

# Reorganization of Software Application Hosting and its Relation to E-Government: A Swedish Municipality Case

*Björn Johansson, Copenhagen Business School, Denmark*

*Jörgen Lindh, Jönköping International Business School, Sweden*

---

## EXECUTIVE SUMMARY

*This article reports a case of a decision-making process in a Swedish local government reorganizing hosting of software applications. One question raised is, how the attempt of improving governance and being more of an e-government, influences hosting decisions. The case findings suggest, that organizations planning to decentralize decision-making in order to make better decisions and to increase ability of being an e-Government need to centralize parts of the IS-work. The article suggests different reasons for why an organization starts the process of reorganizing and how these reasons are connected to e-Government. The reorganization improved the governance so the executive committee could make correct decisions, in line with the government's ambition to become more of an e-Government and providing better services for its citizens. However, the question remains if decided option, to centralize and coordinate software applications hosting and ICT, was the best option or if another outcome would be preferable. [Article copies are available for purchase from InfoSci-on-Demand.com]*

*Keywords: E-Government, IS Governance, Reorganization of Hosting, Sourcing Decisions*

---

## SETTING THE STAGE

This article reports a case describing a sourcing decision-making process in a Swedish local government, in this article labeled “the municipality.” The research context is to a high extent dependent on the definitions of the concepts “e-government” and “hosting.” The idea of e-government is often described (Bekker & Holmberg, 2007; Löfgren, 2007; Moon & Norris, 2005; Yildiz, 2007) as an object or the “principal tool” by which public administrations improve their government activities both internally, for improved efficiency and effectiveness, and externally for improved relations with stakeholders. This opinion is in line with our understanding of the concept. Thus it can be stated that e-government is about how an organization uses its informa-

tion and communication technology (ICT) resources to reduce its internal workload and at the same time facilitate for the customer—that is, the citizen—in gaining access to services delivered by municipalities.

The evolution of e-government is described in different ways. Several stage models have been presented, for instance by Layne and Lee (2001). According to Riley (2003, p. 6):

*Government is an institutional superstructure that society uses to translate politics into policies and legislation, while Governance is the outcome of the interaction of government, the public service, and citizens throughout the political process, policy development, program design, and service delivery.*

We will come back to the concept e-governance later in this article.

The question whether organizations start a sourcing decision process is mostly related to the hosting of their software applications. Some studies have well reported the reasoning behind the decisions on how organizations should host their software applications (Dewire, 2001; Gorla, Chan, & Oswald, 2002; Aalders, 2001). Two factors that may have great impact on these kinds of decisions are control and capability. These two factors are often reported as reasons for organizations to start a sourcing decision process aimed at reorganizing hosting in organizations. Sourcing, from our point of view, involves outsourcing, insourcing, external service provision, and so on. Outsourcing can be positioned as one part within the field of e-government. Heeks (2006, p. 98), scanning the field of e-government, states that “outsourcing can cover a wide variety of e-government systems activities, including:

- analysis and design, for example, feasible study or process redesign;
- construction, for example, procurement advice or programming;
- implementation, for example, training or data conversion;
- operation, for example, running the computer systems or providing maintenance.”

But Heeks also concludes that “it would be rare for the entire central IT unit to be outsourced” (p. 98).

In this article, we define hosting as “localization,” and since citizens use software applications and receive services from software hosted by the service providing organization, e-government strongly relates to external hosting. In the e-government case the user of the software is not employed by the organization that delivers the possibility of using the software. This can, for instance, be related to outsourcing and/or external service provision of software applications. Control is a commonly referred factor when organizations decide on adopting or not adopting external service provision (Johansson, 2004). Control in this case can then be compared to questions about security and protection. And security and protection of ICT resources may to a great extent be viewed as related to hosting of the resources. This discussion directs us to the following questions:

1. Why do organizations deliberately start a sourcing decision process to reorganize their hosting of software applications?
2. How do decision makers' thoughts of e-government influence the start of such a decision-making process?

This article suggests two statements derived from the two factors, control and capability:

**Statement 1:** *A sourcing decision process starts because organizations need to improve their control of the software applications used in the organization.*

**Statement 2:** *One reason for a sourcing decision process to start is because of the need to increase organizational capability through its usage of software applications.*

The article discusses these statements and does so in relation to a case describing reorganization of software applications hosting in a Swedish municipality. The focus of the article is on how these statements are related to e-government.

The rest of the article is organized as follows. The next section describes the municipality sourcing decision-making case. We then cover reported reasons from the literature of why organizations start a sourcing decision process, and we analyze why the decision making in the municipality was started. The final section summarizes the article and gives some conclusions that can be drawn from the study.

## CASE DESCRIPTION: THE MUNICIPALITY CASE

This section reports on a retrospective study of a decision-making process employed in a Swedish municipality. It does so by presenting organizational information about the municipality and the decision-making process in which it was decided on how to host software applications in the future. However, we first present some methodological issues related to collection and analysis of the case data.

### Collection and Analysis of Case Data

The study can be described as a retrospective empirical case study (Walsham, 1995) consisting of empirical data from the municipality's sourcing decision-making process. The study of this process consists of 11 semi-structured interviews, which were audio-recorded and transcribed.

The people involved in the municipality's sourcing decision were divided into groups as described in Figure 1, and interviews were conducted with representatives from each of these groups. In Figure 1 the number of people involved is shown and the number in the brackets shows how many of these who were interviewed. Some of the interviewees were involved in more than one group, which explains why the sum exceeds 11. Table 1 presents the roles respective respondents have in the municipality and what roles they had in the sourcing project.

The interviews were conducted in January 2005, shortly after the decision-making process had been finalized. A timeline for the sourcing project is shown in Figure 3. The research material also consists of documented materials, shown in Table 2, in the form of minutes and reports from investigations made by the participants in the decision-making process employed by the municipality. Furthermore, it includes a report filed by an external consultant.

