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## Public sector IT outsourcing: a framework for evaluating risk

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# Public Sector IT Outsourcing: A Framework for Evaluating Risk

**Abstract.** A recent trend has seen the significant growth of governments outsourcing IT projects to private sector partners. However, despite the high risk of failure in public sector IT projects, the literature on outsourcing risks predominately concentrates on the private sector. This exploratory study draws on a framework developed from IT outsourcing risks in the private sector and applies it to the public sector by carrying out a case study on three local governments in Ireland. This study seeks to identify some of the most important risk factors in an outsourcing strategy by taking into account the unique nature of the public sector in analysis. This study highlights the specific difficulties public sector organisations can experience in attempting to gain cost efficiencies from an outsourcing strategy, especially a complex procurement process, difficulties in requirements gathering, costly contract amendments and inflexible employment structures. The approach used by this paper provides a useful framework for future research in IT outsourcing risks in the public sector.

**Keywords:** E-Government, IT Outsourcing Risks, Public Procurement.

## 1. Introduction

Traditionally, companies outsource their IT functions in the hope of achieving cost savings, greater efficiency and technical expertise to name but a few benefits [1-4]. Similarly, public sector organisations can identify services which may be better worked in tandem with private companies [5]. This has resulted in more and more governments are choosing to outsource e-government projects to the public sector [5, 6]. However a recent study showed that the public sector has the lowest success rate of IT development projects [7]. In Ireland alone, between 2000 and 2005 public bodies spent €420 million in the implantation of e-government initiatives. However a study of the major projects implemented in this timescale found that 23 of the 141 flagship projects to provide State services online were abandoned and that another 44 were only partly implemented by mid-2006 [8].

There have been many studies into the risks of IT outsourcing in the private sector [2-4, 9-15]. To date however there has been very little/if any research focussing on outsourcing in the public sector even though research has shown that there are fundamental differences between public and private organisations such as bureaucratic structures, public accountability and less defined goals [16, 17]. This study provides the first attempt to define a framework to assess risks in e-government outsourcing. This paper seeks to apply a comprehensive set of risks taken from the literature in the private sector and evaluate what lessons can be learned in the unique context of the public sector.

## **2. Outsourcing of E-Government Services**

Electronic government is defined as the provision by government of services to citizens, businesses and other government agencies using information technology applications [18, 19]. The term e-government is not restricted to citizen interaction by internet or accessible systems but covers all IT related systems within government [20]. E-Government has the capacity to transform public administration and provide a new form of government created around the use of IT [21]. E-Government has utilised IS to improve the flow of information within and around public organisations and in the process improving the interaction between government and citizen [22]. Furthermore IT in public administrations has increased performance and efficiency levels resulting in an improvement of service provisions and internal operating procedures within government organisations [23, 24]. Prior to the emergence of e-government, OECD countries started adopting New Public Management (NPM) theories to improve the provision of services [25]. NPM was a set of management principles which described the reform in public administration to try and improve the public sector by implementing management procedures from the private sector [26-28]. One such example of private sector practise was the use of outsourcing to private organisations to implement services.

For the purpose of this research we defined IT outsourcing as the practice of turning over all or part of an organisations IT functions to an outside vendor [29, 30]. Outsourcing can bring many advantages to a public organisation. Outsourcing can free government employees at management and policy levels of the organisation from the execution and delivery details. They are instead left to select most suitable service suppliers and gain the benefits of control from service agreements [31]. By creating a competitive market for the provision of services, governments can take advantage of the greater operating efficiency and specialised expertise evident in the private sector. Ultimately the benefit of these advantages from the private sector would result in cost savings for the government [32].

## **3. Outsourcing Risks**

Despite the apparent advantages to outsourcing, this strategy is not a risk free exercise and there are many examples of failed outsourcing projects [13]. A framework of risks was created by using key areas identified by Gonzalez, Gasco and Llopis [14]. These key areas were further developed by a systematic review of the literature (see table 3-1).

