
Strategic, Political, and Cultural Aspects of IT Implementation: Improving the Efficacy of an IT System in a Large Hospital

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EXECUTIVE SUMMARY

Healthcare spending will exceed \$4 trillion by 2017, a trend that is leading executives to implement information technology (IT) systems to contain these rising costs. Studies show that numerous factors determine the outcome and net benefits of IT in healthcare. However, what happens when a newly implemented IT system results in negative outcomes? We explore this question by examining a newly implemented IT system in a large hospital that was yielding none of the benefits for which its designers had hoped. Using an expanded set of analytic lenses, our in-depth study found that political issues were a major stumbling block to the implementation of this IT system, as the interests of IT managers were different from those of the system's users. In addition, cultural values among these stakeholders were not aligned. The new IT system carried very different meanings for these two key groups.

These political and cultural issues, which reflect a broader set of factors than is commonly applied in IT or in management, led to specific recommendations designed to improve the system's viability and benefits. In a follow-up analysis we found that these alternative lenses helped increase the intended usage of the IT system by 16 percent in the first year, yielding a 20 percent improvement in performance. By better understanding the cultural and political significance of IT implementation, managers may thus improve the effectiveness of new information technologies for containing costs in hospitals.

For more information on the concepts in this article, please contact Dr. Lichtenstein at b.lichtenstein@umb.edu.

According to one recent report, total healthcare spending is expected to increase nearly 7 percent per year over the next decade, reaching \$4.3 trillion in 2017—fully 20 percent of the U.S. gross domestic product (NCHC 2009). Beyond the national and international implications of these enormous escalations in healthcare expenditures (Davis 2008), hospital administrators are exploring local solutions to contain costs. Information technology (IT) systems are increasingly seen as a means for containing hospital administrative costs (Bhattacharjee et al. 2007; Øvretveit et al. 2007) and improving clinical processes (Kazley and Ozcan 2007) such as patient safety and quality of care (Andre et al. 2008; Menachemi et al. 2006). Indeed, the long-term value of IT investments in healthcare was confirmed in a recent large-sample research study (Menachemi et al. 2007), which found that the presence of IT applications was positively related to operations performance and return-on-investment (ROI) measures in more than 80 acute care hospitals in Florida.

At the same time, a companion study found that not all IT applications improve hospital performance, nor do they improve performance equally (Bhattacharjee et al. 2007). Specifically, the researchers found that *clinical* applications—those directly involved in healthcare delivery—did improve the operational performance of acute care hospitals. However, neither *administrative* applications nor *strategic* applications gained any advantage through IT implementation for the organizations studied. In their discussion of this result, they suggest, “The performance

impact of systems that merely automate paper-based processes appears to be lower...than those systems that transform entire processes; hence the non-significance of administrative healthcare information systems” (Bhattacharjee et al. 2007, 11).

A key challenge highlighted by this conclusion is the wide disparity between the *presence* of a healthcare IT system and its *actual usage* by employees. The earlier-mentioned studies acknowledge their inability to measure whether these systems are being used. However, researchers have long shown that usage should be a key determinant of the performance of an IT system (DeLone and McLean 1992). From this perspective, the question becomes, how do managers get employees to use the administrative and strategic IT systems available to them?

One essential success factor seems to be how technology implementation is managed (Thielst 2007b); that is, is the new technology implemented in a thoughtful and interdependent way? Other success factors that determine the benefits of an IT system include the quality of the software system, individuals’ intent to use it, and satisfaction from use (Andre et al. 2008; DeLone and McLean 2003). These are strategic factors that should lead to improved performance. Few studies have shown strong performance benefits from administrative IT systems in healthcare; the industry is one of the slowest adopters of IT compared with other industries (Dorenfest 2000). Our study suggests that improving performance outcomes requires going beyond a strategic design framework to include the political and

cultural reasons employees do not use new IT systems in hospital environments. Like the interactive sociotechnical analysis model developed by Harrison, Koppel, and Bar-Lev (2007), our view focuses on psychosocial issues that undercut the successful implementation of administrative IT systems (see also Barkil, Pare, and Sicotte 2008; Juciute 2009).

