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Currency of Search: How Spending Time on Search is Not the Same as Spending Money

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Abstract

Search theories suggest that a decline in search costs increases search behavior. This relationship has been well supported by prior experimental research but not by studies conducted in retail settings. Our review of the literature suggests that this discrepancy might be driven by the fact that prior experiments typically involve money-based search whereas actual search in retail settings is usually time-based. We argue that the currency of search plays a moderating role. We find that when participants spend money on search, a decrease in search costs has a significant effect on search decisions but, when they spend time on search, a decrease in search costs either has a relatively weak effect (Experiment 1) or no effect at all (Experiment 2). Furthermore, this insensitivity in time also emerges for search payoffs (Experiment 3). We also offer evidence for the processes underlying these effects. Our results provide a new lens to examine inconsistencies in the search literature, and present a view of search that is more applicable to the retail context.

Keywords: Consumer search; Time versus money; Judgment and decision making

Search is a key component of the decision process in retail settings (Miller 1993), and involves seeking information to resolve purchase uncertainties (Moorthy, Ratchford, and Talukdar 1997). Consumers make search decisions in either sequential (Schotter and Braunstein 1981, Zwick et al. 2003) or non-sequential (Burdett and Judd 1983) settings. Sequential search is open-ended and the search decision pertains to when search will be terminated. For example, a consumer trying to buy a couch at the lowest price could keep on visiting furniture stores, and decide to stop searching as soon as she finds a satisfactory price. In non-sequential search, consumers make search decisions even before commencing search. For example, the consumer trying to buy a couch could make an a priori decision about the number of stores to visit in order to check prices. What is common to both these kinds of search, however, is a tradeoff between costs and payoffs. *Search costs* have to be incurred (e.g., spending time to visit stores) in order to achieve potential *search payoffs* (e.g., finding a lower price). The *willingness to search* refers to the number of stores that one decides to visit. This paradigm follows from Stigler's (1961) seminal paper in which he analyzed search as an optimization-under-constraints problem; greater search leads to a higher likelihood of success but involves greater costs as well. Although search entails costs, it can lead to a better payoff, such as a lower price for the good. Therefore, a decline in search costs or an increase in search payoffs should increase consumers' willingness to search. We propose that these fundamental relationships are moderated by the currency of search: time versus money. We experimentally show that willingness to search is less sensitive to changes in costs and payoffs when search is conducted by spending time rather than money.

Our findings have direct relevance for retail theorists and practitioners. As we discuss in the next section, the effect of search costs on search decisions has been well supported by prior experimental research but the evidence from retail settings is not supportive. Our review of the literature suggests that this discrepancy might be driven by the fact that prior experiments typically involve money-based search whereas search in retail settings is usually time-based. We argue that search is likely to occur differently in settings in which money is spent (e.g., paying a real-estate agent to search for home buyers) than in retail settings in which search involves spending time (e.g., visiting different

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retailers or e-tailers). This has consequences for retailers trying to be in the consideration set of consumers searching for products and services. One interesting implication relates to the Internet context, which has been widely studied in the retailing literature (Grewal and Levy 2007). Given that search costs are lower in the electronic world than in the physical world, retailers worry that the Internet leads to higher consumer search and, therefore, more intense competition (Lynch and Ariely 2000). While these worries are perfectly understandable, it seems that people might not be searching very extensively over the Internet (Brynjolfsson and Smith 2000). We argue that, because the Internet reduces search costs of time (not money), the increase in search activity will not happen as would be expected from search models that have been supported in monetary settings. Consequently, retailers need to be less fearful of lower search costs on the Internet, and more enthusiastic about the opportunities offered by online environments (Lynch and Ariely 2000), such as the potential to reduce product performance uncertainty by using various communication practices (Weathers, Sharma, and Wood 2007).

Implications also arise for store location models (Achabal, Gorr, and Mahajan 1982). Our results imply that consumers will be relatively more sensitive to monetary aspects of stores (the lower price offered by an outlet mall relative to the neighborhood store) than to temporal aspects (the time required to visit the outlet mall). We do not suggest that time does not matter; the time of travel will indeed be a cost to consumers. What we suggest instead is that consumers will react more strongly to price differences than to time-of-travel differences.

