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A business process context for Knowledge Management

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Abstract

Knowledge and management of it emphasize and expect interactions between aspects of business processes including workflow execution, information processing, decision making and motivational structure. As such production and consumption of knowledge occur within these aspects of business processes. Therefore, a business process context provides the justification and rationale for organizing Knowledge Management efforts that address knowledge storage and retrieval, knowledge sharing and knowledge synthesis. Exemplar projects are used to illustrate potential approaches and associated research challenges to addressing Knowledge Management efforts within a business process context.

Keywords: Knowledge Management; Business processes; Coordination; Ontology; Knowledge sharing; Information systems

1. Introduction

The challenge of managing knowledge in organizational context lies in effectively harnessing multiple knowledge sources into coherent business intelligence and embedding the intelligence into organization's memory. As the notion of Knowledge Management (KM) matures, it is increasingly clear that KM is not just about technology, and cannot be realized simply through information systems. Knowledge and management of it emphasize and expect collaboration between a wide spectrum of contributors that ranges from people and processes to supportive technologies in an organization.

Historically there has been a perceived disconnection between technologists and business managers as it relates to Information Technology (IT) solutions in business contexts. Technologists typically view IT from the perspective of capabilities, where the focus is on specific functionalities and interfaces afforded by the solution to the users. Business managers tend to evaluate IT solutions from strategic or business process enablement perspective [12].

In this paper, we suggest frontiers for KM efforts in the business domain. As has been recognized in a variety of disciplines, knowledge in the business context is a somewhat nebulous resource. To build a foundation for KM, efforts need to be directed for

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addressing issues related to knowledge storage and retrieval, knowledge sharing and knowledge synthesis. Using arguments grounded in existing theory and literature, we identify coordination mechanism for business processes as the knowledge context.

Knowledge storage and retrieval provides a unique challenge to researchers as data management systems as a general rule use indices to store data and effectively the same indices are used to retrieve the data. As such orientations to storage and retrieval are closely tied together. For KM systems, storage approaches and retrieval mechanism are not necessarily congruent. A single level storage and retrieval mechanism cannot be applied in KM, necessitating an ontological orientation. The utility of this orientation is illustrated via a failure analysis/failure identification KM system developed in the context of a semi-conductor manufacturing organization.

Knowledge sharing addresses the needs related to generation and collaborative aspects of knowledge. Knowledge artifacts–data and information–used in the sharing and generative processes are inherently unstructured. Furthermore, these artifacts come from disparate sources causing the sharing process to be asymmetrical in orientation. We instantiate the complexity associated with knowledge sharing by presenting a real time knowledge sharing case in the context of bio-terrorism surveillance. Success in this setting is inherently predicated on effective and efficient knowledge sharing among sentinel data gathering sites, first responders and epidemiologists. The case illustrates the challenges that emerge from information asymmetries, unstructured data transfer and the opportunistic problem solving necessitated by discontinuous data, information and knowledge sharing.

Before delving into our approach to creating a context for managing knowledge, it is instructed to briefly review the extant literature on KM. While the conceptual foundations of KM were laid out in the work of several management researchers in the early 1960s [18,35,46], more formal treatise of the concepts related to Knowledge began to emerge in the 1980s, especially as the resource based view of the firm began to gain currency [59]. The dominant theme in the KM literature in the

Table 1
KM research themes

Time period	Driving forces	Salient themes	KM and information technology context
1960s–1970s	Increased number of large organizations	Resource Based View of the firm [45] Knowledge Classification [46,35] Organizational Strategy [18]	Systems orientation to KM non-existent
	Transaction Processing Systems and Manufacturing Automation	Organizational Learning Models [4] Bounded Rationality and Information Processing [39]	Expert Systems and Knowledge-based Systems in Research Labs (DENDRAL-1971; MYCIN-1975; HACKER-1975)
1980–1989	Globalization Shift toward service and Knowledge based organizations	Competitive Strategy Framework [48] Organizational design and Strategic Fit [40] Strategic Capability of the firm [49]	Operational uses of Decision Support and Knowledge Based Systems [32] Computer Supported Cooperative Work (CSCW) [33]
	Total Quality Management		Group Support Systems [43]
1990 onwards	Business process re-engineering	Collaboration and communities of practice [24,44]	Internet based systems
	Increased attention to Knowledge and intellectual capital management	Spiral model of knowledge creation; interaction between tacit and explicit dimensions [42]	Data mining
	Emergence of Information Economy	Industry practice and prescriptions for effective KM [15]	Business Intelligence and Data warehouse technologies
	Tighter Inter-organizational relations in operations and strategy		Enterprise Systems Document Management Systems Workflow Management Systems Intelligent and Mobile Agent Systems