

Knowledge Management as a Framework for Understanding Public Sector Outsourcing

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Abstract

This paper provides a conceptual argument for examining the challenge of IT outsourcing in the public sector through the lens of knowledge management. While IS researchers have recently begun to focus attention on the particular challenges of outsourcing in the public sector [19, 28], we believe that the shift to more market based solutions is occurring without much consideration for the knowledge resources that exist in the public sector's IT organizations. Hence, we believe that knowledge management, an emerging area that has generated significant enthusiasm in the management literature, has particular relevance for understanding this challenge. In this paper, we identify differences between public and private sector IT outsourcing [9], then define and employ key knowledge management constructs to identify potential difficulties that public sector organizations may experience in leveraging their knowledge assets when relying on third party IT service providers.

1. Introduction

This paper presents a conceptual argument for evaluating IT outsourcing arrangements in the public sector using knowledge management constructs. While IS researchers have recently begun to focus attention on the particular challenges of IT management in the public sector [19, 28], there has been insufficient attention to theoretical frameworks that may guide our understanding of these challenges in general, and IT outsourcing in particular. Many theoretical lenses have been applied to IT outsourcing in the private sector, and several attributes have been identified as relevant to successful IT outsourcing arrangements [33, 38]. Our review of relevant literature on public sector IT outsourcing, however, did not provide evidence that the same characteristics have yielded similar benefits. In

fact, researchers have provided little theoretical justification for why IT public sector outsourcing will lead to greater efficiency. Moreover, the IT literature has neglected to consider the unique characteristics of public sector organizations that may render such results more difficult to achieve compared to similar private sector initiatives. We believe that knowledge management, an emerging area that has generated significant enthusiasm in the management literature, has particular relevance for understanding this challenge.

The 1990's proved to be a decade of intense examination of the functions of the U.S. federal government. As stated by President Clinton, "the model that we have used to deliver government services and fill public needs is simply no longer relevant to the present, let alone the future" [27, p. 5]. Hence, the Clinton-Gore administration launched the *National Performance Review* (NPR), a major government reform initiative intended to identify ways to streamline government, while generating greater effectiveness.

The NPR report contained 384 major recommendations covering 27 federal agencies and 14 federal government systems [20]. Many recommendations were based on the premise that government should model itself after the private sector – that it should operate with an entrepreneurial, competitive spirit, and seek to function as efficiently as the best-run businesses. Encompassed in this adoption of market-based concepts in the public sector was an increased emphasis on cost-cutting, privatization, downsizing, entrepreneurship, reinvention, quality management, and customer service [8]. While the prescriptions for change were far reaching, two underlying postulates were prevalent throughout: (1) that government should seek market solutions to facilitate delivery of services; and (2) that government should employ advanced IT to expedite or enable the changes recommended by the NPR [11].

Additionally, one of the accompanying reports to the NPR, "Reengineering Through IT," [41], outlined a three-

part agenda for spreading the benefits of IT throughout the government: (1) strengthen leadership in IT; (2) implement electronic government; and (3) establish support mechanisms for electronic government. The NPR acknowledged the importance of IT, while recognizing the risk that implementing new systems can strain existing management capacity [12]. In view of these challenges, government embraced the market-based notion that in some instances private firms can perform non-core government functions better, thus leading to outsourcing of IT functions and services as a critical objective for reinventing government [52]. Various government reports and subsequent practitioner literature led to a plethora of “how-to” outsourcing documents, and much attention was focused on IT outsourcing as a trend heralded by industry leaders as a powerful management tool of the day [26].

In the private sector, IT outsourcing has served as a strategy to achieve lower costs, improve customer service, and gain a competitive advantage. Proponents of government reform consistently argue that in modeling itself after private businesses, government should adopt one of its best-practices, using IT outsourcing as a strategy for deploying advanced IT capabilities needed for reform. In 1994, IT outsourcing was pronounced the wave of the future for public sector IT departments and other service organizations.

We believe the shift to more market based solutions for IT services is occurring without due consideration for the knowledge resources that exist in the public sector’s IT organizations. Increasingly, knowledge is recognized as a critical resource that must be managed. Hence, we believe that the contextual pressures and constraints of the public sector require that knowledge resources be considered a key component of outsourcing strategies.

