Social Media Use in Physician-Patient Interaction – A Fit Perspective

Completed Research Paper

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Abstract

The meaningful use of health information technologies is being heralded as means to engage patients and families in the management of their own healthcare. Patient engagement and their wellbeing can be enhanced by improving communication between the patient and his/her physician. In spite of the widespread use of social media in social communication, their role in complementing physician-patient interaction is highly restricted.   These technologies have great potential to overcome cost and access limitations of face-to-face physician-patient interactions. This study attempts to fill the gap in our understanding of the facilitators and inhibitors of the utilization of social media technologies in physician-patient interaction. Drawing on multiple theoretical streams of task-technology fit, risk-benefit analysis, and social-technical gap, we develop a conceptual model of fit of social media utilization by physicians and articulate related propositions.

Keywords (Required)

Social media, Physician-patient interaction, Task-Technology Fit, Expectancy Theory, Social-Technical Gap

Introduction

Physician-patient interactions are critical to the health and wellbeing of patients (Stewart, 1995). To contain the rising cost of health care and to improve care quality, patients must be in a position to manage their own health. This can be made possible by augmenting physician-patient interactions through technology. Social media, the Internet platforms for creating, communicating, and sharing user generated content (Kaplan and Haenlein, 2010), have the potential to empower patients to take control of their health and lead a healthier lifestyle. Social media have been predominantly used for commercial purposes in marketing, business development, and ecommerce; and for social purposes, as in personal networking, to seek pleasure and companionship. In the last few years, social media in general and social networking sites in particular, have made headway into health care as well. While their role in the healthcare sector has been growing, their use in facilitating interactions among physicians and patients has been limited.

Care quality can be improved by making patients, particularly those suffering from chronic illnesses, actively engaged in their health management, which may involve, among others, following up on appointments, ensuring adherence to treatment plans, and frequent consultations.   This requires repeat interactions between the patient and the care provider, which can be made possible through social media.

Consider a traditional scenario of care delivery where patient-physician interactions take place in a face-to-face setting. Such interactions carry a high transaction cost as the patients have to take time off from their work to visit with the doctor. In addition, the doctor can only visit with a limited number of patients during a work day. This situation limits the number of interactions between the patient and the doctor. Social media technology, with its asynchronous as well as synchronous communication capabilities, can be used to augment the traditional care delivery process by allowing providers to more frequently interact with their patients. Such an use of social media has the potential to not only lower the cost of care delivery but also improve the quality of care by engaging the patient in his/her care process and improving compliance.

Social media enable new ways to access and share information (Kaplan & Haenlein, 2010), foster social support (Bacigalupe, 2011), emphasize collaboration and participation of stakeholders, and increase connectivity among individuals. Patients belong to a social group, whereas physicians belong to a professional group. Accordingly, social media usage by these two groups varies widely. Unlike personal interactions over social networking sites where people communicate to fulfill social needs, physician-patient interactions using social media are hindered due to various concerns related to privacy, security, legal, and ethical issues (Ostrom, 2012). Particularly for physicians, consequences for breaching privacy might be devastating (Mearian, 2012). The sensitive nature of physician-patient relationship demands that it be handled professionally and sensibly, particularly with those suffering from chronic diseases. Thus, it is important to understand whether social media in the current form are really fit for enabling physician-patient interactions; what motivates or inhibits physicians from adopting social media in the care delivery process; what media characteristics facilitate such interactions? Our objective in this study is to develop a conceptual model of fit for using social media by physicians in the health care delivery process.

The rest of the paper is structured as follows. First we briefly discuss the extant literature related to physician-patient use of social media. Next, we provide an overview of theoretical foundations of task-technology fit, expectancy theory, and social technical gap that anchor our study. We then present a conceptual model of physician's social media use in physician-patient interaction along with its associated propositions. Finally, we close with conclusions and directions for future research.

Research Methodology

To accomplish our goal of developing a conceptual model of social media use by physicians, we first performed an exhaustive search of literature in the Web of Science, Google Scholar, PubMed, and other databases for articles published in both IS journals and healthcare journals between 2000 and 2013. Specifically, we reviewed articles related to social media use in patient-physician interaction. Further, we identified theoretical frameworks that would anchor the model, and explain the adoption and usage of social media by physicians.

