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Healthcare IT Adoption under Different Government Models: Debating the HITECH Impacts

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Abstract

Governments around the world are investing in healthcare as they attempt to increase access to care and the quality of care, while simultaneously lowering the costs of providing care. Many of these investments are in healthcare IT (HIT). The IT software industry is preparing for intensive competition for their HIT packages and workers in response to government and private industry investments. Yet different national healthcare models have produced widely differing healthcare outcomes and HIT adoption rates, with the U.S. performing poorly on both. The objective of this panel is to provide insights based on HIT research conducted in multiple healthcare contexts under different national government models, and then to engage the panel audience in debating the prospects for success of three IT-enabled healthcare delivery reforms being government-funded in the U.S. over the next 5 years. Our larger goal is to provide a forum for information sharing that will motivate other IS researchers across the global IS research community to contribute to the design of solutions and the capturing of best practices that will address some of the key goals of IT-enabled healthcare reform: improved access and quality, and decreased costs.

Keywords: Healthcare Information Technology, Government regulation, IT workforce, HIT research

Introduction

Governments around the world are investing in healthcare as they attempt to increase access to care and the quality of care, while simultaneously lowering the costs of providing care. Many of these investments are in healthcare IT (HIT) based on a general belief that more IT will result in improved quality and/or access while lowering costs. However, there is a wide variation in government models related to governing, financing, and regulating the healthcare sector. For example, two recent reform bills could significantly change the U.S. healthcare landscape in the near future. First, more than 20 million uninsured U.S. citizens will have access to healthcare insurance. Second, the HITECH Act, legislated as part of the American Recovery and Reinvestment Act (ARRA), provides more than \$20 billion to incent healthcare providers (hospitals and physician practices) to adopt patient recordkeeping software (called electronic health record [EHR] software) that provides decision support for clinicians and enables the exchange of health information with providers, patients, and public health organizations. In addition, the U.S. federal government is putting at least \$6 billion into various telehealth programs.

But: How successful will such governmental HIT interventions be? We know from more than three decades of IS research that technology innovations, in general, require individual, workgroup, organizational, and social system changes. It is, therefore, not surprising that some researchers have documented improvements in the quality, cost efficiency, and availability of health services due to HIT usage, yet others report “no effects” from specific HIT solutions. We also know that major government HIT interventions are not always successful. For example, U.K.’s National Programme for IT (NPFIT), begun over a decade ago as part of a large-scale healthcare reform agenda, has recently abandoned its quest for a centralized electronic record system in favor of a more regional approach in response to provider opposition.

Furthermore, different national healthcare models have produced widely differing healthcare outcomes and HIT adoption rates, with the U.S. performing poorly on both. In terms of outcomes, the U.S. has much higher healthcare costs and lower healthcare quality than other developed countries. Compared to not only other countries but also other industries, the U.S. healthcare industry has also been an IT laggard, with adoption rates of only 17% in physician practices and 12% in hospitals (DesRoches et al., 2008). Although all nations share some problems related to HIT diffusion and acceptance, the healthcare sector model (Reid, 2009) has implications for how governments may intervene in or promote HIT adoption. For example, in a Bismarck model (e.g., Germany, Japan) both healthcare providers and payers are private entities; in a Beveridge model (e.g., U.K.) healthcare is funded by the government and most providers work for the government, whereas in a national health insurance model (e.g., Canada) the government is the insurer but the providers are private. The U.S. healthcare system has elements of each, which adds to the complexity of IT-related government interventions.

For example, the U.S. HITECH act embodies a mix of volitional/non-volitional use and control. Physician practices and hospitals are only eligible for incentive payments if they 1) purchase EHR software that has been certified by a federally approved body, 2) provide evidence that they have achieved “meaningful use” metrics (just finalized by a federal rule-making process in mid-July 2010), with metrics that increase over a five-year period, and 3) have a high enough percentage of government-insured (e.g., Medicare and Medicaid) in their patient population.

The impacts of the HITECH Act on the IS community of practitioners and academics could be significant in the U.S. and also around the world. For many IS professionals, today’s government interventions are viewed as once-in-a-lifetime opportunities to help bring healthcare providers into the 21st-century and explore ways to leverage newer telehealth and mobile technologies. The IT software industry is preparing for intensive competition for their EHR packages and their workers—and such changes will likely influence not only the U.S. market but the markets for HIT in other nations as well. Current forecasts are for more than 40,000 new workers to support the new and ongoing HIT investments in the U.S., including healthcare information exchange initiatives in every state and the ramp-up of self-sustaining regional extension centers (RECs) selected for initial funding by the federal government.

