Value-driven consumer e-health information search behavior

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Abstract

Purpose – The search for online health-related information has become increasingly popular. This study examines online health information quality (relevance and clarity) and the perceived value of online health information search (social, utilitarian and epistemic) and how they relate to consumers’ satisfaction with their online health information search experience. The resulting intention to repeat a health information search over the internet is also included in a conceptual model to illustrate what drives the process.

Design/methodology/approach – Structural equation modeling was utilized to simultaneously assess the proposed relationships among the constructs. Data from 263 online respondents were used to test the measurement and structural model.

Findings – Results show that information relevance is strongly related to the utilitarian value consumers receive from information seeking, whereas information clarity is strongly related to epistemic value. Moreover, it is the utilitarian value of the information search that drives satisfaction with and intention to repeat online health information search.

Research limitations/implications – Suggestions for website designers in the healthcare industry and health care professionals are addressed. Website designers should stress practical and functional features of websites, while health care professionals should direct patients toward websites that will provide users with the most utilitarian value. Although the study is limited by its online data collection, results provide an initial attempt to develop a conceptual model that explains what may be happening within the world of online health information search behavior. Future research should address the exclusion of potentially important variables including internet skill level and specific types of searches.

Originality/value – This study is unique in that it provides web site designers and health care professionals with clear insights into specific dimensions of online health information and value.

Keywords Information searches, Health and medicine, Internet, Behaviour

Paper type Research paper

Introduction

An important issue for society in general is how healthcare is changing and what impact the changes will have for the future. Consumers seeking information about health-related information have more options today than they had in the past. Available technology provides consumers with more outlets to seek information and perhaps even a sense of empowerment. The internet is a source of “information at our fingertips” with health information being no exception. Wilkins (1999, p. 30) states:

In this new era of consumerism in health care, consumers are going to take ownership of information about themselves and demand value in exchange for it, such as better clinical outcomes and better service. The concept of the information-empowered consumer is growing rapidly, and the days in which only certain “qualified” medical professionals create and disseminate medical information are receding.

The internet has revolutionized the way consumers search for information and has completely changed consumers’ decision making process, particularly within the health
care industry. In general, health care-related information seekers can be motivated in several ways (Williams et al., 2003). They may be searching for information as a health care professional, as a consumer seeking self- or other-diagnosis, as a patient to complement information from a doctor, or as a consumer for peer-to-peer communication or for general interest browsing. This study focuses on the consumer—the patient or person on behalf of the patient—and explores their online health-related information search behavior.

The aim of this study is to understand what variables are contributing to the success or failure of web sites to fulfill consumer needs of online health information (e-health information). More specifically, how does satisfaction with online information search about health-related information relate to future online information search behavior, and which variables impact consumer satisfaction in this area? Both the quality of the online information and the value of the online information will be considered.

**Review of literature**

**Online information search**

Consumers are using the internet to search for information. The dependence on the internet as a primary information source is expected to increase in the future (Peterson and Merino, 2003). However, research suggests that consumers think of online information search as being more risky than other channels of information search such as catalog or in-store information search (Larson et al., 2004). Searching for consumer information online is also subject to certain limits. Internet users must sacrifice more tactile senses such as touch, although they are able to maintain sight and sound which are admittedly limited (Xu and Koronis, 2004). Web site designers understand that user interfaces are the gateway to consumer interaction through technology, and they determine how consumers view information search costs (Hoque and Lohse, 1999). Hong et al. (2004) examined the effect of using flashing icons on web sites and found that flashing icons did not improve respondent memory and in some cases even detracted from memory. This shows that even small, perhaps insignificant enhancements to web sites can make a difference in consumers’ information searches and the resulting information.

**The search for e-health information**

Several studies indicate that the search for health information online is increasing (Ahmann, 2000; Wilkins, 1999; Natesan, 2005). Consumers are looking to the internet for health-related web sites in growing numbers, finding information that was previously protected or unavailable. One survey found that among adults under 60 years of age that have access to the internet, 55 percent of them report using the internet to get health or medical information (Brodie et al., 2000). This is probably a conservative percentage today, considering the study was published several years before the current research was undertaken. Another important study looked at the ability of the internet to search efficiently and successfully for health-related information. Maloney et al. (2005) used internet search engines to locate information regarding osteoarthritis. Results showed that the quality of information retrieved was overall poor due to a lack of relevance. A significant amount of web sites generated by the search had nothing to do with osteoarthritis information. Further exploration showed that medical search engines did a much better job of eliciting relevant information. The government is one organization that is certainly interested in providing online health care information.
The government’s perspective is that an increasing number of consumers finding relevant information online indicate a decrease in the number of doctor visits, perhaps reducing a significant amount of health care costs (Williams et al., 2003).

