Implementing Enterprise Systems in the Public Sector

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INTRODUCTION

Modernizing public administration requires a new approach to technology. You can no longer rely on rigid, monolithic service systems. You need technology that can increase efficiency, improve economic viability, enhance process transparency, and help you communicate with the public. You need a public sector solution that supports integrated processes, simplifies service-oriented administration and cost management, and distributes the information needed for judicious planning and decision making. (SAP, 2003)

BACKGROUND

Enterprise systems (ES), also known as enterprise resource planning (ERP) systems, appear to be a dream come true as they promise seamless integration of all the information flowing through an organization: financial and accounting information, human resource information, supply chain information, customer information, and so forth (Davenport, 1998). The market for ES has grown enormously during the nineties. Most of the Fortune 500 companies have already installed ES (Kumar & Van Hillegersberg, 2000). For government the promise of ES might even be larger as integrated information flows can support government's processes in numerous ways and help improve service delivery, accountability, and managing for results. As the implementation of ES has proven to be quite difficult due to far-reaching consequences for the organization as a whole, the growing number of government organizations choosing to implement an ES needs to learn from previous experiences. Unfortunately, the scientific literature on ES implementation is mostly limited to the private sector, and as such neglects a substantial part of the organized society. Furthermore, implementation is even more difficult due to the unique nature of government organizations.

The structure of the article is as follows. First, a description of ES is given, as well as the problems that generally surface during the implementation process. Then, public sector issues with information systems imple-

mentation are derived from literature on IT in the public sector. Subsequently, the scarce literature in the field of public sector ES implementation is synthesized and discussed. Based on the aforementioned two streams of research and the few studies already conducted, the emerging trends and research opportunities in the field of public sector ES implementation are put forward. Finally, the key findings are summarized in the conclusion.

ENTERPRISE SYSTEMS AND IMPLEMENTATION ISSUES

What differentiates ES from other types of large information systems? ES are characterized by four main traits. First and foremost, ES integrate the information flows within the organization. Furthermore, ES are commercial packages (i.e., vendors release them). Third, ES consist out of best practices. And final, since every organization is in essence unique, some assembly will always be required; ES integrate the software, not the computing platform.

Due to the sheer size and reach of ES packages, complications during implementation quickly arise. Most notorious is the impact on the organization as a whole. Davenport (1998) points out that ES have profound business implications, and offloading responsibility to technologists is particularly dangerous as technical challenges are not the main reason ES fail. Companies often fail to reconcile the technological imperatives of the ES with the business needs of the enterprise itself. Also, the business often must be modified to fit the system (Davenport, 1998). This means the organizations' business processes need to be reengineered to fit the best practices that comprise the system, which considerably adds to the expense and risk of introducing ES (Kumar & Van Hillegersberg, 2000; Markus & Tanis, 2000). Moreover, vendors try to structure the systems to reflect best practices, but it is the vendor, not the costumer that is defining what "best" means (Davenport, 1998). This means the adopting organization is dependent on the vendor for updates of the package (Markus & Tanis, 2000). Furthermore, achieving full integration depends a lot on the

configuration of the system and the choice for installing just one system instead of modules from multiple vendors (Markus & Tanis, 2000). Still, in addition to having important strategic implications, ES also have a direct and paradoxal impact on a company's organization and culture. On one hand organizations are capable to streamline their management structures, creating flatter, more flexible, and more democratic organizations. On the other hand, they also involve the centralization of control over information and the standardization of processes, which are qualities more content with hierarchical, command-and-control organizations with uniform cultures (Davenport, 1998).

Next to these organizational impacts of ES, organizations also have good reasons not to adopt ES or even abandon ES implementation. Two reasons that are often mentioned is that the packages in the market lack fit with the specific needs of an organization, and that ES have the tendency to inhibit flexibility, growth, and decentralized decision making. Also important are the available alternatives, for instance sophisticated data warehousing or using middleware to change a system's architecture (Markus & Tanis, 2000). To sum up, the main reasons for not adopting a system also hold for ES: high cost, no competitive advantage, and resistance to change.

INFORMATION SYSTEMS IMPLEMENTATION IN THE PUBLIC SECTOR

Next to the specific characteristics of ES implementation, information systems implementation in the public sector differs from information systems implementation in business. Numerous studies have been conducted to define the differences between the public and private sector, however, still one of the most influential in the field of information systems is the article by Rainey, Backoff, and Levine (1976). They distinguish three main characteristics in which public sector organizations differ from private sector organizations. Usually, public sector organizations are less exposed to the market, resulting in: less incentive for effectiveness, more legal and formal constraints, and higher political influences. Also, due to the unique sanctions and coercive power of government, demands on fair, honest, responsive, accountable, and honest behaviors by public managers are higher. And, public managers need to handle complex—possibly conflicting—criteria, while there is high turnover of politically appointed top managers.

Based on these distinctions Caudle, Gore, & Newcomer (1991) made a study on key information systems management issues for the public sector. Unique and paramount for the public sector is the linking of IS planning and budgeting as a replacement for the allocative mechanism of the market, and freely transferring a technology from one agency to another contrast sharply with private sector IS development. Issues that already have peaked in the private sector but are still on the rise in the public sector are the integration of technologies, end-user computing, and office automation. This lag is most probably caused by limitations by government red tape and accountability requirements (Caudle, Gorr, & Newcomer, 1991). The authors end with some theoretically derived potential issues. Public managers should be more inclined to develop new information technologies than their politically appointed superiors. And, the more red tape the organization has, the more flexible the information technology employed should be.

Even a decade later, Brown (2001) worries about the elementary level of issues mentioned in a UK government report on the delivery of government IT projects. The list of issues that need more attention in the UK public sector—but most probably in all Western governments–includes: commitment of senior management; identifying the end users and their needs; skilled and knowledgeable project managers; breaking down a project into manageable sub-components; adequate training; importance of IT contract definition, negotiation and management; contingency plans in place; and a post-implementation review (Brown, 2001). All these lessons can be found in basic handbooks on IT implementation. Another important lesson rings a bell: key decisions about IT systems are business decisions not technical ones (Brown, 2001; cf., Davenport, 1998).

PUBLIC SECTOR ENTERPRISE SYSTEMS IMPLEMENTATION

Very few studies have been conducted on ES implementation in the government. After a search for combinations of the words "government" or "public sector," with "enterprise system," "enterprise systems"or"enterprise resource planning" in the "Web of Science" and "Business Source Elite" databases a number of scientific articles appeared. A further selection was made by reading these articles and removing those that included studies in which ES implementation in the government was not the main topic of the study (Ashbaugh & Miranda, 2002; Bannister, 2001; Boudreau & Robey, 2005; Yen & Sheu, 2004), and those that where conducted in a university setting (Scott & Wagner, 2003; Siau & Messersmith, 2003). We removed studies on academic administrations from our selection, as universities are not very representative for government organizations such as ministries,

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