

Generation Z Ready to Embrace the Electric Vehicle Revolution? Predictors of Electric Vehicle Adoption by Youths and Young Adults in Austria

Themenbereich: Verkehr

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Motivation and Research Questions

Electric mobility is globally on the rise. 1.1 million electric vehicles (EVs) have been sold worldwide in 2017 (BNEF, 2018), and sales numbers increase from year to year. Today, there are over 3 million EVs on the road worldwide, an expansion of over 50% from 2016 (IEA, 2018). However, EVs still make up only a small fraction of total vehicles sold/registered compared to vehicles with internal combustion engines. In Austria, for instance, the EV share in new passenger vehicle registrations was 2.02% in 2017 (the EV share of total vehicles registered was 0.38%) (BMVIT, 2018).

Several studies indicate that EVs may be one of the key levers to meet climate change stabilization goals in the transport sector (IEA, 2016; Creutzig et al., 2015; Lutsey, 2015; UNFCCC, 2015). However, despite their pro-environmental benefits, consumer acceptance of EVs still falls short of expectations. Several studies have already investigated consumer characteristics and preferences related to EV adoption (Li et al., 2017; Liao et al., 2017; Nayum et al., 2016; Plötz et al., 2014; Priessner, Sposato & Hampl, 2018) and have concluded that both, socio-demographic (e.g. gender, education, income, age) and socio-psychological factors (e.g. worldviews, experience) impact purchase intention. However, existing literature primarily focused on adult (potential) adopters and non-adopters and mainly neglected the preferences of an important group of the population: the youths. The young generation, for instance, has been found to be more interested in renewables than fossil fuels and to have a more environmentally friendly attitude than older people (de Pauw & Petegem, 2010; Greenberg, 2009). Related to mobility, studies show that young adults living in the Western industrial countries use more sustainable and alternative forms of mobility (e.g. bike, public transport, car-sharing, etc.) (e.g. ifmo, 2013; Frontier Group/US PIRG Education Fund, 2012).

Our study aims at advancing our understanding of early, potential and non-adopters of EVs among youths and young adults with a particular focus on socio-demographic (e.g. age, gender) and socio-psychological characteristics (e.g. social dominance, experience) as predictors of adoption.

Methods and Data

In autumn 2017, a survey on the perception and preferences regarding renewable energy technologies and EVs was conducted among youths and young adults in Austria (N=351; 18-30 years old). Participants were asked to fill out an online survey containing a variety of items and scale measurements. A subsection of the questionnaire focused in particular on issues surrounding EVs, such as the respondents' experience with EVs and their purchase intention. The variable 'purchase intention' represented the basis for the classification of the respondents into three groups:

- *Early adopters* (22%): already purchased an EV or intend to buy an EV as next car
- *Potential adopters* (38%): stated an interest in purchasing an EV
- *Non-adopters* (40%): no purchase intention at all for an EV

Furthermore, different socio-demographic and socio-psychological data was collected from the respondents, e.g. gender, age, education level, number of people per household; social dominance (scale of 8 items, e.g. 'We should do everything possible to balance out unequal conditions for different groups within our population. '; $\alpha = 0.54$), pro-technological (scale of 10 items, e.g. 'I see digitization as something that makes everyday communication much easier. '; $\alpha = 0.78$) and pro-environmental attitude (scale of 3 items, e.g. 'I would say of myself that I am environmentally conscious. '; $\alpha = 0.97$) (all of these socio-psychological variables were measured using a 4-point Likert-type scale ranging from 1 = 'strongly disagree' to 4 = 'strongly agree').

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In the statistical analysis the dependent variable was the willingness to purchase an EV ('purchase intention'), while the remaining variables served as predictors of EV adoption. The data was analyzed by multinomial logistic regression.

Results and Conclusions

Based on our results we find different predictors of EV adoption among youths and young adults in Austria. In contrast to socio-psychological variables, socio-demographic factors do not seem to play a significant role in explaining the differences between the EV adopter segments except for gender, which has a positive impact as predictor of early EV adoption compared to our reference group of non-adopters ($b = 0.68$, Wald $\chi^2(1) = 4.26$, $p = 0.039$). Following the study results the strongest predictor of EV adoption is social dominance (early adopters: $b = 1.41$, Wald $\chi^2(1) = 18.56$, $p < 0.001$ / potential adopters: $b = 0.65$, Wald $\chi^2(1) = 5.06$, $p = 0.024$). Another relevant predictor is environmental awareness ($b = -0.66$, Wald $\chi^2(1) = 6.38$, $p = 0.012$) that has a positive impact on early EV adoption compared to non-adoption, but does not differentiate between potential and non-adopters. In general, this model explains almost 20% of the variance (Nagelkerke pseudo R^2). To sum up, according to our findings more abstract socio-psychological constructs, compared to socio-demographic variables, are good predictors of young people's acceptance of EVs. However, it is interesting to note that the level of experience with EVs (e.g. 'I drove an electric car or was a passenger.') was not significantly associated with the intention to purchase an EV.

Overall, our study is the first to further investigate the willingness to purchase EVs by youths and young adults. The results reported above represent a promising starting point for future studies in this field. Furthermore, with our findings we aim at supporting marketers and policymakers to better identify and understand potential adopters as part of the "generation Z", which hold a different perspective on the future of mobility and represent (potential) future EV customers.

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