We next present the literature that motivates our inquiry into the currency of search. Then, we offer a prediction about its role in moderating the effect of search costs on search behavior and present supporting evidence from two laboratory experiments. We then extend our theorizing to search payoffs and find a similar moderating effect in a third experiment; people are less sensitive to changes in payoffs when the currency of search is time rather than money. Finally, we conclude with the implications of our results for the theory and practice of retailing.

Time versus money as currency of search

Search is frequently conducted by spending time. People spend time searching inside stores, in traveling from one store to another, and in searching over the Internet. The prevalence of time-based searching is evident from field research. When we examined the retail situations that are studied in this literature, we found that they overwhelmingly relate to expenditures of time. When consumers search for automobiles (Moorthy et al. 1997; Punj and Staelin 1983; Srinivasan and Ratchford 1991) or generally for products in the marketplace (Pratt, Wise, and Zeckhauser 1979), they usually spend their time. And when researchers study the effects of lower search costs on the Internet relative to conventional markets (Brynjolfsson and Smith 2000), the costs refer to the time that consumers spend. This consideration of the costs of time rather than money is also inherent in the measures that are used. In field research, researchers usually measure search costs via questions that directly assess respondents' own valuation of the time required to search (Srinivasan and Ratchford 1991) or that indirectly assess respondents' opportunity costs of time from other indicators (Punj and Staelin 1983). That is, field studies seem to consider search as an activity that involves expenditure of time.

In stark contrast to the field research, our review of search experiments revealed an overwhelming reliance on the currency of money. Barring rare exceptions (Smith, Venkatraman, and Dholakia 1999), search costs are operationalized in terms of money. This is true for experimental economics research (Cox and Oaxaca 1989; Kogut 1992; Schotter and Braunstein 1981) as well as experimental consumer research (Diehl 2005; Srivastava and Lurie 2001; Zwick et al. 2003). The use of money is appropriate because it enables easy quantification of search costs as researchers focus on the phenomena that they are studying. However, from the perspective of ecological validity, these experiments seem disconnected from the reality of consumers often spending their time rather than money in order to search in retail settings.

This disconnect is especially consequential because, as we discovered from a comparison of results from several experiments (manipulating monetary search costs) and field studies (measuring temporal search costs), there is an inconsistency between the two. The theoretical prediction of lower search costs leading to higher search behavior (Stigler 1961) has been repeatedly demonstrated in experimental studies (Kogut 1992; Schotter and Braunstein 1981, see Davis and Holt 1993 for a review). In contrast, the support from field research is rare (Moorthy et al. 1997). Consider the findings of Putrevu and Ratchford (1997). Although search costs had a significant effect when they were measured in terms of opportunity costs from an economic perspective (e.g., wage rate), their effect was not significant when they were measured in terms of felt time pressure, which represented the psychological cost of time. Even in other field studies, the effect of search costs on search behavior has been found to be either only marginally significant (Punj and Staelin 1983), or completely non-significant (Srinivasan and Ratchford 1991).

Our review of the literature on price dispersion further highlights the discrepancy in results. Theoretically, if search costs decrease, the increase in search behavior should deter sellers from offering discrepant prices and, therefore, price dispersion in the market should decrease. For example, because search costs are believed to be lower over the Internet, search models suggest that price dispersion on the Internet should be lower than that in comparable conventional markets (Bakos 1997). This effect on price dispersion is evident from experiments involving money (Cason and Friedman 2003) but, once again, not from field research (Brynjolfsson and Smith 2000; Pratt et al. 1979). For instance, the price dispersion in online markets is comparable to that in offline markets (Brynjolfsson and Smith 2000).

We clearly recognize that this inconsistency between experimental and field results may be driven by the numerous differences between the two settings and not just by the currency of search (i.e., money in experiments and time in field studies). However, these results do underscore the importance