

# The Self-Destructive Nature of Dark Patterns:

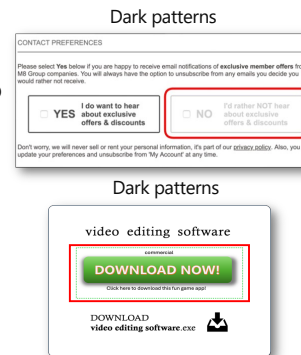
## Revealing Negative Impacts on Usability and Trust in Service Providers

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### Motivation

- **Dark patterns:** Widely adopted in digital marketing; global efforts to regulate are increasing.
- **Effect on People:** Waste time and money, and cause addiction to specific services.
- **Unintended Impact:** Users who avoid dark patterns experience stress and frustration due to extra time and effort.
- **Research Focus:** Examines the negative impacts on usability for users avoiding dark patterns and explores how this undermines trust in a company.
- **Contribution:** This research sheds light on previously overlooked non-deceived users, unveiling the negative impacts of dark patterns that companies have been neglecting.



### Research Questions

**RQ1:**  
Are there differences in the negative impacts experienced by non-deceived users compared to deceived users?

**RQ2:**  
What are the factors that make users more prone to experiencing the negative impacts caused by dark patterns?

**RQ3:**  
How do users regard the impacts caused by the dark patterns in services?

### Method

- Task-based and questionnaire-based surveys in Japanese.
- Recruited 350 participants through the crowdsourcing service lancers.jp, fluent in Japanese.
- **Tasks:** Participants experienced the process of using a food delivery service on a website that included dark patterns.
- Implemented three representative dark patterns on food delivery services: **Sneak into Basket, Trick Questions, and Preselection.**

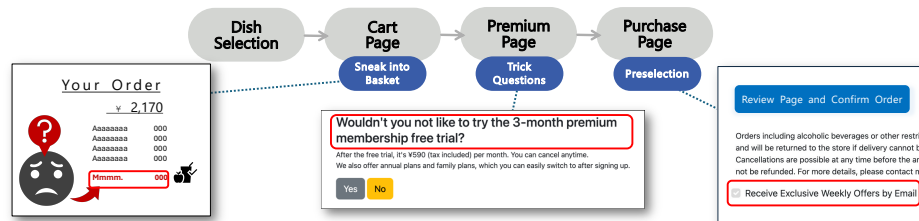


Figure 1: Overview of our method

- Our test included elapsed time during the task, usability ratings (WUS), and customer satisfaction ratings (NPS).
- We also included demographic questions related to users' internet literacy.

### Results

- We classified participants into the **deceived group (D group)** and the **non-deceived group (ND group)** for each page.
- For non-deceived users, the elapsed time was significantly longer, the usability and customer satisfaction ratings were significantly lower.
- We discuss how participants recognize and respond to dark patterns through their open-ended responses.
- We also test the internet literacy between D group and ND group.

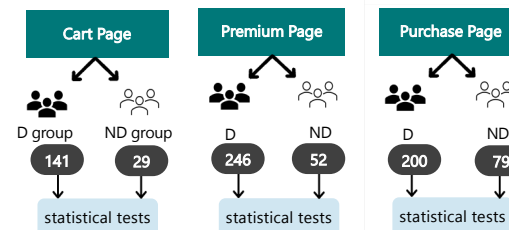


Figure 2: Classification of the participants

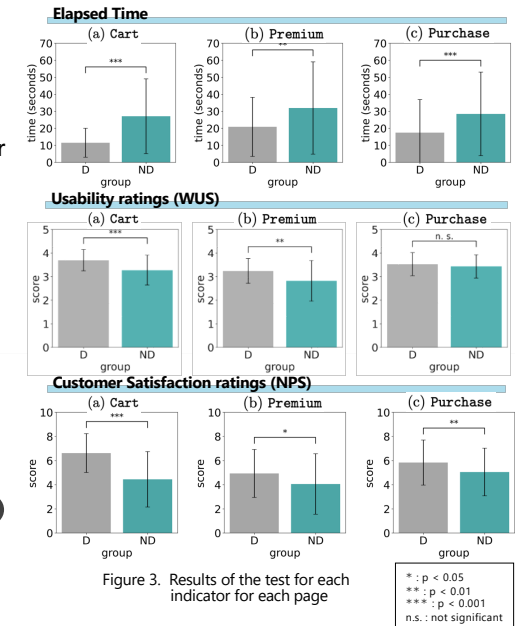


Figure 3: Results of the test for each indicator for each page

#### Open-ended responses

- Some responded : "I thought it was quite malicious," "I felt a significant loss of trust."
- Some reacted : "canceling purchases" by discovering dark patterns
- Some said : "it's fine." or "I gave up." and did not avoid dark patterns despite awareness.  
→ **Users' behavior also depends on the avoidance costs**

Page	p-value
Cart	0.813
Premium	0.460
Purchase	0.164

Table 1.  
Results of the test for internet literacy

### Discussion

#### Answer to Research Questions

- RQ1:** In most cases non-deceived users experienced negatively impacted more than the deceived users.
- RQ2:** Users detect dark patterns regardless of Internet literacy
- RQ3:** Some users accept dark patterns, considering the cost of avoidance.

#### Implications

- Service providers should be aware that the potential cost of dark patterns includes negative usability impacts on non-deceived users.
- Service providers should note that users who act as intended may not necessarily be satisfied.

#### Future Research

- What factors influence how users estimate the cost of avoiding dark patterns?