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Availability Heuristics in Digital Consumer Decision-Making: Effects of Visual and Rating Cues

Xiaoyu Zang

Economics for Management Studies, University of Toronto, Toronto, Canada
xiaoyu.zang@mail.utoronto.ca

Abstract. Consumers rely on cognitive shortcuts to evaluate competing products gradually, but when such shortcuts improve judgment and when they produce bias, it remains unclear. This study examines multimodal review cues (e.g., visuals, ratings, valence) and the architecture of platforms and their roles in consumer decision-making in the context of information overload in digital commerce. The analysis shows that when salient information is relevant and complementary, availability cues lower search expenses and boost diagnosticity. But salience-driven preference distortion, extra attention to negative reviews, peripheral visual salience, and self-salience from review ranking systems can also occur. The paper suggests four remedies to address the problems listed above: integrate visual evidence with representative summary information in the reviews, structure the comparison of negative reviews, prioritize product-relevant visual evidence, and offer more transparency and diversity in the ranking of reviews. These strategies can be used to minimize systematic bias arising from differential information exposure and maintain the efficiency of cognitive shortcuts. The study offers implications for consumers, sellers, and platform designers and provides a better understanding of the interaction between the components of digital choice architecture and consumer heuristics in online purchases.

Keywords: Availability Heuristic, Online Review Diagnostics, Visual Persuasion, Digital Choice Architecture, Consumer Bias

1. Introduction

1.1. Research background

Online reviews are a combination of peer opinions, ratings, and images, all used to influence purchases. When consumers are confronted with too much information, they can resort to the availability heuristic, which is a tendency to give more credence to more salient and memorable reviews than to less salient and memorable evidence of product quality.

This mechanism was explored in the context of online restaurant reviews by Nazlan, Tanford, and Montgomery, who demonstrated that the vividness and the form of review cues can alter evaluations, intentions, and choice of items [1]. The question is of importance in a commercial context since online reviews can impact purchase intention in a variety of product and service contexts. A recent meta-analysis of 156 studies, 214 effect sizes, and 69, 006 observations found that

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the characteristics of a review can have a significant impact upon a consumer's purchase intentions, with the valence of the review having the strongest overall association, while the format of the review is meaningful too [2]. In addition, eye-tracking data suggests that consumers are not distributing their gaze equally while reading online reviews, especially when it comes to the negative aspects, and that this gaze contributes to their buying decision [3]. These findings indicate that digital purchasing is not a matter of objective quality and price. Information that is most salient to the decision process can be influenced by interface design and the salience of cues.

The topic is relevant to platforms, sellers, and consumers. Platforms: Review presentation impacts information usefulness and can impact conversion. Rich reviews can increase the product understanding for the sellers, decrease the uncertainty, but can also bring isolated opinions. From the consumer's perspective, a more efficient interface could result in reduced search costs, and too much attention to the salient cues could lead to biased decisions. It is therefore important to be aware of the availability heuristic to differentiate helpful simplification from the distortion of a decision.

1.2. Literature review

It has been demonstrated that text and ratings can interact in the determination of consumer evaluations, depending on the product type and context of the cultures [1, 2, 4]. Pictures are more effective when the product has a hedonic nature, whereas text is more effective for utilitarian purchases [4]. Recent studies focus on what photos convey - the background can indicate the reviewer's status, the composition of the images, and relevance to the text, and consistency of the images within the text impacts helpfulness of the review [5-7]. The implications of these findings are that visual reviews may be useful, depending on their content and context. It is important to understand how the cues work together in explaining consumer attention and judgment.

Most studies have focused on one type of review cue (valence, ratings, text, pictures, or characteristics of reviewers). Less research focuses on what occurs when multiple cues are involved, and one becomes more easily retrievable than the others. Recent evidence from Yelp indicates that an easily accessible rating of reviews can better predict consumer decisions compared with an aggregate rating, particularly when ratings differ [8]. Yet, how vivid presentation and cue accessibility relate to decision quality is still scattered across various research streams. One area that is less understood is when the availability of a cue facilitates consumers' efficient processing of information and when it interferes with their preferences by crowding out less salient but potentially more diagnostic information.

