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Consumer Resistance to Innovations

The Case of Electric Passenger Cars on Gotland

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Abstract

**Background:** The Swedish island Gotland provides suitable conditions for the successful implementation of electric cars. Despite these conditions and the availability of the product in the Gotlandic market, electric cars do not find acceptance among consumers on Gotland. This phenomenon of consumer resistance behavior represents a rather under-researched area in current literature. Since resistance behavior is one of the main reasons responsible for the high failure rate of innovative products such as electric cars, this justifies the relevance of this study.

**Purpose:** The aim of this study is to explore the reasons for consumer resistance behavior towards electric cars on Gotland. By answering this question, the authors intend to contribute not only theoretically to the existing theory of this phenomenon but also to shed new light on the special case of Gotland regarding the non-adoption of electric cars.

**Methodology:** In order to answer the research question, an exploratory case study approach was chosen. Quantitative data in form of a questionnaire as well as qualitative data including a group interview and six expert interviews were collected and analyzed.

**Key findings:** The barriers preventing consumers on Gotland from adopting electric cars are rooted in four different areas. First, functional barriers occur due to the limited range of electric cars, the existing charging infrastructure, the purchase cost, as well as the technological development status of the car batteries. Second, institutional barriers arise since the local government does not provide sufficient support for the further implementation of electric cars and related issues. Third, a contextual barrier in terms of the local car industry was figured out. This contributes a lot the last identified barrier, the cognitive barrier, which concerns the consumers themselves since their lacking knowledge and awareness about issues related to electric cars on Gotland is one of the main reasons for the resistance towards this innovation. As long as these barriers exist, consumers tend to postpone the buying decision of this product to a future point in time.

**Key words:** E-Mobility, Gotland, Innovative Products, Consumer Resistance Behavior, Non-Adoption
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1. Introduction

Gotland offers the probably best conditions for running electric cars: short distances, a flat area, an already existing infrastructure, green energy, and a local goal to become the sustainable island in 2025. Surprisingly, despite these very good circumstances electric cars do not find more acceptance - why?

1.1 Background - Electric Cars on Gotland

Gotland is a Swedish county in the Baltic Sea. The island consists of a rather flat area of about 3,140 km² (Gotland, 2015), whereas the distance between north and south of the island is about 176 km and between east and west about 52 km. About 57,000 people live on Gotland, with 23,000 of them living in Visby, the island’s capital (Gotland, 2015). The municipality ‘Region Gotland’ developed ‘Vision Gotland 2025’ which is an ambitious political strategy that started in the early 1990s to make the island “a world-leading island region on environmental and climate issues” (Gotland, 2016; Gotland, 2016b). This plan includes several different milestones in order to reach that goal, e.g. to become greenhouse gas emission neutral (Gotland, 2016a). The municipality has different responsibilities regarding the local politics, like managing the regional development (Gotland, 2015). Considering the favorable conditions in terms of short distances, the flat area, or the already existing infrastructure for implementing electric cars, also the municipality’s ambitious political goals for 2025 require a sustainable solution for driving. Thus, Gotland might be the exemplary model for running electric cars. Very advantageous to note is the fact that pure electric vehicles do not produce any emissions while driving which could also contribute to the achievement of the municipality’s goal to become greenhouse gas emission neutral (Gotland, 2016a). However, the emissions that may be caused due to the electricity generation might be seen disadvantageous regarding the product’s environmental friendliness. The amount of emitted greenhouse gases (GHG) in turn depends on the sources used for the electricity generation (Vliet et al., 2010). Considering Gotland’s several wind power farms and the according own green electricity production, which covers about 40% of Gotland’s electricity consumed (Gotland, 2015), this argument may not count for Gotland since climate-neutral energy could theoretically be provided for running electric vehicles on the island.
As pure battery-driven electric passenger cars (EPC) neither require fossil fuels to be run nor do they emit any GHG while driving (UCSUSA, 2016), EPCs can be considered as a sustainable and an environmentally sound alternative to conventional internal combustion engine cars (ICE). According to Blowfield (2013, p. 138) sustainable innovations refer to “technological and economic innovation[s] enabling humanity to meet the major sustainability challenges”. In times of huge challenges concerning climate change, global warming, and the limited availability of natural resources such as fossil fuel (Blowfield, 2013), this alternative can be seen as a possible solution in order to strive towards sustainability and “meet the needs of the present without compromising the ability of future generations to meet their own needs” (UN, 2010, p. 2).

1.2 Purpose and Research Question

There are two projects running that are highly engaged in the idea of promoting EPCs on Gotland: First, the project Elbil Gotland operating since 2008 intends to increase the interest in and the use of electric cars on Gotland and supports local car dealers in distributing them. This project is part of a union of 38 companies that form the association Product Gotland which aims to make Gotland known for a sustainable and climate friendly development (Elbilgotland, 2016). The second project and partner of Elbilgoltand is Elbilslandet which started in summer 2014 and is planned to last until summer 2016 (Elbilgotland, 2016a; Malmsten 2016). Elbilslandet rents out electric cars during the summer peak season primarily to tourists and promotes in this way electric cars on Gotland. The two projects planned and realized the current charging infrastructure on Gotland which is sufficient for charging about 1,500 EPCs (Sandström, 2016). This infrastructure includes 42 charging stations which are strategically distributed all over the island (Elbilslandet, 2016). The charging infrastructure ensures that every geographical point on the island can be reached by the average range of an EPC of 150-200 km\(^1\) (Nissan, 2016; BMW, 2016; Volkswagen, 2016; Renault, 2016). Four of these stations are so called fast-charging stations which enable EPCs to be fully charged within 15-40 minutes (Sandström, 2016; Elbilslandet, 2016).

