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Now what? Evaluating the sales effects of introducing an online store

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ABSTRACT

This study creates a framework for evaluating the sales impact of adding an online channel to an existing network of physical stores. Using a unique database consisting of pooled customer data from a Swedish retailer's online and offline stores, it investigates the purchase behavior of customers before and after the introduction of an online channel. The data overcome a crucial obstacle present in previous studies in that they permit matching of individual-level customer data for both online and offline behavior. The results show significant and substantial effects of online channel introduction on customer acquisition as well as on cannibalization of physical stores.

1. Introduction

The advent of online retailing has dramatically changed retail business models (Verhoef et al., 2015). This change is especially evident for established retailers, which typically have invested heavily in their physical retail channels. The present study seeks to understand how the addition of an online store affects overall sales for such retailers. More specifically, it develops a framework for evaluating the sales effect of adding an online channel by using customer-level data from a Swedish retailer.

A growing body of research has highlighted the potential benefits of adding an online store to an existing store network. A combination of channels opens up opportunities to provide value-added services to consumers (Sousa and Voss, 2006), thereby potentially improving customer satisfaction (Berry et al., 2010; van Birgelen et al., 2006) and enhancing customer loyalty (Neslin and Shankar, 2009). Insights gained across channels can also be used to encourage customer relationships through customization (Neslin et al., 2006). Moreover, adding a new channel also increases opportunities to cross-sell (Avery et al., 2012; Berry et al., 2010; Neslin et al., 2006), such as by encouraging online customers to shop in physical stores (Montoya-Weiss et al., 2003).

However, analytical instruments that retailers can use to evaluate the sales impact of introducing an online store alongside its traditional physical stores have not been developed (Avery et al., 2012). From a retailer's perspective, such an evaluation capacity is needed so as to most effectively integrate customer management between online and physical stores. Neslin et al. (2006) described this function as

“multichannel customer management,” which they defined as “the design, deployment, coordination, and evaluation of channels to enhance customer value through effective customer acquisition, retention, and development” (p. 96). Our study addresses the *evaluation* part of this definition. Our purpose is to develop a customer management-based framework for evaluating the effects on sales when a retailer also presents its offers online. More specifically, the framework is designed to help retailers answer the following questions:

1. To what extent does adding an online channel enable customer acquisition, i.e., provide the retailer with a larger volume of customers?
2. To what extent do acquired customers in the online channel also become customers in the retailer's physical stores?
3. To what extent does adding an online channel increase or, conversely, cannibalize sales in the physical stores? Do the existing customers purchase more overall, or do online customers simply switch channels?

By presenting and empirically testing a framework for evaluating the sales impact from adding an online store to an existing network of physical stores, we contribute a complementary perspective to the literature. Using a unique database consisting of pooled customer data from a Swedish retailer's online and offline stores, we evaluate the effects of an online channel on the *same customer's* actual purchases in a retailer's physical stores, as well as its online store, *over time*. In this way we complement existing studies, which typically rely on highly aggregated (i.e., overall company results; see Cao and Li, 2015) or

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disaggregated (i.e., individual consumer reactions at a certain point in time; see [Herhausen et al., 2015](#)) analyses. Access to this database enables us to overcome a crucial obstacle present in previous studies, in that we were able to match individual-level customer data for both online and offline behavior ([Pauwels and Neslin, 2015](#)). This type of customer-level data is readily available to most retailers, making the framework easy for them to implement. The framework also provides a more comprehensive understanding of the implications of retail digitalization for sales in physical stores and of how to manage customers across channels.

2. The effects of an additional online channel on retailer sales

A retailer adding an online channel to a physical store network needs to understand whether it provides *additional* sales to the retailer or if the sales in the online store are largely cannibalizing existing sales by moving customers from one channel to another. Theoretically, either effect or a combination of both could occur. Also, a retailer can increase sales by acquiring new customers (increasing its customer base) and/or by selling more to existing customers ([Avery et al., 2012](#)). In the following discussion, we consider what retailers can expect in terms of additional sales and cannibalization for these two customer groups. This discussion provides the foundation for our customer management-based framework.

2.1. Sources of additional sales

A major attribute of the online channel is *convenience* (e.g., [Verhoef et al., 2007](#); [Verhoef et al., 2015](#)). By offering more channels, the retailer can decrease the search costs for consumers ([Bhatnagar and Ratchford, 2004](#)), providing them with more convenient shopping opportunities. [Neslin et al. \(2006\)](#) refer to this dynamic as an “availability effect,” elaborated by [Pauwels and Neslin \(2015\)](#) in the sense that “adding channels is a form of increasing distribution, which lowers search costs and increases sales” (p. 184). Providing increased availability could increase sales for the retailer through higher share-of-wallet among existing customers, as well as through attracting new customers online who formerly did not patronize the retailer. This latter customer group could potentially also start buying in the retailer's physical stores.

