Photos in Online Reviews of Search Goods

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Cite as:
Knauß Jessica, Elsner Mark (2023), Photos in Online Reviews of Search Goods .
Proceedings of the European Marketing Academy, 52nd, (114463)

Paper from the 52nd Annual EMAC Conference, Odense/Denmark, May 23-26, 2023

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Abstract:

Online reviews allow consumers to evaluate products and services before making a purchase. They can contain both written and visual user-generated content. While researchers demonstrated that consumers benefit from photos added to online reviews of experience goods, far too little attention has been paid to search goods. More precisely, only one study investigated the effect of photos by examining reviews from American Amazon.com. However, due to cultural differences between American and German society, we assume that their results cannot be generalized to the German population. This study, therefore, investigates to what extent German consumers value photos in online reviews of search goods. In doing so, we conducted an online experiment among 503 German participants. The results of a two-sample t-test and regression analysis support our assumption. This study contributes to research in the field of digital marketing and provides implications for practitioners.

Keywords: Electronic Commerce, Online Review Helpfulness, Search Goods

Track: Digital Marketing & Social Media

1. Introduction

Evidence shows that consumers use online reviews to inform themselves before making a purchase decision (Moe & Trusov, 2011; Eden et al., 2021). Online reviews perceived as helpful can positively impact purchase intention (Ghose & Ipeirotis, 2011). Perceived review helpfulness is the extent to which consumers think the viewed reviews facilitate their decision-making process (Mudambi & Schuff, 2010). With the advent of photo-sharing, online retailers, and online marketplaces, have enabled users to add self-generated visual content to written reviews (Xu et al., 2015). Several previous studies established that helpfulness in online reviews of experience goods (e.g., restaurant stay, hotel visit) increases when photos are added (e.g., Filieri et al., 2021). Those goods are of personal taste, and information about the quality is difficult to access before purchase (Nelson, 1974), which is why images can support acquiring information. So far, to the best of our knowledge, only the study of Osterbrink et al. (2020) focused on search goods in the context of investigating how photos can affect review helpfulness. Search goods, such as a camera, and furniture (Nelson, 1970), can be evaluated before buying and depend more on attributes of an objective nature. Thus, they can be compared easily and considered factually (Mudambi & Schuff, 2010). By crawling American Amazon.com reviews and running a regression analysis, Osterbrink's et al. study (2020) showed that photos positively affect perceived review helpfulness for search goods. The current work builds on the findings of Osterbrink et al. (2020). We consider such an approach valuable to understand whether their results can be generalized to different populations. More precisely, since the German culture rank notably higher on uncertainty avoidance (65) in comparison to the United States (46) according to Hofstede's cultural dimension framework (1984; 2022), we assume that photos in reviews of search goods are less helpful. Thus, this paper attempts to show that text-based online reviews of search goods are more practicable for German users to assess information and overcome uncertainty. Therefore, this study addresses the following research question: *To what extent do German consumers value photos in online reviews of search goods?*

We collected and analyzed primary data from an online experiment in Germany to provide an answer. This study has both theoretical and practical contributions. Theoretically, our study contributes to research investigating antecedents of perceived online review helpfulness. Moreover, we are the first to conduct a study on primary data in Germany (Bhaiswar et al., 2021). The results practically grant international marketers to understand better German consumers interacting in an online environment.

2. Theoretical Foundation and Derivation of Hypotheses

Uncertainty avoidance expresses the extent to which societies feel threatened by the unknown and uncertainty (Hofstede, 1980). This seems to be particularly the case in the German culture, as they have a high score in uncertainty avoidance of 65. Since members of German society try to avoid uncertainty, they rely on the expertise of others. German culture needs a systematic overview and tends to desire much information before deciding (Hofstede Insights, 2022). In comparison, the United States (U.S.) scores low with a score of 46. Therefore, American society members accept trying something new and tend to require less factual but informal information (Hofstede Insights, 2022). Furthermore, an individual's perceived uncertainty in e-commerce is explained as the extent to which they cannot predict the outcome of a transaction due to uncertainty about the seller and whether the product or service will meet their expectations. Hence, consumers are constantly exposed to a particular risk when buying online (Mudambi & Schuff, 2010). Especially when involvement, the personal importance of an object, is high, consumers fear making a wrong decision (Ivanovska & Perovska, 2021). Scholars found that consumers resort to online reviews to overcome uncertainty (Mudambi & Schuff, 2010; Moe & Trusov, 2011). Moreover, research on experience goods reviews revealed that photos added to a review could serve as additional information to help assess the quality of a product before decision-making (Filieri et al., 2021). However, we have raised questions about the value of photos added to an online review of search goods because findings in the context of experience goods are not transferable due to different product nature. Although the study of Osterbrink et al. (2020) demonstrated a significant positive effect of pictures in American reviews of search goods on review helpfulness, we are against transferring these results to German consumers for the reasons mentioned above. Further, their study also observed that the interaction effect of a larger number of added images and a higher number of words on perceived helpfulness was negative (Osterbrink et al., 2020). This result makes us question the effect of pictures in review of search goods on perceived review helpfulness.

