

INFORMATION TECHNOLOGY OUTSOURCING: A KNOWLEDGE-MANAGEMENT FRAMEWORK

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ABSTRACT

Outsourcing information technology (IT) functions to outside companies has become a major trend in today's information economy. This trend is likely to continue in the near future, affecting various aspects of organizations of all types and sizes. One major area of IT outsourcing impact is related to the ways that the enterprise knowledge resources are utilized, preserved, and managed. This article presents an analysis of IT outsourcing implications on enterprise knowledge management (KM). A KM framework that helps identify areas of outsourcing impacts is presented, and suggestions for future research studies on reducing risks of corporate knowledge-drain are provided.

Keywords: IT Outsourcing, Knowledge Management, Tacit and Explicit Knowledge

INTRODUCTION

Outsourcing is defined as “procuring of services or products from an outside supplier or manufacturer in order to cut costs” [3, p. 4]. Organizations turn to IT outsourcing for a number of reasons, the most prominent of which is cost cutting. More and more companies are looking beyond their own data centers and technical expertise to achieve their business objectives. IT outsourcing is a major trend that is expected to continue for a foreseeable future [7, 18]. Over 50% of companies are expected to use IT outsourcing in 2006 [9]. According to the McKinsey & Co, offshore outsourcing—using IT vendors overseas—will continue to rise at an estimated annual rate of 65% within the next few years and will reach \$147 billion by 2008 [15]. Based on predictions by Forrester Research, more than 830,000 US service sector and IT jobs will go offshore by the end of 2005, and this figure will increase to as many as 3.4 million by 2015 [16]. Even the U.S. government offices are aggressively outsourcing their IT activities. It is expected that government spending on outsourced IT functions to increase by an annual compound rate of 8.3% from \$11.7 billion in 2004 to \$17.4 billion in 2009 [21].

IT outsourcing is generally embraced as an integral component of cost-reduction strategy. However, to be an effective strategy, it must address various issues and ramifications regarding enterprise knowledge resources. What are the advantages and benefits of IT outsourcing? What are the potential risks of IT outsourcing to the corporate knowledge resources? What strategies can be implemented to reap the benefits of IT outsourcing while minimizing the risks of corporate knowledge-drain? The purpose of this article is to shed some light in answering these questions and pave the way to further research studies in this important area.

The next section presents a brief discussion of general benefits and risks of IT outsourcing to provide the necessary context for the following discussion of knowledge-drain risks. Next, a KM framework is presented to help identify various areas of IT outsourcing impacts on the enterprise knowledge management. Finally, concluding remarks and research and practical implications of IT outsourcing as related to enterprise KM are discussed.

BENEFITS, RISKS, AND KNOWLEDGE- DRAIN IMPLICATIONS

By signing outsourcing agreements, firms expect to reduce their overall IT costs, focus on their core competencies, and gain superior technical resources. However, without a careful consideration of the issues related to the enterprise-wide knowledge, it is likely that any short-term financial gain can be offset by significant loss of the enterprise knowledge.

First, the most prominent benefit of IT outsourcing is reducing costs. In a previously conducted survey, as much as 80% of the respondents cited the desire to reduce IT costs as a key reason for outsourcing all or part of their IT operations [11]. Second, many firms do not consider IT activities as the strategic core of their business. This perception of IT has led some corporate executives to relinquish some or all of the IT functions to external suppliers. Third, addressing quality-related concerns, many large global developers have attained the high quality ratings of four and five of the Capability Maturity Model by the

U.S. government-funded Software Engineering Institute [12]. Fourth, IT outsourcing is compensating for cyclical shortage of U.S. IT professionals, while Eastern Europe and India among others have access to thousands of more affordable Java and web-based application programmers.

Although IT outsourcing has several advantage and benefits, organizations that do not thoroughly and objectively evaluate the potential risks of this venture are unlikely to achieve a considerable success with it. There are various risks that can easily negate many, if not all, of the above-discussed benefits and make outsourcing a perilous business proposition. The risk categories of outsourcing and specific risk factors within each category are discussed in detail by Tafti [23], and are summarized in Table 1. While there are

various risks associated with IT outsourcing as indicated in Table 1, one of the most serious risk categories concerns enterprise brain-drain and possibilities of diminished technical expertise.

The shrinking pool of IT talents in an organization can dangerously drain the corporate knowledge base. According to Peter Drucker [6], “the attenuation of the relationship between people and the organization they work for represents a grave danger to business.” There is an inherent risk in losing more than just a “bunch of IT workers.” Not only a great part IT professionals and some “codified,” explicit body of knowledge will be lost, but more importantly, the tarnished interplay among them may significantly damage the long-term viability of the enterprise.

Table 1: Risk Categories of IT Outsourcing.