1.3. Research framework

In this paper, the case of the online reviews' experiments conducted by Nazlan et al. is followed and related to recent studies on format and visual effect of online reviews and consumer decision-making [1]. First, the case description describes the experimental design, and the main results related to review type, pictures, valence, and rating format. Second, the analysis leads to the conclusion that two positive effects of the availability cues can be identified: a positive effect on the speed of information processing and a positive effect on the diagnosticity of the combination of text and pictures. Third, the analysis reveals four issues: salience-driven preference distortion, negativity bias, context-dependent manipulation by peripheral visual cues, and self-reinforcing exposure generated by platform presentation. This structure considers availability heuristics as an efficient shortcut and as a possible systematic consumer bias.

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2. Case description

2.1. Experimental design and stimuli

In this paper, two online experiments of restaurant reviews reported by Nazlan et al. (Table 1) are examined [1]. Study 1 (n = 210) was a 2 × 3 design with two sequences of review (text or star rating or both) and three types of review (text, star rating, or both). It assessed restaurant evaluations and behavioral intentions. Study 2 (n = 260) adopted a 2×2×2 design with rating format, picture presence, and review valence varied during menu choice. The experiments combined to investigate the impact of visual information on judgments in the presence of other competing review information.

2.2. Empirical results: the moderating role of cue combinations

The results indicate that the availability effects are not only due to the presence of a single visual feature but to a combination of cues. In Study 1, restaurant evaluation was highest in reviews that included both descriptions and star ratings (M = 4.56) than star ratings only (M = 3.86) and descriptions only (M = 3.71) [1]. Description and rating combination also led to higher recommendation intention. Based on these results, the complementary cues can be used to strengthen the perceived credibility and accessibility of review information.

Table 1. Experimental design and main findings in the central case

Study	Design	Sample	Key Manipulation	Main Finding
Study 1	2×3 factorial	210 online respondents	Review sequence; descriptions and/or star ratings	Descriptions + ratings produced the strongest restaurant evaluations
Study 2	2×2×2 factorial	260 university students	Rating format, picture presence, and review valence	Pictures increased the likelihood of positive reviews; choice effects depended on the rating format

Study 2 showed that pictures facilitated a choice for positive reviews (M = 4.81 to 5.76), but not for negative reviews [1]. Sandwich selection went up with pictures (from 27.0% to 41.5%) and down with stars. So picture effects were dependent upon competitive cues.

3. Mechanisms and implications of availability heuristics

3.1. Functional utility of availability heuristics

3.1.1. Cognitive efficiency and search cost reduction

Availability cues can help the decision process when they make some important information easier to find and understand. When purchasing products online, consumers have to compare a lot of alternatives, which is time-consuming and requires attention. A visible rating, a brief written statement, or an appropriate illustration can serve as a screening tool, reducing the work involved in forming a first impression. This result is in line with the suggestion by Qiu and Zhang's meta-analysis that both review format and content are meaningful predictors of purchase intention, which

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suggests that presentation has a role to play in how efficiently information is translated into purchase intention [2]. In the central case, descriptions and ratings combined yielded more positive evaluations than either cue alone, suggesting that a good description-rating combination can facilitate consumers' input integration and alleviate the dilemma of choosing between verbal and numerical cues [1].

However, fit is crucial to efficiency. Yao et al. discovered that picture-based reviews are more useful for hedonic products, which may be characterized by emotional and experiential advantages, while text-based reviews are more useful for utilitarian products, which may be characterized as rational product information [4]. Availability cues will be most effective when salience is congruent with information needed in the buying process. In this case, a heuristic is not necessarily irrational; it may be adaptive and an error-saving search strategy that reduces search costs without ruling out any meaningful comparison.

3.1.2. Enhanced diagnosticity via multimodal cues

Multimodal reviews can also enhance diagnosticity when the cues offer complementary evidence. Pictures might show the size, appearance, use, or fault that is hard to describe in words, and a written description might provide context, and a rating might give an overall assessment. They discovered that image accuracy and relevance have a positive impact on review helpfulness, indicating that the value of visual information lies in its content, which must contain information that is relevant to the decision [7]. Similarly, Kübler et al. found that the images can be particularly useful if they depict the product in action, and if the context of the image matches the content of the review text, but noted this is dependent on valence and product category [6]. These findings contribute to understanding why the central case showed better results for combined cues – vividness can focus attention, and extra information can facilitate a more well-informed interpretation [1].

