

Internet Usage for Health-Related Purposes among Greek Consumers

DAPHNE HALKIAS, PhD
 Senior Research Fellow
 Hellenic American University
 12 Kaplanon Street, Athens 10680
 GREECE

NICHOLAS HARKIOLAKIS, PhD
 Information Technology
 Hellenic American University
 12 Kaplanon Street, Athens 10680
 GREECE
<http://www.hau.edu.gr>

PAUL THURMAN, MBA
 Clinical Professor
 Columbia University
 420 West 118th Street, New York, NY 10027
 USA

SYLVA CARACATSANIS, BSc
 Senior Research Assistant
 Hellenic American University
 12 Kaplanon Street, Athens 10680
 GREECE

Abstract: - With more than 1 billion Internet users worldwide, the World Wide Web has inevitably made its mark on the global healthcare industry. As an EU nation, Greece has not conducted many e-health trends surveys due to the low penetration of the Internet and the continued belief among Greek consumers that the Internet cannot substitute for face-to-face contact with a physician. Yet, the extant literature does reveal a growing trend of Internet usage for health-related information among Greek consumers over the past decade. The purpose of this study is to survey the extent of Internet usage for health-related purposes among a representative sample of Greek consumers. Results indicated Internet usage among Greek consumers is rising in comparison with past surveys. Also, Greek consumers who are young, female, and well-educated seem to also trust health-related information found on the Internet as well as following recommendations they get from online health-related information.

Key-Words: - Internet usage, e-health, Greece, healthcare, health information retrieval

1 Introduction

The Internet has attracted considerable attention as a means to improve health and healthcare delivery, but it is not clear how prevalent Internet use for healthcare really is or what impact it has on healthcare utilization. Available estimates of use and impact vary widely [1]. Use of the Internet has played a role in revolutionizing the more than \$1 trillion healthcare industry in the U.S. Doctors, hospitals, health maintenance organizations (HMOs), insurance companies, and Internet firms are using the Internet to manage the business of medicine. This environment has squarely placed the burden of responsibility on patients. Not surprisingly, many Internet users have turned to the Web to provide the information they find hard to get from their care-givers and because they are increasingly interested in participating in what the medical community calls “shared decision-making” [2].

Based on a 2003 study, 23.0% of EU consumers use the Internet to get health-related information. In Greece, 13.5% of Internet users log on to access health-related information. Thus far, Greece has not conducted many e-health trends surveys due to the low penetration of the Internet. e-Health in Greece appears to be a consumer-based movement that has emerged in the past decade and is not the result of any planned action from the health care authorities [3].

The purpose of this study is to survey: 1) the extent of Internet usage for health-related purposes among a representative sample of Greek consumers; 2) types of healthcare information sought by Greek consumers and motivation for doing so; and, 3) Greek consumers’ participation in e-health communities.

2 Review of the Literature

With more than 1 billion Internet users worldwide [4], the ease and convenience afforded by the World Wide Web has inevitably made its mark on the global healthcare industry. While surveys on the use of information and communications technologies (ICTs) deliver varying results on Internet searches for health-related information, most evidence “that the Internet has become a valued source of health care information for a substantial number of Internet users” [5].

A Pew Internet & American Life Project, “Online Health Search 2006,” reports that approximately 113 million American Internet users or “eighty percent ... have searched for information on at least one major health topic online [2]. These figures approximate the findings of Harris Interactive, which note that “cyberchondriacs now represent 72 percent of all online [American] adults” [6]. Although Hesse, et al. [7] refer to data from the Health Information National Trends Survey pointing to “63.7% of the online population having looked for health information for themselves or others at least once in the previous 12 months,” the same source reveals that physicians are still considered the most trustworthy source of healthcare information.

