off-contract + procur*	0	0	0
deviant + behavio* + purchas*	0	0	0
deviant + work + behavio*	126	12	138
deviant + buy* + behavio*	3	1	4
non-complian* + contract	57	2	59
noncomplian* + contract	35	1	36
complian* + work + behavio*	25	4	29
non-complian* + work* + behavio*	46	0	46
complian* + purchas*	132	5	137
non-complian* + purchas*	14	0	14
complian* + procur*	62	1	63
non-complian* + procur*	7	0	7
complian* + buy*	112	5	117
counterproductive + work + behavio*	75	44	119
sabotage + workplace	122	7	129
sabotage + purchas*	2	0	2
sabotage + procur*	2	0	2
internal/organisational + incentive* + buy*	0	0	0
internal/organisational + incentive* + purchas*	0	0	0
internal/organisational + incentive* + procur*	0	0	0
“contract buying”	40	17	57
“contract procurement”	59	67	126
“contract purchasing”	42	32	74
			Grand total 1302
			of which 1097 unique hits

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MAVERICK BUYING AS AN AGENCY PROBLEM

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MAVERICK BUYING AS AN AGENCY PROBLEM

ABSTRACT

Non-compliant purchasing behavior, also known as maverick buying (MB), is hindering organizations from attaining the benefits of centralized supplier contracts. Maverick buying can be viewed as an agency problem in which the purchasing department is the principal, and the operative buyers are the agents. We develop and test a model with maverick buying as a problem of 'hidden action', and goal incongruence and information asymmetry as its antecedents, and we show that incentives and output monitoring can be used as governance mechanisms to directly reduce opportunistic behavior, while guidance and training can be used to reduce problems of honest incompetence.

INTRODUCTION

As organizations grow above a certain size, and specialized departments and business units are created, issues of centralized versus decentralized decision-making start to emerge. This is also true for purchasing decision-making. If purchasing is decentralized, all units retain their flexibility to order products and services according to their needs. But, many of such needs are highly similar across units (e.g., office supplies, cleaning services) and the organization as a whole forgoes certain benefits if such purchases are not coordinated from the centre. As a result, many organizations are moving towards the use of frame(work) agreements with selected suppliers to benefit from purchasing synergies. Framework agreements are negotiated at the centre, based on pooled volumes of all the units, and the units are expected to order against such agreements. The corporate purchasing function thus has the responsibility to define the specifications, select the suppliers, products and services, negotiate the terms and prices, and set up ordering channels for the organization. The purchasing function naturally strives for standardization, the minimization of costs and maximization of benefits from the whole organization's point of view, not from individual subunits' point of view. Compliance to such contracts throughout the organization is crucial to achieve the benefits of these pooling efforts.

Non-compliant purchasing behavior, also known as maverick buying, is however hindering organizations from attaining the goals set for these purchasing centralization efforts (Lonsdale & Watson, 2005). Maverick buying (MB) is defined as the off-contract buying of goods and services for which an established procurement process is in place based on pre-negotiated contracts with selected suppliers (Karjalainen, Kemppainen, & Van Raaij, 2009). Recent studies show that MB is commonplace, and that the percentage of compliant transactions is only 65% on average (Aberdeen, 2006). According to a recent study by

Capgemini, improving contract compliance is at the top of agenda for Chief Procurement Officers (Capgemini, 2006).

There is very little research on maverick buying specifically, but the underlying issues behind the phenomenon connect it to a larger theoretical base of organizational theory, namely that of agency theory. MB can actually be perceived as a specific instance of the principal-agent problem. According to Jensen and Meckling (1976), an agency relationship is defined as a situation where the principal engages another person, the agent, to perform some service on their behalf which involves delegating some decision making authority to the agent. The principal expects the agent to behave in a way which maximizes the principal's welfare (Levinthal, 1988). The agency problem arises when the desires or goals of the principal and agent are in conflict (goal incongruence) and it is difficult or expensive for the principal to have complete information about the behavior of the agent (information asymmetry). The principal in this case is the purchasing department, negotiating the frame agreements for use by the whole organization. The authority for ordering and operative buying is then delegated to the agents, various individuals throughout the organization. In case of MB, the desires and goals of the agent and principal can conflict when e.g. the agent finds the act of shopping satisfying, and does not want to settle for the pre-selected supplier, or the agent has local budget responsibility and is rewarded for lowest price (which may be in conflict with lowest total cost for the corporation as a whole). With maverick buying, it is difficult or expensive for the principal to verify the behavior of the agent as ordering behavior is often not monitored and only visible after the fact and in many organizations, any employee can make purchases and have the costs reimbursed post hoc.

Classical principal-agent theory is built on the assumption of the agent as an opportunistic self-seeker. If the agent's goals differ from those of the principal and it is difficult or expensive for the principal to know everything the agent knows, then the agent will take

advantage of that situation to maximize his own utility. Hendry (2002) has presented a complementary view of agency problems, built on the assumption of man as an honest, yet not fully competent actor. Both agents and principals are burdened by ‘honest incompetence’: The principal may not be fully competent to explain his goals to the agent, and the agent may not be fully competent to understand those goals and to know how to behave in order to maximize the principal’s welfare. Maverick buying could occur as a result of self-interested opportunism or as a result of honest incompetence.

In this paper, we develop research hypotheses and test them empirically, with the following questions in mind:

1. To what extent can problems of agency, i.e. goal incongruence and information asymmetry, explain the existence of maverick buying?
2. Do the traditional governance mechanisms of agency theory work to control maverick buying behavior?
3. What factors related to job and organizational context lead to the existence of agency problems (information asymmetry and goal congruence) in purchasing?
4. Can the alternative governance mechanisms of guidance and training (Hendry, 2002; Hendry, 2005) be used to reduce the agency problems of information asymmetry and goal incongruence?

In this paper, we aim to make the following two theoretical contributions. First, this paper presents a comprehensive model of maverick buying as an agency problem. Contract compliance and maverick buying are important issues for managers in practice, but have received very little attention from academic researchers. As a second contribution, this paper presents the first model in which the views of Hendry (2002) are combined with classical principal-agent governance mechanisms. In terms of empirical contributions, this paper

presents a first test of the relationships between governance mechanisms and agency problems in the specific context of maverick buying. To the best of our knowledge, this is also the first study to empirically test and compare the complementary governance mechanisms of traditional agency theory and the Hendry view. This study is thus also the first to empirically show the relationships between guidance and training and the agency problem as suggested by Hendry (2002). This paper also responds to the call for more use of organization theory in explaining operations management phenomena (Ketchen & Hult, 2007).

The rest of the paper is structured as follows. First, a literature review on traditional agency theory is presented. Based on this literature review, hypotheses of maverick buying as an agency problem are presented. Second, the alternative viewpoint to agency theory, that of honest incompetence instead of opportunistic self-seeking, by Hendry (2002; 2005) is discussed. Also this stream of literature is tied to maverick buying phenomena through discussions. Hypotheses of antecedents of the agency problems are then presented. Finally, the hypotheses are tested using empirical data. Conclusions and discussions will end the paper.