\(^1\) Average range of an EPC in May 2016.
Interestingly, despite the seemingly perfect conditions and efforts that have been made, Gotland shows only about 60 registered EPCs in May 2016 (Sandström, 2016) which represents a share of 0.2% of the total amount of 34,500 registered cars on the island (Statistics Sweden, 2016). Considering the time from January to April 2016, only 7 EPCs were registered compared to 237 petrol and 175 diesel cars that were newly registered within the same period of time (Statistics Sweden, 2016). Therefore, EPCs on Gotland can be categorized into Roger’s (2003) adopter group of innovators that, according to the model, represents the first of five adopter stages until an innovation is fully adopted. This classification is in line with the fact that EPCs on Gotland have not been fully adopted by their potential consumers yet. However, this does not necessarily mean that consumers refuse this innovation at all. Therefore, the varying forms of consumer resistance towards an innovation, in this case EPCs, need to be considered.

In the light of the above it needs to be asked why there is consumer resistance occurring on Gotland. Considering the theory of consumer resistance towards an innovative product, which is accompanied by the lacking adoption of this innovation, this study might shed new light on this under-researched area by answering the following research question:

**What are the reasons for consumer resistance towards electric passenger cars in the case of Gotland?**

Answering this question can lead to a valuable contribution in two main fields. On the one hand, the findings can contribute to the current gap in existing literature about consumer resistance behavior towards innovations which is highly relevant since this behavior can be seen as one of the main reasons responsible for why innovations generally tend to fail. Consumers’ decisions of adopting, viz. buying or using, or not-adopting an innovative product influence considerably the overall market adoption and success of this very product. On the other hand the findings might also help Gotland to reach its goal of becoming the sustainable island by disclosing the secret of consumer resistance towards EPCs on Gotland. Ideally this work can contribute to striving for more sustainability.
2. Theories

This chapter presents the theoretical background of this study. In the following, literature and previously conducted studies by other researchers about innovation adoption and the phenomenon of consumer resistance behavior towards innovations are reviewed and explained. Based on these findings, the chapter concludes with the theoretical framework that is underlying this study.

2.1 Innovation Adoption

The term *innovation* is defined slightly differently throughout literature. An innovation is according to Afuah (2003, p.13) for instance defined as the “use of new knowledge to offer a new product or service that customers want“. Porter (1990) defines an innovation as “a new way of doing things that is commercialized”, whereas according to Rogers (2003, p.12, our italics) an innovation is “an idea, practice, or object that is [only] perceived as new by an individual or other unit of adoption”. An EPC is to be seen as a technological innovation that complements and modifies to a certain extent the global product portfolio of passenger cars. However, as the product ‘electric car’ as such exists actually already since the mid-1830s, when the first electric vehicle appeared in the markets of the USA, UK, and the Netherlands (Høyer, 2008), the term innovation is for the purpose of this study defined as follows: An innovation is a *perceived new* or a *modified* product. Adopters, viz. the buyers and consumers of an innovation, often consider the innovation being a better alternative and an improved version of the former ‘original’ product, and thus are considered beneficial by them (Rogers, 2003). Consumers’ decisions of adopting or not-adopter an innovative product influence considerably the overall market adoption and thus the success of this very product. One of the main reasons identified why innovations fail in the adoption process can be explained by the concept of consumer resistance behavior towards innovative products (see Heidenreich and Spieth, 2013; Nabih et al., 1997).

2.2 Consumer Resistance Behavior

Generally, the current literature about consumer resistance agrees on the fact that previous research in this field focused too much on motivating factors for consumers to adopt an innovation while ignoring for the largest part the reasons that prevent them from adopting it (see Cornescu and Adam, 2013; Kleijnen et al., 2009; Laukkanen et al., 2008).
However, these reasons are essential as they are seen as one of the main causes for the high failure rates of innovative products (Cornescu and Adam, 2013; Kleijnen et al., 2009; Heidenreich & Kraemer, 2015; Ram, 1989). What the consumer resistance behavior actually looks like differs, however, according to different studies and research papers (Cornescu and Adam, 2013). Lee et al. (2011) for example differentiate consumer resistance which is defined as an oppositional response to a certain practice of power or dominance within the market, from anti-consumption, which concerns issues of the consumption per se. Comparably, Cherrier et al. (2011) include in their definition of anti-consumption the resistance or aversion to consumption which results from consumers’ personal self-interested and socio-environmental motivations. Resistance is here defined as an act or opposition against a particular actor and usually also against a system of domination (Cherrier et al. 2011). Furthermore, resistant consumers are assumed to be rational decision-makers (Cherrier et al. 2011) which contradicts the findings of Heidenreich and Kraemer (2015) that individuals do not necessarily act rationally when being confronted with innovations. According to the latter, people rather tend to overrate products they currently use while underestimating the advantages of innovations (Heidenreich and Kraemer, 2015). Thus, consumers’ reactions and the decisions they make might not be predictable before the particular innovative product is actually launched in the market. Cornescu and Adam (2013) define resistance simply as the consumers’ reaction to an innovation. This reaction can result in the adoption or non-adoption of the innovative product. The emphasis is here on the initial resistance towards the innovation which is according to Cornescu and Adam (2013) inevitable. As this study investigates exclusively the negative reaction, viz. the non-adoption of EPCs, resistance behavior is defined as follows: Consumer resistance to innovations is the consumers’ negative reaction, viz. the non-adoption, to perceived new or improved products. This definition can be further broadened by differentiating between three particular forms of non-adoption as described in the following.

