

Internet as Preferred Health Information Source: An Information Foraging Perspective

Emergent Research Forum paper

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Abstract

This study provides a model for assessing the likelihood of preferring internet as a health information source from a theoretical lens of information foraging using the HINTS 2014 data. Essentially, this study tries to answer the key question – When do patients prefer to use internet for health information over other sources such as government agencies, physicians etc.? This study focuses on preference to internet for health information by patients suffering from cancer. This paper contributes to the growing literature on health information seeking by providing a theoretical model to identify the organic antecedents of preference to internet sources for health information by users. The findings of the study provide a deeper understanding of the relationships between information seeking preferences of cancer patients and trust in various sources of health information as well as perceived value and search costs associated with the information foraging behavior.

Keywords

Health Information Seeking, HINTS, Information Foraging, Cancer.

Introduction

There has been a steady increase in the number of people using internet as a source to seek health information. According to the Pew internet research, more than 70% of Americans internet users searched for online health information and 18% of them report that such online sources influence their health behavior (Fox and Duggan 2013). The literature on health information systems has seen an increase in number of studies investigating online health information seeking behavior. Many of these studies focus on a number of aspect such as availability of internet, ease of access to internet, trust in internet as a source of health information etc. However there are very few studies which provide the perspective of the role of a user's preference of internet as information source in comparison with other sources. This study provides a model for assessing the likelihood of preferring internet as a health information source from a theoretical lens of information foraging. Essentially, this study tries answer the key question – When do patients prefer to use internet for health information over other sources such as government agencies, physicians etc.? This study focuses on preference to internet for health information by patients suffering from cancer. Constricting the scope of our study to cancer enables us to provide a deeper understanding of information source preference in case of chronic and potentially terminal patients. The information on such diseases is usually obtained from a long tail of resources which makes them different from any other health information seeking behavior. This study contributes to the growing literature on health information seeking by providing a theoretical model to identify the organic antecedents of preference to internet sources for health information by users.

Related Work / Theoretical Foundation

This study seeks to explain health information seeking behavior on the internet using Information Foraging Theory (IFT). IFT explains the searching behavior of individuals when they hunt for information (Pirolli and Card 1999). The structure of the interface between the information seeker and information repositories determines the time costs, resource costs, and opportunity costs of different information foraging and sense-making strategies. Based on the trade-off between the value of information gained and the cost of foraging using a particular strategy drives the individuals towards adopting a particular foraging behavior. Such behavioral patterns are derived from Optimal Foraging Theory (OFT)(Stephens and Krebs 1986) and the Adaptive Control of Thought-Rational Theory (ACT-R)(Anderson et al. 2004). The theory is based on two important concepts namely “information patch” and “information scent”. An information patch is an area of the search environment with similar information (McCart et al. 2013; Pirolli 2007). It may be defined based on the task in hand. Information scent is the driving force behind why a person makes a navigational selection amongst a group of competing/alternative options (McCart et al. 2013). In the context of online health information seeking, information provided by physicians and government health agencies may be considered as competing group of information sources or information patches. The health information seeker essentially uses certain cues as information scents analogous to any biological process of information sense-making (Nevitt 2000). Likewise, the effort required to seek relevant information can be conceived as information cost and quality of information received can be conceived as value gained through the particular patch. The information forager’s trust in a particular source (patch) is also a reflection of the various cues he/she might have observed.

Conceptual Model Development

The premise behind this study is to explain how the likelihood to perform online cancer information searches is affected by trust factors. This likelihood depends on trust in cancer information sources (both online and health organizations and professionals), the perception of the quality of the information received from health professionals and the perceived effort of said online searches. A theoretical model has been developed to assess how the trust an internet user has on information available online, and the information provided by physicians, and government health organizations affect internet users’ likelihood to search for cancer related information online. The proposed model is informed by Information Foraging Theory which explains how users search for information, based on their perception of information relevance.

