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What’s wrong with me? Concerns about Online Medical Self-Diagnosis

Nichola Robertson, Deakin University, nichola.robertson@deakin.edu.au
Paul Harrison, Deakin University, paul.harrison@deakin.edu.au

Abstract

Self-service technologies (SSTs) are becoming increasingly commonplace in healthcare. However, research on the customer (patient) experience in this context is rare. This paper focuses on online medical self-diagnosis, a type of e-health service. This SST can provide customers with benefits such as greater convenience and control, yet we argue that this form of do-it-yourself doctoring also raises concerns for customers. This paper contributes to the service domain by presenting research propositions on the potential negative implications for customers, and their antecedents, of online medical self-diagnosis. We propose that this form of self-diagnosis is related to harms, such as customer anxiety, customer willingness to bypass healthcare professionals, and self-medication. Future research opportunities are discussed, along with implications for policy and practice.

Keywords: Self-service technology, e-health, online self-diagnosis and customer harms.
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Introduction

Technology is profoundly changing the nature of service (Meuter et al., 2005). Self-service technologies (SSTs), or machine-assisted and electronic services, have become prevalent across a range of industries, including banking, retailing (Anitsal and Paige, 2006), airline and hospitality service industries (Beatson et al., 2006). SSTs such as automated hotel check-in and check-out facilities and automated telephone banking enable customers to generate benefits for themselves, without the presence of the organisation’s personnel (Meuter et al., 2000). Such SSTs have predominantly offered customers simple, routine service, such as booking airline tickets or checking bank account balances. Previous research on SSTs has generally been conducted in the context of these non-complex service settings (Eriksson and Nilsson, 2007). In many cases, the provision of these SSTs provides efficiencies for both customers and organisations, and the outcomes are mostly benign. However, increasingly SSTs are being used in the context of non-routine, complex service, such as healthcare (Lanseng and Andreassen, 2007), which has previously remained relatively resistant to SST delivery (Fitzsimmons, 2003) and, therefore, SST research in this context has been limited.

SSTs in healthcare include the provision of online health information resources, interactive health service (e.g., chat with a doctor online), self-help communities (Ferguson, 1997), electronic health records and e-booking of medical appointments (Finch et al., 2008). As SST-based healthcare is broadly conceptualised (Hamid and Sarmad, 2008), this paper focuses on one type of service, namely customer online medical self-diagnosis. This refers to customers providing information about their medical symptoms online in exchange for a diagnosis. The service provided by www.myelectronicmd.com is an example of an online medical self-diagnosis service.

Customer (patient) benefits of healthcare provision via SSTs, such as online medical self-diagnosis, have been touted. These include solving problems of access to healthcare (Lanseng and Andreassen, 2007), providing cost and time savings (Finch et al., 2008; Nijland et al., 2008), giving customers greater control (Finch et al., 2008; Nijland et al., 2008), providing customer education (Lowrey and Anderson, 2006; Ryan and Wilson, 2008), giving greater customer privacy (Ryan et al., 2006) and elevating the status of customers relative to that of healthcare professionals (Finch et al., 2008). However, the use of SSTs in delivering healthcare, specifically online medical self-diagnosis as is the focus of this paper, can also result in customer harms (Ryan and Wilson 2008). This has previously been overlooked in the service marketing literature.

This paper presents research propositions relating to the potential negative outcomes, along with their underlying causes, of customers’ use of online medical self-diagnosis. These propositions provide a framework for future research, as well as highlighting the possible repercussions for marketing policy and practice in the provision of online self-diagnosis service to customers. The paper contributes to the service marketing domain on several key fronts. Firstly, a customer focus is missing in research on SST-based healthcare service (Finch et al., 2008; Hamid and Sarmad, 2008), which this paper addresses. Secondly, this paper highlights the potential negative implications of SST-based medical diagnosis for customers, beyond the extent benefits of the service that have been the focus of previous discourse on the topic. Thirdly, in developing our research propositions, we take a multidisciplinary approach,
SSTs in Medical Diagnosis

