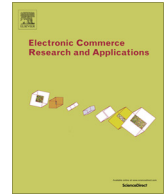




Contents lists available at ScienceDirect

# Electronic Commerce Research and Applications

journal homepage: [www.elsevier.com/locate/ecra](http://www.elsevier.com/locate/ecra)

## Brand competition in fashion e-commerce

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### ARTICLE INFO

#### Article history:

Received 19 August 2014

Received in revised form 27 July 2015

Accepted 28 July 2015

Available online 14 August 2015

#### Keywords:

e-Commerce

Cross-price effects

Fashion

Price elasticity

CCHM-model

Substitution

### ABSTRACT

When developing pricing strategies, it is highly important for managers to understand brand competition resulting from price promotions within a store. To the knowledge of the authors the present study is the first to examine this topic in the fashion e-commerce space. Using a unique data-set with more than 3.3 million observations which was provided by a leading European e-commerce company, we empirically estimate cross-price elasticities in two independent product categories. Regression results show unexpectedly low levels of cross-brand competition due to the distinctiveness of fashion merchandise prohibiting customers to take advantage of increased market transparency in e-commerce. In addition, patterns of brand competition are very distinct as there is only a small share of significant but highly pronounced effects. Moreover, the results show that asymmetric competition exists between private and national brands. Lastly, we also discuss implications for markdown pricing strategies in the context of fashion e-commerce.

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### 1. Introduction

It is essential for retailers to take into account substitution and complementary effects within their assortment when making pricing decisions to improve overall firm profitability (Song and Chintagunta 2006). Successful pricing strategies should thus recognize interdependencies on brand level within and across related categories (Wedel and Zhang 2004). Knowledge of these in-store competitive effects can be very valuable for online fashion retailing companies as they oftentimes apply markdown pricing strategies offering potential for substantial profit gains (Levy et al. 2004). Due to industry-specific supply characteristics, these companies receive the majority of stock prior to season start and before actual demand is evident (Soysal and Krishnamurthi 2012). Moreover, products in this setting are highly perishable as fashion becomes obsolete when new styles are introduced to the market (Varadarajan and Yadav 2002). To clear excess stock of poorly selling products and to boost sales, retailers apply discounts by season end (Levy et al. 2004). These price reductions influence the sales of competing products in the same shop thereby possibly shifting demand between high- and low-margin items (Kopalle et al. 2009). In a category management setting the target is to optimize the overall outcome of a category. This requires a multiproduct

pricing strategy accounting for price-induced substitution and complementary purchase across items (Hall et al. 2010, Kopalle et al. 2009).

The e-commerce space offers a promising setting for this type of pricing strategy as retailers can leverage inexpensive tools to track supply and demand on a detailed level; at the same time low menu costs allow for reactive action in terms of frequent price changes (Biswas and Biswas 2004, Varadarajan and Yadav 2002). Highly frequent price changes, in turn, amplify the potential profit gain generated by applying a sophisticated markdown strategy (Varadarajan and Yadav 2002).

So far, retailers have often neglected cross-price effects in their pricing decisions (Hall et al. 2010, Levy et al. 2004). Some companies also lack the data, the ability, or the time to conduct cross-price elasticity analyses which are essential to be able to cope with the above challenge (Kopalle et al. 2009). Additionally, consistent with the resource-based view (RBV), scholars have identified the strategic importance of the pricing process as a capability to improve competitiveness in the marketplace (Dutta et al. 2003, Kemper et al. 2013). Although it is highly important for academics and practitioners, there has been only scarce research examining cross-price effects in e-commerce settings (Kopalle et al. 2009). Extant literature largely focuses on brick-and-mortar situations involving fast-moving consumer goods (Leeflang and Parreño-Selva 2012). As increased information availability exists online altered patterns of customer behavior with respect to product substitution are likely to occur which renders an examination of this topic in the e-commerce context an interesting extension to

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existing literature (Kopalle et al. 2009, Varadarajan and Yadav 2002).

With this study we seek to make the following contributions. First, we analyze demand interdependencies among brands in two independent pairs of related product subcategories in online fashion retailing. Hence, we examine the impact of price cuts on the market share of other brands in the same product cluster. In our analyses we use a unique data-set consisting of more than 3 million sales observations which was provided by a European fashion e-commerce company. Second, this research helps obtain a fuller picture of price elasticities prevailing in e-commerce. In this context the online fashion retailing setting has not received sufficient attention so far (Kopalle et al. 2009) leaving a gap we seek to close with the present study. Third, we derive insights for category management considerations as we analyze detailed patterns of cross-competitive effects found in this distinct setting.

## 2. Conceptual framework and hypotheses development

In the following we develop our conceptual framework and derive hypotheses to examine cross-price elasticities in fashion e-commerce. Price elasticity “measures the percentage sales loss (gain) from a certain percentage price increase (decrease)” (Nagle 1984, p. 9). Moreover, cross-price elasticities refer to the percentage shift in the demand for a product when the price of a related product is changed (Levy et al. 2004). This change in demand is positive for substitutes and negative for complementary goods (Mulhern and Leone 1991). Moreover, competition among brands is called asymmetric when the effect of a price change of brand A on the demand for brand B is different from the effect of brand B on brand A (Carpenter et al. 1988). In this context extant literature refers to a brand's price changes influencing another brand's sales (gaining market share) as *clout* and, similarly, to a brand's sales being affected by another brand's price movements (losing market share) as *vulnerability* (Kamakura and Russell 1989).

