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## Information Seeking Stopping Behavior in Online Scenarios

The Impact of Task, Technology  
and Individual Characteristics

ANWENDUNGEN  
PROBLEME  
WISSEN

# 1. Introduction

## 1.1. Problem Statement

For more than 150 years, numerous technological advances and disruptive innovations have been changing the way how people work, communicate and influence modern societies (Danneels, 2004; DeSanctis and Poole, 1994). Today, the entity *information* is a major production factor, hence forcing organizations to act as efficient and effective information processors in order to be able to compete in increasingly globalized markets (Capurro and Hjørland, 2003; Choudhury and Sampler, 1997; Kohli and Grover, 2008; McKinney Jr. and Yoos II, 2010; Mendelson and Pillai, 1998). On an individual level, the Internet has a strong impact on the behavior people exert when interacting with information as they now have access to a literally unlimited amount of information considering their restricted cognitive capacities (Browne et al., 2007; Simon, 1982).

From an evolutionary perspective, however, a period of about twenty years in which the Internet gained its popularity is too short for sustainably influencing behavioral patterns that were learned and shaped before today's modern information technology was developed (Kock, 2004, 2009). Therefore, it is essential for Information Systems (IS) developers, managers and users to have a clear understanding of how individuals acquire, process and make use of information they receive from technological artifacts (Wilson, 1999). Several studies have shown that by taking the specific characteristics of human computer-based information behavior into account, information needs can be fulfilled more accurately resulting in higher task performance and user satisfaction (Hong et al., 2004a; Rafaeli and Ravid, 2003; Vessey and Galletta, 1991).

In spite of the fact that human computer-based information behavior is an important early step in many organizational decision making and sense making tasks, there is still a significant lack of research (Hemmer and Heinzl, 2011). Especially the question of when and why information seekers *terminate* information

seeking processes in computer-mediated contexts has been largely neglected in past research (Browne and Parsons, 2012; Browne and Pitts, 2004; Browne et al., 2005, 2007; Davern et al., 2012b). Terminating information seeking processes too early or too late, however, has detrimental effects on the information seeker's overall performance (Bearden et al., 2006, 2005; Seale and Rapoport, 1997): either the acquired information is not sufficient for answering the underlying question accurately (reduced effectiveness), or too much time and effort are invested to come to an appropriate solution (reduced efficiency).

Whereas several *normative stopping rules* have been developed in past research prescribing when a person should stop seeking for information (Busemeyer and Rapoport, 1988; Meyer, 1982; Seale and Rapoport, 1997), only a few publications decidedly investigate actual human behavior in terms of *descriptive stopping rules* (Browne et al., 2007; Nickles et al., 1995; Zach, 2005). With regard to the latter, it becomes obvious that researchers primarily follow two distinct assumptions: they *either* regard a person's decision to stop seeking for information as the endpoint of a rational information acquisition process that is guided by goal-directed reasoning *or* they interpret the stopping decision as a spontaneous reaction that is not based on rational information scrutiny (Gigerenzer and Goldstein, 1996; Stigler, 1961). To date, though, no research explains and predicts how task, technology and individual characteristics affect the two aforementioned contradictory patterns of information seeking stopping behavior.

Apart from the research gap described before, two developments in the field of web-based information provisioning underline the importance of creating advanced knowledge about human information seeking stopping behavior: On the one hand, the *quantity of information* available via online media has been growing exponentially during the last decade (Smyth and Balfe, 2006). As a consequence, the Internet is constantly replacing traditional offline media and catalyzes the development of new behavioral strategies for coping with the large amount of information provided to information seekers both in working life and private life (Andriole, 2010; Taraborelli, 2008).

However, not only the pure amount of information available via online media is rising, but, on the other hand, also the variety of channels which are used to distribute this information to its consumers – such as e-commerce websites, microblogging, social networking or company websites – is increasing continuously.

