

Implementation of Public e-Procurement in Swedish Government Entities

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Abstract—An increasing number of organizations in the public sector are beginning to adopt e-procurement, which its benefits (e.g., to reduce costs through increased efficiency in the procurement function) are well known by businesses. The purpose of this paper is to assess the implementation of e-procurement concept within Swedish government authorities during 2001 and 2008. A qualitative research approach was applied, and a longitudinal study was conducted. Data were collected in 2001 and 2008 through structured personal telephone interviews with 15 central government agencies. Results show that the implementation of e-procurement has developed substantially during recent years, but Swedish government authorities have still not yet adopted and utilized e-procurement to its full potential. Benefits and challenges were identified. The implementation and use of e-procurement were also found to have an impact on the buying behavior, i.e., on the buying process, the selection criteria and the buying center.

I. INTRODUCTION

THERE is strong consensus among researchers and practitioners regarding the strategic importance of developing efficient purchasing to reduce costs. An increasing number of government authorities are adopting e-procurement solutions to reap the benefits that companies in the private sector have already achieved [1]. E-procurement is the process of purchasing goods and services electronically [2], [3], and can be defined as “the use of integrated (commonly web-based) communication systems for the conduct of part or all of the purchasing process; a process that may incorporate stages from the initial need identification by users, through search, sourcing, negotiation, ordering, receipt and post-purchase review” [4, p.295]. In the private sector, e-procurement generally provides annual cost savings of between 25 and 50 percent and potentially can reach the same level in the public sector [2]. The governmental sector in Europe represents 45 percent of the GDP, 15 percent of which is related to public procurement [5]. Sweden has one of the world’s largest public sectors [6], and even small increases in the efficiency in public procurement can lead to large savings. Due to the potential savings, e-procurement is one of the main prioritized areas for EU’s initiatives within the area of e-government [7]. Despite all of the benefits that can be reached through public e-procurement [2], the implementation of any e-government project

is complicated because of the size and bureaucratic nature of government [8].

Even though public e-procurement has similarities with the private sector, such as its focus on value, competitiveness, and accountability [1], it also has some special characteristics that make it different [7]. For example, the procurement process—which includes selecting bidders, evaluating tenders, and selecting contracts—should be transparent to the public. In addition, public organizations must follow certain rules and restrictions imposed by the government [7]. Public procurement in Sweden is regulated by the Public Procurement Act (LOU), which promotes competitive bidding for public contracts and governs public procurement.

The current literature is limited with respect to e-procurement concept [9]. In the marketing literature, e-procurement has been studied primarily from a business-to-business (B2B) perspective, and the field of public sector procurement has been neglected [10], [11], [12]. The purpose of this paper, therefore, is to address this area by assessing the implementation of e-procurement concept within Swedish government authorities during 2001 and 2008. This study, in one hand, evaluates the emerged benefits and challenges in cases where e-procurement was implemented and, on the other hand, identifies the impact of e-procurement’s adoption on buying behavior.

II. LITERATURE REVIEW

The literature review is categorized into three sections focusing on perceived benefits, perceived challenges, and e-procurement’s impact on the buying behavior.

A. Perceived Benefits with e-Procurement

Literature in the field of supply management and e-procurement discuss several benefits of e-procurement [3]. Previous literature (e.g., [13], [1]) has identified major advantages with e-procurement, such as; reduction of supply costs, reduction of cost per tender, lead time savings, simpler ordering, reduced paperwork, decreased redundancy, less bureaucracy, standardization of processes and documentation, online reporting, clearer and more transparent processes, ensured compliance with procurement laws and regulations, minimization of errors, and easier access to information. Previous research also indicates that e-procure-

ment may lead to increased quality and more adequate purchasing [14]. In addition, e-procurement has been found to facilitate decentralization of procurement and, thereby, enable purchasing professionals to focus more efforts on strategically important issues [1]. In summary, through implementation of e-procurement governments can handle much of the administrative work automatically, thus making the procurement process more efficient than any present paper-based system, with a corresponding benefit from large cost savings [2], [7], [1].

B. Perceived Challenges with e-Procurement

Despite the various benefits offered by the use of e-procurement, organizations will meet a number of challenges when implementing such systems. The vast size and bureaucratic nature of governmental organizations can complicate the implementation of e-government projects [8]. Previous literature have identified and grouped perceived challenges with e-procurement into five categories; i.e., challenges associated with strategic initiative, internal integration, external integration, technological integration, and security issues [9].

As to *strategic initiative*, one challenge is to realize that the Internet is not the strategy but rather the tool for developing e-procurement [15]. Need of processes and procedures, adequate planning, time issues, and management support have also been identified as strategic challenges in e-procurement implementation [9]. Challenges related to *internal integration* that has been brought up in previous literature are the need for commitment from senior management and organization-wide communication of this commitment [16], budgeting and costs, change management, as well as need of training and resources [9]. With respect to *external integration*, issues related to change management were found to be most challenging [9]. As for *technological integration*, data quality, system-to-system integration, and ICT/technical issues have been identified as major challenges for many organizations when implementing e-procurement [9].

