



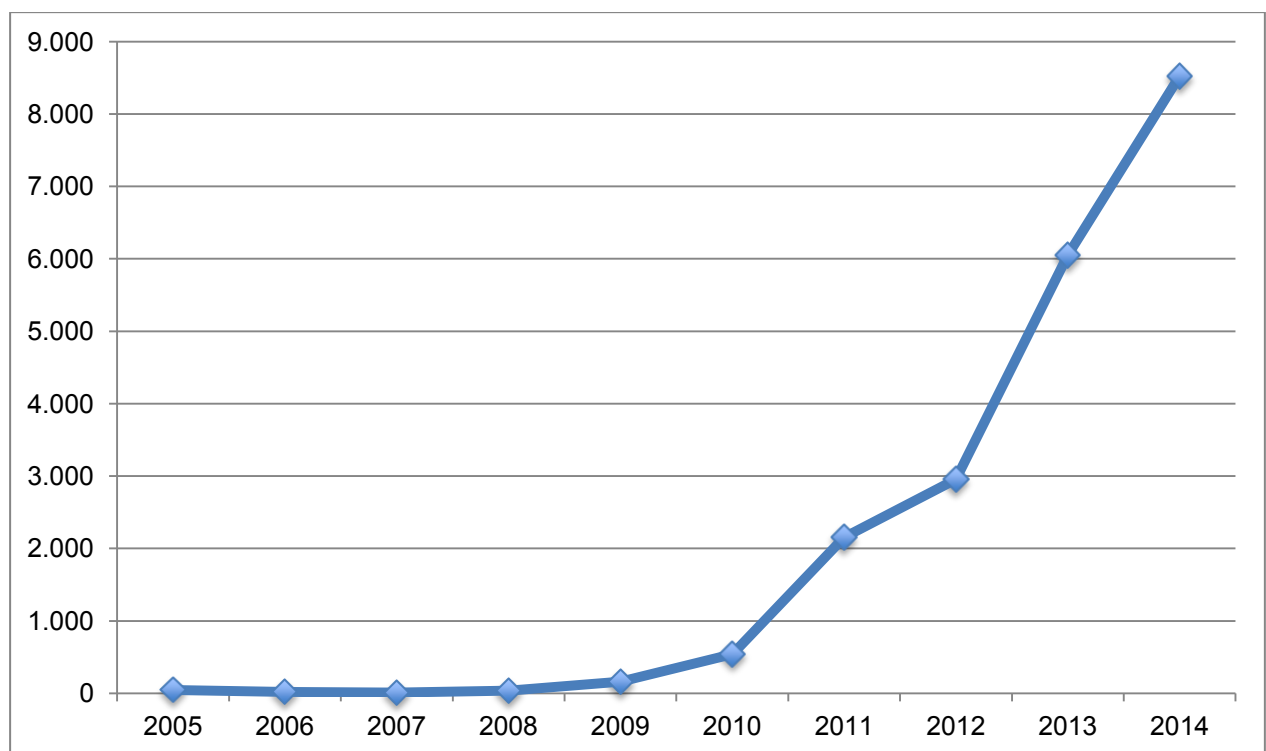
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# 1. Introduction

Car manufacturers, and not only of electric vehicles, are on a high pressure of globalisation and new demands of alternative drive systems (vgl. Fazel, 2014: 1). New demands of thrifty automobiles are also a reason of the rising prices of raw material (e.g. oil) and a uprising environmental awareness of people (vgl. Fazel, 2014: 1). Electric vehicles make the people more independent from the prices of oil and fuel. With the vehicle-to-grid technology, electric vehicles are also able to use their batteries as a temporary storage for energy.

To get a better understanding of what customers want, and to have an important advantage over other competing companies, it is important to understand the acceptance of electric vehicles.

