



The Sales Velocity Effect on Retailing

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Available online 11 November 2014

Abstract

In an increasingly crowded marketplace, retailers need innovative ways of promoting products to their consumers. E-commerce retailers have utilized to great effect lists of top ranked products to promote product sales; the higher the sales rank, the more likely consumers buy that product. This influence to buy, based on observing what others bought is known as observational learning (OL). Prior OL research assumed that OL arises from observing a static outcome, such as the current sales rank of a product. However, prior research on intertemporal choice showed that people prefer outcomes with increasing trends over stable or decreasing trends. This suggests that observing an increasing sales rank, denoted as sales velocity, would have a positive effect on purchase likelihood. We conducted three studies to test the sales velocity effect. Results show that sales velocity has a significant effect on likelihood of purchases, reversing even participant preferences for a product with a higher sales rank. This effect is consistent across four broad products tested. For researchers, by joining the two previously disparate branches of research in OL and intertemporal choice, we addressed a gap in OL research which previously ignored the velocity dimension of OL. For retailers, the study demonstrated the impact of the sales velocity metric on making choices, and thus they could use sales velocity data as a cost-effective marketing tool for specific products.

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Keywords: Observational learning; Consumer choice; Online experiment; Internet marketing; Social influences; Social learning

Introduction

Consumers are often influenced by the purchase choices of others when they make their own purchase choices (Chen, Wang, and Xie 2011; Hanson and Putler 1996). Furthermore, 80% of sales are influenced by online information.¹ Recognizing this, retailers have leveraged e-commerce portals to facilitate popularity-based marketing tools such as a top ten sorted list of sold products. The underlying mechanism is denoted as observational learning (OL) and describes the observation of others' actions without considering the underlying rationale (Bikhchandani, Hirshleifer, and Welch 1998). The consumer subsequently infers some state of reality from the actions of others and takes the same action.

This OL effect is widely deployed as a marketing tool and is an effective form of online social influence (Chen, Wang, and Xie 2011; Duan, Gu, and Whinston 2009; Tucker and Zhang 2011); OL is often implemented as a list of best selling products sorted by sales rank. It has been already shown that the higher the sales rank, the more likely consumers buy that product (Cai, Chen, and Fang 2009).

Prior research (Chen, Wang, and Xie 2011; Duan, Gu, and Whinston 2009; Tucker and Zhang 2011), however, implemented OL as a metric static in time, namely as the current sales rank of a product; however, psychology literature on intertemporal choice showed that the satisfaction with an outcome (ex. a person's current salary) is positively related not only to the "position" of an outcome (ex. the current salary) but also the rate at which this outcome changes over time (the "velocity" — ex. how much the current salary changed from the previous level) (Hsee and Abelson 1991; Hsee, Abelson, and Salovey 1991). Following this logic, the current implementation of OL — sales rank — also has a previously unconsidered velocity counterpart,

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¹ Sources: Hoar et al., 2013.

which we dub “sales velocity”. Implemented as the change of sales rank with respect to time, sales velocity should also positively influence the likelihood of a product purchase. However, it is still open whether the presence of sales velocity metrics would actually influence consumers’ likelihood of purchase.

