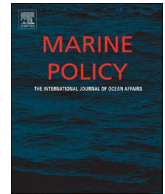




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Morals, money or the master: The adoption of eco-friendly reusable bags

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ABSTRACT

Plastic pollution is rampant in oceans across the globe. Our project in Indonesia seeks to understand and measure the effectiveness of non-monetary interventions that can help to reduce plastic bag consumption. A natural field experiment with 60 local shops was set up and three different persuasion strategies to measure shop owners' likelihood to participate and sell them to customers were applied. In all treatment conditions the reusable bags were offered to the shop owners at a subsidized price along with explanations about the harm plastic bags do to the environment. Additionally and according to their randomly assigned treatment, they got either information activating a pro-environmental social norm (arguing that distributing the reusable bags helps support the wellbeing of their society); Indirect monetary incentive (arguing that their business can save money by reducing the amount of free plastic bags) or; authority endorsements (the head of the village showing his support of the idea to distribute the reusable bags). Our results support the conjecture that local leaders play an important role in the Indonesian context.

1. Introduction

Governmental policies and regulatory approaches have often proven to be very effective tools to encourage and ensure pro-environmental behavior. However the successful implementation of such policies depends greatly on the depth and quality of information used to help relevant agents make appropriate decisions. This includes the quality of institutional and regulatory framework, monitoring capacities and the absence of lobbying and other forms of legal and illegal manipulation in the decision making process. If the conditions for effective policy implementation by the market or the Government can still be improved, what additional approaches can help to facilitate pro-environmental behavior? In this study three low-cost, non-monetary information and persuasion interventions were selected that may be carried out by NGOs- *Social Norm*, *Indirect Monetary Incentive* and *Authority Endorsement*. –The study evaluated their effectiveness towards the adoption of eco-friendly reusable shopping bags as opposed to single use plastic bags. The experiment was conducted in Bali, Indonesia.

Similar to other environmental policies, which for example, target energy saving, reduction of air pollution or natural resource depletion, the problem of plastic bag pollution has largely been addressed through two main instruments. One option is a legal ban. San Francisco and Los Angeles had banned the distribution of plastic bags to be recently followed by a state-wide ban for entire California [2]. In other countries,

such as Rwanda, plastic bags have been illegal for many years [41]. The second option is the introduction of a fee or tax on plastic bags. In Europe, Ireland introduced a tax on plastic bags in 2002. Within weeks of this the use of bags reduced by 94% [30]. For an overview of regulations on reducing plastic bag consumption see Clapp and Swanston [9]. These cases exemplify the value of policies as powerful tools to encourage pro-environmental behavior. It is considered that even developing countries with weak policy settings or an adverse political situation, should be able to pursue environmental policies. Unfortunately, many countries have failed to introduce any measure concerning the use of plastic bags, emphasizing the need for bottom-up approaches. But even in countries with policies in place there may still be scope for improvement by NGO activities. Thus, NGO interventions complements rather than substitute for Governmental policies. In the context of a weak and only slowly improving policy setting with scope for further improvements, NGOs, social entrepreneurs, environmental groups and other members of civil society ask for alternative interventions to support the societal change towards more environmentally friendly behavior in their societies. Our research aims to help find such behavioral intervention tools by examining a severe environmental problem: pollution by plastic bags.

Plastic bags make up 9.4% of the world's coastal litter. More than a million birds, marine mammals and turtles die from ingesting plastics each year [24]. Indonesia is the world's second largest contributor to

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marine plastic pollution [22]. Plastic waste, such as disposed plastic bags, does not biologically degrade. They break-down into micro plastics, which often bind pesticides, or other chemicals that, when eaten by fish, enter the food chain, and can harm humans [10]. Despite the negative consequences from plastic bag pollution, alternatives such as reusable shopping bags are rarely adopted by shops or customers. To induce a behavioral change there is a need to find out more about the determinants of environmentally friendly behavior and effective low-cost interventions, especially in developing countries.

Using a field experiment this study compares different intervention schemes targeting randomly selected shop owners in Bali (Indonesia), as facilitators for reducing the use of plastic bags. The main advantage of field experiments is the high external validity since outcomes are observed in a natural setting rather than in a contrived laboratory environment. In the experimental design of this study the circumstances under which shop owners are more likely to sell environmentally friendly shopping bags were examined. Most studies in this field focus on the consumer. However, it is considered worthwhile to explore the promising multiplier effect that shop owners can have in spurring a behavioral change of customers. All shop owners in the random selection were confronted with explanations about the adverse effects of plastic bags towards the environment. They each received eight reusable bags in one consignment that should be sold within two weeks to their customers. [33] refer to such intervention targeting for the reduction of contextual or infrastructural costs as “making it easy”. The same situation occurs when changing from poor environmental behavior a better environmental behavior. This category of interventions has shown to be successful in different environmental behavior situations [5,27].

