

# User Reviews Variance, Critic Reviews Variance, and Product Sales: An Exploration of Customer Breadth and Depth Effects<sup>☆</sup>

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## Abstract

Online user reviews constitute a new element of the marketing communication mix that can significantly affect product sales. A general consensus holds that positive user reviews valence benefits product sales, yet the effect of variance is less intuitive and current findings are mixed. We propose that user reviews variance actually constitutes a double-edged sword that can either hurt or help product sales, depending on the variance of critic reviews and other quality signals. Three complementary studies in multiple industries (movies, digital cameras, and books) with multiple methods (secondary data analysis and behavioral experiment) reveal three key insights in this setting. First, after recognizing a high variance in user reviews, many potential buyers may simply exclude the focal product from their consideration sets for fear that it does not match their needs and preferences, which is termed the customer breadth effect. Second, high user reviews variance, in combination with high critic reviews variance, can elicit a sense of uniqueness and thus enhance purchase intentions of some consumers, which is termed the customer depth effect. Third, quality signals (e.g., product cost and product extension) can strengthen the positive customer depth effect. The overall effects of user reviews variance, therefore, can be negative, insignificant, or even positive. These findings have important theoretical and managerial implications.

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**Keywords:** User reviews; Critic reviews; Variance; Customer breadth; Customer depth

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User reviews are product evaluations generated by regular users who provide product quality information largely based on their usage experience (e.g., whether and how a product matches their tastes and preferences) (Chen and Xie 2008; Khare, Labrecque, and Asare 2011). In practice, most retailers (e.g., Amazon, Best Buy, Target, and Wal-Mart) adopt review systems that allow users to give overall ratings as well as narrative descriptions of their opinions about a product (e.g., pros and cons). As a result, unlike traditional retailers, e-retailers are

able to provide summaries of overall ratings to potential buyers even before presenting individual user reviews.

Due to the increasing popularity of e-retailers and social media (e.g., Amazon and Facebook), user reviews now constitute a new element of the marketing communication mix that has significant impact on sales (see Table 1 for a summary of representative studies). Previous studies show that both valence and variance of user reviews may affect sales. The valence of reviews indicates the favorability of the product, which could be calculated as the mathematic mean of overall ratings by all reviewers (Moe and Trusov 2011; Sun 2012). Numerous studies have examined the effect of user reviews valence and a general consensus holds that positive valence of user reviews benefits product sales and negative valence hurts sales. Variance of reviews reveals the inconsistency among reviews, which could be measured as the mathematic variance of those ratings (Moe and Trusov 2011; Sun 2012). User reviews variance could have its own information value and thus affect various important financial outcomes such as consumers' willingness-to-pay and

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Table 1  
 Prior research on the effects of user reviews (URs) and critic reviews (CRs).

Studies	Key URs metrics	Effects of URs	Key CRs metrics	Effects of CRs	How URs and CRs Work Jointly	Research context	Test mechanism
Eliashberg and Shugan (1997); Basuroy, Chatterjee, and Ravid (2003)	×	×	Valence	Valence determines sales.	×	Movies	×
	×	×	Valence	Valence affects firm value.	×	Movies	×
Tellis and Johnson (2007)	×	×	Valence	Valence affects firm value.	×	Electronics	×
Basuroy, Desai, and Talukdar (2006)	×	×	Variance	Variance increases the effects of sequels and ads.	×	Movies	×
Duan, Gu, and Whinston (2008)	Volume	Volume increases sales	×	×	×	Movies	×
Godes and Mayzlin (2004)	Volume	Volume increases sales	×	×	×	TV show	×
Chintagunta, Gopinath, and Venkataraman (2010)	Valence	Valence increases sales.	×	×	×	Movies	×
Chen, Wang, and Xie (2011)	Valence	Valence increases sales.	×	×	×	Cameras	
Chevalier and Mayzlin (2006)	Valence	Valence increases sales.	×	×	×	Books	×
Zhang (2006)	Variance	Variance has no effect on sales.	×	×	×	Movies	×
Clemons, Gao, and Hitt (2006)	Variance	Variance increases sales.	×	×	×	Beer	×
Moe and Trusov (2011)	Variance	Variance increases sales.	×	×	×	Beauty products	×
Sun (2012)	Variance	Variance helps sales for low rated products.	×	×	×	Books	×
Zhu and Zhang (2010)	Variance	Variance hurts sales for less popular products.	×	×	×	Games	×
Liu (2006)	Volume	Volume increases sales.	Valence	Valence increases sales.	×	Movies	×
Moon, Bergey, and Iacobucci (2010)	Valence	Valence increases sales. Ads enhance its effectiveness.	Valence	Ads enhance the effects of valence.	×	Movies	×
Holbrook and Addis (2007)	Valence	Valence affects popular appeal.	Valence	Valence affects popular appeal.	URs valence mediates the effect of CRs valence.	Movies	×
Zhou and Duan (2012)	Volume	Volume increases downloads.	Valence	Valence increases downloads.	URs volume mediates the effect of CRs valence.	Software	×
<b>Our study</b>	<b>Variance</b>	<b>Variance decreases sales.</b>	<b>Variance</b>	<b>CRs variance positively moderates the effects of URs variance on sales.</b>	<b>Their interactive effect is positive. Product cost and extension enhance above effect.</b>	<b>Movies Cameras Books</b>	<b>Customer breadth and customer depth</b>

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