Class 13 Case Study: Improve User Engagement for Instagram Using A/B/N Testing

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Section 1

Case Background

Business Objective

- Instagram aims to increase user engagement and activity.
- We can propose gamification strategies based on scientific theories.
- Need to empirically test whether proposed gamification strategies are effective using A/B/N testings.

Situation Analysis

Conduct a situation analysis to assess Instagram's business environment in the UK:[1]

- What is Instagram's business model?
- How does Instagram make revenues?
- Who are Instagram's customers?
- What are the major competitors and their relative strengths and weaknesses compared with Instagram?
- Who are the collaborators of Instagram?
- PESTLE analysis: any particular legal and regulatory issues that Instagram needs to be aware of?

[1] Suggested answers are on the course website.

Section 2

Theoretical Motivations

Theoretical Motivation for Business Ideas

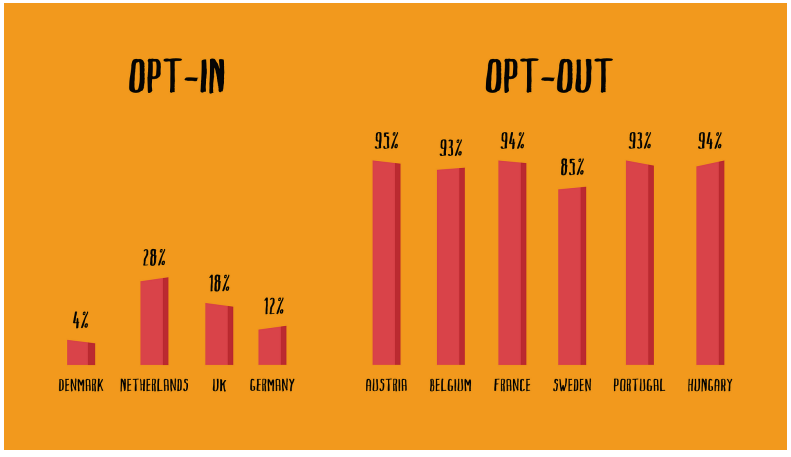
- When proposing business ideas, we should base our proposals on scientific, well-established theories from different disciplines.
  - **Bottom-up approach**: start with theories and then generate business ideas
  - **Top-down approach**: start with business ideas and then find theories to support them
- Let's first see some examples of behavioral economics theories!

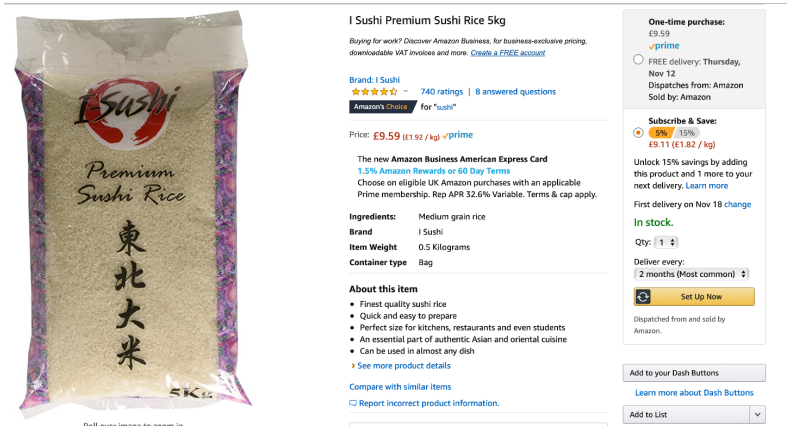
Behavioral Theories

- Framing effect
- Endowment effect
- Mental accounting

Default Effect

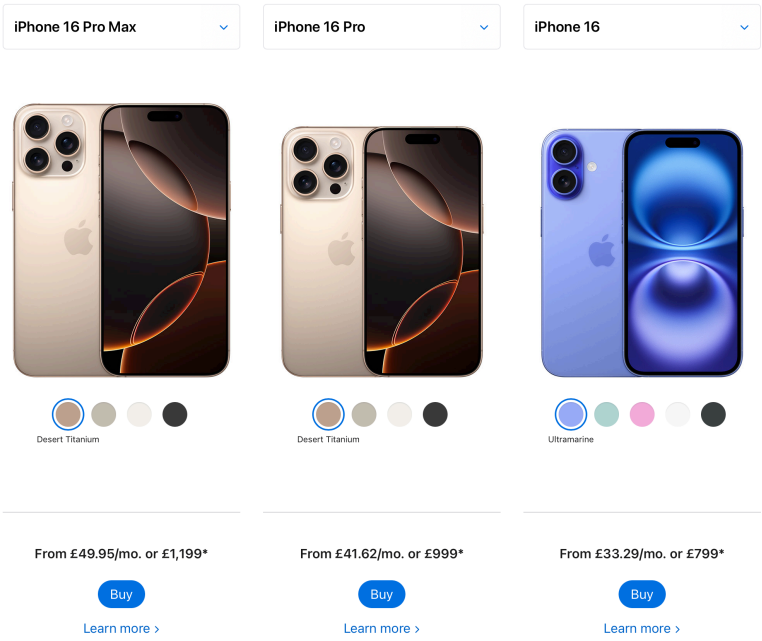
- Default effect





Left-Digit Bias

- Left-digit bias



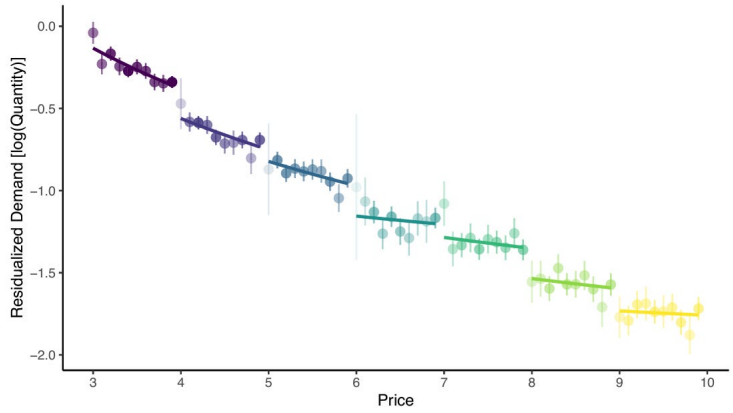
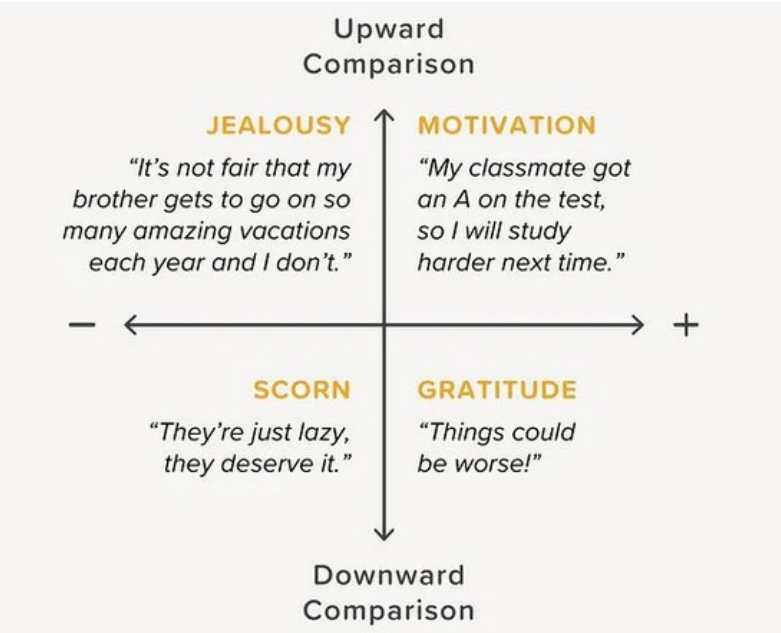


FIGURE 2
Demand curve of thirty-seven products, exhibiting drops at dollar digits

Notes: The figure shows a non-parametric demand curve. Data are for thirty-seven unique products with similar elasticities (between −1.35 and −1.65) from the module "ground and whole bean coffee". Each dot is the estimand from regressing log-quantity sold on a ten-cent dummy (*e.g.*, $4.90–$4.99), controlling for prices of competing products, and fixed-effects which are the interactions between UPC-chain and store, month-of-year, week-of-month, last digit, and promotional flags. Standard errors are clustered at the store level, and opaqueness in the figure is inverse to standard errors.

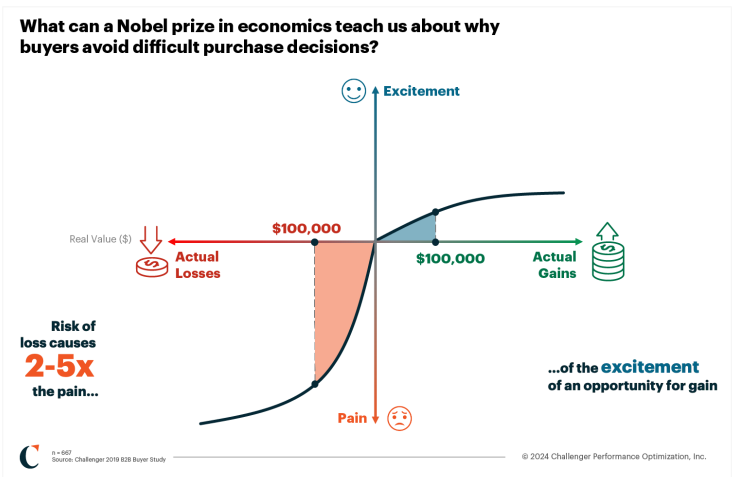
Social Comparison Theory

- People evaluate their own opinions and abilities by comparing themselves to others, especially when comparing oneself to similar others.
- Social comparison can be upward or downward.
- Social comparison can motivate people to improve their performance; however, it can also lead to negative emotions.



Prospect Theory

- Prospect theory posits that people feel more pain from losing something than pleasure from gaining something.
- This theory can be used to explain why people are more likely to engage in activities that prevent loss than those that promote gain.



Business Proposal

- Implement gamification features on Instagram to increase user activity based on the theories of Social Comparison and Prospect Theory.
- Let's think about ideas that can boost user engagement on Instagram.

Potential Strategies

- **Endowment effect**: Implementing a points and badge system to create sense of ownership and encourage engagement (e.g., likes, comments, shares).
- **Social comparison theory**: Leaderboards showing top users; Social comparison through activity rankings
- **Prospect theory**: Time-limited rewards and achievements

Section 3

A/B/N Testing for Instagram

Step 1: Decide on the Unit of Randomization

- What would be the best unit of randomization?

Step 2: Mitigate Spillover and Crossover Effects

- What are the potential problems for spillover and crossover?

Step 3: Decide on Randomization Allocation Scheme

- How should we determine the randomization scheme?

Step 4: Collect Data

- What is the sample size we need?
- What data should we collect?

Step 5: Data analytics

- Randomization checks
- How to estimate the treatment effects?

After-Class

- (optional) Test and learn: How a culture of experimentation can help grow your business