

THE IMPACT OF ONLINE CONSUMER REVIEWS' QUANTITY AND RATING ON BUYING DECISIONS: A PERSPECTIVE FROM ROMANIAN MARKET

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ABSTRACT

In online environment, in order to evaluate a product, the visitors have special searching behaviors, looking for information that might infer the product characteristics. One of the cues used by buyers in this respect is represented by online customer reviews, a form of word of mouth communication which might have important implications on consumer behavior. The present study aims to understand the influence of reviews' quantity and rating on some behavioral variables: perceived quality, perceived value and shopping intentions. For this purpose, it was conducted a 2x2 marketing experiment on Romanian online potential buyers of an electronic product. The results highlight the predominance of reviews' rating over reviews' quantity, the first characteristic having a significant influence on the behavioral variables studied. These findings highlight the importance of online reviews as a mean to infer product quality or value and to increase shopping intentions. The managerial implications of the study regard the potential of customer reviews as a source of messages that could be used in firm's communication activities.

KEYWORDS: *marketing experiment, online customer reviews, perception, reviews' rating, reviews' quantity, Romania.*

JEL CLASSIFICATION: *M31, L 81*

1. INTRODUCTION

Online buying behavior has been extensively studied in recent years, taking into consideration the multitude of factors that influence it and the differences comparing to off-line environment. One of the factors with multiple implications in this environment is represented by the online price, approached in the literature on many directions: the price searching behavior in online environment (Bodur et al., 2014, Kumar et al., 2005), the influence of online pricing information on products perceived value (Jung et al., 2014; Lo et al., 2013) and on shopping intentions (Wu et al., 2013, Chen and Chang, 2005), the perceptions of online prices (Yu, 2008), the price sensitivity in online environment (Garrow et al., 2008), the online differential prices (Lii and Sy, 2009), the influence of online price information on off-line buying behavior (Bodur et al., 2014), the framing effect on online price promotions (Chatterjee, 2011) or on online dynamic prices (Weisstein et al., 2013), the online price fairness perceptions (Andrés-Martínez et al., 2014).

In consumer choice, sensory search attributes, as visual cues, are less important in online buying than factual information (Degeratu et al., 2000). Price is one of the most important sources of messages customers may rely on in their decision-making process, being helpful to know how the price information is obtained. Jiang (2002) have developed a price search model in online environment, according to which online price search depends on perceived search efficiency and on motivation to price search.

Related to price information, in order to assess some product characteristics, customers might use online reviews, considered as a form of word of mouth communication in online environment.

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Consumers reviews can increase sales, reduce price sensitivity, educate consumers on product attributes, contribute to the formation of expectations and to the increase of satisfaction (De Maeyer, 2012).

In evaluation of the relationship between perception of physician quality and online reviews, Gao et al. (2015) have stated there exists a positive correlation between online ratings and physician quality, while physicians that are perceived as low quality providers by the patients are less likely to be rated online.

According to De Maeyer (2012), the online consumer reviews have several dimensions: verbal (includes information beyond numerical data in order to describe product features and benefits, giving to the potential buyer possibility to evaluate which review is more relevant and to resolve the conflict of information), valence (refers to the numerical value associated to the product rating), variance (the distribution of the reviews on a J-shaped curve), volume (the number of reviews) and helpfulness (some sites allow visitors to rate the helpfulness of the reviews).

The online buyers, especially on consumer-centric markets, rely on seller reviews to deduce the transaction risk according to Wu et al., (2013). In a 2x2x2 experiment, they manipulated three variables: review volume (the number of seller reviews), review valence (the percentage of positive seller reviews in the total seller reviews), and product price (low or high). The findings draw attention that buyers' risk attitude (risk-averse, risk-seeking, risk-neutral) moderates the review volume effects on buyers' willingness to pay measured in absolute terms (in dollar amount) and in relative terms (in percentage change). It does not moderate the effect of review valence that is always positive, but it moderates the effect of product price on relative WTP measure (Wu et al., 2013). In academic area, few studies attempts to investigate the influence of consumer reviews' quantity and valence on perceived quality and perceived value in Romanian environment.

