

# Uncertainty Reduction vs. Reciprocity: Understanding the Effect of a Platform-Initiated Reviewer Incentive Program on Regular Ratings

Publication: Information Systems Research

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March 6, 2024

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**Note:** For the convenience of discussion, the No. of figures and tables in this slide are consistent with those in the original paper.

# Introduction

## Online Reviews

**Critical Influence on Purchasing:** Over 90% of consumers indicate that online reviews significantly impact their buying decisions.

**Role in E-commerce Strategy:** E-commerce platforms deploy reviewer incentive programs, like Amazon's Vine, to enhance the quantity and quality of product reviews, thereby influencing consumer trust and purchase behavior.

## Research Background

**Incentivized Reviews:** Platforms and sellers offer free samples to encourage review generation, with platforms aiming to maintain review integrity by restricting seller-initiated samples.

**Impact on Purchase Decisions:** Both incentivized and regular (non-incentivized) reviews play crucial roles, with the latter often perceived as more trustworthy by consumers.

# Research Questions

Do a reviewer's regular ratings change after beginning to receive free samples from a platform-initiated reviewer incentive program?

- **Investigative Focus:** Examination of whether receiving free samples from platform-initiated programs leads to a change in how reviewers rate products they purchase independently.
- **Mechanistic Inquiry:** Whether the observed effects are due to reduced uncertainty about products or a sense of reciprocity towards the platform.

# Research Gap

**Existing Focus:** Prior research predominantly explores the quantity and quality of incentivized reviews, overlooking their potential impact on regular ratings.

**Need for In-depth Analysis:** A gap exists in understanding how free samples from platforms affect the broader ecosystem of product ratings, necessitating this study.

# Theoretical Foundation

**Uncertainty Reduction Theory:** Suggests that familiarity with a product through free samples reduces uncertainty in future purchases, potentially leading to higher satisfaction and better ratings.

**Reciprocity Principle:** Proposes that reviewers may give higher ratings to non-incentivized purchases as a gesture of gratitude towards the platform, even without explicit expectations of reward.

# Research Work

## PART I: Empirical Analysis

- **Approach:** Utilized a difference-in-differences methodology paired with propensity score matching to analyze data from Amazon, controlling for time trends and individual differences; rigorous falsification test.
- **Brief Outcome:** Discovery that regular ratings saw a 2.25% increase, equivalent to 0.093 more stars on the five-star scale, after participants began receiving free samples, indicating a positive effect of incentive programs.

## PART II: Experimental Study

- **Setup:** Conducted with university participants who were asked to purchase and review cookies, with some receiving free samples beforehand.
- **Key Findings:** Those who received a sample with attributes shared with their purchase (e.g., flavor) rated the product higher, reinforcing the uncertainty reduction hypothesis.

The empirical evidence is **consistent with the uncertainty reduction effect**. They do not claim that the current results completely rule out the **reciprocity effect**.

# Some Critical Questions

# Literature Review

## Understanding Regular Ratings

### Regular Ratings: An Overview

- Influenced by prepurchase expectations and postpurchase satisfaction (Hu et al. 2006, Li and Hitt 2010).
- Exhibit a bimodal distribution due to extreme postpurchase utility (Hu et al. 2006).
- Affected by expectation disconfirmation, where a mismatch between expected and actual experience leads to dissatisfaction (Lin and Heng 2015, Ho et al. 2017).

### Social and Economic Influences

- **Future benefits anticipation:** Reviewers' strategic ratings for potential attention or rewards(Shen, 2015).
- **Reputation and reciprocity:** Enhanced by social links or economic incentives (e.g., cash rebates or free samples), leading to higher ratings (Cabral and Li 2015).

### Unique Angle of This Study

- First one to explore how free samples from sellers or platforms impact regular ratings, beyond the sampled product.

# The Role of Free Samples in Shaping Ratings

## Benefits of Free Samples

- Enable a better understanding of the product, leading to more informed purchase decisions(Biswas et al. 2010).
- Proven to be more effective than other marketing methods in enhancing product and brand sales, and firm profits (Smith 1993; Hahn et al. 1994; Bawa and Shoemaker 2004; Cheng and Liu 2012).

## Learning and Confidence from Free Samples

- Reduce consumer uncertainty about the product(Goering 1985, Jamieson and Bass 1989).
- Improve attitudinal confidence towards the product, leading to higher purchase satisfaction.

