

E10

## "Seafood consumption in Japan after the Great East Japan Earthquake: An analysis using Theory of Planned Behavior"

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### 1. Introduction

On 11 March 2011, a joint natural and technological event (Natech) hit Japan. The Great East Japan Earthquake and Tsunami (GEJET) triggered the Fukushima Dai-ichi Nuclear Power Plant (FDNPP) accident. This event caused immense damage releasing large amounts of radioisotopes to the environment (Okamura et al., 2016). As consequence, safety concerns have arisen for food safety and marine products (Wada et al., 2013). The event generated a seafood consumption crisis in the short-term post-event. However, internal crisis of seafood consumption is still existing. Our research contributes to investigate Japanese consumers' planned behavior regarding NON-Fukushima seafood (NFS) and Fukushima prefecture seafood (FS). Theoretical and managerial implications, limitations and future research are described in the next sections.

### 2. Conceptual Background

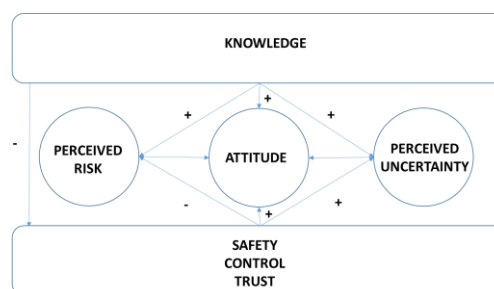
Restriction on distribution and consumption of seafood began on 20 April 2011 in Fukushima Prefecture (Hamada & Ogino, 2011). Several studies have been conducted in order to define the risk linked to seafood consumption, reporting contrasting data (Buesseler, 2012; Wada et al., 2013; Okamura et al., 2016). Contrasting information may influence risk perception and attitudes toward seafood consumption. Previous contributions highlighted the fact that risk perception influences consumption (Quintal et al., 2010). Our study aims to more in-depth investigate the mid-long term effect of the Fukushima accident. Theory of planned behavior (TPB) is a valuable model

to analyze risk perception, attitude and purchase intention concerning food safety (Mullan et al., 2015). We consider perceived risk and perceived uncertainty as two distinct constructs that have different impact on TPB (Quintal et al., 2010; Becker & Kundsén, 2005).

### 3. Hypotheses

In particular, grounded on previous contributions and referring to Japanese seafood consumption we explore correlations between attitudes (ATT), intention to consume (INT), subjective norms (SN), and perceived behavioral control (PBC). Furthermore, in order to check their effect on attitude, we included in the model perceived risk (PR), perceived uncertainty (PU), safety control trust (TRU) and subjective knowledge (SKN) (see Fig.1).

Fig.1 - The proposed model



### 4. Methodology

The complete questionnaire consists of 25 questions (using a 5-point Likert scale) based on previous contributions. A translation-back-translation process was used to prepare the Japanese version (Brislin, 1976). Participants to the survey were contacted in December 2016 at the Festival of the Goden Community Association (Machizukuri) in Higashinada Ward, Kobe. 300 persons attended the

event and a total of 62 respondents participated to the survey. 66% were females, 34% were males. 65% have at least one child. Most participants were aged between 23 and 51 (65%) with a high school/bachelor degree education level (88%).

## 5. Results

Univariate analysis shows significantly lower mean values for ATT, SN, INT in the case of FS with respect to NFS (Tab. 1). PU decreases and PR increases when Fukushima is not included.

Tab. 1 Univariate analysis: Means\*

	Fukushima (FS)	Non-Fukushima (NFS)
ATT	3.50	4.41
SN	3.40	4.07
PBC	3.65	3.89
INT	3.44	4.03
PU	3.29	3.64
PR	2.97	2.63

\*We use a 5-point Likert scale, where 1 is low, 5 is high.

The items used to measure each construct were summed to create composites, as suggested by Murray and Schlacter (1990). We checked the reliability of the available data calculating  $\alpha$  (average .82; max .96; min .063). A regression analysis has been realized in order to test the validity of TPB in our specific context. All the correlations were positive but a small (0.4) and non-significant correlation was identified between attitude and intention to consume NFS. Path analysis has been used to estimate the relationship of the variables in each of the considered case (NFS; FS). Tab. 2 summarizes significant correlations.

Tab.2 – Significant correlations

CORRELATIONS ( $p < 0.05$ )			
NON FUKUSHIMA			
Case: RISK	PR	TRU	-0.58
Case: UNCERTAINTY	PU	TRU	0.45
FUKUSHIMA			
Case: RISK	ATT	PR	-0.32
	ATT	TRU	0.36
	PR	TRU	-0.59
Case: UNCERTAINTY	ATT	PU	0.4
	ATT	TRU	0.33
	PU	TRU	0.54

## 6. Conclusions

The results highlight the fact that a “Fukushima effect” still exists. In particular, ATT, INT and SN

considerably increase in the case of NFS. On the other hand, in the case of PBC there are no strong differences between FS and NFS. The obtained values show that people feel they have good control over eating FS and NFS seafood. In the case of FS, ATT is significantly influenced by PR(-) and PU(+). More research is needed concerning food safety issues after Fukushima and additional efforts would be needed by government in order to increase trust. These efforts could lead to an increase in the certainty that no possibility of radiation-related health effects exists, hence a decrease of PR. Limitations: an increasing dimension of sample size could generate additional findings. Additional analyses and references are included in the full paper.

## References

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