2.1 European Union Inhabitants Active e-Health Seekers

The Eurostat Yearbook 2006-2007 notes that “in 2005, more than half (58%) of all households in the EU-25 had a personal computer at home, and almost half (48%) of all households had Internet access” [8]. The increasing availability of ICTs translates to increased use and a lessening of the digital divide among those in remote areas or lower income groups. This is

changing the face of personal healthcare in Europe, with a series of challenges presenting those using the Internet for such purposes. Internet activity in the quest for healthcare information across the European Union is not far behind the U.S. reality, as revealed in existing literature referred to above. In fact, results of a survey conducted by the Health on the Net Foundation (HON) show that “in 2005, the number of Europeans accessing the clinical trials literature was 10% greater than that of Americans” [9].

Referring to a Eurobarometer survey, Pacanowski notes that “only a small proportion (23.1%) of the European Union’s population uses the Internet to find health-related information,” with the highest activity recorded in Denmark at 41.4% [10]. The HON survey also notes respondents using the Internet because of: “(1) availability of information, (2) ease of finding information/navigation, (3) trustworthiness/credibility, and (4) accuracy of information” [9]. This was found to be true for both personal and professional use.

2.2 Greece Lagging Behind in e-Health Activities

Although use of the Internet in Greece has shown a marked increase over the last decade, current statistics, returning below 40% penetration, reveal the country is still well below the European Union average of 51.3% [4]. Research into the use of the Internet for purposes of healthcare information, paint an even more dismal picture with one profiling report stating: “Very few Greeks actually use the internet to search for health-related issues and most are not aware that eHealth services exist” [11].

In the 15-80 years age group, just 22.9% of respondents used the Internet for purposes of health and illness (H&I) [11]. Such low

percentages can be attributed to a variety of factors, with the number one reason being that around two-thirds of the Greek population are not Internet users [4]. Other factors include the cost of Internet use [12], lack of broadband infrastructure [3], and the fact that “Greeks actually have one of the largest ratios of doctors per inhabitants in the EU” [11], thus keeping them discussing health on a face-to-face basis. In fact, this last point appears to be a major consideration, with Chronaki, Kouroubali, Esterle, et al. stating: “both Internet users and the general population apparently consider that personal contact with health professionals cannot be substituted with innovative technologies and eHealth” [3].

3 Research Methodology

To address the above mentioned hypotheses, a questionnaire was developed to survey demographics of Greek consumers seeking health-related information on the Internet. As well, the questionnaire included questions on Internet user behaviors, including the purpose of using the Internet with activities categories like Entertainment, Correspondence, Education, Business Applications, and Chatting and technology characteristics such as search efficiency, availability of broadband connection, and access point (home, work). As well, respondents were asked about their motivation for seeking health-related information on the Internet and their participation in e-health communities. For most of the queries, the Likert scale was used with values 0, 1, 2, 3, 5 and -1 for missing but labels were changed to “never,” “rarely,” “sometimes,” “often,” and “always” to make it more comprehensive for the study’s sample. All the data were analyzed as nominal.

Surveys were distributed to 600 students of the Hellenic American Union and the

Hellenic American University in Athens, Greece. Both institutions are non-profit organizations serving the educational needs of Greek university/college-level undergraduate and graduate students. One-hundred and ten of the respondents identified themselves as weekly Internet users and consented to participate in the research. Out of this sample, 70 identified themselves as Internet users that at some time have searched the Internet for healthcare-related information and also did not belong to a healthcare-related profession. This group of respondents is the sample of analysis for the present research publication. SPSS v.13 was used for the analysis of the results.

4 Data Analysis and Conclusions

Results were recorded and an analysis of significant findings is presented below. Detailed results and a complete statistical analysis can be requested by direct communication with the authors.

4.1 General Internet User Profile

Seventy individuals responded to the Internet healthcare survey. While not all questions were answered, the non-response effects were negligible. Respondents were relatively young; over 87% were 34 years or younger. Over half of the respondents were under the age of 25. This is in stark contrast to the insignificant 13% over the age of 34. Regarding gender breakdown, female respondents outnumbered male ones at a ratio of almost four-to-one. With only one missing response, over 80% reported having attained at least an undergraduate degree. As a result of the previous percentages, the respondents demographically skew to younger females with at least undergraduate college degrees.