Literature Review

Communication between a physician and his/her patients plays a critical role in the care delivery process and is the cornerstone of care quality and patient satisfaction. The physician's interaction with patients can be verbal or non-verbal. Verbal communication includes asking questions, providing explanations, extending support and empathy, sharing information, and clarifying doubts. Non-verbal cues also play an important role in conveying empathy and other emotions. Historically, these communications take place mostly in a face-to-face mode even though the care setting may vary. For example, physicians interact with patients in primary care settings (Heritage and Maynard, 2006), in the treatment of chronic illnesses (Kaplan et al., 1989; Matthias et al., 2010), in emergency rooms, in surgical rooms, and in follow ups outside the primary care setting. Physician-patient interactions have been studied widely in the literature (See Ong et al., 1995; Beck et al., 2002 for a review). Beck et al., (2002), provide a systematic review of research studies on physicians' verbal and non-verbal communication and its relationship to outcomes. Ong et al., (1995) highlight three key purposes of physician-patient interactions: establishing good interpersonal relationship, exchange of information, and decision making. Studies have demonstrated the positive effect of physician-patient interactions on the clinical outcomes such as patient satisfaction, compliance with the treatment schedule, and other health outcomes (Ong et al., 1995; Kaplan et al., 1989).

Social Media in Physician-Patient Interaction

Recent developments in interactive Internet platforms based on Web2.0 technologies have led to a significant growth in social and professional networks where patients and providers interact. However, their purpose of social media use widely varies. For instance, patients primarily use social media as sources of health information (Fox, 2011). They use the Internet for finding health information (Fox and Rainie, 2000; Gerber et al., 2001; Broom et al., 2005), exchanging advice, seeking social support (Antheunis et al., 2013), and for communicating with other patients coping with similar health issues (Saleh et al., 2012). On the other hand, physicians use social media for communicating with colleagues (Antheunis, et al., 2013), advertising their clinical practices, publicizing their research (Chretien & Kind, 2013), exchanging developments in medical field (Domingo, 2010), and interacting with patients (Guseh et al., 2009).

Digital footprints on the social media are relatively permanent, and digital content, such as wall posts posted to only a few friends on the social networks, is potentially available to a much larger group (Bosslet, 2011). Divergent value systems of medicine and social media make health care professionals regard social media as detrimental to their profession (George & Green, 2012). However, medical professionals of current generation are more comfortable "navigating the professional and ethical dilemmas" presented by social media (George & Green, 2012). In a study by Fisher & Clayton (2012), although their definition of social media did not include Facebook, more than 50% of patients expressed interest in using social media technologies to communicate with their health care providers. However, patients' key concerns were privacy and confidentiality of health data (Fisher & Clayton, 2012). Another study by Jent et al., (2011) found that health care providers did not believe that accessing patients' profiles on social media sites is an "invasion of privacy". Table 1 summarizes the findings from several research studies on the use of social media by physicians. These studies document both favorable (for e.g., Gerber et al., 2001; Ferguson & Frydman, 2004; Domingo, 2010) and unfavorable outcomes (for e.g., Guseh et al., 2009; Bosslet et al., 2011; Hughes et al., 2009) of social media use in physician-patient interaction. One of the limitations of these studies is that they lack theoretical rigor. Nonetheless, they highlight the fact that there are opportunities and limitations of using social media in a health care setting (Gulick, 2011; Graham, 2011; Norton and Strauss, 2013).

Our study attempts to add to the discourse on the role of social media in physician-patient interaction by illuminating the phenomenon using a theoretical lens. Drawing on the theoretical foundations of expectancy theory, task-technology fit, and social-technical gap we develop a conceptual model of fit to investigate physicians' use of social media in physician-patient interactions.

