US Centre Summer Research Grant

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Project Title: Degrowth in America? Using a Discrete Choice Experiment to Understand Policy Preferences

Summary of Project:

Eco-positioning strategies are becoming increasingly prevalent in promoting sustainable products. However, the interaction between these strategies and consumer inertia in adoption is not well understood. This research investigates the impact of eco-positioning on consumers with varying levels of inertia, particularly in the context of eco-friendly energy plans. Through four empirical studies, we demonstrate that eco-positioning significantly boosts adoption intentions among high-inertia consumers by eliciting a warm glow and reducing perceived service barriers. We quantify this effect, showing that a 3.12% reduction in emissions is equivalent to a $1 monetary incentive. Our findings suggest that managers should consider consumer inertia when designing eco-positioning strategies, emphasizing environmental benefits for high-inertia consumers, while traditional incentives may be more effective for low-inertia consumers.

1. Introduction

This research contributes to the literature on sustainable consumption and green marketing in several ways. First, we provide empirical evidence on the differential effects of eco-positioning on consumers with varying levels of inertia, extending prior studies on the general impact of eco-positioning on consumer behavior (Olsen et al. 2014; Esty and Winston 2009) and the tension between the warm glow and sustainability liability effects (Chernev and Blair 2021; Chernev et al. 2024). Second, by integrating the elaboration likelihood model (ELM) (Petty et al. 1983; Petty and Cacioppo 1983, 1984) into the study of eco-positioning and consumer inertia, we offer a theoretical framework for understanding the psychological processes underlying these effects. Third, we explore the role of social norms and trust in shaping adoption intentions, contributing to the literature on social and peer effects in environmental product adoption (Bollinger and Gillingham 2012; Gillingham and Bollinger 2021). Finally, we quantify the impact of eco-positioning relative to

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monetary incentives, providing practical insights for energy providers and policymakers seeking to promote sustainable energy adoption in a cost-effective manner. The conceptual framework is illustrated in Figure 1.

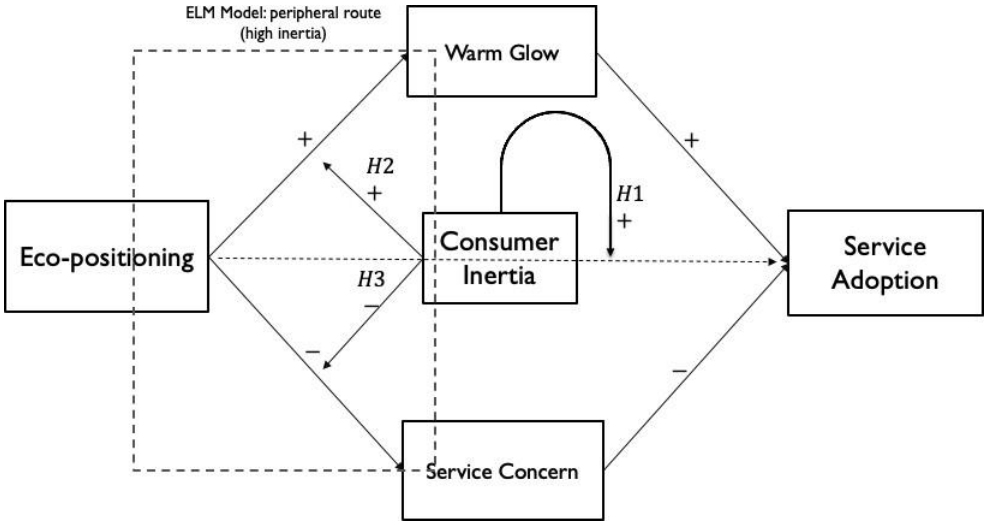

Figure 1 **Illustration of proposed model**

2. Empirical Studies

2.1. Study 1: Consumer Inertia in Eco-friendly Energy Plans Adoption

In the first study, we recruited 102 participants from the United States through Prolific, who were randomly assigned to one of three conditions representing different levels of inertia: (i) newly moved-in, (ii) 6 months, or (iii) 2 years. This design was intended to manipulate the intensity of consumer inertia, based on previous literature (Johnson et al. 2002; Lambrecht and Skiera 2006). Participants were presented with a scenario corresponding to their assigned condition and asked to rate their willingness to adopt a new eco-friendly energy plan offering an 8% savings on their energy bill. This savings rate aligns with the average reported by Horta¸csu et al. (2017) for consumers switching to alternative energy plans. We also collected demographic data to control for potential confounds and to explore their impact on adoption intentions and inertia.