2.3 Three Forms of Consumer Resistance: Postponement, Rejection, Opposition

Resistance to innovations does not simply mean that consumers are against an innovation or refuse it at all. Resistance behavior consists rather of three different forms: Postponement, rejection, and opposition (Cornescu and Adam, 2013; Kleijnen et al., 2009; Szmigin and Foxall, 1998; Laukkanen et al., 2008).
**Rejection** describes the active decision to reject an innovation at all and represents the most extreme form of resistance, as the consumer is not willing to test the innovation before (Cornescu and Adam, 2013; Kleijnen et al., 2009). **Opposition** means that a consumer is in fact willing to test the innovation before the final decision to oppose the product (Cornescu and Adam, 2013). However, opposing consumers usually tend to reject the innovation and even actively protest against it (Cornescu and Adam, 2013; Kleijnen et al., 2009). **Postponement** can be described as a form of initial indecision. The final decision if a product should be adopted is simply pushed forward to another point in time which enables the consumer to escape the decision-making process and the related dilemma of acceptance or resistance (Cornescu and Adam, 2013). Although consumers might find the innovation generally acceptable, their state of decision is not final due to situational factors (Kleijnen et al., 2009; Szmigin and Foxall, 1998). Postponement is often related to technology-related innovations, when e.g. consumers worry to invest too early in such products and face the risk of missing the following ‘better’ version of the innovation (Kleijnen et al., 2009).

On the basis of these definitions, the authors define the three different groups for the purpose of this study as follows: Postponers intend to adopt an EPC within five years from the current point of time\(^2\). Opponents are willing to test the suitability of an EPC and consider the innovation as an option to choose. However, they are indecisive whether to adopt an EPC or not. Rejecters do not intend to adopt an EPC at all. In order to overcome this resistance, reasons for these behavioral patterns have to be found.

<table>
<thead>
<tr>
<th>Rejection</th>
<th>Opposition</th>
<th>Postponement</th>
</tr>
</thead>
<tbody>
<tr>
<td>▪ Total rejection of innovation from the beginning</td>
<td>▪ Consideration of innovation as an option to choose</td>
<td>▪ Innovation is generally acceptable</td>
</tr>
<tr>
<td>▪ No previous testing of innovation</td>
<td>▪ Willingness to test the innovation</td>
<td>▪ Decision is postponed due to situational factors</td>
</tr>
<tr>
<td></td>
<td>▪ Indecisive whether to adopt or not</td>
<td>▪ Intended adoption of innovation in 5 years at the earliest</td>
</tr>
</tbody>
</table>

Table 1: Forms of resistance (own illustration based on Cornescu and Adam, 2013; Kleijnen et al., 2009; Szmigin and Foxall, 1998; Laukkanen et al., 2008)

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\(^2\)The point of time from May 2016. The timeframe of five years was chosen according to the forecast from Statista (2016) – the sales of electric cars is expected to be more than twentyfold higher by 2020 compared to 2015.
2.4 Reasons for Consumer Resistance

The considerable failure rate of innovations named in previous literature varies from 40% to 90% (see Heidenreich and Kraemer, 2015; Heidenreich and Handrich, 2015; Heidenreich and Spieth, 2013). The majority of innovations does not reach the appropriate mass of consumers that are necessary for a successful diffusion in the market (Heidenreich and Spieth, 2013) and thus fail before reaching the so-called stage of maturity (Nabih et al., 1997). Such high failure rates imply that the vast majority of consumers does not seek a change in their consumption patterns through a new product and, accordingly, that only a small share of consumers indeed adopts the innovation (Heidenreich and Handrich, 2015; Rogers, 2003). As innovations provoke such a change inescapably, consumers’ resistance is a normal and expectable reaction to such products (Ram, 1989; Heidenreich and Handrich, 2015; Laukkanen et al., 2008). According to this, the initial resistance of a consumer is a natural reaction to any new or modified innovative product which implies that the successful market implementation of an innovation is only possible if this resistance is overcome. Similarly, Cornescu and Adam (2013) found that resistance behavior is caused by the potential changes to consumers’ status quo or by an occurring conflict with their belief structure. Adoption is an essential part in this definition, as resistance can either result in the final adoption of the product or in the continuance of resistance. Thus, the final stage of adoption is only the result of overcoming consumers’ resistance (Cornescu and Adam, 2013). If such a resistance cannot be overcome, the probability of the innovation to fail increases considerably (Cornescu and Adam, 2013; Kleijnen et al., 2009). This is in line with Ram’s (1989) explanation that the adoption process of an innovation only begins at the moment the existing consumer resistance has been overcome. Similarly, Kleijnen et al. (2009) identify one main reason for resistance on the consumers’ psychological level when the innovation causes a critical problem. This relates to a societally-relevant context and includes any behavior that is contrary to established traditions and norms (Kleijnen et al., 2009). The other main aspect of resistance is the resistance to change, as adopting a new or improved product implies a change in the established behavioral patterns (Cornescu and Adam, 2013; Kleijnen et al., 2009; Heidenreich and Handrich, 2015) which relate to consumers’ personal routines and habits (Kleijnen et al., 2009; Heidenreich and Handrich, 2015). Habits are difficult to overcome (Kurz et al., 2015) and an existing satisfaction with the current situation, the so-called status quo, leads logically to a lacking reason to change (Kleijnen et al., 2009).
Consumers generally tend to maintain their habits: “[T]he typical human tendency is to strive for consistency and status quo rather than to continuously search for, and embrace new behaviors” (Sheth, 1981, p. 275, cited in Heidenreich and Handrich, 2015, p. 881). As Ram (1989) states, the greater the change of habits through the innovation is the greater tends to be the resistance.