Moreover, online stores may be attractive to market segments other than the existing customer base of physical stores. Previous research has shown that online channels appeal to customers who are younger ([McGoldrick and Collins, 2007](#); [Kushwaha and Shankar, 2013](#)), earn higher incomes ([Chintagunta et al., 2012](#); [Kushwaha and Shankar, 2013](#)), and come from larger families ([Chintagunta et al., 2012](#)) than offline customers. Online customers are also more likely to be male ([Alreck and Settle, 2002](#)). Furthermore, channels differ in their value proposition ([Grewal et al., 2004](#); [Grosso et al., 2005](#)). For example, [Verhoef et al. \(2007\)](#) indicated that online stores perform better on measures of search convenience and comparisons between various offers, whereas physical stores are preferable for service, assortment of products, after-sales support, and risk reduction.

2.2. Sources of cannibalization

Historically, many retailers have made only cautious attempts to extend their operations online ([Pauwels and Neslin, 2015](#)), largely due to fears that an online channel would cannibalize their existing offline business and hurt profits ([Alba et al., 1997](#)). Early research pointed to several reasons why cannibalization would occur: (1) a shift of sales from traditional channels to the extent that the Internet provides more appealing features ([Alba et al., 1997](#)), (2) lower average transactions due to less impulse purchasing ([Machlis, 1998](#)), and (3) price transparency leading to increased price competition ([Brynjolfsson and Smith, 2000](#)).

There is little empirical support for online cannibalization as shown by several studies ([Biyalogorsky and Naik, 2003](#); [Deleersnyder et al., 2002](#); [Lee and Grewal, 2004](#)). Nevertheless, [Van Nierop et al. \(2011\)](#) found that informational websites reduced consumers' offline purchase frequency as well as the amount purchased per trip, as some consumers substituted offline store visits with online information, reducing their number of store visits. It is also possible that cannibalization develops over time ([Weltevreden, 2007](#)): as online experience increases, shoppers may start to patronize the online options of multiple retailers, potentially reducing their cross-channel purchasing ([Melis et al., 2015](#)).

2.3. Toward a framework for evaluating the effects of adding an online store

Based on this review of previous literature, it is clear that any evaluation of the economic effects of going online requires information on customer acquisition as well as on cannibalization and loyalty effects among existing customers ([Avery et al., 2012](#)). In other words, the impact of initiating online sales must be assessed in terms of its effects on sales to new customers as well as on the purchase frequency and average transactions of existing customers ([Avery et al., 2012](#); [Pauwels and Neslin, 2015](#)). The latter effects could go in opposite directions, potentially canceling out each other. For example, if increased availability leads to higher purchase frequency but decreases the average transaction size, the retailer may not achieve any additional sales. Indeed, these issues confront any retailer that operates multiple channels ([Purohit, 1997](#); [Iyer, 1998](#)), but they appear even more important with online marketing since the Internet is less constrained by geographical boundaries and retailers have little if any ability to control customers' access to it ([Balasubramanian, 1998](#)).

With regard to purchase frequency, the ultimate question is whether customers will simply switch their purchases to the online store or increase their overall buying, thus providing additional sales for the retailer. One could argue that the latter effect is more likely, since most retailers have less than 100% share-of-wallet among their customers, leaving room to grow revenues further by offering existing customers more varied and more convenient ways of doing business. This is the benefit of what we described above as the availability effect—i.e., that adding channels is a form of increasing distribution that lowers search costs and thus increases purchases ([Bhatnagar and Ratchford, 2004](#); [Kumar and Venkatesan, 2005](#)).

However, whether increased purchase frequency is associated with additional sales also depends on average purchase transaction size. If online offers simply cause customers to spread their existing purchases across a greater number of online or physical store visits, the average transaction size will go down, eliminating any benefit of additional distribution channels.

Any evaluation of the effects of going online thus needs to distinguish between new and existing customers as well as analyzing both online and offline behaviors of customers after the introduction of the new channel. In the next section, we describe our research approach and available data, which provide the opportunity to impact of adding an online store on the purchase behavior of actual customers.

3. Empirical data and research approach

A Swedish non-grocery retailer, operating a nationwide network of physical stores, supplied the empirical data for the study. The merchandise offered addresses goal-directed shopping and utilitarian (rather than hedonic) needs and wants. The retailer opened its online store in September 2014. Data from the retailer's loyalty program (with anonymized customer identities) were provided, facilitating an evaluation of the effects on the retailer's sales on individual customers' purchase behavior. Of the retailer's overall sales, 67% is registered

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