LITERATURE REVIEW

Traditional agency theory and purchasing

Principal-agent theory, in its simplest form, describes mutual contractual arrangements between two or more real or corporate entities, and these relationships may be internal, within a firm or an organization, or external between individuals, firms or organizations (Simonsen & Hill, 1998; Mahaney & Lederer, 2003). Agency analysis becomes useful whenever delegation of authority within a hierarchical relationship is necessary to complete a task (Jacobides & Croson, 2001) and the agency problem arises when the agent does not work entirely on the principal's behalf (Mahaney & Lederer, 2003).

Agency problems arise from the information asymmetry that results from the division of labor between principal and agent, and from the conflicting goals of the two parties (Lassar & Kerr, 1996). Because the agent is more familiar with the details of the task, he may have the motive and opportunity to behave in ways that maximize his own utility at the expense of the principal's. Information asymmetry can mean both that the agent may have more information about their actual skills and abilities, levels of effort and overall investment than the principal does, and that the principal may have more information about the policy the agent is to achieve (Simonsen & Hill, 1998). In terms of MB, this information asymmetry means, first, that the principal is in many cases unable to observe the agent's ordering behavior at least until after the fact. The principal cannot verify that the agent is using the pre-negotiated frame agreements and the specified procedures, which are designed to minimize the total purchasing costs from the organization's point of view. In addition, the agent may possess information that the principal does not have. He may have information on local offers that might be beneficial for the organization, or on specific local purchasing needs that the purchasing department has not realized to take into account in negotiating the frame agreements. At the same time, the principal (i.e., the corporate purchasing department) may have more information than the agents on purchasing objectives and policies, and on what is best for the organization as a whole, such as the total cost of ownership (TCO) of various alternative supplier agreements.

Goal incongruence is based on the assumption that principals and agents are both utility maximizers (Roth & O'Donnell, 1996) and describes the situation where the principal and agent do not have matching goal preferences. Goal incongruity may direct agents to fulfill their own objectives rather than either the principal's or the maximization of joint agency value (Jacobides & Croson, 2001). Within the purchasing context, goal incongruence may surface as the unwillingness of a department or an individual to take a welfare or performance

loss arising from the use of frame agreements with preferred suppliers, notwithstanding any net gain to the organization as a whole (Lonsdale & Watson, 2005). The local units and employees – the agents - may prefer to buy at the lowest price they can obtain for themselves, whereas the principal may have the goal of minimizing TCO, sometimes even at the sacrifice of a lower local price.

According to Nilakant and Rao (1994), agency theory attributes uncertainty in performance outcomes to moral hazard, adverse selection and the state of nature. State of nature is outside the control of both the principal and the agent. Moral hazard and adverse selection are also referred to as hidden action and hidden information (Arrow, 1985) or as postcontractual problems and precontractual problems (Bergen, Dutta, & Walker, 1992), respectively. The precontractual, hidden information problems arise before the principal decides to offer a contract to an agent (Bergen et al., 1992) and the major issue here is whether a particular agent has the characteristics the principal is seeking and what strategy the principal should employ to find out. Moral hazard refers to lack of effort on the part of the agent (Eisenhardt, 1989), and is a problem of hidden action (Steinle, Schiele, & Ernst, 2008). This refers to an information imbalance after contracting: the principal is either not able to monitor the agent's effort, to attribute the effort to the agent or to evaluate it. According to Pavlou, Liang and Xue (2007), hidden information and hidden action are concurrent but distinct problems in agency relationships. They suggest that even if the principal may overcome hidden information by pre-contractually selecting a high-quality agent, the principal is still exposed to hidden action since the agent may decide to post-contractually shirk or skimp on quality.

Maverick buying as a form of hidden action

In this paper, the focus is on the postcontractual problem, as maverick buying can be identified as a form of hidden action. According to Bergen et al. (1992), hidden action models involve three assumptions about the principal and agent. First, both the principal and the agent are typically assumed to be motivated by self-interest (Bergen et al., 1992) and such self-interest typically translates into goals of maximizing profits or utility. So, according to Bergen et al. (1992), in the basic hidden action model the agent attempts to maximize his own utility by choosing the best action available. But with the incompatible goals and risk preferences of the two parties, actions the principal would like the agent to perform are often relatively costly for the agent to undertake, meaning that they require more time, effort, or other resources from the agent. This can then lead to the agent to try to shirk on such actions. This assumption of self-interest is applicable to the case of MB as an agency problem. Typically the self-interest of the principal i.e. the organization is to minimize the total costs associated with purchasing (including prices and process costs) whereas agents might prefer minimizing price only, or maximizing a certain functionality of the product in question. In addition, maximizing the utility of the principal i.e. buying goods and services via pre-negotiated frame agreements with selected suppliers using the established procurement process can require more time, effort, or other resources from the agent. The agent might in this case have to find out the correct procedure, learn to use new e-procurement programs, have to wait longer for product delivery than if bought from a local supplier or have to spend more monetary resources due to a higher price.

The second assumption of hidden action models is that principals work under conditions of incomplete information (Bergen et al., 1992); his knowledge about the agent's actions on the job is neither perfect nor complete and the agent has information the principal would like to obtain. Bergen et al. (1992) show an example from the marketing field, where a manager

may know from call reports how many calls a salesperson made last week, but the salesperson has additional information about how much effort he or she expended preparing for each call and the quality of the presentations made. They argue that self-interest often makes the agent reluctant to share the information with the principal and can even motivate the agent to send the principal false information. In case of MB, if the organization does not have adequate tracking and spend analysis tools in place, it can be difficult to verify afterwards whether all purchases have been done compliant to the frame agreements. Or an employee may claim that he purchased e.g. a flight or a hotel room from an unapproved supplier because a flight seat or a room was not available from an approved supplier for the necessary dates. But the principal does not know whether the employee is making this claim because it is a fact or to cover for his noncompliance.

The third assumption in hidden action agency models is that realized outcomes are partly determined by environmental factors in addition to the agent's efforts (Bergen et al., 1992); environmental uncertainty is present because certain factors change over time, are difficult to predict, and are beyond the control of either principal or agent. According to Bergen et al. (1992) this uncertainty makes it impossible to write a contract that foresees and provides for all possible contingencies and forces principals and agents to keep in mind the resulting risk when making contractual choices. In case of MB, this environmental uncertainty can be caused by for example the actions of the approved suppliers. In case an approved supplier is unable to deliver the products contracted in the frame agreement, an employee (the agent) must buy via non-approved channels. In this case the agent should not be penalized for actions against the principal's goals of using frame agreements.

Governance mechanisms to reduce the agency problem

Existing literature also presents different types of measures to reduce the agency problem i.e. to make the agent more likely to behave in the interest of the principal. These measures include monitoring (control) and incentives. According to Eisenhardt (1989), the two traditional control options are outcome controls and process controls. These formal control mechanisms both represent management initiated mechanisms or processes, but they differ in terms of what they monitor (Aulakh & Gencturk, 2000). Process control refers to the extent to which the principal monitors the agents' behavior or the means used to achieve desired ends whereas outcome control is the degree to which the principal monitors the results or outcomes produced by the agents (Aulakh & Gencturk, 2000). So, to safeguard his interests, the principal can either reduce the information asymmetry by investing in monitoring systems to constrain the agent's opportunity to shirk, or the principal can structure agent incentives such that the two parties' goals are aligned (Lassar & Kerr, 1996). Thus, monitoring and incentives specifically are expected to reduce opportunistic behavior, i.e. to increase contract compliance.

