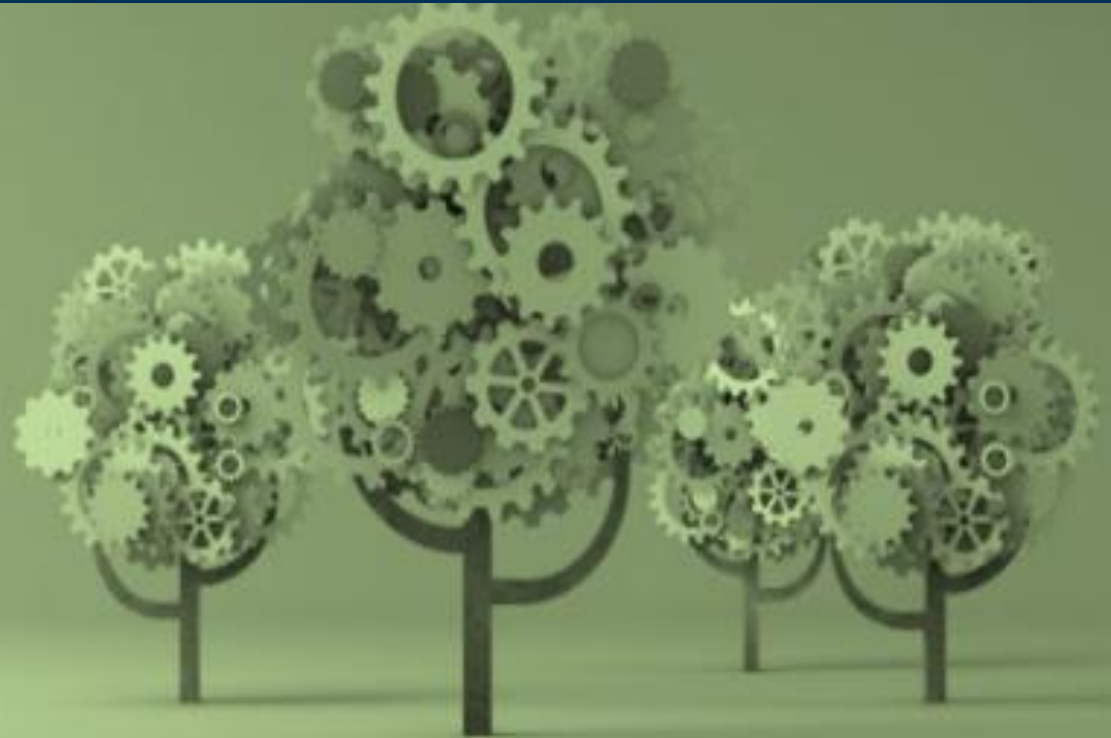



# Sustainable Product Innovation: Perceived Company Motivations and Consumer Outcomes

Angelina Kalogeraki  
Dr. Sabine Kuester  
Dr. Ludwig Bstieler

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# Sustainable (product) innovation (SPI)

 **21.6%** annual growth rate of the global green technology and sustainability market (*Statista 2023*)

**Sustainable product innovations (SPI)** (or green innovations or eco-innovations):  
New or modified products that create "value through implementation of an idea for reducing harms to the natural environment caused by a firm's product during one or more stages of the lifecycle of the product" (*Varadarajan, 2023, p. 64*).



## Benefits of SPIs for the Company

- Favorable market and financial outcomes (*Dangelico, 2016*)
- Increased competitiveness (*García-Granero, Piedra-Muñoz, & Galdeano-Gómez, 2020*)

## Challenges of SPIs for the Company

- Major company investments for SPI introduction (*Dangelico, Pontrandolfo, & Pujari, 2013; Olsen, Slotegraaf, & Chandukala, 2014*)
- Uncertain returns (*Mugge & Dahl, 2013*)

## Research gaps

### Radical & Incremental SPIs

Research investigating **consumers' perceptions of radical and incremental** innovations and the **underlying mechanisms** driving potentially divergent perceptions of these two types of SPIs is lacking (*Dangelico, 2016; De Medeiros et al., 2022*).