This is a positive effect that is of commercial importance as the online purchase is associated with information asymmetry. User-generated visual evidence can remove uncertainty for many products that are incapable of being physically viewed by consumers prior to a purchase. But if the images to be reviewed are real, relevant, and accompanied by explanatory texts, availability can complement diagnosticity. The cue is easy to see, and the textual evidence offers justification for the judgment. This combination can help enhance confidence and make the review environment more informative.

3.2. Cognitive biases and structural distortions

3.2.1. Salience-driven preference distortion

The first is that there is an error in identifying what is salient as important. Availability heuristics place more emphasis on information that is easier to recall, even when that information is not the best indicator of overall quality. Zhang et al. discovered that the review rating is more helpful in predicting consumer decisions than the aggregate rating, especially when there is a mismatch between the two review signals [8]. This means there is a danger that one more recent, more vivid, or more noticeable review will overwhelm a greater amount of evidence.

The same mechanism is shown in the central case, but at the level of visual presentation. The addition of a picture significantly boosted the choice of the target sandwich under numerical ratings, despite the fact that the product remained unchanged [1]. This responsiveness can not necessarily be bad, as a picture may contain helpful information. The problem arises when the visual cue is given

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more weight simply because it sticks in your mind. Then, the consumer may assume or presume the quality of the product based on the intensity of presentation rather than from the complete distribution of reviews. On platforms, therefore, design changes on who receives thumbnails, larger images, and prominent positions can thus change preferences without affecting product quality.

3.2.2. Negativity bias and asymmetric information processing

The second issue is the bias towards positive data versus negative data. Eye-tracking studies indicate that the negative online reviews draw much more attention than positive information and that the attention pattern is related to buying intention [3]. The central case identified the following related asymmetry: images boosted the likelihood of choice when the target review was positive but not when the target review was negative [1]. The authors took this as an indication that negative information can supplant other availability cues.

The negativity bias can be a good thing for consumers because it makes it easier to notice when things have gone bad, but it can also amplify an isolated complaint. One of those negative experiences can be very salient and can influence expectations, even if the majority of reviews are positive. The net effect is that review systems may generate "unstable" judgments, with consumers going back and forth from very positive to very negative impressions as one cue becomes more salient. Emotional intensity attracts attention away from representativeness, frequency, and reliability of the evidence, decreasing the quality of the decision.

3.2.3. Peripheral cue manipulation and contextual interference

A third issue is that peripheral visual cues can impact judgments without having anything to do with product performance. In this regard, Zhang et al. showed that consumers can infer the reviewers' socioeconomic status from the background of the picture of their review and that this can affect their purchase intention [5]. The background is not a direct sign of product quality, but can become cognitively available and be an evaluation. This is an illustration of how a visual inspection can convey social cues which are not necessarily product evidence.

The social context also alters the meaning of the information that is communicated in the review. Ahn and Lee discovered that review ratings and perceived group similarity are moderated by consumers' self-construal, meaning that the impact of a review rating might be different based on consumers' perceived similarity to the reviewers [9]. These findings suggest that the simple assertion that pictures or ratings make a review more objective is questionable. There are more cues that can enhance information richness, but there are also more opportunities for persuasion. Sellers could thus have visually appealing reviews while the persuasive impact is attributed in part to peripheral features and not product-relevant information.

3.2.4. Algorithmic amplification and self-reinforcing exposure

The fourth issue relates to the operating system of the platform. Ranking, sequence, filtering, and interface design make up a part of availability. Namvar and Chua analyzed 650 and 995 Amazon reviews and concluded that the helpfulness of a new review is not only related to the content of the review, but also related to the dissimilarity of the new review with previous reviews, and the sequence in which the reviews appear [10]. This is because consumer perception is influenced by the context of the reviews (and not just one review alone).