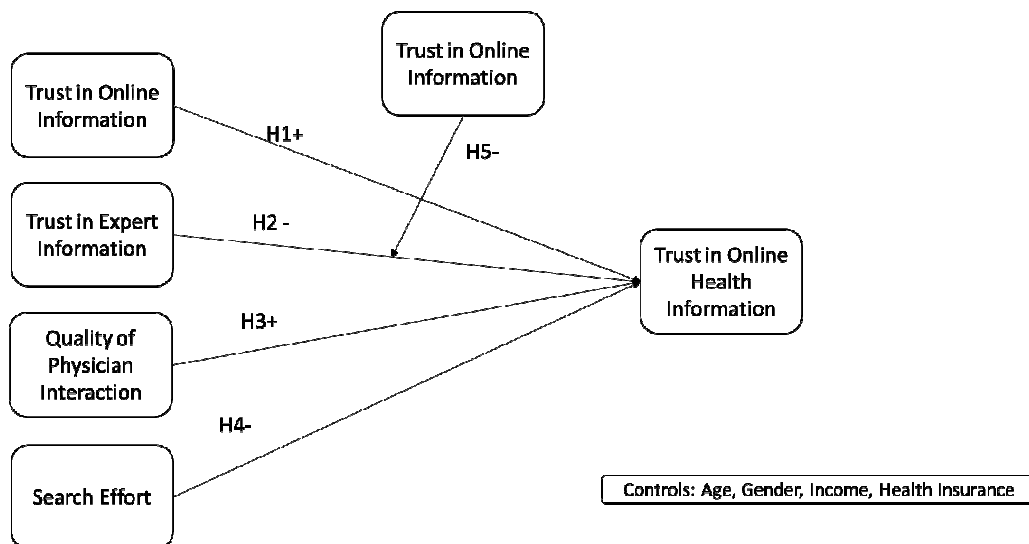


Figure 1 – Proposed Research Model

Trust in information source

Information cues accrued over time with respect to information source translates to trust in the source. In this section, we discuss how trust in online information as a source and the competing group of information impact the likelihood of source preference.

Trust in Online Information

Trust in Online Information reflects the level of trust that internet users have in information about cancer they find in online sources. Internet users who search for online information for longer periods of time (Briggs et al. 2004) are likely to be influenced by reliability issues (Preece 2000) rather than by design features. Assuming that users who search for cancer information will do so for longer periods of time because of the complexity and seriousness of the topic (Sillence et al. 2004), then they will trust the content they find online. This trust in online content will translate into the likelihood to engage in further online searches about cancer information.

H₁: The Trust in Online Cancer Information has a positive impact on the likelihood to engage in Online Information Searches about cancer

Trust in Expert Information

Trust in Expert Information, reflects the level of trust that internet users have in information about cancer they receive from doctors, and government health organizations. Studies have shown that physicians are the preferred source of information about cancer (Hesse et al. 2005), and regularly named as a trustworthy source of information (Rains 2007). If users turn to online sources when they are not satisfied with their physicians information (Chen and Siu 2001), then the reverse can also be argued.

H₂: Trust in Expert obtained information has a negative impact on the likelihood to engage in Online Information Searches about cancer.

Quality of Interaction

Quality of Interaction reflects the amount and ease of communications with health care professionals (doctors, nurses, etc.). Studies have shown that quality of communication sessions between patients and physicians depends more on health insurance status and access to healthcare (having a primary care physician), than on the traditional demographic variables (Finney Rutten et al. 2006). When physicians influence patients through communication they can alter the patients' health behaviors (Stewart et al. 1999), causing them to take ownership of their health. This will lead to information seeking behaviors influenced by perceived value gained through this particular patch of information source.

H₃: The perceived quality of Interaction on health information has a positive impact on the likelihood to engage in Online Information Searches about cancer.