Included and central to the study is a comparison of three promising low-cost interventions that support pro-environmental behavior. Three randomly selected groups of shop owners were addressed through one of the following interventions. First - By indicating to the shop owners that Balinese people care about the environment and reducing plastic bag use – an intervention of the category *Social Norms*, which often refers to pro-environmental behavior of others in their local peer group (Cf. [8]); Second – By explaining to the shop owner the financial benefits that arises from saving expenses on plastic bags given out for free and profiting from selling reusable bags – an intervention of the larger group of *Indirect Monetary Incentives*, a refined version of the traditional economic tool to financially reward pro-environmental behavior. Third - By the endorsement of the village head towards the shop owners to distribute the reusable bags – a type of intervention belonging to the category of *Authority Endorsement*, which aims to achieve more environmentally friendly behavior through the trust of formal or informal authorities.

The researchers found that the intervention *Authority Endorsement* significantly increased the sale of bags compared to activating *Social Norms* or explaining the shop owner the monetary advantage of selling bags. The findings of the study may be applied to other pro-environmental behavior topics, and also to related fields such as health behavior or insurance uptake.

2. Empirical studies, theory and conjectures

In this research the treatment of *Social Norm* as the baseline for activating environmental awareness is used as it is most often implemented by NGOs. Two additional treatments are tested against this baseline: *Authority Endorsement* and *Indirect Monetary Incentive*. All three treatments do not change the incentive structure but work by conveying different sets of information. Thus, the treatments do not include any changes to monetary payoffs of shop-owners. Therefore, it can be seen that the conjectures for the research are mainly based on related literature. It is difficult to evaluate the effectiveness of behavioral interventions against the background of one general global context. There are too many contextual factors, including institutional, historical or

cultural, which could significantly alter the outcome of behavioral interventions. Therefore the study is seen as contributing to the bigger question of what behavioral interventions work best and in what context. Beyond the interventions of *Social Norms*, which has already proven valuable in some contexts, *Indirect Monetary Incentives* and *Authority Endorsement* are added as interventions to the study. Considering the Indonesian context of the research including an intervention based on authority appeared to be a promising option. Also we were interested in low cost interventions and did not use real monetary incentives but made the financial benefits of reducing plastic bags salient to shop owners. Thus, there is little to no evidence for these treatments and we therefore refrain from defining hypotheses. We also want to note that there is no previous evidence on the difference of interventions to customers and shop owners. All studies mentioned here are related to customers.

There is a comprehensive amount of literature on the effect of norms and values on pro environmental behavior, Steg und Vlek [39] provide an overview of this. Among the most prominent is the norm-activation model by Schwartz [37]. Adapted to norms in the environmental behavioral context, the value-belief-norm (VBN) theory of environmentalism focuses on moral obligations as a driver of environmental behavior. Stern et al. [40] include consumer behavior as a sector in which biospheric moral obligations (norms) are being expressed in respective behavior [8], using the theory of normative conduct, find that salient injunctive or descriptive norms influence environmental behavior. In several studies on the issue of littering in public places they found evidence supporting their theory [8]. The influence of social norms on behavior has extensively been researched in different settings activating different norms [7,17,35].¹

In a prominent experimental study Milgram [28] showed early on the influence of authority on behavior. Cialdini and Goldstein [7] have shown that authority affects and changes behavior in non-environmental behavior contexts. Indonesian society supports a long tradition of authoritarian paternalism in enterprise management, government, family and educational system. People expect authorities to tell them what has to be done. This is considered applicable to Balinese, Indonesian and other Asian societies [20,25,38]. The most prominent cross-cultural measurements are from Hofstede. They define Power Distance as the extent to which the less powerful members of institutions and organizations within a country expect and accept that power is distributed unequally. Indonesia has a power distance measure of 78 and thus compares to a country like China (power distance = 80) which is twice as high as in the United States (40) or Germany (35) or Scandinavian countries (30). Despite very few studies analyzing *Authority Endorsement* in the context of environmental behavior, the studies mentioned above indicate this intervention worthwhile to be investigated further in the research context of this study.

Among the few exceptions studying *Authority Endorsement* in the environmental setting has been Javaid and Falk [23] and Chong et al. [6] who analyzed the influence of *Authority Endorsement* on increasing recycling rates. They did not find any significant changes due to messages from authorities in their study in Peru. However, knowing about its potential to increase the legitimacy of certain actions in the hierarchical organization of the regional and cultural context of Indonesia *Authority Endorsement* could have a stronger effect on shop owners than appealing to *Social Norms*.

Conjecture 1 (C1): *Authority Endorsement* is more effective in convincing shop owners to sell reusable bags than *Social Norm*.

The economists' approach to changing people's behavior is by

¹ Goldstein et al. [18] studied environmental behavior of hotel guests. Increasing the reuse of towels was more successful by descriptive norms such as “the majority of guests reuse their towels” than the general appeal by hotels that focused solely on environmental protection. However, this result could not be replicated in Germany pointing towards cultural effects in the effectiveness of norms.

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