Health care providers' use of social media

Type of use/ Purpose	Media Type	Benefits/Concerns	Source
To navigate patients through health care information	Internet	Helping patients make informed health care choices Physician can become "net-friendly clinician"	Ferguson & Frydman, 2004
To help patients assess health related information	Internet	"Sharing the burden of responsibility for knowledge" More efficient use of clinical time	Gerber et al., 2001
To understand patients' experiences of talking to their providers about internet health information	Web	Improves physician-patient relationship if providers take patient's information seriously,	Bylund et al., 2007
To exchange medical advances, search for medical and prescription drug information	Physician social networks such as www.sermo.com, www.ozmosis.com, www.doctornetworking.com	Physicians can solve problems better, collaborate on difficult cases, predict future events through the network Lack of trust on network information	Domingo, 2010
To interact with patients	Facebook	Usage of social networking sites present ethical and professional challenges to physicians Physicians who use online social sites may become privy to information not intended for them.	Guseh et al., 2009
To stay connected with patients	Social Media (Facebook, You Tube, Twitter, PatientsLikeMe	Improve education, provide a forum to discuss relevant medical topics, and to improve medical care Patients may be vulnerable to false information, advice provided on social media is not based on individual medical history	Saleh et al., 2012
To interact with patients	Online social networks such as Facebook, Twitter, MySpace, Friendster, and LinkedIn.	Physicians think it is not ethical to interact with patients using social media for either social or patient-care purpose. These media may not improve patient–doctor communication, and a majority of physicians are skeptical about maintaining patient confidentiality.	Bosslet et al., 2011
To check medical information, to solve medical problems and for background reading on a subject	Web 2.0 – Social networking sites, wikis, online communities that facilitate user collaboration	Physicians are mainly concerned with the quality of information and information overload	Hughes et al., 2009
To create and maintain blogs by medical professionals	Medical blogs	Blog authors commented about patients Portrayal of patients both positively and negatively Patients identifiable information included in the blogs	Lagu et al. 2008
To interact with young diabetes patients	Web 2.0 portal	Time can be saved by using email communications with patients and online patient information No strong inclination toward using the portal for social networking amongst their patients.	Nordqvist et al. 2009
To distribute health information to the public	Social media tools/applications, e.g. social networking sites, blogs, discussion boards	SNS are not widely used by public health PR practitioners. SNS have limited potential for communicating health information at community level as many people do not have home Internet access	Avery et al., 2010
To access patient information from a social network site for better decision making	Facebook	Small percentage of trainees reported a personal history of conducting an Internet search (18%) or an SMS search (14%) for a patient. No faculty showed a history of conducting searches for patients	Jent et al., 2011

Table 1 - Summary of literature related to physicians' use of social media

Theoretical Foundations

Expectancy Theory

Expectancy theory (Van Eerde & Thierry, 1996) holds that individuals behave in ways to maximize positive outcomes and minimize negative outcomes. Individuals weigh in expected costs and expected benefits of an action before committing to it. Such an analysis has been applied to understand a range of behaviors in various contexts, such as, email processing (Wang et al., 2009), e-commerce (Dinev and Hart, 2006), user behavior on financial websites (Hann et al., 2007), synchronous online social interactions (Jiang et al., 2013), and location based services (Xu et al., 2009).

In physician-patient interactions, the theory helps us understand the factors influencing the physicians' willingness to use the social media to interact with their patients. However, the factors (costs/risks and benefits) depend on the type of information being exchanged such as patients' health status, diagnostic results, and treatment plans. Within the health care setting, privacy and confidentiality of patient information is extremely crucial, and physicians risk damaging their reputations and practices in the event of privacy breach. Physicians' willingness to use social media in patient interactions depends on their perceptions of benefits and risks. Such evaluations – expectation of consequences, perception of benefits and costs, and affect toward using social media – act as precursors to physicians' utilization of social media.

Task-Technology Fit

The technology-to-performance chain model (Goodhue and Thompson, 1995) shown in Figure 1 predicts how technology leads to performance impact at the individual level.
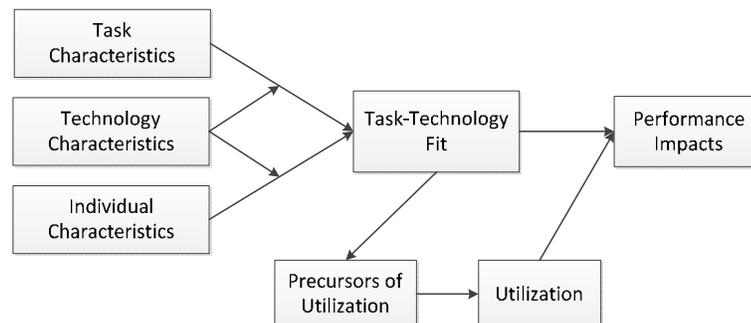