**Table 3-1 Framework of Risks**

<b>Outsourcing Risks</b>	<b>Factors</b>
Unclear cost-benefit relationship	<ul style="list-style-type: none"> <li>• Vendor procurement [5, 9, 12, 14].</li> <li>• Transitioning the work [9, 12].</li> <li>• Transitioning the work [9, 12].</li> </ul>
Hidden costs in the contract	<ul style="list-style-type: none"> <li>• Costly contract amendments [2, 11, 14].</li> </ul>
Loss of critical skills and competencies	<ul style="list-style-type: none"> <li>• Loss of IT skills [2, 3, 13, 14].</li> <li>• Loss of innovation [2, 9, 15].</li> <li>• Loss of innovation [2, 9, 15].</li> <li>• IT competencies needed for managing outsourcing [33, 34].</li> </ul>
Irreversibility of the outsourcing decision	<ul style="list-style-type: none"> <li>• Too costly to bring service back in house [4, 11, 14].</li> </ul>
An excessive dependency on the provider	<ul style="list-style-type: none"> <li>• Cost of contract change expensive [11, 14].</li> <li>• Decrease in flexibility [2].</li> </ul>
Qualification of the providers Staff	<ul style="list-style-type: none"> <li>• Staff transfers from client to vendor resulting in same expertise [9-11, 14].</li> <li>• Reappointment of most talented staff to newer contracts [14, 35].</li> </ul>
The provider does not comply with the contract	<ul style="list-style-type: none"> <li>• May not meet contract obligations [2].</li> <li>• Outsourcer does not fully understand clients business [10, 14].</li> </ul>
Inability to adapt to new technologies	<ul style="list-style-type: none"> <li>• Vendor slow to upgrade so as to maximise profits [9, 10, 14].</li> </ul>
The possible opposition of clients IS staff	<ul style="list-style-type: none"> <li>• Anxiety and anger prior to outsourcing [14, 36].</li> <li>• Employees assigned to unsuitable roles after outsourcing leading to low morale and poor productivity [36].</li> </ul>
Security issues	<ul style="list-style-type: none"> <li>• Need for proper disaster recovery [37].</li> <li>• Data sharing resources with other vendors clients [37].</li> <li>• Vendors access to sensitive government data [37].</li> </ul>

The actual cost of outsourcing may often be higher than management anticipated. Organisations firstly need to undertake the costly process of identifying IT vendors, evaluating the vendors and negotiating a contract with the chosen vendor [5, 9]. An organisation will also incur extra costs in transitioning the work through setup, redeployment and parallel running costs [9, 12]. Management costs are increased by functions such as monitoring contractual obligations, bargaining with vendors and change of contract negotiations [5, 13].

Projects may see a change in business requirements during the development lifecycle [2, 14]. Any additional requirements or contract amendments will occur at an additional cost, sometimes at a premium rate, increasing the overall cost of the contract [11].

There is a possibility that a client may experience a loss in IT skills and competencies due to outsourcing [2, 14]. This can be happen through a reduction of IT training [13] or by the discontinuation of permanent internal IT positions [3]. A client may lose any resulting knowledge and experience gained from any innovative solutions to the vendor [2], thus reducing the level of innovation within an organisation [2, 9]. A certain level of IT knowledge is also needed to successfully manage an outsourced project [33, 34]. Once the human and technical infrastructure is lost, the cost of rebuilding this in-house IT capability may prove too costly making the choice to reverse the decision unfeasible [4, 11, 14]. The irreversibility of outsourcing can increase the amount of dependency an organisation has on a vendor [10]. Both irreversibility and dependency on a vendor reduce the amount of flexibility that an organisation can operate at, making it more difficult to readjust priorities and change technological direction due to binding contract agreements and penalties [2].