Several governmental reports and guides have highlighted the benefits of IT outsourcing in the public sector, as well how to navigate and manage the acquisition and procurement process to acquire the outsourcing services [24, 25]. Also, the rigidity and bureaucracy of past procurement processes have been reformed by initiatives that have reduced procurement cycles considerably, while embracing the notion of results-based and performance-based contracting. Despite these innovations, however, there is no evidence that due consideration has been given to management of the current IT knowledge assets. We believe application of a knowledge management framework is appropriate for addressing, and hopefully, mitigating some of the unintended consequences of IT outsourcing which may impact resources.

In this paper, we introduce knowledge management as a theoretical lens that can be employed to shed light on the complexity of public sector IT outsourcing, and to identify the need for a new program of research. Knowledge man-

agement can guide our awareness of the nature of these challenge in the public sector and suggest some needed remedies. Before introducing core ideas from the knowledge management literature, however, we first examine the differences between private and public sector organizations that we believe render government outsourcing a problem that merits examination.

2. Differences between Public and Private Sector IT Environments

There is scholarly research as well as anecdotal evidence, which indicates that both new technologies and market-based reforms have produced some favorable changes in government [32]. For example, the Department of Defense, National Aeronautics and Space Administration (NASA), and other agencies have implemented electronic procurement operations. The Internal Revenue Service, Department of Education, and Social Security Administration have employed Ecommerce for service delivery to taxpayers, students, and senior citizens, respectively [21]. Market-based IT practices that work well in the private sector, however, may not automatically or easily transfer to the public sector. This is attributable to the differences in the nature of the IT management environment in the private versus the public sector.

Bretschneider [9] empirically tested the argument that IT management in public organizations differs from that of the private sector. Using a sample of 1005 public and private sector organizations, his study concluded that the two environments are indeed different. He found that the critical difference was that the public sector features greater interdependencies across organizational boundaries, which in turn, contribute to increased accountability and coordination problems. Additionally, public sector IT managers are confronted with greater external review and control by third parties, as well as being subject to a host of regulatory, legislative, and political influences.

Bretschneider noted the existence of procedural delays and red tape. Measured in the number of weeks to accomplish the same tasks, public sector IT organizations took longer in all cases. Political cycles that result in changes in top-level management can sometimes disrupt programs and priorities. Lastly, public sector IT programs tend to cover a wider scope, and can generate a lot of publicity when they fail given the costs, and the significance of actions in the public interest.

Taken collectively, the differences described above make for a complex IT environment. The close examination of this environment, which was undertaken during the *National Performance Review*, revealed billions of dollars being wasted on IT expenditures that failed to deliver ex-

pected results. Additionally, a number of management problems were uncovered, including a lack of strategic planning, poor project management, inadequate financial justifications and control mechanisms, and a lack of skilled personnel [25]. These problems fueled the reformers' calls for using IT outsourcing as a strategy to acquire the advanced IT capabilities needed for reform.

The remainder of the paper is structured as follows. In the next section, we review basic concepts from the knowledge management literature. Following this, we identify problems related to management of IT outsourcing, which we believe a knowledge management perspective might inform. Next, we apply this knowledge management lens to explain the results from a prior study on public sector IT outsourcing. After explaining how this perspective may shed light on the key challenges to public sector IT managers, we conclude with some recommendations for future research.

3. Defining Knowledge Management

In our paper, we adopt the definition of knowledge as defined in [17]:

a fluid mix of framed experience, values, contextual information, and expert insight that provides a framework for evaluating and incorporating new experiences and information. It originates and is applied in the minds of knowers. In organizations, it often becomes embedded not only in documents or repositories but also in organizational routines, processes, practices, and norms. [17, p. 5].

Also, in this paper, knowledge management encompasses the management activities and initiatives designed to ensure that organizations effectively create, transfer, and utilize all types of organizational knowledge [1]. With increased competition there is a need to leverage knowledge which, in turn, has led to a recognition of knowledge as a valuable asset. Several IT and organizational researchers have explored its value [16, 46]. Hence, knowledge is now identified as a critical asset that contributes to performance.

3.1 Knowledge Creation

Nonaka [40] presents a theory of organizational knowledge creation based on a synergistic relationship between tacit and explicit knowledge. He defines *tacit* knowledge as knowledge that is deeply rooted in action, commitment, and involvement in a specific context. It is personal, hard-to-formalize knowledge that emerges from the insights and intuitions of being immersed in an activity

for an extended period of time [6, 13]. *Tacit* knowledge can be easily contrasted with *explicit* or *codified* knowledge, which is knowledge that can be transmitted in a formal, systematic manner, and can be easily captured in books, databases, and archives.