2.1.1. Results and Discussion A one-way ANOVA with planned contrasts revealed that participants in the newly moved-in scenario (i) reported significantly higher willingness to adopt compared to those in the 6-month (ii) and two-year (iii) scenarios ($t = 2.18, p < 0.01$). This finding provides empirical support for the existence of consumer inertia in the adoption of eco-friendly energy plans. Interestingly, there was no significant difference between the 6-month and 2-year scenarios ($p > 0.1$), suggesting that status quo bias (Samuelson and Zeckhauser 1988; Kahneman et al. 1991) rather than duration of tenure is likely the primary source of inertia.

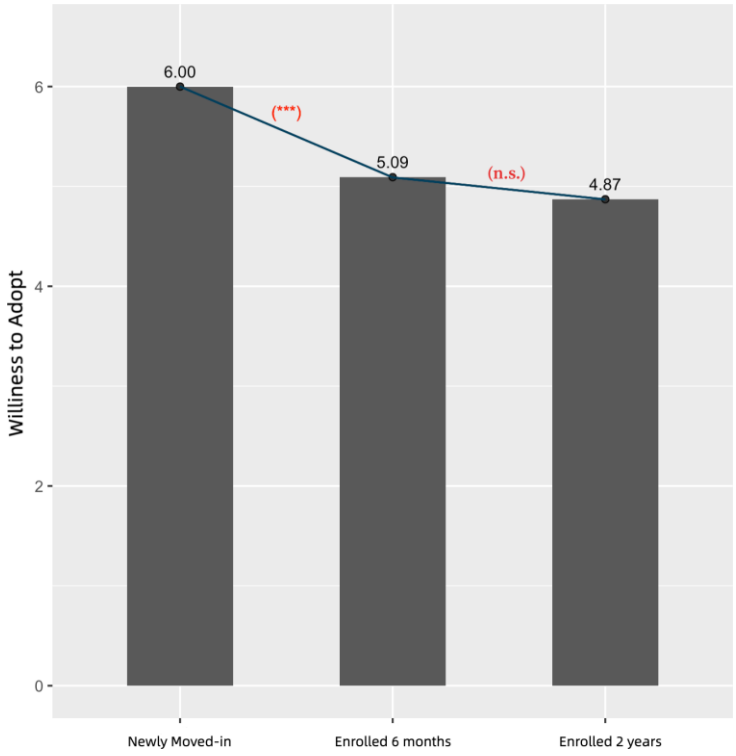

Figure 2 Willingness to adopt for different scenarios in Study 1

2.2. Study 2: Sources of Consumer Inertia

In Study 2, we recruited 310 participants from the United States via Prolific, segmenting them into current users or non-users of eco-friendly energy plans. Participants rated their agreement with statements about service concerns, price perceptions, trust, and social norms on a 7-point Likert scale. These statements were designed to measure participants' perceptions of each dimension, as detailed in the full paper (Zhong and Li 2024).

We also collected open-ended responses to understand participants' reasons for either staying with or switching to eco-friendly energy plans. Ordinary Least Squares (OLS) regression was employed to analyze the impact of these dimensions on consumers' willingness to choose eco-friendly energy plans, using the model specified in Equation 1:

$$Y_i = \beta_0 + \beta_1 Price_i + \beta_2 Service_i + \beta_3 Trust_i + \beta_4 Norm_i + \epsilon_i \quad (1)$$

Here, Y_i represents the dependent variable, which is either $Stay_i$ (willingness to stay with the eco-friendly plan) for current users or $Switch_i$ (willingness to switch to the eco-friendly plan) for non-users. Each independent variable ($Price_i$, $Service_i$, $Trust_i$, $Norm_i$) is measured on a 7-point Likert scale.

