

# Study on the Search Cost in the Electronic Market

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## Extended Abstract

The development of IT, especially the emergence of Internet, has influenced the purchasing behaviors of customers in recent years. Many literatures argue that the Internet leads to intense price competition and the market will finally evolve into a frictionless state because the consumers can acquire the product information more and more easily. However, some research results show this is not always true. For example, Lee found that the price of used cars auctioned in the e-market is higher than that of the conventional market in Japan; Bailey did a research on the products, such as books, CD and software in Boston area and indicated that the e-market's price is higher. So in order to explain the influence of information technology on consumers, we build a search model in this paper and use the search theory to analyze it.

Our model inherits some characteristics from some previous search models and discusses an important variable--search cost. The first search model, the Hotelling Model, regarded travel costs as consumers' search costs and pointed out that search cost is a source of monopolization. But it did not take the factor of sellers, which might influence the search cost as well, into account. Although Salop, Bakos, Zettlemeyer, Rajav Lal improved this aspect of Hotelling's model, their definitions of search cost did not differ much from Hotelling's in essence. Different with these models, we bring forward an inventive idea that the search costs are divided into two parts: one is called systematic search cost and the other is nonsystematic search cost. Systematic search cost is the cost of accessing a seller and negotiating the price, which may occur in every purchase, and it is a feature of markets. Both transportation fee and calling fee belong to this part. Generally speaking, buying the products in a conventional market would cost

consumers more systematic search cost than in an e-market. On the other hand, nonsystematic search cost isn't an innate feature of markets and can be controlled by sellers. They can manipulate this part of search costs through many ways like the products' design, marketing, the layout of product-selling homepages and so on. The more the products deviate from the normal, the higher this kind of cost is. And the nonsystematic search cost is optional, which means that consumers may buy a product before knowing its exact utilities.

In this paper, we mainly discuss the equilibrium of oligarch markets. It assumes there are two firms selling the same kind of products in the market. The first one is the leader and the other is the follower. Every consumer is buying at most one item from the two sellers and can return the dissatisfying items with paying the return cost, which is also a feature of market. It is supposed that there is no difference of quality between the products of the two sellers, but there may be some non-quality differences, such as the appearance and the design of the products. Consumers know the prices, the systematic search costs, and the non-systematic search costs. However, they don't know the gross utilities they will derive from the product but know the distribution pattern of the utility. The search pattern of customers could be illustrated in a search tree. In each stage of the search tree, customers can choose an action from the action set according to the expected utility of each one. On the other hand, sellers must make the decisions of the two variables: prices and the nonsystematic search costs. The decision-making process is a two-stage perfect-information game. First, the sellers must seek the price equilibrium under certain combination of nonsystematic search cost. Secondly, after solving the problem of sub-game equilibrium, we can get the nonsystematic search cost equilibrium and it comes the equilibrium for the whole problem.

By simulation, we get the equilibriums of the market for some special cases. And some managerial implications derived from the simulation results are that in a low-return-cost market, the higher systematic search cost, such as the transportation fee and the calling fee, may cause the followers of the market gain less. If this kind of search cost is high, people are relatively unwilling to search and buy the products of the less famous producer, that is, the follower's products. And even after buying the follower's products, because the return cost is low, many consumers would choose to return the dissatisfying items. So in a low-return-cost market, the higher systematic search cost is a disadvantage to the follower. It is recommended that the followers may invest in information technology, e.g. the Internet to make search easier and lower the systematic search cost. By realizing the information technology first, the follower can put the leader into a disadvantageous circumstance. Therefore, the leaders, on the other hand, should also

utilize the technology to consolidate their power in the market as well. And in a high-return-cost market, the higher systematic search cost is also a disadvantage to the follower. The application of information technology can also benefit the follower and the leader. In addition, different from the low-return-cost market, our results show that in the high-return-cost market followers might choose to differentiate themselves to increase the non-systematic search cost. Because of the high nonsystematic search cost, the consumers would buy the products directly without knowing the exact utility of the product. Moreover, the high return cost would keep the consumers from returning the dissatisfying products. In this way, the followers lock the consumers who might originally not buy the products after knowing the exact utilities of them. Even if the leaders build the electronic transaction market firstly, the followers can also differentiate themselves to set a defense state against the competitors.