From a practical viewpoint, if sales velocity is shown to have an effect on consumer choices, it may also provide a cost-effective promotional vessel for addressing the problem of non-promoted products in inventory. Today, recommendation systems in e-commerce which display top-selling products decrease overall sales diversity (Fleder and Hosanagar 2009); consumers are congregated to the most popular products and ignore the rest of the retailer’s assortment. Since a retailer can have over 100,000 products, this results in the majority of inventory never seen or made salient to consumers, incurring a cost for keeping the product in stock and additional cost to promote them. If a retailer wants to selectively promote these lesser known products, today there is little recourse other than a series of increasing discounts — a form of negative dynamic pricing that cuts into retailer’s margins (Chinthapati 2006; Elmaghraby and Keskinocak 2003; Gallego and Van Ryzin 1994). Since a product with high sales velocity might not necessarily be the one that has a high sales rank, we examine whether sales velocity might provide an alternative and cost-effective promotional vessel that exposes lesser known and lesser sold products. To our knowledge, there is no research which examined which of the retailers’ products exhibit high sales velocity, and therefore could be promoted with this feature, nor research on sales velocity’s influence on a consumer’s likelihood of purchase. The contribution of this paper is therefore to conceptualize and empirically study sales velocity, which describes the popularity rise of a product over a pre-defined period of time. The contribution to research is that these results extend OL research into a hitherto unexplored dimension, namely its change with respect to time by combining OL research with the research stream on intertemporal choice. For practitioners, the results of this work show how to leverage the sales velocity effect as a cost-effective and easy to operationalize tool for promoting selected products in online retailing as well as in traditional in-store retailing via smartphones.

The remainder of the paper is structured as follows. We review related literature and develop the hypotheses. Then, we present and discuss three studies that explore the effect of sales velocity on consumers’ likelihood of purchase and the boundaries of this effect. In a general discussion, we outline limitations of this research and provide practical implications. Finally, we conclude the paper and identify opportunities for future research.

Related Literature

Observational Learning

Observational learning (“OL”) is a social learning phenomenon. The effectiveness of social learning for influencing

consumer behavior has been studied early in marketing research (Herr, Kardes, and Kim 1991; Richins 1983). Social learning is defined in various ways: In the psychology perspective (Cialdini and Goldstein 2004; Deutsch and Gerard 1955), social learning can be either persuasive by suggesting to the customer what actions are socially acceptable by others (normative social influence), or by suggesting that information from others is evidence of some state of reality (informational social influence). In the economics perspective, Libai et al. (2010) and Chen, Wang, and Xie (2011) describe social learning as customer-to-customer (C2C) interactions, distinguishing between the depth of information available. They distinguish between merely observing on the surface what others have done, broadly categorized as OL (Bikhchandani, Hirshleifer, and Welch 1998) and interacting with others/seeking their opinion, where the predecessors’ reason or motivation for the choice is clearly indicated, known as word of mouth (WOM) (Chen, Liu, and Zhang 2011; Chevalier and Mayzlin 2003). The psychology and economics perspectives are not mutually exclusive and can overlap; OL and informational social influence are analogous to each other. As such, the research gap which we will address in this paper is important to both perspectives of social learning and is relevant to both the psychology and economics community.

There are several aspects that render OL attractive not only on the level of research, but also from a practitioner’s view. On a practitioner level, OL is less complex to employ than WOM, since all that is needed is a popularity metric (such as the volume of sales of a product), which is typically already gathered by the retailers’ Point of Sales (PoS) systems. Furthermore, effective implementations of OL came with recent advances in information systems technology, particularly in the area of online shopping. Online shopping platforms such as Amazon.com or eBay.com enable consumers to view information on product popularity in the form of number of sales and product reviews. WOM however, requires active user generated content (for example, written product reviews). Since retailers already have PoS data, the deployment of an OL system faces less “cold-start” problems compared to WOM. Additionally, WOM has already been fairly well studied both online (Chen, Liu, and Zhang 2011; Chevalier and Mayzlin 2003) and offline (Bowman and Narayandas 2001; Herr, Kardes, and Kim 1991). In contrast, OL has only recently been employed for exploratory research in persuasive systems, mostly in e-commerce portals (Chen, Wang, and Xie 2011; Duan, Gu, and Whinston 2009; Tucker and Zhang 2011), while research gaps remain in investigating alternative OL metrics and dimensions. Accordingly, within the bigger picture of social learning, we focus on OL social persuasion rather than WOM.

The Sales Velocity Research Gap

Observational learning was defined as the “inference resulting from rational processing of information gained by observing others” (Bikhchandani, Hirshleifer, and Welch 1998, p 153); although this definition is broad enough to encompass both learning from observing the actions of others, as well as observing

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