



Exploring the relationship between cognitive effort exertion and regret in online vs. offline shopping



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ABSTRACT

Decision making is a fundamental building block of people's lives. Each decision requires expenditure of cognitive effort, though to a varying degree, which is considered a valuable yet limited resource in the decision making literature. Though the importance of a cognitive effort minimization goal is well-established in the marketing literature, this paper examined how cognitive effort exertion can be useful to minimize negative emotions such as regret in the consumer decision making context. Study 1 explored the impact of cognitive effort on the experience of regret by conducting a 2 (Cognitive effort: High vs. Low) \times 2 (Store type: Offline vs. Online) experiment and found higher cognitive effort exertion led to less regret after missing out on a lower price. This effect was most prominent in an offline purchase situation. Study 2 further examined the elements of online shopping that led to a higher regret by conducting a 2 (Cognitive effort: High vs. Low) \times 2 (Type of Information: Touch vs. Visual) experiment. Study 2 confirmed the benefits of touch information in reducing experienced regret; but cognitive effort moderated this effect. Overall, the current studies contribute to the progression of knowledge between cognitive effort and experienced regret when shopping online and offline.

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1. Introduction

With the fast growth of the World Wide Web, and increased ownership of personal computers (Brown, 2008), online shopping has quickly become a part of the human lifestyle. This change in shopping behavior has continued to grow, as evidenced by \$172 billion in total online shopping sales in 2005; current projections for 2017 suggest this number may rise to \$440 billion (Jones, 2013).

This trend in online shopping may serve as a catalyst for new research in consumer behavior (e.g., Flavián-Blanco, Gurrea-Sarasa, & Orús-Sanclemente, 2011; Wang & Benbasat, 2009). Although there are clear similarities between traditional offline shopping and online shopping, there may be stark differences as well (e.g., Browne, Durrett, & Wetherbe, 2004). For example, by definition online consumers are removed from the physical location of the store. This results in inherent constraints on the shopping experience such as holding a product and closely examining its features. However, what is lacked in the online shopping experience in

terms of tactile information is made up for in clearly displayed product specifications; products online are clearly marked with sometimes overwhelming amounts of information which influences consumers' overall shopping experience (e.g., Kim & Lennon, 2000).

The current study aims to address the dynamic between people's cognitive effort exertion and experience of regret in either a web-based (online) or a traditional shopping environment (offline). As people interact with computers and technology, information search has never been more convenient and the employment of new technology may have changed the nature of information search during shopping. The focal point of the current study is on the psychological impacts of online shopping in relation to cognitive effort expenditure. As people interact with technology, psychological impacts from varying degrees of cognitive effort deserve further investigation. This is particularly true since studies on consumers' information search and emotions remain scarce (Flavián-Blanco et al., 2011). Specifically, we were interested in investigating tangential psychological differences, such as regret, occurring post-purchase. Before discussing the literature on regret and cognitive effort, it is helpful to illustrate the purpose of current study with a plausible shopping scenario. Imagine that Emily, a college student looking for her first laptop, and Rachel, a seasoned computer programmer, are both planning to purchase a new personal computer. Although both may have a similar decision

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process for purchasing a new laptop, the information search strategy, and therefore the information used in the decision, may be quite different; Rachel might look for different product attributes than Emily. Although both may be satisfied with their purchases immediately following the shopping experience, it is possible later emotions may differ based on how much information was gathered during the search process. This paper empirically tests the impacts of information search, and information type, on post-purchase regret.

1.1. Internal information search cost (cognitive effort exertion)

The first step in consumer behavior is information search (Bettman, 1979). In general, information search benefits consumers by reducing uncertainty about a product. However, this benefit does not come without a price tag; adequate information search requires significant time and cognitive effort. Cognitive effort is the aggregate use of mental resources and, in the decision making literature, it is often described in a similar context to terms such as mental effort, mental cost, decision cost, and decision effort (Einhorn, 1980; Johnson, 2008; Johnson & Payne, 1985; Navon & Gopher, 1979; Tversky & Kahneman, 1973).

Numerous studies refer to cognitive effort as a valuable yet limited internal resource that needs to be conserved (e.g., Fiske & Taylor, 1984). When consumers waste this finite mental resource, the overall perceived decision quality (a combination of the products features, and how the consumer feels about the product) could suffer. The more dominant view in the consumer decision making literature is that consumers actively aim to minimize cognitive effort for a decision by avoiding the use of high cognitive effort-laden decision strategies (e.g., Bettman, Luce, & Payne, 1998; Johnson, Bellman, & Lohse, 2003). For example, if consumers are faced with too many items in one choice set, their satisfaction level will decrease due to a high decision cost (Iyengar & Lepper, 2000; Sagi & Friedland, 2007; Swait & Adamowicz, 2001). Dijksterhuis and van Olden (2006) observed a dwindled satisfaction rate after a prolonged and consciously deliberated decision process. Similarly, deliberating alternatives and inspecting the reasons for the choice decreased the perceived quality of the final option (Wilson & Schooler, 1991). In a more recent study, extended search time while shopping online caused consumers to hesitate making the final transaction and increased perceived risks associated with a product (Cho, Kang, & Cheon, 2006).