An issue plaguing e-health information search is the inconsistency of the e-health information quality (Tan-Torres Edejer, 2000). With the rapid development of health information web sites, the large number and variety of sources for e-health information may cause these contradictory results. Consequently, while medical professionals can spend less time with the well-informed patient, they might spend more time with the patient having erroneous assumptions. Since, these potential dangers related to its erroneous or unsuitable use (Kim et al., 1999), consumers must make several decisions in the process of searching for health information on the internet. They must decide not only which web sites to search, but also which web sites they can trust and which web sites cannot be trusted. Requests for regulation were fulfilled relatively recently. There are five broad classifications of ways in which web sites can attempt to make their health-related information more credible, including the code of conduct, a quality label, a user guidance system, filtering tools or third-party accreditation (Wilson and Rish, 2002). The code of conduct entails abiding by a set of quality criteria that outline the development and content of web sites (e.g. internet health coalition, American Medical Association, Health Summit Working Group). Quality labels involve placing a logo or symbol on a web site to represent the site’s commitment to implement or adhere to a code of conduct (e.g. Health on the Net, Hi-Ethics). These labels are only available to the web site once formal applications have been accepted and the site is aware of a possible random check. A user guide system entails a series of questions that enable consumers to determine whether web site content complies with certain standards. DISCERN, NetScoring, or QUICK would be examples of system that are capable of ensuring that standards are met. Filters, such as OMNI, are able to accept or reject web site information depending on information quality and relevance. Finally, third-party accreditation, or logos or symbols provided by a third party, are used to notify consumers of the fulfillment of specific standards for web site content, such as MedCertain, TNO-QMIC, or URAC to name a few. These third-party endorsements are typically granted for a fee.

Health care organizations stress the importance of a consumer’s knowledge about the internet as a source of information, and understanding which web sites can be trusted and which cannot be trusted. Ahmann (2000) suggests several strategies for being a “savvy” internet consumer of health-related information. Firstly, consumers should be skeptical about all web sites and be prepared with a practical checklist of questions. Examples of questions include:

- Is it clear who has written the information on the web site?
- Is the site maintained by a credible, reputable, medical organization, government agency, or university?
- What is the purpose of the web site – to inform, persuade, sell?
- Is there any potential conflict of interest involved?
- How current is the information and when was the site produced?

Secondly, consumers should look for code of conduct labels or other quality labels that may communicate whether a site is reputable. Thirdly, consumers should remember to
communicate with doctors or medical professionals openly about website usage as a means of obtaining healthcare information.

E-health information quality and value

Perceived information quality
Research suggests that websites about health issues are among the most popular on the internet (Wilson and Risk, 2002), and with good reason. Consumers want information fast without waiting to make an appointment with a doctor. Once entering the domain of online healthcare information, the issue becomes one of determining the quality and value of the available information, or perhaps the information that a particular consumer was exposed to. Not only is the quality of the information paramount, but also the value received. Based on the available tools provided by the websites (Wilson and Risk, 2002) and personal experience, consumers create perceptions about the overall quality of the online information they have been exposed to.

There has been expressed concern about the quality of healthcare information available online (Keltner, 1998). The increasing number of consumers turning to the internet means that it is imperative that the information be worthwhile. Research shows that search productivity is important to consumers (Ratchford et al., 2003). Productivity of seeking information certainly depends on the quality of information that is obtained. Evidence-based information is extremely helpful for consumers within a healthcare context (Maloney et al., 2005). This is a problem for some websites, which may cause consumers to evaluate the quality of the information as lower.

