

The antecedents of intention to act in favor or against a hydrogen refueling station

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The aim of this study is to identify antecedents for residents' intention to act in favor or against the placing of hydrogen refueling stations, which use will potentially benefit the environment and energy security. We tested, first, whether the theory of planned behavior (TPB; Ajzen, 1991) or the norm activation model (NAM; Schwartz, 1977) better explains intention to take action in favor or against a hydrogen refueling station (e.g. signing a petition, hanging a poster in the window). Second, we tested a cross-over between theories, namely whether beliefs (part of TPB) can add explanatory value to personal norm over NAM variables outcome efficacy and problem perception.

In a pilot study we identified six possibly salient beliefs on costs, risks and benefits of the technology. Subsequently, in December 2010, citizens living near to the first hydrogen refueling station in the Netherlands were surveyed. Only those that indicated to have an opinion in favor or against the refueling station were included in the study. We measured intention to take action, attitude towards taking action, social norm, perceived behavioral control, salient beliefs (all TPB), personal norm, outcome efficacy and perception of problems of current fuel use with respect to energy security and the environment (all NAM). Regression analysis was applied.

For those in favor of the technology, (N=172) intention to act was significantly influenced by personal norm (NAM; 48.1% explained variance); attitude, social norm and perceived behavioral control (TPB; 46.6%); and together these variables predicted 59.8%. Personal norm to act in favor was significantly influenced by one of the six beliefs, namely perceived local economic benefits (predicting 8.8%; TPB) while

problem perception (environmental problems) and outcome efficacy together predicted only 5.3% (NAM). Combined, the three variables together explained 9.4%. Attitude was significantly influenced by two beliefs, namely perceived local economic benefit and perceived usefulness of the station for people living nearby (22.9%).

For those that were against the technology (N=23), intentions to take action was significantly influenced by personal norm (explained variance is 61.0%), but not by attitude, social norm or perceived behavioral control; personal norm was significantly influenced by outcome efficacy, but not by any belief (17.0%).

To conclude, the theory of planned behavior and the norm activation model almost equally contributed to understanding why people would act in favor of hydrogen technology. TPB variable perceived local economic benefit (a belief) better explained NAM variable personal norm in favor than NAM variables outcome efficacy and problem perception did. For people that were against the technology, only NAM variables explained intention to take action.

Although the theories used are generally accepted, the predictive value has been limited, which is again found in this study. Further research with larger samples and with additional variables should extend the understanding of intention to take action in favor or against a hydrogen refueling station.

References

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