

MICROPROCESSES OF HEALTHCARE TECHNOLOGY IMPLEMENTATION UNDER COMPETING INSTITUTIONAL LOGICS

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Abstract

The healthcare sector is one where two co-existing and competing institutional logics – professional and market logics – occur. Following extant research on institutional logics and institutional work, we propose to understand “what microprocesses and institutional practices do institutional actors enact during the implementation of healthcare IT system? What are the impacts of these practices on project outcomes?” In our study, we were interested to understand how actors within organizations were constrained and enabled by the co-existing and competing institutional logics as they implemented a new integrated health IT project. Health IT implementation projects are especially revelatory episodes since different stakeholders with different logics need to collaborate closely and build integrated solutions to make such projects successful. Furthermore such projects typically aim to support significant organizational and even institutional change occur. It is our goal to understand the interplay between actors and their competing logics within such a context.

Keywords: IT in Healthcare, IS implementation, Institutional Theory, IS project management, Qualitative research

Introduction and motivation

Two important aspects of institutional research motivate our research on healthcare technology implementation. First, institutional theory has recently moved from a process view of institutions to a practice view of institutions (Lawrence and Suddaby 2006). Whereas the former perspective was interested in the institutions (what they are, how they evolve etc.), the latter view is focused on how actors and their work within and on institutions. While previous research has typically painted a view that diverse institutional logics within fields tend to converge on a dominant logic, recent studies have begun to recognize that such convergence may not necessarily occur, that competing logics may co-exist for significant periods. As such, there has been a growing interest in understanding how co-existing and competing institutional logics influence these actors' practices within the healthcare field (Purdy and Gray 2009; Reay and Hinings 2009).

These changes are especially pertinent to healthcare IT projects given the persistently low adoption of healthcare IT (DesRoches et al. 2008). Research on IT system implementation, and healthcare IT in particular, have typically adopted the process view of institutional theory to explore the reasons behind such low adoption. They have focused on how IT systems becomes institutionalized (Baptista 2009), how dominant logics enabled legitimacy of systems (Cousins and Robey 2005), or how external institutions and technology changes shaped organizational structures (Davidson and Chismar 2007). The role of institutional factors or processes in the implementation process was the key insight from this stream of research. However with the shifts highlighted above, we should also begin to recognize that the implementation projects are arenas of institutional work. By focusing on institutional work, we explicate the actions and practices undertaken to enact changes within such projects. It therefore recasts the challenges of low IT adoption and implementation not as IT issues e.g., usability (Thatcher et al. 2006) or resistance (Lapointe and Rivard 2005) or as part of external institutionalization but more as part of the issues faced by actors engaged in internal institutional work.

Because we are focused on the microprocesses of institutional work, we need to move away from the view of homogenous institutions and logics and take into account the existence of co-existing competing institutional logics. Therefore the other focus and goal of this study, in addition to explicating the institutional work within healthcare implementation project, is to understand how competing institutional logics influence this type of work. The healthcare sector is one particular industry where such co-existing and competing institutional logics occur (Reay and Hinings 2005; Ruef and Scott 1998). Following Reay and Hinings (2009), we were interested to understand how actors within organizations were constrained or enabled by the co-existing and competing institutional logics as they implement a new integrated health IT project. Health IT implementation projects are especially important events to study the influence of competing institutional logics as the differences become clear when different stakeholders within the healthcare organization come together to work and collaborate in such projects (Azad and Nelson 2008; Davidson and Chismar 2007). The potential tension between co-existing and competing institutional logics is also important given that such projects also involve changing organizational structures that are intertwined with the underlying institutional logics (Barley 1986; Orlikowski 1996). As such, our research questions are "What microprocesses and institutional practices do institutional actors enact during the implementation of healthcare IT system? What are the impacts of these practices on project outcomes?"

Theoretical concepts

We draw on the large body of research within neo-institutional theory, specifically focusing on the theoretical concepts of institutional work and institutional logics. We briefly discuss these two concepts below.

