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Critical Systems Diffusion Approach in Healthcare

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Are there lessons for the IT industry from the way Healthcare professionals dictate quality methods in healthcare system diffusion? This paper draws upon diffusion of innovation theory (Bradford & Florin, 2003; Fichman, 1992) and Critical IT Implementation Approach (Cooper & Zmud, 1990) to describe the Critical Systems Diffusion (CSD) approach to quality in healthcare by drawing on investigation of diffusion of a nationwide healthcare record in the United Kingdom and published research. It describes the similarities and differences between *Connecting for Health* and other systems diffusion in the other industries and the factors leading to the application of CSD approach in the NHS. It describes why CSD approach has not been adopted widely, the approach of evidence based participatory quality improvement, which is being developed and proposes that the IT industry can learn from healthcare as a foundation for systems diffusion in other industries (Levy et al, 2003; Holmes & Warelow, 1997). The paper discusses why CSD approach is being increasingly used in the IT industry, and the methodology of quality circles.

Well documented is the fact that technical properties as well as irreversible phenomena of new IS, which consist of infinitely many coupled nonlinear relations to major human actors in the organization, are only capable of exhibiting phase transitions of the overall organization strategy (Bergeron & Bégin, 1989; Bradford & Florin, 2003; Cooper & Zmud, 1990). Prior literature has viewed IT diffusion from a technological perspective where IS strategy supports an organizational effort directed toward diffusing appropriate information technology within a user community. Innovation diffusion theory provides a useful perspective on one of the most persistently challenging topics in the IS namely, how to improve technology assessment, adoption and implementation (Fichman, 1992). In our research, a correlation functions, together with spectra of the fluctuations of the major parameter of the system, are obtained by use of the fluctuation-dissipation theorem. This improves on Fichman (1992) framework of IT diffusion, which maps two classes of technology (one that conform closely to classical diffusion assumptions versus ones that do not) against locus of adoption (individual versus organizational).

The CSD approach postulates, among other things, that task and technology characteristics affect various stages of the implementation process. In addition, there is evidence that these characteristics may produce different effects on different implementation environments (Holmes & Warelow, 1997). Where healthcare professionals see the new systems implementation process does not follow CSD approach, the researcher noticed a critical slowing down to occur in the divergence of relaxation time for the fluctuations of project progress. This is in accordance with the divergence of the static susceptibility, as a phase transition point is approached.

We tested the relationships between innovation, organizational, sector-specific characteristics and measure IS success through suitability to a specific professional need. Results show that degree of consensus in healthcare-specific objectives are significantly related to perceived performance. Similarly, degree of system complexity, training, reliability during pressurized period, and critical user confidence are significantly related to the satisfaction of functional use of IS. The major contributions of this study include the identification of significant constructs concerning the implementation of IS in the public sector healthcare specifically and healthcare sector more generally. However, the primary contribution lies in the identification of the importance of positioning system performance rationality appropriately in the healthcare IS research. While rational decision models may prove very useful in explaining those behaviors that lead to IT adoption, such models may be of only minor use in explaining success or the lack of success in infusing IS within critical industries (like healthcare and defence).