Nonaka identifies four different patterns of interaction between tacit and explicit knowledge that represent ways in which existing knowledge can be converted into new knowledge. Figure 1, which is adapted from [40], reflects the following patterns of knowledge creation: tacit-to-tacit, explicit-to-explicit, tacit-to-explicit, and explicit-to-tacit creation.

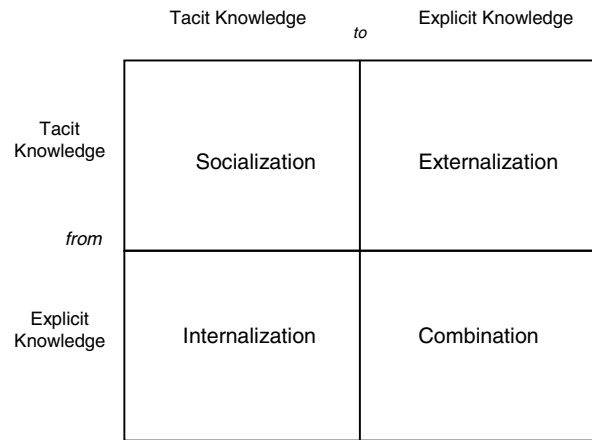


Figure 1 Modes of Knowledge Creation (Adapted from Nonaka 1994)

The first pattern, tacit-to-tacit knowledge conversion, enables the creation of knowledge through interactions between individuals. Key to this process is the sharing of experience with all of its embedded emotion and particular context. Nonaka labels the creation of tacit knowledge through shared experience as *socialization*.

The second pattern, explicit-to-explicit conversion, encompasses the use of formal processes to combine different bodies of explicit knowledge. People transmit and combine knowledge through exchange forums such as meetings, memos, etc. This results in the reconfiguring or recontextualizing of explicit knowledge, which in turn can serve as new explicit knowledge that may be applied in a different context. Nonaka labels this process of creating explicit knowledge *combination*.

The third and fourth patterns of knowledge creation (tacit-to-explicit and explicit-to-tacit) reflect Nonaka's notion that tacit and explicit knowledge are complementary and each can augment the other through mutual interaction. Thus, Nonaka believes that tacit knowledge held by a person or group may be converted into explicit

knowledge and vice-versa. Nonaka labels these processes as *externalization* and *internalization*, respectively.

Nonaka further explains that while each mode of knowledge conversion is capable of creating new knowledge independently, the thrust of his knowledge creation framework is that this process encompasses a dynamic interaction among the different modes of knowledge conversion. Nonaka explains that knowledge creation occurs through a four-step process of:

- building mutual trust,
- conceptualization,
- crystallization, and
- knowledge transfer.
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In this four-step process, creation of new tacit and explicit knowledge are both important. Nonaka states that:

"Knowledge creation centers on the building of both tacit and explicit knowledge, and more importantly, on the interchange between these two aspects of knowledge through internalization and externalization [40, p. 20]."

The first step is the *building of mutual trust*, which facilitates the sharing of experience -- the fundamental source of tacit knowledge. Shared experiences facilitates the creation of common perspectives which, in turn, are shared by those involved in this process as part of their respective bodies of tacit knowledge. The dominant mode of knowledge conversion involved here is *socialization* as various forms of tacit knowledge are brought together by individuals interacting with each other, and are converted through experience to form a common base of understanding.

Once trust is established and a common perspective is achieved, the next step in knowledge creation is *conceptualization*. The dominant mode of knowledge conversion involved here is *externalization* as perspectives are articulated through continuous dialogue. Tacit perspectives are converted into explicit concepts that can be shared. *Conceptualization* is then followed by the *crystallization* of new knowledge into some concrete form such as a product, system, or business process. The central knowledge conversion mode employed here is *internalization* as learning has taken place, and reality and applicability of concepts can be tested.

3.2 Knowledge Contexts

As described above, knowledge encompasses a set of highly contextualized components. [10] argued that working, learning, and innovating are interrelated, and that the

perceived gaps between these concepts were due to the fact that formal descriptions of work and learning are often abstracted from actual practice. They suggest that practice is central to understanding work. Abstract descriptions of work tend to distort and overlook the many important details which are *situated* in practice, within a real context. Without a clear understanding of such situated details, the practice itself cannot be well understood.