Institutional work

Lawrence and Suddaby's (2006) chapter on institutions and institutional work differentiated between a "practice" and a "process" view of institutional work. Their review points out that existing institutional

theory research has mainly approached it from a process view. This view typically focused on the institutions – for e.g., what happens to institutions, how institutions are transformed, what states they take on and in what order. However, they pointed out that this rich body of research has provided limited insights into the work of institutional agents and actors. This revised view – what they termed as the “practice view” – focuses on the work of actors as they attempt to shape the institutional processes. They pointed out two key characteristics of the “institutional work” as: one, actors who are competent, with strong practical skills, which are guided by institutionally defined logics; two, institutions are enacted in the collective and individual actors’ actions or practices and do not exist apart from them. Lawrence and Suddaby (2006) proposed that institutional work could be organized around the creation, maintenance and disruption of institutions. Some examples of research on creation of institution has looked at how parallel practices such as theorization and mobilization are used to support new institutionalized money management practices (Lounsbury and Crumley 2007). They found that theorization involves practices that change categories defined by existing institutional logics and thereby alter the boundaries of these meaning systems. Others who looked at disruption of institutions have looked at how deinstitutionalization practices precede practices of institutionalization in the context of anticorruption campaigns (Misangyi et al. 2008). Many of the deinstitutionalization practices focused on the relationship between existing institutions and the social controls supporting them. These social controls are typically found within existing institutional logics as normative beliefs, assumptions and moral foundations.

In conclusion, identifying the actors (individual or collective) and the practices they undertake to create, maintain and disrupt institutions are fundamental foci points for the institutional work perspective. Moreover, we also note that institutional actors and practices are fundamentally interlinked with the institutional logics. As such, it is important for us to explicate the notion and role of institutional logics within this new perspective.

Institutional logic

Friedland and Alford (1991 pg.248) first introduced the concept of institutional logic in their discussion of macro-societal phenomenon where several key institutions and attending logics were discussed. Within organizational studies, Thornton and Ocasio (2008) applied the concept of institutional logic to six sectors viz. market, corporation, professions, state, family and religions. Thornton specifically defined institutional logic as “the socially constructed, historical patterns of material practices, assumptions, values, beliefs, and rules by which individuals produce and reproduce their subsistence, organize time and space, and provide meaning to their social reality.” Specifically, the concept of institutional logic refers to broader cultural beliefs and rules that structure cognition and guide decision making as well as focus the attention of key decision makers on a set of issues and solutions (Marquis and Lounsbury 2007). The main functions of institutional logics are to define what the new institution means and to provide a set of associated practices. Within research on the health care field, Scott and associates (2000) observed that there are two different institutional logics in the health care field. They argue that specific institutional logic is associated to specific types of hospital system. These two institutional logics are – professional logic vs. market-managerialism logic. Its key attributes are listed below in Table 1.

Table 1. Professional and Market Logics		
<i>Characteristic</i>	<i>Professional logic</i>	<i>Market-Managerialism logic</i>
Sources of identity	Health care as a profession	Health care as a business
Sources of legitimacy	Reputation of physician	Market positions of health care corporation
Sources of authority	Professional association (AMA), government regulation	Management, corporate hierarchy, government regulation
Basis of mission (goals)	Build prestige of clinic Build personal reputation	Build competitive position of corporation; status position through

	To provide all medically necessary services	growth To provide effective and efficient services
Basis of attention	Patient issues, health challenges “doctor-patient” relationship	Generating profits, resource competition; incentive to save “customer” relationship model
Basis of strategy	Organic growth, personal, build ties to community	Acquisition and mergers, build markets; cost competition among providers
Logic of investment	Build legitimacy of profession	Build wealth and career of investors, reduce cost and improve effectiveness
Governance mechanism	Professional norms	Market for corporate control

Most research on institutional logics typically associates the dominant institutional logic with the incumbent agent and the challenger with a non-dominant institutional logic. Through a competitive process, the challenger may overcome the incumbent or may lose the challenge. Regardless, most research focus on how the “winning” institutional logic dominates the field while the “losing” institutional logic become diminished (Kitchener 2002; Ruef and Scott 1998). Recent works show that this may not always be true. Kraatz and Block (2008) discussed the notion that organizations are institutionally pluralistic e.g., it embodies structurally multiple institutional logics and are legitimated by multiple mythologies. Others show how different institutional logics may co-exist in a truce (Azad and Faraj 2008). In some cases, the “losing” institutional logic may continue to persist though not directly in competition with the dominant one (Purdy and Gray 2009; Reay and Hinings 2005). The focus of this research is to examine healthcare implementation projects where competing and co-existing institutional logics operate and its impact on institutional work within these projects.