A vendor may have acquired its staff from the outsourcing organisation [9-11, 14], leaving the client with effectively the same personnel [10]. Furthermore a vendor may choose to shift its most talented staff away from existing agreed contracts to contracts under tender [14, 35]. The outsourcer may not fully complete the requirements [2] or fully understand the business and priorities of the client [10, 14]. In order to maximise the profitability of existing legacy systems, a vendor may be slow to upgrade to new technologies [9, 10, 14].

Anxiety over job security and anger at the organisation prior to outsourcing can cause a reduction in productivity among employees [14, 36]. Poor morale and employees assigned to unsuitable roles after outsourcing may lead to a further reduction after the outsourcing process is completed [38].

Security risks can occur if the vendor does not possess a suitable disaster recovery plan and an agreement with reliable third party storage firms [37]. Further security risks can arise in the case where a vendor may have several clients sharing the same storage devices [37]. However it is not enough to merely identify potential risks but equally important to examine the context in which they are to be studied as often the organisation, its historical and cultural idiosyncrasies can significantly impact the outcome.

#### **4. Public Sector Environment**

The context for this research was that of the public sector. Rainey et al [16] suggested that the differences between public and private organisations can be categorised into three propositions: environmental factors, organisation/environment transactions and internal structure and processes. A public organisation has little control over environmental factors as they are external to the organisation [16]. They are less affected by market conditions and indicators than their private counterparts and do not react to consumer demands and preferences, which results in more inventiveness to reduce costs, improve efficiency and increase profits [17, 39]. The goals and planning of public bodies is more often set by political agendas and strategies [40], resulting in short term goals unsuitable for long term planning that is required for IS goals [41].

Organisation/Environment transactions encompass government enforced mandatory actions. They also describe a greater level of public scrutiny and expectations [16]. The goals imposed on the public organisation may be in conflict with each other and intangible with no known solution (e.g. reduce crime) [17]. Citizens expect good governance in return for their relinquishment of rights and require that their government is transparent and accountable [32, 42] This has a major impact on procurement in the public sector, resulting in a complex process of prescribed rules and regulations [43, 44], adding time and draining the resources of a public organisation [45].

The internal structure and processes of a public organisation differ from those seen in the private sector [16]. The traditional Weberian bureaucratic model encourages departments to behave as independent rigid entities [46], leading to a fragmented model of IS planning in government agencies [47]. Also existing technological hardware and software between departments may be incompatible [48, 49]. Government organisations are tightly controlled by rules and order. This ensures accountability but also has a negative impact on efficiency, coordination, communication, managerial initiative and innovativeness [50, 51]. The complexity of objectives of public organisations results in multiple goals [17, 44], which may create problems at the planning stage of public information systems [42]. The motivation of public sector employees is different to that of their counterparts in the private sector [52-55]. They value monetary rewards less so than private sector employees [39, 52, 55], instead placing more emphasis on lifestyle choices and trying to maintain a balanced work/family relationship [55].

In summary, governments use e-government initiatives to deliver improved services to citizens and to improve the efficiency and performance of the public sector. Governments are also increasingly likely to outsource the creation of e-government services to the private sector. The risks involved in the private sector were systematically reviewed and a framework of IT outsourcing risks was created (see table 3-1). However given the various differences between the public and private sector as documented in the literature, it is not reasonable to assume that lessons learnt in the private sector will necessarily translate to the unique context of the public sector.

## **5. Research Methodology**

The objective of this paper therefore is to evaluate what risks impact outsourcing of e-government projects by applying a framework of risks developed from the private sector literature and to explore the impact of these factors informed by the perspective of the public sector. The research question that this body of work seeks to answer is

*RQ: What are the most important risks in outsourcing in the public sector?*

The approach adopted by this research broadly fits within the interpretive, qualitative paradigm. As the research was exploratory and qualitative in nature, case study research was selected as the research method. In order to achieve a cross analysis of cases [56], three cases were chosen for this research. The research was carried out in IT departments within three different local governments in Ireland. Local government was chosen as they were relevant to the subject matter of outsourcing e-government services, each having experience of internally developed and outsourced e-government systems. E-government services reviewed included an online planning services system, a building control system and a waste services management system. Each system initially was developed specifically for that individual local government and allowed public online interaction with the local government databases.