In a related research area, [49] examined the process of adaptive learning related to new process technologies, and they found that physical context (location) influences how problems are defined and solved. They attribute this to the fact that different physical locations embody the potential for different forms of informed discovery and knowledgeable action.

Collectively these findings suggest that knowledge is situated in a specific context, in a specific place, and among a specific community [10].

3.3 Knowledge Transfer

Once knowledge is created, and given that it is situated, effective *knowledge transfer* from one person or group to another must occur in order to realize performance benefits from that knowledge. Knowledge transfer involves conveying and diffusing knowledge throughout an organization [34] to leverage the ways it can be used to solve problems and strengthen performance. Effective knowledge transfer manifests itself through increasing the value of a firm's knowledge assets, which should eventually be reflected in better organizational performance [2]. Furthermore, the transfer and integration of knowledge across different contexts can generate new insights, as application in other contexts increases the scope and value of knowledge [55].

Critical to successful knowledge transfer is the learning capacity of the recipient organization. [14] argue that an organization's *absorptive capacity* with respect to new, outside technical information is a function of the its prior related knowledge. This stock of knowledge includes not only basic skills and shared language, but also knowledge generated within the organization's own operations.

3.4 Knowledge Utilization

Remembering what an organization has learned is an important aspect of knowledge utilization. Two contrasting approaches to helping an organization remember have been identified [29]. The first approach, *codification*, is heavily dependent on technology support. This is the strategy that has received the most media attention, through formal knowledge management repositories, such as *Lotus Notes* databases [17, 42, 50].

The second approach -- a *personalization* strategy -- does not require investment in sophisticated technology infrastructures. Rather, personalization is a low-tech, high-touch approach grounded in the belief that the best way to manage knowledge is simply to point employees in the direction of the people who have the appropriate knowledge and to provide low-tech ways to bring the people together (face-to-face or through communication technology) so that effective knowledge transfer can take place personally.

While there are many examples of firms that have focused heavily on technology as the foundation for their knowledge management activities (a *codification* strategy), some have argued that a technology-focused knowledge management strategy cannot produce positive results without a supportive culture -- one where employees choose to share information with each other [17]. In contrast, low-tech *personalization* strategies can be effective, as demonstrated in the example of McKinsey, a leading strategy consulting firm [29].

4. A Knowledge Management Perspective on IT Outsourcing

The use of IT outsourcing as a strategy to reduce costs and improve performance presents several knowledge management challenges to IT managers, particularly in the public sector. If much knowledge is tacit and is accumulated only through experience in the specific context, then there is a tension between relying on in-house expertise versus wanting to exploit the well-documented benefits of outsourcing. Ideally, outsourcing can provide access to a wide range of external suppliers' investments, innovations, and specialized expertise that would be impossible to duplicate internally [35]. However, the use of an external contractor to assume IT responsibilities can negatively impact the downstream consequences of IT projects by altering whether and how in-house employees learn and retain important knowledge (both tacit and explicit). Where insufficient learning by in-house employees occurs, this can lead to an atrophy of internal knowledge assets -- which some IS researchers have labeled as a loss of organizational memory [53, 54]. Furthermore, once the organization limits or ceases investing in its own competencies due to outsourcing, it may be difficult to renew a specific competence that had previously been outsourced. The path dependent nature of skill accumulation is impeded once an organization ceases to develop and nurture internal skills and capabilities [14].

Additionally, it is recognized that the same IT capability can transform different organizations in different ways which reflects the "economies of scope" characteristic of knowledge, i.e., the same knowledge is used to solve

many different problems. Outsourcing consultants are able to fully benefit from their knowledge resources as they reuse the same knowledge assets in different contexts for different customers. Yet the downside is that if in-house IT managers and employees do not develop this knowledge, they will be unprepared to apply it to similar (or even dissimilar) events in the future. Potentially, the failure to employ an adequate knowledge transfer strategy can prohibit the public sector IT organization from acquiring the expertise to solve new problems by reusing the same knowledge. The in-house IT organization thus leaves itself unprepared to adopt future technological innovations that depend on a familiarity and experience with an earlier technologies, due to a loss of absorptive capacity [14]. An example might be a public sector organization that lacks the foundation technical skills to develop and support its own Internet-based systems, because it had previously outsourced all its client/server implementation projects.