Healthcare IT implementations are important “arenas” where the interplay between institutional work and logics are made manifest. Health IT implementation projects are especially revelatory episodes since different stakeholders with different logics need to collaborate closely and build integrated solutions to make such projects successful (Azad and Nelson 2008; Davidson and Chismar 2007). Furthermore such projects typically aim to support significant organizational and even institutional change occur (Barley 1986; Orlikowski 1996). These changes across different logics and stakeholders engender intense negotiations and confrontations. For example, Jensen, Kjærgaard, and Svejvig (2009) show how institutional logic bridged institutions and actions within the context of a Dutch hospital’s electronic patient record system implementation. Currie and Guah (2007) showed how problems faced in a national IT programme have its roots in the unresolved institutional logics in the UK system. In summary, healthcare IT projects are potentially rich sites for our research study.

Research Methods

As few studies have studied healthcare IT implementation from the practice-institution perspective, we conducted an in-depth longitudinal interpretive case study of an EMR system implementation project (Yin 2003) and employed methods of grounded theory (Glaser and Strauss 1967) for our data analysis. The in-depth approach allows us to gather data not only through interviews with participants intimately involved with the process, but also through written documentation that contain the discourse and practices enacted by these participants as part of the system implementation.

Research Setting

Our case study involved the implementation of an Ambulatory EMR system across various ambulatory care clinics located within a private, not-for-profit multi-hospital system on the East Coast of the United States. The hospital system – referred to henceforth as Centralsys – owns and manages 12 hospitals and health systems that together account for 2,300 beds. While Centralsys manages the hospitals and the

support staff, the clinical providers belong to a separate organization, which we will refer to as SUPI. In turn, these clinical providers also are faculty in the School of Medicine (SOM). SUPI's role is to coordinate and support the clinical activities of SOM faculty that are spread across over 20 private practices. It has more than 1,000 non-physician staff. As such, Centralsys works closely with SOM and SUPI to provide care in the main hospital as well as across its entire multi-hospital system.

The idea for the Ambulatory EMR project began in 2003 as part of an overall Centralsys strategy to be an integrated enterprise. The aim of the Ambulatory EMR project was to integrate and streamline its patient data with its inpatient medical records database so as to improve the mobility of medical records across the various clinics and hospitals and thereby provide "seamless access to clinical information". As a first step, Centralsys' CEO appointed a visioning group in early 2004 to work on the principles of the clinical systems. This visioning group came up with 11 core principles that were approved by the project sponsors, viz., Centralsys' CEO and the Dean of SOM. Using these core principles, Centralsys and SOM tasked SUPI to work with an external consultant to develop the broad scope of requirements and to engage with potential EMR system vendors. SUPI then coordinated among the vendors as well as Centralsys and SOM staff to evaluate three shortlisted vendors. By the end of 2005, the steering committee made up of key members from Centralsys and SOM selected an EMR vendor out of the three shortlisted companies. Within a year, a new Chief Information Officer (CIO) for Centralsys was appointed as well as the Director for the EMR project. The EMR project officially began in 2006 and as of 2010 it is still an ongoing project for Centralsys. (Please see Chronology of key events below for a summary of critical project events).

Data Collection and analysis

Our research study followed this EMR implementation project and the actual deployment and use of the health IT system. Our involvement with the project coincided with the start of the configuration and setup of the EMR implementation in 2007. We collected interview data from key actors between 2007 and 2010, observation data of important project meetings, and archival data such as meeting minutes, and reports. The data from multiple sources (i.e., documents, interviews and observation at case site) provided us means for triangulation to corroborate events, issues, and themes (Yin 2003). See Table below for our approach towards the data, analysis and theoretical concepts.