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If a platform makes it possible for reviews that naturally gain clicks, votes, or attention to be encouraged, then there can be a self-reinforcing loop. Any reviews that are highly visible are easily discoverable and can generate further interaction, thus warranting even more visibility. This exposure pattern can create a small group of reviews that drive consumers' verdicts. This is particularly relevant when image-intensive reviews are given preferential placement to text reviews. Increased convenience may unintentionally decrease the information set that consumers think about. Thus, the availability heuristic should be seen as a key cognitive tendency and also as a product of the digital choice architecture. Review sites shape cues that are available and opinions that are accessible at the point of purchase.

4. Governance strategies and policy interventions

4.1. Calibrating salience: integrating vivid cues with aggregate diagnostics

To reduce salience-driven preference distortion, review platforms should present vivid cues together with information that represents the broader review distribution. A prominent photograph or highly accessible individual rating should not appear without nearby indicators such as the overall rating, number of reviews, rating distribution, and a short explanation of why a review is being shown. This approach preserves the efficiency of availability cues while reducing the risk that one memorable review is treated as more important than the full evidence. The recommendation is consistent with findings that easy-to-retrieve ratings can influence decisions more strongly than aggregate ratings when the two signals conflict [8]. It is also supported by the central case, where the presence of a picture changed menu choice under numerical ratings even though the underlying product did not change [1]. Platforms should implement balanced interface designs that prevent visual dominance by individual reviews, ensuring that representative statistical summaries remain persistently visible to preserve decisional accuracy. This design would allow consumers to benefit from fast processing without losing access to less salient but more representative information.

4.2. Mitigating negativity bias via structured comparative contexts

The second approach is to stop negative reviews in isolation, to take a disproportionate level of attention. Negative information should also be available, as it could include important warning messages, but can be displayed in a structured setting. For instance, interfaces may categorize common complaints, differentiate recurring issues from isolated incidents, and provide insights into the occurrence rate of a negative issue out of the total number of reviews. Studies on eye tracking show that negative reviews draw the eye more and that this is linked to buying behavior [3]. The central case also proposes that negative information has a stronger influence than positive information, as the addition of a picture had a greater impact on positive reviews than negative reviews [1]. A structured comparison would not stifle criticism, but would help the consumer assess a vivid complaint in terms of representativeness. Sellers should also try to avoid adding too much selling imagery to their response to negative reviews, as this could further turn the attention imbalance in the negative. Proportionate judgment can be better facilitated by clear answers of fact and by standardized categories of issue.

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4.3. Prioritizing diagnostic visuals over peripheral persuasion

Another approach is to minimize the use of peripheral visual cues by incentivizing review images with product-relevant evidence to decrease manipulation. Review sites can give easy-to-follow picture directions that promote clear photos of the product, how it's used, size, condition, or faults, and deter distracting background or decorative items, which can give social-status impressions. Studies indicate that background pictures can help consumers assemble a picture of the reviewer's socioeconomic status and that this socioeconomic status can impact purchase intentions [5]. Other research suggests that the accuracy of the image, the relevance of the image to the text, consistency between image and text, and fit to the context are important aspects of review helpfulness [6, 7]. The results indicate that the evaluation of visual richness should be based on the diagnostic value and not only on the attractiveness. Platforms might automatically or manually categorize images as product-centric, usage-centric, or context-rich, and let consumers sort reviews by these types. This would retain helpful visual data, and such persuasion would be easier to see from the periphery. Users' pictures that evoke aspirational lives not related to the products' performance should not be selectively used by sellers.

4.4. Enhancing algorithmic transparency and exposure diversity

Self-reinforcing exposure, as discussed in the fourth strategy, comes about through review ranking systems. Ranking criteria should be more transparent on platforms and in no way be based solely on previous clicks, helpfulness votes, recency, and/or visual richness. Evidence from Amazon review data at a large scale indicates that helpfulness is affected by the sequence of the review and by how different a review is from other reviews [10]. However, if the more visible reviews are able to garner more engagement simply because they are more visible, ranking systems may widen a first-mover advantage and limit the information that consumers may encounter. A more balanced system could be a mixture of relevance, verified purchase status, informativeness, recency, and diversity of views. Platforms could also offer other sorting criteria – "most representative", "most recent", "with images", and "critical reviews" – rather than one default criterion as neutral. High-quality reviews may be rotated periodically to further diminish the effects of path dependence. These measures would increase transparency of the sources of availability and would enhance consumers' access to heterogeneous evidence. In this manner, digital choice architecture can help support efficient review use while reducing the potential for systematic cognitive bias by the platform's design.

