

## Comparing Forecasting Performances of the Bass Diffusion Model and Time Series Methods for Sales of Electric Vehicles

**Authors :** Andreas Gohs, Reinhold Kosfeld

**Abstract :** This study should be of interest for practitioners who want to predict precisely the sales numbers of vehicles equipped with an innovative propulsion technology as well as for researchers interested in applied (regional) time series analysis. The study is based on the numbers of new registrations of pure electric and hybrid cars. Methods of time series analysis like ARIMA are compared with the Bass Diffusion-model concerning their forecasting performances for new registrations in Germany at the national and federal state levels. Especially it is investigated if the additional information content from regional data increases the forecasting accuracy for the national level by adding predictions for the federal states. Results of parameters of the Bass Diffusion Model estimated for Germany and its sixteen federal states are reported. While the focus of this research is on the German market, estimation results are also provided for selected European and other countries. Concerning Bass-parameters and forecasting performances, we get very different results for Germany's federal states and the member states of the European Union. This corresponds to differences across the EU-member states in the adoption process of this innovative technology. Concerning the German market, the adoption is rather proceeded in southern Germany and stays behind in Eastern Germany except for Berlin.

**Keywords :** bass diffusion model, electric vehicles, forecasting performance, market diffusion

**Conference Title :** ICBFTSA 2020 : International Conference on Business Forecasting and Time Series Analysis

**Conference Location :** Barcelona, Spain

**Conference Dates :** March 05-06, 2020