To explore this idea, we performed an in-depth analysis on the implementation of an administrative IT system in a large teaching hospital in New England. We were able to identify a series of political and cultural problems in the implementation process—problems that go beyond the strategic issues of ROI and efficiency that are commonly studied by researchers and most visible to department managers. By expanding our analysis of the IT initiative to include all three lenses—strategic, political, and

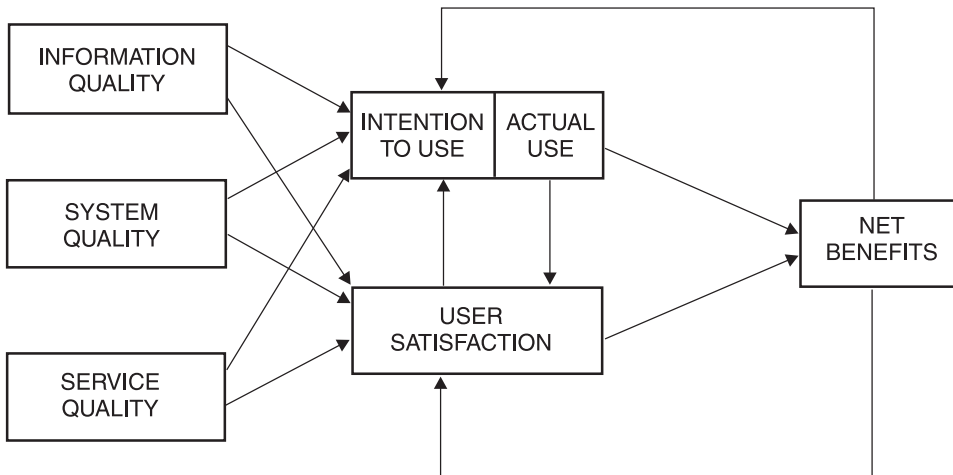
cultural—we found a broader group of factors for success, which ultimately did improve IT implementation in the hospital studied.

IMPLEMENTING AND EXPLAINING IT USAGE

IT Implementation from a Strategic Lens

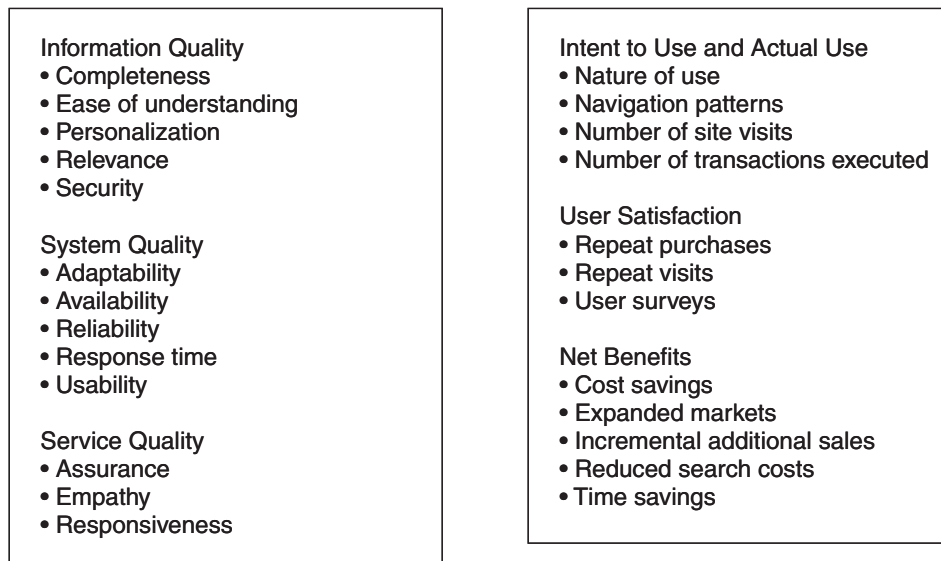
Perhaps the best-known model for explaining IT usage was developed by DeLone and McLean (1992, 2003), shown in Figure 1a and 1b, who identify a set of factors that (should) lead to the successful implementation of IT systems. Their model posits that (1) system quality, (2) information quality, and (3) IT support available for users are the factors that directly influence the intent to use and the actual use of the system, as well as the satisfaction of users. Together these intermediate factors lead to “net benefits” of the system.

FIGURE 1A
Updated Model for Information Systems Success



Source: Adapted from DeLone and McLean (2003, 24).

FIGURE 1B
Measures of Each Construct



Source: DeLone and McLean (2003, Table 1, p. 26).