Archival Data: As part of the negotiation for access to the research site, we were given permission to access the organization's intranet as well as the project team's website where pertinent project documents were stored. In total, we collected and archived 1,928 files from the EMR project team. These documents included project-proposal reports, system requirements, user manuals, internal and external meeting minutes and presentations, project reports, policy minutes, system documentation, requests for change, bug and issue reports, job and process descriptions and promotional documents.

As per the institutional work perspective, we were interested to understand who the key actors and to establish the background and the motivations of these actors. We mainly used project-proposal reports, meeting minutes, and policy minutes (78 documents) to establish the actors and to trace the flow of events (see below). We also analyzed the operational meeting minutes and other post-go live documentation from the clinics (80 documents) to understand the impact and consequences of the EMR system on the organization since we were keen to understand the outcomes of institutional work practices.

Chronology of key events

- 2000: Ambulatory care cost has been spiraling faster than inpatient care (Health Care Commission (HCC), 2000 report).
- 2003: Entry of new CEO in Centralsys hospital system and the creation of a new Ambulatory Care Center (ACC) (COO for Ambulatory Services appointed in 2004).
- 2004-2005: Groundwork for new ACC and EMR done
- 2006: ACC project approved by HCC; EMR vendor and project approved by Centralsys Board of directors; CIO and Project director hired
- 2006 (Sept): New Dean of SOM appointed

- 2007: CMIO for Centralsys appointed
- 2007 (Jul): Rumors of ACC problems and project being shelved
- 2007 (Oct): Metro Clinic go-live with new EMR
- 2008 (Jun): First on-campus site goes live (Diabetic center) with new EMR
- 2008 (Aug): HCC confirms rumors that ACC project has been scrapped; CEO resigns amid huge controversies; A number of the Board of Centralsys resign as well; New Board members and establish CFO as interim CEO
- 2008 (Sept): Cease and desist order from SOM to EMR project after Diabetic Center go-live
- 2008 (Sept): Financial Crisis impact begins to be felt in Centralsys and SOM
- 2009 (Feb): “Green-T” strategy
- 2010 : Federal Subsidy package – Centralsys and SOM works on EMR alone, drops scheduling and registration sub-systems, use interface into existing scheduling system.

*Key:

- 1. EMR: Electronic Medical Records
- 3. CMIO: Chief Medical Information Officer
- 2. CIO: Chief Information Officer
- 4. CFO: Chief Financial Officer

Table 2. Data Collection and Analysis		
Data Type	Quantity	Analysis and Theory
Archived materials	158 out of the total set of 1,991 documents	- Used to establish who the key institutional actors and to establish their background and the motivations - Used to understand the outcomes of institutional practices within the EMR project
Interviews	51 semi-structured interviews and numerous informal interviews	- Used to analyze for institutional work practices and institutional logics
Observations	57 meetings	- Meetings used to supplement our understanding of the changes occurring in the project

Interview Data: We conducted both informal and semi-structured interviews with key participants from the EMR project team. The informal interviews were spontaneous discussions between the participants and researchers that occurred during the routine observation at the EMR project office. These informal interviews provided information about EMR project issues that we might not have been sensitized to given just the archival data. Many times the informal interviews provided the bridge to understand why specific issues were discussed in various meetings. They also provided important information nuggets that became part of our semi-structured interview questions. The notes from these informal interviews were recorded as part of the field notes.