The fact that an organization has relied on outsourcers in the past does not necessarily doom them to failure or ongoing dependence on the same third party provider. What matters, of course, is the organization's recognition of the importance of an ongoing knowledge management program, particularly as related to knowledge transfer. This is more easily said than done, however, as much of the necessary learning about IT management -- including how to effectively deploy it and how to derive business value from it -- is experiential. Organizations learn about IT by doing it, and often challenges are not appreciated unless they are experienced [18]. Earl argues that the understanding of the value of an IT innovation tends to emerge in an evolutionary fashion. New applications for use of a technology are often rooted in tacit knowledge of the relationships between user requirements, cultural idiosyncrasies, and system specifications.

This is well-documented in a case study of the ways in which the uses for IT were gradually adapted and "improvised" over time to fit the changing needs of the organization [43]. Since many of the necessary insights to fashion technology to its changing needs can only accrue through hands-on experience, the organizations that choose to outsource may unwittingly fragment this bundle of skills and knowledge by missing critical learning opportunities, with the resulting loss of subsequent business gains [11].

A growing body of research suggests that organizations that are able to transfer knowledge effectively from one unit (e.g. individual or organizational) to another are more productive than those that are less adept [4]. The complexities of the public sector IT environment are such that effectively using an IT outsourcing strategy to achieve the goals outlined in the NPR is not an easy task. It requires access to the tacit and explicit knowledge assets of

the organization, as well as diligence in protecting and enhancing the organization's knowledge base. This requires continual assessment of the impact of outsourcing decisions on continued skill and competence accumulation. While this soundly rejects the choice of a total IT outsourcing strategy, there are still risks with using a selective outsourcing strategy. If selective outsourcing is used, public sector managers must beware of potential failure to effect appropriate knowledge transfer strategies (transferring knowledge from outsourcer to in-house staff), since failure to do so will expose the government (and, indirectly to its citizens) to the risks of not realizing the benefits sought from its systems. Using the knowledge management constructs discussed here, these complexities are illustrated in the example that follows.

5. Using Knowledge Management Constructs to Evaluate IT Outsourcing: An Example

As noted by [52] the success of IT outsourcing practices is affected by the environment in which it is done as historical, procedural, contextual, and political factors are interrelated where explanations for outcomes are sought. Hence the contextual pressures and constraints of the public sector IT environment has an impact on the success (or lack thereof) of an IT outsourcing arrangement.

In a study published in 1998, Brown & Brudney [11] evaluated the underlying prescriptions of the NPR: (1) that government should make use of advanced IT to expedite or enable the changes; and (2) that government should seek market solutions to facilitate the delivery of services. Specifically, the authors examined the degree to which government reliance on the private market for the implementation of geographic information systems (GIS) assisted the implementing organization in realizing the benefits of the technology. GIS technology provides a comprehensive tool for storing, updating, retrieving, and integrating information quickly for easy access. The intended benefits of GIS are increased productivity, improved performance, and enhanced decision-making which should result through automating specific tasks, by providing access to complete, accurate, and timely information, and by facilitating the use and interpretation of data. Also, the sophisticated information integration features can allow the government to respond more effectively to customer inquiries.

In their study, [11] examined the influences of outsourcing on factors related to both the *process* of implementation and the *outcomes* achieved from the adoption of the GIS. The specific outcomes examined were: on-time system delivery; delivery within budget; perceived improvements in productivity and performance; perceived improvements in decision-making; perceived improve-

ments in customer service. Their sample included three local governments, two of which relied heavily on IT outsourcing for many of their day-to-day information needs. The third government organization utilized a blend of internal and external IT capabilities.

The findings revealed that outsourcing neither stimulated nor impeded system implementation success nor ongoing operational benefits. In contrast to the high expectations for IT outsourcing, Brown & Brudney found that realization of benefits from GIS following implementation was positively related to internal management responsibility for the project, whereas increased reliance on outsourcing was associated with fewer operational benefits. In line with knowledge management precepts, the authors' further analyses suggested that higher levels of IT outsourcing negatively impacted the internal capabilities required to effectively implement the GIS project, as well as subsequent realization of the system's benefits. The third organization, which had assumed a more balanced approach to outsourcing – sharing responsibility for project control across both in-house and outsourced staff – and consequently, enjoyed better outcomes. These findings are consistent with prior research that has demonstrated the problems with total reliance on external providers for IT capabilities. In their comparison of total outsourcing versus selective outsourcing as outsourcing strategies, [33] found that:

...companies engaging in total outsourcing experienced significant difficulties Juxtaposed with [this] growing evidence of the problems with an all-or-nothing approach to IT outsourcing are the benefits of *selective sourcing*.... The practice of outsourcing select IT applications to vendors while retaining other IT applications in-house... eschews the all-or-nothing approach in favor of more flexible, modular outsourcing.... Most of the companies that had successful experiences with IT outsourcing used a reasoned, incremental, and selective approach to outsourcing.