RISK CATEGORIES	RISK FACTORS WITHIN CATEGORY
Loss of Enterprise Knowledge	<ul style="list-style-type: none"> ▪ Loss of key employees ▪ Sacrificed IT knowledge ▪ Inability to rebuild IT infrastructure ▪ Tarnished interaction among experts ▪ Same or inferior IT staff ▪ Inability to define new architecture
Privacy and Security	<ul style="list-style-type: none"> ▪ Lack of effective corporate policy ▪ Inadequate audit and control ▪ No host government laws and regulations
Hidden Costs	<ul style="list-style-type: none"> ▪ Beyond baseline services ▪ Vendor search costs ▪ Transition costs
Outsourcing Contract	<ul style="list-style-type: none"> ▪ Inadequacy of service level agreement ▪ Vendor’s non-performance ▪ No provisions beyond baseline measures

A KNOWLEDGE-MANAGEMENT FRAMEWORK

The level and quality of human capital available for an enterprise determine the state of enterprise knowledge-base. Successful implementation of IT is largely a function of IT intellectual capital, which is a subset of the corporate overall human capital [31]. IT intellectual capital can not be simply created by putting discrete wads of IT professionals and some codified bodies of transferable knowledge together in a short period of time [22]. Rather, it is developed through interplay among them over time within the context of specific corporate culture. Then, what will happen to the corporate knowledge when a big portion, if not all, of IT activities as well as IT professionals is outsourced?

When an organization decides to let a third party take over its IT functions, an employee surplus is created in its IT department. The organization no longer needs to retain many of its IT employees on its payroll, so they become expendable. While initially consistent with a firm’s outsourcing strategy, the loss of IT expertise can have a detrimental long-term impact on its business. IT knowledge that is specific to the way a firm conducts its business is often sacrificed. Although a specific IT function is transferred on the notion that it is ideal for outsourcing, there may be key employees within the outsourced department that possess critical knowledge that should remain internal to the firm. Based on knowledge management literature, this section identifies four types of knowledge that can be lost due to inappropriate outsourcing arrangements.

Many studies present knowledge management models that help managers invest in knowledge tools, recommend formal process analysis, and describe best practices [1, 2, 8, 14, 17]. Two knowledge paradigms that assist in identifying states of knowledge management are the *information processing* and *sense making* models [8]. The information processing view refers to task-specific knowledge and is oriented towards problem-solving [5]. Sense making relies on the capacity of human beings to translate information into meaning and to define problems [4, 5, 13, 17]. The information

processing view is associated with “*explicit knowledge*” and the sense making view is associated with “*tacit knowledge*” [19]. Tacit knowledge refers to the knowledge that resides in the minds of people such as a company’s employees, customers, and vendors. The explicit knowledge, on the other hand, is that which has been externalized and/or documented. Table 2 contains cross-classification examples of two categories of knowledge: the tacit/explicit category as discussed above and the general/specific category discussed in the following.

Table 2: A Knowledge-Management Framework of IT Outsourcing

	Company-Specific Knowledge	General Knowledge
Tacit Knowledge	<ul style="list-style-type: none"> ▪ Factors and corporate-specific relations and processes that should be considered in designing the company’s data warehouse ▪ Human-factor considerations for designing a user interface for the company’s employees 	<ul style="list-style-type: none"> ▪ Knowledge of the principles and methods for designing a database, given a set of user requirements and business rules ▪ Knowledge of user interface design techniques to support human-machine interface
Explicit Knowledge	<ul style="list-style-type: none"> ▪ A document containing company’s user requirements and business rules for a particular database ▪ A document containing the company’s user interface design guidelines 	<ul style="list-style-type: none"> ▪ A book, user’s guide, manual, or tutorial on database design ▪ A book or tutorial on user interface design

Knowledge can also be classified based on the context within which it is created. Context-based knowledge is specific to a particular tool, technology or work environment. *Company-specific* knowledge, for instance, is the knowledge created and embedded in the context of a specific supply chain in the organization. An IT professional, for example, may decide on certain design aspects based on his or her knowledge of the interweaving parts of the company’s operations. *General knowledge*, on the other hand, is applicable in many different contexts and is often possessed by a large number of people, both within and outside a specific work environment. Examples of this latter type of knowledge include skills in various programming languages and database design, in general.

Often tacit, company-specific knowledge (the first quadrant in Table 2) is gained through many years of work in a specific organization and in teams and workgroups. By working in specific work environments, individuals and teams show evidence of “learning curves”. Such knowledge is specific to corporate culture and the way a firm conducts its

business, and is essential in efficient design and development of business processes—particularly those processes that are cross-functional. Turnover of employees with such experience can be disruptive for an organization.

CONCLUSION AND IMPLICATIONS

By all indications, the outsourcing of knowledge work is expected to grow and even accelerate. This is particularly true when the U.S. enterprises are under unprecedented and intense pressure to reduce development costs and enhance operational efficiencies for the purpose of showing favorable short-term financial results. Lower wages for comparable overseas talent, combined with tax credits, amount to substantial savings for many companies. This has enabled many companies to invest in and upgrade their systems, enhance business processes, and increase productivity. On the other hand, the potential knowledge-drain risks associated with IT outsourcing have to be addressed in order to reap full benefits of outsourcing.