The approach for analysis was a qualitative content analysis, as described by Krippendorff (2004). The interviews were transcribed and transcriptions were compared with the other documentations. The documents and the interview transcriptions were also coded by writing down keywords in the margin.

Factors suggested as influential on sourcing decisions were used as keywords, but also words like "decision" were used. The aim of this content analysis was to sort out the text and thereby

Figure 1. Organization of the municipality's sourcing project

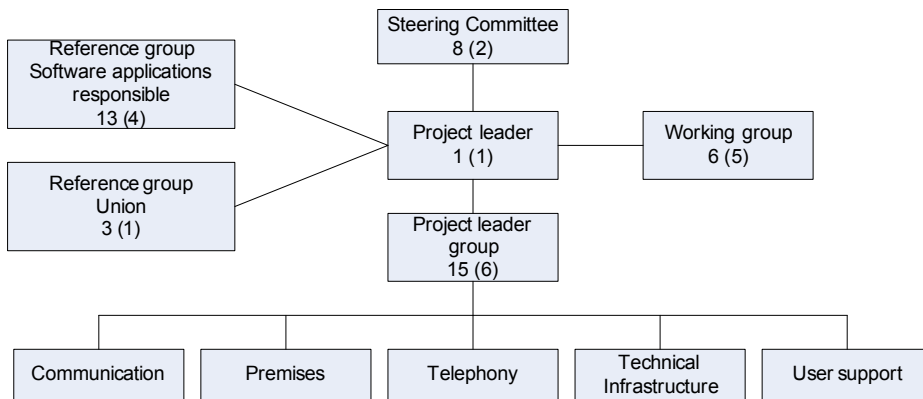


Table 1. Interviews with decision makers in the municipality

Date	Office	Role of Respondent	Respondent's Role/Roles in the Sourcing Decision	Interview Length
17 Jan 2005	Urban office	CIO	Project leader (involved in more or less all parts of the sourcing decision)	1.5 hours
21 Jan 2005	Urban office	Managing director of telephony	Project leader for the sub-project telephony, part of the project leader group	1.5 hours
21 Jan 2005	School and childcare office	Leader of ICT development	Project leader for the sub-project user support, part of the project leader group and the working group	2.5 hours
24 Jan 2005	Social welfare office	IT manager	Project leader for the sub-project technical infrastructure, part of the project group and the working group	1.5 hours
26 Jan 2005	Urban office	CEO	Chairman of the steering committee	1.5 hours
27 Jan 2005	Urban office	Project coordinator	Project coordinator for the sourcing decision (involved in more or less all parts of the sourcing decision)	1.5 hours
27 Jan 2005	Urban office	Project leader	Project leader for sub-projects communication and premises, part of the project leader group and the working group	1.5 hours
3 Feb 2005	Social welfare office	Responsible for the software application "Social Welfare"	Part of reference groups software applications responsible and reference group union	1 hour
3 Feb 2005	Social welfare office	Responsible for the software application "Elderly Care"	Part of the reference group software applications responsible	.5 hour
4 Feb 2005	Social welfare office	Managing director	Part of the steering committee	1.5 hours
4 Feb 2005	Urban office	Municipal commissioner	Not directly involved in the sourcing decision project, but responsible for the political area that the sourcing decision belongs to	1 hour

Table 2. Documentation used in the municipality case

Document Name	No. of Pages
Appendix final report sub-project "Technical Infrastructure"	3
Compilation of the municipality's ICT, 2004	14
Consultancy report, 2002	8
Coordinated ICT and telephony in the municipality, suggestion for final decision	6
Final report sub-project "Technical Infrastructure"	39
Minutes from the municipal executive steering committee, March 25, 2002	1
Overview of urban office's ICT organization	3
PowerPoint presentation of "Coordination Project"	22
Description of the project, 2003	2
Project plan "Coordination of ICT"	5
Report "Coordination of ICT," 2004	62
Report sub-project "Communication"	12
Report sub-project "Premises"	16
Report sub-project "Telephony" Phase 1, 2, 3, 4	40
Report sub-project "User Support"	30
The municipality's annual report, 2002, 2003, 2004	180
The municipality's budget, 2004, 2005, 2006	522
The municipality's IT-infrastructure program	34
Total number of pages	999

be able to get an understanding of what actually happens in a sourcing decision and the reasons why. The analysis can be said to be a within-case analysis (Eisenhardt, 1989). This means that the analysis involves detailed write-ups. The analysis of the write-ups was then made from identified factors suggested in the literature as involved in sourcing decisions. The analysis also adopted both of the strategies that Stake (1995) suggests, direct interpretation and categorical aggregation, and the aim was to arrive at new meanings from the case study data.

## Organizational Background

The municipality, which is a local government situated in the south part of Sweden, has approximately 10,000 employees, 120,000 citizens, and a turnover of 7 billion SEK. The municipality is described by the chairman of the municipal council in the following way:

*The municipality has had a positive evolution for many years. There are more inhabitants in the municipality, and the evolution of the job market has been positive compared to many other municipalities. However, the municipality's economic situation has been problematic the last few years. The economic situation has caused a decreased budget and savings for a couple of years resulting in some problems in the municipality's business.*

The chairman says the result in 2004 shows a change of the trend, but in spite of that, the municipality must save because “the municipality’s economic situation does not have the capacity to deal with unexpected changes in the costs.” This statement and the municipality’s vision describe a municipality that is growing in a fruitful way, but it does so with a somewhat problematic economic situation.