This explanation sees information technology as a strategic resource that increases a firm's competitive advantage, primarily through cost containment and operational efficiency (Øvretveit et al. 2007; Barney 2001). Strategy, design, and performance are inextricably linked in these approaches, creating a gestalt—called the “strategic lens” by Ancona and colleagues (2005)—through which studies of IT implementations are generally analyzed (Bharadwaj 2000; Sauer and Willcocks 2003). In fact, every definition of success in recent studies by Menachemi and colleagues (2006) and Bhattacharjee and colleagues (2007) presents IT implementations in these strategic terms—that is, as a competitive advantage that improves operational performance.

According to the strategic lens, effectiveness occurs through the design

of linking mechanisms and alignment mechanisms. *Linking mechanisms* ensure that information and other resources “flow effectively and efficiently” between key activities and groups (Ancona et al. 2005, M2, 15). *Alignment mechanisms* ensure that the units and individuals assigned certain tasks “have the resources and motivation to carry them out effectively” (Ancona et al. 2005, M2, 23). Thus, a competent strategic analysis would begin by exploring the level of effectiveness of the linking and alignment mechanisms in the IT design.

IT Implementation Through New Lenses: Political and Cultural Issues

As noted above, this focus on operational effectiveness leaves out two additional issues that have a significant influence on employees (Ancona et al. 2005). First, the political lens explains

organization behavior in terms of the *distribution and control of resources*, noting that the control of critical resources may confer important benefits to some individuals over others. These valuable resources will only be shared when stakeholders share the same interests (Ancona et al. 2005, M2, 40–41). Thus, a good political analysis will start by identifying stakeholder interests. A divergence in interests usually results in a divergence in the expectations of managers versus the actual behavior of employees.

The cultural lens, in turn, focuses on the *meaning* of organizational and managerial actions. These, usually tacit, meanings get expressed through cultural symbols, which provide a tangible representation of the beliefs and values that permeate the organization. For example, the decision to implement a new IT system symbolizes an organization's belief that new technology is the best way to improve the organization. According to culture researchers (e.g., Schein 1985) the influence of a new symbol, whether a new logo or a new IT system, is in large part determined by how that symbol's meanings are made explicit and shared throughout the organization. When shared meanings about an initiative are lacking, the initiative's adoption is likely to be limited.

In sum, IT implementation has generally been guided by the strategic lens, which focuses on design mechanisms that can increase the operational performance of a new IT system. However, this lens on its own has not yielded consistent improvements, especially in the implementation of administrative and strategic IT systems (Bhattacharjee et al. 2007). We complement that approach

by including the political and cultural lenses in our analysis to enhance understanding of the factors and drivers of IT implementation success.

RESEARCH CONTEXT AND METHODOLOGY

Our research group analyzed an IT implementation at a New England hospital, a large (20,000+ employees) urban teaching hospital. The initiative involved the Registration and Referral Center (RRC), a newly formed administrative unit charged with improving the efficiency of patient registration, managed care referral processing, and billing for the 250 practices and centers in the hospital system. According to executives, a lack of unified procedures for these functions (across multiple separate offices before the consolidation) was resulting in significant monetary losses due to registration errors. Gathering these areas into one central unit with unified procedures should, according to expectations, lead to fewer errors, decreased expenses, and increased revenues. The majority of staff in the new RRC are registration coordinators, who are responsible for performing patient registrations over the telephone.

The IT Initiative in the RRC

The core challenge to registration procedures is gaining constant updates in insurance policy information; these ongoing updates are necessary for processing patient claims accurately. Initially in the RRC most policy changes were not disseminated throughout the department, leading to unrecoverable expenses that amounted to \$9 million in unreimbursed billings per month—equivalent to \$100 million in lost revenue annually

for the hospital. To counter this problem, administrators decided to implement an online knowledge management database (KMD), which was designed to maintain the most updated policy information for all registration coordinators. We began our research six months after the rollout of the KMD. During that time no change in outcomes had occurred at the RRC. Contrary to expectations, the new IT system had neither decreased registration errors nor improved accuracy of information throughout the registration unit.

Data and Analytic Method

To explore why the IT implementation initiative was not successful, we collected archival and web-based data as well as survey data from all of the line-level registration coordinators. On management's suggestion we tracked the hospital's monthly insurance rejections as one measure of IT outcomes. Further, we conducted interviews with key members of the RRC staff, focusing on the rollout and progression of the KMD initiative, the organization's needs and functionality, and the role of individual positions within the initiative. These data were complemented by a survey given to registration coordinators, inquiring about their learning preferences, usage of the IT system, and demographic attributes. Surveys were collected from all 44 registration staff, yielding a 100 percent response rate.

