The Asymmetric Information Model of State Dependence

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Abstract
Marketing researchers and practitioners are interested in consumer loyalty because of its managerial consequences. Previous empirical studies find that consumers are loyal not only to a brand, but also to a firm (umbrella brand). That is, even when firms offer new products, consumers tend to continue to purchase from the same firm.

This repeat-purchase behavior might result from state dependence or from heterogeneity. The meaning of state dependence is that the current choice behaviorally depends on the previous one. The traditional model of state dependence assumes that the previous choice affects the current utility. This study suggests another source of state dependence: The previous choice affects the current information set. Specifically, the model assumes that the consumer (a) knows the attributes of the new product offered by the firm from which he/she purchased in the previous period, (b) is uncertain about the attributes of the new products offered by the other firms, (c) can obtain full information about the attributes of all the products through a costly search, and (d) if the consumer decides not to search, he/she purchases the new product offered by the firm from which he/she purchases in the previous period.

It is shown that state dependence can result either from the effect of previous choices on the current utility or from its effect on the current information set. This theoretical result raises the following question: What kind of data does a researcher need in order to distinguish between the two sources of state dependence? This study shows that the two sources can be distinguished with a standard panel data set. In other words, although the new source of state dependence is based on the search activity of consumers, there is an identifying factor that enables a researcher to detect such activity even without direct data on search. The empirical distinction is possible because the behavioral implications of the two sources of state dependence are different. They differ in the effect of product attributes on the repeat-purchase probability.

The following example partially illustrates this result: There are two firms A and B; the consumer purchased a product from firm A in period 1; the only product attribute is x; and the utility is a linear function of x. One aspect of our findings is that in the traditional model of state dependence a change in both x_A and x_B that leaves the difference between them, (x_A – x_B), unchanged (neutral change, hereinafter) has no effect on the repeat-purchase probability. However, such a change does affect the repeat-purchase probability in the asymmetric information model of state dependence. This is only one aspect of the finding—the implications of the models differ in a more general fashion.

The intuition of this result is the following. A neutral change has no effect on the repeat-purchase probability in the traditional model of state dependence, because it does not affect the difference between the utilities from both alternatives. In the asymmetric model of state dependence the consumer’s decision process consists of two stages. First, he decides whether to search for information about the other alternative or not. Then, if he searches for information, he chooses the alternative that maximizes his utility. In the second stage, a neutral change has no effect on choices, since such a change does not affect the difference between the utilities from the two alternatives. In the first stage, the consumer knows x_A, but does not know x_B. It turns out that in this stage a neutral change does affect the search decision. When, for example, both x’s decrease and the utility is a positive function of x, the probability of search increases, and thus the repeat-purchase probability decreases.

The proposed source of state dependence is examined using structural estimation and panel data on television viewing choices in the United States. Controlling for both observed and unobserved heterogeneity, it is found that the suggested source is more important in creating repeat-purchase than the traditional one for most of the population (71%). This indicates that what was considered by previous studies to result from the dependence of consumer utility on their previous choices is at least partially due to the effect of the previous choices on consumers’ information set.

The distinction between the two sources of repeat-purchase is important because ignoring the informational explanation may lead to incorrect theoretical and empirical conclusions. For example, price discounts to induce trial are more important for consumers whose utility depends on previous choices, while advertising is more effective for those whose information set depends on previous choices.

(State Dependence; Umbrella Brand Loyalty; Incomplete Information; Search; Search Cost; Television Viewing Choices)