Ram and Sheth (1989) identify and define the reasons underlying consumer resistance more detailed and consider not only psychological reasons, but also functional ones. This is considered suitable for this study as an EPC is a technological innovation. The reasons for consumer resistance can therefore be assumed to be twofold: On the one hand the technical issues regarding the product itself, and on the other hand the changes that go along with the use of the product as described above.

2.5 Theoretical Framework
Ram and Sheth (1989) identify five barriers a consumer might face when it comes to the innovation adoption. The five barriers are categorized into two groups of barriers: functional and psychological ones. While functional barriers arise when consumers are confronted with huge changes due to an innovation adoption, psychological barriers arise in case of occurring conflicts with a consumer’s past experience. The group of functional barriers includes usage barriers, value barriers, and risk barriers. To the group of psychological barriers belong tradition barriers and image barriers (Ram and Sheth, 1989). In the following these barriers will be further defined and the respective arguments underlying each barrier explained. An overview of the barriers according to Ram and Sheth (1989) and their arguments identified by previous literature shows the illustration in the end of this chapter (see Figure 1).

2.5.1 The Usage Barrier
According to Ram and Sheth (1989), the usage barrier occurs in case an innovation is not compatible with current habits. Referred to resistance towards EPCs’ usage, one of the main usage barriers identified in previous research is the limited range of EPCs (see Skippon and Garwood, 2011 in Rezvani at al., 2015, p. 130). Despite this fact, Haddadian et al. (2015) state that EPC consumers perceive the range expectation and their driving needs differently though. The fear of insufficient range is accompanied by skepticism regarding the charging infrastructure for EPCs which according to Haddadian et al. (2015) is often insufficient and has not been adequately developed yet.
Furthermore, there is still a lack of technical standards to be found regarding the charging systems (Haddadian et al., 2015). A further barrier mentioned by Hosseinpour et al. (2015) is the long charging time consumers perceive with EPCs which in turn might hinder a successful adoption. Considering these aspects mentioned above, EPCs are perceived by their potential consumers being functionally limited compared to ICEs (Hosseinpour et al., 2015).

2.5.2 The Value Barrier
The value barrier influences a consumer’s willingness to change in terms of an innovation’s “performance-to-price value compared with product substitutes” (Ram and Sheth, 1989, p. 7f.). Related to the adoption of EPCs one of the value barriers is the high initial cost of EPCs compared to ICEs (Egbue and Long, 2012; Hosseinpour et al., 2015). The related payback time of EPCs often means another barrier for the adoption of EPCs (Haddadian et al., 2015). According to Rezvani et al. (2015), several studies have shown that potential consumers often do not have the knowledge in order to calculate the cost of EPCs compared to ICEs correctly. This is important as, despite the high initial cost of EPCs, they require lower operational costs compared to ICEs which would rather encourage the EPC adoption (see Caperello and Kurani 2011, Egbue and Long 2012, Graham-Rowe et al. 2012, Jensen et al. 2013, Lieven et al. 2011, Sovacool and Hirsh 2009, in Rezvani et al., 2015). Another argument considering the value barrier was found out due to a study conducted by Haddadian et al. (2015), stating that consumers are often not aware of incentive programs offered by the particular government on both state or local level (see Krause et al., 2013). Nevertheless, in case such programs exist, they need to be understandable for potential consumers in order to positively affect both the adoption process and consumers’ attitude towards the product (Lane and Potter 2007, Stern et al. 1999, in Rezvani et al., 2015). Individuals generally tend to “choose options that maximize utility based on their preferences, knowledge of alternatives and budget” (Roche et al., 2010 cited in Egbue and Long, 2012, p.719). Consequently, only if consumers perceive incentive programs as a benefit, they will be successful.

2.5.3 The Risk Barrier
Considering the risk barrier, four different kinds of risk can be represented by an innovation: physical, economic, functional, and social risk. If a consumer is aware of any of the risks, he or she will postpone the innovation adoption until the risk is eliminated (Ram and Sheth, 1989).
Concerning EPCs and this study, the different types of risk will not be distinguished particularly because they are overlapping to a certain extent. The main barrier regarding risk in this case is the battery technology of EPCs which is often associated with being not sufficiently developed yet regarding range, cost, safety, and charging time (Haddadian et al., 2015; M. Dijk and M. Yarime, 2010 in Hosseinpour et al., 2015). Additionally, other researchers argue that as long as the price for fossil fuels, and accordingly for gasoline and diesel, remains low, there will not be any incentive for consumers to save fuel and switch to alternative fuel (Ozaki and Sevastyanova 2011, Krupa et al. 2014, in Rezvani et al., 2015). This again can be seen as a reason for the limited demand for and interest in EPCs since ICEs are still perceived as the better and safer option by consumers. Similarly, Egbue and Long (2012) state that a higher price of fossil fuels combined with lower initial costs of EPCs might help in order to thrill the market for EPCs.

