



# Stakeholder Involvement in Electronic Commerce Projects: Examples from the Public Sector

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## ABSTRACT

*The public sector is becoming gradually an important player in the electronic commerce market, as it engages in the development of applications that offer better services to companies and citizens. At the same time, the uptake of electronic commerce practices by public sector bodies is viewed as very important for the development of global electronic commerce user communities. In this paper we examine four electronic commerce implementation cases in the public sector from a variety of national contexts. Similar to previous information systems research we note that technology alone is not sufficient for the successful implementation of complex electronic commerce applications and illustrate the influence of social interaction among entities effecting the system. We support that the managers of such applications have to consider the widest array of stakeholders in order to control the evolution of the project in the best way. The paper argues that a holistic consideration of these issues that encourages broad stakeholder involvement can support the development of electronic commerce in the public sector.*

## 1. INTRODUCTION

The rapid expansion of network technologies enables easier communication among business partners, companies and citizens making electronic commerce a common practice for day-to-day transactions. The public sector is also increasingly embracing new information technologies and uses electronic networks in order to offer electronic services to citizens and companies. Such initiatives may give governments the opportunity to streamline the delivery of their services to the public, serving the citizens through diverse channels. The public sector can benefit from the use of the new technologies in terms of improvement of productivity and international competitiveness (Evans, 1998), saving of transaction-costs and improvement in the quality of service offered to the citizens (Ytterstad *et al.*, 1996).

In this paper we examine four cases of electronic commerce applications for the public sector, which have been implemented with mixed results. We observe that the interaction between the stakeholders related to the system have positively or negatively influenced the evolution of the four systems. We use stakeholder analysis to study the role of different stakeholder groups related to the system and investigate the impact of their views and interests on its evolution.

The paper is structured as follows. In the next section we present selected case studies of electronic commerce applications in the public sector. These projects have been developed in various countries and therefore their implementation reflects the interaction of different cultural and technological environments. In section 3 we classify the four cases as successes or failures according to the level of user acceptance. The various stakeholders involved in the four selected case studies are described in section 4, focusing on groups of stakeholders who were not directly involved with the development of the systems but proved to be extremely important for their evolution. The paper concludes with the observation that the managers of electronic commerce applications for the public sector have to consider the widest array of stakeholders in their effort to move towards successful implementations.

## 2. ELECTRONIC COMMERCE IN THE PUBLIC SECTOR. FOUR CASE STUDIES

In the current section we describe four cases of electronic commerce applications in the public sector; the VAT submission management and reimbursement system in Greece, the NHSnet in United Kingdom, the TradeNet in Singapore and the Minitel system in France. The selection of these cases is based on the observation that they represent examples of different cultural and technological contexts, they are characterized by the participation of a large number of stakeholders, but also they represent a mixture of success and failure. Specifically, the Minitel and TradeNet systems have been reported as successful implementations of interorganisational information systems, while the VAT submission and NHSnet systems have not. The authors were directly involved in research in the two latter cases, where they were in direct contact with key stakeholders, thus gaining an in depth understanding of the different perceptions about the systems as explained further in section 5. The examination of the other two cases (the TradeNet and the Minitel) is based on the literature and official government reports. The following paragraphs provide a brief overview of the four cases that will be used to guide the analysis in this paper.

### The VAT Submission Management and Reimbursement System in Greece

The Greek government, following the example of other European countries, has initiated a project to introduce electronic commerce in the public sector in order to provide high quality services to Greek citizens. Part of this initiative is a project for electronic Value Added Tax (VAT) submission, management and reimbursement system. This has been the first engagement of the Greek Ministry of Finance with the electronic commerce technology. The ministry is one of the most technologically advanced in Greece and one of the main 'players' in the design of the national electronic commerce strategy and was therefore keen on acting as an exemplar of new information technology user.