2.2.1. Results and Discussion The T-test comparison between the Stay and Switch groups (Table 1) reveals important insights into the factors influencing consumer inertia. Specifically, the significantly higher willingness to stay (M = 5.86, SD = 1.19) compared to the willingness to switch (M = 4.38, SD = 1.50) suggests that current users exhibit stronger inertia, possibly due to higher perceived value and trust in their existing plan.

Table 1 Comparison of T-test Results and Regression Results for Stay and Switch Groups

	T-test Comparison			OLS Regression Results	
	Stay	**Switch**	**Difference**	**Stay**	**Switch**
Willingness to Stay/Switch	5.86 (1.19)	4.38 (1.50)	1.48*** (0.26)		— —
Price	4.50 (1.18)	4.03 (1.17)	0.47** (0.21)	0.390** (0.132)	0.638*** (0.156)
Service	5.16 (1.33)	4.80 (1.38)	0.35 (0.25)	0.236** (0.103)	0.228** (0.109)
Trust	4.37 (0.97)	3.86 (1.32)	0.52** (0.22)	0.091 (0.185)	0.069 (0.079)
Norms	4.63 (1.12)	4.03 (1.07)	0.60*** (0.20)	0.334** (0.118)	0.246** (0.111)

Note: Values in parentheses are standard errors (SEs). For the regression results, these are robust standard errors. Significance levels: *p <0.1, **p <0.05, ***p <0.01.

Regression analysis (Table 1) indicates that price perceptions and service concerns significantly impact consumers' willingness to stay or switch. Trust, however, was not significant, suggesting that greenwashing concerns may be less prominent in the energy sector compared to other industries.

Topic modeling (BERTopic and LDA) was employed to analyze open-ended responses. BERTopic identified three main themes: Warm Glow," Value of Money," and "Service Concern," which were corroborated by LDA results (Table 2). These themes align with the significant factors identified in the regression analysis, providing a comprehensive understanding of the psychological drivers of consumer inertia.

Category	Warm Glow	Value of Money	Service Concern
(Probability)	(39.2%)	(31.3%)	(29.5%)
1	"ecofriendly" "carbon"	"save" "money"	"plan" "think"
Rep Docs	"I would like to know that I am helping to reduce my carbon footprint."	"I want to if landlord offers it to save money."	"I don't think it will be more stable service."
2	"environment" "energy"	"expensive" "cost"	"reliable" "energy"
Rep Docs	"It would be more beneficial to the environment."	"It's just too expensive for me, I am a middle class individual."	"I think it might not be all that reliable."

Table 2 BERTopic topics with Representative Documents

Category	Warm Glow	Value of Money		Service Concern	
(Probability)	(37.9%)	(28.5%)		(33.6%)	
1	energy	save	expensive	cost	like
2	friendly	money	just	need	plan
3	eco	responsible	cost	information	energy
4	plan	expensive	term	know	environment
5	carbon	want	living	reliable	switch
6	footprint	think	right	really	eco
7	switch	long	beneficial	think	bills
8	like	environment	environment	plan	long
9	don	planet	depends	current	sustainable
10	afford	term	don	price	options

Table 3 Categorization of LDA Topics

2.3. Study 3: Eco-positioning and Consumer Inertia

We recruited 204 new participants, distinct from those in Studies 1 and 2, and randomly assigned them to either the lowest inertia scenario (newly moved in) or the highest inertia scenario (using the existing energy plan for two years). Participants were then asked to consider adopting a customized eco-friendly energy plan with randomly assigned features: (a) to save 8% of the bill, or (b) to save 8% of the bill by helping reduce 25% of CO2 and Black Carbon emissions. Participants rated their willingness to adopt on a scale from 1 to 7 and provided reasons for their decision.