2.5.4 The Tradition Barrier
The tradition barrier arises in case of cultural changes perceived by a consumer due to an innovation. Dependent on the extent to which a consumer has to deviate from traditions, resistance will appear (Ram and Sheth, 1989). Considering the adoption of innovative EPCs consumers might need to switch to other forms of transportation such as public transportation due to the limited range of EPCs. For many this would mean a huge change regarding their habits (Hosseinpour et al., 2015). According to Egbue and Long (2012, p. 719) consumers will rather make choices that are closer to “tradition and familiarity” than to the innovation. Another question related to this argument is how an EPC driver is perceived by others and how and if the driver’s esteem might change when having adopted an EPC.

2.5.5 The Image Barrier
In case an innovation is seen as being unfavorable for a consumer regarding the innovation’s industry or country of origin for example, mostly due to stereotypes, the image barrier will arise and hinder the adoption of the innovation (Ram and Sheth, 1989). One image barrier hindering the adoption process of EPCs is the sustainability issue of EPCs, especially regarding their batteries when it comes to the electricity generation and the battery production considering the environmental impact this might have (Egbue and Long, 2012; Graham-Rowe et al., 2012 in Razvani et al., 2015). Consumers are often not sure to which extent an EPC actually benefits the environment (Haddadian et al., 2015).
Another argument why consumers might be skeptical about EPCs shows a study by Bühler et al. (2014, in Haddadian et al., 2015): Consumers have a certain image of an automobile and its functions which also should be provided by an EPC. This argument is followed by a currently rather narrow market of EPC models which in the opinion of some consumers does not offer an appropriate variety (Haddadian et al., 2015). Consequently, it needs to be asked which target groups of consumers the market of EPCs appeals to and if EPCs are suitable for each type of consumers.

As Laukkanen et al. (2008) found, the intentions of using or rather not using an innovation due to these five categorized barriers and the according identified reasons differ for each of the three resistance groups – postponers, rejecters, and opponents. This implies that implications based on the findings of this study might differ for each of the groups. Therefore and related to this study, the authors will investigate which of the resistance groups consumers on Gotland belong to.
3. Methodology

This chapter presents the overall research approach and design used for this study as well as the underlying philosophy the authors stand in for. Furthermore, the used data collection techniques and the according analysis procedure are explained. The chapter concludes with the limitations of this study.

3.1 Philosophical Stance

In order to find the different barriers for the adoption of EPCs on Gotland, the authors aim to gain data through investigating consumer resistance behavior in the specific context of Gotland. This will be done by collecting quantitative as well as qualitative information. The reviewed existing theory and findings of previous research serve as base for the theoretical framework that is underlying this study. With the research question in the center of this study, different views from different actors involved in this context are considered to explore the answer. Although the authors seek to conduct the study largely apart from own values, they are aware of the fact that a total exclusion of these is not possible and rather even helpful in investigating a social phenomenon. Thus, the underlying research philosophy for the study departs from a pragmatic philosophical stance. Depending on what the authors think is the best way to answer the research question the pragmatic philosophy allows to adapt the research process accordingly (Saunders et al., 2009).

3.2 Research Approach and Design

In line with the philosophical pragmatism, the cross-sectional study departs from an abductive research approach. This approach allows the authors to apply the theory emerged from previous studies to the specific case of Gotland as well as to develop or add new findings or insights to this theory due to the collected data. The study is exploratory as the authors wish to deepen the understanding of the currently dominating non-adoption of EPCs on Gotland and want to explore the reasons for this situation in the regional context. The situation of consumer resistance regarding EPCs on Gotland will be studied and analyzed with this work. An exploratory approach enables the authors furthermore to change the direction of the research if necessary, according to the particular findings and data (Saunders et al., 2009).
3.3 The Case Study Approach: EPCs on Gotland

Using a case study as research method “allow[s] researchers to understand the how and why of contemporary events, problems and situations in ways that do[es] not require control over those events or problems” (Shaban, 2009, p. 59). This approach is also seen as “strategy for doing research which involves an empirical investigation of a particular contemporary phenomenon within its real life context using multiple sources of evidence” (Robson, 2002, p. 178, cited in Saunders et al., 2009, p. 145 f.). Using a specific case is suitable if the researchers intend to deepen the understanding of a phenomenon within a certain context (Saunders et al., 2009). Thus, this approach enables the authors to explore and apply the existing theory of consumer resistance. The Swedish island Gotland is used as a single case because the island is considered to present a unique case that provides the authors with the possibility to analyze the phenomenon of consumer resistance towards EPCs on-site in the specific geographical and social context by considering the consumers themselves as well as other involved groups. In order to investigate this phenomenon, different sources of data will be considered as described in the next section.

3.4 Data Sources and Collection

For this case study, a mixed-method research approach is used by combining quantitative and qualitative data collection techniques and analysis procedures (Saunders et al., 2009). Moreover, primary as well as secondary data are collected in order to ensure the triangulation of the data. Triangulation, defined as the use of multiple data sources, assures the correctness and validity of the data (Saunders et al., 2009). The authors believe that using different data collection techniques can be useful in this case to answer the research question.

