Consumer Outrage in Risk Incidents
: A Structural Equation Modeling Approach

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Part 1

Introduction

Risk Society(Beck, 2009)
Incomplete/Asymmetric risk information, Uncertainty, Top-down risk communication
→ Negative Emotion : anxiety and fear about risk, outrage at risk managers

Risk

- The potential to be harmed
  = (magnitude) x (probability)

Risk Incidents

"A situation in which newly form or reinforce perceptions of risk related to health damage"

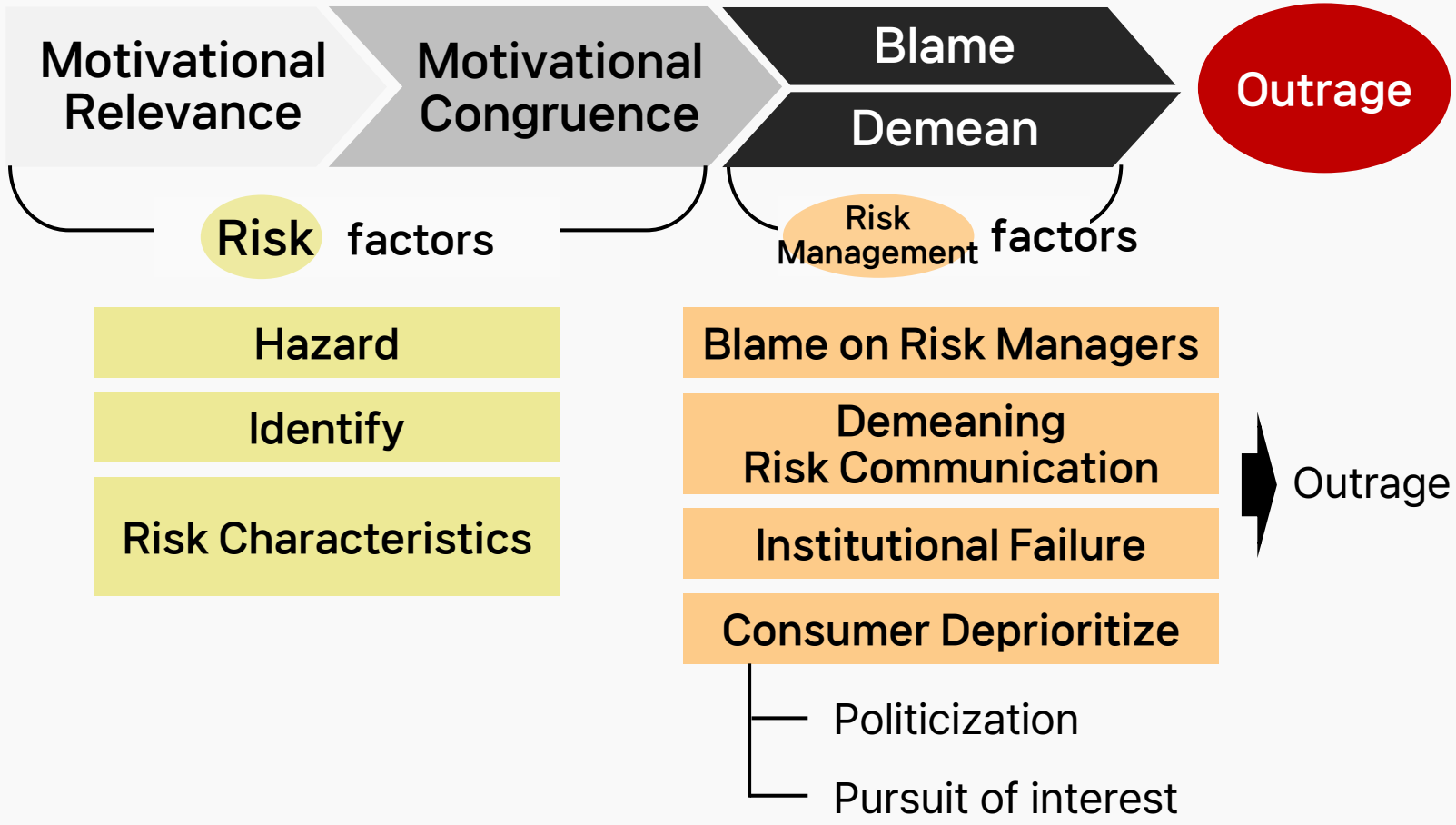
Outrage refers to a negative emotion triggered when individuals perceive 'a demeaning offense against me and mine' and 'the attribution of blame to others' (Lazarus, 1991)