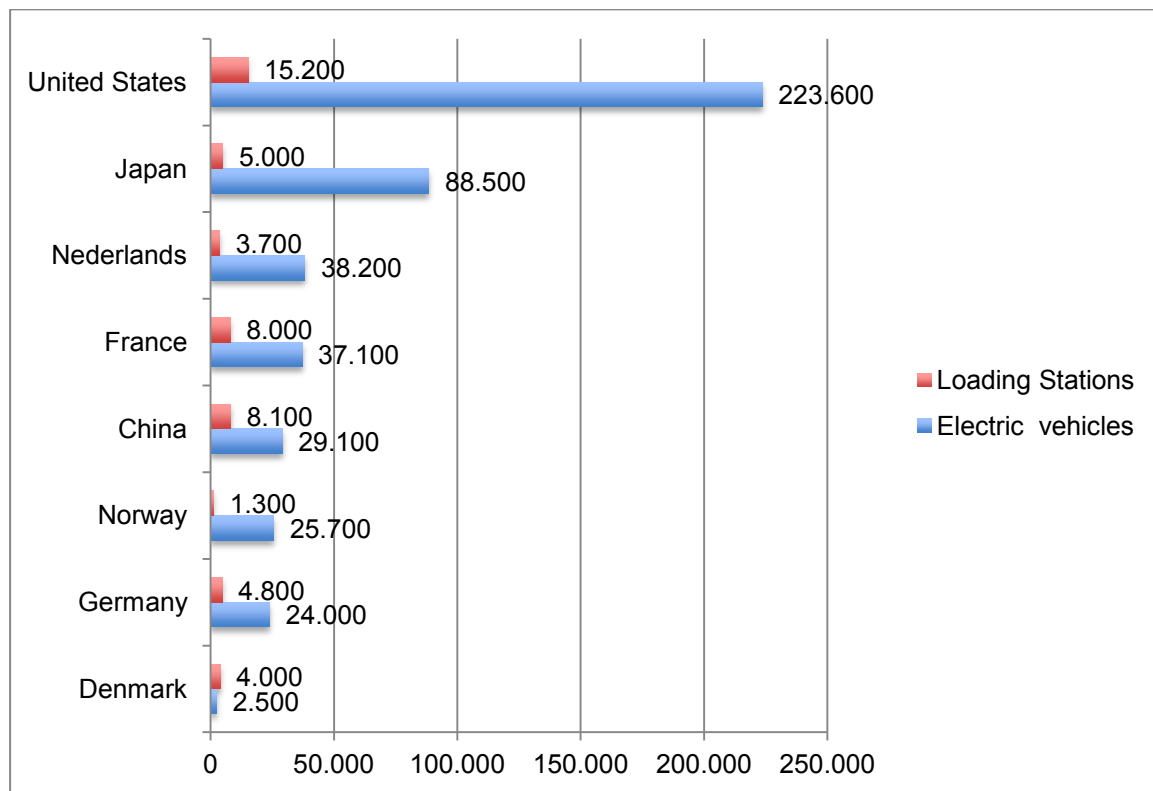
The Kraftfahrt – Bundesamt<sup>1</sup> (KBA) shows that the stock of new electric vehicles in Germany on the roads rose in 2014 by 40,8 % (cf. Kraftfahrt – Bundesamt(a), 2015). In addition, figure 2 gives an overview about the total number of new electric vehicles in Germany from 2005 to 2014. The data indicates a high rising of new electric vehicles in Germany.



**Figure 1:** Numer of new electric vehicles in Germany from 2005 - 2014, own presentation, based on Kraftfahrt – Bundesamt (KBA) (b) (2015).

<sup>1</sup> The KBA is an authority from the german government, which is responsible for e.g. road transport and permits for cars

As additional information, figure 2 will give an overview about the number of electric vehicles and loading stations in June 2014 in selected countries.



**Figure 2:** Number of Electric vehicles and loading stations in selected countries, Data: June 2014, own presentation, based on Nationale Plattform Elektromobilität (NPE) (2014: 10).

Germany has, compared to other European countries, a fewer number of electric vehicles and loading stations but an uprising number of new vehicles on the road. In the result of this fact, there is a high potential for car manufacturers to a higher number of selling's of electric vehicles.

Because of the small numbers, the German government tries to rise the selling of electric vehicles by several action and promotions (cf. Nationale Plattform Elektromobilität, 2014: 15).