Mainly for search goods, Mudambi and Schuff (2010) recommended, based on their results, that online retailers should encourage consumers to provide as many details as possible in written reviews. Ghose and Ipeirotis (2011) further found that consumers evaluated reviews of feature-based goods, such as electronic products (search goods), as helpful if they contained mainly objective, fact-based written content. We suppose for German consumers that adding photos to an online review of search goods does not have a

meaningful influence on the perceived review helpfulness. We assume that German consumers are more attracted to verbal information as they can draw more conclusions about their decision from the facts. Therefore, we hypothesize

H1: If photos are added to an online review of search goods, online review helpfulness will not increase.

H2: The more photos are added, the more online review helpfulness of search goods decreases.

3. Empirical Study

To examine the derived hypotheses, we conducted an online experiment with a survey among German online shoppers from April 2, 2022, to April 8, 2022. To conduct the experiment, we used the survey platform *SoSci Survey*. We performed the hypotheses testing by using *R*.

3.1 Study Design and Measurement

Our research was tested in a 2 × 2 between-subjects factorial design. One factor is involvement with the two-factor levels of low and high involvement. The other factor is the online review, with two-factor levels representing different formats: text only and text with photos. Participants were randomly assigned to the resulting four experimental conditions. We have chosen to query two goods with varying levels of involvement to determine if the effect is generalized. In more detail, a pretest with 35 participants was conducted to identify low and high involvement products from Nelson's search goods category (1970). To create a realistic manipulation, the design of the stimuli was inspired by Amazon.de. We took several measures to control the effects of possible confounding variables, thereby improving the study's internal validity. For example, we excluded helpful buttons and extreme star ratings to avoid bias.

After the participants were welcomed to the survey, they were confronted with a control question to eliminate participants who had not used e-commerce in the past. Subjects who answered 'no' to whether they had ever shopped online were directly excluded from the survey. Those who answered 'yes' were randomly assigned to one of the four experimental conditions. Each participant saw a scenario in which they were told to imagine considering buying a product and referring to the following review for information. After seeing the stimuli, participants were required to answer questions about their perceptions of the shown review's helpfulness. The last section of the questionnaire asked for participants'

demographic information. Additionally, as a manipulation check, participants had to indicate which product they had seen in the previously displayed review.

Since review helpfulness was not explicitly operationalized in past studies, previous research measured related indicators (Mudambi & Schuff, 2010). Thus, we decided to use a scale measuring diagnosticity. Review diagnosticity describes the ability of a review to provide consumers with information that helps them to understand and evaluate the performance and quality of goods sold online (Mudambi & Schuff, 2010). We relied on the scale developed by Jiang and Benbasat (2007) for website analysis. The scale contains three items measuring whether it is "helpful for me to evaluate the product," "helpful in familiarizing me with the product," and "helpful for me to understand the product" (Jiang & Benbasat, 2007, p. 468). Participants rated all items on seven-point Likert scales ranging from 1 (completely disagree) to 7 (completely agree).

3.2 Recruiting and Sample Descriptives

We recruited participants from a German panel maintained by an international market research institute. The criteria for this panel were: Internet-savvy e-commerce users and a balanced mix of gender, age groups, and federal states. 671 participants completed the survey and were initially counted as valid cases. However, data cleansing, e.g., removing participants who failed in manipulation check and who sped through the test, resulted in an adjusted sample of $N = 503$. The sample comprises 62.4% women ($n = 314$) and 37.4% men ($n = 188$). One participant was of a different gender. The participants' ages range from under 18 ($n = 1$, 0.2%) to over 70 ($n = 2$, 0.4%). The age distribution shows that 30–39 years and 40–49 years are the most common, with 29.6% each. When looking at places of residence, each federal state was named at least once.

