

BUSINESS MODEL FOR BIDIRECTIONAL CHARGING AS ECONOMIC DRIVER FOR REDUCING CO2 EMISSION

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Extended Abstract

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Abstract Summary

This paper examines the role of bidirectional charging technologies in the context of the German energy transition and the increasing electrification of the transport sector. As renewable energy sources such as wind and solar introduce increasing volatility into electricity generation, new flexibility options are required to ensure grid stability. Electric vehicles (EVs), traditionally seen as additional electricity demand, are increasingly being recognized as decentralized storage units capable of supporting energy systems through concepts such as Vehicle-to-Grid (V2G), Vehicle-to-Home (V2H), and Vehicle-to-Building (V2B). The work adopts a qualitative research approach based on literature analysis and applies a suited Business Model framework to systematically develop and evaluate potential business models for bidirectional charging. The analysis identifies key stakeholders, such as automobile manufacturers, energy suppliers, grid operators, and technology providers, and outlines the essential components of value creation, such as digital platforms, smart energy management systems, and EV batteries as core resources. Results show that bidirectional charging can potentially generate multiple value streams, including grid stabilization, increased self-consumption of renewable energy, and new revenue opportunities for EV owners. However, the successful implementation of this business model depends heavily on regulatory frameworks, technological standardization, and the alignment of stakeholder incentives. This work highlights the importance of developing scalable and economically viable business models to unlock the full potential of bidirectional charging in future energy systems.

Presenting Author Biography

Jonas Holzinger has a Bachelor of Science in Business Information systems and a Master of Science in Machine Learning and Data Analytics. He is currently researching together with Prof. Dr. Anna Nagl in the Competence Center for Innovative Business Models and working

on his PHD Thesis within the Promotionsverband BW. In addition, he is working in part time in a logistics and freight forwarding company as process manager realizing digital projects, ranging from integrating AI and accelerating digitization in to office processes as well as utilizing PV-production data forecasts.