The clarity and relevance of online health-related information is vital because consumers are diagnosing themselves and even making treatment decisions based on what they find. One consumer reported as part of the qualitative study that “...information quality is obviously important especially in relation to health information; it could be potentially damaging physiologically and psychologically to receive incorrect information regarding specific conditions or symptoms” (Williams et al., 2003, p. 309). Another consumer mentioned that they would cross check any information obtained online with their doctor before accepting it as relevant information. Bolton and Drew (1991) asserted that perceived service quality and perceived value are not identical concepts while perceived service quality is positively related to the perceived service value. Cronin et al. (2000) found strong and consistent results for the relationship between service quality and service value.

Perceived information value
Woodruff (1997, p. 142) defined value as:

... a customer's perceived preference for and evaluation of those product attributes, attribute performances, and consequences arising from use that facilitate (or block) achieving the customer's goals and purposes in use situations.

It is important to keep in mind that consumer value is perceived by the customer through subjective interpretation (Parasuraman, 1997). Under this perspective, consumers perceive the value of a product or service (in this case, information search) as inputs versus outputs. More specifically, what are consumers getting out of the e-information search compared to the effort that they are making? Customer effort can be thought of as the sacrifice of time, physical effort of searching, or the monetary costs involved.
The health-related information obtained by consumers brings value to them by helping them understand what to expect about symptoms, treatments, experiences and numerous other related circumstances. In short, the internet provides some level of epistemic value to those who use it as a resource for health care information (Wilkins, 1999). Moreover, consumers could be talking to their doctors about more health-related issues than they would have if they had not received information online (Williams et al., 2003). Similarly, consumers who use the internet to find relevant information are more informed, and can therefore spend less time talking to their doctors about more basic matters. The knowledge gained from online resources produces a more well-informed consumer and a doctor who needs to spend less of his or her valuable time explaining basic information with patients.

Consumer value is important because it provides an indication of future trends (Angelis et al., 2005). A higher perceived value translates into increased intention to repeat the valued behavior. The epistemic value gleaned from e-health information is important because it is linked with many factors related to the satisfaction level consumers have with the information. These factors include, but are not limited to, more informed participation in decision making about health-related issues, taking a more active role in health care, finding service providers, gaining a better understanding of treatment possibilities, gathering financial information, and improving coping skills through social support of other online consumers (Ahmann, 2000).

The utilitarian value of the online information is also notable. The usefulness of the web provides the obvious convenience of obtaining health-related information without having to physically go to the doctor or medical professional. The online search can also be performed at any time, day or night (Williams et al., 2003). One study found that satisfaction with e-health information was strongly tied to the ability to get "usable ideas" (Baum, 2004). Saved et al. (2005) found that web site competence was related to customer value which was linked with the performance of the organization. Competence involved aspects such as customer service and the functionality of the web site – those attributes which provide the customer with utilitarian value.

The relationship between perceived value and satisfaction has been well established in the literature (Zeithaml, 1988). Cronin et al. (2000) confirmed the positive relationship between perceived value and satisfaction across industry contexts as well. Both epistemic and utilitarian value obtained by seeking e-health information are extremely important for consumer satisfaction since information that may lead the consumer to make poor choices or wrong decisions would most likely lead to decreased levels of satisfaction with online searches for health-related information (Wilkins, 1999).

Satisfaction and intention to repeat online information search
Satisfaction has been considered as a comparison between the expected value and the perceived value after the purchase or after usage of service or products (Parasuraman, 1997; Ravald and Grönroos, 1996). Under this definition, satisfaction with searching e-health information is a comparison between the expected value of the information and the perceived value of the information after getting the health-related information online. Satisfaction with searching on the internet for health-related information is important for predicting consumers' future behavior. Traditionally, the relationship
between satisfaction and intention to repurchase has been identified (Oliver, 1980). While Cronin et al. (2000) found that satisfaction is related to intention to repeat use services, McDougall and Levesque (2000) confirmed that satisfaction affects the future purchase behavior of customers. More recently, Jarvelainen and Puhakainen (2004) found that over half of consumers who have concerns about booking travel reservations online did not intend to use online booking in the future. This is compared with the 90 percent of consumers who thought the process was easy and useful and intended to book online in the future. Although not directly related to health care information, it is not a big jump to assume that the same process may transfer over to the health information situation. Consumers who are more satisfied with their online search experience will be more likely to intend to search for e-health information again in the future. Further research shows that consumers who use the internet to seek health information are more knowledgeable about their area of concern and are more confident with their abilities to handle their situation, compared with consumers who do not use the internet to find health information (Kalichman et al., 2002). This may be initial evidence to assume that consumers utilizing the internet as a tool may do this on a continual basis, as it provides a sense of accomplishment and confidence.