Hypotheses of maverick buying as an agency problem

Based on the traditional agency theories on principal-agent problems, hypotheses of maverick buying as an agency problem can now be specified. Specifically, the following hypotheses are suggested based on previous literature:

Hypothesis 1. The lower the goal incongruence between corporate purchasing (the principal) and operational buyers (the agents), the higher the level of contract compliance of the agents.

Hypothesis 2. The lower the information asymmetry between corporate purchasing (the principal) and operational buyers (the agents), the higher the level of contract compliance of the agents.

Hypothesis 3a. The higher the use of incentives linked to compliant behavior, the higher the level of contract compliance of the agents.

Hypothesis 3b. The higher the use of output monitoring related to contract compliance, the higher the level of contract compliance of the agents.

Hypothesis 3c. The higher the use of process monitoring related to contract compliance, the higher the level of contract compliance of the agents.

Our review of the literature revealed two factors which could directly impact contract compliance, and for which our analyses need to be controlled: Organizational climate and personality factors.

Compliance climate. Organizational factors such as organizational climate have been emphasized as contributing to employee behaviors (Vardi, 2001; Wimbush & Shepard, 1994). Specifically, ethical climate of an organization can be used to predict unethical behavior (Wimbush & Shepard, 1994). Also Husted (2007) argues that corporate culture and normative control may provide effective constraints on self-interest-seeking behavior by agents. Following the same logic, the climate of compliance i.e. the general position towards following rules is expected to possibly influence whether employees feel a need to act compliantly also in their ordering behavior and it is thus used as a control variable in testing Hypotheses 1 to 3.

Personality factors. Fong and Tosi (2007) have studied the impact of conscientiousness on the principal-agent problem. They argue that motivation to act opportunistically differs between individuals, unlike typically assumed by agency theory. We also include openness to experience as a control factor, because ordering and finding the best deal may be perceived by

some as an exciting activity, and thus may influence the occurrence of MB (Karjalainen et al., 2009).

The other explanation for agency problems – honest incompetence

The assumption of man as opportunistic and self-seeking has been dominating the agency literature. This assumption has however also been criticized by e.g. Ghoshal and Moran (1996) who argue that it is exactly the ability of organizations to solicit unselfish behavior that makes them valuable. Hendry (2005) argues that by removing the assumption of opportunistic self-seeking and that of total competence, and replacing them with alternative assumptions of honest endeavor and bounded rationality in Simon's (1957) sense (which Hendry together calls honest incompetence), it is possible to develop a theory that is formally analogous to traditional agency theory. In this theory, the divergence between the principal's desires and the agent's actions is explained by a combination of the principal's inability to express unambiguously in advance what outcome he will desire in any given (but initially unknown) situation, and the agent's inability to reliably deliver the outcomes he seeks (Hendry, 2005). Hendry (2002) attributes the lack of recognition of limited competence in agency theory to the fact that given the utility functions of principals and agents, the effects of self-interest can be formally modeled, but those of incompetence, which could act unpredictably in any direction, cannot. But according to Hendry (2002), perfect competence does not exist in reality; people are prone to make mistakes even in simple operations. And especially in situations where judgment is called for, or if individuals' achievements depend on cooperative efforts involving other individuals, the outcome is far from guaranteed, regardless of the amount of effort applied.

In Hendry's view (2002; 2005), agents suffer from the limitations of bounded rationality in Simon's sense and from human fallibility in making the judgments and interpretations that

bounded rationality imposes on them. Under the assumption of bounded rationality an agent may be unable to determine with any confidence which of two courses of action would serve the principal better and may thus opt for the course that serves his own financial interests, without sacrificing either honesty or duty (Hendry, 2002). Nelson (2008) describes bounded rationality as the reasoning and learning abilities of an actor who has a goal to achieve and, on the one hand, an at least partially formed theory about how to achieve it, and on the other hand, that the actor's theory is likely somewhat crude and perhaps even a bad guide for action, and that success is far from assured. Thus, under assumptions of honest incompetence, an agent's discretion can sometimes act in the interests of the principal, whereas under the assumptions of opportunistic self-seeking it will always act against them (Hendry, 2005). Without specific knowledge of the personalities involved, competent self-seeking and honest incompetence are difficult to distinguish from each other and the governance mechanisms set up primarily to deal with problems of self-interest are very different from ones set up primarily to deal with problems of honest incompetence (Hendry, 2005). When dealing with the agency problem of honest incompetence, the remedy is not found in monitoring, but in guidance and training (Hendry, 2002).

Honest incompetence, just as well as traditional agency theory, can be perceived as a potential explanation for maverick buying behavior. The agents with the authority to execute the purchasing tasks may be unaware of frame agreements in place or the correct ordering procedures, or may lack the skills to perform the correct procedures. In addition, due to lack of TCO insight, they may sincerely believe that bypassing the frame agreement for a cheaper priced alternative may serve the interest of the organization better than using the established frame agreement.

Hendry (2002) suggests that the essence of agency relationships lies in the delegation of authority from principal to agent, as a result of which responsibility for the conceptualization,

interpretation, and expression of objectives is divided between two or more people. In cases where both the objectives and the actions needed to achieve them are complex, he argues that inevitable different people under different circumstances will conceptualize, interpret, and express them in different ways. Whether these are caused by competent self-seeking, honest incompetence, or to some combination of these depends on the circumstances and context of the problem (Hendry, 2002). Thus, principals potentially face two kinds of problem; the traditional problem of agency theory arising from the self-seeking tendencies of agents but also problems caused by limited competence, due to either their own limited competence to know and communicate what exactly they want from the agents or the agents' limited competence to deliver this in an uncertain, unpredictable and uncontrollable world (Hendry, 2005).

Guidance and training as governance mechanisms

Much of the traditional agency literature examines formal and contractual approaches to resolving coordination problems (Stephen & Coote, 2007). Aulakh and Gencturk (2000), however, point to a third control mechanism, social control, which represents an informal control mechanism based on prevailing social perspectives and patterns of interpersonal interactions within a firm. Also Stephen and Coote (2007) discuss a similar concept, relational governance, which relies on socialization efforts encouraging close coordination and cooperation. They suggest that relational governance is a possible mechanism for mitigating agency problems of hidden action. According to Hendry (2002), the costs to principals of agents' limited competence can be reduced by principals' investing resources in guidance or mentoring. Managers can devote time to the activities of their subordinates, not to monitor for self-seeking as in classical agency theory but to develop their competence and to convey an understanding of objectives beyond that specified in the contract between the principal and

the agent (Hendry, 2002). Principals are thus in this way trying to prevent the problem of information asymmetry and goal incongruence to emerge before they even have a chance to lead to non-compliant behavior, i.e. the governance mechanisms suggested by Hendry are not designed to control non-compliant behavior but to prevent situations where such behavior could come into play. Guidance acts as an alternative to the contractual specification of objectives when these are complex, value-based or context sensitive (Hendry, 2002). Hendry (2002) distinguishes between two types of mentoring: principals can invest resources in improving their agents' technical competence (via training) or they can invest resources in improving their agents' understanding of their objectives and of the circumstances, values, and broader priorities underlying these (via guidance). Hendry (2002) suggests that there may be situations in which it is more important for principals to invest resources in mentoring or training to improve managerial competence. According to Shen (2003) this suggestion is very similar to stewardship theory's empowerment argument. In our hypotheses, measures to reduce goal incongruence and information asymmetry are divided into guidance and training. Specifically, the following hypotheses are suggested based on the views of Hendry (2002; 2005):

Hypothesis 4a. The higher the use of training in the area of purchasing and contract compliance, the lower the level of goal incongruence between principal and agent.

