THEORETICAL FOUNDATIONS FOR ANALYZING
PROCUREMENT OF IS IN PUBLIC SECTOR

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Abstract

The paper discusses the need for research on public procurement of information systems and IS consulting services, due to the magnitude of such procurements and to the complexity of procuring information systems and consulting services and of procurement in public sector in general. It gives a brief overview of some of the previous research on procurement and identifies a research gap. This gap is suggested filled with applying dialectics as analytical lens, and agency theory and stakeholder management theory on a limited amount of case studies, to identify challenges or dilemmas in public procurement of IS and IS consulting services, and what strategies may be applied to deal with these dilemmas.

1 INTRODUCTION

In this paper I will reflect on how some of the meta-theories applied in Information Systems can be used for analyzing public procurement of Information Systems (IS) and IS consulting services, and suggest a methodology for data collections. This is as a basis for my doctoral research hence this paper is very much work in progress. I will start the paper by describing the research topic and its relevance in next chapter. Following this I will present a preliminary review of current research on procurement of IS in public sector in chapter 3, which will serve the role of positioning my own research. Next, I will introduce dialectics which will serve as my analytical lens, and two theories which will complement this, agency theory and stakeholder management theory. Chapter 5 will show these theories may be applied and suggest a research approach, before I will sum up with potential contribution and future work.

2 RESEARCH TOPIC

IS as a discipline can be defined as “the effective design, delivery, use and impact of information technologies in organizations and society” (Avison and Fitzgerald, 2003). Procurement of information systems has become the common way of acquiring software. My research will examine how the public sector procures information systems (IS) and IS consulting services, what challenges or dilemmas it faces and how it meets these challenges.

The topic area is of great relevance due to the magnitude of procurement of IS and IS consulting; probably almost all information systems are procured from vendors. The complexity of procuring these systems and services adds to the need for research on the topic area, and the unique challenges in public sector compared to private sector make it even more complex.

Public procurement of IS constitutes enormous costs, the Norwegian central government alone used 1.1 billion NOK for purchasing software in 2006, when figures from municipalities and county government is included the total amounts to 1.6 billion NOK or 200 million Euro (SSB, 2008). Procurement of ICT consulting services has also been increasing (Iyer et al., 2006) due to a broader view of IT that includes how IT is deployed in an organization, in line with the resource based view of the firm (Mata et al., 1995). According to Mata and his co-authors (op. cit.) the only attribute that is expected to create a competitive advantage is managerial IT skills, which includes management’s ability to conceive of, develop and exploit IT applications to support and enhance other business functions.

Procurement of Information Systems and IS consulting is not an easy task. Procuring information systems is probably more complex than procurement of most other items, including ICT equipment. Whereas ICT equipment is standardized and has formalized specifications, information systems are hard to specify upfront. ICT equipment is one of the items which most often are purchased over the net, due to the fact that
it is easy to compare between different vendors and brands, and to check that specifications are met. In contrast some of the information systems procured by the public sector are very complex, and for a buyer it is difficult to evaluate offers against requirement specifications and to compare between competing systems, hence they are not well suited to online procurement.

There are also challenges in acquiring or procuring IS consulting services. These challenges include the difficulties in specifying requirements, risks of incurring costs and problems inherent in outsourcing firm specific knowledge to external consultants, Dawson and his co-authors (Dawson et al., unpublished) expands on this. One additional problem which may be crucial, is the information asymmetry between the professional consultant and the client (Sharma, 1987). Whereas the consultant has specific knowledge about the clients needs and about the types of Information Systems that may be relevant, the client does not know how the professional does the job, or what he or she does. This information asymmetry makes it difficult for the client to know beforehand how much service is actually needed, and it makes it difficult to evaluate the quality of the service supplied.

