Journal of Business Research 68 (2015) 1136–1144

Contents lists available at ScienceDirect

Journal of Business Research

The effects of compensatory inferences for attributes on the choice of incomplete product options ☆

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ARTICLE INFO

Article history:
Received 16 September 2013
Received in revised form 1 November 2014
Accepted 5 November 2014
Available online 18 December 2014

Keywords:
Inference making
Decision making
Prompted inference
Incomplete options
Missing information
Compensatory inferences

ABSTRACT

Choice options almost always have some information that is unavailable. Some researchers have argued that consumers do not form inferences in these situations, while others have shown that consumers rely on existing attributes to infer missing ones. This paper focuses on what happens to choices for incomplete options when consumers make compensatory inferences in an attempt to balance rival products' attributes. We examine situations in which the incomplete options are inferior on available attributes and missing more or less important attributes. We find that regardless of whether consumers are explicitly prompted to make inferences about missing attributes or they voluntarily make inferences, the mere act of inference making increases the choice of product options that are missing vital attributes. This tendency decreases the potential advantage of product options that have complete attribute information.

1. Introduction

Consumers almost always face decisions that involve making choices among options, some of which have missing information. Consider the following real-life situation. You are trying to decide which of two new similarly priced minivans to buy. You are surfing the websites of car companies A and B. On one company website, you see a comparison of attributes between the two companies' competing minivans. Minivan A's payload is listed as 1600 lb, but minivan B's payload is not available. What do you infer about Minivan B's payload? Depending on what you infer and assuming that payload is important to you, you may emerge from this website thinking that minivan A has attractive features that you need but that minivan B may or may not have these features. This means that the chance that you will buy minivan A over minivan B will be higher after your visit to this site. On the other hand, as you think about what you read, you may begin to wonder about your preferences. If the minivans have the same price and minivan B is inferior on other available features, it may have a higher payload to compensate for its inferiority on these other features (Chernev & Carpenter, 2011). If you make this compensatory inference, how will that affect your preference?

This scenario is interesting both substantively and theoretically. The substantive interest derives from the fact that numerous company websites have missing information about the competition. The theoretical question here is important and interesting. Research has shown that missing information causes uncertainty about the missing attribute, which leaves consumers less likely to choose the option with the missing information (Dick, Chakravarti, & Biehal, 1990) especially when the missing information is salient (Sanbonmatsu, Kardes, & Herr, 1992). But what happens if the consumer makes inferences about the missing information? How does this affect the consumer's decision process and its outcome? Managerially, would either company benefit more from providing complete information or from leaving consumers to make inferences about it on their own, or from eliciting inference making either explicitly or implicitly?

Considerable research examined whether inferences are made at all (Simmons & Lynch, 1991) and the nature of the inferences that are made either by prompting decision makers or encouraging voluntary inferences. One stream of research has looked at what happens when participants were prompted to make inferences about missing attributes (Huber & McCann, 1982; Johnson & Levin, 1985; Kardes, Posavac, & Cronley, 2004; Moon & Tikoo, 1997; Ross & Creyer, 1992; Bilgin & Gunasti, 2013). Another stream focused on voluntary inferences (Broniarczyk & Alba, 1994; Dick et al., 1990; Lee & Olshavsky, 1997). Chernev and Carpenter (2011) made the distinction between non-compensatory inferences based on evaluative consistency (when consumers do not assume equally balanced options) and compensatory inferences when options are balanced (e.g., equal prices) which induces consumers to assume negative correlations among the attributes. The focus of all of these streams has been on the inferred values and the inference making processes. While some studies

☆ We would like to thank Hans Baumgartner and Meg Meloy for their valuable comments.

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http://dx.doi.org/10.1016/j.jbusres.2014.11.003
0148-2963/

have paid attention to different aspects of choices made after inferences (Broniarczyk & Alba, 1994; Dick et al., 1990; Gunasti & Ross, 2009, 2010), we still know little about the change in choice outcomes when decision makers are asked to infer missing attributes. Would people make the same choices if they are required to make explicit inferences or induced to make voluntary inferences? Would there be any difference in the relative choice of complete vs. incomplete options? Our research seeks to address these questions.

This paper makes several important contributions to the literature. We propose and demonstrate how patterns of choices made with and without inferences differ, even when all product options are missing a different attribute. We also examine how inference making affects the choice of incomplete options when they are compared to complete options. Finally, we test whether our results generalize to situations in which inferences are explicitly prompted or voluntarily generated. We draw upon the inference making and missing information literatures and conduct four experimental studies to investigate the effects of multiple inferences in multi-attribute, multi-product choice environments. Our findings provide a better understanding of the inference making process in different situations and show the consequences of prompting inferences for consumer choices.