Responses to inquiries regarding hours spent online weekly were grouped to less than 5, 6 – 15, 16 – 25 and more than 25. A relatively even balance of hours spent online is observed, but we note that respondents either spend (modally) 15 hours or fewer, or more than 25 hours. Thus, there appears to be two basic segments of online users with healthcare interests: those who spend a small amount of time per week online (casual users or “surfers”) and those who spend a great deal of time online (heavy users or “power users”).

Regarding the purpose of using the Internet, an interesting observation was that the respondents indicated that Internet didn't dominate as a medium of exchange for entertainment, business applications, and chatting. This is likely because television and/or radio are still substitutes for entertainment. Also, business applications are likely run on at-work computers, and chatting is likely done largely by cell phone (via text or SMS messaging). These make sense given the age, gender, and user segmentations provided earlier. Correlations of these results will appear later in this paper (Table 1).

Regarding the location of Internet access (Home, Work, or Both), over 70% of the sample responded “often” or “always” access the Internet from home. A roughly 60%–40% split between “power” and “casual” users occurred when respondents were asked whether they had broadband access at home. The power users likely did (64%), while casual users likely access the Internet via relatively low-speed dial-up connections (31%). As a direct consequence of the previous findings, most users were able to find what they were looking for in 2–3 search attempts (69%). Power/broadband users on the average are more efficient/skilled in searching, while casual/dial-up users give up (given slow

dial-in speeds) after a couple of search tries. When it comes to trusting online information in general, almost 75% of respondents said they “often” or “always” trust online results/data. However, a quarter of respondents was a bit more skeptical—perhaps these are the power users—and only “sometimes” trusts Internet-sourced content.

4.2 Healthcare-Related Frequency

Results

By observing the responses to healthcare information-specific questions we can summarize the following:

- Eighty-two percent of respondents can at least “sometimes” easily locate information. The responses, here, were split relatively in half between “sometimes” and “often” or “always,” and this may again indicate a segmentation of user sophistication with Internet exploration.
- Although ease of locating healthcare-related information may be relatively high, users’ ease of understanding such information is not perfect. Ninety percent of respondents said that health-related information was at best “often” easy to understand. This makes sense, again, given the suspected dichotomy of the user-base.
- Interestingly, since users have some relative ease in both finding and understanding health-related information, they seem to also trust such information (although skeptics remain, just as they did in the broader Internet information trust question). Fifty-four percent of respondents “often” or “always” trust online health information, whereas 46% at most “sometimes” trust such information. Thus, we continue to see interesting segmentations between those who can find, understand, and trust online health-related information and those who have difficulty finding, understanding, or believing it.
- Although the split is almost even between those who trust and do not trust health information online, a more skewed response emerges when respondents were asked whether they actually follow recommendations they get from online health-related information. Here, only 39% report that they “rarely” or “never” follow recommendations, compared to 60% who “sometimes” or “often” follow such recommendations. Thus, this points to a group of online leisure readers or “perusers,” who may trust the information but not act on it, as well as a group of serious searchers or “researchers” who both trust and act on recommendations found online.
- Regardless of respondents’ trust and actions regarding online health-related information, limits emerge as to how much users—power or casual ones—will spend, in terms of time and money, to become serious online healthcare information specialists. Whether a lack of time or interest (or both), it was convincingly shown by the data that while users will largely find, believe, and act on “free” information, they will not commit financial resources to subscribe to sites or significant time to join discussion groups. Users may also not feel comfortable joining discussion groups that focus on healthcare-related information given the often personal nature of such discussions and data for individuals.
- Seventy percent of respondents either rarely or never subscribe to healthcare information sites. “Often” is the lowest response; perhaps this is due to a dearth of local, topic-specific health-related information that is available via subscription; that is, there may not be that many options from which to choose.

- Over 85% of respondents will not join discussion groups related to healthcare information. However, the authors believe that understanding both why some users would, and would even pay money to subscribe to specific sites, could lead to helpful marketing and positioning insights for online healthcare information sites that are trying to extract premiums from users in the form of either money (subscriptions) or time (discussion groups).
- Finally, we note that when it comes to how users actually find healthcare-related information, only 32 respondents answered this question; i.e., a high non-response bias, here, could affect our conclusions. Nevertheless, most users (over 60%) go to and/or use specific Websites, not search engines, to help them locate, trust, and implement healthcare-related information.
- Only a little more than a third of respondents use search engines. This could be because users initially used search engines to now find the site(s) they go straight to now. Learning more about these specific sites—as well as number of visits, market penetration, depth of information, “trust factor,” etc.—would be very interesting in order to learn from the supplier’s side what differentiates an offering in this space.

