**Extended abstract**

**SOCIAL INFORMATION AND ENERGY CONSERVATION – ENVIRONMENTAL**

**IDENTITY AND SOCIAL NORMS**

The influence of social information on behaviour has been demonstrated in a variety of settings. For example, research indicates that telling people how their actions compare with those of other, similar people encourages them to modify their energy and water consumption, their contributions to charitable causes, and their savings decisions. Despite a growing interest in social comparison research, though, several questions remain open. In particular, relatively little is known about the sources of the heterogeneity observed in the effects of classic social comparison experiments, such as Opower’s Home Electricity Report (HER) program.

In our paper, we hypothesize that an important source of the heterogeneous effects observed in the Opower peer comparison might be consumers’ environmental values. While the conservation behaviour of people with high biospheric values has been well-documented in the literature, little is known about these consumers’ responses to peer comparison. In this paper, we test whether there is an effect of social comparison on energy conservation and whether this effect depends on the extent to which individuals endorse high environmental values.

Another important gap in research is the understanding of the mechanisms behind individuals' reactions to Opower’s HER with regard to their energy use. The HER contains different elements, including a static neighbour comparison of energy consumption levels (a descriptive norm), feedback on individual performance (an injunctive norm), as well as energy saving tips. A further objective of this paper is to assess possible mechanisms to make the HER more effective. First, we test whether the HER shapes individuals' perceptions of norms in the domain of energy conservation. A stronger perception of the norm to conserve energy may then influence energy consumption. While environmental values tend to be stable throughout people's lives, environmental self-identity can be influenced, for example by information regarding energy conservation. A second mechanism could therefore be that the information delivered with the HER enhances consumers’ environmental self-identity. By activating biospheric values, the HER strengthens consumers' focus on benefiting the environment.

This analysis combines data from a large randomized program conducted by Opower in Italy with survey data collected from utility customers. The data received from the utility company specify whether a person receives an HER that includes social information, the frequency and type of social information, customers' engagement with it, and their energy consumption. The survey data include measures of environmental values, environmental self-identity, social norms and other household characteristics.

The first objective of this analysis is an evaluation of the impact that the HER program has on energy consumption and on customers’ engagement with the digital HER portal. The empirical analysis is based on a sample of customers of an Italian utility company (ENI gas e luce) between January 2015 and December 2017. The sample consists of 4,535 customers, 3,720 of whom belong to the treatment group while 815 constitute the control group.

A second objective of this paper is to assess the heterogeneous effects of the program along two dimensions. We aim to test how treatment effects vary with respect to pre-treatment energy consumption as well as baseline environmental values. This analysis aims to answer the question of which characteristics make customers more likely to respond to the information in the HER.

A third objective of the study is to answer the question about the mechanisms behind the effects of the program. To shed light on the roles of two possible mechanisms, we conduct manipulation checks. We first test whether the information received via the HER affects environmental self-identity. We also test whether the HER influences consumers’ perception of social norms related to energy conservation.

A very robust finding of the analysis is that pre-treatment energy usage and environmental values are the major sources of heterogeneity. Families with higher pre-treatment consumption respond to the intervention by curbing energy consumption. If they have high pre-treatment consumption, people who strongly endorse environmental values are more likely to respond to the social information by cutting energy consumption. Furthermore, the HER increases environmental self-identity among people with high pre-treatment consumption. Another important result is that the HER increases consumers’ perception in favour of the social norm of energy conservation. Interestingly, this effect holds for both high-consumption and low-consumption households.

Taking all these results together, we can infer that the HER encourages high pre-treatment consumption households to reduce their home energy consumption because the HER increases their environmental self-identity. The HER also influences the social norm of energy conservation among low pre-treatment consumption households but this effect does not translate into lower energy consumption among this type of families. We can therefore argue that the social norm mechanism is less effective in promoting energy-conserving behaviour.