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Antonina Durfee
Appalachian State University

B. Dawn
Appalachian State University

Joseph Cazier
Appalachian State University

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Bias and Intrigue in Internet Searches: Do You Have the Patience and Skill to Find What You Need?

Antonia Durfee
Appalachian State University
durfee@appstate.edu

B. Dawn Medlin
Appalachian State University
medlinbd@appstate.edu

Joseph A. Cazier
Appalachian State University
cazierja@appstate.edu

ABSTRACT

The Internet continues to grow at an ever-increasing rate, with individuals receiving multiple responses to their search queries. More than half of the individuals who search the Internet are satisfied with their search results. Mistakenly, they are unaware of the fact that the results that appear first are most likely paid for.

To gain insight into trust, patience, and search engine proficiency we will conduct a survey followed by an experiment in a follow up study at a comprehensive university. The issues related to the information system areas of security, human computer interaction, and information seeking behavior will be addressed in this paper.

Keywords: Trust, Patience, Skill, Information Seeking Behavior

INTRODUCTION

On an average day in the U.S., 68 million Americans or about 53% of internet users will go online; with more than half of them will use the two most popular search engines which include Google with 46.3 % of the share and Yahoo with 23.4% (<http://searchenginewatch.com/>). Information seeking has often been compared to a rational problem-solving process, where the information-seeking process depends to a great degree on the context and to a large extent on the individual performing it (Solomon, 2002). Some individuals plan and structure their searches, while others gather information in a more flexible and spontaneous fashion. We aim to determine what influences an individual's choice of which web search interface they prefer and how patience, trust, and the enduser's command of search technologies relate to different types of information seeking strategies.

Model

A general analytical model of information seeking and retrieval, which shows various actors and their interaction in context of the field of information seeking, comes from Ingwersen and Jarvelin (2004). Figure 1 represents their original model, where cognitive actors or information seekers in the middle are surrounded by several kinds of contexts formed by their social, organizational and cultural affiliations and a blend from information systems and interfaces of using them. Information seeking behavior means the acquisition of information from knowledge sources, which may come from interaction among people or with information systems. Information space influences and creates information technology infrastructure. Information seekers are users and authors of various information objects. Since information seeking behavior is a user-centered process, we need to learn how information seekers act in interactions with information space. Cognitive actor is a user of search technology who has an individual skill set, persistence and perception of trust.

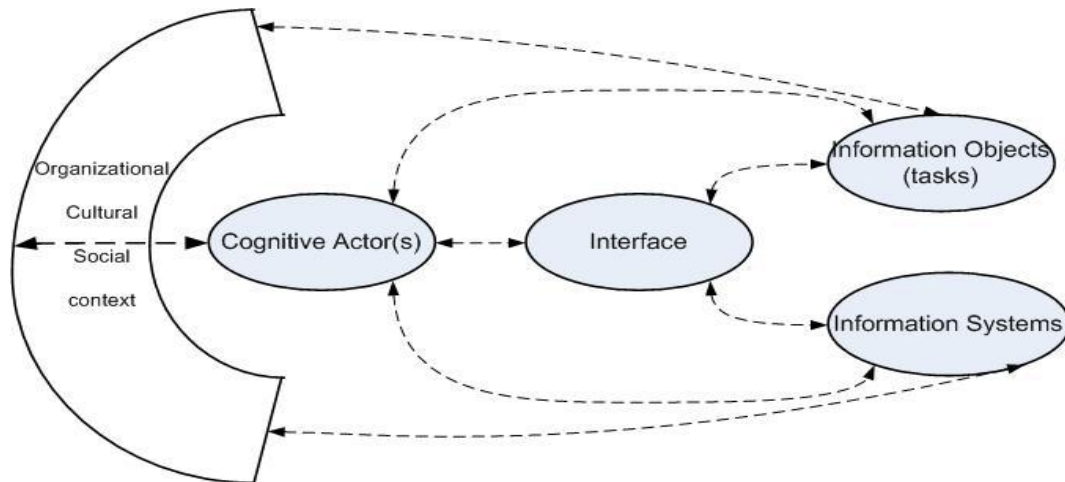


Figure 1. A general analytical model of information seeking and retrieval (adapted from Ingwersen and Jarvelin) (2004).

In order to investigate complicated interrelationships among all the nodes in a diagram from Figure 1, we describe cognitive or information seekers as a confluence of their computer, Internet and search technology proficiency, persistence and trust ability toward chosen information system or interface (e.g. Google form-based like interface vs. Yahoo directory hierarchical interface).