Another problematic issue is the demographic situation which shows two future problems for the municipality. The first is that the demand of services in healthcare and elderly care will increase in the future. The second is that the municipality must prepare to employ quite a number of new people. It is stated that this will demand good support and good tools for handling the huge amount of new employees. According to the municipality’s CIO:

*We will need to be more effective in our processes so that the municipality can give good services in the future. In the municipality 43% of the employees will retire within 10 years. This means that we have to use ICT and be much more effective with the help of software applications and we can’t do that with the ICT structure we have today.*

This is connected to the third future challenge, namely the need for developing the municipality’s e-government services, and a report from the municipality states:

*A change to e-government services demands investments in software applications and equipment to handle the requirements. It also demands that commonly processes are developed, which goes over office boundaries. It is a benefit if these investments are made as joint investments in the municipality. It will also demand that citizens are given support to be able to use the services that are provided.*

The municipality’s CIO states:

*To be able to coordinate software applications, you have to coordinate hosting of software applications, and the trend at the moment is to coordinate and consolidate to have a standard for developing 24/7 services.*

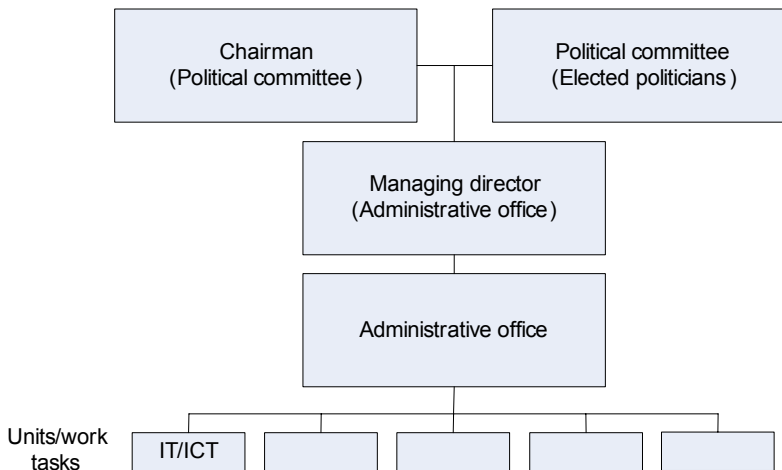
To describe the municipality further, and to give a more extensive background for its sourcing decision-making process conducted between March 2002 and November 2004, the structure of the municipality will be described next.

## **The Municipality’s Structure**

The municipality is a politically driven organization and as such it has a political structure. Political organizations such as municipalities also must have an administrative structure. The general organizational chart, shown in Figure 2, describes both the political structure as well as the administrative structure. The administrative structure largely follows the political structure.

The history of the municipality can be described with its political ideology, which is to strive for a high degree of decentralization. The municipality administrative structure consists of 11 offices. Six of these offices are organized into one group, the municipal executive office. The other five are self-organized offices. They are supposed to be supervised by the municipal executive office. However, as the ideology of the municipality focuses mainly on decentralization, these offices have a far-reaching decision authority. The effects of this ideology can be clearly identified with how the municipality has organized its hosting of ICT and software applications. Each

Figure 2. General municipality organizational chart



of the offices has developed its own organization and hosting of its software applications. The situation in 2004 was that the municipality had 57 employees working with ICT, the total amount of servers was 186, and the municipality had 6,543 PC/clients. The distribution of employees, servers, and PC/clients in each office is shown in Table 3.

However, the municipal executive office is meant to have the overall responsibility for the municipality's general ICT infrastructure, which seems to be a hard task. To further illustrate the effect of the decentralization and the evolvement of software applications in the municipality, it can be mentioned that a high variety of software is used in the municipality. There are nine different office products, 11 different database systems, 16 different operative systems, five different e-mail software programs, and 66 different software applications that are identified as critical for the municipality. In addition to those 66 software applications, there are an unidentified number of software applications. This could explain the reason for the decision-making process. As described by the CEO in the municipal executive office, "The welter of the municipality's software applications and ICT has to be controlled." This could probably be seen as the starting point of the sourcing decision-making process.

## The Sourcing Decision-Making Process

The whole process started in March 2002, when a standing committee, consisting of the five municipal commissioners and the CEO of the municipal executive office, gave the municipal executive office the task to investigate the general ICT infrastructure in the municipality. One reason was the expansion of ICT used in the municipality. The investigation should define the municipal executive office's responsibilities for development, maintenance, and hosting of the municipality's general ICT infrastructure. The examination should also include the need for competence development and how this should be organized. Following this directive the municipal executive office engaged a consultant to lead the investigation. The consultant interviewed employees in various committees, including some employees responsible for ICT in the individual offices. In the concluding report, the consultant claimed that the organization of ICT

*Table 3. Distribution of employees, servers, and PC/clients at different offices in the municipality*

Office	Number of "ICT" Employees	Number of Servers	Number of PC/ Clients
Recreational office	1	2	100
Cultural office	3	5	160
Rescue services office	0	4	50
School and childcare office	27	95	4,500
Social welfare office	8	35	900
Town architecture office	2	1	100
Urban office	11	32	320
Urban office/telephony	2		13
Technical office/environmental office	3	12	400
Total	57	186	6,543

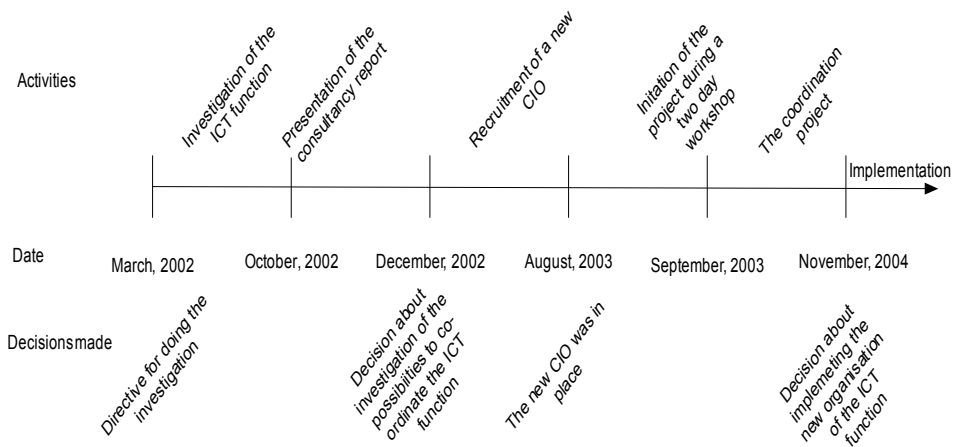
was distinguished by decentralization to a great extent, and there were no established long-term plans for how ICT should be developed.

