



Exploring the influence of the online physician service delivery process on patient satisfaction



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ABSTRACT

The vibrant and rapid advancement of Web 2.0 technologies has made it possible for online health communities to provide convenient platforms that enable patients to consult physicians online. Healthcare services are related to issues of mortality and quality of life for patients, hence studies on online healthcare services and patient satisfaction continue to be fundamentally important as healthcare practices evolve and change. Although many studies have investigated the benefits of the online health community and motivation of participants, there has been scant research on the influence of the online physician service quality with regard to patient satisfaction. This paper is based on service quality model and the customer characteristics theory, as well as the analysis of data from the online health community. It verifies that online physician service delivery processes significantly affect patient satisfaction, specifically with respect to response speed and interaction frequency. Moreover, this paper examines how a patient's disease risk moderates the relationship between the service delivery process and satisfaction. The empirical results of this paper support all our hypotheses. This paper contributes to online service quality and e-health literature by investigating the effects of the physician service delivery process on patient satisfaction.

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1. Introduction

The Internet is transforming traditional ways of acquiring knowledge on diseases and treatments [46], particularly as people access online health communities. Online health communities have the capacity to create favorable environments in which patients can obtain information [23] and emotional support [40] that is beneficial to the improvement of their health conditions. With the development and application of Web 2.0 technology, online health communities streamline the process of finding health information and knowledge of diseases for patients [6]. Previously, communication between physicians and patients transpired mainly in physical hospital buildings, whereas patients are now able to consult physicians on health issues and the treatment of their illnesses in the online community, anytime and anywhere. The online health community provides unique levels of convenience for patients as they access information on health problems and related treatments swiftly and incurring minimal cost.

This novel platform, where physicians and patients communicate closely with each other, has two primary features that differ significantly from the traditional method of interaction between physicians and patients in actual hospitals [6]. Firstly, by reading the online text

descriptions of a patient, a physician can potentially diagnose a patient's illness without direct observation of the patient's condition. In an online health community, a patient can choose a physician and create a post describing his/her condition, and pose questions. Based on the information provided by the patient, the physician can provide a diagnosis and subsequent treatment without direct observation of the patient's condition. Secondly, the interaction between physicians and patients on the Internet lacks face-to-face communication. The development of the online health community observed for this paper has dramatically changed the traditional process of physician service delivery. Therefore, how physicians use this novel platform to deliver high-quality service to satisfy patients has become a significantly important issue.

With increasing consumer demand for high-quality service, service quality and consumer satisfaction have become key issues in management research [37,43,44]. In particular, as health services are related to mortality and fundamental quality of life [4], service quality and interaction between physicians and patients are of greater importance to patients than other kinds of service. However, according to a survey conducted by the China Youth Daily in 2013, 66.8% of participants stated that they neither trusted nor were satisfied with physicians' professional services [26]. Thus, it follows that improvement of the physicians' service quality will enhance relationships between physicians and patients.

The uncertainty of outcomes of health services translates to difficulties and uncertainties in their measurement [4]. Moreover, because online health services are intangible, heterogeneous, and inseparable,

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it is impossible for researchers to focus solely on the outcomes of those services: it is necessary to study the process of service delivery itself [31].

Although numerous studies have investigated the benefits of the online health community for patients, as well as the e-service quality and interaction between consumers and service providers on the Internet [5,6,40], there is a dearth of research examining the influence of the online physician service delivery process on patient satisfaction. This paper focuses on exploring the effects of the physician service delivery process on patient satisfaction in order to fill this research gap.

In comparison to research on offline service quality, the study of online service quality is still preliminary [1]. Many new attributes have arisen in online services that markedly differ from offline services [11,20,24]. Based on the service quality theory [28,31] and the customer characteristics theory [3,13], this paper explores the effects of physicians' online service delivery in this online health community from two perspectives: responsiveness and communication. In addition, based on the customer characteristics theory, we also investigate the moderating effects of disease risk on the relationship between physicians' service delivery and patients' satisfaction.

The objective of this research is to investigate the effects of the service delivery process on patient satisfaction, using data from an online health community. The main research questions are:

- (1) Could response speed and interaction frequency affect patient satisfaction?
- (2) What are the moderating effects of a patient's disease risk on the relationship between the service delivery process and satisfaction?

