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Rethinking the Characteristics of IS/IT Innovations: Rhetorics and Managerial Perspective

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Introduction

The "innovation" is an important concept in organizational studies of information systems (IS) and information technologies (IT). In particular, it plays a central role in research on IS/IT adoption and diffusion (Fichman, 1992; Swanson, 1994). This work draws on a long tradition of research on the diffusion of innovations (Rogers, 1983; Zaltman et al., 1973). Central to this tradition is the straightforward notion that (1) prospective adopters evaluate innovations in making their adoption decisions, and (2) those evaluations can be said to focus on particular characteristics of innovations that are made salient by the practical challenges adopters face.

Scholars have offered numerous characteristics for consideration, in the context of studies addressing many different kinds of innovations (Tornatzky & Klein, 1982). On the whole, these characteristics pertain primarily to individual adopters (Rogers, 1983) and have consequently found their main use, in IS/IT research, in diffusion studies focused on end users (e.g., Moore & Benbasat, 1991; Ramiller, 1994; Wynkoop, 1992). However, where the research focus shifts to adoption decisions at the organizational level, the pertinent challenges change and therefore so, too, do the salient characteristics of IS/IT innovations. But, what are these characteristics? On the whole, the research literature addressing this question is thin. The research-in-progress that is the subject of this report addresses this lacuna.

Making Sense of IS/IT Innovations: The Managerial Challenge

The central challenge for managers, change agents, and other sensemakers considering an IS/IT innovation for adoption is to determine its relevance for their organizations. This entails a learning process that culminates in the building of a conceptual model of the innovation (Clark, 1985) that reduces uncertainty concerning what the innovation consists of, what opportunities and/or threats it portends, and what responses are needed to realize its benefits (Milliken, 1987).

However, learning about an IS/IT innovation is frequently complicated by dynamism in the innovation itself. An innovation is often long in the public eye while still immature and subject to substantial further evolution. Moreover, at any given time the innovation's constitution may be subject to debate and indeterminacy, as different parties -- prospective adopters, technology providers, trade and business journalists, academics, and others -- hold forth very different views of the innovation. This complication is especially acute where the framing for the innovation embraces the organizational

application of technology (e.g., groupware, client server, data warehouse) rather than focusing, more narrowly, on technological artifacts (e.g., 32-bit operating systems, GUI development tools, RAID storage technology).

The dynamism and indeterminacy in the IS/IT innovation demand that organizational sensemakers pay close attention to the on-going "talk" in the broader interorganizational community in which much of the substantive development of the idea for the innovation takes place (Swanson & Ramiller, 1994). Through processing the stream of interpretations offered in this community's discourse, organizational sensemakers become both informed about the innovation and persuaded, in some measure, about its validity, applicability, and value.

That the community discourse functions both to inform and to persuade suggests that the innovation is, at one level, a rhetorical phenomenon. Here, "rhetoric" is intended in the classical sense as communication organized around the "debatable" (Huff, 1983) and employing a full range of conceptual resources in fact, logic, metaphor, and narrative (McCloskey, 1994). The sensemakers' assessment of the innovation, then, is in important respects a critical interaction with rhetoric.

Provisional Characteristics of IS/IT Innovations

This rhetorical perspective points the way toward a provisional suite of innovation characteristics (Table 1). It is proposed that the innovation, as perceived by organizational sensemakers, carries an overall level of persuasiveness or "rhetorical strength," which may range from weak (questionable, confused, contingent, motivated) to strong (fact-like, compelling, independent of advocacy) (Latour, 1987). An innovation's rhetorical strength is, in turn, a function of a number of other attributes. These reflect (1) qualities of the community discourse that shapes the innovative concept, (2) attributes that measure the fit of the innovation to existing ideas and understandings, and (3) substantive evaluations of the innovation relative to practice. Characteristics in the first two of these three categories derive mainly from literature addressing the application of rhetorics and narrative to organizational analysis. Characteristics in the third category draw on research on managerial cognition (especially strategic issue diagnosis) and technology implementation. These latter sources are key because the substantive issues that enter into the rhetoric of an IS/IT innovation are principally related to organizational performance and capabilities in technology transfer.

Research Strategy

An empirical research project to evaluate and refine the provisional suite of innovation characteristics is currently underway. The project involves two phases, the first based on a program of interviews and the second on a formal survey.

Focused interviews (Spender, 1989) are being conducted in adopter and prospective adopter organizations with high-ranking IS managers, including CIOs and senior personnel in charge of advanced technology assessment and planning. These informants

are drawn from a large variety of industries, and in each case represent key participants in their organizations' evaluations of IS/IT innovations. A set of four IS/IT-related innovations of current interest in the field provides the topical subject matter of these interviews. These are, specifically, CASE, client server, data warehouse, and business process re-engineering. As broader visions for the organizational application of IT, these tend to be, at least to some degree, rhetorically problematic. They also present a range of maturities and variety in their organizational scope of impact. Interviews are being transcribed in full, and put through an open coding procedure (Strauss & Corbin, 1990) to allow for the emergence of unanticipated characteristics and the obviation of postulated ones.

The suite of innovation characteristics, modified along lines indicated by the interview findings, will be the subject of a large-scale formal survey. The survey, to be distributed by mail to senior IS personnel, will focus on the same innovations as the interviews. Dimensionalization in respondents' perceptions of the innovations will be uncovered through factor analysis. Results will point the way toward a revision of the initial scheme for the characterization of innovations. Of interest, too, will be the stability of factor structure across the innovations, and the specific contribution which particular factors appear to make in determining the overall rhetorical strength of an innovation.

Table 1. Provisional Characteristics of IS/IT Innovations

Overall impact: rhetorical strength	(Latour, 1987)
Aspects of the discourse: coherence richness balance	(Eccles & Nohria, 1992; Astley & Zammuto, 1992) (Riesmann, 1993; Kaplan, 1986; Lyles & Schwenk, 1992) (Kaplan, 1986)
Relationship to established knowledge and belief: originality plausibility criticality	(Rogers, 1983; Eccles & Nohria, 1992) (Golden-Biddle & Locke, 1993) (Golden-Biddle & Locke, 1993)
Substantive implications: importance urgency scope actionability	(Dutton & Duncan, 1987; Ginsberg & Venkatraman, 1992) (Dutton & Duncan, 1987; Ginsberg & Venkatraman, 1992) (Dutton & Duncan, 1987; Leonard-Barton, 1988a, 1988b)

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