From the consultancy report the municipal executive board, in December 2002, entrusted the municipal executive office to investigate the possibility for centralization of software applications hosting within a new planned data center. The next step in this decision-making process, which probably had the most far-reaching impact on the outcome of the decision, was the employment of the new chief information officer. The CIO began to work with this issue in 2003 and immediately organized the decision-making process as a project. The organization of the project is shown in Figure 1.

The CIO, who also was project leader for the municipality's sourcing project, then presented the result of the project to the municipal executive board in October 2004. The report from the project stated that a decision to position the municipality for its future development was necessary. The report concluded that there were two options for how to do this in the future. The first option presented was to "continue with the ICT infrastructure that historically has been built up in the different offices with a very low grade of coordination"; the second was "to coordinate the ICT function and telephony for better usage of existing resources making the municipality prepared to meet future challenges and possibilities of increased effectiveness."

There was then a decision from the municipal executive board, and the basic data for making the decision was a report from the project work, a file of investments necessary from 2005 to 2007, and an estimation of costs for hosting of ICT, after the reorganization. The municipal executive board decided on the option of centralization by restructuring and coordinating software applications hosting and ICT in the municipality. Since this decision meant exceeding the budget, the municipal council needed to approve it. This was granted in November 2004, and the decision was to coordinate software applications hosting and ICT in the planned new data center. The decision by the municipal council was unanimous.

Figure 3. Overall timeline for the municipality's sourcing decision-making process



## WHY DO ORGANIZATIONS START A SOURCING DECISION PROCESS?

Sourcing decisions could be seen as decisions made in organizations whether to buy or produce services by themselves. Irrespective of the products or services, organizations have two distinct options—to buy or to produce. This distinction is discussed in, for instance, transaction cost theory as a distinction between market and hierarchy (Williamson, 1985) and by Kishore, Agrawal, and Rao (2004) as market governance and hierarchical governance. This distinction can to a great extent be compared to a decision whether organizations should handle hosting of software applications in an external or internal way. It can also be related to centralized or decentralized hosting. So, if this is what sourcing decisions are about, the question is what sourcing options there are. Kern, Willcocks, and Lacity (2002) describe four general sourcing options for organizations: traditional outsourcing, insourcing, buy-in, and netsourcing. Netsourcing normally means that one rents the needed resources from a supplier. But instead of labeling it “netsourcing,” we will refer to it as “service provision,” since we focus on the actual services as well as how they are delivered. Thus the four options can be described in the following way:

1. *Outsourcing* is when an organization lets an external partner take care of some or all hosting of its software applications. The difference between all or parts of the hosting is described as total vs. selective outsourcing (Willcocks, 1994). Quélin and Duhamel (2003) define outsourcing as “the operation of shifting a transaction previously governed internally to an external supplier through a long-term contract, and involving the transfer of staff to the vendor” (p. 648). This means that the control of the hosting is moved to another organization. It also implies that the hosting of the specific software applications was handled and controlled by the outsourcing organization before the reorganization took place.
2. *Insourcing* is when an organization brings back previously outsourced hosting of software applications (Chapman & Andrade, 1998; Lacity & Hirschheim, 1995). Control and management of the hosting is addressed after an insourcing process is handled internally in the organization.

3. *Buy-in* refers to the way the insourcing option is used. The organization, in this case, buys resources then controlled and used internally. However, the buy-in option does not state that a resource that is bought in was necessarily outsourced before. The buy-in means, when it comes to hosting, that if the organization starts to use a new software application, which could be either bought or internally developed, it needs to decide how to host that application.
4. *Service provision* is when an organization uses another organization for parts of its hosting of software applications. They then buy the services on a regular or an irregular basis depending on their need and pay a rental fee for it. Service provision could be compared to outsourcing, but it differs from outsourcing in at least two ways: (1) it does not necessarily demand that the hosting was done internally before, and (2) it does not involve movement of human resources in the same way that is usually included in outsourcing.

The remainder of this section presents two statements about why organizations start a sourcing decision process. These build on mainly two factors: control and capability. It can be claimed that both of these reasons have a high influence on the results of a sourcing decision process. The question is how they influence the start of a sourcing decision process.

*A sourcing decision process starts because the organization needs to increase control.* One reason for starting a sourcing decision process is that the organization needs to increase the control. The question is then what this control is about. It might be to control the cost of using software applications. It might also be to control the actual usage of the software applications, which could be described as a need to control “what, when, and how” the software application is used, so that the software application supports the business processes in the organization. Control can be and is here compared to governance. Governance can be defined as “authority,” the way it was defined by Simon (1997), or “politics and power” as defined by Pettigrew (1973), or strictly as “decision rights.” Then the question is what these “decision rights” are about. Weill and Ross (2004) describe ICT governance as decision rights regarding ICT management, and they give the following definition of ICT governance as “specifying the decision rights and accountability framework to encourage desirable behaviour in the use of ICT” (p. 8). This indicates that ICT governance is about how resources are organized and the way it is related to decision making about sourcing options.