### Consumer Outcomes

The effectiveness of SPIs on **various performance indicators** (*Zheng & Iatridis, 2022*) and **firm benefits** (*De Medeiros et al., 2022*), while clearly important, has not been comprehensively investigated.

Further investigation into **consumer responses to SPIs** and guiding companies in developing and marketing SPIs is required (*Hemonnet-Goujot, Kessous, & Magnoni, 2022*).

This study focuses on the impact of radical vs. incremental SPIs on consumer perceptions and consumer outcomes

# Understanding consumer perceptions of sustainable innovations: Attribution theory

**Attribution theory (Heider 1944; Kelley 1973):** The cognitive processes through which an individual infers the cause of an actor's behavior.

Consumers attribute **intrinsic and extrinsic motivations** to corporate sustainability actions (Parguel, Benoît-Moreau, & Larceneux, 2011):

- **Intrinsic motivations:** honest managerial motivations to fulfill social obligations (Crilly et al., 2016; Du, Bhattacharya, & Sen, 2007)
- **Extrinsic motivations:** driven by external factors like the pressure to increase the company's welfare (Crilly et al., 2016; Du, Bhattacharya, & Sen, 2007)

The attributions of extrinsic and intrinsic motivations are not two opposite ends of a continuum but might **coincide in the consumers' minds**, influencing their response to the company's efforts (Ellen, Webb, & Mohr, 2006).

# Connecting SPIs and attribution of company motivations

## SPI

**Radical SPIs:** Actual contributions to environmental sustainability (*Del Río, Carrillo-Hermosilla, & Könnölä, 2010*), since they produce significant enhancements to the environment (*Shu et al., 2016*).

**Incremental SPIs:** Unlikely to yield important environmental improvements (*Dangelico & Pujari, 2010*), raising consumer concerns about the company's sustainability impact (*Domínguez-Escrig et al., 2019*).

## Hypotheses Development

The SPI introduction causes the consumer attribution of intrinsic and extrinsic motivations:

- **Radical SPI** → reflects extensive company efforts towards sustainability → **more intrinsically motivated**
- **Incremental SPI** → reflects an attempt to cope with competition → **more extrinsically motivated**

## Outcomes of company motivations

**Intrinsic motivations:** Attribution of intrinsic motivations causes positive outcomes (*Becker-Olsen et al., 2006; Edinger-Schons et al., 2018; Ellen et al., 2006*).

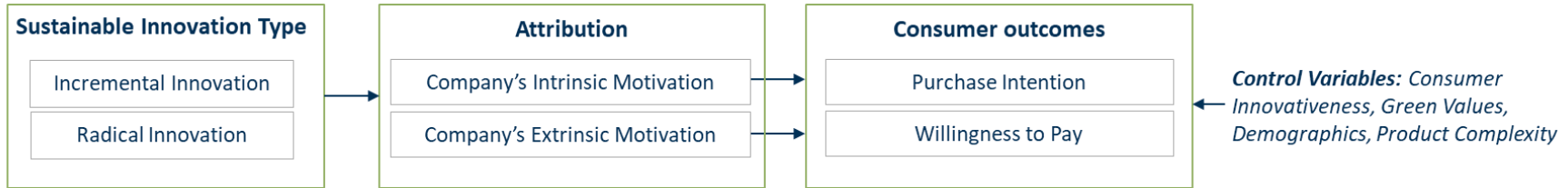
**Extrinsic motivations:** Attribution of extrinsic motivations causes negative outcomes (*Becker-Olsen et al., 2006; Ellen et al., 2006; Ginder et al., 2021*).

**H<sub>1</sub>:** Radical SPIs will be perceived as more intrinsically motivated than incremental SPIs, which, in turn, will positively influence consumer outcomes.