5. Conclusion

5.1. Key findings

The studies examined reveal that jointly, text, ratings, and images influence consumer judgments. Availability cues can facilitate the information search and enhance product knowledge if they supply supporting evidence. They also have the power to amplify positive reviews, amplify negative impressions, and amplify unequal exposure. These risks can be lowered, and useful exposure of images can diversify the review by displaying representative statistics, placing the complaints in context, and prioritizing the images that could be useful for efficient decisions. Further testing is needed to assess these proposed benefits.

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5.2. Research significance

This study clarifies how salient cues shape consumer preferences, and importantly, the need for diagnostic, not just persuasive, visuals for sellers and the importance of review design in shaping platform choice architecture. This study is a theoretical extension of the research on heuristic theory that incorporates digital choice architecture. In practical terms, it offers guidelines for platforms to develop ethical interfaces that protect consumer welfare while keeping markets thriving.

5.3. Limitations and future studies

This paper draws mainly on published experimental and observational studies, and no new primary data were collected. Additionally, the central case deals with restaurant reviews, and the presence of these availability effects may vary depending on the product category, culture, and platforms' interfaces. Future research might be able to run experiments on large e-commerce sites, perform comparisons between utilitarian and hedonic products, and employ an eye-tracking or clickstream method to measure the salient cues to which users are cognitively attuned. Future studies may look at the impact of the ranking algorithms and repeated exposure over the long term, and how this affects the accessibility of reviews and purchasing decisions.

References

[1] Nazlan, N. H., Tanford, S., & Montgomery, R. (2018). The effect of availability heuristics in online consumer reviews. *Journal of Consumer Behaviour, 17*(5), 449–460. https://doi.org/10.1002/cb.1731

[2] Qiu, K., & Zhang, L. (2024). How online reviews affect purchase intention: A meta-analysis across contextual and cultural factors. *Data and Information Management, 8*(2), 100058. https://doi.org/10.1016/j.dim.2023.100058

[3] Chen, T., Samaranayake, P., Cen, X., Qi, M., & Lan, Y.-C. (2022). The impact of online reviews on consumers' purchasing decisions: Evidence from an eye-tracking study. *Frontiers in Psychology, 13*, 865702. https://doi.org/10.3389/fpsyg.2022.865702

[4] Yao, Q., Han, Y., & Yang, D. (2024). Should online reviews include pictures? The impact of fit between product type and online review presentation format. *Australian Journal of Management, 49*(3), 509–527. https://doi.org/10.1177/03128962221142407

[5] Zhang, M., Zhao, H., & Chen, H. (2022). How much is a picture worth? Online review picture background and its impact on purchase intention. *Journal of Business Research, 139*, 134–144. https://doi.org/10.1016/j.jbusres.2021.09.050

[6] Kübler, R. V., Lobschat, L., Welke, L., & van der Meij, H. (2024). The effect of review images on review helpfulness: A contingency approach. *Journal of Retailing, 100*(1), 5–23. https://doi.org/10.1016/j.jretai.2023.09.001

[7] Yang, Y., Wang, Y., & Zhao, J. (2023). Effect of user-generated image on review helpfulness: Perspectives from object detection. *Electronic Commerce Research and Applications, 57*, 101232. https://doi.org/10.1016/j.elerap.2022.101232

[8] Zhang, R., Yu, Z., & Yao, W. (2024). Navigating the complexities of online opinion formation: An insight into consumer cognitive heuristics. *Journal of Retailing and Consumer Services, 81*, 103966. https://doi.org/10.1016/j.jretconser.2024.103966

[9] Ahn, Y., & Lee, J. (2024). The impact of online reviews on consumers' purchase intentions: Examining the social influence of online reviews, group similarity, and self-construal. *Journal of Theoretical and Applied Electronic Commerce Research, 19*(2), 1060–1078. https://doi.org/10.3390/jtaer19020055

[10] Namvar, M., & Chua, A. Y. K. (2023). The impact of context clues on online review helpfulness. *Internet Research, 33*(3), 1015–1030. https://doi.org/10.1108/INTR-02-2021-0093