Recently, there has been an ongoing transformation from static web pages to highly interactive ones, shifting the focus to content visibly created by its users (Bawden and Robinson, 2009; Mudambi and Schuff, 2010). Consequently, issues with respect to *information quality* are another important dimension influencing online information seeking activities: information rich in social cues, i. e. information that was visibly created and rated by a heterogeneous group of people seems to be highly appreciated by today's Internet users, although it is often hard to judge the objective quality of this type of information (Bawden and Robinson, 2009; Smyth and Balfe, 2006). Social cues convey additional contextual information which go beyond "objectively correct information" (Cross et al., 2001, p. 439) and are likely to support a holistic approach for making sense of the acquired information without a thorough argument scrutiny (Petty and Cacioppo, 1986).

In summary, both from a research perspective as well as from a practitioner's viewpoint, there is a strong need for obtaining insights into the determinants of computer-mediated information seeking stopping behavior. Furthermore, it is essential not to take a purely rational view assuming that human information seekers strictly follow systematic processing rules but also to investigate factors activating spontaneous, affective reactions on part of the information seeker.

## 1.2. Research Objectives

Given the aforementioned research gaps in the realm of information seeking stopping behavior, this study addresses several derived questions. First, the research project analyzes two fundamentally different reasons why people terminate information seeking processes showing rational, goal-directed stopping behavior on the one hand and impulsive, spontaneous stopping behavior on the other hand. Thus, two research streams that were investigated separately in the past are combined in one theoretical model in order to answer the following research question:

*(1) Why do people stop seeking for information in online scenarios?*

As this study's major objective consists in the development of a holistic nomological network for explaining and predicting information seeking stopping behavior, the determinants of stopping behavior are also identified and integrated

into a coherent research model. A specific focus is set on the impact of social cues on information seeking stopping behavior as information visibly created by other social actors is constantly gaining importance in the context of web-based information provisioning (Cross et al., 2001; Cyr et al., 2009; Gefen and Straub, 2004). Consequently, the following research questions are addressed:

*(2a) Which factors influence the decision to terminate information seeking processes in online scenarios?*

*(2b) How is information seeking stopping behavior influenced by the presence or absence of social cues?*

Answering these research questions provides various insights for several stakeholders. *First*, a central topic for the IS discipline, namely the relationship between human beings and the entity information, is addressed holistically. Therefore, existing theories from different disciplines will be combined in a multi-theoretical research model. Hence, a mid-range theory of information seeking stopping behavior is developed which also informs extant theories by applying them in a new context of computer-based information processing. *Second*, by applying modern psychophysiological measures as part of a triangulation approach, new insights into cognitive processes are generated that are not amenable to traditional empirical data collection methods (Dimoka et al., 2011; Riedl et al., 2010a). *Third*, information system designers get valuable advices on how to develop information systems that adequately support their users in information-intensive task scenarios and thereby maximize their task performance. At the same time, the findings will also be helpful for the operators of e-commerce websites or online search engines because they get knowledge on how they can influence the users' information seeking stopping behavior actively and intentionally (Mudambi and Schuff, 2010).

### 1.3. Overview of Research Methodology

The study takes a *post-positivist epistemological perspective*, assuming that there are unilateral causal relationships which can be deduced from universal laws or principles and which can be tested empirically in order to verify or falsify them. The objective is to generate “generalized knowledge” (Orlikowski and Baroudi,

1991, p. 10) and thus, the thesis is theory-building. *The level of analysis* is the individual user of information technology although there is a continuum towards a group perspective since information seeking is usually integrated into a broader social context with several persons interacting. *Methodologically*, the study follows an experiment-based triangulation approach, combining quantitative, qualitative (Meredith et al., 1989) and innovative techniques from the field of neurosciences (Dimoka et al., 2011; Riedl et al., 2010a). The goal is to reduce method bias (Burton-Jones, 2009), balance internal and external validity of the results (Bonoma, 1985) and especially to allow for both confirming the validity of the deduced propositions and giving explanations and predictions (Gregor, 2006).