Outrage arises not only from the perceived **risk itself**
but also from perceptions of **inappropriate risk management,**
which can lead to a range of **behavioral outcomes.**

This study aims to explore the antecedents and consequences of consumer outrage.

Consumer Outrage Triggers and Outcome in Risk Incidents (Huh, 2025)

Cognitive Appraisal Theory (Lazarus, 1991)

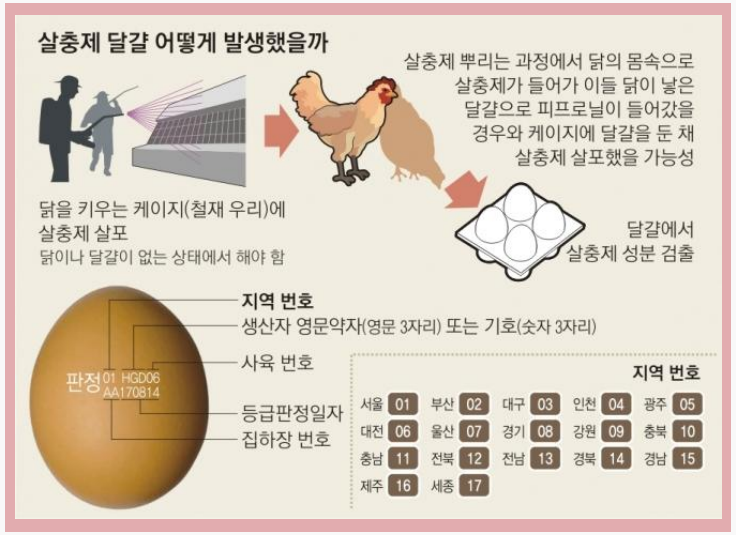


Part 2

Method

- **Online Survey**
- **500** Adults aged 30 to 69 who recalled three major consumer-related risk incidents
- *Quota sampling* based on regional population proportions in South Korea

Risk Incidents



Pesticide Egg (2017.08.)

Humidifier Disinfectant (2011.08. / 2015.11.)

Fukushima Nuclear Water Release (2023.8.)

Part 2

Method

- Stimulus-Organism-Response **(S-O-R) framework** (Mehrabian, Russell, 1974)
- **Structural Equation Modeling**, using the R "lavaan" package
- **Mediation Analysis** : 5,000 bootstrap samples, 95% bias-corrected bootstrap C.I.