To explore the psychological mechanisms underlying these effects, we collected open-ended responses and analyzed them using the Latent Dirichlet Allocation (LDA) topic model, focusing on the three main themes identified in Study 2: Warm Glow," Value for Money," and "Service Concern." By examining the prevalence of these themes across different experimental conditions, we aimed to gain a deeper understanding of how eco-positioning influences consumer perceptions and adoption intentions, particularly among high-inertia consumers.

2.3.1. Results and Discussion Our findings (Figure 3) reveal that in the low inertia (newly moved-in) scenario, eco-positioning does not significantly impact willingness to adopt the eco-friendly energy plan ($p > 0.1$). This suggests that consumer willingness to adopt is already quite high (5.60 out of 7) when there is low inertia, making additional eco-positioning less necessary. However, in the high inertia scenario, consumers' willingness to adopt when faced with the eco-positioning feature (b) is significantly higher than when faced with only the monetary feature (a) ($t = 2.14$, $p < 0.01$), indicating that eco-positioning can increase adoption intentions among high-inertia consumers. The eco-positioning effect in the high inertia scenario raised willingness to adopt from 4.96 to 5.64, nearly equal to the level in the low inertia scenario.

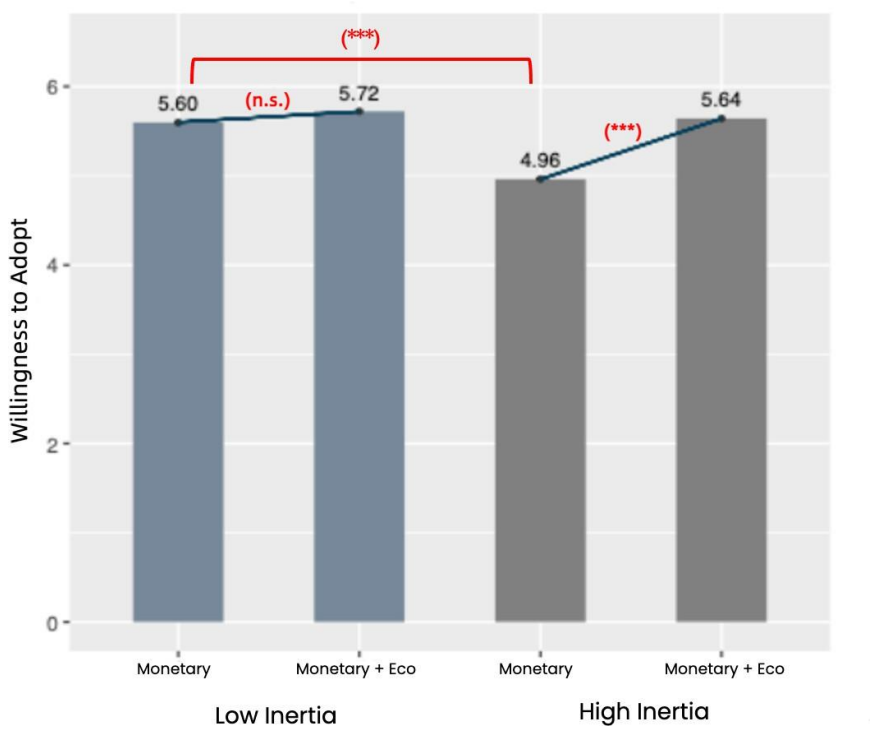

Figure 3 **Willingness to adopt of different scenarios in Study 3**

LDA analysis of open-ended responses (Table 4) revealed that eco-positioning increased the consideration of warm glow and environmental content in both low and high inertia environments (from 15.6% to 18.5% and 20.6% to 40.7%, respectively). This aligns with the ELM framework, suggesting that eco-positioning serves as a powerful peripheral cue that elicits positive emotions and reduces perceived barriers, particularly for high-inertia consumers who are less motivated to process central cues such as price and service attributes. Additionally, eco-positioning significantly dampened the rise in service concerns in high inertia environments, supporting the hypothesis that it effectively reduces perceived service barriers among high-inertia consumers.