Although SSTs have been successfully implemented in a range of private sector industries, such as retailing and banking, the same might not be the case for healthcare (Lanseng and Andreassen, 2007). Customers using technology to self-diagnose a medical condition is vastly different from customers using an SST to check-out groceries at a supermarket. Lanseng and Andreassen (2007) noted several differences between healthcare service and ordinary service, e.g., fast moving consumer service. Firstly, medical service is typically sought by customers under considerable stress. It is a service associated with high perceived risk (Cioffi, 1991). Secondly, healthcare is targeted at customers’ minds or bodies, with customers traditionally being co-producers of medical service with a healthcare provider (Lowrey and Anderson, 2006). Thirdly, healthcare service is high in credence properties. It is a complex and uncertain service (Hamid and Sarmad, 2008), where the healthcare provider has much greater knowledge than customers. Therefore, healthcare service is difficult for customers to evaluate, thereby making customer trust in the provider vital. In considering these distinctive characteristics of healthcare service, we highlight several potential negative implications of SST-based medical self-diagnosis and their causes. This forms the basis for our research propositions.

Customer as Doctor

Value is created through SSTs by enabling customers to do things for themselves that they could not do before. Although the organisation supplies the technology to enable or facilitate service production (Namasivayam, 2003), the service is created through customers’ performance. This is achieved by customers playing active and leading roles in service production (Xue et al., 2005). Therefore, it has been suggested that customers can be considered effectively as “partial employees” of the organisation (Bettencourt, 1997), otherwise termed “quasi-employees” (Lengnick-Hall and Lengnick-Hall, 1999) or “amateur employees” (Xue et al., 2005). “Partial employees” are defined as customers who temporarily participate in the service production process, contributing resources to the organisation in the form of information and/or effort (Manolis et al., 2001). This equates to customers being required to function as their own doctors in the context of online medical self-diagnosis (Lanseng and Andreassen, 2007). This can be empowering for customers, however, we argue that do-it-yourself doctoring is concerning for several reasons.

Firstly, given the nature of healthcare services, customers have insufficient expertise to act as their own doctors in the context of self-diagnosis. Online self-diagnosis is undertaken by novice customers. This is distinct from the more sophisticated customers who are informed of their condition via prior diagnosis by a doctor and are self-managing it by using a member-based e-health service (Nijland et al., 2008). Customers who self-diagnose are laypeople; they are ill-equipped to decipher or recognise what is “evidence based” or from a credible source (Alshammary et al., 2007; Ayonrinde and Michaelson, 1998). Poor health literacy is likely to negatively influence customers’ ability to effectively self-diagnose (Mead et al., 2003), as will their inability to formulate their complaints as health problems or readily express their symptoms online (Nijland et al., 2008). As such, the following proposition is advanced:
**P1:** Customers’ health literacy is related to the outcome of self-diagnosis.

Secondly, customers in the e-health context are vulnerable. People who visit self-diagnosis websites are likely to be excessively concerned with their health. The term “cyberchondriac” has been coined to describe people who use the Internet to find out more about their health or illnesses (Ryan and Wilson, 2008). These customers are likely to self-diagnose symptoms prematurely that would previously have resolved themselves before a visit to the doctor (Ryan and Wilson, 2008), thereby potentially putting undue stain on the medical profession. In the light of this, the following proposition is suggested:

**P2:** Customers’ vulnerability is related to the outcome of self-diagnosis.

Self-diagnosis can lead to customer anxiety (Ryan and Wilson, 2008; Cioffi, 1991) or even fear (Nijland et al., 2008) and distress (Ryan et al., 2006) associated with a false or true diagnosis of a serious and/or life-threatening condition. Fear might also arise as self-diagnosis services often present a long list of serious diseases rather than common conditions, and might prematurely suggest the need to visit a doctor (Nijland et al., 2008). As such, the following propositions are advanced:

**P3:** Customers’ use of self-diagnosis is related to customer anxiety.

**P4:** Customers’ use of self-diagnosis is related to customer fear.

Conversely, self-diagnosis could provide false reassurance, leading to a delay in seeking professional medical assistance and diagnosis (Ryan et al., 2006). Furthermore, patients might dismiss what the medical profession has to offer (Finch et al., 2008) or not take their advice seriously (Nijland et al., 2008) because they no longer perceive medical practitioners as being exclusive experts (Lowrey and Anderson, 2006). It is also likely that some patients will reject professional diagnoses after they have undertaken their own diagnosis, or withhold or modify information that they provide to their doctor. In the psychological discourse, the concept of consistency is a critical component of ego-management (Greenwald, 1980; Heider, 1958). In this context, the preservation of the ego might result in patients, having come to the conclusion that they have a particular illness, deciding that the professional’s diagnosis is imprecise, or simply wrong. This is compounded by the fact that customers who have self-diagnosed could opt to self-medicate by buying over-the-counter remedies or prescription drugs from Internet pharmacies that are sometimes attached to self-diagnosis sites. Based on this discussion, the following propositions are suggested:

**P5:** Customers’ use of self-diagnosis is related to their likelihood of consulting a healthcare professional.

**P6:** Customers’ use of self-diagnosis is related to the quality of their co-production (e.g., providing adequate information, acting on advice offered, etc.) in the event that they consult a healthcare professional.

**P7:** Customers’ use of self-diagnosis is related to their likelihood of self-medicating.

Thirdly, the medical diagnostic process is a fluid one, in which the physician uses information provided by the patient, and by others, such as spouses, friends, and even colleagues. In addition to the patient providing the doctor with details of their symptoms, the patient will normally undergo a physical examination by the doctor and may also need to undertake medical tests. In traditional medicine, the doctor usually considers the patient in their “well” state, in addition to their “ill” state. The doctor will consider factors such as the environment...
in which the patient lives, e.g., social, economic, relational, even religious, as well as previous mental and physical health conditions. Indeed, in many cases, the patient does not come to the doctor in isolation – patients tend to stay with a doctor for a long period of time, and as such, the doctor will build up both formal and iterative knowledge about the patient and a relationship with them. Therefore, even though online self-diagnosis follows an algorithm that doctors use, a comprehensive assessment of the patient is not made from a caring, therapeutic, humanistic perspective because the process also needs elements such as touch (Finch et al., 2008). Furthermore, SSTs lack emotional intelligence. Self-diagnosis is delivered without the presence of a health professional to provide a context, to reflect on the likelihood of different diagnoses, or to put in place any steps that are necessary to make a definitive diagnosis. This leads to the following proposition:

\[ P_5: \text{The lack of interpersonal interaction and relationship with a healthcare professional is related to the outcome of self-diagnosis.} \]

**Variable Quality of Self-Diagnosis Service**

The quality, relevance and reliability of health information online is variable (Ayorinde and Michaelson, 1998; Ryan and Wilson, 2008). An increase in self-diagnosis sites suggests that the chances of customers being provided with an accurate diagnosis and information decrease (Lowrey and Anderson, 2006). Anyone can set up a Website, and online word of mouth related to a specific condition may be presented or treated by the reader as fact. It is possible that even information from reputable organisations might be less well edited and checked than when presented in print publications about symptoms (Ryan and Wilson, 2008). Although many developers of health-related Websites may intend to provide clear, accurate information for the benefit of customers, others may have different agendas, such as selling products (Ryan and Wilson, 2008). These services are often supported in some way by commercial health organisations, such as pharmaceutical companies or private hospitals (in the USA) (Ryan and Wilson, 2008), which may represent initial concerns around probity and intent. Some self-diagnosis Websites ultimately recommend purchasing drugs or alternative therapies that could lead to vulnerable customers being financially exploited (Ryan and Wilson, 2008). Based on this discussion, the following proposition is advanced:

\[ P_9: \text{The quality of the service and its provider is related to the outcome of self-diagnosis.} \]