Model

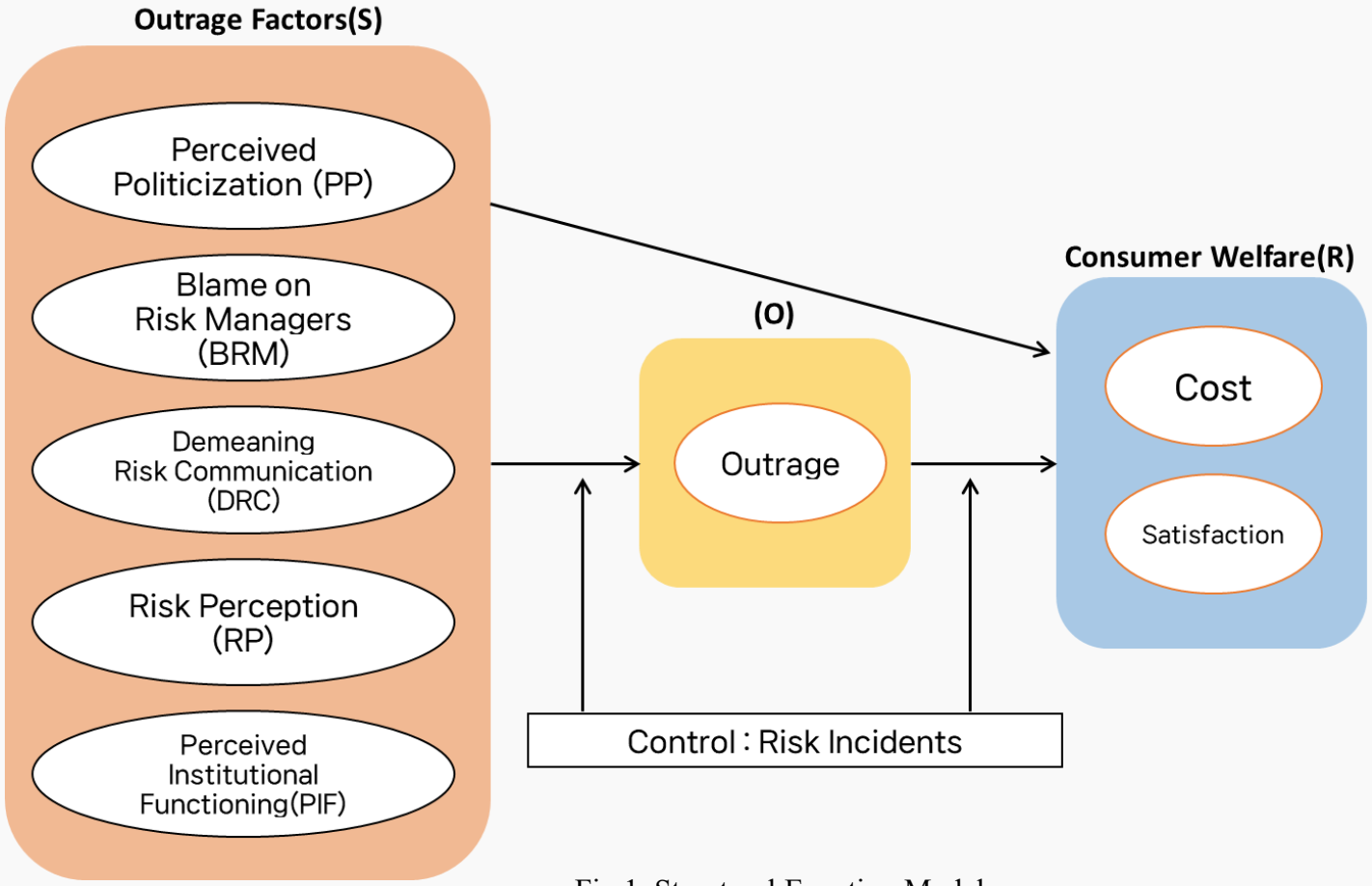


Fig 1. Structural Equation Model

Measurements

Construct	Measurements	Mean(SD)
Cost	Have you noticed **an increase in the cost** of purchasing [eggs/ seafood/ household chemical products] since this incident?	2.975 (1.106)
Satisfaction	** Reverse Coding* Have you noticed **a decrease in the satisfaction of purchasing** [eggs/ seafood/ household chemical products] since this incident?	2.405 (1.028)
Outrage	How did you feel during [the pesticide-contaminated egg / the humidifier disinfectant crisis / the Fukushima nuclear water release] ? : Outrage * 0 = Not at all, 1 = felt mildly ~ 4 = felt strongly	3.457 (0.847)