Four factors constitute the underlying effects responsible for price-induced sales shifts. First and second, there is current and future brand switching within the same as well as in other stores in the same category (Ailawadi et al. 2007, 2007). Third, a possible result are sales shifts in other categories in the same store (Ailawadi et al. 2007, 2007). Fourth, increased category or brand consumption is likely to occur following a price promotion (Ailawadi et al. 2007, 2007). In a similar vein, customers get detracted from purchasing in the focal product category when prices increase (Ailawadi et al. 2006).

Previous research on cross-price effects focuses on brick-and-mortar settings where fast-moving consumer goods—mostly groceries—constitute the center of attention. In these studies, evidence of substitution and complementary effects among different brands and categories becomes apparent (Mulhern and Leone 1991, Walters and MacKenzie 1988). In addition, cross-price effects are found to be less pronounced compared to own-price effects (Leefflang and Parreño-Selva 2012). Furthermore, significant cross-brand effects exist among a substantial share of brands within a category. In this context different studies consistently find a two-digit percentage ratio of significant effects over all possible brand-to-brand effects within a category (e.g. Bezawada et al. 2009, Kamakura and Kang 2007, Leefflang et al. 2008, Song and Chintagunta 2006). In contrast, cross-competitive effects across categories are found to exist only among a fraction of the examined product categories. (Duvvuri et al. 2007, Leefflang and Parreño-Selva 2012). Moreover, research has revealed that there is asymmetric competition among price tiers and national as well as private brands (Blattberg and Wisniewski 1989, Wedel and Zhang 2004).

One major difference between offline and online retailing can be seen in increased supply side transparency in e-commerce since most online retailers offer a multitude of different searching, filtering, and comparison possibilities for their products to create a more convenient shopping experience (Biswas and Biswas 2004, Rubin and Mantin 2012). Early predictions theorize the emergence of frictionless commerce characterized by highly competitive markets, enabling customers to easily obtain an overview of the products offered by a retailer within seconds (Bakos 1997, Varadarajan and Yadav 2002). Although information availability is high in fashion e-commerce brand competition is still not likely to exist between all brands within a category for these kind of products because of fashion products' distinct characteristics.

The classification of goods devised by the American Marketing Association groups products into either convenience, shopping, or specialty goods<sup>2</sup>, with the respective category depicting an item's importance to the customer as well as the effort invested to purchase it. Given this classification, fashion products are considered specialty goods (American Marketing Association 1948, Copeland 1923, Murphy and Enis 1986). Customers have to invest little effort into buying convenience products, whereas the opposite is true for specialty products. They are generally very important to customers, and they thus invest substantial physical effort to be able to purchase these items (Murphy and Enis 1986). Nevertheless, customers avoid canvassing information about substitutes when it comes to shopping this type of product (Kaish 1967). There are two reasons for this customer behavior. First, customers ascribe the potential to satisfy their distinct needs only to a small set of brands, which leads to less substitution among alternatives as customers decline all but the preferred items and are willing to make an extra effort to obtain them (Bucklin 1963).

The blocking of dissonance reduction serves as a second explanation for the lack of shopping activity. In a shopping context, cognitive dissonance occurs post-purchase if an item is important to the customer and turns out to have one or more inappropriate attributes (Kaish 1967). People generally seek to reduce dissonance in order to achieve consonance regarding their attitudes and mental accounts as well as their actions (Festinger 1970). Collecting product information helps reduce the anxiety that a product's inappropriateness is only detected post-purchase, thereby reducing dissonance in the first place (Kaish 1967). Nevertheless, certain conditions exist when the possible anticipated dissonance is high but engaging in any activity does not promise to solve this dissonance (Festinger 1970). In this case, people refuse dissonance reduction and live with its discomfort (Festinger 1970). When shopping for fashion merchandise, product comparisons often do not yield sufficient information to reduce dissonance as for these goods, “the physical characteristics of the product do not reflect directly its functional characteristics” (Kaish 1967, p. 31). As a result, customers avoid comparing products as items are “purchased on the basis of brand preference stemming from habit or recommendation” (Kaish 1967, p. 30). Given this lack of extensive shopping activity, it is likely that customers do not extensively search for substitutes either.

De Figueiredo (2000) developed a more current product classification scheme in which products are categorized based on the difficulty to judge an item's quality on the web (Nikolaeva 2005, Walter et al. 2006). The continuum of product classes includes commodity products, quasi-commodity products, “look-and-feel” items, and “look-and-feel” items with variable quality (De Figueiredo 2000). The difficulty to judge a product's quality

<sup>2</sup> Later on, a fourth dimension, preference goods, was added to the framework (Murphy and Enis 1986). In addition, the product classification was based on two dimensions—risk of making a faulty purchase and effort invested in the purchasing process (Murphy and Enis 1986).

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