CUSTOMER DECISION-MAKING BEHAVIORS DEPENDING ON ONLINE REVIEWS

Presented By : Sajja Patel & Himanshu Sarraf

Neuroeconomics | M'23

OVERVIEW

- Introduction
- Background
- Problem
- Task designing
- Results
- study limitations
- Concusions

INTRODUCTION

In the digital realm of endless reviews, consumers' product perceptions depend on the specific reviews they encounter. This study delves into consumers' decision-making processes regarding the interplay between text and numerical information in reviews. It addresses three research questions:

1. How consumers compare two products based on reviews.
2. How they form individual opinions about a product through reviews.
3. How they interpret star ratings and comments.

INTRODUCTION

This user study highlights that consumers approach to reviews varies based on the presentation of product information. When comparing products, star ratings hold more influence, whereas when evaluating individual products, comments bear more significance. Moreover, consumers planning to make a purchase scrutinize star ratings more critically than those who have already made a purchase.

BACKGROUND

1

Attempts to Understand Consumers through Online Reviews:

- reviews offer valuable insights into consumer-product interactions
- recommendation systems use user data to suggest better products

2

Understanding Review Helpfulness:

- Key factors include quantitative aspects (rating, length) and qualitative aspects (sentiment, complexity).
- Techniques like NLP, machine learning, and deep learning help assess review helpfulness.

3

Review Types: Numeric vs. Text:

- Text reviews offer qualitative insights impossible through ratings
- Numerical reviews use rating scales, common in high-traffic websites
- Listing by likes or recency can introduce randomness and bias.

PROBLEM

- This study explores user selection patterns involving star ratings and comments in online reviews. The research aims to better understand how consumers make decisions and build trust based on reviews.
- Some research questions that guide the investigation:
  a. When choosing between two options, which has a greater impact: star ratings or comments?
  b. How do users make choices when a single product is presented with both star ratings and comments?

Hypothesis H1

In a binary selection situation, when star rating and reviews are oppositely given, the option with a high star rating will be chosen to prevail.

Hypothesis H2

In a single selection situation, deciding on a single subject alone, review data will be considered to be more important than star rating

TASK DESIGNING

Task 1- Choosing Between Two Options

- In this experiment, participants were tasked with choosing between two movies, each accompanied by a review (one star rating and three comments).
- The experiment aimed to explore whether star ratings or comments had a stronger influence on decision-making.
- Participants had to decide between two types of combinations: Type A (low star rating, high-scoring comments) and Type B (high star rating, low-scoring comments).
- To account for all combinations of Type A and Type B scenarios, 100 sample spaces were compared.
- Participants were randomly divided into two groups, and each group performed selections for half of the sample spaces.

TASK DESIGNING

Task 2 - Decision on a Single Product

- Task 2 simulates consumer decision-making on a single product, mirroring a like/dislike rating system.
- Participants were provided with a one-star rating and five comments for an arbitrary movie.
- The goal was to assess participants' desire to acquire the product based on the reviews.
- Participants indicated their preference by selecting 'thumbs-up' or 'thumbs-down.'
- The experiment covered all combinations of Star Rating Ranges (SRRs) and Comment Scores (CSs), totaling 25 possibilities.
- Each participant made selections for the entire sample space, randomly presented in a sequence for balance.

