

CONSUMER ADOPTION OF ALTERNATIVE FUEL VEHICLES: A CLUSTER ANALYTIC APPROACH ON PROENVIRONMENTAL TECHNOLOGY CHOICES AND CURTAILMENT BEHAVIORS

Johan Jansson, Umeå School of Business, Umeå University, Sweden
Agneta Marell, Umeå School of Business, Umeå University, Sweden
Annika Nordlund, Umeå University, Sweden

ABSTRACT

Although the private passenger car brings consumers freedom of mobility and expression, the downsides to the car focused society are also becoming obvious. Perhaps air pollution and the squandering of dwindling fossil oil resources are the most commonly discussed issues. In order to reduce emissions and to consume less oil, the traditional approach has been to influence consumers to curtail their car use and influence them to switch to other modes of transportation. Considering the increasing private car use in most countries this approach has had limited effect. Another approach winning ground currently is the path of technological development, where new types of vehicles have been developed that are marketed as having a lesser environmental impact than the conventional fossil oil fuelled cars. From a consumer perspective these new alternative fuel vehicles (AFVs), running on fuels such as ethanol, natural/biogas and to some extent on electricity, can be viewed as proenvironmental innovations. The problem is that much research within environmental psychology has focused primarily on curtailment behaviors rather than on understanding consumer adoption of purportedly proenvironmental innovations. For example, Stern and colleagues have developed the value-belief-norm (VBN) theory postulating that activated personal norms influence consumers' proenvironmental behaviors. Although well proven, the VBN-theory has mainly focused on curtailment behaviors. From a consumer behavior point of view, less is known about consumer adoption of proenvironmental innovations.

The aim of this paper is to begin to fill the knowledge gap between curtailment behaviors, as conceptualized in environmental psychology research, and consumer's proenvironmental technology adoption. Specifically the aim is to analyze whether there are differences among consumers who perform proenvironmental curtailment behaviors and consumers who perform proenvironmental technology choices. Therefore, instead of approaching the green consumers as a uniform group in terms of attitudes and behaviors, we explore the possibility that green consumers may be a mixed group performing 'green' behaviors for different reasons. The purpose of the paper is thus to arrive at a more nuanced picture of green consumers in terms of attitudinal, behavioral and motivational factors.

We use survey data from 1,832 adopters and non-adopters of AFVs in Sweden (European market leader of AFVs) when clustering consumers on curtailment behaviors (reducing car use) and technology choices (purchasing green products). The cluster analysis produces three groups of consumers that we name 'low-greens', 'curtailers' and 'green techies'. A discriminant analysis on a wide selection of profiling variables and constructs validates the groups. The findings show that the largest group (n=763) is the low-green group who are least willing to switch modes of transportation, and purchases environmentally labeled products the least. This group also exhibits the lowest altruistic and biospheric values, the lowest personal norm for reducing oil use, and the lowest willingness to cut down on car use. In addition, this group performs a number of proenvironmental behaviors, such as recycling, saving water and energy and purchasing energy efficient products the least of the three groups. This low-green group also has the strongest car habit and owns the lowest amount of ethanol cars compared to the other groups (19%). The curtailment group (n=542) is the group of consumers most willing to cut down on driving and switching transportation mode. This group also performs the highest level of curtailment behaviors such as saving water and energy and has the weakest car habit of the three groups. The green techies (n=469) exhibit the highest intentions to replace the current car for an AFV and also report purchasing energy efficient products to the highest degree. This group has the highest educational level, the highest income and also the largest amount of ethanol vehicles (33%).

From the analyses it can be concluded that the VBN-theory constructs have discriminant ability between low-greens and the other two groups. However, since curtailers and green techies are more closely related to each other in terms of values, beliefs and norms, the constructs are less efficient in discriminating between these groups. Our study also finds that the group with the strongest green values is the group with the strongest inclination towards technology choices. This finding implies that having green values is not contradictory to also being an early adopter of proenvironmental innovations such as the AFV.

References available upon request