Hypothesis 4b. The higher the use of guidance, the lower the level of goal incongruence between principal and agent.

Hypothesis 5a. The higher the use of training in the area of purchasing and contract compliance, the lower the level of information asymmetry between principal and agent.

Hypothesis 5b. The higher the use of guidance, the lower the level of information asymmetry between principal and agent.

Control variables for hypotheses testing

As stated previously, agency problems arise under certain conditions: when information asymmetry and/or goal incongruence are present. These two conditions and their relevance to the MB context have been explained above in the literature review. Several other factors can be seen to contribute to the existence of information asymmetry and goal incongruence. Specifically, this study addresses five possible contributing factors as control variables in testing Hypotheses 4 and 5: organizational commitment, local cost of compliance, specialization, distance to principal and task programmability. Each of these concepts will be explained and related to information asymmetry and goal incongruence in the purchasing context in the following.

Organizational commitment. According to Roth and O'Donnell (1996) one factor, which affects the agency problem concerns commitment at the individual level. They suggest that agency theorists assume that the principal-agent relationship is a social one, and the fundamental issue is the divergence of interests. The original definition of organizational commitment by Porter, Steers, Mowday and Boulian (1974) argues that it is the strength of an individual's identification with and involvement in a particular organization. Such commitment can generally be characterized by at least three factors: a strong belief in and acceptance of the organization's goals and values, a willingness to exert considerable effort on behalf of the organization and a definite desire to maintain organizational membership (Porter et al., 1974). According to Roth and O'Donnell (1996), organizational commitment has been defined as an individual's identification with and willingness to embrace organizational goals, wherefrom it follows that as an agent accepts and works toward organizational goals, goal incongruence between the principal and agent is reduced and the agency problem is low in such cases. According to Cullinan et al. (2008), researchers have linked organizational commitment to many antecedents and consequences such as role

conflict and ambiguity, job satisfaction, professional commitment, employee performance, and organizational turnover intentions and recently studies have been expanded to include the relationship between organizational commitment and unethical behavior.

Local cost of compliance. According to Ouchi (1979), the problem of organization is to obtain cooperation among a collection of individuals or units who share only partially congruent objectives. Ouchi (1979) argues that when a team of individuals collectively produces a single output, the problem is how to distribute the rewards from that output so that each team member is equitably rewarded. In the purchasing context this principal-agent problems is described by Lonsdale and Watson (2005) who suggest that managers have twin loyalties: they have a loyalty to their organization, which is paying their wage, but they also tend to have a second loyalty to themselves. They argue that within the purchasing context, this problem can particularly occur during consolidation initiatives. These initiatives may promise a net benefit to the organization as a whole but do not distribute these benefits or any potential adjustment costs, such as having to use a different supplier, evenly. Thus, the parties that stand to be net losers from such an initiative will often oppose it. Despite potential budgetary etc. disputes regarding the allocation of savings from centralization, other issues may also arise. Lonsdale and Watson (2005) argue that internal clients who interpret purchases through their functional values often place greater stress on product functionality and can thus dismiss the value of the cost savings from a consolidation initiative seeing that they offer a ‘false economy’. Thus, high local cost of frame agreement compliance can lead to goal incongruence in the purchasing context.

Specialization. Roth and O’Donnell (1996) argued that lateral centralization increases the agency problem in foreign subsidiaries. According to them the role of a foreign subsidiary ranges from global rationalization to lateral centralization. Global rationalization occurs when the subsidiary is a single part of a worldwide system with the responsibility for system

coordination residing at headquarters. The foreign subsidiary may perform only some of the value adding processes composing the system. In this case there is little agency problem at the senior management level as the actions and output of the subsidiary must be relatively visible within the networked system and the specialized knowledge needed to manage the system is headquarters based. But with lateral centralization a foreign subsidiary has worldwide responsibility for a complete set of value-adding activities associated with a specific product or product line. So if a unit has had full responsibility of all or most value-adding activities within its own range of operations and specialized knowledge, the more it will have its own goals, and the harder it is for central management to understand what the unit does and needs. The same was noted already by Holmström (1979), as he suggested the more autonomy the agent enjoys, the greater the information the agent possesses, and the greater the specialized knowledge required to perform the task, the greater the chances for the occurrence of moral hazards.

Distance to principal. Simonin (1999) argues that such as cultural distance, organizational distance amplifies ambiguity. According to Simonin (1999), organizational distance represents the degree of dissimilarity between partner's business practices and organizational culture. Organizational distance can increase the difficulty in information exchange and processing, enabling information asymmetries to arise, and it may also impede the development of shared goals, thus potentially causing goal incongruence. In the purchasing context, distances between business practices can lead to different practices in how the units are used to conducting purchasing tasks such as supplier selection and ordering.

Task programmability. Task programmability is defined as the degree to which appropriate behavior by the agent can be specified in advance (Eisenhardt, 1989). Mahaney and Lederer (2003) suggest that low task programmability can increase the agency problem. In the purchasing context, several factors can contribute to task programmability i.e. how easy

it is to create a standard format for purchasing behavior in an organization. The most often mentioned remedy for MB is the implementation of electronic procurement (e.g., Cuganesan & Lee, 2006). E-procurement makes compliant purchases easier for the user. Purchasing cards are another suggestion for reducing MB (Karjalainen et al., 2009). So by making the task of ordering via the pre-negotiated contracts more programmable and thus easier for the user for example via electronic systems that guide the user and only allow the ordering of pre-specified items with correct prices and from correct suppliers, information asymmetry could be reduced.

EMPIRICAL TESTING

The hypotheses were tested with a large scale survey among employees of the Finnish government engaged in operative purchasing and ordering (the agents). The principal in this case is the central purchasing unit, whose job it is to tender centralized frame agreements for the use of the government and to advance their use. The government has always expressed that use of these contracts is both desired and expected. In late 2006, national legislation was also passed obliging all units to use contracts tendered by the central unit in their purchases of certain products such as office supplies and equipment, computers, vehicles, travel services and occupational health. Despite these facts, the frame agreements have, however, been estimated to have a usage rate of only 20–80% of the potential in the different categories.

Data collection

Cleaning services was selected as the category for empirical testing for the following reasons, that make it prone to maverick buying: ordering rights for the category are given to multiple people in an organization, a large number of purchasing transactions is done in the category during the course of a year, a large number of potential suppliers (other than the frame agreement suppliers) are available in the market for this category, and most

governmental agencies use the products/services in the category. In addition, the frame agreement for the category has been in place for several years, which suggests that maverick buying is not happening only because the frame agreement is new or not yet implemented in a particular unit. Based on discussions with the personnel in the central purchasing unit, MB is also known to exist in this category, in two different forms: employees either make individual purchases related to cleaning services outside the frame agreement or they completely bypass the frame agreement in all purchases by negotiating a local agreement with (typically) a local service provider.