Literature Research

Information seeking behavior and its theories

In this paper we use the definition of information seeking behavior proposed by Wilson (2000) as the purposeful seeking for information as a consequence of a need to satisfy some goal via interaction with manual information systems or with computer-based systems (the Internet). An earlier definition from Wilson (1997) included the need of information, inner processes, and environmental factors affecting an individual's way of responding to the information need. According to Broder (2001) the need behind a web search is not only informational – it might be navigational (i.e. give me the url or address of the site I want to reach) or transactional (i.e. show me sites where I can perform certain transactions).

Navarro-Prieto et al (1999) investigated cognitive strategies in web searching of 20 users. They discovered two different types of tasks. The first type is fact finding and exploration of availability which are affected by user's computer and internet experience as well as their knowledge of search engines, and the second type is their level of satisfaction and accuracy of remembering previously taken search steps.

Persistence and trust of cognitive actor

In the use of information systems merely technical skills are not enough; also a positive attitude and self-confidence are also needed in order to cope with the systems. Emotional aspects like feelings of impatience and frustration can form barriers to the search process (Nahl, 2001). The feeling of uncertainty, often expressed as anxiety or worry, is particularly strong at the beginning of a search process, when the users become aware of their lack of knowledge about the topic (Kuhlthau, 1993).

According to Bandura (1986) the expectations of one's own capacities is more influential on performance than the actual skills one possesses, and could therefore, have an impact on information search behaviors. If searchers consider it likely that they will fail the search task, this affects their further actions. They may even abandon the search too soon. Those who expect to be successful at a search task are more efficient and adaptive than those who doubt their ability to complete the task. The less competence you expect from yourself, the less effort you are willing to use (Nahl, 1996).

Personal attitudes (trust)

Trust is a critical success factor for online businesses and is imperative for organizations and researchers to study how online consumer trust is promoted and cultivated (Koufaris and Hampton-Sosa, 2004). The lack of online trust is one of the main reasons people drop out of online business transactions (Luo, 2002).

Mayer et al. (1995) developed a model for the dimensions trust. These include the trustor's perception of the trustees' ability, benevolence and integrity. Ability, referred to as competence in some of the literature, is the "group of skills, competencies and characteristics that enable a party to have influence within some specific domain." Benevolence is the extent to which a "trustee is believed to want to do good for the trustor, aside from an egocentric profit motive." Integrity is the "trustor's perception that the trustee would adhere to a set of principles that the trustor finds acceptable."

Further complicating the issue of trust is the existence and use of persuasive technologies. Technology, including search technology, can be used to persuade (Fogg, 1999). This growing trend of using technology to persuade impacts a users trust on the benevolence dimension. The proliferation of the paid search industry and the sheer volume of money spent on marketing suggest that persuasive technologies will continue to grow and have an impact on consumers and their level of trust in search technologies.

Prior Research ISB Theories

Numerous studies focused on the impact of individual psychological characteristics on information behavior. Heinström (2000) studied the impact of the Big Five personality traits on the ways that individuals search for information. She discovered that three types of people, fast surfers, broad scanners and deep divers, have distinctly have different approaches to searching and locating useful information and learning. Her survey consisted of 500 graduate students concerning the approaches they used while collecting information related to their masters thesis.

Other researchers have also studied individuals and their search behaviors. Saracevic et al. (1988) conducted a series of observations and experiments in real-life situations to identify cognitive traits and decision making of 40 searchers. Each of the individuals was required to use different searching strategies for the same question. Ford et al. (2001) conducted a study with sixty nine graduate students in a controlled environment and concluded that different individuals do seek information differently. He included in his factors: cognitive styles, levels of prior Internet experience and perceptions, study approaches, age and gender. The researchers found that retrieval effectiveness was linked to male gender, low cognitive complexity, and images that are the opposite of the verbalizer cognitive style.

Jarvelin and Ingwersen (2004) pointed out the need to extend information seeking research toward tasks and technology. Reih (2004) identified the relationships between the home environments, the web context and interaction situation with respect to user goals and information seeking behaviors. He interviewed and analyzed search activity diaries of twelve Northern California residents over a 3-5 day period. Choo and Marton (2003) developed a behavioral model of web information seeking that consisted of four complementary modes of information seeking: indirect viewing, conditioned viewing, informal and formal search. The model was applied empirically to analyze the web information-seeking behavior of 24 women within the IT profession over a two-week period.