These challenges are probably greater in the public sector than in the private sector. One specific challenge of public sector is the strict regulations concerning procurement and public tendering. Public entities are required to publicly announce call for tenders for all procurements above a certain threshold value in member states in EU, and in the EEA area, of which Norway is a part of. This includes local government, central government, directorates and other public agencies. Another challenge is the magnitude of some of the ICT projects, both in terms of scope and of volume; it is well known that increase in scope adds risk. There are several incidents of huge overruns in time and costs, such as the Golf project for the Norwegian defense (Riksrevisjonen, 2008, Dagens, 2008) or the NHS Programme for IT in England (BBC, 2009, BCS, 2008). However there is limited research on dilemmas public sector faces between possible conflicting challenges.

Public sector also has the complexity of satisfying different needs and different stakeholders. According to Boyne (Boyne, 2002) the main conventional distinction between public and private organizations is their ownership; whereas private sector are owned by a limited group of entrepreneurs or shareholders, public agencies are owned collectively by members of political communities. Boyne (op. cit.) further argues that organizations that are subject to political rather than economic controls are likely to face multiple sources of authority that are potentially conflicting. As will be shown later there is limited research on this specific issue, hence research on what role different stakeholders play, is needed.

Due to the magnitude and complexity of procurement of IS in public sector the potential benefits of better knowledge of how the processes of procurement actually are carried out, and how they may be carried out, can lead to considerable benefits in terms of better information systems. Before introducing my research questions in detail and the theoretical foundation, I will give a brief and currently also fairly limited overview of research on procurement, with a focus of procurement of IS and IS consulting in public sector.

### 3 PREVIOUS RESEARCH ON PROCUREMENT

Public procurement can be defined as “the acquisition (through buying or purchasing) of goods and services by government or public organizations” (Hommen and Rolfstam, 2009). Others (Vasilecas et al., 2007) limit IS procurement to cover only a part of the wider IS acquisition process, which also includes analysis of organizational goals and needs, decision on necessary acquisitions and formulation of business requirements, and development of requirements specification for procurement.

Public procurement has been a neglected area of study (Thai, 2001). Currently there is little work on the process of procurement of information systems, and quite a lot of the work on procurement of IS seem to focus on the use of public procurement as an instrument for advancing specific technology solutions (Sieverding, 2008), for advancing innovation (Hommen and Rolfstam, 2009), or they are documentary, explaining the situation in a certain country (Telgen, 2006). There is also work on e-procurement in public sector (Hsiao and Teo, 2005, Hardy and Williams, 2007, Moon, 2005), but as previously shown procurement of IS is generally too complex to do completely online. Hence e-procurement lies outside the scope of my research.
However there is some work focusing on challenges or conflicting goals in public procurement. Thai states that public procurement must deal with a broad range of issues (Thai, 2006), such as:

- Balancing the dynamic tension between a) competing socioeconomic objectives, and b) national economic interests and global competition as required by regional and international trade agreements;
- Satisfying the requirements of fairness, equity and transparency;
- Maintaining an overarching focus on maximizing competition; and
- Utilizing new technology to enhance procurement efficiency, including e-procurement and purchase cards.

A very recent paper (Guijarro 2009) explores how ICT standardization and e-government interoperability influences public procurement in US, EU and United Kingdom. And in spite of the goal of transparency and fair competition, there may be reason to believe that the process is not altogether transparent, and that not all competing vendors have equal opportunities. A qualitative study of IT procurement processes in private companies in four European countries (Schiessl and Duda, 2007) shows that the choice of vendors may be based on limited information. The findings indicate that the search for supplier is usually initiated either through contacting a known supplier or one that has been recommended, and on average a rather small amount of suppliers were actually contacted in this study. Whether these results are transferable to public sector remains to be researched.

