



Triggering the tsunami evacuation of tourists with the concept of “Nudge”

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Background

Evacuation of tourists in case of earthquake and tsunami is the great concerns for local gov't, hotels and tourist guides.

- Thousands of tourists were killed during the 2004 Indian ocean tsunami (Cohen, 2005; World Vision, 2019)
- Many beaches & tourists destinations are located along with the tsunami prone coast (Chile-Mexico-US-Japan-New Zealand)
- The photo was taken at Zihuatanejo beach in Mexico, while the tsunami alert was issued due to the 2011 Japan Tsunami.



Current strategy of tourist's evacuation 1

- Tsunami risk communication towards the tourists are promoted.
- Distribution of brochure, tsunami evacuation sign, tsunami evacuation map, etc).

- Evacuation map was posted at Oharai beach in Ibaraki, Japan, however, only 18% of the tourists checked them (Yoshida et al, 2013)
- Brochures and evacuation signs were prepared in Bali, Indonesia, however 24.7% learnt about tsunami (Hall et al, 2019)



**Tsunami evacuation map
(Ibaraki, Japan)**



Current strategy of tourists evacuation 2

Basic assumption behind the current strategy

The risk communication for tourists is promoted based on the assumption that “if the knowledge of tsunami and evacuation information is communicated to the tourists, tourists will take appropriate evacuation actions.”

(Rational knowledge model)

However, the problems are...

- Tourists rarely pay attention to the risk information during the journey.
- Level of knowledge does not correlate with the level of actions (Wachinger, 2013; Nakano, 2020 etc)

In stead of “rational knowledge model”

“Nudge” concept for tourists’ evacuation

What is “Nudge”?

- “Nudge” is the concept of behavioral economics by Richard H. Thaler (Nobel prize in Economic Sciences) and Cass R. Sunstein.
- Dictionary meaning of “Nudge” is to “Prod (someone) gently with one’s elbow in order to attract attention”.
(Oxford Dictionary of English)
- “Nudge” is **libertarian paternalism** approach.
- Libertarianism maximize the freedom of choice based on the assumption that people can take rational choices. (but people makes non-rational choice!)
- Paternalism restricts the choice or induce the choice based on the assumption that the people make non-rational choices. (but freedom of choice is important!)

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“Nudge” by libertarian paternalist admits that people make non-rational choices. So that people should be indirectly induced to select appropriate & rational choices by the soft intervention of choice architecture.

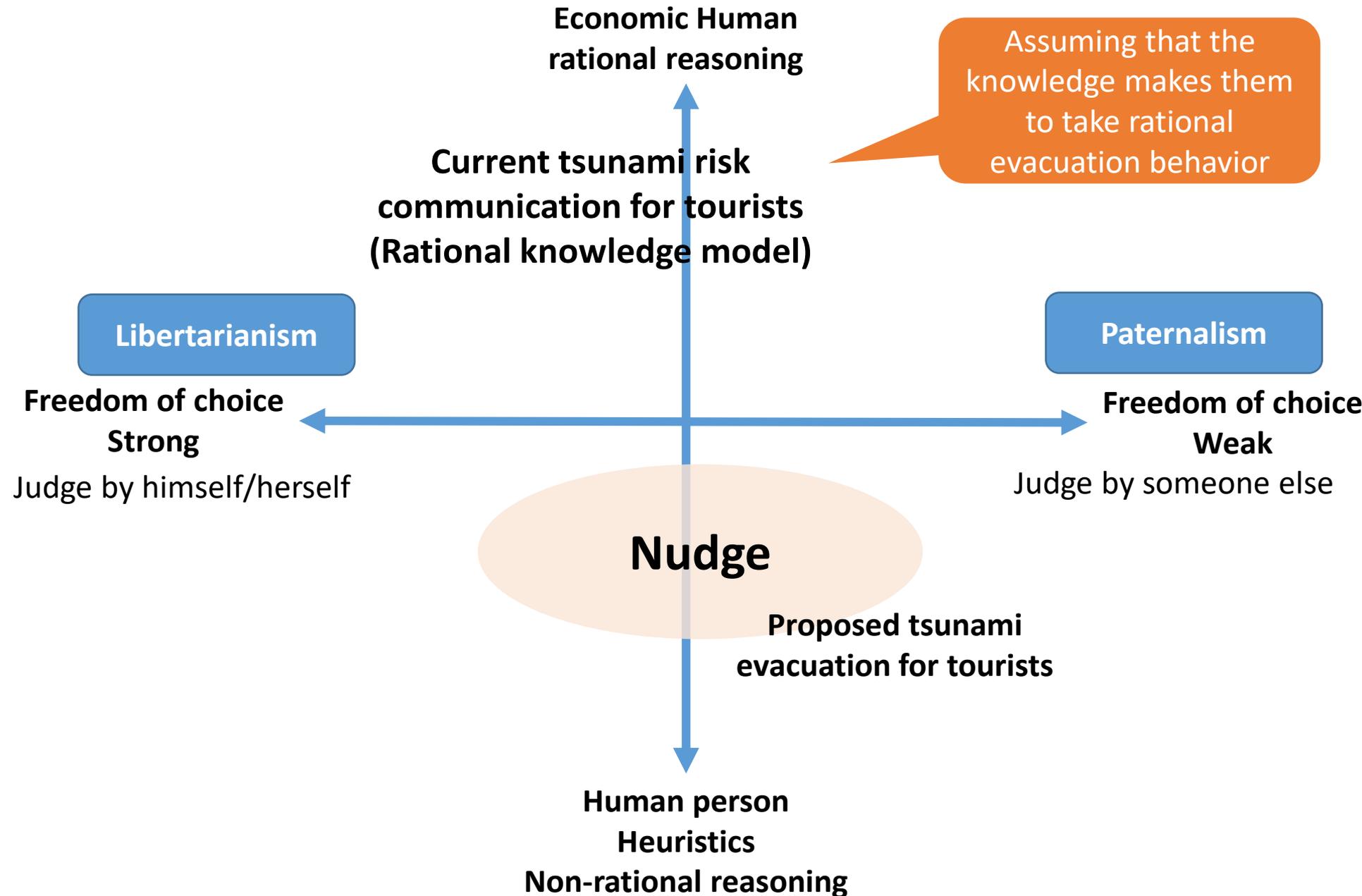
Example of “Nudge” based on the libertarian paternalism