The sample for the survey was based on the central purchasing unit's contact list of people involved in purchasing cleaning services throughout the different governmental agencies in Finland. The sample size was 1475 government employees. Elements and guidelines of the Tailored Design Method (Dillman, 2007) were followed in designing the survey procedure to achieve best results. The questionnaire was first developed in English and was translated into Finnish by two translators working independently. The two translated versions were then compared against each other and differences in translations were discussed and decisions on the wording were finalized. The Finnish version of the questionnaire was reviewed by three academics and six government employees. These reviews led to improvements in the wordings of the questions and accompanying texts, but not to any structural changes in the instrument itself.

A pre-notification of the survey was sent to the respondents by the Ministry of Finance, the Ministry responsible for the strategy of government purchasing. In the pre-notification letter it was explained that as the move towards using centralized frame agreements has created a lot of discussion on how the government should organize its purchasing, the Finnish government would like to learn from the people in governmental agencies who are doing the operative day-to-day purchasing, what their perceptions are on centralized frame agreements.

The actual survey invitation with a link to the Web-based questionnaire was sent out by the research team. Two reminders were sent out to the respondents during the three weeks the survey was open for responses.

The respondents filled out the survey anonymously, without revealing their name, position or the name of their government agency, to reduce the threat of socially desirability bias. This was done to ensure truthful answers regarding compliance, as maverick buying is considered an undesirable behavior from the Finnish government's point of view.

Construct measures and control variables

The construct measures are presented below, and all the questions and constructs can also be found in Appendix 1. The occurrence of the agency problem (i.e., maverick buying) was measured as self-reported *Compliance*. In the absence of reliable spend data for many agencies of the Finnish government, there is no objective measure that could be used for the dependent variable. Respondents were asked seven questions related to their general disposition to buy cleaning services within or outside of existing frame agreements. All answers were recorded on a 7-point Likert-scale (strongly agree-strongly disagree), unless noted otherwise.

Goal incongruence was measured by five statements regarding how well the frame agreements match the needs of the agents. These items were based on Jap (1999) and adapted to a purchasing context. The measure for *Information asymmetry* was adapted from Jaworski and McInnis (1989). While generally, information asymmetry in principal-agent studies has been measured as the degree to which the agent holds information which the principal does not possess, information asymmetry actually works both ways (Hendry, 2002; Simonsen & Hill, 1998). The principal may also possess knowledge (e.g., about his or her objectives), which the agent does not hold. Our measure was designed to capture both types of

asymmetries. The measure contained four items, two of which related to the agent's understanding of the principal's objectives, and the other two related to how well the principal understands the agent's job. The mean scores of both types of asymmetry were summed to arrive at a rating of Information asymmetry for this study.

As a measure of *Incentives*, a six-item measure was developed containing questions on non-monetary incentives for compliant behavior, on the perceived risk of non-compliant behavior being detected and on the perceived severity of penalty for non-compliant behavior. Monitoring was divided into two separate constructs: Output monitoring and Process monitoring. The items used were adapted from Jaworski and McInnis's (1989) constructs for performance documentation, output control and process control. *Output monitoring* contained five items related specifically to the monitoring of frame agreement usage and *Process monitoring* contained four items on how the purchasing practices used by the agent are being monitored.

Operationalizations of Training and Guidance were based on the descriptions of these concepts in Hendry (2002: 102). A seven-item construct was developed to measure *Training*, described by Hendry as "devoting resources to improve an agent's technical competence". Respondents were asked to indicate, on a 6-point scale, the extent to which they felt the training they had received on several purchasing-related areas had been sufficient. *Guidance* is described by Hendry as "devoting resources to communicating an understanding of objectives outside the contract specification", and was measured with seven statements gauging the extent to which the principal party is informing and involving the agent, and the openness of communications.

Organizational commitment was measured by a 6-item version of the Organizational Commitment Questionnaire (Mowday et al., 1979). The scale's authors claim that the short form of the scale (having only the nine positively worded items) may be an acceptable

substitute for the 15-item version if questionnaire length is a consideration. For this survey, an additional three items were removed, both to reduce questionnaire length, and as their relevance to the MB phenomena being investigated here was judged to be small.

Measures for *Specialization* were developed based on Holmström (1979), who stated that the more autonomy the agent enjoys and the greater the specialized knowledge required to perform the task, the greater the chances for the occurrence of moral hazards. Agents were therefore asked four questions to test whether they perceive their unit as different, autonomous and possessing specialized knowledge compared to other units in the organization. Four components of *Distance to principal* were measured with items adopted from the Organizational Distance measure of Simonin (1999). In addition, the physical distance between the agent and the principal was measured by asking the agents the postcodes of their unit and turning this information into kilometer distances.

Pre-existing scales found for *Task programmability* were all mostly specific for the research setting in question (e.g. Eisenhardt, 1985). Two items from Stroh, Brett, Baumann, & Reilly (1996) were however adopted and modified to suit the MB context, along with three newly developed items related to the extent of standardization of purchasing procedures. An 8-item construct was developed for *Local cost of commitment*. The items were related to whether the respondents perceived products purchased outside of frame agreements are generally superior in terms of price, service, etc.

Personality factors, i.e. *Conscientiousness* and *Openness to experience* were measured using a selection of items from the Big Five Inventory. The measure for *Compliance climate* was modified from the ethical climate construct used by Schwepker (2001), and it contained four items. As opposed to the original ethical climate scale, which measures a company's tendency to emphasize ethics and ethical behavior, the compliance climate scale measures an organization's tendency to emphasize compliance to rules and policies. In addition to these

variables, *Tenure* within the Finnish government was also used as a control variable in all regression models.

In order to check for common method variance, Lindell and Whitney (2001) suggest including one or more marker variables. A marker variable is theoretically unrelated to at least one other variable in the questionnaire. If a correlation between the marker variable and the other variable does surface, this would be an indication of common method variance. Two marker variables were placed in the questionnaire. A correlation analysis between the marker variables and the main constructs showed no significant correlations, which supports the discriminant validity of the marker variable (Lindell & Whitney, 2001). This suggests that the results of the survey are not vulnerable to the inflation of correlations by common method variance.

Data analyses and results

Upon e-mailing the survey invitations, several notifications of undelivered mails were received. In addition, some individuals in the sample indicated that they were not part of the target population, i.e. they are not involved in purchasing cleaning services. All these individuals were removed from the total sample size. The total adjusted sample was thus 1200 people. Out of this sample, 230 responses were received, making the response rate 19.2 %. After initial data analysis, 16 responses were taken out due to a high number of “neither agree nor disagree” answers throughout the survey, which was seen as an indication that these respondents had simply filled the middle option throughout the pages without consideration of the questions asked. Thus, a total of 214 responses were carried over to the final data analyses.

Cronbach’s alpha was used to test the reliability of the constructs, i.e. the internal consistencies of the items used to form the constructs. Appendix 2 reports Cronbach’s alphas

for all variables, as well as variable means, standard deviations and inter-construct Pearson correlations. During construct purification, some items were omitted from the constructs; these instances are also indicated in Appendix 1.