Previous and current online information search literature suggests that the quality of the information has an impact on consumers' evaluations of the search process and resulting information. Perceived value of e-information search will impact seekers' satisfaction with the process, which in turn could affect intention to repeat e-health information search (Figure 1). The following are the proposed hypotheses, based on the reviewed literature and proposed model:

- **H1.** Information quality (relevance and clarity) is positively related to the perceived social value of the online health information search.

- **H2.** Information quality (relevance and clarity) is positively related to the perceived utilitarian value of the online health information search.

- **H3.** Information quality (relevance and clarity) is positively related to the perceived epistemic value of the online health information search.

![Figure 1. Proposed model of consumer e-health information search behavior](image-url)
**H4.** Perceived social value of the online health information search is positively related to the satisfaction with the online health information search.

**H5.** Perceived utilitarian value of the online health information search is positively related to the satisfaction with the online health information search.

**H6.** Perceived epistemic value of the online health information search is positively related to the satisfaction with the online health information search.

**H7.** Satisfaction with the online health information search is positively related to the intention to repeat online health information search.

**Methodology**

Data for this research were collected using an online survey methodology. The sample was made up of the US consumers who have searched for health information online. A list of potential respondents was purchased from an online research company. The survey link was e-mailed to qualified panel members who were at least 18 years of age. A total of 263 usable cases were collected for analysis. The data was analyzed using AMOS, a structural equation modeling (SEM) package. The advantage of structural equation modeling is that the proposed relationships can be analyzed simultaneously for their associations, including direct and indirect effects.

There are four overarching variables in the proposed research, including:

1. information quality (relevance and clarity);
2. information value (social, utilitarian, epistemic);
3. satisfaction with the information search; and
4. the intention to repeat the information search.

Information quality refers to the quality of the information that was retrieved in an online health information search. Information quality was measured by a 13-item scale (Maltz, 2000). The two dimensions of information quality are relevance, defined as whether the information was important or necessary, and clarity, defined as whether the information was clear or easy to follow. The value of the online health information search is defined in three ways: social, utilitarian, and epistemic. The social value of the information search refers to whether the online information search could improve the searcher's social status or approval. These items were adapted from a previous study (Sweeney and Soutar, 2001). The utilitarian value is based on whether the searcher was able to obtain the needed information. These items were adapted from a previous study as well (Babin et al., 1994). The epistemic value of the information search stemmed from whether the searcher was able to increase his or her knowledge about the health-related topic in question. The epistemic value was measured by a five-item scale (LeBlanc and Nguyen, 1999). Satisfaction with the information search is conceptualized as whether the search experience was a positive one or not. The three-item scale of satisfaction was adapted from Oliver (1997). Intention to repeat using the internet for health-related information searches was measured simply as the perceived likelihood to duplicate the behavior in the future. These items were adopted from Rundle-Thiele (2005). Specific measures and scale reliabilities along with mean and standard deviation for each scale item are provided in Table I. All items were measured using a Likert scale where 1 – strongly disagree and 7 – strongly agree,
<table>
<thead>
<tr>
<th>Construct</th>
<th>Measures</th>
<th>α</th>
<th>Mean (SD)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Information relevance</td>
<td>The online health information communicated important details about health</td>
<td>0.87</td>
<td>4.79 (1.12)</td>
</tr>
<tr>
<td></td>
<td>The online health information provided the data necessary to estimate my health status</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>The online health information provided relevant information</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Information clarity</td>
<td>It was easy to follow the online health information</td>
<td>0.88</td>
<td>4.87 (1.15)</td>
</tr>
<tr>
<td></td>
<td>The concepts and language used by the online health information made sense to me</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>The online health information was presented clearly</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Utilitarian value</td>
<td>I got exactly the information I wanted from online health information</td>
<td>0.83</td>
<td>3.97 (0.63)</td>
</tr>
<tr>
<td></td>
<td>While searching online health information, I found just the information I was looking for</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Epistemic value</td>
<td>The quality of online health information influences my knowledge of health</td>
<td>0.94</td>
<td>4.97 (1.22)</td>
</tr>
<tr>
<td></td>
<td>The contents of the online health information influence the level of my knowledge about health</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>The quality of online health information influences the level of my knowledge about health</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>The guidance received from online health information affects the level of my knowledge about health</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>I learn new things from online health information</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Satisfaction with online</td>
<td>My choice to search health information on the internet was a wise one</td>
<td>0.88</td>
<td>4.81 (1.16)</td>
</tr>
<tr>
<td>health information search</td>
<td>I think that I did the right thing when I searched online health information</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>The online health information is exactly what is needed for this service</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Intention to repeat online</td>
<td>How likely are you to get more information from the online health information?</td>
<td>0.94</td>
<td>5.04 (1.36)</td>
</tr>
<tr>
<td>health information search</td>
<td>How likely are you to use the online health information for most of your needs?</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>How likely are you to choose the online health information the next time you have a similar health problem?</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>How likely are you to use the online health information for other health information you may require?</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Table 1.
Summary of measurement scale