3.4.1 Primary Data

Primary data were collected through different sources. First, quantitative data were collected by conducting a survey. This survey was on the one hand provided as a self-administered ‘delivery and collection’ questionnaire, which was delivered and collected by hands, and on the other hand the same questionnaire was provided online in selected social media groups. The questionnaire can be seen in the appendix (Appendix A). Second, a semi-structured group interview with Gotlandic people was used as part of the survey strategy to validate and complement the findings of the questionnaire (see Saunders et al., 2009). Third, semi-structured expert interviews served as a further source of qualitative data. The interview guidelines can be found in the appendix (Appendix B).
A survey enables the authors to collect a typically large amount of data within a limited timeframe and from a limited population group (Saunders et al., 2009). The main target group of consumers in the frame of this study consists of Gotlandic people that intend to buy a car and have to decide upon which type of car is suitable for them. These consumers are in the actual position to decide whether to adopt the innovative product of an EPC or not. To ensure that only consumers of this target group fill in the questionnaire, the authors decided to deposit them at the two car dealers in Visby selling both ICEs and EPCs on the island. The questionnaire was provided in English as well as in Swedish. Nevertheless, the authors faced the risk that the amount of respondents is rather limited as cars can be considered high involvement products (see e.g. Mowen and Minor, 2001). In order to broaden the sample responding to the questionnaire, it was also distributed online in a social network in certain carefully chosen groups to ensure that only the intended target group fills in the questionnaire. In the literature review for this study about reasons for resistance behavior towards EPCs, 15 items were identified as potential barriers for the adoption of EPCs. The questionnaire consists of overall 20 questions, including 15 questions that are directly related to each of these items. The questionnaire includes answer options to the different items which are 5-point Likert scales with responses from “totally agree” (1) to “totally disagree” (5). In total 54 people participated the survey. It needs to be considered that the target group of potential EPC consumers on Gotland was directly addressed and that EPCs represent high involvement products. This justifies the relatively low rate of responses. In order to allow the consideration of more information that is possibly not included in the survey, the authors were additionally present for a certain period of time at each of the car dealers to be available for consumers’ questions and comments.

In order to triangulate the collected quantitative data from the survey, a semi-structured group interview can reveal interesting findings for the research question (Saunders et al., 2009). An announcement was published in two local newspapers (Gotlands Allehanda and Gotlands Tidningar) and was addressed to Gotlandic people who are interested in electric cars or want to contribute to this topic. The group interview took place in the Almedalen Café in Visby and lasted for 1.5 hours. Eight persons participated actively in the conversation, including the authors of this study. The participants were male and female with an age of 25 years and older. Furthermore, among the discussants were EPC-drivers, ICE-drivers, as well as persons that do not own a car.
Although this interview technique was semi-structured, meaning that certain questions are intended to be covered in the conversation (Saunders et al., 2009), the authors enabled the interviewees to talk spontaneously and freely about their opinion and issues they relate to EPCs on Gotland. The discussants themselves led the conversation and the interviewers only intervened if the conversation was stopping or deviating from the actual topic. This interview was not audio-recorded in order to ensure the comfortability of the participants. Instead, the authors took notes. The respondents of the survey as well as the interviewees were informed in advance that the questionnaire and the interview are treated anonymously. All questions and comments referred exclusively to the research topic.

*Semi-structured expert interviews* were conducted face-to-face or via Skype with representative persons from different fields involved in the issue of EPCs on Gotland (see Table 2). All expert interviews were audio-recorded and transcribed in accordance with the interviewees. Furthermore, the particular websites of the projects Elbil Gotland, Elbilslandet, and further websites and brochures about the Region Gotland were checked for relevant information.

<table>
<thead>
<tr>
<th>Expert field</th>
<th>Expert</th>
<th>Function</th>
</tr>
</thead>
<tbody>
<tr>
<td>Public Relations</td>
<td>Representative of Public Relations</td>
<td>Freelancer Journalist</td>
</tr>
<tr>
<td>Projects (on Gotland regarding electric cars)</td>
<td>Project leader Elbil Gotland</td>
<td>Project leader with the intention to increase the use of electric cars on Gotland.</td>
</tr>
<tr>
<td></td>
<td>Project leader Elbilslandet</td>
<td>Project leader who established a local car rental with electric cars.</td>
</tr>
<tr>
<td>Local Car Industry</td>
<td>Salesman 1</td>
<td>Salesman at a local car dealer distributing next to other type of cars also electric cars.</td>
</tr>
<tr>
<td></td>
<td>Salesman 2</td>
<td>Salesman at a local car dealer distributing next to other type of cars also electric cars.</td>
</tr>
<tr>
<td>Municipality Region Gotland</td>
<td>Representative of the local government</td>
<td>Leader of the strategy for the ecological development on Gotland.</td>
</tr>
</tbody>
</table>

Table 2: Participants of the semi-structured expert-interviews including expert field and function (own illustration)
3.4.2 Secondary Data
In order to gather secondary data, literature and findings of previous studies were reviewed and considered in our study. The theoretical framework for this study is based on these secondary data which again were reviewed by the according authors.

3.5 Data Analysis
The quantitative data from the survey as well as the qualitative data from the interviews were analyzed according to the theoretical framework. As the analysis starts thus from the theoretical perspective, the primary approach is deductive. All data were summarized and categorized within this framework in order to study the barriers and reveal similarities or differences between the different data sources. This is in line with Yin’s (2003, in Saunders et al., 2009, p.489) suggestion that “where you have made use of existing theory to formulate your research question and objectives, you may also use the theoretical propositions that helped you do this as a means to devise a framework to help you to organize and direct your data analysis”. However, the analysis revealed new theoretical insights and the theory was adapted to the specific context of Gotland which is a rather inductive practice. Thus, elements of both approaches were considered in the data analysis.