But: What are the relevant lessons already learned by researchers in the U.S. and other countries?

Controversial Issues and Panelists' Positions

The objective of this panel is to provide insights based on HIT research conducted in multiple healthcare contexts under different national government models, and then to engage the panel audience in debating the prospects for success of three IT-enabled healthcare delivery reforms being government-funded in the U.S. over the next 5 years. Our larger goal is to provide a forum for information sharing that will motivate other IS researchers across the

global IS research community to contribute to the design of solutions and the capturing of best practices that will address some of the key goals of IT-enabled healthcare reform: improved access and quality, and decreased costs.

1. Will at least 50% U.S. physician practices adopt an EHR and achieve “meaningful use” by 2016?

Background: According to a recent U.S. 2007 survey, only 17% of physician practices had an EHR. Small physician practices were much less likely than large group practices (9% vs. 50%) to have adopted even a basic EHR (clinical notes, record Rx, record lab and imaging results), let alone a fully functional EHR such as will be required by the HITECH incentives (DesRoches et al., 2008). Similarly, physician practices in rural areas are much less likely than practices in urban locations to have already adopted an EHR. About half of the respondents reported paying less than \$25,000 per doctor for their software. However, cost was the most frequently stated barrier.

Panelist #1 (Speaking For): Diane Strong (U.S.), drawing on her research on EHR adoption and use in physician group practices in several countries, believes that U.S. physicians will increasingly adopt EHRs. The availability of high quality EHR packages reduces the need for HIT support staff. While physicians have actively resisted EHRs (Lapointe and Rivard, 2005), many now acknowledge EHRs as the future of healthcare delivery. Many physician offices, large and small, want to take advantage of HITECH funding to enter the digital healthcare age. Small physician offices are sharing advice and IT resources. Support will also be available through RECs.

Panelist #2 (Speaking Against): Liz Davidson (U.S.) will draw from her research on EHR adoption among small physician practices and her ongoing action-research project with a community of independent practitioners to argue that these goals are highly ambitious for physicians in small practices. Small and solo practices lack the organizational resources to overcome learning and change barriers. Lack of a HIT workforce is a significant barrier to widespread adoption. Also troubling are questions about how “meaningful” the meaningful use criteria will be to bring about the improvements in patient care and health outcomes.

Panelist #3 (Pros and Cons based on U.K. and other European countries): Wendy Currie (U.K.) will share insights based on her multi-year research not only on HIT adoption and implementation in the U.K. and more than a dozen EU countries with different national health system models. Wendy will discuss the adoption of EHRs in the wider socio-political and economic landscape within countries and regions. She will provide examples of ‘best practice’ EHR adoption in selected European Union (EU) 27 member states, showing that large financial investment does not equate to more widespread adoption and enhanced benefits to clinicians and patients.

2. Will 90% of U.S. hospitals adopt software with decision support for entering patient orders that is utilized directly by the physician by 2016?

Background: When coupled with decision support, computerized physician order entry (CPOE) is thought to arm the physician with access to best practices and alerts that take into account patient data, and may also enable cost containment based on inclusion of administrative data such as the patient’s insurance plan for cost considerations. By the end of 2009, however, fewer than 14% of hospitals reported even partially implementing such software capability (HIMSS Analytics, 2010).

Panelist #1 (Speaking For): Chon Abraham (U.S.) will justify why CPOE is essential in the care process, drawing from her own research. CPOE use in medication ordering is a requirement for hospitals to receive HITECH incentives and is one of the fifteen core objectives for demonstrating HIT meaningful use. Data about CPOE can be supplied to convincingly inform the physicians about the benefits of system use for all stakeholders (i.e., the physician, patient, and organization), including exemplars from Kaiser Permanente and Sentra Healthcare. CPOE with decision support should save nearly \$170 million and prevent 55,000 adverse drug events annually in the U.S. (Bates, 2008).

Panelist #2 (Speaking Against): Carol Brown (U.S.) will focus her arguments on the “downsides” that have been associated with CPOE implementations in the past. Examples of problems encountered include CPOE systems interfering with established physician/nurse communications and nursing ‘checks,’ errors introduced by the usage of electronic templates and order sets, unintended physician behaviors due to poorly designed alerts, and physician resistance to the usage of evidence-based decision support from external service providers. Even with the reduced expectations under the Final Rules, this will be a major hurdle that many U.S. hospitals will not reach by 2016.

Panelist #3 (Pros and Cons based on U.K. and other European countries): Wendy Currie (U.K.) will relate successful CPOE adoptions within the U.K. and other EU countries. She will argue that the extent to which

physicians are employees of a state-owned provider institution does not make a difference, based on her multi-year research in the U.K. and more than a dozen EU countries with different national healthsystem models.

3. Will the U.S. barriers to widespread adoption of telehealth be significantly reduced by 2016?

Background: The term telehealth encompasses a whole range of medical activities, including diagnosis and treatment of disease by utilizing remote experts as well as home-based and mobile monitoring solutions to improve disease management. Remote communications and monitoring will also enable a Medical Home concept in which timely, ongoing care by teams of clinicians can reduce expensive emergency room visits and provide education that enables patients to take more responsibility for their health status. New mobile devices have also been developed for routine monitoring of vital signs (and blood sugar levels for diabetics) as well as wellness activities. Despite government investment and the potential for reducing barriers such as time and distance, pilot program successes are no guarantee that these projects will make the transition to a successful long-term service solution.

Panelist #1: Cynthia LeRouge (U.S.) will draw on her past and current telehealth research with U.S. government and private healthcare providers, as well as a recent study with researchers in the Netherlands and mobile health application work in China. She will discuss current government policy and other inter-related barriers to telehealth in the U.S and will provide examples of recent performance outcomes for different types of telehealth initiatives that can improve quality and increase access, despite the existing barriers. She will emphasize that a strategic, sustainable perspective, rather than a pilot project perspective, will facilitate benefit from government investment and promote diffusion.

Panelist #2: Miki Akiyama (Japan) will draw from her research regarding the drivers, facilitators, and barriers for telemedicine and supporting HIT in Japan. Japan accounts for nearly 35% of all Asian telehealth activity (mostly teleradiology focused). She will discuss access as a primary driver, over quality and cost of care, for use of telemedicine. She will summarize governmental efforts to use telemedicine and other HIT projects as facilitators and note grass-root community efforts to empower patients to participate in telemedicine enabled care in the home or other community-based locations.

Panel Structure

The panel will begin with a brief summary of our points in the Introduction about different government models and the HITECH Act. For the first two HIT adoption questions, one U.S. panelist will emphasize key arguments *for* a successful outcome, a second U.S. panelist will then emphasize an *opposing* view, and a third non-U.S. panelist will then provide arguments *for and against* based on recent examples in the U.K. and other European countries with different government healthcare models. For the third HIT adoption question (telehealth), one U.S. panelist will describe success stories and national barriers, followed by a second panelist who will do the same for another developed country with a model of private funding and payer (Japan). Audience members will be encouraged to contribute their own views and relevant research experiences, with a quick audience “poll” following each of the three topics. After the three debates, the panel members will briefly summarize their own conclusions, including their suggestions for opportunities for HIT-related research that takes into account the issues raised.

Biographies

Chon Abraham, Ph.D., is an Assistant Professor of Information Systems in the Operations and Information Systems (IS) Management department in Mason School of Business at the College of William and Mary. Her research focuses on healthcare information systems (IS) and informatics. She has received an IBM Center for Healthcare Management research grant to study U.S.-based comprehensive EMR implementations and a Fulbright Research grant for healthcare IS research on adoption and governance in Japan.

Miki Akiyama, Ph.D., is an Associate Professor, Faculty of Policy Management, Keio University. Her research interests include healthcare platforms for information delivery for inter- and intra- organizational systems inclusive of telemedicine and home care. She is a member of various consortia, government advisory councils, and project teams in Japan such as the Commission on Collection and Analysis of Scientific Knowledge for Care Prevention for the Ministry of Health Labor and Welfare (MHLW).

Carol V. Brown, Ph.D., is a Distinguished Professor and Program Director for the Healthcare IT Management graduate program in the Howe School of Technology Management at Stevens Institute of Technology. Her current field research focuses on IS strategy and management topics of interest to senior IS leaders and physicians, including enterprise systems implementations, post-acquisition integration, and mobile technologies in healthcare.

Wendy L. Currie, Ph.D., is Professor and Director of the International Policy and Technology Research Unit at Warwick Business School, UK. She works closely with Warwick Medical School on research projects on eHealth, personalized medicines and health information technology policy and management. She is currently the Hon. Treasurer of a medical charity, the Fellowship of Postgraduate Medicine which publishes the PG Medical Journal, and also a trustee of the Cardiovascular Research Trust charity.

Elizabeth Davidson, Ph.D., is W. Ruel Johnson Professor of Information Technology Management at the Shidler College of Business, University of Hawaii at Manoa. She conducts research on the adoption, diffusion, and use of health information technologies, focusing on the organizational and institutional changes that must accompany technology-enabled change in this industry. She is Project and Research Director of the “Bridging the IT Adoption Gap Project,” which is aimed at facilitating meaningful adoption of EMRs among small physician practices.

Cynthia LeRouge, Ph.D., C.P.A., is an Associate Professor in the Decision Sciences and Information Technology Management Department at Saint Louis University, where she also holds a joint appointment at the School of Public Health. She served as a visiting scholar at the Centers of Disease Control and Prevention. Her primary research interests relate to telemedicine, consumer health informatics, and public health informatics. She has been an executive officer of the AIS Special Interest Group for Healthcare Research.

Diane M. Strong, Ph.D., is a Professor and Director of MIS in the School of Business at Worcester Polytechnic Institute. She is a founder of WPI’s Center for eHealth Innovation and Process Transformation (CeHIPT), which studies HIT implementations and the process and procedure transformations needed for effective and meaningful HIT use. With NSF funding, she is conducting an international qualitative study of how electronic health record systems affect healthcare delivery processes in healthcare organizations in the U.S., Canada, and Israel.

Selected References

- Abraham, C. and Reese, B. 2010. “Making Music Out of Noise: The Sentara Healthcare Experience Implementing e-Care,” *Journal of Healthcare Information Management* (24:1), January, pp. 44-50.
- Akiyama, M. 2009. “Effects of Physician Communication and Cooperation with Nurse Home Visits of Asynchronous Media,” *Journal of Healthcare Management* (10:3), pp.504-509.
- Bates, D. 2008. *Saving Lives, Saving Money: The Imperative for Computerized Physician Order Entry in Massachusetts Hospitals*. Cambridge, MA: New England Healthcare Institute Publications.
- Currie, W.L. and Guah, M.W. 2007. “Conflicting Institutional Logics: A National Programme for IT in the Organisational Field of Healthcare,” *Journal of Information Technology* (22), pp. 235-247.
- Davidson, E. and Heslinga, D. 2007. “Bridging the IT Adoption Gap for Small Physician Practices: An Action Research Study on Electronic Health Records,” *Information Systems Management* (24:1), pp.15-28.
- DesRoches, C. M., Campbell, E. C., Rao, S. R., Donelan, K., Ferris, T. G., Jha, A. Kaushal, R., Levy, D. Rosenbaum, S. Shields, A. and Blumenthal, D. 2008. “Electronic Health Record Adoption in the Ambulatory Setting: Findings from a National Survey of Physicians,” *New England Journal of Medicine* (359), July 3, pp. 50-60.
- Healthcare Information Management Systems Society (HIMSS) Analytics. 2010. *U.S. EMR Adoption Model*, http://www.himssanalytics.org/hc_providers/emr_adoption.asp.
- Lapointe, L. and Rivard, S. 2005. “A Multilevel Model of Resistance to Information Technology Implementation,” *MIS Quarterly* (29:3), September, pp. 461-491.
- Metzger, J., Welebob, E., Bates, D., Lipsitz, S., and Classen, D. 2010. “Mixed Results in the Safety Performance of Computerized Physician Order Entry,” *Health Affairs* (29:4), April, pp. 655-663.
- Reardon, J. and Davidson, E. 2007. “An Organizational Learning Perspective on the Assimilation of Electronic Medical Records among Small Physician Practices,” *European Journal of Information Systems* (16:6), pp. 681-694.
- Reid, T.R. 2009. *The Healing of America: A Global Quest for Better, Cheaper, and Fairer Health Care*. New York: Penguin.