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.

Keywords: Adaptive Structuration Theory; diffusion theory; medical electronic billing systems; technology adoption

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 technol-
ogy in healthcare and its delivery is called medi-
cal informatics, which began with the comput-
erization 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 ex-
change of data have been driven by both inter-
nal and external pressures. Hospitals are com-
prised 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 com-
pany regulations and guidelines (Hagland,
1998), government mandates and restrictions
as well as Medicare deadlines (Straub, 1998)
have pushed organizations to adopt technolo-
gies to automate their operations. Automating
these processes may reduce costs as less pa-
per 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
informatics or clinical systems development.
The quality improvements from hospital infor-
mation systems would emerge from the im-
proved record-keeping and decreased mistakes
generated 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 re-
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 stan-
dards for protecting medical data, the need for
large scale investments, and the requirement
for behavioral adaptations on the part of pa-
ients, 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, govern-
mental regulations and the demands of insur-
ance clearinghouses are forcing these clinics
to adopt automated billing technologies. Some
clinics, unable to afford billing technology ca-
pable 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 associ-
ated with adopting this new billing system into
their business operations.

This paper uses a version of Adaptive
Structuration Theory (AST) to examine the chal-
lenge faced by a rural medical clinic as it adopts
new billing technology. AST provides a con-
ceptual change model that helps capture the
longitudinal change process. This paper pro-
poses a modified AST model, which provides a
theoretical framework that explains the appro-
priation process of medical electronic billing
systems (MEBS). In recent years, MEBS has
become a critical tool for supporting healthcare
services. The appropriation of MEBS in a medi-
cal center involves a great deal of change,
which, if not carefully considered, could result
in significant difficulties. Using a case study
approach, this research identifies appropriation
issues when planning and evaluating MEBS
usage in medical centers.

LITERATURE REVIEW

Changes in information technologies can-
not be viewed as isolated events; rather, one
must be mindful of the interdependent, recipro-
cally structuring relationships that exist be-
tween the information technology and the or-
ganization (Lucas & Baroudi, 1994; Orlikowski
& Baroudi, 1996). One strand of research deal-
ning with this type of incorporative change pro-
cess is adaptive structuration theory originally
posited by DeSanctis and Poole (1994) as an
extension of Anthony Giddens’ structuration
theory (Giddens, 1979, 1994). Adaptive
structuration theory focuses upon the interre-
lated dynamics embedded in the application/crea-
tion of the technology that is in use by the
organization through the combined processes
of human interaction, technology, and organi-
zational social structures (Griffith, 1999; Lucas