3.6 Limitations
Apart from the limitations that come along with the different data collection techniques, like the limited amount of responses for the questionnaire or the risk of response bias in the interviews (Saunders et al., 2009), above all, limitations regarding the generalizability of the results need to be considered. As this study is a case study, all findings are exclusively related to Gotland and the according context. Therefore, the findings do not necessarily apply for other places and countries. Furthermore, only reasons for the resistance towards EPCs that concern consumers were explored with this study. Thus, reasons departing from other involved actors and issues, like the car brands or the technological progress of EPCs, were not considered. Moreover, the limited timeframe and the reference to only electric passenger cars for this study need to be considered.
4. Empirical Results and Analytical Discussion

This chapter will present the results of the data collection that was done due to the aim of this study – to find the main barriers that hinder the further adoption of EPCs on Gotland. In the following, the three main sources of data, namely the survey, the group interview, and the expert interviews, will be shortly described and the results of each demonstrated. Furthermore, these results will be analyzed and discussed according to the underlying theory. An overall overview of the results and their reference to the barriers and arguments found previously is given in the attached table (see Appendix C).

4.1 Survey

The questionnaire results revealed interesting findings regarding the previously defined barriers. Only the results that are relevant for the analysis and for answering the research question are presented in this section. The overall results of the survey can be seen in the table below (see Table 3). Although in total 54 people participated the survey, it needs to be considered that the following numbers do not always represent the share of all 54 participants since there were sometimes questions left out.

In the beginning participants were asked about general information, among others regarding their current driving behavior. Of 63% male and 37% female respondents of random age, 64% are currently driving petrol driven and 13% diesel cars, whereas 2% are driving a biogas-driven car, 2% an EPC and 19% do not own any car. When it was asked which car the participants are looking for, exactly the half of all respondents claimed to search for a petrol or diesel car. Whereas only 4% are looking for a biogas car, an unexpected high share of 13% is looking for an EPC which seems to be relatively high considering the low amount of EPC-drivers on Gotland. Regarding the average distances people drive per day, nearly half of the participants ticked 6-50 km, whereas 41% drive less than 5 km per day. Only 2% answered that they drive more than 100 km a day. The vast majority of all participants (74%) is generally interested in EPCs, whereas nevertheless almost the same share of 67% claimed not to have any previous experience with EPCs. This is particularly interesting, because there are indeed possibilities on Gotland to test an EPC, for example at the local car dealers or the electric car rental.
Regarding the usage barriers, about half of the participants were not sure if the average range of an EPC is sufficient in their opinion. Apart from that, more people think the average range is not sufficient than people who think the opposite. This means that the range per se is not a reason for the non-adoption but rather the fact that the respondents do not know if the range is actually sufficient for them or not. The probably most nearby reason for that might be that people do not know what the average range of an EPC actually is. Thus, the range is not identified as a barrier according to the questionnaire. The same applies for the arguments of the standardization of EPCs regarding the charging process for example as well as the charging time and the according influence on consumers’ daily lives. Although the results for both arguments are rather mixed, a considerable share of respondents was ‘not sure’ regarding both which identifies these arguments as such not as reasons for the resistance. The main problem here seems to be that people do not know anything about such characteristics of EPCs and have not yet developed an opinion towards these. Therefore, the both arguments standardization and charging time are not identified as usage barriers. Similarly, slightly more respondents believe that the charging infrastructure on Gotland is not adequate to manage their individual daily distances than respondents who are ‘not sure’. Therefore, the infrastructure can be identified as a usage barrier. However, the infrastructure all over the island can indeed be perceived as sufficient. This leads to the assumption that people are not aware of the current status of the infrastructure. The mixed result of this argument might be thus a further indicator for the general uncertainty among consumers when it comes to EPCs.

When it was asked if EPCs offer the same functionalities and features like conventional cars do, the majority thinks so. Thus, this argument is not identified as a reason for the non-adoption of EPCs. The only usage barrier that could be identified is following an insufficient infrastructure according to the answers of the questionnaire.

The purchase price as one of the value barriers can be identified as a reason for the resistance behavior, as almost half of the respondents believe that the cost of an EPC are higher than for an ICE. However, still 37% are not sure about that and accordingly lack information. Interestingly, the majority of respondents also thinks that it is indeed economical to own an EPC which excludes this argument as a barrier. Although this is not a contradictory finding, it could be asked in this context if the economical keeping of an EPC could compensate the high purchase price.
Most people clearly agreed that the government should support EPCs, e.g. through incentive programs. Since there is according to this study’s results no appropriate local governmental support present as it will be described later, this argument can be identified as a barrier. The value barriers that can be identified according to the questionnaire are therefore the purchase price as well as the lacking governmental support.

A clear risk barrier represents the battery technology, as exactly half of all respondents believe that the technology has not been sufficiently developed yet. Still, 28% are again not sure about it.

Regarding the tradition barriers, the argument alternative transportation can be identified as a reason for the non-adoption of EPCs on Gotland, as 40% of the respondents cannot imagine to switch to public transportation services in case the range of an EPC is not sufficient. However, the same share of respondents was also ‘not sure’ if they can imagine doing this. Thus, this barrier is not a distinct one, but is nevertheless not ignored for the further analysis. Furthermore, more than half of all respondents believe that they could be perceived differently by others when owning or driving an EPC. This result leaves open if this perception is positive or negative. Considering the group interview’s result, as explained in the next section, that all discussants experience this perception as positive, it is not further considered as a barrier.