To test Hypotheses 1, 2 and 3, we used a hierarchical regression analysis. The results of the regression analysis are presented in Table 1. We controlled for compliance climate, conscientiousness, openness to experience and tenure. Results of Model 1 indicate that none of these significantly impact compliance. Estimated variance inflation factors (VIFs) for all predictor and control variables ranged between 1 and 1.85, suggesting an absence of multicollinearity among them. The Shapiro-Wilk test validated the normal distribution of standardized residuals ($p > .25$). A comparison of Model 2 with Model 1 reveals that the inclusion of information asymmetry and goal incongruence adds significantly to the model's power to explain the variance of compliance. Both information asymmetry and goal incongruence are negatively and significantly related to compliance. These results support Hypotheses 1 and 2. Addition of the governance mechanisms to reduce opportunistic self-seeking (model 3), i.e. incentives, output monitoring and process monitoring also adds significantly to the model's power. Specifically, it is found that incentives and output monitoring increase compliance. These results support Hypotheses 3a and 3b. The regression coefficient for process monitoring is non-significant, so Hypothesis 3c has to be rejected.

----- *Insert Table 1 about here* -----

Hierarchical regression analysis was also used to test Hypotheses 4 and 5. These analyses were used to test whether the Hendry measures reduce information asymmetry and goal incongruence. Several alternative antecedents to information asymmetry and goal incongruence, taken from the literature, were used as control variables in these regressions. In addition, tenure within the Finnish Government was used as a control variable. Results are reported in Tables 2 and 3. VIFs for all variables varied from 1 to 1.6, indicating absence of

multicollinearity among them. In addition, the Shapiro-Wilk test revealed normal distribution of the standardized residuals in both hierarchical regression analyses.

To test for effects on goal incongruence, the control variables were first entered in Model 4. The results indicate that perceived organizational distance to principal, distance to principal in kilometers and local cost of compliance increase goal incongruence between the principal and the agent. Adding the Hendry measures of training and guidance in Model 5 adds significantly to the model's power to explain the variance of goal incongruence. All the control variables identified as having a significant effect retain those effects, guidance is also found to have a significant effect, i.e. guidance reduces goal incongruence, but the regression coefficient of training insignificant. These results support Hypothesis 4b, but Hypothesis 4a has to be rejected.

----- *Insert Table 2 about here* -----

The control variables for information asymmetry entered in Model 6 were specialization, distance, task programmability and tenure. Out of these, perceived organizational distance to principal and task programmability were found to reduce information asymmetry and longer tenure to increase it. Adding training and guidance in Model 7 significantly adds to the model's power to explain the variance of information asymmetry. Both regression coefficients are negative and significant. These results support Hypotheses 5a and 5b. We also executed a mediation test for the effects of guidance and training on compliance (not reported here) which showed that these relationships were indeed fully mediated by information asymmetry and goal incongruence.

----- *Insert Table 3 about here* -----

Discussion of results

In this study, we set out to investigate whether maverick buying can be modeled as a problem of ‘hidden action’ in terms of principal-agent theory. Our analyses suggest that maverick buying is indeed related to two key conditions of agency problems: information asymmetry and goal incongruence (Eisenhardt, 1989; Simonsen & Hill, 1989). Earlier research had established conflicting preferences between principal and agents as a reason for maverick buying in a single case study of purchasing in a medical institution (Lonsdale & Watson, 2005). Our study extends this finding with quantitative data on the relationship between goal incongruence and compliance.

Our second research question then asked whether the ‘classic’ governance mechanisms to reduce hidden action – incentives and monitoring – can be used to reduce maverick buying c.q. increase compliance with frame agreements. Our analyses show that both the use of incentives and of output monitoring are positively related to compliance. Process monitoring, however, is not. These findings on output monitoring prevailing over process monitoring are also in line with findings of Heide, Wathne and Rokkan (2007), whose study concluded output monitoring to be more effective in reducing partner opportunism, as it is a less obtrusive form of control. Heide et al. (2007) actually found that behavior monitoring increases partner opportunism, as it causes a defensive attitude and reactance in the people being monitored. Our empirical tests also reveal a positive effect of process monitoring on opportunistic behavior, but this effect is not significant. Heide et al. (2007) focused on inter-firm relationships, while the focus in this study is on intra-firm relationships; our study suggests that their findings, at least partly, apply also to intra-firm relationships. This potential negative impact of process monitoring on compliance holds a warning for companies that intend to implement e-procurement. These companies need to take into account the findings from Heide et al. (2007) that process monitoring does not promote opportunism if combined

with appropriate informal relationship governance (solidarity norms or social contracts), although further research is needed to extend the findings of Heide et al. (2007) to intra-firm relationships.

Our tests showed that the governance mechanisms to reduce honest incompetence suggested by Hendry are efficient in reducing the conditions of the agency problem. Guidance works in reducing both information asymmetry and goal incongruence, while training reduces information asymmetry.

Task programmability had a significant effect in reducing information asymmetry. Thus by making the ordering procedures highly standardized and pre-specified, the principal can ensure that the agent is aware of how to use the frame agreements. Task programmability can also be used to reduce the information asymmetry on the principal's part: task programmability established by use of e-systems can give the principal better visibility to the agents' spending patterns and behaviors (Cuganesan & Lee, 2006).

Local cost of compliance was found to have a significant effect on goal incongruence. To reduce local cost of compliance and thus goal incongruence, the principal needs to take into account the local costs to agents of using the frame agreements already while negotiating the terms of those agreements and deciding on the ordering processes involved, as these are typically fixed during the frame agreement period.

It was discovered that perceived organizational distance increases goal incongruence. This can be due to the fact that if the agents perceive the organizational culture of the principal to be very different from their own, they feel that the frame agreements negotiated by the principal reflect the organizational culture and thus the needs of the principal, which differ from their own. Actual distance to principal as measured in kilometers was also found to increase goal incongruence. The principal in this case is located in the Helsinki metropolitan area, whereas agents with a great distance to the principal are typically located in smaller

cities and towns or even in rural areas. Several reasons can contribute to this result of the physical distance impacting goal incongruence. For example, the service levels of the national service providers selected for the frame agreements may differ locally, making the selected suppliers appear less desirable from some agents' point of view. Additionally, in smaller cities located far from the metropolitan area, the desire to favor local suppliers can be an important factor in purchasing decisions (to support local economies and thus local employment), whereas the principal typically puts more weight on general goals of service levels, prices etc.

Tenure within the Finnish government had an affect on information asymmetry, specifically the longer the agents had worked for the Finnish government, the higher the information asymmetry between the agent and the principal. One explanation could be that agents with a longer work history within the government have become more used to the purchasing practices and routines preceding the frame agreements, and have not been active or interested in acquiring information and understanding of the new purchasing processes. As information asymmetry is a condition of the agency problem, these results are in line with previous studies relating agency problems, such as entrenchment, to top management tenure in organizations (Chavez, Wiggins, & Yolas, 2001; Dharwadkar, George, & Brandes, 2000).

The results of our study also carry important managerial implications in presenting which types of governance mechanisms work best to create contract compliance. As output monitoring was found to reduce maverick buying, managers should invest in establishing electronic systems that provide documents on contract compliance levels and enable detailed spend analysis. In addition, management should actively use these documents to follow compliance and give feedback on employee purchasing behavior. Incentives were also shown to be positively linked to contract compliance. For the Finnish government, the incentives in place are typically related to negative performance evaluations and reprimands in case of

maverick buying being detected, as the wage systems in place do not allow for performance-related pay. For private organizations, an even more effective option might be monetary incentives tied to compliance levels of individuals or units. This would mean however, that a portion of the savings from the framework agreements is then allocated back to account for those incentives, i.e. the incentives become an agency cost. Moreover, there is the question whether organizations should reward employees for doing something that is simply part of their task. This dilemma perhaps suggests that the sanctions approach would be preferable, although there are costs associated with it as well.

