Examining Heterogeneous Patterns of Electronic Health Records Use: A Contingency Perspective and Assessment

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ABSTRACT

The basic use of Electronic Health Records (EHR) and the progression toward advanced EHR applications are key concerns facing leaders interested in integrating the healthcare delivery supply chain. Currently, substantial heterogeneity exists among hospitals in terms of EHR use and the progression toward advanced EHR applications. Understanding this heterogeneity is important as hospitals face pressure to adopt and achieve meaningful use of the technology. Contingency theory is tested herein to suggest that a hospital’s structural constraints may explain the heterogeneity among hospitals in terms of their EHR use. Data collected from 297 acute care hospitals in 47 states reveals that critical access hospitals may be slow to use EHR, even in basic applications. Conversely, major teaching hospitals appear to be early adopters, achieving advanced EHR use. These findings are important for hospital executives, Health Information Technology managers, and policymakers concerned with directing resources with an aim toward EHR integration.

Keywords: Contingency Theory, EHR Adoption, Electronic Health Records (EHR), Empirical Survey Research, Healthcare Information Systems, Hospitals, Information Technology Adoption, Structural Constraints

INTRODUCTION

Healthcare spending in the U.S.A. is expected to reach $4 trillion in 2015 – roughly 20% of gross domestic product (GDP) (Borger, Smith, Truffer, Keehan, Sisko, Poisal, et al., 2006; Bourgeois, Prater, & Slinkman, 2009). This has led “many policymakers, industry experts, and medical practitioners [to] contend that the U.S. health care system is in crisis,” (Trimmer, Cellucci, Wiggins, & Woodhouse, 2009, p. 55). Many believe that this crisis can be at least partially addressed by improving integration in the healthcare delivery supply chain – also thought of as clinical integration – using information technology (Ford & Scanlon, 2007; Falan & Han, 2011). Given this, there is a “…call for increased adoption and use of health care information technology (HIT) to address structural inefficiencies and care quality issues plaguing the US health care industry” (GAO, 2005; Trimmer et al., 2009). According to Katsamakas, Janamanchi, Raghupathi, and

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Gao (2009, p. 19), “HIT has the potential to transform the healthcare industry by increasing productivity, reducing errors and costs, facilitating information sharing and improving the quality of healthcare services” (Brailer, 2005).

Growth in HIT use among hospitals is motivated by the desire for these improved outcomes (Bourgeois et al., 2009; Dobrzykowski, 2011). This growth is primarily led by two HIT applications: picture archiving computer systems (or electronic health records used for results viewing (ERV)) and computerized provider order entry systems (CPOE) (Dorenfest, 2004). These applications (ERV and CPOE) represent a range of functional sophistication (Bourgeois et al., 2009) in that ERV can be defined as basic electronic health record (EHR) use and CPOE can be defined as advanced (or comprehensive) EHR use (Jha, DesRoches, Campbell, Donelan, Rao, Ferris, et al., 2009). Unfortunately, the adoption and use of these EHR technologies has been below expectations (Reardon, 2009), and heterogeneous among hospital providers (McCullough, Casey, Moscovie, & Burlew, 2011). In other words, while all hospitals use EHR to some extent, the levels of sophistication vary substantially (Cohen, 2005).

The heterogeneity in EHR use among hospitals may be contingent on a variety of factors present in a hospital’s environmental or operational context (Helms, Moore, & Ahmadi, 2008; Spil, LeRouge, Trimmer, & Wiggins, 2009). One key contingency in such an operational context might be a hospital’s structural constraints such as location or type (Li, Benton, & Leong, 2002). For example, a high volume teaching hospital treating high acuity patients may be more likely to adopt advanced EHR applications than critical access hospitals which typically face less competition and possess fewer resources (Hough, Chen, & Lin, 2005; Helms et al., 2008). Given the substantial investment afoot for EHR among hospitals, it would be useful to better understand some of the adoption patterns of specific hospital types (Bourgeois et al., 2009). Understanding the extant contingencies may “…help to smooth IT implementation in the future” (Spil et al., 2009, p. 70).

This study informs curiosity related to hospital adoption of EHR by examining two unique cases of structural constraints—critical access hospitals (CAH) and major teaching hospitals (MTH) (Li et al., 2002). CAH are small facilities located in rural areas, aimed at treating non-acute patients (HRSA, 2010; McCullough et al., 2011). These facilities endeavor to stabilize and transport critically acute, complex cases to tertiary care centers, many of which are MTH. As such, it is suggested that the technologies and practices employed at CAH tend to lag behind their more progressive MTH counterparts. On the other hand, MTH are affiliated with a medical school and maintain teaching and research as core to their missions (Li et al., 2002; McDermott & Stock, 2007; Jha et al., 2009). As a result, it is suggested that these facilities treat highly complex cases, often employ state-of-the-art technologies and practices, and therefore should be more likely to use EHR in advanced applications. Given this, the present study seeks to inform two key research questions facing policymakers, hospital executives, and HIT managers. First, are certain hospital types more advanced than others with respect to EHR use? And second, if so, what contingencies may be driving this heterogeneity in EHR use? This study informs these research questions by developing hypotheses linking hospital type to basic and advanced EHR use and testing these hypotheses using survey data collected from 297 hospitals in 47 states. Findings reveal that CAH lag behind in their implementation of EHR at even the basic level of results viewing. MTH are more mature in terms of their EHR use, outpacing mainstream facilities at even advanced levels such as computerized provider order entry.

**VARIABLES AND HYPOTHESES**

The contingency perspective argues that the success of many organizational initiatives can be linked to contextual factors (Jayaram, Ahire,
PPP’s Application in Greek Health Infrastructure and Personnel’s Response
*International Journal of Healthcare Delivery Reform Initiatives* (pp. 1-15).
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