except intention to repeat online information search, which is measured using a scale where 1 – very unlikely and 7 – very likely.

A preliminary analysis was first conducted to check for violations of the assumptions of SEM. These include normality, missing data, and multicollinearity.

Descriptive statistics include means, standard deviations, skewness, and kurtosis.

A confirmatory factor analysis was used to verify the measurement model before continuing with the full structural model. Fit measures and path coefficients provided insight into the viability of the proposed model.
**Results**

None of the variables were found to have significant skewness (> 3) or kurtosis (> 10). Reliability measures are also acceptable, ranging from 0.83 to 0.94 (Table I). There were no missing data in the dataset due to respondents being forced to answer each question in the survey. Multicollinearity was assessed by examining the tolerance and variance inflation factor (VIF). Based on the results, there was no reason to suspect that multicollinearity may be a problem (highest tolerance = 0.51; highest VIF = 5.76).

Table II shows the demographic characteristics of the respondents. Almost 30 percent (29.7 percent) are between 18 and 30 years of age, 32 percent (31.8 percent) are between 31 and 45 years old, while 27 percent (27.3 percent) are between the ages of 46 and 60. About 8 percent (7.9 percent) are over the age of 60. The majority of respondents were female (61.2 percent). Almost all of the respondents had at least some college education (25.1 percent some college, 36.5 percent college graduate, 26.3 percent graduate degree, 2.7 percent professional degree). Some respondents had a high school education or equivalent (5.7 percent) or a vocational or tech school education (3.8 percent). Some consumers had an annual income of less than $10,000 (6.5 percent). Others had an income between $10,000 and $29,999 (14.8 percent), while others’ income ranged between $30,000 and $49,999 (22.8 percent). Nearly 18 percent (18.3 percent) had an income between $50,000 and $74,999, 16 percent (16.3 percent) had an income of $75,999 to $99,999, while 21 percent (21.3 percent) had an income of $100,000 or more.

The measurement model was further assessed by evaluating the fit measures of a confirmatory factor analysis. Although the $\chi^2$ value was significant ($345.56; p < 0.001$), it is sensitive to sample size. Additional fit measures provide support that