Governance might be compared to centralization as well as decentralization. In order to increase control (from a specific decision makers’ point of view), centralization of resources is imperative. It can also be stated that the lack of control can be traced back to the decentralization of ICT. However, as Simon (1960, 1997) and Markus (1984) state: Centralization or decentralization is not a question for organizations of whether they should centralize or decentralize. Instead it is a question of how far they should go with the decentralization or centralization. This means that for organizations, which need to improve their control, centralization of its resources is one way to do that. It can be argued that the most centralized hosting option is hosting through outsourcing—an alternative for organizations that want to attain control of their software applications. However, it also means that an organization, having outsourcing in mind, needs to have control of its resources. This discussion can be summarized as: An organization needs to increase its control of software applications and the usage of them, because of too much decentralized hosting of software applications. In order to increase control and thereby governance, outsourcing is a feasible sourcing option. However, to be able to have a successful outsourcing, the organization needs to have a certain degree of control and to have that, the first step in outsourcing is to do an internal restructuring. Control in this context refers to both cost control, control over the usage, control over what software applications are used, as well as control over versions of software

applications. What can be concluded is that the evolution of ICT has made this possible, without making the increased level of control a barrier for the organization's development:

**Statement 1:** *A sourcing decision process starts because organizations need to improve their control of the software applications used in the organization.*

*A sourcing decision process starts because of a need to increase capability.* Capability related to software applications can be described as a "technical" capability and/or a "theoretical/practical" capability (Johansson, 2007). Theoretical/practical capability is about the users' ability to manage and use software applications, while technical capability is related to the embedded capability in the software as a physical resource. However, in this context we adopt the definition of capability from Amit and Schoemaker (1993) as "a firm's capacity to deploy resources, usually in combination, using organizational processes, to effect a desired end" (p. 35). It can be stated that the need to increase capability, and especially capability received by usage of software applications, influences hosting decisions to a great extent (Johansson, 2004). This, in turn, is dependent on how decision makers look at the possibility to increase the organization's capability by software applications usage or not. It is also dependent on how decision makers take into consideration different sourcing options' impact and influence on the possibility to increase capability, which in turn indicates that if decision makers are not satisfied with the received capability from software application, they start a sourcing decision process.

From the capability perspective, another reason why organizations start a sourcing decision can be suggested: decision makers often see internal ICT departments as unresponsive to organizational needs (McLellan, Marcolin, & Beamish, 1998). Organizations want a flexible ICT organization, and the sourcing decision process is started with the aim of investigating how different sourcing options solve this. A change in the structure of the organization and the usage of external service provision is seen as a way of reaching this. A commonly referred reason for ICT outsourcing is that ICT outsourcing provides increased flexibility to cope with the changes in technology and in the business environment. Paradoxically the traditional ICT outsourcing agreement is based on long-term contracts that rather tend to inhibit than facilitate change (Shepherd, 1999). With the possibility to assist organizations with ICT skills, especially in the development and software maintenance areas (Kern, Lacity, Willcocks, Zuiderwijk, & Teunissen, 2001), the aim of the sourcing decision process might be seen as an investigation. This provides external service as a way for organizations to take advantage of the rapidly changing opportunities within the field of ICT (Currie & Seltsikas, 2000; Turban, McLean, & Wetherbe, 2001). However, it can be questioned if this is the case when talking about hosting of software applications. According to Mata, Fuerst, and Barney (1995), organization of resources is closely related to whether the resource provides competitive advantage or not, and it can be claimed that having competitive advantage means having capability as well. Based on this discussion the following statement is formulated:

**Statement 2:** *One reason for a sourcing decision process to start is because of the need to increase organizational capability through its usage of software applications.*

## Why the Municipality Started the Sourcing Decision-Making Process

It can be suggested that there were two reasons to start the decision-making process aimed at restructuring software applications hosting in the municipality. First was the need to increase control over the municipality's ICT costs. ICT costs had probably increased considerably. The

reason for using the word “probably” is that the municipality had no idea about the ICT cost. In each of the offices, they had a good grasp of their own costs, according to the CEO, but they had weak control. Weak cost control was also given as one reason why outsourcing was not seen as a possible alternative at this stage, and the reason was according to the municipality’s CIO, “since we had such bad cost control it was impossible to evaluate offers from outsourcing partners.” However, coordinating increasing control facilitated the possibility of having an external partner to compete with the internal data center in the future.

Second, security was emphasized as an important factor for starting the process, since a number of critical software applications were dependent on only one person. This was described as an effect of decentralization, and the decision makers saw centralizing of hosting as the only alternative. The other security concern was that some of the offices did not have suitable premises for their servers. Both cost and security reasons could be looked upon as needs to increase control and could therefore be seen as factors relating to an increase of governance regarding software applications in the municipality.

Enhanced control can therefore be seen as one motivation for the initial directive given by the standing committee in March 2002, which was to investigate the municipality’s general ICT infrastructure. However, when analyzing the consultant’s report, it seems like the investigation made by the consultant moved one step further than was originally stated in the directive. Although the consultant was asked not to investigate the ICT infrastructure of the individual offices, it was done, and the recommendation was to conduct a total investigation intending to centralize all hosting into a central data center. It is not known which persons the consultant interviewed. However, there were indications in the interviews done later that it was mostly the employees of the municipal executive office that were interviewed by the consultant. In that respect the investigation seems to be somewhat biased, and this was also indicated, by representatives in the decision-making process, in the interviews made later on when they claimed that the outcome of the process had already been decided before it started. They also said that they were not involved in the first investigation made by the consultant, despite the fact that the investigation involved their work to a great extent. However, the consultant’s report has one important point that reflects the results of the entire decision-making process. He emphasizes that the development of broadband connections in the municipality resulted in a coordinated hosting of the entire set of the municipality’s servers. This indicates that an analysis of the history of an organization is important to understand why decisions are made (Pettigrew, 1973). It goes back to the start of the sourcing decision-making process, and the question of power and politics in the decision-making process. During this study it has become successively evident that there is a group of five persons who meet fairly regularly. This group consists of CIOs from various committees and the CEO of the municipality. They have no formal decision authority, but they can propose what should be done.

