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Satish Vasudevan

Syracuse University, spvasude@syr.edu

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User-led Initiation of Information Systems Innovations: An Organizational Learning Perspective

[Satish Vasudevan](#)

School of Management
Syracuse University
Syracuse, NY 13244
Tel.: (315) 443-1040
Fax: (315) 443-5457
Email: spvasude@syr.edu

1. Introduction

The rapid development of new and powerful information technologies has created numerous opportunities for their innovative application in organizations. In a recent survey, chief information officers (CIO) across the US ranked creativity and innovation as one of the top five issues facing information technology (IT) management (Zawacki, 1993). Organizations can no longer afford to wait for 'suitable problems' to occur to deploy a particular IT, instead, they need to be proactive and scout for opportunities to exploit new information technologies (Keen, 1993). While researchers too recognize the need for creativity in IT management, much of the research on information systems (IS) innovation focuses on adoption and diffusion issues, and pays limited attention to how ideas for IT deployment originate and develop.

In their constant search for profitable IT applications, organizations are discovering that technology users, more than technology providers, hold the key for innovative deployment of IT in business (Keen, 1993; Keil and Carmel, 1995). Several scholars have emphasized the important role of users in initiating innovations in technological industries (Urban and von Hippel, 1988; von Hippel, 1988). The constant exposure to dynamic business situations enhances the users' potential for creating new opportunities for deploying IT.

This research adopts an organizational learning perspective (Huber, 1991) and views initiation of IS innovation as a knowledge creation process that requires effective integration of business and technological knowledge (Ciborra, 1991). The objective of the research is to explore the different mechanisms organizations can employ to promote user-led initiation of IS innovation, and to study the influence of various contextual attributes on these mechanisms.

2. Research Questions

The study would attempt to answer the following two research questions.

- a) What are the different organizational mechanisms that can enhance the ability of users to innovate in information systems?
- b) What are the contextual variables that moderate the effectiveness of such organizational mechanisms?

3. Theoretical Background & Preliminary Research Model

A technological innovation perspective can provide IS researchers with a useful framework for studying the underlying processes and the influencing factors of IT deployment in organizations (Cooper and Zmud, 1990; Swanson, 1994). Swanson (1994) categorizes IS innovations into three types: type I (IS process innovations), type II (IS products and services applied to the administrative core of the organization), and type III (IS products and services integrated with the core business technology). Since the emphasis on the

integration of business and IT knowledge is utmost in the case of type III IS innovations, the role of users in initiating IS innovations will be most significant in the case of type III innovations. As such, the focus of this research will be on user-led initiation of type III IS innovations.

The studies that have focused on IS innovation initiation are characterized by two factors: a) they view initiation as the process of becoming aware of an innovation, and of matching its suitability in addressing a known performance gap (Nilakanta and Scamell, 1990; Rogers, 1983); b) they neglect the grassroots-level activities, and focus only on rational organization-level planning models largely drawn from the business strategy literature (Premkumar and King, 1994).

This research adopts a learning perspective, and defines initiation as the process of creating new knowledge regarding the application of a technology to a particular business context. As Attewell (1992) notes, such "knowledge often has to be discovered *de novo* within the user organization" (p6). For example, an organization desiring to adopt multi-media technology has to create new knowledge that marries the technology to its unique business context. In short, the initiation process should be likened more to a knowledge creation process than to a technology awareness process.

The need for adopting such a learning perspective has been emphasized by several scholars. Ciborra (1991) noted the need to study how IS innovations emerge from the grassroots of the organization (through end-user hacking, prototyping, etc.) rather than focusing only on rational planning models. Zmud and his associates (Zmud et al., 1987) called for a focus on "IT-related managerial interactions" (p39) responsible for the effective integration of business and IT knowledge. They believe that a deep understanding of such interactions is crucial for explaining interorganizational differences regarding IT penetration.

However, very little is known about the different organizational mechanisms that can facilitate and promote such IT-related managerial interactions. This study will attempt to identify these organizational mechanisms, and test their influence on user-led initiation of IS innovations. The theoretical foundation for the research model is obtained from the IS, innovation management, and organizational learning literatures. Although the research model is still under construction, some of its salient features are briefly summarized here.

a) The integration of technological and business knowledge, and the creation of new IT deployment knowledge demand certain skills or characteristics, termed 'initiation capabilities', in the users. By enhancing these user-based initiation capabilities an organization can increase the effectiveness of the initiation process.

b) Different mechanisms that an organization can employ to enhance its users' initiation capabilities have been identified (derived from the IS literature and from interviews conducted with practicing IS managers in various organizations). These organizational mechanisms will be classified along different dimensions (eg., formal/informal, level of interaction, type of knowledge activity).

c) The model proposes that the relationships between various organizational mechanisms and user-based initiation capabilities will be moderated by individual factors (eg., cognitive style, tenure) and situational factors (eg., diversity of current IS portfolio, top management support).

The study will have several important implications, for both research and practice. First, there is a definite gap in the IS literature on how innovative IS applications are developed and the role of users in this knowledge creation process. Second, the study would identify a varied set of mechanisms that organizations can use to enhance their IT deployment capabilities. Since the research will also examine the relative cost and efficiency of each mechanism, it can guide IS managers in selecting an appropriate suite of mechanisms to fit a particular context.

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