The research design comprises three sequential stages. *In the first stage*, extant research on information seeking stopping behavior will be analyzed in order to identify task-, technology- and individual-related determinants. Theories from the IS domain and adjacent disciplines will be combined to deduce theoretical explanations for the hypothesized causal relationships between independent and dependent variables. *In stage two*, these insights are summarized in a comprehensive but nevertheless parsimonious research model explaining and predicting human information seeking stopping behavior. *In the third stage*, a web-based laboratory experiment environment will be developed and used to pre-test the research model's theoretical assumptions. Furthermore, heart rate variability measurement will be employed for obtaining complementary data on human behavior in a high granularity. Post-hoc interviews with the participants of the experimental sessions will help to potentially detect additional constructs and causal relationships that were not part of the original model. Finally, the research model on human information seeking stopping behavior will be validated following a survey-based experimental approach. Figure 1.1 summarizes the research methodology.

## 1.4. Study Organization

The study is divided into seven chapters, reflecting the logic of the research methodology introduced in the previous section.

The major objective of *Chapter 2* consists in the development of a research model for explaining and predicting human computer-based information seeking

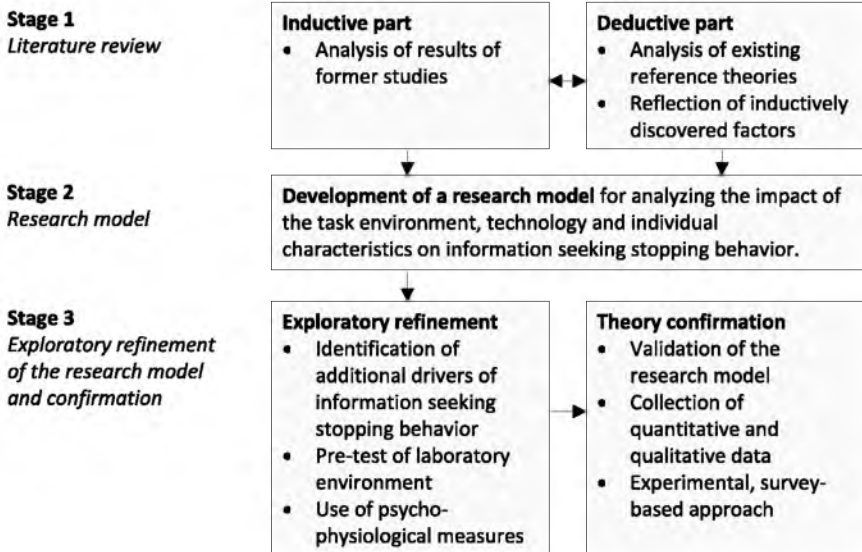


Figure 1.1.: Research Approach

stopping behavior. For this reason, the fundamental terminology concerning the entity *information*, the concept of *human computer-based information behavior* and *information seeking stopping behavior* are introduced. Based on extant literature, appropriate theoretical lenses for answering the study's research questions are identified and discussed.

In *Chapter 3*, the study's research methodology is described in detail, before major characteristics of the web-based laboratory environment are introduced which is used to collect empirical data in a triangulation approach comprising questionnaires, interviews and the use of psychophysiological methods.

*Chapter 4* gives an overview of a pre-test with eleven subjects using the laboratory environment while being connected to a heart rate monitor. Furthermore, the findings of interviews that were conducted with the participants after the experimental sessions are presented and result in a slight adaptation of the research model.

In *Chapter 5*, the design and the results of the empirical main study are described. This study is conducted in order to validate the research model's hy-

pothesized causal relationships explaining information seeking stopping behavior. Again, the laboratory environment is used for collecting data after it was improved based on the feedback by the participants of the pre-test.

In *Chapter 6*, the findings gained by the analysis of the empirical data are presented. Implications for theory and practice are discussed before the study's limitations are described and avenues for future research are stated.

The study closes with a summary in *Chapter 7*.