The present paper aims to understand the effects of reviews' quantity and rating on some consumer behavior variables: perceived quality, perceived value and shopping intentions. For this purpose, a 2x2 marketing experiment was conducted among potential buyers of an electronic product. The primary focus of this study is on outlying the characteristics of Romanians behavior when they are exposed at two elements of online reviews: quantity and rating.

2. THE INFLUENCE OF CONSUMER REVIEWS ON BUYING BEHAVIOR

In order to search information in online behavior, many consumers consider the reviews as a helpful source. The review system might be unidimensional when the customer does an overall evaluation of the product or multidimensional when there are several product characteristics that are rated (Li and Hitt, 2010). According to the price level, the reviews configuration may influence purchase decision. For high-priced products, consumers prefer to buy rather from a seller with numerous (over 1000), but mixed reviews (positive, negative and neutral) than from one with few positive reviews (less than 10) (Chou et al., 2013). The same authors have concluded that for low-priced products the review configuration doesn't influence the shopping decision, for these products the perceived associated risk being low.

Unidimensional rating is very similar with a value assessment in a complex rating system, according to Li and Hitt (2010). The same authors concluded that the influence of price on reviews depends on the review system: the unidimensional rating can be significantly biased by price effects (because in most cases this is focused on product value, not on product quality) while the multidimensional rating (e.g. the price and quality are assessed separately) is less influenced by price effects. Thus price has an important effect on unidimensional rating, even if it is not evaluated separately.

Purchase intention is influenced by the valence intensity of online reviews, but in a asymmetric way, medium and high reviews increase buying decision only for positive reviews, for negative reviews the effect on purchasing decisions being insignificant (Floh et al., 2013). Though, Chevalier and Mayzlin (2006) found that the influence of a negative review in decreasing sales is greater than

of a positive review in increasing sales. In this way, people with positive buying experience must be stimulated to communicate through online reviews their impression. The personality traits influence the attitude to review configuration. Thus, for high priced products, the persons with a high level of openness to experience will manifest an increase in their shopping intentions, when they buy from sellers with few, but positive reviews (Chou et al., 2013).

Referring to the consumers from UK, Obiedat (2013) have demonstrated that the reviews' quality (accuracy, objectiveness, clearness, relevance and understandability) and the reviews' quantity (the number of reviews) influence the buying intention. The average ratings and the number of online customer reviews influence the sales of search goods (products evaluated mostly on objective properties, that not require an experience on using them, e.g. cameras) (Zhang et al., 2013) and of experience goods (as books) (Chevalier and Mayzlin, 2006). Considering these aspects, the first hypothesis of the present study is:

H₁: Higher online consumer reviews' quantity generates higher perceived quality, higher perceived value and higher shopping intentions

Chintagunta et al. (2010) found that the mean rating (valence) of online word of mouth has positive effect on box office earnings in movies industry, so it might be supposed that:

H₂: Higher online consumer reviews' valence (average rating) generates higher perceived quality, higher perceived value and higher shopping intentions

Obiedat (2013) stated that the buying intentions of consumers with high level of cognition need (the propensity to look for information related to a product) are influenced more by the quality than by the quantity of online reviews, and for consumers with low level of cognition need the vice versa is correct. For low price products, males are less sensitive on the number of reviews comparing to females (Chou et al., 2013).

Park et al. (2007, p. 128) gave examples of low quality reviews, with high degree of subjectivism: "It's so good that I'm going to buy another one" and of high quality review, that is more objective: "This product is twice as fast as other comparable goods and even cheaper". They have demonstrated also that reviews' quality and quantity increase shopping intentions, low-involved consumers being affected more by reviews' quantity than by reviews' quality.