Figure 1: Goodhue and Thompson's (1995) Technology to Performance Chain Model

According to this model, tasks are "actions carried out by individuals in turning inputs to outputs" and technologies are tools that enable the individuals in performing these tasks (Goodhue and Thompson, 1995, p.216). In order to make a positive performance impact, there should be a good match between the technology and the task for which the technology is used. Utilization captures the individual's behavior in using the technology for accomplishing the task. The authors predicted TTF to impact individual performance and also to influence the "precursors of utilization". These precursors of utilization determine the individual's utilization of technology, which in turn influence performance impacts.

Task technology fit model helps us understand how technology, "social media", can facilitate interaction between physicians and patients. For example, the fitness of social media platform for exchanging health information such as diagnostic results can motivate physicians in using social medial for patient interactions.

Social-Technical Gap

Findings from Computer-Supported Cooperative Work (CSCW) indicate that there is a gap between social requirements and technology capabilities (Ackerman, 2000). Ackerman defines social-technical gap as the "divide between what we know we must support socially and what we can support technically".

Figure 2: Social-Technical Gap (Ackerman, 2000)

Similar to task-technology fit, social technical gap is concerned with the fitness or lack thereof between social requirements and technology capabilities (Dwyer, 2007). Within the context of socio-technology fit, social requirements translate to those elements that facilitate interaction and collaboration among individuals. For example, when individuals communicate over social media, apart from having the right technology, there should also be a fit with social elements such as privacy and trust to foster collaboration. Coenen et al., (2009) argue that social networking sites are meant to support social needs of individuals. In their analysis of socio-technical gap in social networking sites, they derive social needs such as reciprocity, trust, meaning negotiation, nuanced social activity, transactive memory, awareness, identity building, and creating and maintaining social relationships for the individuals. However, within the health care setting, these social needs have to be viewed in light of the unique nature of relationship between physicians and their patients.

Concept of Fit

Interpersonal relationships among physicians and patients are highly complex in nature. Most importantly, they involve interactions that are involuntary, sensitive, and emotional between two individuals who are in very different positions (Chaitchik et al., 1992). Unlike the interactions that happen over social media among peers, the interactions between a physician and his/her patients are not "social". The expectations of the individuals interacting in these two settings are very different.

There exists a professional and some level of hierarchical relationship between a physician and his/her patient. Physicians have to maintain their professional status while communicating with patients. They have to be particularly mindful of sensitive aspects such as privacy and confidentiality of patient health information. Legal aspects and elements of trust and ethics play a vital role in such interactions. The meaning of the term "social" takes a completely different interpretation when we analyze the physicians' use of social networking sites for interacting with patients. So, the "social requirements" between physicians and patients must be viewed in light of this unique relationship.

The social media that enables physician-patient interactions must be compatible with the so called "social" needs. Good fit between the "social requirements", tasks, and the social media components is expected to result in better performance outcomes in physician-patient interactions. Adopting Dwyer's (2007) model for analysis of social requirements and social networking sites, we present the fit among these three elements in the figure 3.
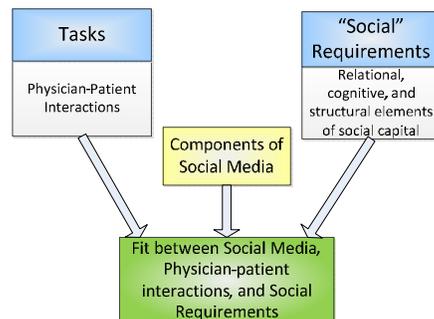

Figure 3: Fit among "Task", "Social" Requirements, and Social Media

Conceptual Model and Propositions

We reevaluate "tasks" and "technologies" in the Goodhue and Thomson (1995) model in the context of physician-patient interaction. For example, the "technology" for physician-patient interactions relates to the media such as emails, blogs, and social networking sites. Similarly, "tasks" within physician-patient relationship include health related communications such as exchanging the results of diagnostic tests, seeking and offering medical advice, follow ups, reminders, and ensuring compliance with treatment plans.