Semi structured interviews were employed as the primary data gathering instrument. The interview was structured based on table 3.1. Interviews were conducted with two members of the IT department in each local authority and with an employee of a private organisation that carried out outsourcing work for the local authority. Interviews were of duration between 45 and 90 minutes. Each interview was recorded and transcribed later. Initial interview at each case study was carried out at the case study site while remaining interviews were carried out over the phone. The role of the employees in the local authority in each case was one of a senior management role (initial contact) and the other of a project management development role. The employees of the private companies worked in project management roles.

## **6. Findings**

The three case studies provided a rich experience of outsourcing gained over a number of years. The research showed that some risks involved with outsourcing had an impact on the work performed by the IT departments and an impact on e-government services provided. Other risks had been successfully dealt with and now provide lessons for other organisations with regards outsourcing.

### **6.1. Impact on Internal IT Department**

All three case studies showed that there was a large cost in time and man hours in the procurement stage. For large projects, mandatory response time and the need to advertise in the EU journal added to the delay. Yet still for projects below the EU threshold difficulties still existed. The research showed that accountability and transparency have a direct impact on public procurement, making it a more heavily

prescribed activity than its private counterpart. Lengthy mandatory response times, a set minimum amount of applicants and a transparent detailed scoring system combined to form a slow detailed process. The research confirmed the assumption that the public procurement process can add time and drain resources of a public body [45, 57].

A further increase in the work load was also noted regarding the task of requirements gathering. The internal IT departments spent more time at the requirement gathering phase than they would have for an internally developed project. The findings showed that internal project managers spent a greater effort in gathering requirements for external projects so as to overcome the lack of familiarity by the private company for the business processes and functions of the public organisation. This was further compounded by the outsourcers having difficulty getting in contact with the relevant system users, as each department was operating individually to each other due to the silo like structuring of public organisations [46]. This resulted in extra work for the internal IT staff to help define the requirements.

Despite not losing staff to the outsourcer, in some instances the internal IT department had to perform development work for the outsourcer. The local governments did not have any issues with staff retention reflecting the research that public employees are less motivated by money and find greater reward in work that benefits society as a whole [39, 52, 55]. Projects were impacted due to outsourcer staff leaving before the completion of the project. Even with inbuilt contract stipulations concerning availability of skills, deadlines were affected and even extra work was placed on the client to meet the shortage of manpower. The research suggests that by outsourcing the development of e-government systems a public organisation is exposing itself to the volatility of the private workforce.

The loss of IT skills and competencies [2, 14] was dependent to the extent of outsourcing undertaken. The more work outsourced the greater diminishment of in house development skills. The provision for training within the three organisations remained strong. However one case had completely changed their training focus from development skills to project management skills. Another organisation acknowledged they were in fact substituting the training of internal IT staff in a particular area with outsourcing.

Two of the test case outsourced for resource reasons and therefore did not encounter any anxiety or opposition from staff. Howard the third case outsourced an entire system development function and experienced initial feelings of anxiety among staff. However they were sufficiently large enough as an organisation to accommodate people in a similar development role elsewhere. Interestingly there was no reduction in IT staff within any of the case studies. This is in contradiction to one of the perceived advantages of outsourcing of converting fixed assets to variable assets [2, 58]. The mature, rigid, hierarchical structures make change more complex [13] resulting in a risk that public organisations are experiencing the extra costs of retaining the services of people whose work was outsourced.



