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The influence of institutional pressures on hospital electronic health record presence

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ABSTRACT

Electronic health records (EHR) are a promising form of health information technology that could help US hospitals improve on their quality of care and costs. During the study period explored (2005–2009), high expectations for EHR diffused across institutional stakeholders in the healthcare environment, which may have pressured hospitals to have EHR capabilities even in the presence of weak technical rationale for the technology. Using an extensive set of organizational theory-specific predictors, this study explored whether five factors – cause, constituents, content, context, and control – that reflect the nature of institutional pressures for EHR capabilities motivated hospitals to comply with these pressures. Using information from several national data bases, an ordered probit regression model was estimated. The resulting predicted probabilities of EHR capabilities from the empirical model's estimates were used to test the study's five hypotheses, of which three were supported. When the underlying cause, dependence on constituents, or influence of control were high and potential countervailing forces were low, hospitals were more likely to employ strategic responses that were compliant with the institutional pressures for EHR capabilities. In light of these pressures, hospitals may have acquiesced, by having comprehensive EHR capabilities, or compromised, by having intermediate EHR capabilities, in order to maintain legitimacy in their environment. The study underscores the importance of our assessment for theory and policy development, and provides suggestions for future research.

1. Introduction

Health information technology (HIT) provides a potential opportunity through which hospitals in the US may be able to improve on quality of care and costs (Hillestad et al., 2005; Shojania et al., 2001). Hospitals with HIT may achieve this by improving communication, making knowledge more readily accessible, performing checks in real time, assisting with monitoring, and providing decision support (Bates and Gawande, 2003). In particular, researchers have noted that electronic health records (EHRs) are an especially promising form of HIT (Furukawa et al., 2010; Kazley and Ozcan, 2008). EHR generally consist of numerous possible combinations of HIT applications that may range from a grouping of basic functionalities to a more comprehensive set of functions.

Unfortunately, behind the optimism of EHR and its capabilities might be an "array of unproven assumptions, wishful thinking, and special effects" (Himmelstein and Woolhandler, 2005; p. 1121). These expectations have diffused across several institutional stakeholders (e.g., insurance companies and government agencies) in the US healthcare environment, who in turn pressure hospitals to have EHR capabilities even in the presence of weak technical rationale for the technology. Such institutional pressures, which Ingram and Simons (1995) noted as being socially constructed rules and conventions that shape organizations' practice, could drive hospitals to either have or resist EHR capabilities based on the nature and context of the pressures. Oliver (1991) presented five factors – cause, constituents, content, context, and control – to explain an organization's nature of response to institutional pressures. This paper uses these factors in its exploration of hospitals' specific responses to the institutional pressures for EHR capabilities.

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2. Background and contribution

EHRs exist in great variety and, as a result, have led to varying interpretations and assumptions of what exactly an EHR is and how an EHR system should function in a healthcare facility. Healthcare Information and Management Systems (HIMSS, 2012; "Electronic Health Records," para.1) define EHR as,

> a longitudinal electronic record of patient health information generated by one or more encounters in any care delivery setting. Included in this information are patient demographics, progress notes, problems, medications, vital signs, past medical history, immunizations, laboratory data and radiology reports. The EHR automates and streamlines the clinician's workflow. The EHR has the ability to generate a complete record of a clinical patient encounter - as well as supporting other care-related activities directly or indirectly via interface - including evidence-based decision support, quality management, and outcomes reporting.

The definition above lists several characteristics that an EHR may possess. Although various institutions and groups have developed definitions of EHR, there has been little consensus on what functionalities should constitute the essential features of an EHR system present in hospitals (Jha et al., 2009). Lacking such an agreement, hospitals may be faced with the reality of haphazardly adopting EHR applications that satisfy the distinct purposes and requirements of different groups, and potentially overlooking the applications critical for patient care. In an attempt to remedy this apparent shortcoming, Furukawa et al. (2010, 2011) and Jha et al. (2009) presented two similar models of EHR capabilities in hospitals. Their classification of EHR applications was based on clinical functionality, which in turn provided a clearer picture of how different sets of complementary applications provided basic or comprehensive support and automation to hospital clinical work processes.