Evidence suggests there is a clear price for expending cognitive effort during information search. Although this may reduce uncertainty about a product online (e.g., Kim & Lennon, 2008), too much information search—and therefore too little remaining cognitive effort—may result in less than desirable feelings about the final product choice. So, one might argue a judicious consumer should do her best to reduce the cognitive effort exertion. Furthermore, with the advancement and employment of web-based decision aids and web-based tools, consumers' cognitive effort reduction has become convenient (Wang & Benbasat, 2009; Zettelmeyer, Morton, & Silva-Risso, 2006). Despite its usefulness in reducing decision costs, an overemphasis of a cognitive effort minimization goal will often sacrifice decision accuracy. This reduction in decision accuracy may then lead to an increase in negative valuations of a decision, such as an increase in regret. There is a clear trade-off between the value of reduced uncertainty gained from information search, and the value of retaining enough cognitive effort to have positive feelings about the product post purchase.

More recent studies have even shifted the focus from a decision maker's trade-offs between cognitive effort and accuracy to improvement in the decision quality while preserving more cognitive effort (Häubl & Trifts, 2000). Kool and Botvinick (2013) argued in favor of motivation-based cognitive exertion theory rather than

a finite mental resource based theory (e.g., limited cognitive effort). The idea behind motivation based theory is that cognitive exertion is context sensitive and people will be motivated to expend cognitive effort until they find a balance with cognitive disengagement, rather than being hesitant to expend cognitive effort for the fear of its depletion. This is a relatively new theoretical approach which provides a novel way to interpret consumers' behaviors online. For example, a student looking for a laptop online may be motivated to spend cognitive effort in searching several websites and stores to find the best deal. In this instance they are conserving something, but that something is their total amount of money. In this case, consumers may exert cognitive effort, thereby sacrificing the effort minimization goal, but they may achieve other equally important goals in return. In particular, this study is interested in examining the benefits of cognitive effort exertion in terms of reduction of negative emotions such as regret.

1.2. Regret

Consumer decisions are often emotion-laden, and emotions can make powerful predictions about consumers' future behaviors (Flavián-Blanco et al., 2011). Furthermore, consumers are generally known to have a negative emotion minimization goal (Bettman et al., 1998). Among a range of diverse negative emotions, regret is known to bring one of the most intense emotional responses (Saffrey, Summerville, & Roese, 2008) and consequently, people are regret-averse and try to regulate their regret levels (Zeelenberg & Pieters, 2006).

One possible explanations of the intensity of regret is that it lies in the center of a decision maker. Regret is a negative emotion experienced when comparing or imagining future or forgone options (Bell, 1982; Zeelenberg, 1999), and realizing that one could have been in a more favorable situation had they chosen a different option. Studies about regret have repeatedly shown that a person needs to have a sense of responsibility for his/her negative outcome to feel regret. For example, Zeelenberg, van Dijk, Manstead, and der Plicht (1998b) argued that regret is a subcategory of disappointment and a decision maker will feel regret only when the disappointing result is attributed to him/her. Due to a strong relation between personal responsibility and regret (Zeelenberg, van Dijk, & Manstead, 1998a; Zeelenberg et al., 1998b), regret often leads to self-blame (Zeelenberg & Pieters, 2007) and can be aversive to one's wellbeing (Jokiassair, 2003). Unfortunately, regret is unavoidable for many consumers and it can have a lingering negative consequences (e.g., Lecci, Okun, & Karoly, 1994).

To overcome this unpleasant emotion, studies have found unique coping strategies to mitigate regret's unpleasantness. For example, the regret literature suggests that the degree of regret is attenuated when a decision is perceived as justified (Inman & Zeelenberg, 2002). This also explains why consumers engage in justification and rationalization of their decisions as a coping mechanism after experiencing regret. Furthermore, consumers tend to engage in more elaborative information search or rationalization to cope with this severe feeling (Yi & Baumgartner, 2004; Zeelenberg et al., 1998a). These coping behaviors show that the intensity of regret depends on how the decision maker processes the information, and that the intensity of experienced regret may shift depending on the amount of information being processed. The relationship between exertion of cognitive effort and the experience of regret is still being explored in the literature.

1.3. Cognitive effort and regret in online shopping

One of apparent benefits of cognitive effort exertion is the increased decision accuracy (Bettman et al., 1998). With more extensive information search, it is reasonable to gain more

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