Spink (2002) found that all user of web search tools experience major changes or shifts in their information problem or information seeking behaviors with searches that require a low level of precision. She studied a web meta search tool called Inquirus using twenty two volunteers where pre- and post search questionnaires and search transaction logs were used. Bruza et al (2000) studied search effectiveness when using query based, directory based and phrase-based query reformulation searches on fifty four undergraduate students in the field of psychology. Although it is argued that people store information in cognitive hierarchies, directory based searches did not offer increased relevance over query reformulation that appeared to improve the relevance.

We had chosen a complex and information-rich task of travel planning to be conducted by individuals with various Internet searching proficiency using different Internet search engines. Compiling a complicated travel itinerary is informational, navigational, and transactional task.

Description of Task

Historically, research accommodated users as passive, situation independent receivers of objective information. Modern studies of Ingwersen (1992); Murtonen and Jarvelin (1992) suggested a strong impact of task complexity on information seeking strategies suggesting substituting task complexity by perceived task complexity. Ford et al (2003) confirmed the relationship between deep, surface and strategic studying approaches and web searching. Author's manipulated complexity of task from fact based finding to research-based searching. The operational definition of fact-based vs research based was borrowed from Schacter et al (1998). Fact based research has clearly defined goal, low complexity, and specified task requirements and instructions. Research-based tasks, on the other hand, are characterized by loosely specified goals, high complexity, multiplicity and go beyond information given in instructions. Lazonder et al (2000) studied the differences between experiences and novice searchers on "find site" and "find information" tasks. Experts produced higher success rate

in shorter time in “locate site” task. There was no difference in efficiency and effectiveness in “locate information” task on a given site between two groups of searchers.

Our Model

Based on the literature we present the following hypothesis:

H1: A user’s perceptions of trust will influence their information seeking strategy.

H2: A user’s innate persistence will influence their information seeking strategy.

H3: A user’s search experience will influence their information seeking strategy.

H4: A user’s technology skills will influence their information seeking strategy.

H5: A user’s information seeking strategy will influence the interface(s) they choose to employ.

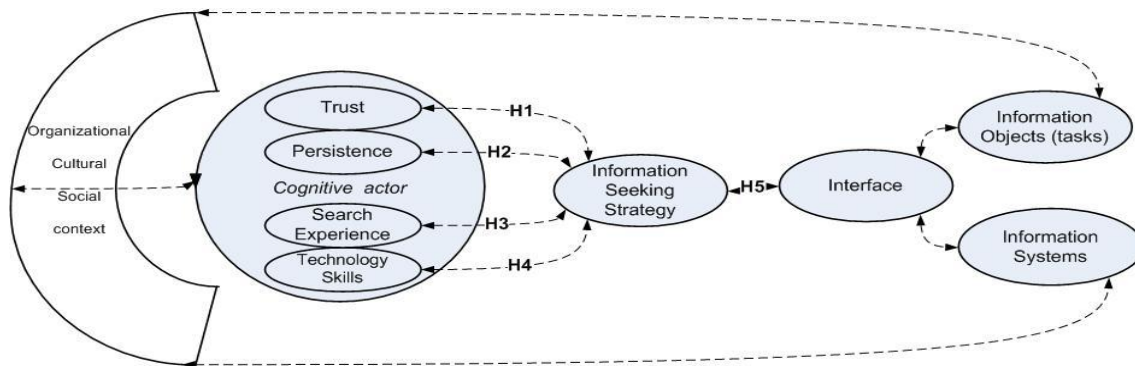


Figure 2: Research Model

METHODOLOGY

In the uncontrolled field experiment phase of our research, business students from a comprehensive university will be asked to complete an internet-based travel itinerary exercise. This task is transactional in nature. Travel searches are complex and include such activities as flight and travel arrangements, hotel bookings, entertainment activities, and other necessary arrangements. These opportunities allow for information searching to be studied on two levels: a primary level that addresses the overall task and subtasks such as specific needs necessary for that trip. Through this experiment we will ascertain their information seeking strategy which will determine the interface they will choose as well as their patience and trust in search technologies. Through this exploratory study we will investigate the relationship between trust, persistence and search technology proficiency and information seeking on the Internet.

CONCLUSION

With our increasing dependence on information in the digital economy, tools and practices that assist us in searching for and finding accurate information are of paramount importance. This study makes an important contribution to the literature by expanding current research and exploring how trust, persistence, search experience and technology skills affect a user’s information seeking strategy and hence the chosen interface. Analysis, results, finding and implications will be presented at AMCIS for this research in progress paper upon acceptance.

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