C. Implementation of e-Procurement and its Impact on Buying Behavior

To transform a procurement department into an e-procurement environment requires changes in buying behavior. It is a mistake to believe that the establishment of an e-procurement system can be comparable with the purchase of a new computer system. To succeed, significant planning must be done to find solutions that integrate strategy, technology, processes, and people [2]. However, relatively little has been done with regards to empirical studies focusing on e-procurement implementation [4].

Implementation of e-procurement can impact organizations buying behavior (i.e., their buying process, selection criteria and the buying center). The *buying process* often is described as a sequential process with separate stages, steps, or phases of buying activities that take place from the time that a need arises to the actual purchase and subsequent evaluation. Mitchell [2] states that that e-procurement will change procurement processes; however, there is a lack of research focusing on how e-procurement will impact the

buying process in the public sector. Previous research focusing on B2B has shown that e-procurement can shorten, automate, streamline, and structure the buying process [2], [17], [18], [19]. Also, the *selection criteria* may change in an e-procurement setting; however, no study has been found that focused on this with respect to public procurement. In B2B, new criteria, such as electronic catalogue management, electronic order management, electronic financial settlements and suppliers' e-skills, have been gaining importance [19]. In addition, the number of suppliers that can be evaluated has increased, and potential suppliers can be found all over the world [20].

No study has been found focused specifically on public e-procurement's impact on the *buying center*, i.e., the members of the organization that influence the buying decision. However, Mitchell [2] states that the introduction of e-procurement will influence the roles and skills required in the purchasing organization and will alter relationships with vendors and suppliers. It therefore is important to manage the impact of these changes on both personnel and customers. In a B2B setting, one study suggests that the buying center may decrease in size, include fewer hierarchical levels, and contain fewer functional areas when e-procurement is applied [17]. Another study suggests that e-procurement leads to a centralized purchasing function and those employees will be more empowered to manage their own purchasing while adhering to the organization's rules [21]. Findings from one study within the public sector [10] suggest that personnel across different departments—such as finance, procurement, administration, IT, and e-government—should be involved in public e-procurement. This, in turn, might lead to conflicts such as regional policies of local purchases versus cost savings from having access to larger national markets [10].

III. METHODOLOGY

Due to the scarcity of research focusing on public e-procurement as well as the exploratory nature of this research, a qualitative research approach was selected [22]. To capture the development of public e-procurement, a longitudinal study was carried out. Data were collected at two points in time: in 2001 and in 2008. Our sample included 15 public organizations, i.e., the five largest county councils, the five largest county administrative boards, and five governmental authorities all having several local offices in Sweden. All these were selected from databases on Swedish government authorities.

Data were obtained through structured telephone interviews with the person responsible for e-procurement within each of the 15 organizations. Each interview lasted between 30 and 60 minutes. An interview guide was used to collect the data. The interview guide was developed based on previous research; some modifications were made between 2001 and 2008 due to the fact that public e-procurement evolved and became more sophisticated. In the data analysis, three concurrent flows of activities (data reduction, data display, and conclusion drawing) were applied (e.g., [23], [22]). Different steps were taken to increase the quality of the data [24], [22]. The interview guides were carefully developed

and tested before the interviews were conducted. Follow-up questions were used when something was unclear, and anonymity was guaranteed.

IV. THE IMPLEMENTATION OF PUBLIC E-PROCUREMENT

E-procurement within Swedish government authorities evolved significantly between 2001 and 2008. Out of the 15 investigated agencies, only three had implemented some form of e-procurement in 2001, and they were in an early stage of development. These organizations used e-procurement mainly for buying office supplies and expendable items related to healthcare. By 2008, 11 of the 15 government authorities (about 73 percent) had an e-procurement solution in place that included additional product categories such as furniture, telecom services, computer hardware and software.

The result indicates that the purchase value of e-procured products increased substantially between 2001 and 2008, although the value varies substantially between the different authorities. Five of the government authorities, four of which had not implemented e-procurement in 2001, purchased goods and services valued between approximately €18 million and €54 million in 2008, while four agencies purchased less than €450 000 electronically. Also, the share of total purchased value handled through e-procurement solutions in 2008 varied considerably between the authorities, ranging from less than 5 percent of the total purchase value up to 60 percent.

D. Perceived Benefits with e-Procurement

Findings from this study show that, as indicated in previous research, implementation of e-procurement results in numerous benefits, such as time and cost savings, increased compliance with supplier contracts, and enhanced control of spending. Other identified benefits include easier access to information and simplified, standardized, purchasing process. Thus, the use of electronic means in purchasing is perceived to increase the efficiency of the procurement process. This study has also identified environmental benefits such as e-procurement facilitating coordination of deliveries.