The qualitative data analysis proceeded with the research team instrumentally coding phrases from the interviews into the strategic, political, or cultural lens (Van de Ven, Angel, and Poole 1989). The research team

then analyzed the data content within each category (lens) to identify specific reasons for lack of success or problems encountered that were most salient for each stakeholder. These reasons were then compared within and across categories by the research team until a parsimonious group of reasons for and issues related to the lack of success in the IT implementation were identified, leading to the results reported in the next section. These results generated a set of recommendations, some of which were implemented in the RRC.

Twelve months after these recommendations were offered, the first and third authors (Wurster and Hogeboom) initiated a follow-up set of interviews and a new survey to establish the impact of our recommendations and to determine the current state of the KMD initiative. These updated results and data are reported at the end of the Results section.

RESULTS AND INTERPRETATION

Strategic Lens: Design for Performance

The two most frequently cited reasons for the ineffectiveness of the KMD initiative were (1) the disparity between management's intended flow of information and the actual flow of information and (2) the fact that the KMD was not kept up to date—an issue that was mentioned by 85 percent of our interviewees. Our analysis shows that these problems are attributable to organizational design issues rather than to the technology itself.

According to an RRC manager, the two training specialists are responsible

for communicating all policy changes to the registration coordinators and for updating these changes in the KMD. However, these policy changes are mainly acquired by registration coordinators—the line employees who are in constant contact with these payers and who are the most likely to receive these updates. Thus, the training team relies on the registration coordinators to bring updates to their attention so that they can be communicated, via the KMD, to the rest of the department. This link was not well designed.

One key design flaw was that the majority of trainers' time is allocated to classroom trainings for newly hired staff, an ongoing process driven by the department's 20 percent turnover rate. Thus, when a registration coordinator has a policy question to ask or an update to share, training specialists are rarely available; instead, the coordinators rely on their senior peers, who are always accessible. When asked, "If you need an answer to a registration question, who is the first person you tend to ask?" less than 20 percent said they would find someone on the training team, whereas 82 percent said they would first seek out a senior registration coordinator or a coworker. (Table 3 provides complete survey results). These data support the hypothesis that the flow of information is contrary to management's expectations for the RRC. Figure 2 (a and b) provides a visual depiction of this disparity.

Adding to this problem is the lack of alignment mechanisms within the RRC. In particular, although the trainers are expected to update the KMD, no incentives are in place to motivate them.

Worse, the RRC has neither measures nor incentives to judge whether information is uploaded into the KMD in a timely manner. Without such alignment mechanisms, it is understandable that trainers are more focused on the activities for which they are directly measured and rewarded—namely, producing classroom trainings for new hires. In summary, the lack of linking and alignment mechanisms results in the low usage of the KMD system.

Political Lens: Information Is Power

Less than 6 percent of insurance rejections in this hospital are caused by input error or other technical problems, whereas more than 94 percent of rejections are due to a lack of updated information by registration coordinators. Given the total financial value of these rejections, a great deal of power resides in this updated information. As illustrated in Figure 2, that power is held by the registration coordinators. According to strategic design principles reflected in the organizational chart, the disparity of power between RRC managers and registration coordinators should be going in the opposite direction. This contrast is well known; the RRC's business analyst confirmed that "a major challenge to the training team is convincing the staff to share updates when they get them." As explained earlier, such power sharing will only occur when stakeholders have common interests in the initiative.

The political lens (see Table 1) shows an important disparity between the interests of RRC managers/hospital executives and the interests of the registration coordinators.