## Study's Contribution

- Investigates the indirect effect of free samples on consumers' attitudes and ratings of other purchased products.(Previous studies: focus on how free sampling influences consumers' attitudes toward the sampled product)
- Offers insights into using free samples as a strategic tool to influence regular ratings positively.

# Hypothesis Development

**Objective:** To establish a theoretical foundation for understanding how free samples affect regular ratings.

## Mechanisms Proposed:

- **Uncertainty Reduction:** Free samples help consumers better understand products, reducing pre-purchase uncertainty.
- **Reciprocity:** Free samples invoke a sense of obligation, encouraging reviewers to post more favorable ratings.

# Uncertainty Reduction Mechanism

**Concept:** Free samples alleviate consumers' doubts about product attributes by offering direct experience.

**Mechanism Insights:** Free samples enable consumers to form more accurate expectations, as experiencing specific attributes aids in evaluating other products with similar attributes, enhancing understanding and reducing uncertainty.

## Alter Consumer Decision-Making:

- Experiencing product samples allows consumers to make more informed choices among alternatives, especially when attributes are critical, facilitating both selection and evaluation processes.
- Marketing activities for one product can indirectly benefit related products with shared attributes, as consumers generalize their experience to the entire category.

**Consumer Ratings:** Free samples help bridge the gap between consumers' pre-purchase expectations and post-purchase experiences, thus increasing satisfaction and improving regular ratings.

# Reciprocity Mechanism

## Two types of Reciprocity:

- **Anticipation-Based:** Reviewers post favorable ratings hoping for future rewards from the platform.
- **Gratitude-Based:** Reviewers feel obligated to reciprocate the platform's gesture with higher ratings.

## Influence on Ratings:

Reviewers are motivated to post positive ratings not only to express gratitude but also to secure future benefits, such as continued participation in reviewer incentive programs.

# Proposed Hypotheses

## **Hypothesis 1 (Main Effect).**

Reviewers generate higher ratings of purchased products after beginning to receive free samples from a platform-initiated reviewer incentive program.

## **Hypothesis 2A (Mechanism: Uncertainty Reduction).**

The increase in regular ratings occurs because free samples reduce the reviewer's uncertainty about subsequent purchases of other related products.

## **Hypothesis 2B (Mechanism: Reciprocity).**

The increase in regular ratings occurs because free samples stimulate reviewers' sense of reciprocity toward the platform.

# Research Context and Data

## Amazon's Vine Program

**Launch Date:** August 2007.

**Purpose:** Provides free samples in exchange for reviews.

**Selection Criteria:** Amazon invites experienced reviewers based on the helpfulness of their reviews, experience across different product categories, and the number of reviews posted.

**Program Requirement:** Reviewers must write a review within 30 days of receiving a sample to maintain their status. b Amazon adds a "Vine Customer Review of Free Product" badge to distinguish incentivized reviews from regular ones.

# Data Collection and Analysis

**Data Source:** Reviews written by top experienced reviewers on Amazon.

**Identification Method:** Vine reviewers identified by the "Vine" badge on their reviews.

**Study Period:** January 1, 2007, to December 31, 2009.

**Rationale:** To assess the impact of Vine samples on regular ratings without confounding effects from program policy changes or seller-initiated incentivized reviews.

## Sample Size:

- **Reviewers:** 3,487 (1,673 participated in the Vine program).
- **Reviews Analyzed:** 336,899 (46,162 incentivized, 290,737 regular).

**Dataset:** Reviewer ID, product ID, product category, name, price, review timestamp, text, rating, and helpfulness vote.

# Econometric Analysis

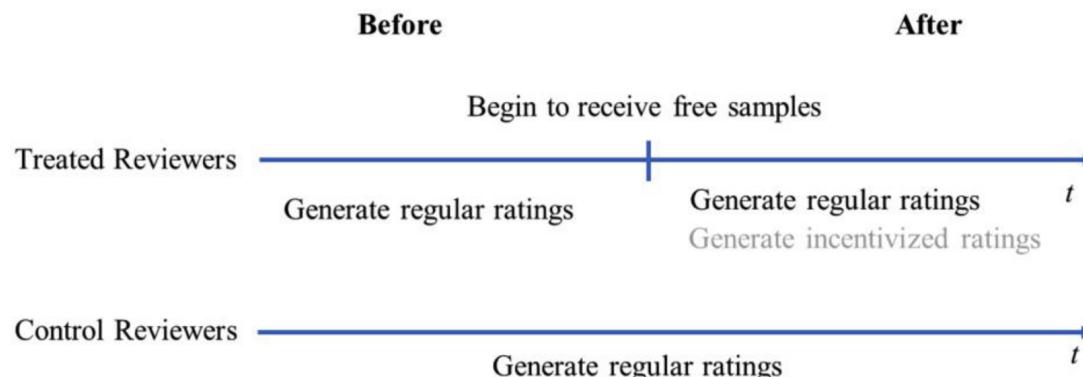
## Model Estimation and Identification

**Approach:** Difference-in-Differences (DID) to examine the **impact of Vine free samples on regular ratings**.

**Design:** Comparison of pre- and post-treatment rating changes between treated (Vine participants) and control (non-participants) groups. As shown in **Figure 2**, the DID model is expressed as:

**Exclusion:** Incentivized ratings excluded from the dependent variable to focus solely on regular ratings.

Figure 2. (Color online) DID Design



# Matching and Panel Data Construction

**Propensity Score Matching (PSM):** Used to address sample selection bias, matching treated reviewers with similar control reviewers.

- **PSM Details:** One-to-one matching with replacement; using a caliper size of 0.2 times the standard deviation of the propensity score.
- **Static vs. Dynamic Matching:** Main analysis uses static matching; robustness checked with dynamic matching.
- **Kolmogorov-Smirnov test:** propensity score distributions do not statistically differ between the treatment and control groups ( $p = 1.000$ ). (Online Appendix A, Table A.2).
- **Figure 3** shows that after matching, the propensity score distributions of the treatment and control groups are similar.

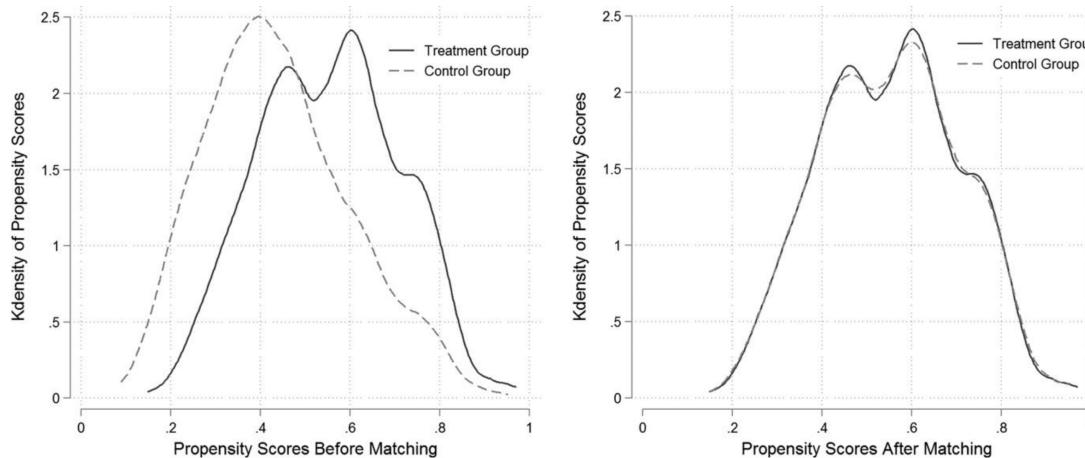
**Panel Data Set:** Panel created at the **reviewer(i)-month(t) level**, accounting for staggered receipt of Vine products.

# Model Specification:

Includes fixed effects for time and reviewer, and interaction term for Vine participation and time to capture treatment effect. Empirical model combines PSM with a DID approach and is written as follows:

$$\begin{aligned} \text{AvgRegRating}_{it} = & \beta_0 + \beta_1 \text{VineReviewer}_i + \beta_2 \text{VineMonth}_{it} \\ & + \beta_3 \text{VineReviewer}_i \times \text{VineMonth}_{it} + X_{it} \\ & + \tau_t + \delta_i + \epsilon_{it}, \end{aligned} \quad (1)$$

Figure 3. Propensity Score Distributions Before (Left) and After Matching (Right)



# Main Results

- **Treatment Effect:** Positive and statistically significant impact of Vine on regular ratings (**supporting Hypothesis 1**).
- **Magnitude:** Regular ratings increased by 0.093 stars on average after receiving Vine products—a 2.25% increase.
- **Economic Significance:** Such an increase is meaningful, especially for products near rating cutoffs, potentially affecting their relative standing and visibility on Amazon.

Table 2. Effect of Vine Products on Regular Ratings

	AvgRegRating (1)
<i>VineReviewer</i> ( $\beta_1$ )	—
<i>VineMonth</i> ( $\beta_2$ )	-0.017 (0.017)
<i>VineReviewer</i> $\times$ <i>VineMonth</i> ( $\beta_3$ )	0.093*** (0.018)
Control variables	Yes
Time fixed	Yes
Reviewer fixed	Yes
R <sup>2</sup>	0.315
Observations	54,668

*Notes.* Robust standard errors clustered by each reviewer are in parentheses. The null hypothesis tested is  $H_0: \beta_1 = \beta_2 = 0$ .

# Robustness Checks - Classic DID and Falsification Test

**Classic DID Approach:** Confirms significant treatment effect.

**Falsification Test:** No significant treatment effect found, reinforcing the validity of the main results.(Online Appendix A, Section A.2.1)

**Alternative Matching Methods:** Additional variables and different matching techniques used, all yielding consistent results with the main analysis.(Online Appendix A, Section A.2.2)

**Parallel Trends Assumption:** Verified through a relative time model, confirming similar pre-treatment trends between treated and control groups.(Online Appendix A, Section A.2.3)

**Alternative Explanation:** Analysis includes control variables for product quality and popularity to rule out the possibility that the rating increase is due to reviewers choosing higher-quality or more popular products post-treatment.(Online Appendix A, Section A.2.4)

# Mechanism Exploration

**Objectives:** To determine whether the Vine program:

- Reduces pre-purchase uncertainty.
- Stimulates reciprocity, affecting reviewers' evaluation of purchased products.

## Exploration 1: Analyses with the Main Model

**Re-estimate Equation(1) with Additional Variables:** Review volume, rating deviation from product average, use of positive language, and certainty in reviews.

- **Review Volume:** Significant uptick in the number of regular reviews post-Vine participation.
- **Rating Difference:** Vine recipients tend to give purchased products higher ratings than their average ratings, not just selecting higher-rated products to review.
- **Positive Language:** Reviews post-Vine contain more positive emotion-bearing words, as identified by LIWC.
- **Certainty:** Vine recipients express more certainty and confidence in their post-Vine reviews.

Table 3. Managerial Importance of the Effect of Vine Products on Regular Ratings

	<i>Review Volume</i> (1)	<i>Rating Difference</i> (2)	<i>Positivity</i> (3)	<i>Certainty</i> (4)
<i>VineReviewer</i> ( $\beta_1$ )	—	—	—	—
<i>VineMonth</i> ( $\beta_2$ )	0.031** (0.013)	0.020 (0.012)	-0.020* (0.012)	-0.029** (0.011)
<i>VineReviewer</i> $\times$ <i>VineMonth</i> ( $\beta_3$ )	0.190*** (0.019)	0.013*** (0.005)	0.075*** (0.005)	0.054*** (0.013)
Control variables	Yes	Yes	Yes	Yes
Time fixed	Yes	Yes	Yes	Yes
Reviewer fixed	Yes	Yes	Yes	Yes
<i>R</i> <sup>2</sup>	0.567	0.283	0.622	0.561
Observations	120,240	50,425	51,909	51,909

Notes. Robust standard errors clustered by each reviewer are in parentheses. The unit of analyses is at the user-month level.

\* $p < 0.1$ ; \*\* $p < 0.05$ ; \*\*\* $p < 0.01$ .

## Treatment Effect Based on Quantity of Vine Products

**Analysis:** Examined the impact of the quantity of Vine products on reviewers' ratings.

**Comparison:** Between reviewers receiving fewer (average 0.54/month) versus more Vine products (average 3.32/month).

### **Findings:**

- No impact on ratings from fewer Vine products.
- Significantly positive ratings from more Vine products.

**Conclusion:** More Vine products received, higher the regular ratings.

Table 4. Effect of Vine Products on Regular Ratings: The Role of Vine Products

Specifications	Lowest quartile	Highest quartile	Number of <i>Vine</i> products
	(1)	(2)	(3)
<i>VineReviewer</i>	—	—	—
<i>VineMonth</i>	0.064 (0.036)	-0.008 (0.033)	0.030** (0.013)
<i>VineReviewer</i> × <i>VineMonth</i>	0.037 (0.037)	0.099*** (0.048)	—
<i>VineProducts</i>	—	—	0.014** (0.006)
Control variables	Yes	Yes	Yes
Time fixed	Yes	Yes	Yes
Reviewer fixed	Yes	Yes	Yes
R <sup>2</sup>	0.311	0.316	0.315
Observations	12,842	13,733	54,668

Notes. Robust standard errors clustered by each reviewer are in parentheses. The unit of analyses is at the user-month level.

\* $p < 0.1$ ; \*\* $p < 0.05$ ; \*\*\* $p < 0.01$ .

## Exploration 2: Analyses at a Higher Level of Granularity

- Examines how Vine products within the same product category enhance understanding of similar products.
- **Uses product categories as proxies for shared attributes** between Vine and purchased products.

### Analysis 1: Category-Level Impact

- **Approach:** Panel data set created at reviewer-category-month level to assess the impact of Vine products on regular ratings.
- **Findings:**
  - Significant increase in regular ratings for products in categories where reviewers received Vine products.
  - Marginal significance for increases in categories without Vine products, implying the importance of shared attributes.

Table 5. Effect of Vine Products on Regular Ratings: Vine vs. Non-Vine Categories

Specifications	Overall category analysis	<i>Vine</i> categories	Non- <i>Vine</i> categories
	(1)	(2)	(3)
<i>VineReviewer</i> ( $\beta_1$ )	—	—	—
<i>VineMonth</i> ( $\beta_2$ )	-0.004 (0.016)	-0.027 (0.019)	0.015 (0.025)
<i>VineReviewer</i> $\times$ <i>VineMonth</i> ( $\beta_3$ )	0.067*** (0.017)	0.079*** (0.020)	0.065* (0.033)
Control variables	Yes	Yes	Yes
Time fixed	Yes	Yes	Yes
Reviewer fixed	Yes	Yes	Yes
$R^2$	0.212	0.281	0.232
Observations	85,496	50,078	35,418

Notes. Robust standard errors clustered by each reviewer are in parentheses. The unit of analyses is at the reviewer-category-month level. Each control reviewer has the same set of *Vine* categories as the matched treated reviewer. In Online Appendix B, Section B.3, we replace  $VineMonth_{it}$  in Equation (2) with  $VineMonth_{ikt}$ , which is a binary variable representing whether reviewer  $i$  received *Vine* products from category  $k$  in month  $t$ , and the results are consistent with those in this table.

\* $p < 0.1$ ; \*\* $p < 0.05$ ; \*\*\* $p < 0.01$ .

## Analysis 2: Impact Relative to Vine Product Quantity

- **Hypothesis:** Greater effects expected in categories with more received Vine products, due to enhanced familiarity.
- **Results:**
  - Positive association between regular ratings and the number of Vine products received within the same category.
  - No significant association with the number of Vine products from different categories, underscoring the role of specific product familiarity.

Table 6. Effect of Vine Products on Regular Ratings: Differentiating Vine Products Based on the Product Category

	<i>AvgRegRatingCa</i> (1)
<i>VineReviewer</i>	—
<i>VineMonth</i>	0.085*** (0.024)
<i>VineProductsFocal</i>	0.034** (0.017)
<i>VineProductsNonFocal</i>	0.004 (0.011)
Control variables	Yes
Time fixed	Yes
Reviewer fixed	Yes
<i>R</i> <sup>2</sup>	0.217
Observations	34,269

*Notes.* Robust standard errors clustered by each reviewer are in parentheses. The unit of analyses is at the reviewer-category-month level.

\* $p < 0.1$ ; \*\* $p < 0.05$ ; \*\*\* $p < 0.01$ .

# Detailed Examination at Subcategory Levels

## Subcategory Analysis

- **Model:** Adjusted to compare the impact of Vine products received in focal vs. non-focal subcategories.
- **Outcome:**
  - Positive correlation between regular ratings and number of Vine products in the focal subcategory.
  - No correlation with Vine products from non-focal subcategories.