In addition to directly controlling for compliance, managers can also invest in removing the conditions that were proven to lead to this agency problem, i.e. information asymmetry and goal incongruence. The purchasing department must continuously guide and mentor those engaged in operative buying, involve them in their processes and invest in informing them of the frame agreements in place and the reasoning behind the frame agreements. Training the operative buyers on frame agreements in place, purchasing policies and purchasing procedures in use also serves to reduce the information asymmetry between the principal and the agents.

CONCLUSIONS

This research paper aimed at extending the research on agency theory to the purchasing context, specifically for the purposes of explaining the phenomenon of maverick buying and providing possible measures for reducing such behavior. Empirical testing showed that maverick buying is related to the two conditions of agency problems: information asymmetry and goal incongruence. Based on the results, it can also be concluded that traditional governance mechanisms of principal-agent theory are efficient in reducing non-compliant behavior (the agency problem), while governance mechanisms to reduce honest incompetence

(the Hendry view) are efficient in reducing the conditions of the agency problem, i.e. information asymmetry and goal incongruence.

The modeling and hypotheses building in this research paper as well as the empirical results obtained have unique contributions to the purchasing and supply management literature. This type of utilization of organizational and economic theories in the field of purchasing and supply management serves to develop the discipline and to integrate it further with overall management and economics sciences (Das & Handfield, 1997). Previous research (Karjalainen et al., 2009) has conceptually modeled the reasons leading to MB behavior and used interviews to validate these. Hypotheses and empirical tests were the logical next step in furthering knowledge of the phenomenon.

This study has some limitations which need to be noted. First of all, the cross-sectional design does not allow us to assert causation, but merely relationships between variables. We have used existing theory to support our assumptions about cause and effect. A longitudinal design would allow for a more rigorous analysis of causality. Such a design would also be valuable to study the effect of governance mechanisms over time. Second, our study examined the relationships between maverick buying and governance mechanisms in the context of the Finnish government, and for one specific product category. Future research should extend this into other countries, in the context of the private sector, and for other products and services.

In terms of future research it would also be important to study what are the costs of the various governance mechanisms associated with maverick buying as an agency problem. Knowing which governance mechanisms work best in increasing compliance is the first step, but for managers, the relative incremental cost of improving training, guidance, monitoring, and incentives should also play a role in making decisions on how to reduce maverick buying in their organizations.

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APPENDIX 1

Tenure

1. Please indicate the number of years you have been employed by the Finnish government.

Distance (kilometers)

1. Please indicate the postcode of the address where your office is located (if you work at multiple offices, please select the office where you spend most of your time)

Distance (perceived) (7-point, strongly disagree – strongly agree)

1. The business practices and operational mechanisms of [CPU] are very similar to ours
2. The corporate culture of [CPU] is very similar to ours
3. The management style at [CPU] is very similar to ours

Specialization (7-point, strongly disagree – strongly agree)

1. Our unit has a high level of specialized knowledge that other units in the Finnish government do not have
2. We execute our tasks relatively autonomously from other units in the Finnish government
3. We have very few lateral linkages with other units in the Finnish government
4. Our unit is very different and unique compared to other units in the Finnish government

Compliance climate (7-point, strongly disagree – strongly agree)

1. My unit strictly enforces rules and procedures.
2. My unit actively supports rules imposed by the central government.
3. Top management in my unit has made absolutely clear that deviation from rules and procedures will not be tolerated.
4. There is a strong emphasis in this unit to play by the rules.

Organizational commitment (7-point, strongly disagree – strongly agree)

1. I am willing to put in a great deal of effort beyond that normally expected in order to help this unit be successful.
2. I would accept almost any type of job assignment in order to keep working for the Finnish government.*
3. I find that my values and the values of the Finnish government are very similar.
4. I am proud to tell others that I am part of this unit.
5. I really care about the fate of this unit

Guidance (7-point, strongly disagree – strongly agree)

1. Our unit and [CPU] make it a point to keep each other well informed
2. We hesitate to give [CPU] too much information*
3. We are quite involved in the frame agreement tendering efforts of [CPU]

* Item deleted, (R) Reverse-coded item, [CPU] Corporate Purchasing Unit

4. [CPU] seeks our advice and counsel concerning their tendering efforts
5. Our relationship with [CPU] is like an open book
6. [CPU] is available when I have questions about purchasing policies and frame agreements
7. [CPU] makes an effort to keep me informed about purchasing policies and frame agreements

Training (6-point, far below sufficient – more than sufficient)

1. Training related to purchasing in general
2. Training related to law on public procurement
3. Training related to the public tendering process
4. Training related to purchasing policies and objectives regarding cleaning services
5. Training related to contracts in use in cleaning services
6. Training related to purchasing procedures in cleaning services
7. Training related to purchasing systems in cleaning services

Task programmability (7-point, strongly disagree – strongly agree)

1. Standard operating procedures have been established for ordering cleaning services
2. Our unit has documented work processes for ordering cleaning services
3. My responsibilities with respect to ordering cleaning services are clearly defined
4. I am given little freedom to decide how and where I order products and services within this category.*
5. For this specific category, we use an e-procurement system which pre-specifies the procedures to be used.*

Information asymmetry (7-point, strongly disagree – strongly agree)

1. I have intimate understanding of the purchasing strategies of the Finnish government
 2. I have intimate knowledge of the frame agreement for cleaning services and its clauses
 3. The people at [CPU] have developed an excellent working knowledge of ordering tasks in cleaning services
 4. The people at [CPU] know how I accomplish the ordering tasks in cleaning services
- ### *Goal incongruence (7-point, strongly disagree – strongly agree)*
1. The frame agreement for cleaning services is completely in line with our local needs
 2. Our goals with respect to ordering cleaning services are aligned with the goals of those who established the frame agreement
 3. Everything I need with respect to cleaning services I can find in the frame agreement
 4. The conditions of the frame agreement for cleaning services are a good match with what I need
 5. The products and services offered through the frame agreement for cleaning services serve my needs well

Local cost of compliance (7-point, strongly disagree – strongly agree)

1. Prices negotiated by our unit are lower than prices in centrally negotiated contracts
2. Delivery times of suppliers we have selected ourselves are better than delivery times of suppliers in the centrally negotiated contracts
3. Product/service specifications determined in our unit are better for our needs than specifications in the centrally negotiated contracts
4. Service of the suppliers we have found ourselves is better than service from centrally contracted suppliers
5. Ordering from local suppliers is more socially responsible than ordering from centrally contracted suppliers
6. Ordering through centrally negotiated frame agreements is more time-consuming than ordering directly from non-contracted suppliers
7. Using frame agreements is unfair to non-contracted suppliers
8. Ordering from suppliers we have selected ourselves brings more personal benefits than ordering from centrally contracted suppliers

Output monitoring (7-point, strongly disagree – strongly agree)

1. Documents exist to measure the extent to which frame agreements are used
2. My use and non-use of frame agreements can be adequately assessed using existing documents and reports
3. Specific performance goals for the use of frame agreements are established for the purchasing of cleaning services
4. Management monitors the extent to which I have used frame agreements when purchasing cleaning services
5. If my goals for the use of frame agreements in purchasing cleaning services were not met, I would be required to explain why