Outsourcing decisions are often based on analyses that emphasize short-term, tangible benefits and costs. Intangible costs, which often accrue over a longer period of time, are usually not apparent right away—nor are they straight forward to quantify. One important source of intangible costs of IT outsourcing is the loss of irreplaceable skills and knowledge—particularly the company-specific, tacit knowledge. Loss of a company's valuable knowledge-resources through either attrition of its valuable knowledge-workforce or transfer of that knowledge to outsourced workers and organizations could lead to an erosion or loss of the company's strategic and competitive advantage in the long run.

To reap the benefits of IT outsourcing while avoiding the high costs of losing enterprise knowledge, organizations must estimate potential costs and benefits, considering both the tangible and intangible aspects. The KM framework presented above is a useful step towards a better understanding of the level and type of IT outsourcing that is most appropriate for a particular enterprise. However, future research studies are needed to test and explore this framework as a guide in formulating the hypotheses on the impact of IT outsourcing on each of the four types of knowledge.

Future research studies that should be conducted in this area may include case-base studies and strategic alliance approach (among others). In *case-Base Studies*, the significance of knowledge-drain risks in each quadrant of the proposed KM framework may be explored and evaluated through comprehensive case studies. These case studies can reveal the magnitude of each risk factor and provide an insight into the lessons learned by companies that actually experienced, and the way they dealt with, the risks in each of the four areas. The proposed framework may also help creating a proper *strategic alliance* between the outsourcing company and its client that avoids, or minimizes, various knowledge-drain risks. Therefore, research studies in developing a new paradigm regarding IT outsourcing based on strategic alliance would provide significant contribution in this area.

REFERENCES

- Alavi, M. & Leidner, D. E. (2001). Review: Knowledge Management and Knowledge Management Systems: Conceptual Foundations and Research Issues, *MIS Quarterly*, 25(1), 107-132.
- Bassellier, G. & Benbasat, I. (2004). Business Competence of Information Technology Professionals: Conceptual Development and Influence on IT-Business Partnerships. *MIS Quarterly*, 28(4), 673-94.
- Brooks, G. (2004). What Is Outsourcing?, *New Media Age*, Supplement, Oct 28, p.4.
- Churchman, C. W. (1971). *The Design of Inquiring Systems: Basic Concepts of Systems and Organization*, Basic Books, NY.
- Davenport, T.; DeLong, D. W. & Beers, M.C. (1998). Successful Knowledge Management Projects, *Sloan Management Review*, 39(2), 43-57.
- Drucker, P. (2002). They're Not Employees, They're People, *Harvard Business Review*, 80(2), 70-77.
- Farrell, D. (2004). Beyond Offshoring: Assess Your Company's Global Potential, *Harvard Business Review*, 82(12), 82-90.
- Holsapple, C. W. & Joshi, K. D. (2002). Knowledge Management: A Threefold Framework, *Information Society*, 18(1), 47-66.
- King, W. (2004). Outsourcing and the Future of IT, *Information Systems Management*, 21(4), 83-84.
- Lee, D. M. S., Trauth, E. M. & Farwell, D. (1995). Critical Skills and Knowledge Requirements of IS Professionals: A Joint Academic/Industry Investigation, *MIS Quarterly*, 19(3), 313-340.
- Lacity, M. & Willcocks, L. (1998). An Empirical Investigation of Information Technology Sourcing Practices: Lessons from Experience, *MIS Quarterly*, 22(3): 406-408.
- Levina, N. & Ross, J. W. (2003). From The Vendor's Perspective: Exploring the Value Proposition in Information Technology Outsourcing, *MIS Quarterly*, 27(3), 331-364.
- Malhotra, Y. (2000). Knowledge Management and New Organizational Forms: A Framework for Business Model Innovation, *Information Resources Management Journal*, 13(1), 5-14.
- Markus, M. L., Majchrzak, A. & Gasser, L., (2002). A Design Theory for Systems That Support Emergent Knowledge Processes, *MIS Quarterly*, 26(3), 179-212.
- Marshall, J. (2003). Offshoring Drive for Savings Accelerates, *Financial Executive*, 19(6), 52.
- McDougall, P. (2004). There's No Stopping The Offshore-Outsourcing Train, *InformationWeek*, 5/24/2004, No. 990, 18.
- Nissen, M.; Kamel, M. & Sengupta, K. (2000). Integrated Analysis and Design of Knowledge Systems and Processes, *Information Resources Management Journal*, 13(1), 24-43.
- Pfannenstien, L. & Tsai, R. (2004). Offshore Outsourcing: Current and Future Effects on

- American Industry, *Information Systems Management*, (21)4, 72-80.
19. Polanyi, M. (1967). *Tacit Dimension*, Routledge & Keegan Paul, London.
 20. Reich, B. H. & Benbasat, I. (2000). Factors That Influence the Social Dimension of Alignment Between the Business and Information Technology Objectives. *MIS Quarterly*, 24(1), 81-113.
 21. Soat, J. (2004). Offshore Outsourcing, Tax Dollars, Trouble, *InformationWeek*, No.1018, 84.
 22. Stewart, T. (2001). *The Wealth of Knowledge: Intellectual Capital and the Twenty-First Century Organizations*. Nicholas Brealey, London.
 23. Tafti, M. (2005). Risk Factors Associated with Offshore IT Outsourcing, *Journal of Industrial Management and Data Systems*, 105(5), 549–560.