FIGURE 2A
Management-Approved Flow of Information Updates at the RRC

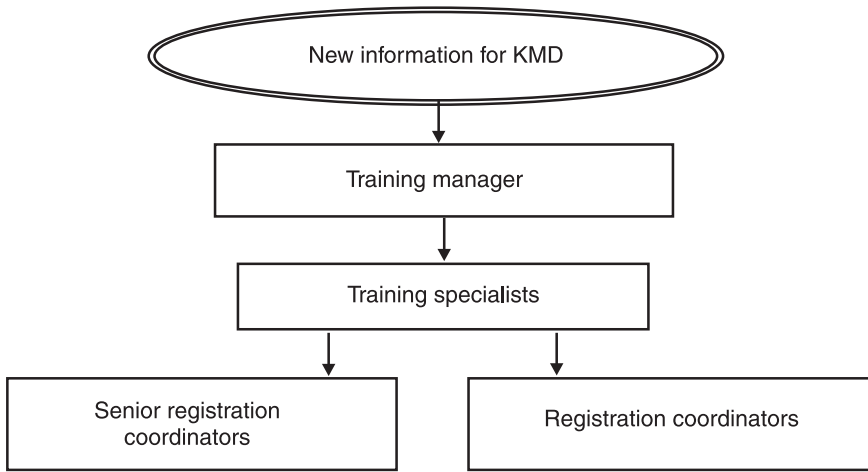
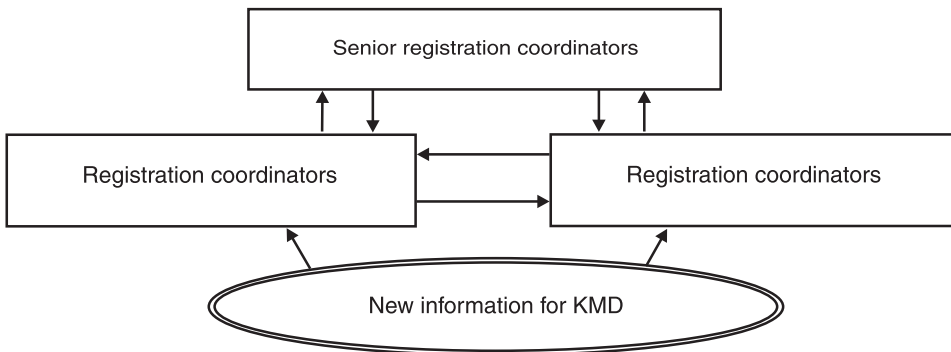


FIGURE 2B
Actual Flow of Information Updates at the RRC



Our analysis suggests that the interests of hospital executives are financially driven: Increased attention on reducing reimbursement rejections should increase revenues. The RRC manager is also focused on reducing rejections; her core strategy for achieving these goals

was the creation of a KMD that would be *the* repository for all new registration information.

In contrast to managers' financial interests in reducing rejections, the registration coordinators care most about having timely access to correct

TABLE 1
Divergent Interests Between RRC Stakeholders

Stakeholder	Status via Registration	Interests
Hospital administration	External	(A) Reduce rejections (\$)
Billing department	External	(A) Reduce rejections (\$)
Physicians	External	(A) Reduce rejections (\$)
RRC director	External administrator*	(A) Reduce rejections (\$) Create a departmental structure that fosters the collection of accurate registration information
Training team	Internal manager	(A1) Reduce rejections by providing updated information for KMD so that staff can perform accurate registrations. (B) Produce trainings on internal systems and job functions, especially for new hires
Senior registration coordinators	Internal line employee	(C) Have immediate access to accurate information about registration policies and procedures (D) Oversee operation efficiency and timing
Registration coordinators	Internal line employee	(C) Have immediate access to accurate information about registration policies and procedures

*As the executive manager for all four units in the RRC, the RRC director is functionally an external stakeholder in the KMD effort, which was designed and implemented by the training team.

information. In fact, virtually all registration coordinators (97 percent) are committed to providing the most accurate information possible on every registration they perform. However, information comes in many forms; if the KMD does not serve the RRC staff interests, the staff are not likely to use it. More importantly, registration coordinators are not aware of management's interest in reducing rejections, nor do they receive any data on rejections. Thus, even if coordinators were using the KMD, they would not understand how and why it should increase their

accuracy. We next show that gaining the necessary buy-in from registration coordinators requires a shift in the cultural meaning of the KMD, which would lead to shared interests in the RRC.

Cultural Lens: What Does the KMD Really "Mean"?

Our cultural analysis of the KMD focused on the divergent meanings associated with the IT system given by the training managers and the registration coordinators. Ensuring that everyone has the most up-to-date information was, and is, extremely difficult. The

training managers aimed to mitigate those difficulties by focusing on *consistency*, *efficiency*, and *reliability* of the new KMD system. On the surface, these three values were also important to the registration coordinators; however, we found that those values held very different meanings for the two cultural subgroups.

For training managers, the KMD was intended to generate consistency across the department. This approach would replace the ubiquitous “cheat sheets”—handwritten personal summaries of answers for common policy and procedure questions—used by the registration staff. In fact, when asked how often cheat sheets were used to answer registration questions, more than 40 percent of the registration coordinators answered “often” or “always.” These trusted cheat sheets represented consistency for the staff.