**H<sub>2</sub>:** Incremental SPIs will be perceived as more extrinsically motivated than radical SPIs, which, in turn, will negatively influence consumer outcomes.

# Study 1: Examining the effect of SPI type on attribution of motivations and consumer outcomes

Model



Method

- 2 (sustainable innovation type: incremental vs. radical) × 1 between-subjects design
- **Scenario setting (fictitious company):** Imagine you are reading the news and come across an announcement of the launch of a product from a company, that price-wise aligns with other products in this category.
- N = 163 U.S. participants (Prolific, 49.7% female)

Stimuli

## Radical



### Introducing the SP-7 smartphone

- Slim, elegant and durable design
- Screen: 6.1", Full HD resolution
- Camera: Rear 64MP, Front 20MP
- **No electricity demand thanks to its revolutionary Charging-Through-Motion-CTM® battery system**

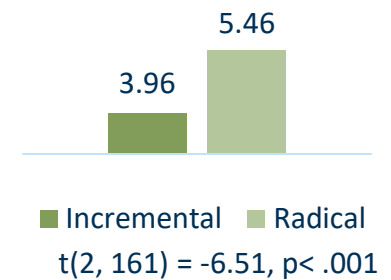
## Incremental



### Introducing the SP-7 smartphone

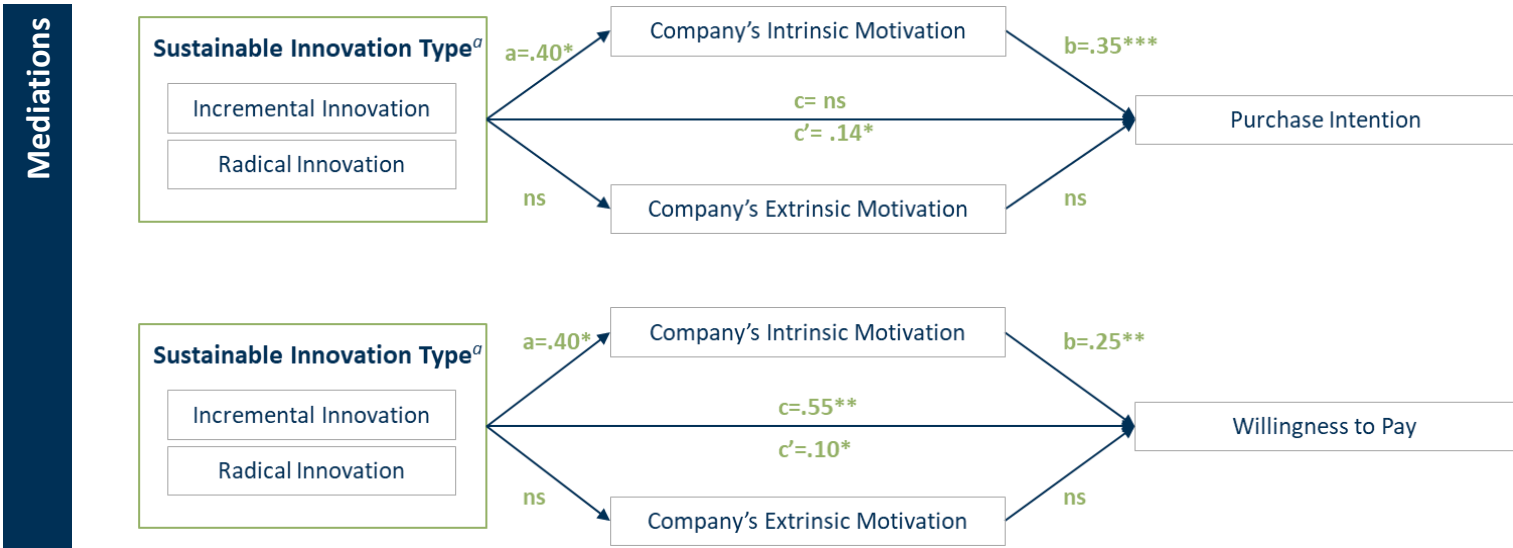
- Slim, elegant and durable design
- Screen: 6.1", Full HD resolution
- Camera: Rear 64MP, Front 20MP
- **Reduced electricity demand thanks to its new battery power management**