The Jha et al. (2009) measure of EHR is based on a survey, administered by the American Hospital Association (AHA), that asks respondents to report on the presence or absence of various clinical functionalities (e.g., clinical documentation of medication lists and nursing assessments). Based on the review of an expert panel, 24 functions, present in the survey, are noted as being essential to a comprehensive EHR system that should be present in all major clinical units of the hospital. Similarly, the expert panel indicated that the presence of eight functionalities, in at least one clinical unit, represent the presence of a basic EHR system.

The Furukawa et al. (2010) measure of EHR is also based on a survey, administered by the Healthcare Information and Management Systems (HIMSS), of healthcare providers that, similar to the AHA survey, asks respondents to report on the presence or absence of several EHR applications and functionalities. Furukawa and colleagues used survey response patterns to classify hospitals given their cumulative capabilities based on the structure of the EHR functionalities identified in the HIMSS EMR Adoption Model (Garets and Davis, 2006). They classified hospitals into three EHR capabilities ranging from basic, intermediate, to comprehensive.

The survey questions on which Jha et al.'s (2009) definition is based, however, had data for fewer hospitals (approximately 3000 in 2007) than the data examined by Furukawa and colleagues, and had been asked for a shorter time frame. For these reasons, the Furukawa et al. (2010) definition of EHR capabilities is used in this study.

Prior empirical explorations of the key predictors of hospitals having EHR applications focused on hospital organizational and market factors. The empirical techniques used to test study hypotheses primarily involved multivariate regression. Whereas McCullough (2008) used a longitudinal sample, the other studies used cross-sectional samples. Several of the studies found significant relationships between market or hospital characteristics and the adoption of particular EHR applications (e.g., computerized physician order entry, laboratory information system) or a group of applications that represent a comprehensive EHR system (e.g., Cutler et al., 2005; Jha et al., 2009; Wang et al., 2005). The existing research on the topic of EHR, however, presents two divergent streams. Some studies used elaborate sets of predictors to assess the adoption of particular EHR applications that may not be representative of a basic or comprehensive set of EHR capabilities. Other studies used more carefully defined EHR measures but included a small group of predictors, which were not usually identified within an organizational theory framework. The latter is especially important since it aids in understanding a phenomenon with a set of interrelated perspectives that are based upon organizational logic (Miner, 2002).

This study contributes to the current literature with the integration of the above noted divergent streams of EHR research. It uses an extensive set of organizational theory-specific predictors to help explain the presence of specific levels of EHR capabilities in hospitals during a five-year study period.

3. Theoretical perspectives

Oliver (1991) incorporated Institutional and Resource Dependence Theories, and argued that both theories were focused on the constraints presented by the external environment. She noted that Institutional Theory focuses on the ability of powerful stakeholders to shape and enforce beliefs and Resource Dependence Theory presupposes that power resides in those who control scarce resources. The implications for hospitals facing pressures to have EHR capabilities based on each of the theories are discussed in turn.

Hospitals experienced growing pressures to incorporate EHR in order to improve the quality of healthcare (Encinosa and Bae, 2011). These pressures emanated from various institutional forces: a "cultural-cognitive, normative, and regulative elements that, together with associated activities and resources, provide stability and meaning to social life" (Scott, 2001; p. 48). Facing contemporary norms – as influenced by the aforementioned forces – Institutional Theory posits that organizations will comply to these expected and accepted beliefs in the organizational environment in order to receive support and legitimacy (Scott and Davis, 2007). Meyer (1977) contended that such behavior can also help an organization muster support and confidence even in scenarios where there is no proven technical advantage from the adoption of a potentially rationalized myth, which may be the case for EHR capabilities. More specifically, in light of claims of greater efficiency and quality of healthcare due to EHR capabilities and the fear of not being viewed as "appropriate, rational, modern" (Meyer and Rowan, 1977; p. 307), hospitals may simply have EHR capabilities in order to maintain legitimacy.

Resource Dependence Theory explains organization behavior as dependent on its environment and interactions with other organizations (Scott and Davis, 2007). Organizations depend on exchange for subsistence and make necessary accommodations to guarantee exchange relationships with other organizations. Active changes in a focal organization's structure and behavior reflect accommodations to demands and pressures and are intended to ensure that the organization can secure a stable flow of resources from its environment (Pfeffer and Salancik, 1978). In regard to EHR capabilities, hospitals may have such technologies in order to appease the expectations of important stakeholders who believe in the utility of EHR and control the flow of essential resources (e.g., money and patients) on which the hospital depends.