4.3 Correlation Results

As an addendum, one-tailed Pearson correlations were computed between Likert scores of the responses, and the ones significant to a 1% alpha (Type I) error level results are reported below in Table 10.

Highlighted rows show the highest positive and negative correlations (above 40%) as well as highest r-squared terms from linear regressions (above 16%).

Note that while no correlation or linear relationship is that strong—the best explained variance terms (r-squared terms) are barely above 20%—some interesting relationships do emerge (both positively and negatively when considering the Pearson correlation statistic). For example, hours spent online are best correlated with online chatting. This makes perfect sense (and is the best absolute correlation found). Also, those who subscribe to online services—as well as those who are more prone to trust online information—are more likely to follow recommendations.

A noteworthy result comes with the correlation between age group and ease of location. Older users can find information more easily. This is somewhat counterintuitive until we recall that almost all respondents are under age 35. Thus, computer, Internet, and/or search engine familiarity is not as big of a driving force as just plain age and (online) experience. Older users know more about what they are looking for and how to find it. Note, though, that the largest negative correlation shows that older users actually use the Internet *less* for entertainment than do younger users. Again, this may make sense given the “TV and Radio” generation vs. the “iPod and Internet” generation (not to mention the proliferation of online games, communities, avatars, and social networking capabilities).

Table 1 Pearson Correlations (sorted highest to lowest)

Variable 1	Variable 2	Pearson Correlation	r-Squared ¹
Hours Online	Online Activity – Chatting	0.482	0.232
HRI ² Follow Recommendations	HRI – Subscribe to Online Services	0.454	0.206
Online Activity Business	Online Activity – Chatting	0.451	0.203
HRI – Trust	HRI – Follow Recommendations	0.413	0.171
Age Group	HRI – Easy to Locate	0.412	0.170
Online Activity Entertainment	Discuss Online Info with Others	0.374	0.140
Online Activity Entertainment	Online Activity – Chatting	0.364	0.132
Education	HRI – Join Online Groups	0.344	0.118
HRI – Understand	HRI – Trust	0.335	0.112
Hours Online	Online Activity – Correspondence	0.313	0.098
Education	Online Activity – Correspondence	0.310	0.096
Age Group	HRI – Understand	0.307	0.094
Education	HRI – Understand	0.299	0.089
Internet Access Job	HRI – Follow Online Recommendations	0.293	0.086
Online Activity Entertainment	Online Activity – Business	0.280	0.078
Online Activity Education	Discuss Online Info with Others	0.280	0.078
Hours Online	Online Activity – Business	0.279	0.078
Age Group	Internet Access – Job	0.266	0.071
Age Group	Internet Access – Home	-0.298	0.089
Online Activity Education	HRI – Easy to Locate	-0.302	0.091
Online Activity Business	HRI – Easy to Locate	-0.302	0.091
Age Group	Online Activity – Chatting	-0.316	0.100
Online Activity Entertainment	HRI – Easy to Locate	-0.317	0.100
Age Group	Discuss Online Info with Others	-0.345	0.119
Internet Access Home	Internet Access – Other	-0.414	0.171
Age Group	Online Activity – Entertainment	-0.448	0.201

¹ R-squared indicates the amount of variance of one variable explained by the other when using a linear model to relate the two variables. In the case of two variables, the r-squared is simply the correlation squared.

² HRI = Healthcare-Related Information

Thus, our largely young, female, highly educated respondents seem to be either power users or casual ones, and this usage level may be driven by availability/access to high-speed Internet capabilities. Many features and functions of the Internet—from entertainment, correspondence, and chatting—are used by most users. Information achieved from relatively few searches is generally believed/trusted. When it comes to healthcare-related information, users generally trust and act on information that is free. Few users subscribe to health-related Websites or discussion groups, but those who do, tend to trust and likely act on health-related information even more so.