## Perceived Innovativeness



# Study 1: Results

ANOVAs	Variable	M Incremental	M Radical	p	
	Intrinsic Motivation	4.29	4.74	.04	✓
	Extrinsic Motivation	5.48	5.45	.84	
	Purchase Intention	4.12	4.72	.02	✓
	WTP	2.44	3.15	.04	✓



Note: N=163; Hayes PROCESS model 4, bootstrap sample= 5000; \*\*\*p < .001; \*p <= .05; ns= non-significant; <sup>a</sup>dummy-coded: incremental (1) vs. radical (2) SPI. Analysis including control variables.

- **Radical SPIs are attributed to a company's intrinsic motivations more than incremental SPIs**, which in turn positively affects consumer outcomes.
- We found **no significant difference** between SPI type in the **perception of the company's extrinsic motivations**. It seems that the consumers recognize and understand the profit-making nature of companies for SPI introduction, regardless of the SPI type.

# Connecting sustainability reputation and attribution of company motivations

## Sustainability reputation

- It can be defined as a company's sustainability stature over time (*Manto and Wilson, 2001*).
- A company's positive sustainability reputation can boost the success of SPIs (*Cheng, 2020; Leonidou et al., 2013*) by reinforcing the company's social and environmental dedication in consumers' minds (*De Medeiros et al., 2022*).

## Hypotheses Development

- A company's sustainability reputation influences the consumer attribution of intrinsic or extrinsic motivations.
- A company's **positive** sustainability track record is **linked to intrinsic motivations** and a company's **negative** sustainability track record is linked to **extrinsic motivations** (*Leonidou & Skarmneas, 2017*).

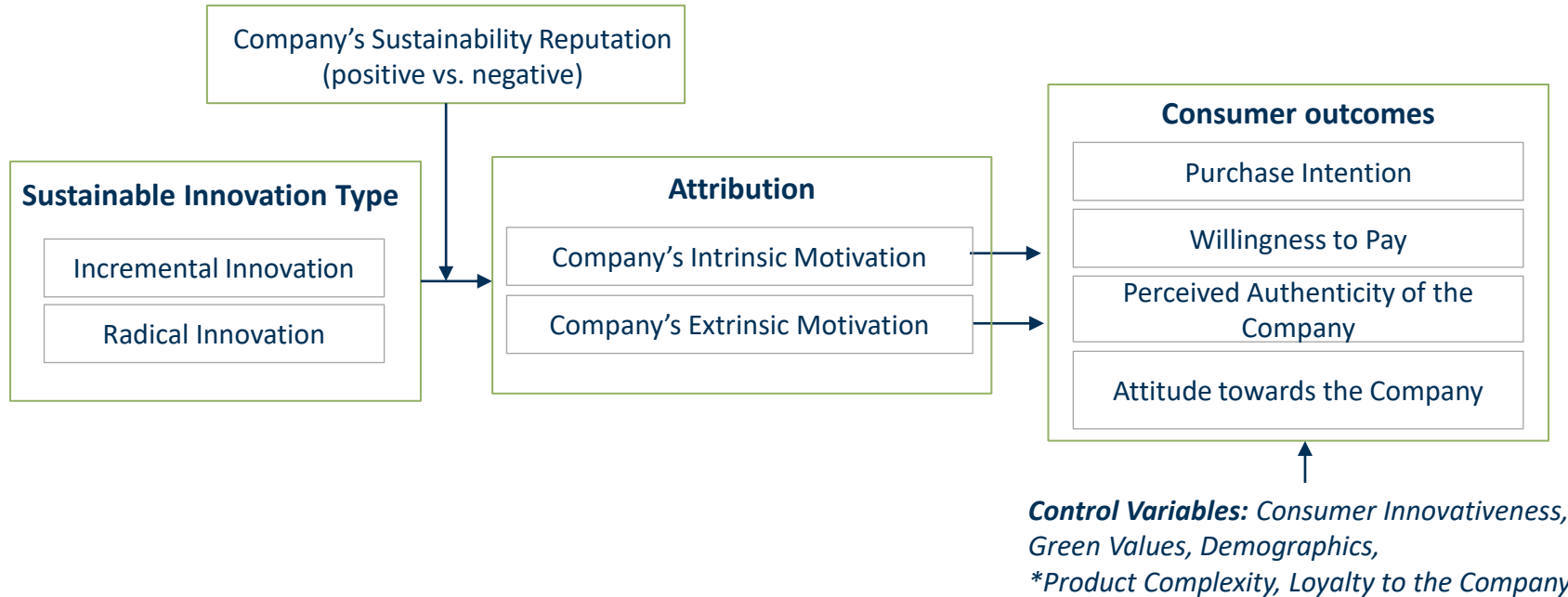
**H<sub>3a</sub>**: A company's positive sustainability reputation will strengthen consumer attribution of a company's SPI introduction as intrinsically motivated.