An examination of the outcomes from [11] supports the argument that evaluating IT outsourcing decisions in the public sector using knowledge management constructs can contribute to obtaining more effective results. Likewise, the outcomes for the sample members that relied too heavily on the IT outsourcers supports the argument that assimilating innovative IT requires organizational managers who can address the unintended consequences of outsourcing on the organizations knowledge resources, as well as the political, managerial, and technical demands that IT systems may trigger. [31, 37, 45]. Furthermore, successful innovations require a champion within the or-

ganization who will promote the benefits of the technology, elicit trust from organizational members, and encourage commitment to the project [44].

According to [40], innovation is best understood as a process in which an organization creates and defines problems, and then creates new knowledge to solve them. Also, knowledge creation is the result of a dynamic process of interaction between tacit and explicit knowledge. Hence, we conclude that the explicit and tacit knowledge assets of an organization are critical to an organization's ability to innovate, and that failure to give due consideration to these assets and their interaction can impact the successful adoption of technology. For those government organizations in Brown & Brudney's study that employed IT outsourcers without the close, active involvement of in-house staff in the GIS implementation, they failed to gain the benefits of the knowledge creation processes that generate and re-use tacit and explicit knowledge assets of the organization. To illustrate this point, recall Nonaka's knowledge creation process. It is conceivable that the lack of sufficient interaction between in-house and external staff during project implementation may have impeded the creation of trust (Nonaka's first step of the three-step knowledge creation process), and hence the downstream processes were not triggered. The new knowledge generated would have facilitated customization of the IT outsourcers' technical know-how to accommodate the tacit knowledge base of the organization. As done, the implementation left the outsourcers focused on the highly technical aspects of the GIS implementation, without having access to the tacit knowledge that would help them understand how to fashion the technology to the organization's specific requirements. In consequence, the internal adoption efforts were undermined and few lasting benefits occurred.

Furthermore, [36] noted that learning processes such as learning by doing, learning by using, and learning from a supplier, are linked to specific pre-existing knowledge bases within the organization. As discussed in an earlier section [39], this points to an organization-specific knowledge base which is a prerequisite for the purposeful transfer of knowledge from an external supplier. The first two sample members in the Brown & Brudney study relied heavily on IT outsourcing for implementing their GIS, because they lacked expertise or because in-house resources were required elsewhere. The third sample member employed a close working relationship with the outsourcer, thus moderating its degree of reliance on the outsourcer. No positive changes in organizational performance were realized by the first two organizations, who thus failed to realize the benefits of their investment in GIS infrastructure. Given the lack of a preexisting knowledge base, no meaningful transfer of knowledge

took place from the outsourcer to in-house staff. Conversely, the GIS implementation for the third organization achieved high marks in meeting needs and providing benefits to users. Using a blend of internal and external resources was able to leverage a preexisting internal knowledge base, and thus was able to achieve successful knowledge transfer between outsourcer and in-house staff (and vice-versa).

6. Conclusion

As this example illustrates, knowledge management constructs are helpful in understanding the reasons why some organizations experience successful IT outsourcing events while others do not. We believe that in an environment subject to the contexts and constraints of the public sector, knowledge management precepts provide a sound basis for examining and mitigating some of the risks related to outsourcing, and helping plug the knowledge drain, i.e. the draining away of essential knowledge assets [47].

To our knowledge, this paper represents the first application of knowledge management concepts to understanding the challenges and outcomes of IT outsourcing, and we encourage other researchers to consider its merits for understanding other IT outsourcing issues, including private sector IT outsourcing.

Furthermore, [48] analyzed several implicit knowledge management assumptions in terms of their strategic and operational impact on an organization. They propose a research framework, and identify several questions that we plan to address in the future, specifically as related to the public sector. We expect our contribution to provide guidelines for effective knowledge management practices in this particular sector.

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