

eHealth information search behaviour

Is there a difference between private and public health care markets?

The use of eHealth websites (websites containing health and medical information) is relevant in the context of patient-centred medicine, as it informs and influences patient behaviour and interactions between the patient and professional healthcare staff. Therefore, it is essential to understand how individuals engage with eHealth information online. Professor Christopher Patrick Holland, of Loughborough University, and his colleague, Dr Janina Schneider-Swales, use digital marketing concepts to analyse consumer big data search patterns, to explore this phenomenon in their study, titled "eHealth Search Patterns: A Comparison of Private and Public Health Care Markets Using Online Panel Data", and published in the *Journal of Medical Internet Research*.

eHealth information is, as the name suggests, health or medical-related information that is available online. With over 100,000 health and medical-related websites being hosted online and around 4.5% of all Internet searches being related to eHealth information, it is obvious that many of us are looking for answers to our health, wellbeing and medical queries on the Internet. In fact, most adults in the US (around 80%) have searched for health and medical information online, including general health and wellbeing queries and medical questions ranging from symptoms to diagnoses and treatments. This is not surprising, considering that more recent perspectives on health care place the patient at the centre of medical decisions and treatments. Therefore, it is vital that patients are informed and, as a result, the sources they use to gain this information can play a big part in influencing their decisions and, consequently, the outcomes of their health and medical choices.

Given the scale of the phenomenon and what is at stake – people's health and wellbeing – it is important to understand these search behaviours, or, to put it in digital marketing terms, the consumer journey (the steps the users take to engage with these online resources). That is the aim of the study conducted by Professor Christopher Patrick Holland, of Loughborough University, and his colleague, Dr Janina Schneider-Swales. In their paper – "eHealth Search Patterns: A Comparison

of Private and Public Health Care Markets Using Online Panel Data" – published in the *Journal of Medical Internet Research*, Holland and Schneider-Swales use big data (very large datasets that are analysed with the aim of revealing patterns, associations, trends and insights, in this case particularly relating to human behaviour) in a health care context, to conduct a comparative analysis of the eHealth search patterns in the US and the UK health care markets.

PRIVATE VERSUS PUBLIC HEALTH CARE – DOES IT MAKE A DIFFERENCE FOR SEARCH BEHAVIOUR?

To answer this question, the starting point was to identify and categorise the largest eHealth websites – in effect, proposing a taxonomy which allowed the researchers to conduct a systematic and objective analysis of eHealth search patterns. The study then uses online panel data (data obtained from online surveys from users with a specific profile) to analyse search behaviour (depth and breadth of searches) across one hundred of the largest eHealth websites in the US and UK health care markets. A key feature of the research is the combination of a very broad, comprehensive data sample of the top 100 eHealth websites in the US and UK healthcare markets combined with the very detailed analysis of individual search behaviour. The novel analysis and interpretation of online panel data, an important type of big data in consumer markets, enabled this approach and methodology.

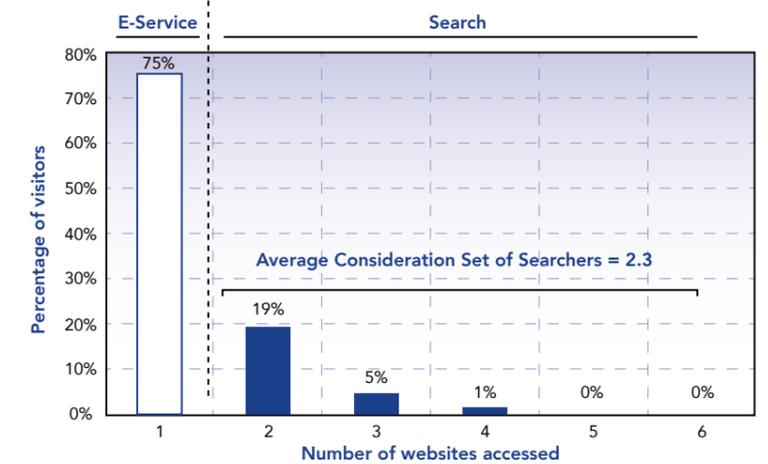
The main categories that were identified as part of eHealth information were

health, medical and lifestyle, which accounted for approximately 90% of all search activity. The minor categories of e-pharmacy, professional and social media accounted for the remaining 10% of online searches. No significant differences were found between the private and public health care markets in terms of the types of eHealth information that consumers (patients) access and the number of websites they engage with.

The largest category of websites for both countries was health. In the US, 75% of consumers only access one health website to get the information they need and the position is very similar in the UK (78%): they then return to the same website which becomes their preferred information supplier for this type of information. Consumers that only use one website are labelled e-service because the primary use of the Internet in this case is to provide an information service from just one website.

Of those that search two or more health websites, the consideration set is 2.3 (US) and 2.4 (UK). By consideration set, we mean the breadth of search, i.e. how many health websites are visited. See Figure 1 for the search pattern in the US health category, which shows a highly skewed search distribution that is typical of consumer search patterns in other markets. This diagram also illustrates that the search breadth is quite narrow, with only 6% of consumers looking at three or more websites, and just 1% of consumers looking at four or more health websites.

Figure 1: The distribution of all visitors in the private (US) health category.



The majority of eHealth website users view a single health website only, and just 6% of users explore three or more health websites.

The use of the Internet by patients has the potential to significantly increase patient informedness.