<table>
<thead>
<tr>
<th>Age (years)</th>
<th>Percent</th>
</tr>
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<tbody>
<tr>
<td>18-30</td>
<td>29.7</td>
</tr>
<tr>
<td>31-45</td>
<td>31.8</td>
</tr>
<tr>
<td>46-60</td>
<td>27.3</td>
</tr>
<tr>
<td>61+</td>
<td>7.9</td>
</tr>
<tr>
<td><strong>Gender</strong></td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>38.8</td>
</tr>
<tr>
<td>Female</td>
<td>61.2</td>
</tr>
<tr>
<td><strong>Education</strong></td>
<td></td>
</tr>
<tr>
<td>High school or equivalent</td>
<td>5.7</td>
</tr>
<tr>
<td>Vocational/tech school</td>
<td>3.8</td>
</tr>
<tr>
<td>Some college</td>
<td>25.1</td>
</tr>
<tr>
<td>College graduate</td>
<td>36.5</td>
</tr>
<tr>
<td>Graduate degree</td>
<td>26.3</td>
</tr>
<tr>
<td>Professional degree</td>
<td>2.7</td>
</tr>
<tr>
<td><strong>Income ($)</strong></td>
<td></td>
</tr>
<tr>
<td>Under 10,000</td>
<td>6.5</td>
</tr>
<tr>
<td>10,000-29,999</td>
<td>14.8</td>
</tr>
<tr>
<td>30,000-49,999</td>
<td>22.8</td>
</tr>
<tr>
<td>50,000-74,999</td>
<td>18.3</td>
</tr>
<tr>
<td>75,000-99,999</td>
<td>16.3</td>
</tr>
<tr>
<td>100,000+</td>
<td>21.3</td>
</tr>
</tbody>
</table>

**Table II.** Demographic characteristics of respondents ($n = 263$)
the measurement model fits the data relatively well (NFI = 0.91; AGFI = 0.84; CFI = 0.97; TLI = 0.96; RMSEA = 0.07).

The structural model also fit the data fairly well. The $\chi^2$ statistic was significant (408.75; $p < 0.001$), however this is common given the size of the sample. Other measures used to determine model fit were above or verging on the recommended 0.90 level (NFI = 0.93; AGFI = 0.82; CFI = 0.95; TLI = 0.95; RMSEA = 0.08).

Initial results of the structural equation model revealed some interesting findings. Model building caused several changes in the model, including the deletion of the social value of the information search as a relevant variable. Moreover, the path from information relevance to epistemic value and the path from information clarity to utilitarian value were not significant. The resulting model showed good model fit (Table III) and relatively strong parameter estimates (Table IV) (Figure 2).

Though the $\chi^2$ statistic was significant, this is common given the size of the sample. Other measures used to determine model fit were above the recommended 0.90 level.

<table>
<thead>
<tr>
<th>Parameters</th>
<th>Coefficients</th>
</tr>
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<tbody>
<tr>
<td>UTIL-RELEV</td>
<td>0.96*</td>
</tr>
<tr>
<td>EPIS-CLAR</td>
<td>0.82*</td>
</tr>
<tr>
<td>SAT-UTIL</td>
<td>0.78*</td>
</tr>
<tr>
<td>SAT-EPI</td>
<td>0.20*</td>
</tr>
<tr>
<td>INT-SAT</td>
<td>0.79*</td>
</tr>
</tbody>
</table>

Notes: *Indicates parameter is significant at 0.05 level; UTIL = utilitarian value; EPIS = epistemic value; RELEV = information relevance; CLAR = information clarity; SAT = satisfaction with online health information search; INT = intention to repeat online health information search

Table IV. Standardized coefficients

![Figure 2. Final model of e-health information search behavior](image)
(CFI = 0.94, NFI = 0.90, TLI = 0.93). The root mean square error of approximation fell within an acceptable level (0.07).

The relative strength of each of the paths provided fascinating results. H1 and H4 are rejected due to the non-significance of social value as a construct. Both H2 and H3 are partially supported. Information relevance was strongly related to the utilitarian value gained from online information searches (0.96), although it was unrelated to epistemic value. Information clarity was highly related to the epistemic value of the online information search for health-related information (0.82), however it was not linked with utilitarian value.

The relationship of both utilitarian and epistemic value with consumer satisfaction with their online information search experience differed from one another. Although both paths are significant, the utilitarian value path is clearly higher in magnitude (0.78 versus 0.20). However, both H5 and H6 are supported. Satisfaction is strongly linked with consumers’ intentions to repeat online information searches (0.79). Therefore, H7 is also supported.