Measurements

Construct	Measurements	Mean(SD)
Demeaning Risk Communication	** Reverse Coding* 1) Risk managers **communicated transparently** about the safety of [the pesticide-contaminated eggs/the humidifier disinfectant/the Fukushima nuclear water release]. 2) Risk managers **showed empathy** toward consumers exposed to the risk. 3) Risk managers demonstrated **sincerity** in their response.	3.894 (0.942)
Blame on Risk Managers	1) Risk managers **made poor decisions** (failed to properly carry out their role) during the incident. 2) Risk managers **knowingly or intentionally overlooked** the issue, contributing to the incident. 3) Risk managers failed to take appropriate **preventative actions** in advance, which contributed to the incident.	3.639 (1.067)
Perceived Politicization	1) Media and politicians **framed** the incident as a political issue. 2) Decisions related to the incident were driven more by **political interests or ideologies** than by scientific information.	3.796 (0.914)

Part 2

Method

Measurements

Construct	Measurements	Mean(SD)
Perceived Institutional Functioning (North, 1990)	1) There was sufficient **social consensus** regarding the causes of the risk and how it should be managed. 2) At the time of the incident, appropriate **laws and regulations** for safety were in place. 3) At the time of the incident, risk managers properly **enforced** laws and regulations related to safety. 4) Appropriate **safety norms** were established at the time of the incident. 5) Risk managers **adhered** to established safety norms during the incident.	Social Consensus Formal 2.031 (0.866) Informal
Risk Perception	1) The **harmfulness** of [the pesticide-contaminated egg / the humidifier disinfectant / the Fukushima nuclear water release] is serious enough to affect human health. 2) If health problems were to arise from [the pesticide-contaminated egg / the humidifier disinfectant crisis / the Fukushima nuclear water release], **I or my family could easily become victims.**	20.005 (5.217)

**Risk perception was calculated by multiplying two items: perceived harmfulness and perceived susceptibility

Confirmatory Factor Analysis

Latent Variables	Items	Standardized Factor loading (λ)	CR	AVE
Demeaning Risk Communication	Opacity	0.868	0.907	0.766
	Apathy	0.843		
	Insincerity	0.913		
Blame on Risk Managers	Fault	0.771	0.877	0.705
	Intent	0.876		
	Incompetence	0.868		
Perceived Politicization	Political Discussion	0.744	0.796	0.662
	Prior to Science	0.877		
Perceived Institutional Functioning	Social Consensus	0.812	0.942	0.764
	Formal constraints existence	0.872		
	Formal constraintsobservance	0.918		
	Informal constraints existence	0.893		
	Informal constraints observance	0.871		

Note: Model fit: χ^2=1014.119, df=125, CFI=0.931, TLI=0.908, RMSEA=0.078

Part 3

Results

1. Significant Outrage Triggers

- **Even after controlling Risk Perception(RP), Blame on Risk Managers(BRM), Demeaning Risk Communication(DRC), and Perceived Institutional Functioning(PIF) remained significant predictors of consumer outrage.**
- Meanwhile, Perceived Politicization(PP) did not significantly impact outrage or consumer satisfaction. Some treated risk incidents as "political issues rather than scientific ones ", while others expressed outrage at the fact that safety issues, which should be addressed through science, were instead exploited for political purposes. (Huh, 2025).

  → These contrasting views likely neutralized the effect of PP on consumer responses.

Hypothesis		Std. Estimate	C.R.	Sig.	Accepted /Rejected
H 1-1	Perceived Politicization → Consumer Outrage	-0.013	-0.554	0.580	Rejected
H 1-2	Blame on Risk Managers → Consumer Outrage	0.108	4.427	***0.000	Accepted
H 1-3	Demeaning Risk Communication → Consumer Outrage	0.138	3.275	**0.001	Accepted
H 1-4	Risk Perception → Consumer Outrage	0.474	21.409	***0.000	Accepted
H 1-5	Perceived Institutional Functioning→ Consumer Outrage	-0.112	-2.679	**0.007	Accepted

p<0.001 *** p<0.01 ** p<0.05 *

2. The Consequences of Consumer Outrage

- Consumer outrage significantly influenced **post-incident costs** and **satisfaction.**
- **Higher outrage levels** were associated with **increased costs in post-incident consumption** and **lower satisfaction with the marketplace.**
- These findings suggest that **consumer outrage in risk incidents can have negative impact on consumer welfare.**