The similarities that the study has found could be owed to the overall similar nature of the countries themselves and their eHealth landscape, i.e. they both have high levels of Internet penetration, a high rate of adoption of online technologies across all market sectors and they both have advanced health care systems.

There are some significant differences between the UK (which has a public health care market) and the US (private). In the US, 83% of Internet users accessed one

or more health websites, compared with the UK, where the online penetration (the awareness and use of the service) was less than half of that, at 41%. US consumers also spend significantly more time on all categories of eHealth websites.

The average time spent on an individual eHealth website varies between three and seven minutes, which suggests only a surface level of learning and/or understanding, and this has important implications for eHealth website design,



Around 80% of adults in the US have searched for health and medical information online.



In the UK, only 41% of Internet users accessed one or more health websites.



Professor Chris Holland focuses his research attention on better understanding the eHealth landscape.



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and may be problematic in terms of consumers successfully answering their eHealth queries.

WHAT DOES THIS MEAN IN PRACTICE?

The differences that the study identifies are significant, and indicate that the UK population is less likely to refer to online sources when searching online for health and medical related information. This makes sense, in the context in which the public health care system provides patients with free, i.e. no-cost access to this type of information – through GPs, telephone support, access to healthcare professionals in the community and also in hospitals. However, as the authors of the study identify, these are expensive channels for the healthcare system to provide information. One of the implications of these findings, which could have an impact on policy, is that having free access to medical information through healthcare specialists seems to limit the engagement with online health resources and may impede the development of eHealth usage.

The US private model of healthcare provision is also likely to be influencing

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online search behaviour. The higher online penetration of eHealth websites can be attributed to the fact that many individual patients pay for access to professional healthcare advice, and poorer patients may have very limited or no access to professional medical advice. Patients are therefore more likely to find answers to their health-related questions online rather than from more expensive healthcare information through appointments with professionals. US consumers also spend more time on eHealth websites and this again is likely to be related to the fact that professional consultations are expensive. Individual research may also make the consultation process more effective. Consequently, the following question arises in the UK: should a financial charge be placed on access to healthcare information through appointments with healthcare professionals, alongside generating awareness and educating the public about the availability of the online resources?

Another practical implication of the research is derived from the amount of time users have been found to spend on eHealth websites – between three and

seven minutes per website. This might impact on how healthcare websites are designed in the future, but it also raises questions regarding how informed patients really are regarding healthcare issues.

CONCLUSIONS

By applying digital marketing frameworks to the healthcare context, Holland and Schneider-Swales conduct an intriguing comparative analysis between the search patterns in a private versus public healthcare market, using a systematic and rigorous taxonomy and online measurement framework. Significant differences were observed between the UK and the US, which contradict prior research, highlighting the impact of the type of funding on consumers'/patients' online search patterns. The study raises interesting hypotheses regarding eHealth information search behaviour, which may have potential implications for eHealth policy and design. It also highlights the importance and scale of the use of eHealth information, which can be a useful tool in providing patients with insight into specific health and medical issues, to inform their decisions, and to potentially improve the quality of the consultation process with healthcare professionals. eHealth could be used in the UK to reduce the cost of providing basic health information by encouraging the use of digital channels and to move patients away from more expensive channels such as telephone services, GPs and hospitals.

Behind the Research



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Research Objectives

Professor Christopher Holland, Loughborough University, and Dr Janina Schneider-Swales, explore how eHealth information is accessed in a private healthcare market (US) and a publicly funded healthcare market (UK). The research objectives were to develop a taxonomy and measurement framework to analyse eHealth search patterns in a systematic manner, using techniques and concepts from digital marketing. The empirical focus of the research was to model and evaluate the overall eHealth landscape, based on an extensive data set of the top 100 eHealth websites in the US and the UK. To achieve both a comprehensive sample and also to capture very detailed search behaviour of individual consumers, big data techniques were employed.

Detail

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Bio

Dr Holland is Professor of Information Management at the University of Loughborough. His research focuses on digital marketing strategy, analytics and the evaluation of big data in a marketing context. He has conducted consultancy and research into technology projects in a range of market sectors in Europe and the US.

Dr Schneider-Swales is a Biologist with a business degree working in the Pharmaceutical Industry. She has experience in multiple operational areas in Pharma across a range of countries. Her professional interest is in the application of Big Data and Data Analytics in Healthcare and Pharma.

References

Schneider, J.A. & Holland, C.P. (2017). eHealth Search Patterns: A Comparison of Private and Public Health Care Markets Using Online Panel Data. Journal of Medical Internet Research, 19(4). DOI: 10.2196/jmir.6739

Personal Response

What drove you to pursue research on eHealth Search Patterns?

// eHealth is one of the largest online sectors measured by online penetration and is a major economic sector in terms of the scale of healthcare spending. However, relatively little was known about the overall landscape of eHealth search patterns. By developing a taxonomy of eHealth websites, we could compare and evaluate online usage based on concepts and frameworks that have been applied more widely in consumer markets. This rigorous analysis and evaluation of big data paints a more realistic picture of the overall eHealth landscape in the US and UK, and provides the foundation for meaningful policy and research discussion. //

What are the benefits of using eHealth websites?

// These are three-fold:
1. To answer specific health and medical queries.
2. To increase patient informedness, which has the potential to improve the quality and effectiveness of discussions with healthcare professionals.
3. To share information and ideas with people who have similar health and medical interests. //