Thus, although managers and staff both want consistency, the meaning of “consistency” is substantively different between them. To the training managers, “consistency” means a single source of information for the entire department, whereas to the registration coordinators, it means remaining consistent in their routines for maintaining the most up-to-date information possible. Because those routines led staff to use cheat sheets and to ask nearby colleagues they trust, the KMD was mostly left unused.

A second difference is in the meaning of “efficiency.” Although the training managers designed the KMD to be the most efficient source of information, registration coordinators rated it lower than the combination of going to “cheat

sheets,” “long-term employees,” or “other” sources for answers to registration questions. Here again, what seems efficient to managers differs from what seems efficient to staff.

A third distinction is registration coordinators’ view of reliability. Because senior registration coordinators serve as the primary point of contact for staff’s day-to-day questions, they place a high value on information reliability. If they perceive that the information in the KMD is out of date—even to a small extent—they consider the entire system unreliable, a perception confirmed in several interviews. This perception leads to a declining usage of KMD by all staff.

In summary, differing interpretations of the KMD by various registration subcultures result in important discrepancies. Without a single, reliable, consistent location for the most up-to-date registration information and the lack of necessary incentives, structures, and buy-in to use and improve the system, it is unlikely that the KMD will serve its intended purpose.

RECOMMENDATIONS AND FOLLOW-UP

Based on these findings, recommendations from this study were reported to the training managers and other RRC administrators; a number of those suggestions were implemented over the following 12 months (see Table 2). Specifically, new linking mechanisms improved the strategic design of the system within the department, including the addition of a new training specialist who is more aligned with the needs of registration coordinators. In addition, the training managers took actions to

TABLE 2
Research Team Recommendations and RRC Actual Implementations

Recommendation	Actual Implementation (12–18 months)
<p>Create a linking mechanism between the training team and the senior registration coordinators by inviting them to attend semi-monthly training team meetings. (strategic lens)</p>	<p>(1) The trainers are now attending the weekly registration team meetings, which prompts feedback and a collection of updates for the KMD.</p> <p>(2) Each trainer is paired with a registration supervisor to facilitate communication and to ensure information is gathered.</p>
<p>Hire additional training manager/specialist. Add a full-time training specialist to the RRC who will be focused primarily on KMD updates and training. (strategic lens)</p>	<p>(3) A new trainer was hired who is ultimately tasked with managing the KMD.</p> <p>(4) Hiring practices have been altered to appropriately align skills and experience with job responsibilities.</p>
<p>Compromise on alternative resources. Create a hard-copy “work bible” that can easily be updated to replace all cheat sheets. Essentially a printout of the current KMD, the work bible would allow individuals to use paper but retain a single, consistent document for all information. New additions into the KMD are printed; these printouts get inserted into each of the work bibles in the office. (cultural lens)</p>	<p>(5) The KMD was updated to a newer version, including more than ten technical improvements to allow for more user-friendly features and functions.</p> <p>(6) Consistent communications are sent that include refresher information on the KMD and useful resources to increase job efficiency.</p>
<p>Create a knowledge management officer position. This position will be held by a registration coordinator and will be responsible for notifying the training team of updates for the KMD. (strategic lens)</p>	<p>No action taken</p>
<p>Make reporting transparent. Make registration coordinators aware of monthly registration-related rejections and their role in decreasing the dollar amount received in reimbursement. (political lens)</p>	<p>No action taken</p>
<p>Create financial incentives for all RRC employees toward this end—e.g., offer quarterly bonuses that are directly linked to percentage decreases in rejections. Also, create incentives for the training team to update the KMD more regularly. In particular, include this goal in their periodic evaluations. (strategic lens)</p>	<p>No action taken</p>

create more shared meanings about the KMD; in particular they improved the consistency of the IT system by rolling out a new, user-friendly version with significant technical improvements, and they refocused on efficiency by communicating how the KMD can increase effectiveness for registration coordinators.

Six months after these changes were implemented, another survey was given to all registration coordinators in January 2009, receiving a 100 percent response rate ($N = 39$).¹ The results (summarized in Table 3) confirmed the value of this overall approach. Coordinators are now 16 percent more likely to look first to the KMD for answers to a registration question, even though 18 percent of them still use cheat sheets “almost always” to answer a registration question. The reliability of the RRC managers has also increased significantly; line staff are nearly 25 percent more likely to direct registration questions toward supervisors and the training managers and away from coworkers and senior coordinators.