5 Conclusions and Future Research Directions

The results so far suggest follow-up studies on behaviors—both Internet and health-related information, only—of different user segments, trust levels, action levels, etc. Beyond these initial data collected, future research should include interviews and/or follow-ups in future surveys—several additional analyses could be performed.

Some of the research actions that will be considered include:

- *Longitudinal analysis:* Study a group of respondents over time (or in a controlled experiment) as more online healthcare information capabilities and data become available. Also use this survey instrument periodically to understand shifts in the consumer market for online (healthcare) information.
- *Cause-and-Effect Modeling:* Use interviews to better understand why respondents trust/do not trust information, use the Internet only a lot or very little, etc.
- *Supply-Side Surveying:* Create a separate survey of suppliers of online healthcare-

related information to see if their perceptions of their user bases are substantially different from our results above. If so, an explanation of the source(s) of variance between the supply and demand markets could provide useful insights for online content providers—healthcare and beyond—as new search, content management, and user segmentation/experience modeling becomes more commonplace.

References:

- [1] Baker, Laurence, Wagner, Todd H., Singer, Sara, and Bundorf, Kate M., Use of the Internet and E-Mail for Health Care Information: Results From a National Survey. *JAMA*, 2003; 289:2400-2406.
- [2] Fox, S., Online Health Search 2006. *Pew Internet & American Life Project*, October 29, 2006.
- [3] Chronaki, C. E., Kouroubali, A., Esterle, L., Orphanoudaki, E., Roumeliotaki, T., Stathopoulou, A., and Tsiknakis, M., eHealth Consumer Trends Survey in Greece: Results of the 1st Phase. *FORTH-ICS TR-365*, December 2005 (Updated July 2006).
http://www.ics.forth.gr/ftp/tech-reports/2006/2006.TR365_eHealth_Consumer_Trends_Survey.pdf
- [4] www.InternetWorldStats.com Miniwatts Marketing Group. Updated March 10, 2007.
- [5] Fox, S. and Rainie, L., et al., The Online Health Care Revolution: How the Web Helps Americans Take Better Care of Themselves. *Pew Internet & American Life Project*, November 26, 2000.
- [6] Harris Interactive (David Krane, editor), Number of “Cyberchondriacs” – U.S. Adults Who Go Online for Health Information – Increases to Estimated 117 Million. Vol. 5, Iss. 8, July 28, 2005.
http://www.harrisinteractive.com/news/newletters/healthnews/HI_HealthCareNews2005Vol5_Iss08.pdf

- [7] Hesse, Bradford W., Nelson, David E., Kreps, Gary L., Croyle, Robert T., Arora, Neeraj K., Rimer, Barbara K., and Viswanath, Kasisomayajula, Trust and Sources of Health Information: The Impact of the Internet and Its Implications for Health Care Providers: Findings From the First Health Information National Trends Survey. *Arch Intern Med.*, 2005; 165:2618-2624. <http://archinte.ama-assn.org/cgi/content/abstract/165/22/2618>
- [8] Europe in Figures – Eurostat Yearbook 2006-2007. http://epp.eurostat.ec.europa.eu/cache/ITY_OFFPUB/KS-CD-06-001-09/EN/KS-CD-06-001-09-EN.PDF
- [9] 9th HON Survey of Health and Medical Internet Users: Winter 2004-2005. <http://www.hon.ch/Survey/Survey2005/res.html>
- [10] Pacanowski, Toni Gonzalez, New Tendencies in Health and Medical Websites [on line], “*Hipertext.net*”, num. 4, 2006. <http://www.hipertext.net> [Consulted 12/02/2007], ISSN 1695-5498
- [11] eHealth User Orientation Profile for Greece. <http://www.euser-eu.org/ShowCase.asp?CaseTitleID=940&CaseID=1982&MenuID=111>
- [12] Kerdos Newspaper, Σημαντική Αύξηση στη Χρήση του Internet. February 6, 2007. www.kerdos.gr