Adapting Goodhue and Thomson's (1995) Technology to Performance Chain Model (TPC), we conceptualize that the fit among the "tasks" (Physician-patient interactions), "social" requirements, and the technology (social media) moderates the relationship between the precursors of utilization and the actual utilization of social media. Accordingly, we propose a conceptual model (Figure 4) of physicians' utilization of social media for patient interactions and the performance outcomes moderated by the fit between "task", "Social requirements", and Social media. Effective utilization of social media in this setting will result in positive performance outcomes. The primary outcome of physician's interactions with patients is improved care delivery as reflected in higher care quality and/or lower cost of care. The other key outcomes include patient satisfaction, compliance with treatment plans, patient recall, trust, and overall quality of life (Beck et al., 2002).
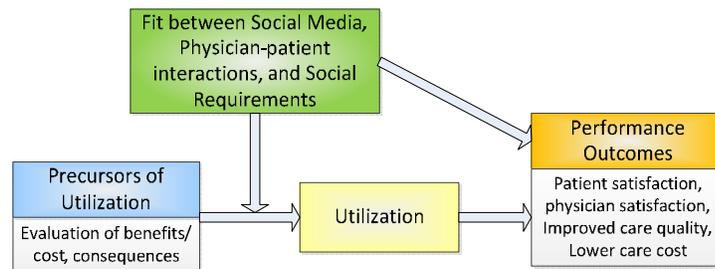

Figure 4: Conceptual model of Fit and performance of Physician-patient's use of Social Media

Utilization

Following the TPC model, utilization in our proposed model refers the use behavior of physicians in employing social media to interact with patients in the context of care delivery.

Utilization in the task-technology-fit model refers to individual's use of the technology for accomplishing tasks. It is well documented in the literature that utilization of information technology leads to performance improvements (see Jamal et al., 2009). Accordingly, we propose:

Proposition 1: Physicians' utilization of social media for interacting with patients will result in positive performance outcomes.

Precursors of utilization

The TPC model includes factors such as expected consequences of using the technology, affect toward use, social norms, habit, and other facilitating conditions as precursors to the utilization of technology. We have seen previously that individuals weigh their inputs (costs/risks) and outputs (benefits) before disclosing or sharing their personal information. This is particularly relevant from the physician's perspective. In the context of physician-patient interactions over social media, factors such as physicians' evaluation of costs, consequences, and affect from using social media become key drivers (precursors) of utilizing social media.

The relationship between the predictors of use and intention to use/actual use of technology has been extensively studied in the literature. Habit and social norms (for e.g., Venkatesh et al., 2012) have been effective in predicting technology use. Similarly, positive and negative affect have been found to influence online information disclosure behavior of individuals (Wakefield, 2013). Accordingly, we propose:

Proposition 2: Precursors of utilization influence the use of social media by physicians.

Fit among "tasks", "Social" requirements, and Social Media

Greater fit between the task, "social" requirements, and social media motivates an individual to use technology. Following TPC, while the precursors influence the individual to utilize technology, we argue that this influence will become stronger in the presence of appropriate fit. Accordingly we propose:

Proposition 3: Fit among the task, "social" requirements, and social media moderates the relationship between the precursors and utilization of social media

Finally, researchers have demonstrated performance impacts when features of technology match the requirements of the task. That is, task-technology fit influences performance impacts. Accordingly,

Proposition 4: Greater fit among the task, "social" requirements, and social media will result in positive performance outcomes

Conclusion and Future Research

While social media technologies and their usage among the general population have been extensively studied, there is a dearth of research addressing physicians' use of social media in a healthcare setting. As a small step towards bridging this knowledge gap, we developed a conceptual model of physician's utilization of social media and articulated its associated propositions. Our model is anchored in the theoretical foundations of task-technology fit, social technical gap, and expectancy theory.

Future research includes model refinement and model validation. We intend to refine our conceptual model and validate it using a survey of physicians. Another way to enhance our model is to integrate the patient's perspective of social media use in a healthcare setting. Such an extension will provide a comprehensive picture of drivers of social media utilization, fit between media characteristics and tasks, and the resulting impact on outcomes.

As our society rapidly moves toward using social media in the health care setting, the necessary mechanisms have to be in place to facilitate their use among physicians and patients. Appropriate use of social media technologies in fostering physician-patient interaction has great potential to empower patients and improve quality of care while lowering costs.

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