Identifying Future Strategic Options for the Automotive Industry

Using Real Options Theory and a Parsimonious Delphi Design to derive empirically based implications for OEMs on the way to Electric Mobility

Political regulations on fleet fuel consumption are forcing the players in the automotive industry to adjust their strategy towards more CO$_2$-efficient technologies beyond an optimization of the conventional internal combustion engine (ICE). According to the EU Climate Protection Act for 2020, the CO$_2$ emissions for newly released models in 2015 will have to be reduced by 28% to 120 g/km compared to 2008. In addition, from 2020 on, laws for a drastic reduction of fleet fuel consumption by about 40% will be applied on the US automobile market. Therefore, more emission reducing technologies such as hybrid drive, electric drive, and hydrogen drive will have to be promoted (Malorny et al., 2009; Mathies et al., 2010).

Based on real options theory (Avadikyan and Llerena, 2009; Leiblein and Zienodis, 2007; Tong and Reuer, 2007) we develop and empirically evaluate future trends within the stated research field, applying a recently developed parsimonious Delphi design (Koch and Prügl, 2011). In total 24 leading experts from different relevant areas (from top management) participated in the two rounded Delphi process (Häder, 2009; Linstone and Turoff, 1975; Schmidt, 1997) and identified as well as evaluated different future trends and its relative importance.

We found battery electric vehicles (BEVs) as the dominant technology in 2035. However, there will be numerous different propulsion systems on the market. As the timing of crucial technological breakthroughs for batteries is uncertain, car manufacturers will focus on hybrid and ICE-technology in the interim. Furthermore, the results are contingent on two types of customer needs: short-range and long-range transportation. Whereas BEVs are seen as the primary technology for short-range transportation, they have almost no relevance for the long range. Using a model of Real Options Theory, implications for different segments of OEMs are given.
Selected references:


