TEKX18-23-01

Financial modelling and interactions between stakeholders for vehicle-to-grid aggregation services

Background

The advent of electric vehicles to the mass market may lead to excessive power fluctuations in the electrical grid, therefore causing grid instability and blackouts. A notable solution is to utilize the electric vehicle-to-grid (V2G) concept to balance the demand and supply of renewable energy, therefore flattening the demand-supply energy curve.

Problem

According to existing studies, one major blocker for the mass adoption of V2G is the low customer acceptance rate, which are due to unfamiliarity with the new technology and confusion around the renumeration model. The problem may be exacerbated by competition between stakeholders, as most involved parties are eager to be aggregator and capture the market share. To deter competition, technology barriers may be introduced, which may lead to the creation of complicated renumeration scheme – a major blocker for the mass adoption of V2G.

Purpose

The aim of this investigation is to identify the value flow of V2G market and identify winning business models for stakeholders, including the network operators, utility companies, manufacturers, aggregators, and end customers. Additionally, renumeration models that are attractively to the end customers shall be investigated.

Method

The value flow of the V2G market may be investigated utilizing the Circular Value Flow of income model. Additionally, business model for the stakeholders may be studied using Osterwalder's Business Model Canvas. To this end, the market size and market share shall be estimated, the competitive environment is analysed, and the effect of V2G equipment capabilities is investigated. A go-to-market strategy, including partnership shall be conceived. Furthermore, a pricing and renumeration model shall be created, revenue is estimated, and from that drawing up a financial plan. A survey and inspirations obtained from other technological fields, such as the telecommunication and car sharing services are encouraged.

Pre-selected members:

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Notes

The project will be written in collaboration with Polestar.

This project will be written in English at the request of Polestar.