	Hypothesis	Std. Estimate	C.R.	Sig.	Accepted /Rejected
H 2-1	Consumer Outrage → Cost	0.115	3.950	***0.000	Accepted
H 2-2	Consumer Outrage → Satisfaction	-0.181	-6.313	***0.000	Accepted

p<0.001 *** p<0.01 ** p<0.05 *

Part 3

Results

3. Mediation Effects

: Outrage Triggers → Consumer Outrage → **Cost**

- **Consumer outrage mediated the effects of BRM, DRC, RP, and PIF on post-incident costs** and satisfaction.
- Except for PP, the effects of BRM, DRC, RP, and PIF on post-incident costs were fully mediated by consumer outrage, suggesting that **outrage serves as the key mechanism through which these factors influence consumer welfare.**

Hypothesis		Total Effect	Direct Effect	Indirect Effect
H 5-1	Perceived Politicization → Consumer Outrage → Cost	-0.004	-0.003	-0.001 (0.011, 0.006)
H 5-2	Blame on Risk Managers → Consumer Outrage → Cost	-0.002	-0.014	***0.012 (0.005, 0.024)
H 5-3	Demeaning Risk Communication → Consumer Outrage → Cost	-0.081	-0.097	*0.016 (0.004, 0.036)
H 5-4	Risk Perception → Consumer Outrage → Cost	0.097	0.042	***0.055 (0.005, 0.018)
H 5-5	Perceived Institutional Functioning → Consumer Outrage → Cost	0.022	0.035	*-0.013 (-0.035, -0.002)

Fully Mediated

p<0.001 *** p<0.01 ** p<0.05 *

3. Mediation Effects : Outrage Triggers → Consumer Outrage → **Satisfaction**

- **Consumer outrage mediated the effects of BRM, DRC, RP, and PIF on** post-incident costs and **satisfaction.**
- Except for PP, the effects of BRM, DRC, RP, and PIF on Satisfaction were mediated by consumer outrage, suggesting that **outrage serves as the mechanism through which these factors influence consumer welfare.**

Hypothesis		Total Effect	Direct Effect	Indirect Effect	
H 6-1	Perceived Politicization → Consumer Outrage → Satisfaction	0.054	*0.056	-0.002 (-0.009, 0.015)	
H 6-2	Blame on Risk Managers → Consumer Outrage → Satisfaction	0.104	**0.085	**0.019 (-0.031, -0.009)	Partial Mediation
H 6-3	Demeaning Risk Communication → Consumer Outrage → Satisfaction	0.065	0.040	**0.025 (-0.048, -0.009)	Full Mediation
H 6-4	Risk Perception → Consumer Outrage → Satisfaction	0.12	***0.034	***0.086 (-0.022, -0.011)	Partial Mediation
H 6-5	Perceived Institutional Functioning → Consumer Outrage → Satisfaction	-0.057	-0.037	*-0.02 (0.005, 0.047)	Full Mediation

p<0.001 *** p<0.01 ** p<0.05 *

Part 4

Conclusion

- This study empirically examined the relationships among consumer outrage, outrage triggers, and consumer welfare in the context of risk incidents, using SEM and mediation analysis.
- The findings demonstrate that not only risk perception, but also risk management perception practices significantly contribute to consumer outrage, which in turn negatively affects consumer welfare, as measured by cost and satisfaction.
- These results suggest that improving institutional and communicative responses to risk may help mitigate public outrage and its adverse effects on consumers.

In conclusion, this study underscores the importance of enhancing risk management capabilities and prioritizing public health and safety over efficiency or profit, in order to prevent consumer outrage and its negative consequences on welfare.

EOD

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