In spite of the shift from custom developed software to standardized packaged software development, the research on packaged software also remains a largely under-represented research area in information systems literature (Howcroft and Light, 2006). The term information systems encompasses very different types of systems ranging from off the shelf packaged general office software to large enterprise systems and to very specialized systems for niche sectors such as systems for public social services. Whereas off the shelf packaged software should be fairly easy to procure, there are huge challenges with procurement of the larger systems and the more specialized systems:

- uncertainty of needs, difficulty in specifying requirements before contacting vendors or announcing tenders
- difficulty in comparing competing systems

A previous paper on public procurement (Moe et al., 2006) shows some of the complexity with public procurement of information systems, and the need for more research on this topic. The paper reports from two different case-studies in a Norwegian municipality involving fairly complex information systems. The findings are based on interviews with both public employees and employees from the two competing vendors, as well as document analysis. The findings from the cases include that the vendors perceived the standard contracts developed by the Norwegian state agency; Statskonsult, as being very much in favor of the public entities using them. The findings also indicate tensions or dilemmas concerning creating requirement specification up front and doing the system specification as an integral part of the procurement process, and other dilemmas related to negotiations and fixed price contracts.

My work will expand on this, and I will be applying dialectics as a research lens in my research on procurement processes in public sector. That implies identifying challenges and dilemmas in terms of dialectical contradictions or thesis and antithesis, and through data collection also identifying possible synthesis or solutions. My research will focus what dilemmas there are between the requirements implied in the rules and regulations and other goals, and on how conflicts between conflicting goals of various stakeholders are solved.

Currently I have narrowed the topic area down to two research questions, each of them with a following sub question:

a. What challenges or dilemmas does the public sector face when procuring IS and ICT consulting services? And how does the interest of different stakeholder groups add to these dilemmas or challenges?
b. What strategies does the public sector use to cope with these challenges or dilemmas? And what are the consequences of these strategies?

The first question will deal with challenges between rules and regulations and other conflicting interests or goals. To identify these challenges we need data from different stakeholders. The second research question is a natural follow-up of the first one, where the goal is to understand and describe how the public sector deal with these challenges or dilemmas and what consequences their actions and strategies have. In the future this understanding may lead to more normative recommendations, indicating what strategies may be the best; however this is outside the scope of my planned thesis.

4 THEORETICAL LENSES

I plan to use dialectics as research lens. Dialectical theory begins with the Hegelian assumption that the organizational entity exists in a pluralistic world of colliding events, forces, or contradictory values that compete with each other for domination and control (Van de Ven and Poole, 1995). These oppositions may be internal to an organizational entity which may have several conflicting goals or interest groups competing for priority. But oppositions may also be external to the organizational entity. Van de Ven and Poole (op. cit.) uses dialectical theory to explain change in organizations as occurring when the opposing values, forces or events gain sufficient power to confront and engage the status quo. These opposing forces are termed thesis and antithesis, thesis being the status quo or the ruling way of "doing things". In such situation a new “synthesis” is developed which at a later stage becomes the status quo and again may be confronted by an opposing force. It must be added that the new situation or “way of doing things”, the synthesis is not necessarily progress to a better state.

Using dialectics as research lens in my research will imply identifying challenges and dilemmas in terms of dialectical contradictions or theses and antithesises, and through data collection also identifying possible synthesises or solutions. These may be in the form of work around, e.g. by specifying requirements which favor other goals than just costs. As previously shown, findings from two case studies of procurement in local government identify different tensions in the procurement process (Moe et al., 2006). However dialectics serves a limited role as analytical lens in identifying conflicts. To understand why these conflicts arise and how different persons or subgroups involved influence the process, other theoretical lenses are needed, and agency theory and stakeholder management theory ties well in with dialectics.

Agency theory attempts to describe the agency relationship, in which one party (the principal) delegates work to another party (the agent), who performs that work (Eisenhardt, 1989). Two problems can arise in such relationships, the desires and goals of the principal and agent can conflict, and it is difficult for the principal to verify what the agent actually is doing. Principal–agent researchers are concerned with a general theory of the principal-agent relationship, a theory that can be applied to employer-employee, buyer-supplier and other agency relationships. Agency theory is most relevant in situations in which contracting problems are difficult. These include situations in which there is a substantial goal conflict between principals and agents and sufficient outcome uncertainty to trigger the risk implications of the theory (Eisenhardt, 1989).

