The Impact of Information Overload on Decision Quality in the Web 2.0 Environment: A Cognitive-Emotional Dichotomy Perspective

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Abstract
Most information overload research has been done in cognitive load contexts and predominantly focused on normative decision-making process. This study suggests the need to divide information load into two dimensions: cognitive load that is found in prior research, and emotional load as a new dimension. The emotional dimension can affect the information overload that results from the prevalence of the Internet. The present study aims to find a new factor or dimension of information overload and its impact will be examined.

Keywords
Information overload, Web 2.0, Cognitive and Emotional load, Decision quality

1. Introduction
The abundant information has been aggravated by the rise of the Internet in the 1990s, and later by the advent of the social networking tools of Web 2.0 technology. These technical advances have led to a more complex information environment (Bawden and Robinson 2009). However, the abundant information plays a critical role not only in improving consumer buying decisions by reducing buyer search costs (Bakos 1991), but also in increasing information load beyond a certain level; thus, consumers might need to exert more effort in processing information, subsequently making lower quality decisions (Chen et al. 2009).
This study suggests the need to divide information load into two dimensions: cognitive load, which prior research has highlighted; and emotional load as a new dimension. People’s emotions can be affected by the information overload that results from the prevalence of the Internet. Recent developments in social psychology suggest that emotion may play a more central role in the decision making process than previously recognized.
This research-in-progress study aims to find a new factor or dimension of information overload (e.g., emotional load, information channel). Furthermore, the effects of both traditional and new information overload factors on consumer’s decision quality will be investigated. Thus, two primary research questions are: 1) What causes information overload in the current Internet environment?; and 2) How do these levels of information overload affect consumer decision quality?

2. Impact of the Web 2.0 environment on consumers
Digital life transition due to Web 2.0 technology, specifically social networking services, has a large impact on both buyers and sellers in market research. Traditional electronic markets mainly use company Internet sites, Internet retailers, or Internet portals for marketing their products and
services. However, these channels are already considered “old Internet” (Eccleston et al. 2008). Web 2.0 technology and social networking services affect commercial influencing behavior, which includes collecting information, and discussing and recommending products and services interactively (See Figure 1).

3. Research model and hypotheses
Most information overload research has been done in cognitive load contexts and predominantly focused on normative decision-making process (Malhotra 1982; Keller and Staelin 1987; Helgeson and Urisic 1993; Lee and Lee 2004). Hence, there is a distinct challenge to develop a research model that integrates prior constructs that are appropriate for the emotional contexts and role of information channels.

However, most of constructs identified by prior studies apply to cognitive levels that are quite different from that being studied here. For example, Pham (1998) states that people may evaluate targets by holding the target’s representation in their minds and asking themselves, “How do I feel about it?” Positive feelings would lead to a favorable evaluation of the episode, whereas negative feelings would lead to an unfavorable evaluation. Bawden and Robinson (2009) also identify the channel effect, such that technical advances have led to a richer and more complex information environment, with a greater amount of information available, in a greater variety of formats and types of information resource, and accessible through a greater variety of media and communication channels.

Therefore, the present research proposes an integrated model (Figure 2), in which information overload and decision quality are influenced by three sets of factors: cognitive load, emotional load, and information channels.

3.1 Information overload
Abundant information plays a critical role in improving the quality of consumers’ decisions (Bakos 1991). One of the advantages of Internet marketers is the capacity to convey large amounts of information at a very low cost, widen the range of product choices, and improve consumers’ welfare.

According to the theory of information overload, however, information load increases beyond a threshold; hence, consumers might need to exert more effort to process the information, subsequently making poorer decisions (Chen et al. 2009). The information-rich nature of the online environment can easily become a trap for information overload to occur, as more and more consumers become part of the Internet population.
3.2 Cognitive load factors
Prior research on information overload in cognitive perspective has identified the following three load factors.

3.2.1 Information quantity
Information quantity pertains to the amount of product information via the number of alternatives in the choice set and the number of attributes, as well as the effect of information load on decision-making performance. Jacoby et al. (1974) present convincing results ascertaining the influence of the amount of information on consumers’ ability to make correct decisions among many different products. The traditional approaches that investigate the effect of information load on choice quality usually involve measuring the amount of information by counting the number of alternatives and attributes presented to consumers (Lee and Lee 2004).

3.2.2 Information quality
Information quality have considered important factor of information overloads. Prior studies suggest that information quality should be considered together with information quantity. For example, Keller and Staelin (1987) argue that “when information quality was held constant, increases in information negatively affected decision accuracy,” and “when information quantity was held constant, increasing information quality increased decision accuracy to some point.” Helgeson and Ursic (1993) also demonstrate that the number of attributes and alternative similarity negatively affect choice accuracy, with alternative similarity having the most impact on choice accuracy.
3.2.3 Information structure
Recent considerations on information structure are unlike earlier approaches that define the amount of information as the multiplication of the number of alternatives and attributes and their similarity and variability. To remedy the shortcomings of the information quantity and quality approaches, other researchers have suggested that the amount of information should be the sum of the number and probability of outcomes developed in the formal information theory (Lurie 2004), which assumes that the amount of information in a given set is determined not only by the number of alternatives and attributes but also by the distribution of attribute levels across alternatives. It indicates that attribute level distribution with the traditional measure of information amount can provide a clearer understanding of the information overload phenomenon (Lee and Lee 2004).

