

Complex Organizations and Information Systems

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INTRODUCTION

In modern organizations, information, and particularly knowledge, is known to be the most strategically important resource. The defining characteristics of modern organizational forms are purported to be flatter hierarchies, decentralized decision making, greater capacity for tolerance of ambiguity, permeable boundaries, capacity for renewal, self-organizing units, continual change, and an increasingly complex environment (Daft & Lewin, 1993; Warne, Ali, Bopping, Hart, & Pascoe, 2004). Yet, many systems that are developed to support organizational activities continue to fail at an alarming rate (Hart & Warne, 2005; Warne, 2002). Many explanations have been offered for such failures (e.g., DeLone & McLean, 1992; Fortune & Peters, 2005; Lyytinen & Hirschheim, 1987; Sauer, 1993; Warne, 2002), but contradictions and stresses continue to confound organizations and their use of information and communications technology (ICT).

The challenge for information systems (IS) research and practice is to articulate an organizational paradigm, including its structures, forms, and systems, that will enable the organization to be agile, innovative, and have the capacity to learn. This article discusses some of the parameters for a new contemporary model for organizations.

BACKGROUND

A modern paradigm for organizations needs to focus on their ability to support knowledge work practices that integrate thinking and doing (Burstein & Linger, 2003). Such practices address both the production of goods and services and the means of their production. Most importantly, such practices rely on the ability to remember and learn from the past and to use this learning to make sense of current situations. It is these practices that enable organizations to effectively compete in a rapidly changing environment through their ability to respond flexibly to internal and external demands.

Such flexibility is derived from the dynamic of a network-centric organizational form, the shift to knowledge as a critical resource, the emphasis on learning, and a recognition and acceptance of complexity as the modern context of organizations.

The 'sensible organization' is an articulation of such an organizational paradigm. The concept of a 'sensible organization' is related to the sense-making view of organizations (e.g., Weick, 1995; Wiley, 1994; Cecez-Kecmanovic & Jerram, 2002). There are three significant levels of sense-making (see Linger & Warne, 2001): individual, organizational, and an intermediate level involving teams, groups, or units. Knowledge has traditionally been understood at the individual level. It is often said that "only people know," and individuals learn as they acquire knowledge from others. At the organizational level we use metaphors of 'organizational learning' and 'organizational memory' in the context of formal knowledge repositories, intranets, databases, and data warehouses that are invariably ICT based. The focus of most knowledge management initiatives is at this organizational level, while less attention has been paid to the collective knowledge at the intermediate level.

The focus of the sensible organization is the intermediate level since the informality, interactivity and adaptability of small teams defines a space for what is traditionally called 'common sense'. Within this space, teams are able to construct shared understanding and take action based on that understanding, amid the accountability and constraints of the formal enterprise. In this sense, teams represent the site of most innovation and creativity in organizations, and consequently where the challenges and potential of a sense-making approach are most apparent. Sensible organizations therefore encourage the emergence of self-directed teams interconnected in a network-centric configuration as described in Warne, Ali, and Hasan (2005b).

What is proposed by the sensible organization is not new but a return to past skills that have often been overtaken by the bureaucratization of the workplace—a process that, in many instances, is itself a result of ICT-driven change.

THE SENSIBLE ORGANIZATION IN CONTEXT

As organizations change in order to maintain their strategic and sustainable position in the broader society, they are adopting flatter forms that require substantial changes in the way people work. These changes are directed to supporting agile teamwork and coordinated group activity that is flexible but also well aligned with the desired organizationally defined outcomes. The sensible organization needs to be understood in the context of its structural and functional forms, and the interdependencies between these forms, in shaping the organization.

On the other hand, IS research will need to increase its understanding of these transformed organizational cultures in order to provide advice on managing organizations where uncertainty and complexity are the norm. Such understanding is a necessary prerequisite to the design and implementation of ICTs that are consistent with the sensible organization. For ICT systems to effectively support the sensible organization, the underlying architecture will need to appropriate social technologies (e.g., Pfaff & Hasan, 2006; Hasan, 2006a) in a manner that empowers knowledge workers and democratizes organizational information.

In order for IS research to understand the sensible organization, it is necessary to examine elements that characterize the sensible organization and its context.

Situating the Sensible Organization— The Complex Environment

Organizations are confronted by increasing complexity and a rapid rate of change (Robbins, 1990), where the nature of change is frequently revolutionary rather than evolutionary. This is exemplified by the impact of ICT, and the Internet in particular, on how organizations work and interact with their environment. The challenge for the sensible organization is to successfully manage this transformative environment as a network of complex entities and to adopt ‘systems thinking’ (Senge, 1994) in order to recognize and understand emerging patterns of this complex world.

Traditionally, organizations adopted a reductionist approach that attempted to summarize the dynamics, processes, and change that occurred in terms of the lowest common denominators and the simplest, yet most widely provable, applicable, and elegant explanations. For the sensible organization, it is more appropriate to view the world as a complex system that includes numerous elements, arranged in structures, that go through processes of change. These changes are neither describable by a single rule nor are reducible to only one level of explanation and often include features whose emergence cannot be predicted from their current specifications (Hasan, 2006b). This approach is consistent with IS,

which intrinsically takes a socio-technical systems view of the situations it investigates as illustrated by ‘soft systems methodology’ (SSM) developed by Checkland (1991).

For the organization to make sense of a complex system, it needs to accommodate the system’s inherent dynamics, including the ability to incorporate unanticipated and unforeseen features that emerge from that dynamic. This requires an innovative means of understanding the longitudinal changes to the organization and the possibilities open to the organization in the future. Frameworks like Snowden’s (2002) Cynefin model are useful to reach such understanding.

The Sensible Organization as a Complex System

Complexity itself is characterized by a number of important properties such as self-organization, non-linearity, and emergence. Snowden’s (2002) Cynefin framework is a model that presents organizations as a knowledge space with five domains: two domains of order, the known and the knowable; two domains of unordered, complexity and chaos; and the undesirable domain of disorder. Each domain has a different mode of community behavior, and each implies a different form of management, a different leadership style, and the adoption of different tools, practices, and conceptual understanding. For the sensible organization, the ‘complex’ domain is of particular interest with its characteristics of self-determination, emergence, and organic forms.

Importantly, sensible organizations are not limited to any domain, but exhibit, to a greater or lesser extent, characteristics of each domain. Sensible organizations are often more like ecosystems than machines with one domain predominating in any specific situation. Using the Cynefin model one is able to see how organizations and their information systems can simultaneously be mechanistic and organic. When confronting a complex and changing environment, the sensible organization replaces rational planning with processes that stimulate patterns of propitious emergent activity with an emphasis on sense-making, unstructured decision making, and shared situation awareness. The current reality is that organizational transformations will continue to be a permanent feature and therefore it makes sense to view the organization primarily from the perspective of the Complexity domain.

The Sensible Organization Infrastructure—Socio-Technical Systems to Support Complexity

The characteristic of IS that distinguishes it from other management fields in the social sciences is that it concerns the use of “artifacts in human-machine systems” (Gregor, 2002). Conversely, the characteristic that distinguishes IS

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