Search Effort

The perceived cost of an information foraging activity may have a negative impact on choosing the particular source Search effort reflects the perceived effort the user undergoes while searching for online cancer information. It is important to note that search effort is different from ease of use since the latter is a construct that pertains to the system being used. This construct reflects the self-reported effort and frustration in cancer information searches, as well as the difficulty in understanding cancer related information. Users reported that when the perceived effort to obtain health information is excessive, they are more likely to lose motivation in their quest for information (Arora et al. 2008), which will permeate to online searches.

H₃: The perceived effort in cancer information searches has a negative impact on the likelihood to engage in Online Information Searches about cancer.

Health Ownership

Health ownership is the ability that the users have to take care of their own health. The more active users are in their own health, the more motivated they will be to seek for health related information (Akerkar and Bichile 2004). Users will call upon online information searches even when they trust their physicians as a source of information (Hart et al. 2004), so they will complement their physician provided information with information obtained online . The relationship between trust in physician sourced information and motivation to engage in online information searches will be degraded.

H₅: Health Ownership will diminish the effects of trust in expert information sources.

Preliminary Results and Discussion

Dependent Variable: Likelihood to Search for Online info.				
	Estimate	Jackknife SE	Pr	Odds Ratio
Trust in Online Info	0.37	0.21	0.08	1.45
Trust Health Experts	-0.44	0.20	0.03	0.65
Quality of Info. Received	0.32	0.15	0.03	1.38
Perceived Effort in Info. Search	-0.08	0.18	0.66	0.93
Intercept	-1.47	1.33	0.27	

Table 1 - Results

We tested the research model using a logistic regression approach with jackknife replicate weights to calculate standard errors (Lumley 2004). The parameter estimate and odds ratio results indicate that trust in online information positively impact the likelihood to search. This finding supports hypothesis 1. On the other hand, trust in expert information negatively impact the likelihood to search for online information which provides support for hypothesis 2. Thus, trust in the system has a positive impact on the use of the system while trust in t experts reduces the need to look for information elsewhere. To test the moderation effect of health ownership on trust in expert information we compute the interaction effect and standard error using method introduced by (Norton et al. 2004). The true interaction effect in a basic logistic regression may be biased (Norton et al. 2004). Norton (2004) indicate that about 20% of economic papers interpret interaction effect in a logistic regression using the wrong method. We found support for hypothesis 5 indicating a significant moderation effect. We found that better quality of information positively impact the likelihood to search online. This finding supports hypothesis 3 indicating that perhaps when patients get quality information from their medical professionals, then they have more motivation to go online and read about these topics. Also, patients are empowered by knowing what information to look for. We did not find support for hypothesis 4. This finding is perhaps important as it could mean that cancer is a very major problem, thus effort does not influence people decisions to seek information in this life changing disease.

Discussion

Trust in online source as an information patch has significant and positive impact on the likelihood of selecting it as a preferred source. Similarly, trust in alternative sources (patches) has a negative impact on the selecting internet as preferred source. These results are in line with hypotheses H1 and H2. Similarly, the quality of health information online – which indicates the perceived value of the particular source has a significant and positive impact (H3). However, the perceived effort in information source – essentially the information foraging cost does not seem to have an impact on preference to internet source. A possible explanation to this counter-intuitive result may arise from the fact that cancer- related information is generally available in a long tail of information sources owing to the nature of the

information. Answers to the questions related to cancer may not be straightforward and users may have greater tolerance towards making extended efforts to seek information.

Conclusion and Future Work

This study throws some light on how cancer information seekers weigh-in the trade-off between the value provided by an information source and the effort (search cost) with respect to having preference to internet as a health information source. Trust may play an important role in this context. Studies have shown that cancer patients have different attitude towards information seeking efforts, as part of their coping mechanisms, when compared to non-cancer patients. For this preliminary study we didn't distinguish patients from non-patients or the stages of illness, however this is an example of a future development. Further, a deeper investigation of the antecedents of trust in internet as well as other sources may provide more insight into how health information seekers in the internet process cues to arrive at judgements on the value-effort trade-off.

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