TASK DESIGNING

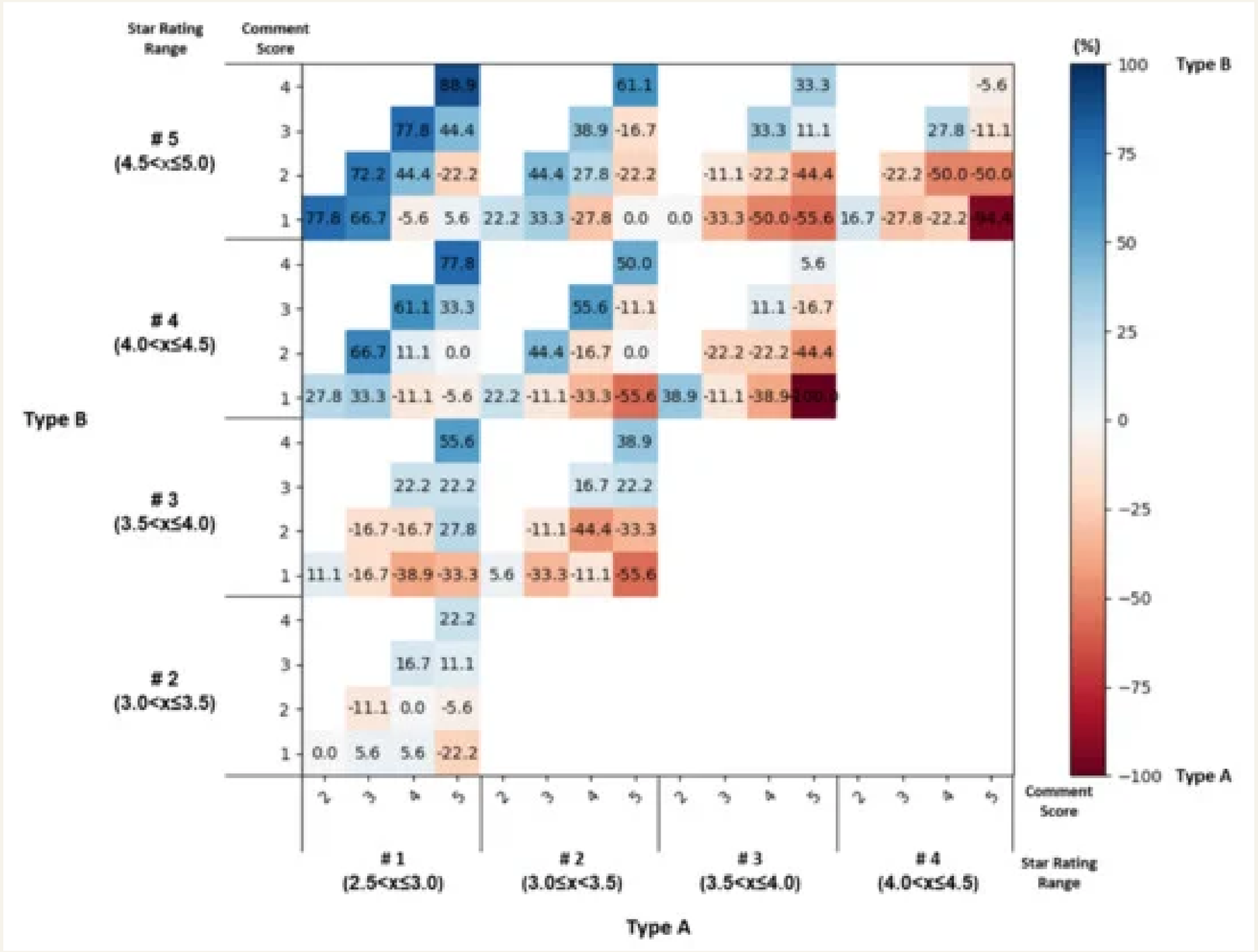
Task 3 - Acceptable Comments to Star Rating

- Task 3 aimed to identify the range of 'acceptable' user comments for a given star rating.
- Participants were presented with a star rating and 10 comments of varying scores.
- Comments were randomly selected, with two from each possible Comment Score (CS) ranging from 1 to 5.
- Participants determined which comments matched the presented star rating.
- This task provided insights into the relationship between star ratings and user comments.