The implementation of the system started with an agreement among the interested parties to create initially an 'experimental system' with the participation of a small number of pilot users such as the Greek Telecommunication Organization (OTE), the information center of the ministry of finance (KEPYO) and a bank association (DIAS). The Athens University of Economics and Business was responsible for the development of the experimental system, which was delivered to the end users in 1997. As we will explain in the next section the use of the system was problematic; consequently, the Ministry of Finance has decided to extend the experimental system to a pilot one, forming four expert committees: the technical, the incorporation and re-engineering, the awareness and the legacy formulation. The basic task of these committees was the proposal of solutions that will lead to the achievement of the original's project aims. The initial results of this effort were formulated and published in 1998 (Greek Ministry of Finance, 1998). The experimental system is ready

and has been tested in a laboratory environment. At the moment the system has been fully implemented. However, its adoption is only partial and limited to non-financial transactions.

### The NHSnet in United Kingdom

The NHSnet is the product of the NHS-wide networking project, launched by the Information Management Group of the NHS Executive in 1993 in Britain. Its purpose was the improvement of the communication in the British health sector. The NHS-wide network infrastructure was expected to cover communication for a variety of information flows across different levels. The business areas covered by the network included patient related service delivery, patient related administration, commissioning and contracting, information services, management related flows and supplies of NHS organizations. The development of the network was progressed rapidly and was widely available three years after its launch, in 1996. The fast establishment of the system was due to the NHS Executive's initiative in the development of the network, the establishment of the standards and the effort to include all the interested parties in the implementation of the system.

However, the implementation of the system has been problematic. The network was met with mixed feelings particularly by some of its prospective users. Doctors, in particular, recognized on the one hand the need for the network but, on the other hand, were reluctant to use a system that, in their view, did not cater adequately for the confidentiality of the exchanged personal medical data (Pouloudi, 1997). The NHS Executive decided to make a thorough study of the security issues involved in the implementation of the system and the resulting report (NHS Executive, 1996) has been recognized by the doctors as a first step towards addressing the security problem. The debate about the suitability of the security measures has gone on as more governmental bodies became indirectly involved in the choice of acceptable security policies (see Pouloudi, 1998). As a consequence of this debate and uneasiness of the key stakeholders about its security, the network is still not being used as intended for the facilitation of electronic information exchange between healthcare professionals. The British government has announced a plan for the successful implementation of the NHS net and with the aim to solve the security problems and achieve the full operation of the system until 2005 (NHS Executive, 1998).

### The TradeNet in Singapore

The Singapore government developed and implemented TradeNet, its first nation-wide EDI system, in 1989. TradeNet links the private trading community to government agencies to process trade documents for cargo clearance. TradeNet has been characterized as one of the most successful inter-organizational systems (Tan, 1998) primarily due to its contribution to 'a larger vision' of building Singapore's information infrastructure: "TradeNet helped Singapore acquire the capacity to build value-added networks, develop a national EDI infrastructure and move a step closer to becoming a fully networked society" (ibid., p. 149). It has been argued that the participation of several key participants in meetings during all the development and implementation stages of the system ensured user satisfaction and participation leading to the successful implementation of the pilot system.

### The Minitel system in France

The Minitel system in France started in the 1970s as a way towards the digitalization and modernization of the French society. The system was one of the most successful in comparison with other videotext systems developed in United Kingdom, Germany and USA (Cats-Baril *et al.*, 1994). The success factors were the design of the terminal, the architecture of the network, the billing system and the regulatory environment. Apart from its financial success for the government, the system has shown a positive social impact, becoming an integral part of the French life style. The system started as a technological innovation but its developers realized the necessity of the consideration of the interest of the obvious (e.g. France Telecom, consumers) and non-obvious stakeholders (e.g., newspaper publishers) and their expectations in order to ensure wide acceptance.

## 3. ASSESSMENT OF THE FOUR CASES

The notion of information systems failure has been extensively investigated (Lucas, 1975, Lyytinen, & Hirschheim, 1987, Cavaye, 1996; Cavaye &

Cragg, 1995). Electronic commerce applications are not immune to failure with reports on many abandoned electronic commerce implementations and dot.com failures (Damsgaard & Lyytinen, 1998, Doukidis & Smithson, 1995, (Kuo, 2001)).