Moreover, these shifts reduced registration errors. According to the business analyst, the department has made approximately a 25 percent improvement in registration accuracy compared with initial levels: “In the 12–24 month period, registration errors occurred on 70% of registrations, so quality has improved since [the implementation of recommendations].”

CONCLUSION

In summary, the well-intentioned creation of an administrative IT system yielded virtually none of its originally

intended outcomes in the Registration and Referral Center of a large urban hospital. Our analysis found that the obstacles to this IT implementation involved (1) problems in strategic design, including a lack of linking and alignment mechanisms, (2) a disparity in the political interests of management versus line staff, and (3) significant differences in the cultural meanings of the KMD in the two subcultures. Our analysis led to recommendations across all three lenses, and managers enacted changes in the strategic design and in the cultural meanings of the IT system. As a result, IT usage has increased by 16 percent, leading to a decrease in costs of up to \$30 million annually.

Our analysis has several limitations. First, this is but one case study, making it difficult to generalize to other settings. At the same time, such an approach may be the best way to collect and analyze the in-depth data needed to understand this dynamic process. Second, our analytic framework, which integrates the strategic, political, and cultural lenses, is unfamiliar to most scholars in health-care management as well as to researchers of IT implementation. Some might argue that this unconventional framework goes beyond the boundaries demarcated by the IT literature, rendering it less applicable. On the other hand, an increasing number of IT studies are incorporating psychological, social, and systemic frameworks into their analysis (e.g., Harrison, Koppel, and Bar-Lev 2007; Juciute 2009). Finally, only some of our recommendations were implemented, making it hard to judge the overall value of the three-lens framework for practice.

TABLE 3
Initial and Follow-up Survey Results

Survey 1—April 2007, N = 44; 100% response

Survey 2—January 2009, N = 39, 100% response

	April 2007		January 2009		Percentage Change
	Percent	Total	Percent	Total	
Q1. When you need to find an answer to a registration question, where is the first place you tend to look?					
a. Cheat sheets	31.80	14	25.60	10	-6.2
b. KMD	45.50	20	61.50	24	16.0
c. Long-term employee	9.10	4	12.80	5	3.7
d. Other	13.60	6	0.00	0	-13.6
Total respondents (n)		44		39	
Q2. In general when you need to find an answer to a registration question, how often do you use the KMD?					
a. Hardly ever	11.40	5	12.80	5	1.4
b. Sometimes (20–50% of the time)	34.10	15	20.50	8	13.6
c. Pretty often (50–80% of the time)	38.60	17	38.50	15	-0.1
d. Almost always (80–100% of the time)	15.90	7	28.20	11	12.3
Total respondents (n)		44		39	
Q3. In general when you need to find an answer to a registration question, how often do you use cheat sheets?					
a. Hardly ever	20.50	9	25.60	10	5.1
b. Sometimes (20–50% of the time)	38.60	17	33.30	13	-5.3
c. Pretty often (50–80% of the time)	34.10	15	23.10	9	-11.0
d. Almost always (80–100% of the time)	6.80	3	17.90	7	11.1
Total respondents (n)		44		39	
Q4. How important is it to retrieve the most updated information in order to answer a registration question?					
a. Not that important	0.00	0	0.00	0	0.0
b. Somewhat important	2.30	1	0.00	0	-2.3
c. Quite important	18.20	8	15.40	6	-2.8
d. Extremely important	79.50	35	84.60	33	5.1
Total respondents (n)		44		39	

continued

TABLE 3 Continued

	April 2007		January 2009		Percentage Change
	Percent	Total	Percent	Total	
Q5. How many years have you been working at RRC?					
a. Less than 6 months	15.90	7	17.90	7	2.0
b. 6 months–1 year	11.40	5	5.10	2	–6.3
c. 1–2 years	22.70	10	17.90	7	–4.8
d. 3–4 years	50.00	22	59.00	23	9.0
Total respondents (n)		44		39	
Q6. If you need an answer to a registration question, who is the first person you tend to ask?					
a. Coworker	27.30	12	20.50	8	–6.8
b. Senior registration coordinator	54.50	24	48.70	19	–5.8
c. Supervisor	0	0	2.60	1	2.6
d. Training team	18.20	8	28.20	11	10.0
Total respondents (n)		44		39	