E. Perceived Challenges with the e-Procurement

Due to the fact that only three of the government authorities had put e-procurement into practice in 2001, few major challenges were identified at that time. The perceived challenges were mainly related to ICT/technical issues such as lack of information from the technology provider when new versions of the system were launched. By 2008, when 11 of the 15 investigated organizations had implemented e-procurement, additional challenges could be identified. While some of the government authorities had not come across any major disadvantages with e-procurement, analysis of empirical data shows that most of these organizations encountered challenges when implementing the e-procurement solution. Among the challenges discussed in prior research, this study found that issues related to strategic initiative and internal integration were the main challenges. Specifically, lack of a standardized government system, em-

ployees who did not have sufficient knowledge for using the new system, and those also perceived the new system as complicated led to internal resistance to change. Findings highlight that it is necessary to educate people who are involved in the procurement process; however, this will lead to higher costs in the short term.

F. Implementation of e-Procurement and its Impact on Buying Behavior

Similar to previous research on B2B procurement, findings from this study show that implementation of e-procurement impacts government authorities' buying behavior in different ways. With respect to e-procurement's impact on the buying process, the results are contradictory. In most organizations, implementation of e-procurement has simplified and speeds up the buying process to make it more efficient, as noted in previous studies. However, in some cases, it was perceived that the buying process had become more complex and required increased employee knowledge. Two government authorities did not experience any changes with respect to the buying process. This could be due to the fact that these organizations implemented e-procurement quite recently and involved few product categories.

The study also shows contradictory results with respect to the impact of introduction of e-procurement in government sector concerning selection of supplier. In some cases, having electronic capabilities was a requirement; suppliers that could not handle electronic interactions or electronic invoices were simply rejected in the selection process. However, most of the government authorities pointed out that the introduction of e-procurement did not influence the selection of supplier; although, in some cases, it was anticipated that the development of e-procurement would eventually lead to exclusion of suppliers lacking electronic capabilities. None of the respondents noted the possibility of evaluating a larger number of suppliers through the use of e-procurement, which often is mentioned in the B2B setting.

Findings from this study only partially support previous research regarding the buying center, which suggests that the number of people involved in the purchasing process will decrease when e-procurement is used. With respect to the number of people involved, the results are contradictory. While some organizations involved more people in the purchasing process, once e-procurement had been implemented, others involved fewer. This difference might be explained by the fact that government authorities may have adopted different strategies with respect to centralization versus decentralization of the procurement process. Since e-procurement solutions streamline the procurement process, an increased number of employees could be empowered to handle purchase activities. Consequently, e-procurement could facilitate a higher degree of decentralization. On the other hand, results from this study also indicate that increased accessibility and involvement of more people in the procurement process call for increased control. High cost of control could be one factor justifying centralization of the procurement process, which most likely would involve fewer individuals in the purchasing process.

V. CONCLUSION AND FUTURE RESEARCH

Results show that the implementation of e-procurement within Swedish government authorities developed substantially between 2001 and 2008. One factor that might have influenced the increased activities of public e-procurement lately is the regulation by the Swedish National Financial Management Authority (a central administrative agency under the Ministry of Finance), requiring all central government agencies to apply e-invoicing from 1st of July 2008. This requirement is a first step towards increased use of public e-procurement solutions.

Although more organizations have implemented e-procurement, more products are purchased through e-procurement, and the total amount spent has increased significantly, e-procurement is still not utilized to its full potential. The results of this study support previous findings with respect to e-procurement benefits such as cost savings, increased contract compliance, and enhanced spend control. An additional, environmental, benefit deriving from better coordination of deliveries has been identified in this study.

The perceived challenges changed significantly, from being related to the system provider in 2001 to strategic initiatives and internal integrations in 2008. This change could possibly be related to circumstances, such as; the increased usage of e-procurement, affecting a larger number of employees and the availability of more strategically advanced e-procurement solutions in 2008.

This study reveals contradicting findings concerning the impact of e-procurement implementation on the purchasing process. The difference in perception regarding whether e-procurement simplifies the process or makes it more complex indicates that organizations were in different stages of implementation. It could also indicate an underestimation of employees' resistance to change. The results also indicate that the introduction of public e-procurement added new selection criteria related to electronic interactions and electronic invoices.

With respect to managerial recommendations, this study highlights the importance of focusing on people involved in the implementation of e-procurement and how they will be affected. It is important to allocate resources to educate people instead of focusing only on the possible savings. In order to balance the empowerment of employees with the need for increased control, government authorities need to make strategic decisions regarding the degree of centralization. Another important factor is to ensure compliance with regulations and policies; however, it seems to be less of a challenge in the public sector compared to the private sector, since regulations (e.g., LOU) govern public procurement. It also is important to understand how and if e-procurement will influence SMEs' (Small to Medium size Enterprises') possibilities to be selected as suppliers.

Since this study was limited to only 15 governmental authorities, further studies are needed to evaluate e-procurement within other public organizations that might have other administrative structures. Moreover, this study focused on Sweden with its regulations of public procurement; future studies should investigate if public e-procurement differs across countries with other legal or cultural conditions.

Additional issues such as the impact of e-procurement on actual steps involved in the buying process, the selection of supplier, and the composition of the buying center needs to be investigated in future studies.

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