There are multiple approaches to the definition and study of IS failures, that can form the basis for our understanding of interorganisational information systems failure. In this paper we adopt Lyytinen and Hirschheim's (1987) taxonomy of information systems failure phenomena, which distinguishes between four failure notions, namely:

- *Correspondence failure*, the information system doesn't match its goals
- *Process failure*, the information system has not been designed within the budgeted time and cost
- *Interaction failure*, the information system is not used
- *Expectation failure*, the information system does not fulfil its stakeholders' expectations

The last notion of failure has a broad meaning so that the three other failure notions may be interpreted as special instances of expectation failure, reflecting the gap between stakeholders' expectations expressed in some ideal or standard and the actual information systems performance (Lyytinen 1988).

According to this definition of failure we can assess the four cases under investigation as success or failures (see table 1). Specifically, with respect to the electronic VAT submission system, there is not evidence for correspondence failure or process failure. Although the system was ready-to-use at the end of 1997 *none* of the pilot users actually used it, fact that forced the developers to make a 'laboratory' test of the system in order to examine its functionality. The absence of system's users leads to conclusion of interaction failure and subsequently expectation failure.

Similarly, in the case of the NHSnet the development of the network was progressed rapidly and was widely available three years after its launch within the budgeted time and cost. However, although there was no evidence of correspondent or process failure the system wasn't used by one of the major user groups: the doctors. This case is also a typical example of interaction failure and expectation failure.

The other two cases (Minitel, TradeNet) present examples of systems delivered on time within budget while they had wide acceptance from their users.

It is important to note the four systems are in different development stages. The two failures (NHSnet and VAT declaration system) are still in an interim phase while the successful examples (Minitel, TradeNet) have been finalised.

In many cases, failures result from social and political factors, which are often ignored. In the next section we identify the stakeholders related to the four systems in order to get a better understanding of their expectations and reasons for success or failure of the corresponding systems.

## 4. STAKEHOLDERS IN THE CONTEXT OF THE PUBLIC SECTOR ELECTRONIC COMMERCE PROJECTS

We argue that one of the key elements of interorganisational co-ordination is the interaction between those who directly or indirectly affect or are affected by the interorganisational systems. The variable and often conflicting perspectives of these *stakeholders* are given secondary importance in most approaches. We believe that the identification of an interorganisational system's stakeholders is critical for our understanding of the system, its use and its implications. Indeed, this process is critical for discovering the complexity of the system, especially in terms of the conflicting effects that it may have for resulting in expectation failure.

Table 1: Assessment of the four cases as success or failures

	Correspondence failure	Process failure	Interaction failure	Expectation failure	Overall assessment	Project stage
VAT system	no	no	yes	yes	Failure	Interim
NHSnet	yes	yes	yes	yes	Failure	Interim
Minitel	yes	yes	Yes	Yes	Success	Final
TradeNet	yes	yes	yes	yes	Success	Final

Table 2: Stakeholder groups in the four case studies

VAT submission system Greece	Minitel system France	TradeNet Singapore	NHSnet United Kingdom
<ul style="list-style-type: none"> <li>The information Center of the Ministry of Finance</li> <li>Independent tax technicians</li> <li>Bank association</li> <li>Athens University of Economics and Business</li> <li>The Greek Telecommunication Organization</li> </ul>	<ul style="list-style-type: none"> <li>France Telecom (Intelmatique)</li> <li>Subscribers-citizens</li> <li>Users-business</li> <li>Information providers</li> <li>Advertising organizations</li> <li>Regulatory authorities</li> <li>National policy consultants</li> </ul>	<ul style="list-style-type: none"> <li>Government agencies</li> <li>Trade intermediaries</li> <li>Trade firms</li> <li>Financial institutions</li> <li>Port authorities</li> </ul>	<ul style="list-style-type: none"> <li>Doctors in primary care (GPs)</li> <li>Hospital doctors</li> <li>Health authorities (purchasers)</li> <li>Healthcare organizations (providers)</li> <li>The department of health and the NHS executive</li> </ul>

All cases examined in this paper are characterized by the participation of a large number of stakeholders. In table 2 we present the stakeholders (i.e., those people or groups of people that were directly or indirectly involved or affected in the development, implementation or usage of the system) as they have been identified in the four cases under investigation (Papazafeiropoulou et al., 2002).