**H1:** The higher the level of cognitive load (information quantity, information quality, and information structure), the higher the degree of perceived information overload.

3.3 Emotional load factor: Information feelings
The second factor is called the emotional factor. Prior research (Ochsner and Gross 2005; Olsson and Ochsner 2008; Izard 2009) suggests that positive feelings would lead to a favorable evaluation of the episode, whereas negative feelings would lead to an unfavorable evaluation. Consumers will sometimes avoid making a trade-off among conflicting attributes through feelings (e.g., negative), which leads to the use of simplifying heuristics and biased decision outcomes (Pham 1998).

![Emotional Range Diagram](image)

**Figure 3:** Relationship between cognitive and emotion (Hirschman and Stern 1999)

Hirschman and Stern (1999) suggest that current personal events would have transient effects on consumer’s emotional states and the direct influence of emotion on a variety of cognitive responses. In other words, consumers may cope with the potential negative emotion associated with such choices by practicing certain avoidant behaviors (See Figure 3). In explaining emotional load, consumers often face emotion-laden choices involving conflicting goals of personal importance.
H2: Emotional load will moderate the relationship between cognitive load and perceived information overload.

3.4 Information channel load factors
Traditional electronic markets use company Internet sites, Internet retailers, or Internet portals for marketing their products and services. However, these channels are already considered “old Internet,” which consists of low-engagement and traditional online activities, such as simple web surfing and sending/receiving email (Eccleston et al. 2008). Recent research on the impact of Web 2.0 technology (e.g., YouTube, Wikipedia) on consumer purchase decisions shows that the average broadband user spends 27 percent of his/her time online on communication activities, and approximately one-third rate or review products online (Riegner 2007). In this trend, electronic commerce and market research are often concerned about failing to provide the insights sought by customers in an increasingly complex society. They believe that a Web 2.0 platform and a social network approach provide marketing research with new tools for meeting the challenges of the future. However, this trend may cause consumers’ information channel load to levels that they cannot control, because of the numerous forms of social networking services that allow people to participate actively in the marketing and selling of products and services in online marketplaces (Stephen and Toubia 2010).

H3: Information channel load will moderate the relationship between cognitive load and perceived information overload.

3.5 Decision quality: The dependent variable
Decision quality simply means a consumer’s best choice (Jacoby et al. 1974). Chen et al. (2009) point out that decision theories care about two things: outside information and decision quality. They also describe consumer’s decision as perfect information, and recognize complete rationality as the way to obtain an optimal decision. However, the complexity and limitation of individuals’ information processing capacity and the difficulty to gather perfect information limit a consumer’s best decision. In reality, individuals usually adapt well enough to “satisfied” but not “optimized” decisions due to these limitations (Simon 1956). Although outside information is necessary for decision making, the individual factors in relation to processing information seem more important. While making decisions, consumers also use a variety of information processing strategies, a type of “mental information filtering mechanism,” to trim down those complex tasks of assessing alternatives and predicting the value of outcomes into some simpler judgments (McGuire 1976). The frequency heuristic, for example, indicates that frequency knowledge plays an important role in consumers’ decision making. Frequency knowledge refers to the mere number of positive or negative attributes of a product which is accumulated while information load inhibits the comprehension of alternatives’ semantic details. However, the frequency heuristic often leads to erroneous decisions (Alba and Marmorstein 1987).

H4: The higher the level of perceived information overload, the lower the degree of decision quality.
4. Research methodology
This study will employ a two (the level of cognitive load; high or low) by two (the level of emotional load; high or low) by two (the level of information channel load; high or low) between-subjects design. To validate the hypotheses, an online-based experimental survey will be developed, in which respondents will be shown a product with high or low levels of cognitive, emotional, and information channel load, and asked their perceived level of information overload and their best choice. In measuring the effects of information overload on decision quality, this study will employ the statistical procedures of prior studies (Malhotra 1982b).

5. Expected contribution and implications
This study expects to extend previous work on information overload by finding additional load factors in the Internet environment. Many prior studies focus on consumers’ cognitive load factors, but scant attention has been given to examining the emotional factors like consumers’ feelings about a product. In the situation that many individuals have discovered the power of blogs, wikis, and social networks, emotional load factors may have a stronger effect on consumers’ decision quality than previous cognitive factors. Furthermore, the current Internet environment makes people use various channels interactively. Therefore, the level of information channels can be another key factor in considering information overload.

This study has two practical implications. First, by integrating views about the cognitive-emotional and information channel load factors, this study can provide meaningful guidelines for firms on the commercial use of Internet technologies. Second, information overload can affect consumers’ best choice in unexpected ways. This study can provide consumers with a new mindset that overcomes information overload problems by categorizing the loading factors.

References


