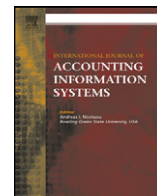




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How much is enough? An investigation of nonprofessional investors information search and stopping rule use☆

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ABSTRACT

Regulators are concerned that the information overload in the current Internet-based disclosure environment may cause investors to overlook important information. To gain a better understanding of the information set gathered by investors, this study incorporates theories from information systems research to examine the cognitive stopping rules used by investors to terminate information search. We survey nonprofessional investors to gain insight into what information they gather and when they determine they have enough information to stop searching and make an investment decision. Demographic analysis shows that investor characteristics are associated with the particular stopping rule used. In addition, results show that the stopping rule used affects the amount and type of information gathered. We find that, in general, investors include very little financial information in their search, and the amount gathered depends on the stopping rule employed. Our results call into question the decision usefulness of accounting information for nonprofessional investors and should be of interest to accounting information systems researchers, regulators, and accounting practitioners.

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1. Introduction

The Securities and Exchange Commission (SEC) (2012) considers information search a critical part of the investor's due diligence process. Investor demand for easier and timelier access to information has led to a significant increase in the quantity of Internet-based information (e.g., investor news, company websites, and social media platforms) available for investors to search. An unintended consequence, however, is that nonprofessional investors¹ are overloaded with information. The SEC is concerned with information overload and warns of the potential negative capital market effects if investors "overlook or do not take the time to study valuable information because there is simply too much information to try to engage it constructively" (Paredes, 2013). SEC Chairman Mary Jo White called for disclosure reform to address the information overload problem and investigation into what information investors find necessary and what information investors do not want (White, 2013). In other words, the actual information that investors find useful to the investment decision making process is an unanswered empirical question. To shed light on the issue, this study investigates investors' information search processes.

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¹ We examine nonprofessional investors, as opposed to professional analysts, as research shows that nonprofessional investors are more likely to experience information overload and rely upon heuristics during decision making (Maines and McDaniel, 2000). For expositional ease, we refer to nonprofessional investors as "investors."

The search process is key to understanding what information investors consider decision useful.² Any decision making task is preceded by a search for information that the individual considers useful. In situations of information overload, such as an investment task, a plethora of information is available which must be reduced, or filtered, in order to be used effectively. The process used to filter the information will likely have a significant impact on the information set gathered, the information set ignored, and, ultimately, investment-related judgments and decisions. We rely on findings from information systems research and examine the filtering mechanism used by investors that leads to information search termination (i.e., the stopping rule) and the end result—the information set gathered.

Academic research regarding investors' information search strategies is scant and findings are limited by the methodologies employed. For example, archival studies offer evidence of aggregate investor information search volume via EDGAR and Google around corporate event dates (e.g., Drake et al., 2012, 2014), but archival methods cannot identify individual decision processes or investor characteristics that influence search. The most common survey method is to provide investors lists of information types and sources to evaluate (e.g., Elliott et al., 2008), and experimental studies (e.g., Cianci and Falsetta, 2008; Rose et al., 2010; Arnold et al., 2011) vary specific information cues presented to participants in order to isolate variables of interest that impact search.³ However, the information sets used in these studies are determined by the researchers a priori and it is not clear if investors would include the same information in a more natural (i.e., not primed) setting.

Information processing theory suggests that investors may not be able to consume the amount of information provided in prior studies. Specifically, individuals' cognitive capacities are limited and they often use heuristics, or decision rules, to lessen the cognitive burden of decision making tasks (Miller, 1956; Chewing and Harrell, 1990; Stock and Harrell, 1995; Tuttle and Burton, 1999; Pennington and Tuttle, 2007). However, prior survey research often uses long lists of items which far exceed an individual's processing capacity. Thus, it is unlikely that investors have the capacity to use all the information provided in these studies. We posit that investors' information search will reveal a more limited set of information that the investors find useful to the investment decision.

To manage information search, eventually the investor must stop the search. Information systems research defines stopping rules as heuristics individuals use to determine when the information gathered is sufficient to terminate information search and move on to the decision making stage of the task (Nickles et al., 1995; Pitts and Browne, 2004; Browne and Pitts, 2004). The use of a stopping rule involves determining sufficiency through a comparison of the information gathered to some pre-defined criteria. When the criteria of the stopping rules are met, the search for information stops. Prior research does not consider what stopping rule investors are likely to use. We suggest investors will determine sufficiency of information by using the criteria of one of the following stopping rules: absolute standard, differences, or single criterion. For an absolute standard stopping rule, the criterion is a certain amount of information and/or a pre-determined list of information items. If investors use an absolute standard rule, they would search until the pre-determined amount of information or list of information items is attained. The criterion for a differences stopping rule is the incremental value of an additional information cue to the overall view of the information set. If investors use a differences rule, they would search until the overall representation (or mental model) of the company stops shifting and stabilizes. The single criterion stopping rule considers a single information item (e.g., stock price history) and/or related facts about that item as sufficient information. If investors use a single criterion rule, they would search until the information on that criterion or characteristic is attained (see Table 1).

Prior information systems research finds that characteristics of the decision maker (e.g., experience) and of the task influence stopping rule use and that the specific stopping rule used affects the amount and type of information gathered (Pitts and Browne, 2004; Browne and Pitts, 2004; Browne et al., 2007). However, it is unclear whether results from prior research will generalize to an investment decision making task as the investment task is inherently different than the tasks used in prior research. For example, investors often conduct information search online and have immediate access to a vast amount of information from multiple sources (Kelton and Yang, 2008). This unlimited amount of information makes it possible for investors to gather similar quantities of information regardless of the stopping rule used. For example, a single criterion investor may gather a similar quantity of information cues about a specific investment characteristic (e.g., revenues) as an absolute standard investor with a pre-determined list of information requirements. In addition, the stock investment task has a relatively higher degree of risk, as compared to tasks used in prior research, which may result in different stopping rules being used and differing effects on information search outcomes (Browne et al., 2007). Investors are typically loss averse (Tversky and Kahneman, 1991) and respond to increased risk by collecting more information during search (e.g., Blay et al., 2012). It is thus unclear whether and how stopping rule use will impact investor information search.

We draw from research in information systems and psychology to investigate the association between stopping rule use and the quantity and type of information investors gather. The theory of representational congruence (Chandra and Krovi, 1999)

² We adopt the view of decision usefulness offered by Williams and Ravenscroft (2015, p. 12) in that "what is useful is determinate only from the perspective of the individuals making the decisions in their particular contexts."

³ Information search research in other disciplines uses a similar methodology. Specifically, these studies provide participants with specific information cues to search in order to complete an experimental choice task. For example, Chen et al. (2015) examine the impact of affect and task goal on consumers' information search and purchase decisions. Chen et al. (2015) provide participants with 30 customer reviews and measure information search by capturing the number of reviews (of the 30) that participants read. In a separate experiment, Chen et al. (2015) provide participants with information regarding the location, price, and specialties of 10 different restaurants and measure information search by the number of information cues each participant read. Huang (2000) examine the effect of information processing goals and political sophistication on the search for candidate information and voters' decision processes. Huang (2000) use a computerized matrix board to provide participants with 15 types of information (e.g., positions on specific issues, demographic information, poll results, etc.) about six hypothetical candidates and measure information search by tracking which information cues participants select.

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