This research collected 2112 physicians' data from the "Good Physician Online" website, one of the biggest online health communities in China. We established an empirical model to test our hypotheses. The empirical results show that both online response speed and interaction frequency positively affect patients' satisfaction. Furthermore, importantly, our results prove the moderating effects of disease risk on the relationship between service delivery process and patients' satisfaction. The effects of physicians' online service delivery processes are more influential to patients with high-risk disease than to patients with low-risk disease.

The contributions of this paper are threefold, as follows. Firstly, this paper contributes to online service research by expanding the service quality theory to encompass e-health research. Secondly, our research further contributes to e-health literature by exploring the effects of physicians' service delivery process on patient satisfaction. Our study examines physicians' process of service from two perspectives: response speed and interaction frequency. Our study provides a more customized approach to understanding the delivery process of service quality and interaction between physicians and patients. Lastly, this paper examines the moderating effect of disease risk on the relationship between online physician service delivery processes and patient satisfaction.

The rest of this paper is organized as follows. In Section 2, we review the literature on online health communities, service quality and customer characteristics. Our research model and hypotheses are presented in Section 3. We then describe data sources and the regression in Section 4. Section 5 includes the discussion of our results, the implications of our findings, the limitations of our research, and the implications for further research. Section 6 comprises our concluding comments.

2. Literature review

In this section, we examine literature on online health community, service quality and consumer's characteristics for a better understanding of the relationship between online physician service process attributes and patient satisfaction.

2.1. Online health community

With the growth of Web 2.0 technologies, many hospitals, healthcare organizations and physicians are involving themselves in online health community utilization. This utilization can promote the interaction between physicians and patients. Moreover, these communities create a convenient platform for patients to obtain health information [40]. Previous online interactions between patients and physicians were mainly through emails and online chat rooms [6]. However, now, patients can participate in an online community where they share information with physicians and other patients [6], and physicians can deliver health services online. Thus, it offers convenience for both physicians and patients.

Extensive studies have investigated the advantages and mechanisms of online health communities. Ba and Wang have studied the effects of motivation mechanisms on participants in an online fitness community [6]. They found that networking activities and support motivated participants to do more exercise. Yan and Tan found that information and emotional support from an online health community could affect the patients' health conditions [40]. Xiao explored the factors that could impact on patients' online health information search [39]. Bansal investigated the factors that could affect patients to disclose health information online [7]. Although many studies have investigated the online health communities, literature that has focused on physicians' service quality and patient satisfaction is sparse. To fill this research gap, we aim to explore the effects of physicians' online service delivery process on patient satisfaction in this study.

2.2. Service quality and consumer satisfaction

Service quality and consumer satisfaction are indispensable for service providers' capacity to obtain competitive strengths [9,33,41]. This is especially important in the healthcare industry, because health services relate to issues of high personal importance. Hence, the relationship between service and patient satisfaction is an issue that is of growing importance.

Previous studies on service quality provide findings relating to aspects of the service delivery process that may affect consumer satisfaction. Parasuraman [31] showed that, because services are intangible, heterogeneous, and inseparable, the intentions of the service providers may be significantly different from what the consumer receives. Thus, the process of service delivery can affect consumers' satisfaction and evaluation regarding service quality, and the evaluation of service quality should focus on the service delivery process. Lehtinen [25] presented the fundamental idea that service quality comes from the interaction between the service provider and the consumer. Their research focused on three dimensions of service, of which interaction quality was considered the most important dimension. Gronroos [19] concluded that there are technical and functional qualities in service quality. The former type of service quality is concerned with what the consumer receives from the service provider, and the latter involves the manner of service delivery.

Service quality is considered as the result of a consumer's expectations compared to the actual service performance [28,31]. The expectation–confirmation theory is instrumental in explaining consumers' perceptions of service quality [28,29,45]. According to this theory, researchers have developed the service quality model and a multi-item scale called SERVQUAL to measure the service delivery process [41,42]. This theory is widely used by researchers to investigate service quality [15,20,37].

Research on online services has also received considerable attention and effort. However, since face-to-face services differ from online services in terms of fundamental quality dimensions, the established methods of measuring the offline service delivery process is not suitable for measuring the online service delivery process [16]. Researchers have developed new methods to evaluate the online service delivery

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