**H<sub>3b</sub>**: A company's negative sustainability reputation will strengthen consumer attribution of a company's SPI introduction as extrinsically motivated.



## Study 2: Examining the role of sustainability reputation on the overall relationship for multiple consumer outcomes

Model



Method

- **2** (sustainable innovation type: incremental vs. radical) × **2** (company's sustainability reputation: positive vs. negative) between-subjects design
- **Scenario setting (Samsung):** First, participants had to read some information about a company. At this point, they were shown either a positive or a negative sustainability reputation text. After a short distractor task, they were asked to imagine that they were reading the news and coming across an announcement of the launch of a product from the respective company, that price-wise aligns with other products in this category.
- **N** = 276 U.S. participants (Prolific, 48.6% female), familiar with Samsung

## Study 2: Stimuli and Manipulation

### Positive Sustainability Reputation

Samsung excels in sustainability, focusing notably on the reduction of CO<sub>2</sub> emissions throughout the lifecycle of its appliances.

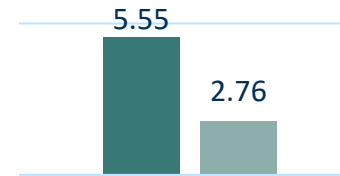
The company champions eco-friendly practices by heavily investing in technologies that can minimize harmful emissions from its production sites and products.

Samsung's commitment to reducing CO<sub>2</sub> emissions reflects an innovative mindset and addresses environmentally conscious consumers building up its positive reputation in the realm of sustainable technology.