## Sub-subcategory Analysis

- **Method:** Investigates even finer distinctions within product categories.
- **Findings:**
  - Regular ratings positively associated with the number of Vine products in the focal sub-subcategory.
  - Supports the precision of the uncertainty reduction effect based on specific shared attributes.

## Implications

- These detailed analyses affirm that the uncertainty reduction mechanism operates through familiarity with shared attributes, enhancing regular ratings.
- Highlights the nuanced impact of product familiarity across different levels of product categorization on Amazon.

Table 7. Effect of Vine Products on Regular Ratings: Differentiating Vine Products Based on the Product Category, the Level of Subcategory and Sub-Subcategory

Specifications	Subcategory level	Sub-subcategory level
	<i>AvgRegRatingSubCa</i> (1)	<i>AvgRegRatingSubSubCa</i> (2)
<i>VineReviewer</i>	—	—
<i>VineMonth</i>	0.073*** (0.022)	0.074*** (0.022)
<i>VineProductsSubFocal</i>	0.051** (0.024)	—
<i>VineProductsNonSubFocal</i>	0.001 (0.010)	—
<i>VineProductsSubSubFocal</i>	—	0.081** (0.032)
<i>VineProductsNonSubSubFocal</i>	—	0.003 (0.010)
Control variables	Yes	Yes
Time fixed	Yes	Yes
Reviewer fixed	Yes	Yes
R <sup>2</sup>	0.201	0.193
Observations	40,212	44,322

Notes. Robust standard errors clustered by each reviewer are in parentheses. The unit of analyses is at the reviewer-subcategory-month level in Model 1 and at the reviewer–subsubcategory–month level in Model 2. In Online Appendix B, Section B.4, we also describe the number of products that are not from the focal subcategory (or sub-subcategory) in a more detailed way and validate the results.

\* $p < 0.1$ ; \*\* $p < 0.05$ ; \*\*\* $p < 0.01$ .