The interviews found that decision makers in the municipality emphasized two issues over which they needed to have better control: (1) software applications costs aiming at decreasing costs in the future, and (2) what software applications are used in the municipality. The CEO at the municipality’s urban office points out: “The usage of software applications has increased a lot and so have the costs. We can’t continue to have this increase in costs, so we have to do something.”

This indicates that it was not only the need to decrease already existing costs that made the municipality start the sourcing decision, but also a need to make sure that costs did not accelerate further. The way the decision makers at the municipality described how to do this was not only by improving cost control. It was also described as a need for improving the overall control over software applications, and according to the municipality’s CIO, it is necessary to increase control

over what software applications are used to be able to increase cost control in the long term. The question of software applications capability was also raised in the interviews. For instance, the municipality's CIO describes the need for increasing capability gained from using the municipality's software application. He does so from two different angles: First, the municipality needs to develop software applications that support the municipality's processes:

"We will need to be more effective in our processes and arrange so that the municipality can give good services in the future. We have to use ICT and be much more effective with the help of software applications and we cannot do that with the structure we have on ICT today."

Second, the municipality's CIO says that the decision on centralization of software applications hosting is related to the need for developing the municipality's e-government services. This is described as demanding an increase in software applications investments as well as developing common processes that exceed the boundaries of different offices. According to the municipality's CIO, this is not possible to do without coordinating hosting of software applications. The final report from the sourcing decision states that it would be a benefit if these investments are made as joint investments in the municipality.

It could be argued that one reason for the municipality to start the sourcing decision process was that decentralization of ICT resources had proceeded too far, at least from the perspective of the entire organization. The municipality had built up a structure in each department leading to increased complexity in the hosting and maintenance work of its software applications.

## **ANALYZING THE CASE AND THE OPTION THAT THE MUNICIPALITY DECIDED ON**

The structure of the software applications and ICT in the municipality can be considered as strained, but well controlled, since each office controls its own resources. However, from an overall perspective, the control is inadequate. The municipal executive office that is supposed to have the overall control and should coordinate generally used software applications and ICT in the municipality is struggling to do this. The fact that ICT resources are not well controlled in the municipality is reflected in a statement by the municipality's CIO, who says "nobody can clearly state how many different systems there are." The CIO says that the number of different software applications used in the municipality ranges between 300 and 400. The hosting structure follows the decentralization ideology of the municipality.

Increased control and governance can be seen as reasons for the initial directive from the standing committee. The initial directive in March 2002 was, as previously described, to investigate the municipality's general ICT infrastructure. It is clear that the consultant exceeded the instructions when he also investigated the ICT infrastructure of the different offices. However, the consultant also recommended a total investigation aimed at centralizing all hosting at a central data center. It is clear that issues of power and influence are critical for new or redesigned e-government systems, which totally corresponds with experiences from other projects (Heeks, 2006).

Furthermore, the report stated that the development of broadband connections under the management of the municipality highlighted the issue of coordinating hosting of the entire set of the municipality's servers. This was a major reason for the start of the decision-making process. By providing citizens with a broadband connection, the municipality expected citizens to communicate more with the municipality. Investing in broadband connections requires offering citizens meaningful usage.

Thus the introduction and spreading of the Internet had a great impact on the process of the case. Scandinavia has generally had a long history as a trendsetter within the field of soft system development, since the days of Langefors (1995). In more recent times, when the Internet was invented and widely spread over the world, famous research work was done by the research group around Åke Grönlund, both concerning research on fundamental principles of E-government and later on the increasing use of e-services in the society. A few papers reflecting these trends are Axelsson and Melin (2008), Goldkuhl (2008), and Grönlund (2008).

We know that at the same time our case was processed, strong efforts were made on different levels to develop e-services from central government agencies (Heeks, 2006). Also international e-government programs were launched, for instance:

- eEurope 2005
- Was launched at the Seville European Council in June 2002
- Aims to develop modern public services
- And a dynamic environment for e-business
- Widespread availability of broadband access at competitive prices
- A secure information infrastructure
- The 24-hour agency in Sweden (Verva)
- Government On-Line in Canada (<http://canada.gc.ca/>)

In Sweden and many countries, “stage models” for explaining public e-services were introduced. Persson and Goldkuhl (2007) give a good summary of this research, where they present different stage models such as the SAFAD (Swedish Agency for Administrative Development) model and the ANOA (Australian National Auditing Office) model, where stage 4 was a kind of integrated level of “sharing information with other agencies; exchange of information between different government agencies regarding a specific user.” This was in parity with thoughts already published by Clift (2000): “Perhaps the most democratizing aspect of the Internet is the ability for people to organize and communicate in groups.”

We also know that the municipality under study was involved in cooperative work with 11 other Swedish municipalities with a shared interest to develop community e-services and to support development of a 24/7 authority. This work was strongly supported by the Swedish Agency for Public Management (2005), which stated:

*The modern administration is a coherent and transparent administration in continuous change composed of citizen and business centric agencies in a incessant process of development, creating benefit for citizens and business creating value by a high level of service and availability, excellent communications and high efficiency.*

One important reason for the municipality to start the sourcing decision process was that the organization had decentralized too much, and the decentralized hosting structure was not regarded as suitable for an introduction of potential e-government. However, as Simon (1960, 1997) and Markus (1984) point out, whether to decentralize or not is not the pertinent question. Instead, the important questions are:

1. *How far* should an organization decentralize or centralize?
2. *What* should an organization decentralize vs. centralize?

