Complexity Effects on Consumer Choice Consistency

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This study investigates the impact of task and context complexity on consumer choice consistency. Consumer choice consistency is measured in consumers repeated choices in the exact same choice set at two occurrences in a conjoint choice experiment. We find that across choice sets composed of different numbers of alternatives, different numbers of attributes, and different attribute levels, consistency decreases with task complexity, and increases with greater differences in utility between alternatives, and greater variance within alternatives. The results suggest that consumers compensate for greater complexity, at least in part by a greater effort in making their choices.

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EXTENDED ABSTRACT

The consistency with which consumers make product choices has important consequences for organizations interacting with consumers. If consumer choices are not very consistent (i.e., if consumers do not make the same choices in otherwise identical choice situations), the impact of changes in marketing mix variables on choice will be lowered. This situation may be harmful to for example innovative producers that develop products that are superior to existing alternatives. The reason is that if consumers do not respond consistently to the new product’s strengths in their decisions, market share of the new product will be lower than it could otherwise have been. For consumers also it may be undesirable to make inconsistent choices, for example if it leads them to ignore beneficial product attributes in making product purchase decisions.

In this study we focus on choice set complexity as a potentially important driver of consumer choice consistency. Recent empirical work on the relationship between effort and consistency (Haaijer et al. 2000), and on the effects of choice set composition on the level of effort in consumer choice models (Caussade et al. 2005, Swait and Adamowicz 2001) suggests that consumer choice consistency may vary with complexity. We add to this research an analysis of observed consistency in consumers’ repeated choices and how it is affected by task-based and context-based complexity.

Task-based complexity refers to the number of cognitive steps a consumer needs to choose an optimal product (Johnson and Payne, 1985). It is expressed as the combined effect of the number of attributes and the number of alternatives in the choice set. Context-based complexity refers to the difficulty of the trade-offs that consumers have to make. We express this effect using three variables based on Shugan (1980): the variability of the attribute utilities of the products in the choice set (VAR), the covariance between the attribute utilities of these products (COV), and the difference in total utility between these products (DIF).

The effects of choice set complexity on choice consistency are not straightforward. The simulation analysis of Johnson and Payne (1985) shows that with equal effort, consumer choice consistency is inversely related to choice complexity. The effect of complexity on consistency then depends on how consumers adapt their choice strategy and their effort level. In particular, if consumers respond to increased complexity by increasing their effort, the consistency of their decisions may be stable (or even improve) if complexity increases.

Results of Haaijer et al. (2000) suggest that in general consumers’ effort responses to increases in choice set complexity are not sufficient to maintain equal choice consistency. Fischer et al. (2000) analyze consumer preference judgments. They find that, if judgment tasks become more complex in terms of variance, responses take more effort and become less accurate. The latter finding suggests that increases in VAR in a choice context may also lead to less consistent choice behavior. Dellaert et al. (1999) find that logit model error increases when price based utility trade-offs increase. This effect also suggests that increases in VAR (i.e., higher price variance), and possibly decreases in COV (i.e., lower correlations between price and other attributes), lead to less accurate choices. An opposing effect of increases in VAR may be that the differences between the products become larger, increasing the incentives to perform well in the choice task. Hence, VAR could also increase choice consistency as more effort is exerted. With respect to task complexity, Caussade et al. (2005) investigate the effects of the number of alternatives and the number of attributes, finding a positive effect of the number of alternatives and a negative effect on the number of attributes, implying a mixed result for the effect of task complexity (TASK). We are not aware of previous research on the effect of DIF, but greater differences in utility make the best alternative stand out from the rest, we expect it to facilitate consistency in choosing the best alternative from a set.

To investigate the proposed effects of complexity on consistency, data was collected through a stated choice experiment where each one of the 1114 respondents was randomly assigned to two of twelve possible choice complexity conditions. These twelve choice conditions were composed of different numbers of alternatives, different numbers of attributes, and different attribute levels, resulting in substantial variation in task and context complexity across conditions.

To quantify context-based complexity and its effects on choice consistency we first estimate a heteroskedastic mixed logit model. The variance of the error component in the mixed logit model is allowed to vary across choice sets, permitting the level of error in the choice model estimates to vary freely on choice set composition. In the next step, we obtain individual level preference parameters. These parameters are used to compute attribute utilities for each alternative for each respondent in each condition. Based on these utilities we calculate measures VAR, COV and DIF for each choice set. TASK is a function of the number of attributes and alternatives only, and varies only across choice sets.

In our main analysis, we empirically test the effects of choice set complexity on choice consistency using a Logit model. The dependent variable is whether the repeated choice task is performed consistently, i.e. the same alternative is chosen twice or not, and the independent variables are the complexity measures introduced above. The results show that TASK complexity decreases consistency and we conclude that increases in task complexity are not sufficiently compensated by increased effort to maintain the same level of accuracy. For context complexity, we find that differences in utility between the alternatives in the choice set increased choice consistency. Variance of the attribute utilities in the choice set alternatives also increased choice consistency, and the effect of covariance between the attribute utilities in the choice set alternatives was not significant. These results suggest that increased differences in utility between alternatives and greater variability in the attribute levels raise the stakes to the decision maker, resulting in more effort being exerted in the choice task and higher choice consistency.

REFERENCES

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