2. Conceptual background

Consumers rarely have immediate access to complete information about products in the marketplace. Thus, to make a decision with fairly complete information, they often must make inferences beyond the information that is readily available (Lynch & Srull 1982; Kardes et al., 2004). Simmons and Lynch (1991) have argued that consumers do not always form inferences even when doing so seems logical, and Sanbonmatsu et al. (1992) report that only knowledgeable decision makers form inferences about missing information. It has also been suggested that a comparative judgment context increases the salience of missing information, resulting in more inference formation (Hernandez, Han, & Kardes, 2014). We cannot assume that consumers always form inferences whenever they are exposed to missing attributes, and even if they do, it is not possible to know whether they infer every piece of missing information or only some or whether they make relative or absolute inferences. We propose that, when consumers make inferences, their choices should be affected by their inference making process and the attribute assessments it produces. Bastardi and Shafir (1998) observed that when consumers pursue pseudo-diagnostic information such as missing information, it is weighed more heavily in choice. Assigning values to missing attributes will change consumers' perceptions of the options with missing information and therefore the complete choice set. Moreover, Sloman (1996) suggests that encouraging choice justification increases the tendency to engage in analytical processing.

Kivetz and Simonson (2000) report that an option's missing attribute is frequently offered as a reason for not choosing that option. Similarly, those attributes that are available can be important determinants of choice under missing information. When decision-makers face a difficult choice, they often resolve the difficulty by selecting the option that is superior on the most prominent attribute (Tversky, Sattath, & Slovic, 1988). When choice options have missing attributes, the availability of an essential attribute, such as price, might be the sole reason for choosing one option over another that lacks information on that attribute. On the other hand, Gunasti and Ross (2009) examined the effects of inference making on choice deferral and found that when consumers made inferences about missing attributes, either on their own or via external prompts, the uncertainty associated with the choice was reduced and consumers were less likely to defer purchase decisions.

Inference making is one way to provide the attribute information for options with missing attribute values. In so doing, the whole structure of the choice set may change. When decision makers are explicitly prompted to make attribute inferences, the tendency to focus on important missing attributes as a reason not to choose an option will decline, because that information will be available based on the self-assigned values (Gunasti & Ross, 2009). Once consumers make inferences, complete information will be available (albeit self-generated) and this will reduce the tendency to focus on important available attributes as a justification for choices. We hypothesize that a choice alternative's advantage over other options based on the fact it has information about an important attribute will attenuate if consumers make inferences. Similarly, the lack of an important attribute will no longer disadvantage other choice alternatives.

H1. *When choosing among incomplete options, making inferences will increase the relative choice of options missing important attributes.*

Both general intuition and research (Dick et al., 1990) suggest that consumers naturally prefer alternatives with complete attribute information (complete options) to alternatives with missing attribute information (incomplete options). Complete options have obvious advantages over incomplete options due to the reduction in uncertainty that comes with the availability of more information. An important question is whether inference making can decrease the choice advantage of complete options over incomplete options and in what situations. Consider a choice set consisting of a complete product option that includes all attribute information and an incomplete product option that is missing some attribute information. Assuming that product attributes are not highly correlated, there are three possible cases with respect to the attribute information that are available, 1) the incomplete option and the complete option may be equivalent, 2) the incomplete option is superior to the complete option, or 3) the incomplete option is inferior to the complete option. In the first case, the complete option has a clear advantage because the decision maker cannot access the incomplete option's missing attributes. Only if the complete option has the worst possible value for the attribute missing in the incomplete option would consumers have a reason to pick the incomplete option. In the second case, however, the incomplete option may have a reasonable chance to be chosen. Although the complete option has an advantage because its attributes are observable, it is disadvantaged compared to the incomplete option because the incomplete option is superior on the attributes that are available. Finally, in the third case the incomplete option is clearly inferior, disadvantaged on the available attributes and saddled with some missing attributes making it clearly inferior. We focus on the third case, so that our tests are conservative, that is, if the choice of incomplete option can be improved by prompted inferences in this case, it can more easily be increased in the other two cases.

When product options are evaluated individually and there are many attributes, consumers try to have an overall evaluation and engage in within-brand inferences, inferring missing attributes based on available ones (Dick et al., 1990). When available and unavailable attributes are highly and inherently correlated, consumers will engage in across-brand inferences and inferred values may regress to the mean (Ross & Creyer, 1992). Recent research by Chernev and Carpenter (2011) makes a distinction between compensatory inferences based on market efficiencies and consumers' intuition vs. non-compensatory inferences based on evaluative consistency and well-established attribute-correlations. In many real market situations, when choice options can be directly compared in a competitive context, consumers tend to assume value parity and treat the choice options as if their attributes are somewhat balanced. Consider two medications. If Medication A is strong but has severe side effects whereas an equally priced Medication B is weaker but has unknown side effects, consumers making compensatory inferences will tend to assume that B has milder side effects. Such inferences should increase the preference for an option with missing attributes even if it is inferior on available attributes.

In many cases, consumers are reluctant to choose options with missing attribute information because they cannot engage in information