RESULTS

Task 1 Results - Choosing Between Two Options

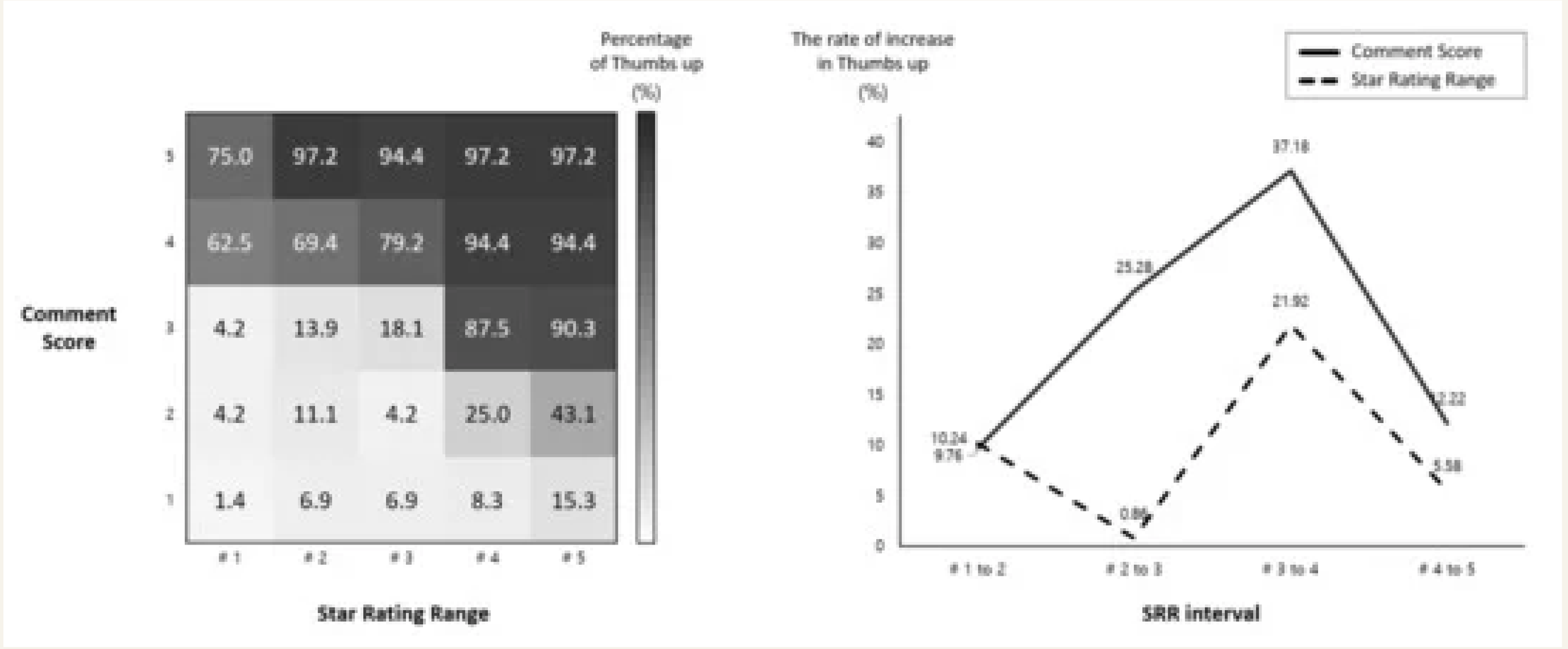
- They collected 3600 selections from 100 unique scenarios.
- Type B was chosen slightly more often than Type A.
- The results, represented as a heatmap, show that participants tended to favor Type B.
- Dark blue indicated a strong preference for Type B, while dark red showed a preference for Type A.
- Type B had a slight overall predominance in both the number of choices and inter-rater reliability values.
- Participants prioritized star ratings when making decisions, supporting the established assumption (H1).


Star Rating Range
Comment Score
5 (4.5<x≤5.0)
4 (4.0<x≤4.5)
3 (3.5<x≤4.0)
2 (3.0<x≤3.5)
Type B
1 (2.5<x≤3.0)
2 (3.0≤x<3.5)
3 (3.5<x≤4.0)
4 (4.0<x≤4.5)
Type A
(%)
100
75
50
25
0
−25
−50
−75
−100
Type B
Type A
Comment Score
Star Rating Range