In the municipality case, decentralization of ICT resources has gone too far, at least as viewed from the organization's overall perspective. Each office has its own structure of software applications, leading to an increased complexity of the hosting and maintenance work of those applications, which at the same time makes it more difficult to attain governance and increase capability gained from software applications that are necessary to have in the future.

## **CURRENT CHALLENGES/PROBLEMS FACING THE ORGANIZATION**

The strategy of the municipality seemed to go in the direction of a maximized decentralization. In spite of this, a sourcing decision process began regarding software applications hosting, which from the very beginning aimed at a solution to centralize hosting, thus a decision that contradicts the strategy. The question is, why did the decision makers in the municipality behave in that way? This can be explained if one looks at the new users and the new usage of the municipality's software applications. It can be seen that the municipality has far-reaching goals of continued decentralization by letting the citizens themselves produce the services they need. The next step for the municipality is to decentralize tasks to be performed by the citizens themselves. To be able to decentralize tasks, the decision makers have found it necessary to increase control and capability gained by software applications; the way they see to do that is by restructuring software applications hosting.

From this it can be concluded that municipalities in Sweden must prepare for their future usage of software applications, implying that it is up to citizens to do more of the services themselves regarding work tasks which previously had been done by the municipalities' employees. This raises the requirements on municipalities to prepare for a higher level of control of software applications, both of usage and costs. This required increase of control can be seen as a factor that makes organizations begin to reorganize the hosting of their software applications. The increased control is also an effect of the need for added capability that will come about as a result of organizations striving to become "e-government organizations." The increased number of users will both generate demand on enlarged control of software applications and demand on achieved capability of software applications.

Finally, it might be interesting to discuss how well general sourcing patterns are justified by the case analysis done. We can then conclude that the first phase of the municipality process describes a pattern of outsourcing in the sense that software applications were moved out from the different offices in the municipality, although we do not really know whether or not respective offices still owned the software they used. The other movement, when IT resources were centralized, is much more difficult to describe, since it was a puzzle of components laid to bring a new order into the municipality. It has characteristics of an "insourcing" movement. Alternatively it might be considered a "buy-in," depending on the prior ownership of the software.

How far is our case generalizable? We think that many Swedish municipalities at the time of the study would have shown many similarities with the studied one. What we mean is that the process might have been almost the same, seen from an overall perspective. Of course the political circumstances would have had a certain impact on the tempo of different things that happened. And with other actors at the political playground, outcomes would have developed differently. Still, we believe the overall process would have been similar, seen from the background of a general interest in developing central e-services within the municipalities.

Applying the results and conclusions from this case study to foreign contexts might be more complicated, however. Contexts with other political structures, technological levels, and goals

might have resulted in quite various processes, even if the basic preconditions in many aspects would have been the same.

## REFERENCES

- Aalders, R. (2001). *The IT outsourcing guide*. New York/Chichester: Wiley.
- Amit, R., & Schoemaker, P.J.H. (1993). Strategic assets and organizational rent. *Strategic Management Journal*, 14(1), 33-46.
- Axelsson, K., & Melin, U. (2008). Facilitating citizen participation and involvement in e-government development projects. *Proceedings of EGOV 2008*, Copenhagen.
- Bekker, V., & Holmberg, V. (2007). The myths of e-government: Looking beyond the assumptions of a new and better government. *The Information Society*, 23(5), 373-382.
- Chapman, R.B., & Andrade, K. (1998). *Insourcing after the outsourcing: MIS survival guide*. New York: American Management Association.
- Clift, S. (2000). *The e-democracy e-book: Democracy is online 2.0*. Retrieved from <http://www.e-democracy.org/do>
- Currie, W.L., & Seltsikas, P. (2000). *Evaluating the application service provider (ASP) business model*. Executive Publication Series CSIS2000/004, Center for Strategic Information Systems, Department of Information Systems & Computing, Brunel University, UK.
- Dewire, D.T. (2001). ASPs: Applications for rent. *Proceedings of the 7th Americas Conference on Information Systems* (pp. 2275-2282).
- Eisenhardt, K.M. (1989). Building theories from case study research. *Academy of Management Review*, 14(4), 532-550.
- Goldkuhl, G., & Persson, A. (2006, June 12-14). From e-ladder to e-diamond: Re-conceptualising models for public e-services. *Proceedings of the 14th European Conference on Information Systems* (ECIS2006), Göteborg, Sweden.
- Goldkuhl, G. (2008). The evolution of a generic regulation model for e-government development. *Proceedings of EGOV 2008*, Copenhagen.
- Gorla, N., Chan, E., & Oswald, P. (2002). Determinants of IS outsourcing decision: Development of an integrated model and test. *Proceedings of the 8th American Conference on Information Systems* (pp. 2274-2285), Dallas, Texas.
- Grönlund, Å. (2008). NPM and e-government: Like father like son? *Proceedings of EGOV 2008*, Copenhagen.
- Heeks, R. (2006). *Implementing and managing e-government*. London: Sage.
- Johansson, B. (2004). *Deciding on using application service provision in SMEs*. Linköping: Linköping University.
- Johansson, B. (2007). *Deciding on sourcing option for hosting of software applications in organisations* (p. 301). Linköping: Linköping University.
- Kern, T., Lacity, M.C., Willcocks, L., Zuiderwijk, R., & Teunissen, W. (2001). *ASP market space report 2001. Mastering the customers' expectations*. GMG Report.