3.3 Data Analysis and Findings

First, it is essential to point out that this study used a maximum error probability for a first-kind error of $\alpha = 0.05$ as an acceptance criterion for all subsequent significance tests.

For reliability analysis, Cronbach's alpha for the diagnosticity scale was .87. Thus, the scale was internally consistent, with values above the recommended threshold of .7 (Nunnally, 1978). Based on the central limit theorem, a sample size of $n = 30$ assumes a normal distribution. Consequently, this study considers this requirement to be fulfilled for all tests. To check the manipulation of involvement, we compared mean differences between the experimental groups by Welch's ANOVA. A classical one-way factorial ANOVA could not

be used because the data violated the assumption of homogeneity of variances (Levene's test $p < .001$). The results showed that involvement differed significantly for the different experimental groups (Welch's $F(5, 228.9) = 22.1$, $p < .001$). Games-Howell's post hoc analysis revealed significant differences for the different involvement levels. The results indicated that the experimental manipulations regarding involvement were successful.

To test *H1*, we used a two-sample t-test for each group of involvement level. Each test contained one sample of the group who saw photos; the other sample was the group with only a written review. Since H1 already specified a possibility of effect in one direction, it is a directional hypothesis with a one-tailed significance. The hypothesis testing for the low involvement group met the assumption of variance homogeneity, $F(1, 165) = 3.397$, $p = .067$. The mean values of the groups displayed that the group who saw photos with a mean of 4.62 ($SD = 1.60$), had a lower value than the group with only written reviews with a mean of 5.03 ($SD = 1.35$). This outcome did confirm the presumed direction of effect. The added photo to the review did statistically significantly not increase perceived review helpfulness, $t(165) = -1.77$, $p = .039$. Also, for the high involvement group, the assumption of variance homogeneity was met, $F(1, 172) = 0.87$, $p = .768$. The mean was fewer in the group with visual ($M = 4.30$, $SD = 1.56$) than in the group without visual ($M = 4,79$, $SD = 1.49$), which confirmed the postulated direction. Hence, statistically significant photos did not improve review helpfulness, $t(172) = -2.12$, $p = .018$. As a result of both testings, *H1* is supported.

To assess *H2*, we carried out a regression analysis. To run the study, we dummy-coded the review formats. Thus, the group with written reviews was coded as zero, and the group with photos was used as the independent variable in the test, coded as one. The F-test demonstrated that the entire model was statistically significant, $F(1,339) = 7.34$, $p = .007$ ($R^2 = .021$). The result showed a statistically significant negative influence of added photos on perceived review helpfulness, $\beta = -.146$, $t(339) = -2.71$; $p = .007$. The findings revealed that if a photo increases by one unit, perceived review helpfulness decreases by .146 units. Thus, *H2* is supported.

4. Discussion and Implications

We built on the study of Osterbrink et al. (2020), who found that American consumers perceive images in online reviews of search goods as helpful, especially in combination with short text reviews. However, we assumed that their findings could not be transferable to German society due to cultural dimension differences between the U.S. and Germany in terms

of uncertainty avoidance. Our results expose that when photos accompany reviews of search goods, German consumers do not perceive those reviews more helpful than those with only text. Moreover, the experiment detected evidence that if visuals are added to an online review of search goods, review helpfulness will decrease. This finding has a similiar trait to the study by Osterbrink et al. (2020), who discovered a negative interaction effect between a higher number of photos and a larger text. Also, previous studies, which are only about written reviews, called for the need for fact-based and objective user-generated content regarding search goods (e.g., Ghose & Ipeirotis, 2011; Mudambi & Schuff, 2010).

We aimed to shed light on the research question of what extent German consumers value photos in online reviews of search goods. Derived from our findings, we showed evidence that consumers do not see photos as valuable information added to the information in the written online reviews. Thus, German consumers are more able to access information before purchasing through text based reviews of search goods. Photos do not convey the required factual information to German consumers in the case of search goods.

4.1 Implications for Theory

Firstly, the present study contributes to existing research investigating antecedents of perceived online review helpfulness. It is well established from various studies that the classification of products, according to Nelson (1970), ensures a differentiated understanding of the perceived helpfulness of reviews (Mudambi & Schuff, 2010). The analysis of visuals in online reviews of search goods conducted in this study has extended our knowledge of handling this product category. This study has confirmed that consumers' information requirements differ for search and experience goods. While many studies on experience goods discovered positive effects of adding photos to online reviews, such as increased perceived review helpfulness or facilitated decision-making (Filieri et al., 2021), this study found the opposite true for search goods. Consequently, this study emphasized that findings on experience goods might not necessarily transfer to search goods.