With regards to semi-structured interviews, an initial interview protocol during the planning phase of the project had 15 open-ended questions which were focused on the background of the actors, the key issues the actors encountered during the course of the implementation and their attempts made to overcome them. Later interviews during the implementation phase had other specific focus, following Glaser and Strauss’s saturation principle (Glaser and Strauss 1967). We used the interview data as our main set of data analysis and coding. Specifically we iterated between the data and the institutional work perspective to analyze the specific “institutional practices” that were enacted as well as coding for the type of “institutional logic” intertwined with these practices (with reference to the dimensions listed in Table 1). We conducted a total of 51 interviews – each lasting between 20 to 45 minutes – with 22 EMR project site participants. The majority of the interviews were done during the planning phase (N=33) while the rest were done during implementation phase (N=18). We interviewed management staff from Centralsys, SOM, SUPI and the EMR project as well as project team members. See table 3 below for a breakdown of the interviews. All semi-structured interviews were transcribed during the interview session or after the session from tape, when permission was granted. All participants were kept anonymous in the writing of the study. The list of key participants was developed from reviewing internal meeting minutes and the formal project structures.

Observation Data: While archival data and interviews can enable one to develop a sense of the project, the dynamic interactions among project participants as well as the rich story behind the dry bones that are recorded in official minutes are often lost. To get the dynamics of the situation, I sat in and observed

project meetings at the project site as well as the clinical sites' operational meetings. As different issues and decisions were made at various levels, I also attended, where possible, meetings that were held at the Project sub-team level (e.g. Charting Tool Meeting), the Project level (e.g. Fortnightly Project Meeting or Project Leadership Meeting), the Advisory Committee level (e.g. Physician Advisory Group Meeting), and at the Steering Committee level. These meetings were important as they "provide insights into areas where problems in the project surface and recur; those that are malleable, those that are not; ... gaps and dilemmas at varying organizational levels" (Gregory 2000). All observations were transcribed during the meetings and they typically last between 1 to 2 hours. These meeting minutes were used to corroborate details and events derived from the archived minutes.

Table 3. Interviews Breakdown

Level	No. of Interviews	No. of Interviewees
<i>Planning phase</i>		
Centralsys Management	11	4
EMR project management	10	5
EMR project staff	12	10
Sub-Total	33	19
<i>Implementation phase</i>		
Centralsys and SOM/SUPI Management	8	6
EMR project management	6	6
EMR project staff	4	3
Sub-Total	18	15
Grand Total	51	22

Data Analysis

Our data analysis combines established methodologies for longitudinal case analysis and grounded theory analysis. As part of longitudinal case analysis, we reconstructed a chronological narrative of the entire implementation process. This in-depth case study forms the base document for arranging the vast amount of information available in the primary dataset of archival and interview data. This case study not only provides a overall view of the project events but also allows us to validate the case with the project participants. The next step involves an iterative process of grounded theory analysis. As suggested by Suddaby (2006), we approach the coding process sensitized by the case study data and our reading of the extant literature on institutional work. Instead of slavishly following the coding steps, we intend to focus on theoretically salient codes as discussed in our theory section while keeping an open mind to emergent codes from the data.

As such, the first step of our analysis is to focus on the "institutional practice" and "institutional actor" as our units of analysis. We aim to reconstruct the different institutional practice and the actors involved from the project archives (e.g., project minutes and email correspondences) and the interviews. Next, we plan to analyze the practices in terms of institutional logics, paying close attention to the practices associated with different logics as revealed through project archives and interview data (Klein and Myers 1999). The coding analysis would be supported by Atlas TI software package. Next, we intend to trace the institutional practices through the development of the project over time to explicate how institutional logics and extant project issues shaped them. As in grounded theory research and interpretive research in general, we shall iterate between our theoretical framework and data and empirically ground the process model to approximate what our data is telling us (Glaser and Strauss 1967; Klein and Myers 1999). Specifically, we hope to understand what kind of institutional work practices are involved in a healthcare IT project. Next we want to understand how competing co-existing institutional logics are embedded or leveraged in these practices and to what effect. Finally, we want to theorize how institutional actors may enact specific institutional work practices to increase the probability of success in healthcare IT project.

Expected Contributions

Initial analysis of the data collected from both the planning and implementation phases suggests that differences in the institutional logic of the EMR project and the institutional logics of the hospital systems contributed to the project difficulties and final project outcome.