- Kern, T., Willcocks, L., & Lacity, M.C. (2002). Application service provision: Risk assessment and risk mitigation. *MIS Quarterly Executive*, 1(2), 113-126.
- Kishore, R., Agrawal, M., & Rao, H.R. (2004). Determinants of sourcing during technology growth and maturity: An empirical study of e-commerce sourcing. *Journal of Management Information Systems*, 21(3), 47-82.
- Krippendorff, K. (2004). *Content analysis: An introduction to its methodology*. Thousand Oaks, CA; Sage.
- Lacity, M., & Hirschheim, R. (1995). *Beyond the information systems outsourcing bandwagon: The insourcing response*. Chichester: Wiley.
- Langefors, B., & Dahlbom, B. (1995). *Essays on infology: Summing up and planning for the future*. Lund, Sweden: Studentlitteratur.
- Layne, K., & Lee, J. (2001). Developing fully functional e-government: A four-stage model. *Government Information Quarterly*, 18(2), 122-136.
- Löfgren, K. (2007). The governance of e-government—a governance perspective on the Swedish e-government strategy. *Public, Policy and Administration*, 22(3), 335-352.
- Markus, M.L. (1984). *Systems in organizations: Bugs + features*. Cambridge, MA: Ballinger.
- Mata, F.J., Fuerst, W.L., & Barney, J.B. (1995). Information technology and sustained competitive advantage: A resource-based analysis. *MIS Quarterly*, 19(4), 487-505.
- McLellan, K., Marcolin, B.L., & Beamish, P.W. (1998). Financial and strategic motivations behind IS outsourcing. In L.P. Willcocks & M.C. Lacity (Eds.), *Strategic sourcing of information systems: Perspectives and practices* (pp. 187-204). Chichester: Wiley.
- Moon, M.J., & Norris, D.F. (2005). Does managerial orientation matter? The adoption of reinventing government and e-government at the municipal level. *Information Systems Journal*, 15, 43-60.
- Persson, A., & Goldkuhl, G. (2007). Stage-models for public e-services—investigating conceptual foundations. *Proceedings of the 2nd Scandinavian Workshop on E-Government*, Copenhagen.
- Pettigrew, A.M. (1973). *The politics of organizational decision-making*. London: Tavistock.
- Quélin, B., & Duhamel, F. (2003). Bringing together strategic outsourcing and corporate strategy: Motives for outsourcing and the risks involved. *European Management Journal*, 21(5), 647-661.
- Riley, T.B. (2003). *E-government versus e-governance—examining the differences in a changing public sector climate*. International Tracking Survey Report 2003.
- Shepherd, A. (1999). Outsourcing IT in a changing world. *European Management Journal*, 17(1), 64-84.
- Simon, H.A. (1960). *The new science of management decision*. New York: Harper.
- Simon, H.A. (1997). *Administrative behavior: A study of decision-making processes in administrative organizations*. New York/London: The Free Press.
- Stake, R.E. (1995). *The art of case study research*. Thousand Oaks, CA: Sage.
- Swedish Agency for Public Management. (2005). *Framework for assessing the performance of e-government in Sweden*. Stockholm: Author.
- Turban, E., McLean, E.R., & Wetherbe, J.C. (2001). *Information technology for management: Making connections for strategic advantage*. New York: Wiley.

Walsham, G. (1995). Interpretive case studies in IS research: Nature and method. *European Journal of Information Systems*, 4, 74-81.

Weill, P., & Ross, J.W. (2004). *IT governance: How top performers manage IT decision rights for superior results*. Boston: Harvard Business School Press.

Willcocks, L. (1994). *Collaborating to compete: Towards strategic partnerships in IT outsourcing*. Oxford: Oxford Institute of Information Management, Templeton College.

Williamson, O.E. (1985). *The economic institutions of capitalism: Firms, markets, relational contracting*. New York: The Free Press.

Yildiz, M. (2007). E-government research: Reviewing the literature, limitations and ways forward. *Government Information Quarterly*, 24(3), 646-665.

## APPENDIX

As a teaching case, a couple of questions could be of interest to further discuss in a classroom setting:

- The case suggests a couple of benefits with centralizing hosting in the municipality. Are there any more benefits within the selected option for hosting, in addition to the benefits already described in the paper?
- The case suggests centralization of hosting as a solution of the problematic issues existing in the municipality related to development and evolution of software applications and services gained from software applications usage. What other possibilities could there be to solve the problematic issues cited by the municipality's CIO?
- The case does not clearly describe risks/drawbacks with the selected solution, as this was not discussed extensively in the project. That does not mean, however, that there are no risks/drawbacks with the decided solution. Thus, what potential risks/drawbacks are there with the solution that the municipality finally selected?
- One of the major suggestions for why the municipality had to reorganize hosting was to further develop e-government services. In what way would the selected option for hosting of software application influence/impact e-government in the municipality?
- The final decision in the municipality was to reorganize hosting and aim at a centralized solution for this. What are your opinions on this decision? Do you think it was the best decision for the municipality? If yes, what arguments do you see as support for the decision? If no, what arguments do you see as support for another solution?

*Björn Johansson holds a doctoral and a licentiate degree in information systems development and a bachelor degree in business informatics. Currently he works as a post doc at the Center for Applied ICT at Copenhagen Business School, within the 3gERP project (<http://www.3gERP.org>). He is a member of the IFIP Working Group 8.6 on Diffusion, Adoption and Implementation of Information and Communication Technologies and the research networks: VITS Work practice development, IT usage, Coordination and Cooperation and KiO Knowledge in Organizations. He defended his doctoral thesis Deciding on Sourcing Option for Hosting of Software Applications in Organisations in 2007.*

*Jörgen Lindh is associate professor of informatics at Jönköping International Business School (JIBS), Sweden. His main interests are different kinds of ICT use in school. He defended his doctoral thesis Computer supported teaching in school – possibilities and problems (1993) in 1993. Besides research on online courses in universities, he had recently run a project investigating effects of regular robotic toys (lego) training on school children's performance. Lindh is today a group leader of the research group "Networked Learning, Collaboration and Competence", one part of the CenIT centre at JIBS. The focus is on collaborative aspects of learning.*