in brief...
Bargain hunters: calculating the benefits of consumer search

To what extent can shoppers convert the time they spend looking for particular products into monetary savings? **Fabio Pinna** and **Stephan Seiler** use electronic tags to study the behaviour of 12,000 consumers in a large supermarket in Northern California.

Most of us are familiar with the experience of scouring supermarket shelves to find the items we want at the right price – but how effective are we at converting the time spent looking for a particular product into monetary savings? Our research seeks to measure the benefits of consumer search by studying the behaviour of around 12,000 shoppers visiting a large supermarket in Northern California.

To avoid interfering with consumers' normal shopping behaviour, we use a unique dataset obtained from radio-frequency identification (RFID) tags attached to supermarket shopping carts. Once consumers pick up a shopping cart (or basket), the RFID tags start to emit signals to a grid of antennas installed on the roof of the supermarket.

We combine the data collected from the RFID tags with purchase data from loyalty cards and a map of the supermarket with the location of all products placed on the shelves. This technology allows us to record consumers' purchases, the paths they travel within the supermarket as well as the time they spend in front of a shelf when contemplating which product to buy, giving us a direct measure of search effort.

The data collected from the supermarket suggest that consumers spend about 10 seconds on average in the vicinity of the products that they eventually purchase. Using pricing data, we can quantify the possible benefits from searching by reporting the difference between the average and the lowest price we observe in each product category. The average price corresponds to the expected price when the consumer does not engage in search, while the minimum price reflects the expected price paid when search is exhaustive.

There can be big gains from consumer search: an extra minute scouring the shelves lowers spending on an average shopping trip by 7%

Consumers' search activity varies greatly across different areas of the supermarket

We find an average price difference of $1.57, but the difference varies both across and within product categories. On average, consumers buy in seven categories on a shopping trip, which would allow for total trip-level savings of roughly seven times $1.57 or $11. This corresponds to 40% of total expenditure during the average shopping trip, which suggests that there are substantial gains from search.

We also find that the impact of extending search is surprisingly large. An additional minute spent searching lowers expenditure by $2.10, which corresponds to about 7% of total expenditure on the average shopping trip. This number quantifies how much more consumers could have saved if they extended their search time *from the current level*, and hence suggests that consumers are not realising substantial possible gains from further search. This could be either because they find it cumbersome to search or because they are underestimating the possible gains from search.

Perhaps surprisingly, we find that characteristics of different product categories, such as the average price level, have little influence on search behaviour. In other words, consumers are searching for similar amounts of time in cheap and expensive categories. There is, however, very substantial variation in search duration across different areas of the supermarket, partly due to the timing of the average visit to those categories. For example, categories that are stocked towards the exit tend to be visited late in the trip and consumers systematically search less in those categories.

These findings suggest that situational factors such as cognitive exhaustion towards the end of a shopping trip are a strong determinant of how much consumers search and hence how likely they are to find a good deal. The supermarket layout can therefore greatly influence purchase decisions via its impact on search behaviour.

Our findings also imply that because of the limited amount of search that consumers actually do, marketing tools such as feature advertising and in-store displays can be very effective.

This article summarises 'Consumer Search: Evidence from Path-tracking Data' by Fabio Pinna and Stephan Seiler, CEP Discussion Paper No. 1296 (http://cep.lse.ac.uk/pubs/download/dp1296.pdf).

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