- ❑ Assume that university cafeteria owner want students have healthy diet. However, most of the students usually eat fried chickens, fried potato etc.
- ❑ So, the owner changes the arrangement of the plates (choice architecture). Healthy diet is placed at the more visible and easy-to-take places, while unhealthy diet is placed at the less visible and difficult-to-take places.
- ❑ This approach gives the indirect induction to influence the students behavior and the decision making of choice without trying to encourage them to take rational choice of food (No mediation of communicating the knowledge/importance of healthy choice of foods.)

“Nudge” is the indirect induction to influence the one’s behavior and the decision making



“Nudge” for tourists evacuation



Economic Human
rational reasoning

Assuming that the
knowledge makes them
to take rational
evacuation behavior

Current tsunami risk
communication for tourists
(Rational knowledge model)

Libertarianism

Paternalism

Freedom of choice
Strong

Freedom of choice
Weak

Judge by himself/herself

Judge by someone else

Nudge

Proposed tsunami
evacuation for tourists

Human person
Heuristics
Non-rational reasoning

Critique against “Nudge” concept

- **(Ethical critique)** It violates the right to choose. Is it justifiable to intervene/influence people’s choice without the consensus, agreement, explanation?
- **(Attribution of responsibility)** Who is responsible for the choice? Interferer induce the choice of people (but choice was made by interfered person).
- **(Critique to Nudge concept)** Nudge itself regard people as non-rational.

Why “Nudge” for tourists evacuation?

- ❑ For local residents, conventional risk communication style (rational knowledge model) may be useful as they live in the locality, are familiar with the local risks and have time to judge and make choice based on the communicated knowledge and prove the communicated knowledge through the evacuation drill.
- ❑ For tourists (temporal visitors), they are unfamiliar with the local risks, local geographical settings, and do not tend to pay attention to the communicated knowledge, do not have opportunity to judge the communicated risk information.

Tourists needs to be induced for their safe evacuation.
“Nudge” strategy for tourists evacuation will be justified.

Examples of “Nudge-like” strategy in evacuation



Pelluhue, Chile

Electric pole painted with red, yellow and green stands for the tsunami inundation risk. It may guide visitors to evacuate in right direction (Natural Hazard Center, 2011).

Leading evacuees

Leading evacuee triggers the evacuation of others.



Next step

Prepare some ideas of “Nudge” based evacuation approach for tourists and discuss the potential application!

For example...

- ◆ Designate the evacuation site as lovers pilgrimage.
- ◆ Road illumination from the beach to evacuation site.
- ◆ Stamp rally of the shops from the beach to evacuation site (if you get all the stamp, you win something)
- ◆ Visitors can see something via virtual reality along with the evacuation route.
- ◆ Give an idea of road designing



Thank you very much

References

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