RESULTS

Task 2 - Decision on a Single Product

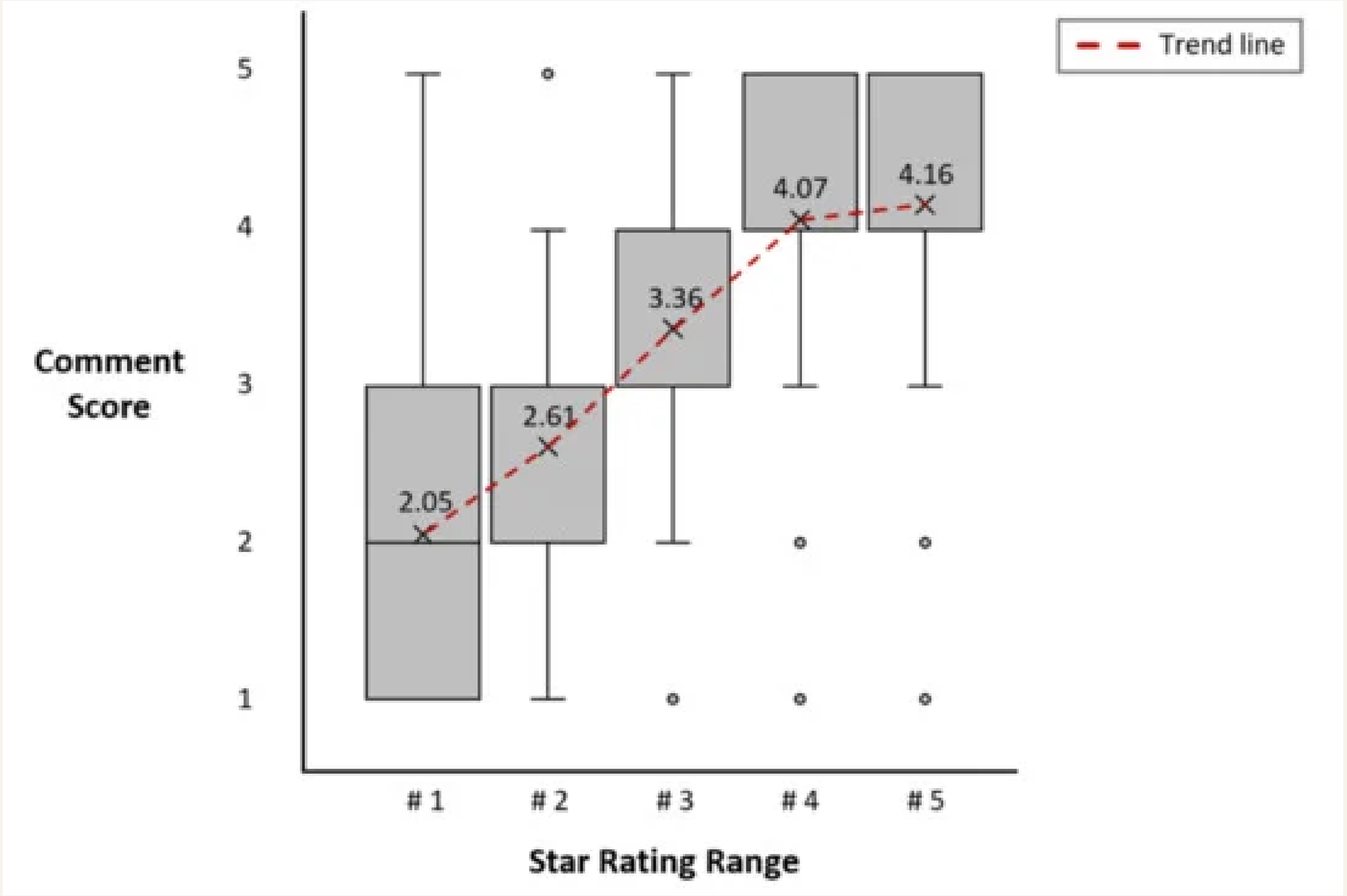
- 1800 selections were collected from 72 participants.
- The heatmap in Figure 5 (left) displays preference values.
- Darker colors indicate higher preference, with some conditions showing preferences for ratings of 3 or higher.
- Comments had a greater impact on preferences than star ratings in single product evaluation.
- Preference values increased more with Comment Score (CS) increases than with Star Rating Range (SRR) increases.
- The hypothesis for single selection (H2) was supported, emphasizing the influence of comments on decision-making in single product evaluation.


Percentage of Thumbs up (%)
Comment Score
5 75.0 97.2 94.4 97.2 97.2
4 62.5 69.4 79.2 94.4 94.4
3 4.2 13.9 18.1 87.5 90.3
2 4.2 11.1 4.2 25.0 43.1
1 1.4 6.9 6.9 8.3 15.3
1 # 2 # 3 # 4 # 5
Star Rating Range
The rate of increase in Thumbs up (%)
Comment Score
Star Rating Range
40 35 30 25 20 15 10 5 0
10.24
9.76
25.28
0.89
37.18
21.92
12.22
5.58
1 to 2 # 2 to 3 # 3 to 4 # 4 to 5
SRR interval

RESULTS

Task 3 - Acceptable Comments to Star Rating

- 720 data points were collected for Task 3.
- The average calculated CS increased from 2.05 to 4.16 for SRR #1 to #5.
- Converting SRRs to sentiment, SRR #1 and #2 were negative, SRR #3 was neutral, and SRR #4 and #5 were positive.
- Notably, SRR #3 (3.5 to 4.0 stars) was seen as neutral, indicating stricter standards for prospective buyers.
- SRR #4 and #5 received positive sentiment, with no significant difference between them.
- The largest CS change occurred when SRRs shifted from #2 to #3, representing a significant increase in perceived value.


Trend line
Comment Score
5
4
3
2
1
2.05
2.61
3.36
4.07
4.16
1
2
3
4
5
Star Rating Range

STUDY LIMITATIONS

1. Exclusion of Additional Factors
2. Lack of User Characteristics and State Data
3. Emotions and Psychological States
4. Comment Data Construction
5. Diversity of Expressions

CONCLUSION

This paper aimed to understand how consumers perceive and respond to reviews containing star ratings and comments. The study involved three user experiments with 72 participants and focused on choice between two products, single product evaluation, and the interplay between star ratings and comments. The findings revealed that consumer preferences differ based on the context:

1. In the first study involving a choice between two products, star ratings had a more significant influence on consumer decisions.
2. In the second study, which assessed single product evaluation, comments played a crucial role in determining whether a consumer 'liked' or 'disliked' a product.
3. Consumers displayed a stricter attitude when assigning positive sentiment to star ratings as consumers, in contrast to when they were reviewing products themselves.

THANK YOU