Considering the prevalent influence of reviews' valence or reviews' quantity on sales, the opinions are not convergent. In a study on movies, Chintagunta et al. (2010) found the valence, not the volume, is the most important in box office performances for movies industry, thus it might be supposed that:

H₃: The effect of online consumer reviews' valence on shopping intentions is greater than online consumer reviews' quantity

3. RESEARCH METHODOLOGY

In order to evaluate the influence of online customer reviews' quantity and reviews' rating, a 2x2 marketing experiment was conducted between the 15th April - 9th May 2016, using factorial design. It was applied on 100 students of an economic university from Romania, subjects from each of four groups being presented a scenario describing an online shopping situation. The potential buyer from each scenario was exposed to an electronic product (laptop), whose main characteristics were described and whose price was mentioned, without being made references to the brand, in order to not influence the buying behavior. The product chosen was one of the most popular electronic device among students who represent a major category of its target market. The independent variables were: reviews' quantity (the number of reviews, varying from 5, for low quantity condition, to 25, for high quantity condition) and reviews' rating (the average rating of the product, evaluated on a scale from 1 to 5, which has the value 3.4 for a low score condition and 4.7 for high score condition). In order to set the levels of the independent variables, a content analysis was conducted on reviews of a well-known online store from Romania, to understand what represents a high and a low level in Romanian online environment.

The dependent variables were represented by: perceived quality, perceived value and shopping intentions, all being measured on a 5 points Likert scale. Concerning the internal consistency of these variables, for perceived quality Cronbach Alpha=0.703, for perceived value Cronbach Alpha=0.769, while for shopping intentions Cronbach Alpha=0.749. All Cronbach Alpha values are over 0.7, proving a good reliability of the scales used to measure the dependent variables.

4. RESULTS AND DISCUSSION

In order to analyze the data, it was chosen the analysis of variances technique (ANOVA), the Levene test attesting variances are homogeneous. Concerning the influence of reviews' number, the product quality is perceived as being somehow higher ($M_H=3.48$), for high quantity condition than for low quantity condition ($M_L=3.46$) (Table 1). However, the difference is not significant, $F(1,98)=0.011$, $p>0.05$, therefore the reviews' number doesn't influence the perceived quality (Table 2).

Table 1. Descriptive statistic for reviews' number influence

	Review number	Sample	Mean	Std. Deviation	Std. Error
Quality perception	High	50	3.4800	0.97395	0.13774
	Low	50	3.4600	0.90824	0.12844
	Total	100	3.4700	0.93695	0.09370
Value perception	High	50	3.4800	0.86284	0.12202
	Low	50	3.3200	1.05830	0.14967
	Total	100	3.4000	0.96400	0.09640
Shopping intentions	High	50	3.2800	1.16128	0.16423
	Low	50	3.0200	1.15157	0.16286
	Total	100	3.1500	1.15798	0.11580

Source: author

For online purchases, a higher reviews' number generates a higher value perception score ($M_H=3.48$) than a lower reviews' number ($M_L=3.32$), but the difference is not significant, $F(1,98)=0.687$, $p>0.05$. The same type of influence is manifested on shopping intentions. The online visitors are more inclined to buy when they are exposed to a product which has many reviews ($M_H=3.28$) than to one with less reviews ($M_L=3.02$), but the difference is not significant $F(1,98)=1.264$, $p>0.05$ (Table 2).

Table 2. Statistic significance of reviews' number influence

		Sum of Squares	df	Mean Square	F	Sig.
Quality perception	Between Groups	0.010	1	0.010	0.011	0.916
	Within Groups	86.900	98	0.887		
	Total	86.910	99			
Value perception	Between Groups	0.640	1	0.640	0.687	0.409
	Within Groups	91.360	98	0.932		
	Total	92.000	99			
Shopping intentions	Between Groups	1.690	1	1.690	1.264	0.264
	Within Groups	131.060	98	1.337		
	Total	132.750	99			

Source: author

Considering these results, it may be concluded that hypothesis H₁ is not accepted, the reviews' quantity does not influence the perceived quality, the perceived value and the shopping intentions. The influence of the product average rating, done by other buyers through online reviews, was analyzed also with ANOVA, the Levene test proving the appropriateness of this method. The online visitors perceive a higher quality for a product which is rated with a higher score (M_H=3.7) than for a product rated with a lower one (M_L=3.24) (Table 3), the differences being significant F(1,98)=6.352, p<0.05 (Table 4). The product average rating influences the perceived value, for high scored products the online visitors perceiving a better value (M_H=3.7) than for low scored products (M_L=3.24), F(1,98)=10.627, p<0.05 (Table 4).