Eisenhardt (op. cit.) discusses the assumptions of the theory and raises the issue of principals learning about the agents when there is a long term relationship, when there may be less need for outcome-based contracts. This may be more the case with procurement in the private sector, where there are fewer regulations than in the public sector, and where tendering is not required. Private businesses are free to have long term relationships with software developers and consulting firms. Jones (1995) suggests that long term relationships with vendors may in the long run lead to higher effectiveness, due to the stability of the relationship being dependent on controlling goal conflicts.
Sharma has extended the agency theory and focuses on the principal-professional relationship, where professionals can include consultants (Sharma, 1987). It is not uncommon for public entities to use IS-consulting houses in specifying requirements and even in the tendering phase and the selection of vendor. According to Sharma (1987), there are some specific distinctions of the principal-professional agency exchange. The greatest is the power asymmetry. In an owner-manager or manager-worker relationship, the principal have the power to design and enforce contracts and hence the power to enter or to dismiss incentives for the managers and the workers. In contrast, principal-professional exchanges are inherently those in which professionals have the power over lay principals by virtue of their expertise, functional indispensability, and intrinsic ambiguity associated with the services they provide (op. cit.). It also involves a considerable information asymmetry; the principal does not only not know how the professional agent does the job, but also not what he or she does. This information asymmetry also makes it difficult for the principals to know beforehand how much service is actually needed. Dawson et. al. (unpublished) has expanded Sharma’s work to study information asymmetry in IS consulting.

Procurement can be viewed as involving at least two parts with different goals, a buyer and one or more vendors competing for the contract. However in addition to the agency relationship between buyer and competing vendors, there may be a number of internal stakeholders possibly with conflicting goals, adding complexity to the procurement process. These groups of internal stakeholders may include IT staff, procurement personnel, users, user representatives, line managers, financial officers and cost controllers. These may have conflicting interests even though there may not be an agency relationship between them; one common observation is that different user groups in different parts of a business may have conflicting requirements. This is where stakeholder management theory may be helpful. Eisenhardt and agency theory has been influential development of stakeholder theory (Jones, 1995, Hill and Jones, 1992)

Flak and Rose (Flak and Rose, 2005) have done a thorough literature study of stakeholder theory and discusses the strengths and weaknesses of the theory for theoretical contribution to the e-government field. Jones (op. cit.) defines stakeholders as applying not only to groups easily characterized by words such as customers or employees but also to subgroups of customers and employees (e.g. shop workers and middle managers) who may have distinct and competing interests. In my work I plan to identify different stakeholders in a number of case organizations, what conflicting goals or interests they may have, and to what extent this influences the process. Two obvious groups of stakeholders which may have conflicting goals are IT managers and users. There may also be conflicting goals between different external stakeholders (e.g. small compare to big vendors, local compared to national vendors).

5 METHODS

My research problem will be addressed by theory providing description and explanation. My goal is to develop theory for understanding the complex world from the point of view of those living in it, from the actors in the procurement process. I will develop theory for understanding procurement of information systems in public sector that apply where tendering is compulsory and regulations play an important role. My ultimate goal is to develop theory which can lead to normative prescriptions, in the form of recommended strategies and techniques to deal with challenges in procurement in public sector. However development of theory for action and design lies outside the scope of this research project.

I will use dialectics as research lens. That implies identifying challenges and dilemmas in terms of dialectical contradictions or theses and antitheses, and through data collection also identifying possible syntheses or solutions, and possibly new contradictions of conflicts arising from these syntheses. These may be in the form of “work around”. My plan is further to use agency theory and stakeholder management theory, when identifying the conflicting interests between buyer and vendors and consultants in the organizations I plan to use as cases.

Part of my work will be based on an interpretivist approach. I plan a methodology in four phases:

1. Preliminary case study to identify what may actually be “going on” and to identify some challenges or dilemmas
The preliminary case study is planned to be carried out in a local municipality. It will be a study of the planning of the procurement and part of the process. It will help to identify different groups of stakeholders and to what extent and how they may influence the procurement process in one organization. This case study will give valuable input on what to actually look for when carrying out later empirical research.