For example, a special depreciation for commercial users of electric vehicles will be established. In the other hand, the government will support the research and development for the topic of electric vehicles and accumulation (cf. Nationale Plattform Elektromobilität, 2014: 4).

But although of the big rise of electric cars there are still more possibilities to absorb more revenues and a higher number of selling's of electric cars.

One of the influences to understand the customers is the Range Reliability and the infrastructure (e.g. loading stations) to reload an electric vehicle (cf. Zeit Online, 2015).

But not only these two factors are important, also information systems have an influence to use the full potential of electric vehicles (cf. Busse et al., 2013: 2).

Kollmann (cf. 1998: 69) describes that acceptance is a connection of three levels. These levels are at first the level of attitude, then on the level of action and at last the level of use until the end of the process of using. In context of electric vehicles it means the level of attitude toward an electric vehicles, action and the level of using an EV.

The level of attitude is an interaction of the level of a consideration of relevant factors of attitude in the case of using and buying, the intention of action and the intention of using (cf. Kollmann, 1998: 95).

Level of action is a connection of a consideration of relevant factors of attitude in the case of using and buying, an action of buying and an intention to use (cf. Kollmann, 1998: 101).

Last level of use is described as the components of a consideration of relevant factors of attitude in the case of using, an ex-post consideration of the action of buying and an evaluation of the terms of using (cf. Kollmann, 1998: 105).

The following thesis focuses on the measurement of the different influencing factors on user acceptance for electric vehicles. To measure these factors a conceptual framework was developed. The framework is based on the Technology Acceptance Model (TAM) by Davis (1986, 1989) and the Theory of Reasoned Action (TRA) by Fishbein and Ajzen (1975) as well as Oliver and Bearden (1985).

Before the operationalization of the conceptual framework to measure the acceptance of electric vehicles, the thesis gives an overview about the current state of research in the topic of acceptance in the relation with electric vehicles.

Part two describes the TAM, the TRA, the self-developed framework, the description of the hypothesis and at the beginning a short overview about relevant literature in case of acceptance research.

The fourth part shows the procedure of the empirical study and the structural equation model that is based on the conceptual framework.

In the fifth part, the thesis will give recommendations and suggestions for practice and research, while the sixth and last part shows limitations and a conclusion.

## 6. Limitations and conclusion

The main target of the thesis was to locate influences and dimensions of the acceptance of electric vehicles. Empirical analysis shows that some of them have a positive influence on the acceptance.

The number of electric vehicles will rise in the next years in Germany because of the promotions from the government. The study gives several implications for car manufacturers and research to handle with this challenge and opportunity.

The study is object of some limitations:

The survey was executed in German, which means only German speakers could understand it and participate with. In this result, it was not possible to compare different cultures and speakers.

Different cultures are significant in using IT and managerial decisions (cf. Leidner & Kayworth, 2006: 357). Further research should compare different cultures and try to show and analyse differences. As explained in the introduction, many countries have a total different number of electric vehicles and loading stations. This could be also a result of different cultures and influences.

In addition, all items were originally in English. Because of the translation in German, there is the danger of losing the intention of the original item.

Another limitation is the small number of participants and the demographic profiles. Most of them were students with a small income. Further research should acquire a higher number of participants with are not mainly students. Most of them had the subjective opinion that an electric vehicle do not provides a good value for current prices. A better spread of participants, who had a bigger monthly net-income than 1.000 € could bring better data in the dimension of the Price Value.

As described before, TRA does not include traditional attitudes (cf. Fishbein and Ajzen, 1980: 8). This attitudes in the case of electric vehicles cannot be considered in the survey and distort the results.

Some people do not know how much an electric vehicle costs. Because of the danger of manipulation, the survey does not give any information of current prices. In the result participants are maybe not able to answer the questions correctly. This could bring a bias inside of the analysis.

The thesis only tests a small number of external variables. Further analysis should test the influence of other variables (e.g. possibilities to load an electric vehicle) on the acceptance of electric vehicles.