Discussion

Our conceptualization of a model of online health information search was partially supported by the data. Both information quality and information value were relevant in relation to the ultimate variable of interest – intention to repeat online health information search. H1, which suggested a positive relationship between information quality and the perceived social value of the online health information search, was not supported. Social value of the information does not appear to play as strong of a role as initially thought. The sample of this study was comprised of US consumers who have searched for online health information for themselves or for others. However, the analysis did not divide them into these two groups, which may have had some impact on the nature of relationships between the constructs and may have been responsible for the insignificance of the social value. If consumers search online health information for others, social value could play a stronger role than when they search it for themselves. Both H2 and H3 were supported, which suggested a positive relationship between information quality and utilitarian and epistemic value of the online health information search. H4 was not supported by the data, confirming the weak role that social value of online health information plays in the resulting intention to repeat the information search. H5 and H6 show that the utilitarian and epistemic value of the online information search was positively related to the consumers’ satisfaction with the online health information search. Finally, satisfaction with the online health information search was significantly and positively related to the consumers’ intention to repeat the online health information search, thereby supporting H7.

Results point to the idea that the relevance of the information is most directly related to the utilitarian value of the information search, while the clarity of the information is linked most directly with the epistemic value of the information search. Intuitively, this makes sense in that the most useful information is required to be relevant. Furthermore, knowledge is driven by the intelligibility of the information.

An interesting finding is the outcome of the strength of the information quality dimensions that relate to each information value construct. This could be interpreted as meaning that consumers are most satisfied with online health information that provides actionable options, not simply facts or insights. Consumers may be more
interested in information that helps them understand and use the information in terms of treatment, available options or even support groups. The epistemic value gained by the online health information may be increasing consumers' knowledge, without increasing the actionability of the information. What can web site designers do to increase consumers' satisfaction levels with online health web sites? They should focus on providing information that consumers can use, along with increasing their knowledge about the health topic in question. Consumers want to be empowered by the information they obtain, in terms of taking action to perhaps cure an ailment, pursue new treatment options, or find a support group. The productivity of the search in providing usable information is, indeed, important (Ratchford et al., 2003). Health care providers, in turn, should remain aware of what drives consumers' satisfaction with online health information, and strive to direct their patients to sites that provide utilitarian value. Wilkins' (1999) assertion that consumers are perhaps more demanding than they have been in the past due to exposure to fast information via the web may be correct.

In terms of consumers' overall satisfaction with their online information searches related to health issues, the data show that it is primarily being driven by the utilitarian value of the search, more so than the epistemic value. The insignificance of the social value of health information search is interesting, although understandable, given the context. Although the proposed influence of the social value of the online search was not substantiated, it may be that the relatively private nature of the internet as a search tool causes social influence to have less of an influence. In addition, if we look at consumers searching online health information for others, social value might have more influence.

Search satisfaction is strongly linked with consumers' intentions to repeat the behavior. Jarvelainen and Pohakainen's (2004) findings were supported, in that satisfaction levels with online capabilities are strongly linked with the likelihood of their future behavior online. This may imply that if consumers are not satisfied with an initial search, they may be less likely to search for online health information in the future. Health care providers and providers of health information on the internet must be aware that they need to provide accessible, quality information to consumers with usable insights. Perhaps, advertisements advocating the usage of the best sites would draw in more consumers, in turn providing them with good experiences on the web in finding health information. The hope is that the burden placed on health care providers will be lessened with the diffusion of the internet as a resource for consumers to seek health-related information.

The nature of the data provides some reason for concern. Although online data collection fits well with the current study, there is some question about its representativeness. Another limitation of this study is that the survey relies on recollection of information that may have been accessed in the past. Accordingly, data depending on consumers' memory might cause bias. The underlying implications of the results of this study are important for both web site designers and healthcare professionals. Although information relevance and clarity are both important variables for providing utilitarian and epistemic value of online health information search, it is really the utilitarian value of the search that contributes strongest to consumers' satisfaction. It is therefore important that web designers stress practical and functional features of web sites, both in terms of web site features and content. Health care
professionals can direct patients toward web sites that they know will provide the most utilitarian value. Endorsement of web sites that promote repeat usage would not only increase patient knowledge, but also reduce the amount of basic questions and even more importantly, foster relevant discussion of an appropriate nature with health care professionals.

Future research should focus on analyzing specific health information web sites. More specifically, which site features and types of content provide utilitarian value for consumers? It may also be beneficial to segment consumers based on health topics to determine whether their search patterns and resulting satisfaction and intention to repeat the search is affected. This study has provided an initial attempt to understand which constructs contribute to consumers' satisfaction with online health information search and how repeat intention is affected.

References


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