**Self-Diagnosis Technology**

When customers choose to use technology by themselves, factors associated with the technology become important (Dabholkar, 1994). Customers need to be able to manage the technology and feel comfortable with it to make effective use of it (Walker et al., 2002). To encourage customer adoption of online self-diagnosis, Lanseng and Andreassen (2007) found that self-diagnosis sites had to be easy to use. Ease of use of the technology has also been shown to be a decisive factor in influencing customers’ satisfaction with SSTs. Ease of use of online self-diagnosis is likely to be especially important given that its users are customers in an unwell or stressed state. If SSTs are hard to use and inadequate instructions are provided, customer failure and dissatisfaction is likely to result (Meuter et al., 2003). In observing customers using e-health tools, Nijland et al. (2008) found that they had difficulty using the technology because of the navigation structure of Websites, including poor search options that did not allow customers to find the right information quickly and also provided irrelevant and useless results. Furthermore, patients did not make use of all of the features of the self-
diagnosis sites because of their poor structure. These problems are likely to be caused by a lack of involvement of patients in the design, pre-testing and evaluation of e-health services (Finch et al., 2008; Lanseng and Andreassen, 2007), including self-diagnosis sites. In the light of this, the following proposition is suggested:

**P10:** The quality of the technology is related to the outcome of self-diagnosis.

### Implications and Future Research

This paper aimed to develop research propositions in respect to the antecedents and outcomes of customers’ experience of medial self-diagnosis, viewing it through a negative lens. The propositions raised in this paper have implications for policy and practice in the provision of self-diagnosis services. Finch et al. (2008) expressed the need to examine more closely the relationship between policy ideas and specific types of e-health technologies and their use. At present, in Australia, the UK and the USA, there are no government policies that seek to manage medical websites, including self-diagnosis sites. Legislating, and even controlling, aspects of the Internet has been notoriously difficult, due to the fluid nature of Websites, blogs and online information. However, we argue that some form of regulation is appropriate given the potential dangers of this service. Doctors strongly advocate control over health sites by professional medical entities. Furthermore, they oppose customers self-diagnosing without consulting a doctor (Lowrey and Anderson, 2006). Self-diagnosis should not be seen as a replacement of face-to-face medicine. This paper highlights that there is potential for confusion amongst customers as to the intent of self-diagnosis sites. Customers may not be able to determine whether a site is a commercial site, with an underlying goal of introducing customers to goods and services in the medical area. In the context of a government site, there may be an underlying intention of diverting potential patients away from the medical system, as was the case with the recent swine flu outbreak, where patients were advised to go to the Federal Government website before contacting their doctor. There needs to be some kind of quality accreditation of sites so that customers can make well-informed decisions about which self-diagnosis sites to use. There is also a role for educational campaigns to improve customers’ health literacy (Mead et al., 2003) and ability to effectively use self-diagnosis sites. Customers can be socialised in using online self-diagnosis via formal training and the provision of literature (Anitsal and Paige, 2006; Chebat and Kollias, 2000). Such support is important in the SST context, where it is expected that customers’ satisfaction is, at least in part, the result of their own performance (Mills and Morris, 1986).

Several avenues for future research are open to pursue that are stimulated by the propositions presented in this paper. Given the newness of this research, we suggest that qualitative methods, such as in-depth interviews with customers who have self-diagnosed online, would be useful for gaining a deeper understanding of this phenomenon. This could assist in helping to refine the propositions presented in this paper, prior to translating them into hypotheses. Following this, quantitative research to test a framework similar to that proposed in this paper is needed. Given that certain customer segments, such as “cyberchondriacs”, might be a more vulnerable population in respect to self-diagnosis, it would be particularly interesting to focus on this group of customers. It would also be valuable to understand the motives of those who self-diagnose and what they expect from the service. This will assist in providing customer-centred online medical self-diagnosis services. However, exploring the views of healthcare professionals, i.e., conducting a dyadic study, will also be important in “catching” the shape of this overlooked research and public policy issue.
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