

ABSTRACT

Influence of Individual Differences on the Adoption of Electricity Storages in the German Photovoltaic Market

Stefan Poier

In the last decade, electricity storage batteries for private households have become increasingly affordable, making cost-neutral self-supply with electricity possible. However, approximately every second household that invests in a PV system decides against a storage solution. Since the sociodemographic conditions for PV system owners are very similar, the question arises as to which other factors are responsible for the decision-making process. This paper examines two well-known psychological constructs – the Big Five personality traits and human values – for significant influences on the purchase decision. For this purpose, owners of a PV system in Germany were asked about their personality and values by means of an online questionnaire in the fall of 2019. The working sample consisted of 460 individuals who were involved in the purchase decision about the electricity storage system, or about the PV system. Mean comparisons, regression analyses, and structural equation modeling were used in the study. Regarding personality traits, SEM for conscientiousness, agreeableness, and neuroticism showed a negative effect on battery adoption, with conscientiousness mediated by perceived risk. The analysis of the values showed direct effects of conservation and self-transcendence and indirect effects of openness to change and self-enhancement, which were mediated by perceived risk. In the interaction of traits and higher order values, extraversion and self-enhancement together with perceived risk had a direct effect on battery adoption. The simultaneous analysis of traits and individual values revealed direct positive effects of humility and self-direction thought. At the same time, environmental concern could be excluded as a motivation for the purchase decision.

Keywords: consumer behavior, photovoltaic market, Big Five, human values, electricity storage