2. Delphi study of the most important challenges.

This will use input from different stakeholder groups, two internal groups of staff and probably one external group of vendors and one of consultants. The internal groups can be IS managers and procurement staff, municipalities tend to have an internal procurement department that know the regulations and generally take care of the procurement process. The Delphi study will be carried out as a two-step procedure. In the first step challenges can be identified by all participants. Then, in the second step, each group can be asked to rank the challenges through several iterations. By asking all participants to identify challenges irrespective of what subgroup they belong to, I ascertain that the ranking is based on the same concepts.

3. Quantitative study to identify magnitude of procurement and types of contracts and tenders

This study can be carried out either in local government or in different entities of central government. Local government in Norway consists of a body of 430 municipalities, and the advantage of focusing on this group, or a sample of it, is that it is a group which generally offers the same services and hence need similar sort of systems. It should also be fairly easy accessible.

Through this survey I hope to be able to learn something about how size and type of system and service affects dilemmas or challenges and the procurement process. I also hope to learn something about the strategies the respondents use to deal with these dilemmas and challenges or conflicts, but this depends on to what extent I am able to design a survey where a limited set of possible strategies are included. However quantitative studies have the inherent limitation of not disclosing information that is not asked for, so to get a deeper understanding I suggest a multiple case study. Another discrepancy with a qualitative study is that one can only expect to get the reply from one respondent in the entities surveyed. Time is also an issue, as a procurement process unfolds, new challenges or conflicts may surface. Hence richer data and longitudinal data are needed.

4. Qualitative longitudinal study with 3-4 cases of procurement

This study will be carried out by following one case of procurement in 3-4 case organizations, from the need for procurement is identified, through specification of user requirements, announcements of tenders, selecting vendor(s) and possibly also implementation.. I will collect data both through interviews with different stakeholders, observation in meetings, note-taking and document analysis. The procurements need to be picked according to certain criteria concerning size, type of system and complexity; however these criteria will be developed through the previous phases. The study will hopefully contribute to discovering dilemmas and challenges, strategies in use and what further dilemmas or conflicts that arise from these strategies. Hopefully it will also contribute to an understanding of what strategies are successful in different contexts. In this study it will be important to get data from different stakeholders, including both internal subgroups and external groups. Triangulation will be achieved by using different techniques like focus group interviews in addition to document analysis and observations from meetings. Critical incidents like e.g. change of stakeholders involved, decision points and issues concerning contract negotiations will be investigated.
6 POTENTIAL CONTRIBUTION AND FUTURE RESEARCH

My current literature review indicated there is a need for considerable research on procurement of IS and IS consulting services in public sector and that dialectics can serve as a useful research lens. Due to the roles of buyer and seller and especially the relationship between the buyer and consultant agency theory can contribute to understanding of the processes taking part during the procurement. Stakeholder management theory should also serve as a way of interpreting and understanding conflicting views between different internal groups of employees. My contributions may be along two different lines

i. Increased understanding of procurement of IS and of ICT consulting services in public sector and dilemmas and challenges in doing this.

This understanding in itself is important as understanding dilemmas and challenges is needed to deal with these. However just as interesting as this understanding, is the issue of strategies and techniques employed to deal with these challenges and dilemmas. This issue is likely to be complicated as strategies to deal with dilemmas are most probably context dependent, depending on both size of organization, complexity of system or service and on the actual stakeholders involved. However still I hope to contribute to:

ii. Increased understanding of how different strategies and techniques are used to deal with challenges in procurement in public sector, and what consequences these may have

As pointed out earlier there are definitely similarities between public and private sector and both sector faces the challenge of procuring systems that are hard to specify up front, so my contributions could have implications beyond the public sector.

However this knowledge and understanding could give the possibility of more normative prescriptions in the future, currently this lies outside of the scope of my research.

References


SSB (2008). IKT-utgifter i offentlig sektor:


