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## Opening the envelope of health care information systems research

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## ABSTRACT

In 2004, Chiasson and Davidson published a challenge to the scholarly Information Systems (IS) field to embrace health information systems research more fully within its mainstream research interests. In the ensuing 14 years, health care research has become an acknowledged specialization within the IS field. In this review article, we examine how health care research publications have developed within the IS field's leading journals since 2004 and explore the analytical and technological areas of focus within these publications. In addition to providing a descriptive overview of such research, we also examine three topical clusters in-depth (health IT adoption and diffusion, physician resistance to health IT use, and health IT impact on health care or system outcomes) to consider how researchers have addressed the challenge of developing general IS knowledge within this distinctive research context while also contributing contextually-relevant insights to the health care field. Finally, we discuss the implications of these analyses and suggest potential areas for future research. Overall, we contribute a foundation for IS health care researchers to consider how to position their work to contribute to knowledge through informational and organizational theory as well as to address important concerns of practice at the intersection of health and IS.

## 1. Introduction and motivation

In a review of health care information systems research (often referred to as health information technology or HIT research) published in Information Systems (IS) journals, [Chiasson and Davidson \(2004\)](#) challenged the IS field to expand its “contextual envelope” by embracing the health care sector as a socially important and theoretically interesting context to develop and refine information systems theory as well as to provide contextually-relevant insights on health care information systems development and use. Over the period of their review (1985–2003), they estimated that less than 1.5% of publications in the 17 journals examined addressed health care topics (p. 160) and over half did so by focusing exclusively on IS theory or on the health care context, rather than on the nuanced interplay of theory and context (p. 163). They noted that a critical mass of IS researchers interested in HIT topics was developing within IS conferences, but argued that for HIT research to become a viable specialization within the IS academic field, greater acceptance within high visibility, mainstream IS journals would be essential (p. 178).

Over the ensuing 14 years, HIT research has grown into a well-recognized specialty within the IS academic field. For instance, most major IS field conferences<sup>1</sup> regularly sponsor health care-focused tracks. A special interest group within the Association of

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Information Systems (SIG-Health)<sup>2</sup> promotes the specialty through conference events, publication awards, and member communications. A number of IS faculties have established HIT research centers in their institutions or collaborated with university medical schools or schools of public health to do so. As we report here, health care-related papers are now being published more regularly across mainstream IS journals, indicating widespread acceptance of research in this specialty area.

This rapid growth in HIT research can be attributed in large part to socio-economic and technical developments within the health care sector that have provided new opportunities and demand for HIT research. In most national economies, health care spending continues to grow rapidly as populations age and rates of chronic diseases increase. HITs, which include software and infrastructure used in the clinical practice of medicine<sup>3</sup> as well as technologies to store, share, and analyze health information,<sup>4</sup> have been touted as vital components to reduce health care costs and also to improve health care quality, access, and health outcomes (Chaudhry et al., 2006; Hillestad et al., 2005). Yet, many challenges have emerged including a slower than expected rate of HIT adoption, questionable usability of technologies such as Electronic Health Records (EHRs), health care professionals' resistance to adopting or using such technologies, difficulty in changing health care processes to reap the full benefits of HIT, and the lack of interoperability between disparate systems (Kellermann & Jones, 2013).

Investigating such challenges, particularly in light of substantial HIT spending by governments, health service providers, and IT firms, has provided extensive opportunities for researchers to examine how to more effectively realize value from HIT investments. Further, many HIT research phenomena lie at the intersection of organizational, consumer, and societal needs and information technology developments, that is, in the mainstream of the scholarly IS field's broad research agenda. Thus, ample opportunity has been afforded to IS researchers to leverage HIT to revisit prior research contributions, to further refine existing theory, and to generate new research questions and insights (Agarwal, Gao, DesRoches, & Jha, 2010; Baird, 2014; Chiasson & Davidson, 2004; Fichman, Kohli, & Krishnan, 2011; Kohli & Tan, 2016).

To understand how IS scholars have leveraged opportunities to study health IT developments in order to make contributions to knowledge, we need an understanding of what the health care context has offered to the IS field in terms of theory development opportunities, what the IS field has contributed to the understanding of information systems phenomena in health care settings, and how the scholarly IS field has embraced these contributions to knowledge as evidenced in published research. To examine these points, we consider where and how contributions to the IS field's knowledge domain from health care studies have occurred. Specifically, we analyze health care related articles published from 2004 to 2017 in *Information & Organization* and eight other highly-ranked IS journals to understand how the HIT specialty has progressed within the IS field in terms of scholarly publications, to identify specific areas of contributions, and to provide guidance for future research. In the following sections, we discuss our approach to the literature review, the review results, and implications of this analysis.

## 2. Literature review approach

The HIT literature is broad and diverse. To accomplish our specific review objectives, we thus established boundaries to the scale and scope of the review process. To assess theoretical developments in the IS field's body of HIT literature, we examined publications in *Information & Organization* and in the IS senior scholars' basket of eight journals.<sup>5</sup> We limited our review to this subset of highly-ranked IS journals for two primary reasons. First, there are many other outlets for HIT research, such as medical sociology, health economics, and medical informatics. However, each field has distinctive criteria for research contributions, such as an emphasis on policy or empirical findings rather than theoretical developments. Examining IS journals provides a more realistic perspective on whether and how IS researchers, within their own field, have developed or refined IS theory through HIT research. The selected journals publish research across the range of topics in the mainstream of IS research and thus evaluate HIT research within the IS field generally. Second, early reports of HIT research may appear in conference proceedings, and some studies are also published in specialized journals. However, as the field's top-ranked journals, the selected journals represent and also help shape norms and expectations for high quality IS research. HIT publications in these journals have been vetted for theoretically significant contributions in terms of these expectations through the peer review process. In summary, publications in these journals provided a useful and appropriate body of literature for examining how theory and context have been addressed in HIT research in the IS field.

We identified and downloaded individual articles from the selected via Web of Science and Google Scholar search engines, using terms such as *health information technology*, *health information system*, and *health care*, limiting the search to these nine journals. We examined each article in the initial compilation to remove articles that were not relevant, such as when articles included the term "health," but were not referring to health care or HIT. We also removed editorials that simply introduced a special issue or that incidentally mentioned an HIT study while describing an issue's contents. The authors then made final decisions about including or excluding articles that incidentally mentioned health care in the text. The final set of publications included 202 articles that either directly evaluated some aspect of HIT or incorporated the health care context into the research design and empirical study.

To assess these 202 articles, we conducted three separate analyses: 1) descriptive analysis of when and where HIT papers were

<sup>2</sup> URL: <http://www.aissighealth.com/>

<sup>3</sup> Source: <http://www.cms.org/uploads/HIT-Terms.pdf>

<sup>4</sup> Source: <https://www.healthit.gov/patients-families/basics-health-it>

<sup>5</sup> The basket of eight includes (in alphabetical order): *European Journal of Information Systems*, *Information Systems Journal*, *Information Systems Research*, *Journal of the Association for Information Systems*, *Journal of Information Technology*, *Journal of Management Information Systems*, *Journal of Strategic Information Systems*, and *Management Information Systems Quarterly* (<http://aisnet.org/general/custom.asp?page=SeniorScholarBasket>).

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