Those limitations do not mitigate the numerous implications of our study for further research and practice. Theoretically, the multi-lens approach suggests that research into the usage of administrative IT systems should include a more systemic analysis of psychological, social, and cultural factors, which can complement the more traditional focus on strategic design and performance outcomes (e.g., Kohli and Kettinger 2004). Our particular model, derived from that created by the management group at the Massachusetts Institute of Technology (Ancona et al. 2005), is similar to recent studies that incorporate stakeholder interests (Barkil, Pare, and Sicotte 2008; Juciute 2009) and links well to sociotechnical analysis of IT implementation in healthcare (e.g.,

Harrison, Koppel, and Bar-Lev 2007). Future work can build on these analyses and other case study research, with the goal of identifying the full range of issues in IT implementation, including organization and strategic design, the unseen political implications of new IT resources, and the tacit cultural meanings that can be most powerful in driving usage of the system or leaving it unused.

In practical terms, our analysis confirms the value of an “action research” model (e.g., Kohli and Kettinger 2004) for improving the outcomes of IT implementation in healthcare. Like evidence-based models of healthcare, the action research model sees the outcomes from an intervention as inputs to further interventions, leading to improved results

over time. In our case, the managers enacted recommendations from the strategic and cultural lens; we would expect further benefits to be gained by incorporating political issues as well.

Overall, an awareness of the multifaceted process of IT implementation can help practitioners “realize Health Information Technology’s potential for improving healthcare safety, quality, and efficiency” (Harrison, Koppel, and Bar-Lev 2007, 548). A deeper understanding of this process—the real goal of our study—can decrease employee resistance, increase system effectiveness, and generate substantive improvements in the use and long-term benefits of administrative IT systems in healthcare settings.

NOTE

1. This helpful suggestion was offered by one of our reviewers.

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PRACTITIONER APPLICATION

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The authors of this article allude to the importance of asking the right questions, at all levels of technology users, to achieving success in implementing information technology (IT). We are often told that management knows best, but this saying is only true when management has asked the right questions of the right people.

The findings in this article will be most useful to organizations whose existing IT systems are not meeting their needs and not providing the desired benefits. The case study presented here may spark new thoughts in leaders of these institutions that will help recharge their approach to and understanding of the next steps. Also, it will benefit organizations that are just beginning the IT planning process and want to avoid mistakes, rework delays, and poor returns on investment. Healthcare has been slow to adopt IT, but the 2009 economic stimulus package and the Health Information Technology for Economic and Clinical Health Act (see <http://waysandmeans.house.gov/media/pdf/110/hit2.pdf>) are renewing the national emphasis on health information exchange. As a result, healthcare organizations will face more pressure to apply the available tools. Therefore, healthcare leaders must learn from others' lessons in this regard.

As indicated in a previous publication (see Thielst 2007a in the References section), to avoid a narrow view, those involved in planning for the application of any technology should "represent various disciplines, cultures, and perspectives" and understand that "everyone should not look or think alike." This article offers three lenses—strategic, political, and cultural—through which to view an IT project so that planners can minimize the risk of a narrow perspective:

- Strategic: IT implementation is a strategic resource that improves operational performance and contributes to an organization's competitive advantage. This idea

is the most obvious and traditional. It involves linking and aligning users and is most successful when all user groups (levels of technology users) are involved in planning and/or designing the implementation process.

- **Political:** Information is power, and the needs of collectors and keepers of this information must be understood. Effective leaders and managers build shared interest(s) with user groups and think through the current and expected processes to identify potential conflicts or misalignment of interests. The article demonstrates that misalignment occurs when users are not involved in the planning and design of the initiative.
- **Cultural:** The organization's culture has an impact on any organization-wide change in tools, processes, or systems. IT implementation is more successful if leaders and managers have clearly defined what the new technology means to the organization and have communicated this meaning to all stakeholders.

The New England hospital, the subject of the case study, might have experienced implementation success from the beginning had it assessed and evaluated the needs of all its stakeholders and those who would benefit from the technology. This comprehensive approach would have provided the necessary insight, revealing the blind spots described in the article. In conclusion, "any successful implementation of technology requires a complete understanding of the technology's capabilities and limitations, as well as the processes it replaces and connects. Healthcare organizations and their leaders can achieve sustained success only when they have analyzed and managed workflows and applied the technology appropriately" (Thielst 2007b).