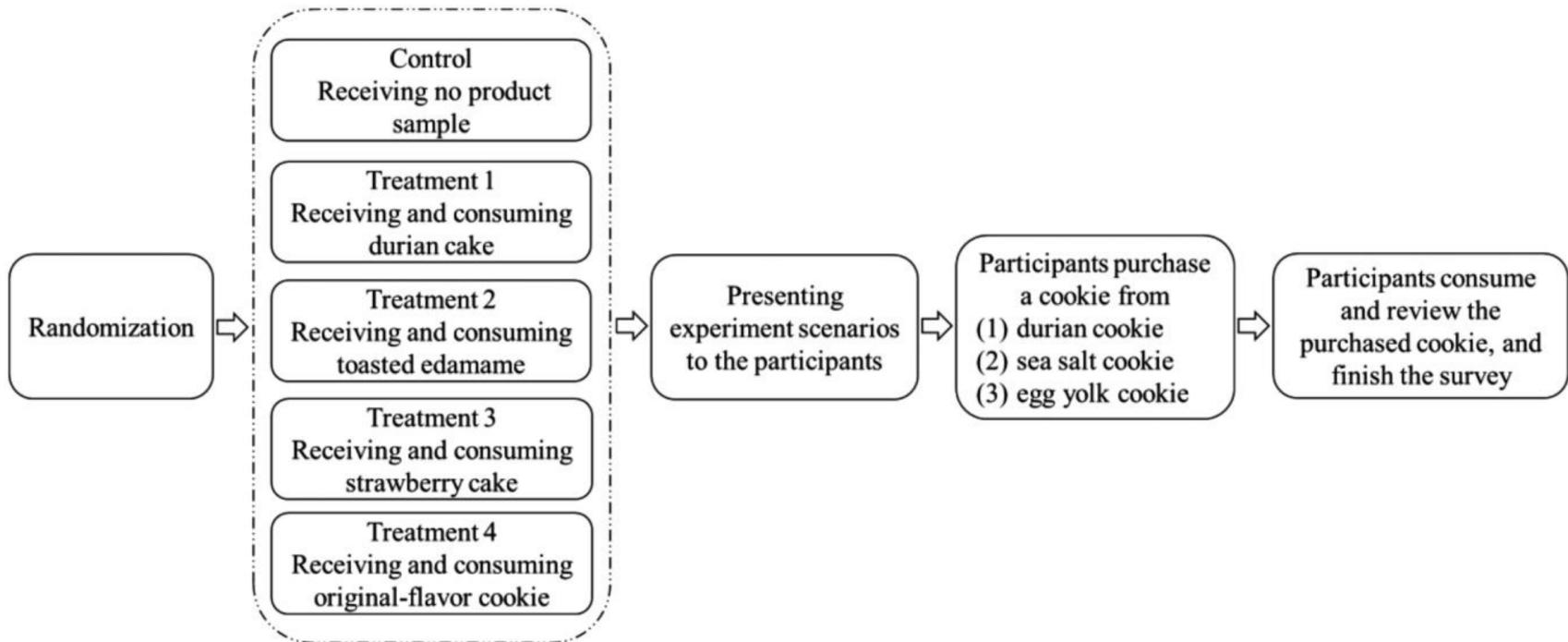
# Exploration 3:Randomized Experiment

**Purpose:** To directly assess the uncertainty reduction and reciprocity effects by overcoming observational data limitations.

## Setup:

- **Location:** Large public university in north China.
- **Design:** Participants guided through an experimental e-commerce platform to purchase, consume, review cookies, and complete surveys.
- **Groups:** Participants randomly assigned to control or one of four treatment groups, differing by the type of free sample received.

Figure 5. Steps in the Randomized Experiment



# Experimental Design and Hypotheses

## Free Samples:

- **Control Group:** No free sample.
- **Treatment Groups:** Free samples varied to test shared attribute relevance (e.g., durian cake sharing flavor attribute with durian cookie).

## Hypotheses Tested:

- **Uncertainty Reduction:** Free samples sharing key attributes with purchase options reduce uncertainty.
- **Reciprocity:** Free samples influence review ratings through anticipation-based or gratitude-based reciprocity.

**Mediation analyses** in the manner of Baron and Kenny (1986):

$$\begin{aligned} Rating_u = & \gamma_0 + \gamma_1 T1_u + \gamma_2 T2_u + \gamma_3 T3_u + \gamma_4 T4_u \\ & + Control_u + \epsilon_u, \end{aligned} \quad (3)$$

$$\begin{aligned} UncerLevel_u = & \omega_0 + \omega_1 T1_u + \omega_2 T2_u + \omega_3 T3_u + \omega_4 T4_u \\ & + Control_u + \epsilon_u, \end{aligned} \quad (4)$$

$$\begin{aligned} Rating_u = & \mu_0 + \mu_1 T1_u + \mu_2 T2_u + \mu_3 T3_u + \mu_4 T4_u \\ & + \mu_5 UncerLevel_u + Control_u + \epsilon_u, \end{aligned} \quad (5)$$

Table 8. Regression Results of the Randomized Experiment

	Main effect	Mediation test for <i>UncerLevel</i>		Mediation test for <i>RP_Antbased</i>		Mediation test for <i>RP_Grabased</i>	
	<i>Rating</i> (1)	<i>UncerLevel</i> (2)	<i>Rating</i> (3)	<i>RP_Antbased</i> (4)	<i>Rating</i> (5)	<i>RP_Grabased</i> (6)	<i>Rating</i> (7)
<i>T1</i>	0.235* (0.125)	-0.390** (0.173)	0.178 (0.123)	0.212 (0.178)	0.224* (0.125)	0.020 (0.195)	0.235* (0.125)
<i>T2</i>	0.028 (0.124)	-0.179 (0.171)	0.002 (0.122)	-0.026 (0.177)	0.029 (0.124)	-0.111 (0.194)	0.028 (0.124)
<i>T3</i>	0.007 (0.124)	-0.218 (0.172)	-0.024 (0.122)	0.190 (0.177)	-0.003 (0.124)	0.056 (0.194)	0.007 (0.124)
<i>T4</i>	0.047 (0.123)	-0.295 (0.171)	0.004 (0.121)	0.220 (0.176)	0.035 (0.123)	-0.088 (0.193)	0.048 (0.124)
<i>UncerLevel</i>	—	—	-0.145*** (0.032)	—	—	—	—
<i>RP_Antbased</i>	—	—	—	—	0.053 (0.032)	—	—
<i>RP_Grabased</i>	—	—	—	—	—	—	0.004 (0.029)
<i>Female</i>	-0.261*** (0.080)	0.251** (0.111)	-0.225*** (0.079)	0.012 (0.114)	-0.262*** (0.080)	0.138 (0.125)	-0.262*** (0.080)
<i>Age</i>	0.017 (0.024)	-0.035* (0.019)	0.012 (0.023)	-0.007 (0.020)	0.017 (0.014)	0.028 (0.022)	0.017 (0.014)
<i>Selected_2</i>	-0.178 (0.105)	0.015 (0.144)	-0.176 (0.102)	0.096 (0.149)	-0.183 (0.104)	0.006 (0.163)	-0.178 (0.104)
<i>Selected_3</i>	-0.075 (0.111)	-0.020 (0.153)	-0.078 (0.108)	0.167 (0.158)	-0.076 (0.110)	0.027 (0.173)	-0.075 (0.111)
<i>R</i> <sup>2</sup>	0.045	0.031	0.083	0.009	0.050	0.008	0.045
Observations	485	485	485	485	485	485	485

