

## Chapter 4.12

# Applying Adaptive Structuration Theory to Health Information Systems Adoption: A Case Study

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### ABSTRACT

*Adaptive Structuration Theory (AST) is rapidly becoming an important theoretical paradigm for comprehending the impact of advanced information technologies. In this paper, a modified AST model was designed to illustrate the changing inter-relationships among the variables affecting the adoption and application of a new technology into a medical organization setting. Using findings from*

*a case study conducted over a 10-month period, the authors apply the case to the model to illustrate the complex interactions between medical billing technology and organizational processes. As the organization attempted to install and implement the new system, they found that in order to maintain daily operations, they would have to modify and adapt several aspects of the organization, technology, and operations. As the system was slowly integrated into operations and the organization's*

*needs evolved through the adaptation process, the study, in turn, found that different iterations of the model could emphasize different structures. The case illustrated that the capacity to manage health information systems (HIS) often requires the organization to prioritize its needs and focus its energies on a critical structure while temporarily disregarding others until the primary healthcare processes are under control.*

## **INTRODUCTION**

Driven by a need to improve utilization of information and productivity, information technology (IT) has become pervasive in the healthcare industry. Some of the areas in clinical medicine in which technology has been successfully employed include billing and scheduling, practice management, laboratory result reporting, and diagnostic systems. The use of computer technology and information technology in healthcare and its delivery is called medical informatics, which began with the computerization of hospital administration tasks in the 1960s. These systems are best thought of as cost reducing and/or quality improving technologies.

Increased demands for electronic exchange of data have been driven by both internal and external pressures. Hospitals are comprised of a multitude of specialized departments and suppliers requiring that large amounts of clinical as well as financial data be exchanged. External forces consisting of insurance company regulations and guidelines (Hagland, 1998), government mandates and restrictions as well as Medicare deadlines (Straub, 1998) have pushed organizations to adopt technologies to automate their operations. Automating these processes may reduce costs as less paper is generated, as fewer mistakes are made, and as information is transferred faster.

A Health Information System (HIS) can also increase the quality of medical care. This was the goal of many of the pioneers in medical in-

formatics or clinical systems development. The quality improvements from hospital information systems would emerge from the improved record-keeping and decreased mistakes engendered by more administrative systems, as well as from clinical systems designed to aid in the provision of medical care.

Today, the role of HIS in medical care has expanded at an ever-increasing pace. As a result, health care professionals' familiarity with medical informatics as well as the adoption of HIS is crucial for the delivery of higher quality care. However, the challenges of applying IT to healthcare are very real. Concerns of privacy and confidentiality of data, lack of national standards for protecting medical data, the need for large scale investments, and the requirement for behavioral adaptations on the part of patients, physicians, and organizations are just a few of the impediments to the adoption and use of IT in healthcare.

Rural area medical practices are especially feeling squeezed by the demands being placed upon the use of technology in the medical field. Although their use of HIS is limited, governmental regulations and the demands of insurance clearinghouses are forcing these clinics to adopt automated billing technologies. Some clinics, unable to afford billing technology capable of electronic data exchange, have been forced to merge with other practices or close their doors. Those clinics that could afford the technology experienced the challenges associated with adopting this new billing system into their business operations.

This paper uses a version of Adaptive Structuration Theory (AST) to examine the challenges faced by a rural medical clinic as it adopts new billing technology. AST provides a conceptual change model that helps capture the longitudinal change process. This paper proposes a modified AST model, which provides a theoretical framework that explains the appropriation process of medical electronic billing systems (MEBS). In recent years, MEBS has become a critical tool for supporting healthcare services. The appropriation

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