Inertia	Eco	Warm Glow	Value of Money	Service Concern	Willingness to Adopt
Low	Monetary	15.6%	51.9%	32.5%	5.60
	Monetary + Eco	18.5%	33.4%	48.2%	5.72
High	Monetary	20.6%	41.0%	38.5%	4.96
	Monetary + Eco	40.7%	27.1%	33.3%	5.64

Table 4 **Summary of LDA Models and Willingness to Switch**

2.4. Study 4: Quantifying the Effect of Eco-positioning on Consumer Inertia

In Study 4, we examine how much eco-positioning affects consumer choice. We conducted a choice-based conjoint experiment with 312 participants from the United States recruited through Prolific, distinct from those in Studies 1, 2, and 3. After collecting demographic data, participants were randomly assigned to one of three scenarios: (i) newly moved-in, needing to choose between a standard energy plan and an eco-friendly energy plan; (ii) using the existing standard energy plan for six months; or (iii) using the existing standard energy plan for two years. Participants were then informed that they would need to make ten consecutive decisions between three different energy plans or could choose not to adopt an eco-friendly energy plan.

2.4.1. Estimation Strategy The decision to consider alternatives is determined using a standard binary logit model:

$$\text{P(consider alternatives)} = \frac{e^{\sum_k \lambda_k t_k}}{1 + e^{\sum_k \lambda_k t_k}}, \tag{2}$$

where t_k refers to the characteristics of the current plan, including the per-month tariff t.

The utility function for participant i in each choice set t, when selecting a plan with m amount of money saved and j amount of gas emissions reduced, is given by:

$$U_{it} = \begin{cases} v_{it} + X_i\gamma_{0it} + GL(H_i, \delta)\lambda_i + \epsilon_{it}, & \text{if m = j = 0;} \\ v_{it} + X_i\gamma_{1it} + M_{tm}\alpha_i + J_{tj}\beta_i + \epsilon_{it}, & \text{otherwise,} \end{cases} \tag{3}$$

2.4.2. Results and Discussion We estimated the model based on Eq. (3).

	Six months **Coef.** (Std. Err.)	**Six months**	**Two years** **Coef.** (Std. Err.)	**Two years**
$\boldsymbol{\lambda}$	1.356** (.324)	$\boldsymbol{\lambda/\alpha}$ = 7.33	1.369*** (.299)	$\boldsymbol{\lambda/\alpha}$ = 7.44
$\boldsymbol{\alpha}$	0.185*** (.013)		0.184*** (.013)	
$\boldsymbol{\beta}$	0.061*** (.004)	$\boldsymbol{\alpha/\beta}$ = 3.03	0.059*** (.004)	$\boldsymbol{\alpha/\beta}$ = 3.12
N	2130		2140	
LL	-715.4		-721.4	
AIC	1436		1449	
BIC	1446		1459	

Significance levels: *p <0.1, **p <0.05, ***p <0.01.

Table 5 Estimation Results of the Model in Study 4

The estimation results are consistent with our prior studies. Significant consumer inertia exists in both the six-month (Inertia 1; $\lambda = 1.356$, $p < 0.01$) and two-year (Inertia 2; $\lambda = 1.369$, $p < 0.01$) scenarios. Most importantly, since the unit of M is dollars and the unit of J is the claimed percentage reduction in emissions, our estimates enable us to quantify the monetary value of eco-positioning. Using the results from the Inertia 2 scenario, we find that $\lambda/\alpha = 7.44$, indicating that energy companies need to offer a \$7.44 incentive to persuade an inertia consumer to adopt their eco-friendly plan. Every 3.12% claimed reduction in emissions is equivalent to a \$1 incentive effect ($\alpha/\beta = 3.12$). These results provide a practical reference for companies and policymakers to weigh the costs of eco-positioning against the costs of providing monetary incentives.

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