## **6.2. Impact on E-Government Services**

The three local governments, while not affected by political decision from the elected members of their own council; were heavily under the influence of political decisions made at a national level e.g. Department of the environment. Changes in service functions and processes by decree from a higher level of government have resulted in amendments to the original contract. These were found to be excessively costly by the local government compared to the cost of modification if the work was carried out in house. The research showed that the nature of political goal setting by public organisations [40] exposes the introduction of e-government services to greater costs due to the high costs of contract amendments [2, 9, 11, 14].

Additionally in two of the case studies, software upgrades to the system were sometimes offered by the outsourcer. The fee for upgrades varied and sometimes was provided free. However unless requested by the client, they generally were not happy to receive upgrades to the outsourced system as they felt the disadvantages outweighed the benefits. The disadvantages listed were unnecessary downtime and software bugs.

## **6.3. Lessons Learned to Overcome Potential Risks**

The issue of upgrades impacting on e-government services was overcome by one of the local governments. They made provisions for their upgrades in their service agreement with the outsourcer, where all future upgrades were identified. This is a good model to copy for public organisations entering outsourcing agreements as it will commit the outsourcer to delivering upgrades and remove the possibility of unnecessary upgrades. They are instead left to select most suitable service suppliers and gain the benefits of control from service agreements [31].

All test cases were aware of how a loss of innovation would have serious implication for the design of future e-government systems [2, 9]. Innovation within the local governments was viewed as a partnership with the outsourcer. The original innovation for the provision of the organisations functions and services electronically came from within the internal IT department and various user departments with ownership for the service. The outsourcer would provide innovation with regards the technical implementation of the system. This innovation partnership between both parties highlighted the benefits of public/private collaboration. Furthermore, all three local governments, through training and specialised internal positions possessed the managerial skills needed for a successful outsourcing project.

The local governments were able to reduce their dependency on the outsourcer [2, 10] by maintaining flexibility through the retention of Intellectual Property Rights (IPR). The use of generic systems also allowed them to further develop on the system themselves or employ another vendor to carry out the work. It was evident that the key to maintaining flexibility and reducing dependency on one supplier was through a

contract agreed upon by both parties at the start where the IPR rights, system capabilities and future requirements were outlined. This ensures the public organisation can gain all the benefits from service agreements and are free to choose the most suitable supplier for each project [31].

## **7. Conclusion**

The research has shown that many of the risks of outsourcing that are evident in the private sector are also evident in the public sector. However due to the context of the public sector, outsourcing carries a risk of costing more than was initially planned. Public sector organisations appear to have an even greater exposure to additional costs at the procurements stage than private organisations. This is a direct result of the extra accountability and transparency measures that public organisations operate under. Internal staff experienced an increase in work at the requirements gathering phase for outsourced projects. This extra work was to overcome a lack of knowledge that the vendor had in the complex working of a multi- functional public organisation. High costs of contract amendment brought about by political intervention also added to the overall cost. Finally inflexible employment structures make staff reductions more difficult to achieve. These four areas where costs are at risk of increasing are evident because outsourcing as defined in the private sector doesn't readily apply to the different environment of the public sector.

This study provides a comprehensive analysis of risks to IT outsourcing in the public sector and presents a framework that has shown to be useful in identifying impacts on e-government services. The four key areas of procurement, requirements gathering, contract amendments and staff retention which posed a risk of increasing costs were all heavily influenced by the unique environment, processes and structures of the public sector. Public organisations must address whether outsourcing is achieving cost benefit for e-government implementation. If not then it is a questionable strategy to undertake.

This research has highlighted the shortage of literature in certain areas. Despite literature existing on public procurement, very little deals with public procurement with regards IT. Research is needed on the extra amount of time spent gathering requirements for externally developed IT systems as opposed to internally developed systems, particularly within the public sector. The effect on political decisions changing requirements after project commencement and the inability to reduce staffing levels need further study also.

This study was limited to three case studies of local government. Further testing is needed with the framework. It needs to be applied to different levels of government, particularly at a more central level. Its effects on different sizes of agencies need to be investigated along with different types of e-government systems.

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