Notes. Robust standard errors are in parentheses. The unit of analyses is at the participant level. The estimations are consistent if we remove the variables *T1*, *T2*, *T3*, and *T4* in Models 3, 5, and 7. *Selected\_1* is missing because the inclusion of *Selected\_1*, *Selected\_2*, and *Selected\_3* leads to perfect collinearity.

\**p* < 0.1; \*\**p* < 0.05, \*\*\**p* < 0.01.

## Key Findings from the Experiment

- **Uncertainty Reduction Evident:**

- Participants receiving a free sample with a shared key attribute (T1: free durian cake) rated the purchased cookie significantly higher.
- Lower uncertainty levels reported in T1 compared to the control group, supporting the uncertainty reduction mechanism.

- **Reciprocity Not Evident:**

- No significant differences in anticipation-based or gratitude-based reciprocity among groups.
- Reciprocity did not mediate the relationship between free sample reception and product rating.

## Implications

- The experiment confirms that shared attributes between free samples and purchased products play a crucial role in reducing uncertainty and influencing product ratings.
- The lack of significant findings on reciprocity suggests that the increased ratings are not driven by reviewers' desire to reciprocate the free sample but rather by a better understanding of the product.

# Conclusion: Key Findings and Mechanisms

## Findings

- Main Result: Vine samples significantly boost regular ratings.
- Mechanisms:
  - Uncertainty Reduction: Confirmed. Samples align with products' attributes increase ratings.
  - Reciprocity Effect: Not significant.

## Methodology

- Used DID with PSM; findings robust across various tests.
- Randomized Controlled Experiment: supported uncertainty reduction, not reciprocity.

## Implications

- Key Insight: Shared attributes between samples and products reduce uncertainty, enhancing ratings.
- Note: Reciprocity less impactful than anticipated.

# Discussion

## Contribution to Literature

**To Regular Rating Generation:** Identifies platform-initiated reviewer incentive programs as a factor improving regular ratings through product attribute understanding.

**To Marketing Strategies:** Expands understanding of how free samples influence word-of-mouth (WOM) for both sampled and related products.

**To Financial Incentives Research:** Distinguishes the impact of platform-initiated incentives from seller-initiated ones, highlighting an uncertainty reduction effect beyond the well-documented reciprocity effect.

# Managerial Implications

**Reviewer Incentive Programs:** Platforms should consider the broader impact of free samples on regular ratings when designing reviewer incentive programs.

**Marketing Evaluation:** Encourages platforms to conduct comprehensive evaluations of reviewer incentive programs, considering potential for uncertainty reduction among consumers.

**Policy Considerations:** Assists policymakers and consumers in understanding that free samples can lead to more informed and thus potentially higher regular ratings, not necessarily biased ones.

# Limitations and Future Research

## Limitations:

- Exploration of additional behaviors influenced by free samples and reciprocity effect remains incomplete.
- External validity concerns due to the experimental design and e-commerce platform replication accuracy.

## Future Research:

- Investigation into other reviewer behaviors as forms of reciprocity.
- Examination of the impact of free samples across a wider range of products and consumer familiarity levels.
- Further exploration of potential mechanisms influencing regular ratings beyond those identified.

**To cite this article:**

Jingchuan Pu, Young Kwark, Sang Pil Han, Qiang Ye, Bin Gu (2023) Uncertainty Reduction vs. Reciprocity: Understanding the Effect of a Platform-Initiated Reviewer Incentive Program on Regular Ratings. *Information Systems Research*

# Thank You !