### Radical Sustainable Innovation

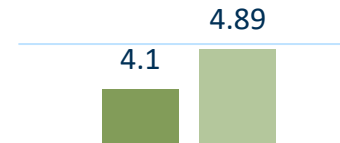


### Perceived Reputation (*pre-tested*)



■ Positive ■ Negative  
 $t(2, 99) = 9.89, p < .001$

### Perceived Innovativeness



■ Incremental ■ Radical  
 $t(2, 274) = -4.98, p < .001$

## Study 2: Moderated Mediation for Intrinsic Motivation

	COEFFICIENT	95% C.I.	
<b>INTERACTION EFFECT ON COMPANY'S INTRINSIC MOTIVATION (R<sup>2</sup> = .28)</b>			
Sustainable Innovation Type <sup>a</sup> × Sustainability Reputation <sup>b</sup>	-.73*	[-1.35, -.11]	H <sub>3a</sub> ✓
Sustainability Reputation=Positive	.79***	[.41, 1.18]	
Sustainability Reputation=Negative	.06 <sup>ns</sup>	[-.39, .52]	
<b>MEDIATION EFFECT OF INTRINSIC MOTIVATION ON PURCHASE INTENTION (R<sup>2</sup> = .42)</b>			
Sustainability Reputation=Positive	.33	[.15, .54]	
Sustainability Reputation=Negative	.03	[-.17, .22]	
Index Of Moderated Mediation	-.30	[-.60, -.04]	H <sub>3a</sub> ✓
<b>MEDIATION EFFECT OF INTRINSIC MOTIVATION ON WILLINGNESS TO PAY (R<sup>2</sup> = .31)</b>			
Sustainability Reputation=Positive	.26	[.11, .42]	
Sustainability Reputation=Negative	.02	[-.13, .17]	
Index Of Moderated Mediation	-.24	[-.47, -.03]	H <sub>3a</sub> ✓
<b>MEDIATION EFFECT OF INTRINSIC MOTIVATION ON PERCEIVED AUTHENTICITY (R<sup>2</sup> = .47)</b>			
Sustainability Reputation=Positive	.38	[.17, .62]	
Sustainability Reputation=Negative	.03	[-.20, .26]	
Index Of Moderated Mediation	-.35	[-.68, -.05]	H <sub>3a</sub> ✓
<b>MEDIATION EFFECT OF INTRINSIC MOTIVATION ON ATTITUDE TO COMPANY (R<sup>2</sup> = .32)</b>			
Sustainability Reputation=Positive	.30	[.13, .49]	
Sustainability Reputation=Negative	.02	[-.15, .20]	
Index Of Moderated Mediation	-.27	[-.53, -.04]	H <sub>3a</sub> ✓

Note: N=276; Hayes PROCESS model 7, bootstrap sample=5000; \* p < .001; p <= .05; ns= non-significant; S.E. = standard error; C.I. = confidence interval. <sup>a</sup>dummy-coded: incremental (1) vs. radical (2) SPI. <sup>b</sup>dummy-coded: positive (1) vs. negative (2) sustainability reputation. Analysis including control variables.

- A **positive sustainability reputation** can **enhance the positive effect of sustainable innovative type on intrinsic motivations**.
- The moderated mediation model is valid **for all consumer outcomes**.
- We examined the effect of the interaction on a company's extrinsic motivation. Similar to the findings of Study 1, the analysis yielded no significant effects, thus, we reject H3b.

# Conclusion

## Theoretical contributions

- Deepening the **understanding of consumer perceptions** of sustainable innovations while responding to recent **calls for research** (*De Medeiros et al., 2022; Zheng & Iatridis, 2022*).
- **Radical** sustainable innovations **perform better** than incremental on multiple consumer outcomes.
- Identifying an important **underlying mechanism** responsible for divergent consumer perceptions of SPIs.
- Enriching **attribution theory in the SPI** context :
  - Corporate actions attributed to intrinsic motivations are relevant and can yield favorable effects.
  - Attribution of extrinsic motivations remains unaffected by SPI types and a company's sustainability reputation.
- Highlighting the importance of a company's **positive sustainability reputation in shaping consumer perceptions** and determining the success of SPIs.

## Managerial implications

- **Radical** sustainable innovations can secure a series of **positive consumer outcomes**.
- Companies willing to be perceived positively by consumers should aim for sustainability **initiatives highlighting their genuine environmental concerns**.
- Managers must allocate resources to **strengthen their positive sustainability reputation**.
- Policymakers should encourage **radical SPIs to achieve not only environmental but also positive consumer outcomes**.

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**Thank you.  
Questions?**

**ANGELIKI KALOGERAKI  
UNIVERSITY OF MANNHEIM – CHAIR OF MARKETING & INNOVATION**

[!\[\]\(d84e7ea36f695d92cb39ec32c307ac93\_img.jpg\) Angeliki Kalogeraki](#)

[!\[\]\(feabb98897b440bc8695a03336a6e2df\_img.jpg\) Chair of Marketing & Innovation](#)

<https://www.bwl.uni-mannheim.de/en/kuester/>