We are the first scholars in Germany that focused on search goods and conducted an experiment while exploring the influence of photos on review helpfulness. So, we are also expanding knowledge about German consumers.

4.2 *Implications for Practice*

The findings of this study imply that it is essential for practitioners to consider that different product types acquire different information and information formats (verbal or visual). This study can help practitioners better understand customer needs and intelligently manage their review system or tool. For example, the review mask can be designed so that photos do not have to be added to the review by users. Also, companies could consider whether more images are beneficial for their product presentations or whether they should instead rely on fact-based text for search goods.

Furthermore, marketers need to consider cultural differences even on the internet, which is global and independent.

5. Limitations and Future Research

Naturally, this study has some limitations that could help to guide future research. First, we only focused on two products we had previously identified as examples of high and low involvement goods. However, the findings may not hold for other products from these categories. We thus recommend replicating this study, including other types of search goods. Since existing literature did not provide an example of operationalizing perceived helpfulness, we relied on the construct diagnosticity. Therefore, additional work must be done to develop a single scale to measure review helpfulness. A further limitation of this study might be that the experiment did not create a realistic purchase situation for participants. They each saw only one review, although, in a natural online environment, such as a retailer's website, they would constantly be confronted with many reviews in different formats. An eye-tracking experiment could be conducted to understand better how consumers process the interplay between textual and visual information. Moreover, scholars could crawl data like in the study of Osterbrink et al. (2020).

Even with these limitations, this research is a good starting point for further work.

References

Bhaiswar, R., Meenakshi, N., & Chawla, D. (2021). Evolution of Electronic Word of Mouth: A Systematic Literature Review Using Bibliometric Analysis of 20 Years (2000–2020). *FIIB Business Review*, 3, 215–231.

Eden, S., Hoyer, A.-L., Niemeier, D., & Peters, L. (2021). *eCommerce in Germany 2021. eCommerce DB Country Report.* Retrieved from https://www.statista.com/download/MTY1MTU4NjgzNyMjNjQ1MTUjIzY5NTEzIyMxIyNudWxsIyNTdHVkeQ== (Last accessed: April 29, 2022).

Filieri, R., Lin, Z., Pino, G., Alguezaui, S., & Inversini, A. (2021). The Role of Visual Cues in eWOM on Consumers' Behavioral Intention and Decisions. *Journal of Business Research*, 663–675.

Ghose, A., & Ipeirotis, P. G. (2011). Estimating the Helpfulness and Economic Impact of Product Reviews: Mining Text and Reviewer Characteristics. *IEEE Transactions on Knowledge and Data Engineering*, 10, 1498–1512.

Hofstede, G. (1984). *Culture's Consequences: International Differences in Work-Related Values (Cross-Cultural Research and Methodology Series)*. Newbury Park, CA.: Sage Publications.

Hofstede Insights (2022). *Country Comparison*. Retrieved from https://www.hofstede-insights.com/country-comparison/germany,the-usa/ (Last accessed: December 4, 2022).

Ivanovska, L. P., & Perovska, F. M. (2021). Online Customer Reviews as Source of Information. *Journal of Sustainable Development*, 11(26), 56–59.

Jiang, Z., & Benbasat, I. (2007). Research Note—Investigating the Influence of the Functional Mechanisms of Online Product Presentations. *Information Systems Research*, 18(4), 454–470.

Moe, W. W., & Michael, T. (2011). The Value of Social Dynamics in Online Product Ratings Forums. *Journal of Marketing Research*, 48, 444–456.

Mudambi, S.M., & Schuff, D. (2010). What Makes a Helpful Online Review? A Study of Customer Reviews on Amazon.com. *MIS Quarterly*, 1, 185–200.

Nelson, P. (1974). Advertising as Information. *Journal of Political Economy*, 4, 729–754.

Nunnally, J. C. (1978). *Psychometric Theory*. McGraw-Hill, New York.

Osterbrink, L., Alpar, P., & Seher, A. (2020). Influence of Images in Online Reviews for Search Goods on Helpfulness. *Review of Marketing Science*, 1, 43–73.

Xu, P., Chen, L., & Santhanam, R. (2015). Will Video Be the Next Generation of E-Commerce Product Reviews? Presentation Format and the Role of Product Type. *Decision Support Systems*, 1–36.