



# The impact of promotions on consumer choices and preferences in out-of-stock situations



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## ABSTRACT

Out-of-stock is a prevalent problem in retailing, particularly for promoted products. This research analyzes customers' substitution decisions in out-of-stock situations by accounting for the specific impact of promotions. The results of two studies demonstrate that substitution patterns are context-dependent and change contingent on the relative positions of the promoted and the respective unavailable product. Specifically, preferences shift according to a reversed similarity effect, which is, however, reduced for stock-outs of promoted items. If a similar substitute is on sale, the effect is increased. For promoted dissimilar substitutes, the effect is offset by the simultaneous occurrence of an attraction effect. The results lead to important theoretical and managerial implications.

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## 1. Introduction

Out-of-stock (OOS) is not only a prevalent problem in today's retailing practice but also of high relevance in online and service sectors such as airlines or hotels. With regard to brick-and-mortar retailing, the European Optimal Shelf Availability (OSA) survey revealed an average OOS level of approximately 7% and an augmented rate of 10% for items on promotion (ECR Europe and Roland Berger, 2003). Customers encountering such OOS situations are forced to react. Potential behavioral responses include item switching, brand switching, store switching, as well as purchase postponement and cancellation (e.g., Sloot et al., 2005). Depending on the respective response, both retailers and manufacturers may face severe long-term and short-term damages (Campo et al., 2000).

The focus of previous OOS research is twofold: firstly, the studies have looked at the magnitude of the potential behavioral responses. The results, however, vary strongly from study to study (e.g., Emmelhainz et al., 1991; Sloot et al., 2005). Secondly, the studies have identified fundamental determinants of OOS responses. Typically, a classical choice approach (e.g., a multinomial logit model) is applied to relate certain product-specific, store-specific, consumer-specific and situation-specific variables

and the potential OOS reactions (Campo et al., 2000; Hegenbart, 2009; Sloot et al., 2005; Zinn and Liu, 2001).

However, up to now only little thought has been devoted to OOS-induced switching behavior with regard to the remaining brands at the point of sale (POS). Although, empirical research points out that substitution decisions in response to a stock-out deviate from ordinary choice behavior (Anupindi et al., 1998), following a systematic attribute-specific choice pattern (Campo et al., 2003). Yet, what is lacking so far is an approach explaining these preference changes resulting from stock-out situations of differently positioned products in a theory-based way, thereby making choice shifts and alteration in market share predictable for practitioners. In our research, we draw on context effects to deduct how the unavailability of an item affects the relative preferences for the remaining alternatives at the POS. Context effects are based on the assumption that individuals do not have invariant preferences that can simply be revealed when making purchase decisions (e.g., Tversky and Simonson, 1993). Instead, preferences are assumed to be constructive (Payne et al., 1992) and result contingent on the positions and the presence or absence of other alternatives in a choice set (Bhargava et al., 2000). In this regard, it has been demonstrated that even unavailable products, so-called phantoms, which arise due to stock-outs or other situations of scarcity, have the potential to alter the preference relationship among the still available options of a choice set (e.g., Hedgcock et al., 2009). That way, the unavailability of one alternative in the choice set does not lead to a proportionate increase in choice probabilities of the remaining options, but to systematic shifts in preference depending on the relative position the phantom holds in the choice set.

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Likewise, research on customers' OOS reactions has not explicitly regarded promotion as an influencing situational factor, although OOS particularly occurs for promoted items (Taylor and Fawcett, 2001), and some recent publications have underlined that this domain requires further research (Ettouzani et al., 2012; Hegenbart, 2009; Sloot et al., 2005). Promotions represent a marketing tool used by retailers to actively stimulate consumer purchase. As such, promotions have become a key element of current retailing strategy and a fundamental determinant of success in the fierce competition for market share (Gedenk et al., 2010). Mostly, promotional activities are applied to stimulate brand switching or to accelerate purchases since customers are lured into stockpiling, i.e., buying earlier or later and larger quantities of the promoted article than actually required or consuming the promoted products at a faster rate (Neslin et al., 1985; van Heerde et al., 2003). Since, as a consequence, demand for the promoted item is difficult to predict and often exceeds the available stock, OOS situations are inevitable which, in turn, force customers who were planning on purchasing the promoted article to react. Regardless of whether the promotion incentivized the customer to switch brands or provided a reason for already loyal customers to increase their purchase quantity, the promoted article, as an attractive yet no longer available choice option, represents the customer's preference in the moment of purchase. Hence, it constitutes the reference point from which the remaining alternatives at the POS are evaluated (Heath et al., 2000). What is especially interesting about this situation is that due to the promotion, the dominance structure of the options in the choice set changes since the promoted article shifts its relative position as it decreases in price. Research on phantom alternatives suggests that this altered dominance relationship persists even beyond the stock-out (e.g., Hedgcock et al., 2009), thereby triggering shifts in choice share despite the unavailability of the formerly preferred item.