The TradeNet is one case where the early involvement of the key stakeholder groups ensured the acceptance and successful adoption of the system. However, it should be noted that this is a perception that is created by our reading of the literature. Whilst it might be an appropriate reflection of the key stakeholders' perceptions of the system, it still reflects the perspective of the researchers reporting on the case. These researchers are also stakeholders, operating in a particular context; their perspectives are shaped by their cultural assumptions and their perception of the context and may thus be biased and limited.

The research in the other cases has shown that less obvious stakeholders may often influence substantially the evolution of the systems. In the information systems research the main groups of stakeholders reported as interested parties are the developers, users and managers of the system (Ruohonen, 1991). In the case of interorganisational information systems (such those investigated in this paper), the number of individuals and groups of stakeholders that can affect or be affected by the project is much broader. Additionally, less obvious, 'external' stakeholders such as the press, the academic community or the non-governmental political parties may play an important role to the successful implementation of a project. The examination of the four case studies has shown that failure to consider such stakeholders may have important implications for the project management.

For example in the VAT submission system case, although the users and developers of the system had been identified and included in the project, other groups of stakeholders have been excluded during the initial phase (Themistocleous, Poulmenakou, Laopidis, 1998). According to the ministry of economics these groups were legacy advisors; professional associations such as chambers of commerce; software and hardware vendors and business consultants who later formed the "expert consultant groups".

In the case of the Minitel system in France, newspaper owners and politicians originally had strong objections against the system. The newspaper owners felt that the new videotext system was a serious threat to their business, while some politicians thought that the system could be abused by the state. Those conflicting views posed difficulties in the implementation of the system and forced the government to seriously consider those two groups of stakeholders.

The experience of the NHSnet is similar. It was only after the British Medical Association was represented by security consultants that the issue of confidentiality became center-stage and the NHS Executive committed to a detailed study of security issues. Interestingly, as security became a primary concern, more stakeholders (e.g., the Data Protection Registrar or security consultants) actively sought their involvement in the NHSnet implementation debate.

The investigation of the above cases leads to the conclusion that a thorough stakeholder analysis of the domain under investigation is very important for the managers of electronic commerce projects for the public sector. This analysis could help to an in-depth understanding of the variety of stakeholders involved and their viewpoints. The case studies presented in this paper demonstrate that unless such analysis is undertaken, stakeholders who may be critical for the acceptance and 'success' of a system become obvious only with hindsight.

## 5. CONCLUSIONS

Electronic commerce applications are increasingly introduced to the business community but their development had been until now rather spontaneous in nature. The applications for the public sector need special attention due to the impact their implementation may have on society. Using four case studies from different national contexts, the paper considered how the adoption of the system is typically contingent on the involvement of a great range of stakeholders.

Thus, the investigation of the four cases lead to some conclusions that may have important implications for the managers of such systems. The main argument in our analysis is that these managers should have in mind that stakeholders that might initially seen as unimportant can turn out to play a vital role in a successful or a problematic implementation. Thus, the consideration of the widest range of stakeholders is crucial for the effective system management.

Further research in the area would include the examination of other factors, apart from the stakeholders involvement, that influence the evolution of a project, that may be related to more technical aspects. The importance that managers should give to social or technical aspects in different stages during the life span of the project will also be interesting. This analysis could lead to the definition of a multidimensional framework that will guide in a more detailed way both technical system development and social processes of awareness and negotiation regarding electronic commerce in the public sector.

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