Table 3. Descriptive statistic for reviews' average rating influence

	Review number	Sample	Mean	Std. Deviation	Std. Error
Quality perception	High	50	3.7000	0.86307	0.12206
	Low	50	3.2400	0.95959	0.13571
	Total	100	3.4700	0.93695	0.09370
Value perception	High	50	3.7000	0.83910	0.11867
	Low	50	3.1000	0.99488	0.14070
	Total	100	3.4000	0.96400	0.09640
Shopping intentions	High	50	3.5000	1.09265	0.15452
	Low	50	2.8000	1.12486	0.15908
	Total	100	3.1500	1.15798	0.11580

Source: author

The same type of influence may be observed for shopping intentions F(1,98)=9,963, p<0.05, the online visitors exposed to higher review scores are more inclined to buy (M_H=3.5) than those exposed to lower review score (M_L=2.8), for the last case the mean of intentions being less than neutral level 3 (Table 4).

Table 4. Statistic significance of reviews' average rating influence

		Sum of Squares	df	Mean Square	F	Sig.
Quality perception	Between Groups	5.290	1	5.290	6.352	0.013
	Within Groups	81.620	98	0.833		
	Total	86.910	99			
Value perception	Between Groups	9.000	1	9.000	10.627	0.002
	Within Groups	83.000	98	0.847		
	Total	92.000	99			
Shopping intentions	Between Groups	12.250	1	12.250	9.963	0.002
	Within Groups	120.500	98	1.230		
	Total	132.750	99			

Source: author

Considering the influence of reviews' average rating, the hypothesis H₂ is accepted: the higher online consumer reviews' average rating generates higher perceived quality, higher perceived value and higher shopping intentions.

Shopping intentions are increased for higher rating scores ($M_{HV}=3.5$) than for higher reviews' number ($M_{HQ}=3.28$), the reviews' average rating having a significant influence ($t=3.156$, $p<0$) comparing to reviews' number ($t=1.124$, $p>0$). Thus, the effect of online consumer reviews' rating on shopping intentions is greater than online consumer reviews' quantity, hypothesis H_3 being accepted. The shopping intentions are directly influenced by perceived value ($F(4,95)=3.171$, $p<0.05$) and by perceived quality ($F(3,96)=14,544$, $p<0.05$), this result being in accordance with the literature regarding this type of influence (Yee et al., 2011).

5. CONCLUSIONS

The online buying behavior is complex, influenced by many variables, some of them not being present in off-line shopping occasions. One of the most important source of information online visitor rely on is represented by consumer reviews, which express the impressions of other online buyers regarding the product.

The utility of consumer online reviews and their influence on sales is outlined by many studies (De Maeyer, 2012, Chevalier and Mayzlin, 2006, Zhu and Zhang, 2010). This influence is dependent on product and consumer characteristics. In a study on online video games, Zhu and Zhang (2010) found that online reviews are more influential on product sales for less popular games and for consumers with greater Internet experience.

The present study aims to evaluate the effects of reviews' quantity and rating on perceived quality, perceived value and shopping intentions of Romanian online buyers. In this respect it was carried out a marketing experiment on Romanian buyers of an electronic product. Two out of three hypotheses set in the present paper were accepted. The results emphasize the predominance of consumer reviews' valence on buying behavior over reviews' quantity, Romanian buyers being more sensitive to the reviews' rating than to the reviews' number. Reviews' quantity has not a significant influence on quality perception, value perception and shopping intentions, while reviews' rating influences significantly these variables. These findings should be considered cautionary, because there might exist differences on product category and on customer characteristics. Thus, one limitation of the research is that subjects exposed to the experimental treatment are not representative for entire target market of laptop computers in Romania. Also, the results might be different if the product category would be changed or if the brand name would be disclosed.

The managerial implications of these findings refer to the necessity for companies to identify and analyze the customer online reviews in order to understand the sources of satisfaction or dissatisfaction. Decision makers could manage the communication activities, emphasizing the customers' positive impressions or transmitting information meant to clarify some aspects that could generate dissatisfaction.

Further research may consider, for reviews' valence, the influence of a negative average rating on some behavioral variables, the present study operating only with positive and neutral average ratings. Also, it should be analyzed the influence on buying behavior of other reviews characteristics such as reviews' verbal content or reviews' helpfulness.

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