We observed that the EMR implementation project involved two microprocesses of institutional work: the first microprocess consisted of competition where powerful actors from the managerial coalition attempted to repress the professionalism logic using a host of translation tactics (Kitchener 2002). For example, the Centralsys CIO attempted to persuade the various directors of hospital clinics to be early adopters of the EMR system by appealing to the efficiency rationale of such a decision. Efficiency rationale is rooted in the market-managerialism logic. He argued that “the efficiency gains will be (from) savings in the workflow. Now that data are captured in one place the aggregate time for the clinic not having to look for charts will save time, or at least not lose time.” (Interview with CIO). This efficiency logic, the CIO argued, should be the main driver rather than the goal of providing care according to each clinic’s unique issues and challenges.

This microprocess cumulated in a critical event where Centralsys’ attempts to develop a dominant logic within the system as well as the organization became stalled. The CEO of Centralsys left and the SOM Dean asked for the EMR project to “cease and desist” (Minutes from Project Meeting). As the Director of the EMR project pointed out: “The push to computerize got tied up in the battle (over the ACC) and is a casualty of that battle. The EMR system was supposed to be the supporting player. A beautiful EMR to a beautiful new building (the Ambulatory Care Center).” (Interview with Director of EMR project). At that juncture, the EMR system was only implemented in three pilot clinics.

A second microprocess of collaboration occurred where actors began to collaborate closely together (Reay and Hinings 2009). Instead of attempting to overwhelm each other’s logic, the key actors began to develop hybrid practices that attempted to adopt parts of each of the two logics. The CIO pointed out the underlying difference saying,

“We have been basically saying ‘if you don’t do it our way, we’re not going to do it’, and they’re going to say ‘well we’re not going to do it that way, so we’re not going to do it.’ ... So the fact that everybody’s stand down a little bit and just look at the situation, say how do we best work inside of these parameters, how do we best make it work, I think that we got people’s egos and everything else off of the table and we were able to manage a way through that, and consequently I think that we have a product, again not perfect, but we have a product that we can replicate now in 22 practices on the campus.” (Interview with CIO)

Another marked characteristic of the whole process was the role of material system and their inscriptions. We observed that the material inscriptions of the Health IT system were critical in the interplay of co-existing and competing logics. For example, the EMR project team agreed to change part of their EMR architecture such that SOM’s existing billing system would be integrated with the new EMR system without having to adopt the entire EMR’s billing component (System documentation). This enabled SUPI and SOM to inscribe in the new system the professional group’s authority through its control over its professional fee billing process while leveraging on the resource and efficiency of the EMR system.

We intend to further iterate the coding of the process as well as refine the theoretical constructs with regards to the two processes as well as the theoretical relationships between the institutional work and practices observed and the outcomes of the processes.

In summary, the potential contributions of this paper are as follows. Theoretically, we intend to add to a stream of research that has looked at fields where competing institutional logics occur over an extended period of time. Specifically, we intend to show that the influence of such competing institutional logics do not simply occur either as competition or as collaboration. Instead it may emerge as a process where both types of mechanisms may come to play, albeit at different time and phases. Practically, we explicate the strategies or practices that actors enact in order to ensure the continuity and success of complex IT projects such as healthcare IT systems. We believe that this case study potentially shows how institutional actors involved healthcare IT projects could manage fragile coalitions within healthcare organization. It also shows how they could align and motivate such coalitions across ever changing challenges intrinsic to such projects (Yeow and Sia 2008).

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Appendix: Initial Interview Protocol

1. Background of interviewee. When and how did they get involve with the EMR project?
2. What are your responsibilities?
3. How do you do your work?
4. Who do you interface with?
5. Perception of the system? Vision of EMR?
6. How did that vision compare with what the EMR is?
7. Key issues that have been tackled/Challenges (from your perspective)
8. Any thoughts going forward for other implementation
9. How were project decisions made?
10. How has the EMR design evolved based on the political reality, give us examples?
11. Walk-us through key events that occurred between 2006 to 2010.
12. Institutional settings and forces: Were they impactful in the project? If yes, why and how?
13. Tell us your role during the early period (2004-5 period) for this project? (For those who this question was applicable)
14. How has the EMR impact on clinical and non clinical outcomes?
15. Who has benefited most from the systems?