Further, context and phantom theory can be used to predict shifts in relative market share in situations where retailers react to the OOS-related unavailability of one product with the promotion of other, substitutional articles. By applying such OOS-policies, retailers might encounter the involuntarily imposed need for the customer to switch brands by providing a positive incentive to do so. This could be applied in an attempt to alleviate the possible risk of negative OOS-consequences, like purchase cancellation or postponement and store switching. Additionally, promoting substitutional articles might offer an effective way to cannily direct customers' demand towards certain articles of the retailer's assortment. This, in turn, can be regarded as especially relevant in online markets where retailers are relatively flexible in adjusting their assortments and promotional activities to current market conditions. Yet, questions arise as to how exactly choice shares evolve contingent on the relative positions of the unavailable alternative, i.e., the phantom, and the respective promoted article.

In the scope of two studies, we use context theory (e.g., Huber et al., 1982; Simonson, 1989; Tversky and Simonson, 1993) and the research on phantoms (e.g., Highhouse, 1996; Pratkanis and Farquhar, 1992) to explain and predict preference shifts subsequent to an OOS in a theory-based way. Particularly, we focus on customers' OOS-induced substitution patterns by further taking into account the specific effect of promotions in influencing substitution decisions. As such, the first study demonstrates that for the temporal unavailability of products, substitution patterns correspond to a *reversed similarity effect* (Tversky, 1972), which is, however, reduced for stock-outs of low involvement fast moving consumer goods (FMCGs) on promotion. In the second study, we show that the *reversed similarity effect* is even increased for promotions of similar substitutes. Yet, the effect is ruled out by the simultaneous occurrence of an *attraction effect* when dissimilar substitutes are offered at a reduced price.

Overall, our paper contributes to marketing and retailing literature by (1) employing context and phantom theory to explain OOS-induced preference shifts and resulting substitution patterns, (2) including promotion as an additional important driver of customers' reactions in OOS situations and (3) investigating substitution behavior in different experimental settings, hence making it predictable for marketing practitioners.

The paper is organized as follows: the next section briefly reviews theoretical aspects of context-dependent preferences and research on phantoms, thus providing the conceptual framework to deduct hypotheses on the effect of context and promotion on customers' substitution decisions in OOS situations. We then describe the methodology to collect individual choice data in a series of online experiments, present the applied data analysis and test the derived hypotheses. We conclude with a general discussion of results and indicate implications as well as limitations and directions for future research.

## 2. Conceptual framework

### 2.1. Preference formation in situations of varying choice sets

Research on the context-dependence of choice has so far brought into focus the effects of new product introduction on customers' preference formation (Huber et al., 1982; Simonson, 1989). The studies reveal that choices are dependent on the composition and the dominance structure of a considered choice set and that preferences shift contrary to the assumptions of classical economic theory (e.g., regularity and Independence of Irrelevant Alternatives (IIA) (Luce, 1959)). Initially, test persons are confronted with a non-dominating core choice set consisting of a target (T) and a competitor (C) in a two-dimensional space with approximately the same probability of choice (see Fig. 1). Subse-

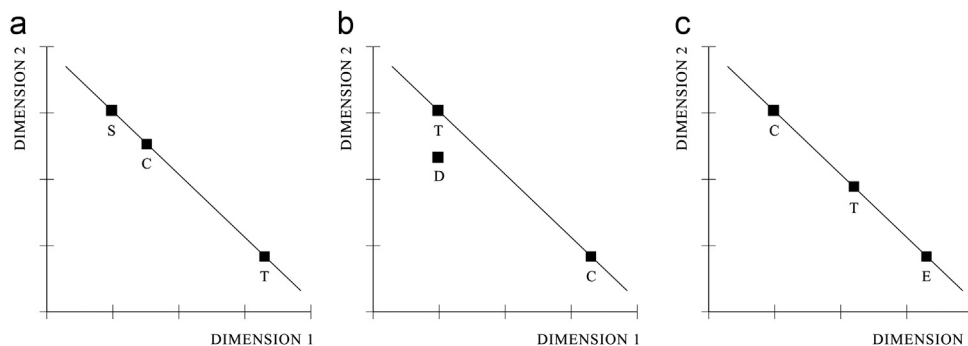


Fig. 1. Similarity effect (a), attraction effect (b) and compromise effect (c).

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