Behavior monitoring (7-point, strongly disagree – strongly agree)

1. I receive feedback from management concerning how I have purchased cleaning services
2. Management monitors the extent to which I follow established purchasing procedures in cleaning services
3. Management evaluates the purchasing procedures I use to accomplish a given task in purchasing cleaning services
4. Management modifies my purchasing procedures in cleaning services when desired results are not obtained

Incentives (7-point, strongly disagree – strongly agree)

1. I believe the risk of not using centrally negotiated frame agreements being detected is large
2. Not using centrally negotiated frame agreements is something which could negatively influence my performance evaluation
3. I believe my organization would discipline me for not using centrally negotiated frame agreements
4. If I was caught buying outside frame agreements, I think I would not be reimbursed for the invoice
5. If I was caught buying outside frame agreements, I think I would be given a verbal warning
6. Using centrally negotiated frame agreements is something which could positively influence my performance evaluation

Compliance (7-point, strongly disagree – strongly agree)

1. When I have to purchase cleaning services, I prefer to use [CPU] frame agreements
2. When I have to purchase cleaning services, I make an effort to use [CPU] frame agreements
3. It is easy to purchase cleaning services outside of [CPU] contracts (R)
4. In this unit, it is common to purchase cleaning services outside of [CPU] contracts (R)
5. When I buy something I have never bought before, I always check whether a frame agreement is in place
6. Whatever good or service I buy, I always shop around for the best deal (R)
7. I use a centralized frame agreement only when I cannot find a better deal myself (R)

Conscientiousness (7-point, strongly disagree – strongly agree)

1. Can be somewhat careless (R) *
2. Tends to be disorganized (R)
3. Perseveres until the task is finished
4. Does things efficiently
5. Makes plans and follows through with them

Openness to experience (7-point, strongly disagree – strongly agree)

1. Prefers work that is routine (R) *
2. Has an active imagination
3. Is curious about many different things
4. Is inventive
5. Likes to reflect, play with ideas

* Item deleted, (R) Reverse-coded item, [CPU] Corporate Purchasing Unit

APPENDIX 2

Variables	Cronbach's α	Mean	s.d.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	
1. Compliance	0.76	4.94	1.13																		
2. Goal incongruence	0.95	4.33	1.38	-0.45**																	
3. Information asymmetry	0.83	3.63	1.54	-0.43**	0.58**																
4. Incentives	0.90	3.55	1.40	0.21**	-0.07	-0.15*															
5. Output monitoring	0.74	4.38	1.04	0.37**	-0.30**	-0.45**	0.47**														
6. Process Monitoring	0.91	3.80	1.50	0.13	-0.07	-0.18**	0.51**	0.52**													
7. Training	0.96	2.71	1.14	0.23**	-0.15*	-0.52**	0.05	0.22**	0.24**												
8. Guidance	0.78	4.21	1.04	0.32**	-0.42**	-0.56**	0.20**	0.44**	0.12	0.30**											
9. Specialization	0.66	4.46	1.21	-0.19**	0.16*	0.14*	-0.05	-0.08	-0.06	-0.01	-0.09										
10. Distance (perceived)	0.87	4.10	1.01	-0.21**	0.36**	0.28**	-0.10	-0.18**	-0.03	-0.45**	-0.06	0.06									
11. Distance (km)	NA	213.02	232.12	0.00	0.09	0.04	-0.03	-0.05	-0.01	-0.05	-0.16*	-0.05	-0.03								
12. Organizational commitment	0.74	5.11	0.97	0.01	-0.07	0.07	0.12	0.20**	0.25**	0.07	0.02	0.09	-0.18**	0.1							
13. Local cost of compliance	0.85	3.94	1.11	-0.49**	0.49**	0.39**	-0.09	-0.23**	-0.05	-0.41**	-0.15*	0.12	0.12	-0.03	0.04						
14. Task programmability	0.57	4.49	1.31	0.29**	-0.31**	-0.51**	0.11	0.37**	0.30**	0.31**	0.47**	-0.04	-0.21**	-0.08	0.11	-0.26**					
15. Compliance climate	0.87	5.13	1.18	0.02	-0.03	-0.1	0.15*	0.19**	0.21**	0.15*	0.08	0.04	-0.11	0.14*	0.27**	-0.00	0.25**				
16. Conscientiousness	0.71	5.51	1.01	0.17**	0.12	-0.09	0.00	0.14*	0.14*	0.08	0.03	-0.05	-0.13	0.17*	0.17**	-0.09	0.10	0.12			
17. Openness to experience	0.79	5.03	1.17	0.15*	-0.03	-0.08	0.02	0.16*	0.21**	0.03	-0.03	-0.04	-0.03	0.03	0.22**	-0.03	-0.06	0.06	0.47**		
18. Tenure	NA	20.31	10.4	0.01	-0.12	-0.14*	0.05	0.09	0.02	0.04	0.01	-0.05	-0.08	0.11	0.13	-0.06	0.01	0.07	-0.06	-0.02	

n=214

* Correlation is significant at the 0.05 level.

** Correlation is significant at the 0.01 level.

TABLE 1

Results of Hierarchical Regression Analysis for Compliance

Variables	Model 1	Model 2	Model 3
Goal incongruence		-0.35***	-0.34***
Information asymmetry		-0.22**	-0.15*
Incentives			0.16*
Output monitoring			0.18*
Process monitoring			-0.12
Compliance climate	-0.01	-0.02	-0.04
Conscientiousness	0.12	0.05	0.05
Openness to experience	0.09	0.09	0.09
Tenure	0.03	-0.05	-0.06
(Intercept)			
Model F	1.75	13.43***	11.11***
R ²	0.03	0.28	0.33
ΔR ²		0.25	0.05
Hierarchical F		35.62***	4.92**

n=212. All entries are standardized regression coefficients.

† p < 0.10

*p < 0.05

** < 0.01

*** < 0.001

TABLE 2**Results of Hierarchical Regression Analysis for Goal incongruence**

Variables	Model 4	Model 5
Training		-0.04
Guidance		-0.15*
Specialization	0.09	0.09
Distance (perceived)	0.27***	0.21**
Distance (km)	0.12*	0.10 [†]
Organizational commitment	-0.01	0.00
Local cost of compliance	0.45***	0.39***
Tenure	-0.08	-0.08
(Intercept)	5.41	4.55
Model F	15.76***	12.67***
R ²	0.34	0.35
ΔR ²		0.02
Hierarchical F		2.61 [†]

n=194. All entries are standardized regression coefficients.

[†] p < 0.10

*p < 0.05

** < 0.01

*** < 0.001

TABLE 3**Results of Hierarchical Regression Analysis for Information asymmetry**

Variables	Model 6	Model 7
Training		-0.25***
Guidance		-0.39***
Specialization	0.09	0.08
Distance (perceived)	0.19**	0.03
Distance (km)	0.01	-0.04
Task programmability	-0.49***	-0.30***
Tenure	-0.12 [†]	-0.12*
(Intercept)	2.64	0.36
Model F	19.31***	29.82***
R ²	0.34	0.53
ΔR ²		0.19
Hierarchical F		37.40***

n=194. All entries are standardized regression coefficients.

[†] p < 0.10

*p < 0.05

** < 0.01

*** < 0.001

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