Considering the image barriers, most of the respondents clearly agreed on the statement that EPCs are a sustainable, viz. an environmentally friendly alternative to conventional ICEs. Despite the clear skepticism for example regarding the battery technology or other technical features of EPCs, this innovation seems to be positively associated with environmental friendliness. Moreover, most people think that EPCs are a suitable product ‘for everyone’. This might explain the respondents’ general interest in EPCs. Both arguments are thus not identified as reasons for the non-adoption. However, the opinion dominates that there is not enough variety of models offered in the EPC market (47%). Nevertheless, compared to this number the share of people who are ‘not sure’ is also relatively high (39%). Therefore, the only image barrier according to the questionnaire is the EPC market.
Referring to consumer’s opinion towards owning an own EPC in the future, 50% were not sure about it. This identifies half of the respondents as opponents who in fact consider EPCs as an option but do not know if and when this option is going to be realized.

This number is followed by 28% considering owning an EPC within the next five years from the current point of time\(^3\) which categorizes this share of respondents as postponers. Only 2% of the respondents are rejecters and cannot imagine owning an EPC all. The rest of the participants did not give an answer to this question. Interestingly and to sum the survey’s results up, despite the obviously positive association of EPCs with for example environmental friendliness, most respondents seem to either do not know about the situation of EPCs on Gotland or do have a rather negative image of it: people are for example either ‘not sure’ about or disagree with the arguments that the range, the charging times, the charging standards, or the battery technology of EPCs and the according infrastructure are adequate. This is also reflected by the question if they can imagine owning an EPC in the future: half of the respondents simply did not know.

<table>
<thead>
<tr>
<th>Barrier (Ram &amp; Sheth, 1989)</th>
<th>Argument (based on previous studies)</th>
<th>Related Questions for Survey</th>
<th>Survey Results (1 = strongly agree, 2 = agree, 3 = not sure, 4 = disagree, 5 = strongly disagree)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Usage Barrier</td>
<td>Range</td>
<td>In my opinion, the range of an electric car is sufficient.</td>
<td><img src="image1.png" alt="Bar Graph" /></td>
</tr>
<tr>
<td>Charging Infrastructure</td>
<td>In my opinion, the public infrastructure on Gotland is sufficient to charge electric cars regularly to manage the daily distances.</td>
<td><img src="image2.png" alt="Bar Graph" /></td>
<td></td>
</tr>
</tbody>
</table>

\(^3\) The current point of time is May 2016.
<table>
<thead>
<tr>
<th>Standardization</th>
<th>I believe that I can charge an electric car with the attached cable everywhere on every charging station, independently of place and country.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Charging Time</td>
<td>In my opinion, the charging times of an electric car do not influence my daily structure.</td>
</tr>
<tr>
<td>Features and Functionality</td>
<td>In my opinion, an electric car offers generally the same functionality and the same features as a conventional internal combustion engine car.</td>
</tr>
<tr>
<td>Value Barrier</td>
<td>In my opinion, the average purchasing costs for an electric car are not higher than for a conventional internal combustion engine car.</td>
</tr>
<tr>
<td>Purchase Price</td>
<td>The use of electric cars is economical.</td>
</tr>
<tr>
<td>Economic Efficiency</td>
<td>In my opinion, the use of electric cars should be supported governmentally by incentive programs.</td>
</tr>
<tr>
<td>Risk Barrier</td>
<td>Battery Technology</td>
</tr>
<tr>
<td>----------------------</td>
<td>-------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Tradition Barrier</td>
<td>Alternative Transportation</td>
</tr>
<tr>
<td>Perception</td>
<td></td>
</tr>
<tr>
<td>Image Barrier</td>
<td>Sustainability</td>
</tr>
<tr>
<td>Market</td>
<td>In my opinion, the electric car market offers an appropriate variety of car models.</td>
</tr>
<tr>
<td>Target Group</td>
<td>In my opinion, electric cars are for everyone.</td>
</tr>
</tbody>
</table>

Table 3: Survey results with reference to Ram and Sheth (1989) and previous studies (own illustration)
4.2 Group Interview

As already explained, the group discussion was organized as a public event. The questions that were asked aimed to get insights into the issue why EPCs have not found more acceptance on Gotland yet from a consumer’s perspective. The participants freely discussed reasons that might be responsible for the non-adoptive of EPCs on Gotland. All points and arguments out of the barriers according to previous literature that were not mentioned in the group discussion are not considered as barriers.

Interestingly, the participants’ opinions about usage barriers regarding the range of an EPC and the charging infrastructure on Gotland differed among the EPC-drivers and the persons that do not drive an EPC, in the following referred to as non-drivers. EPC-drivers perceive the range as sufficient for the island and explained additionally that it is possible to drive from the north to the south of the island with a fully charged EPC without charging it in between, whereas the non-drivers perceive the range as a problem. Thus, for most of the consumers according to the group interview the range is indeed a barrier, since only a small share actually owns or drives an EPC. As the EPC-drivers, however, already have experience through using that product for a certain period of time, it can be assumed that the non-drivers simply do not have sufficient information concerning the range. Nevertheless, it represents a reason for people to not buy or use an EPC. Thus, the argument range is considered a barrier according to the group interview. The same applies for the charging infrastructure as the opinions differed among EPC-drivers and non-drivers. The EPC-drivers perceive the existing infrastructure as “very good” with charging stations “spread all over the island”, whereas most non-driving participants were either not aware of it or had the initial attitude that it is not sufficient. Both groups agreed, however, that more fast charging stations are required. Thus, this argument is considered a barrier. Nevertheless, a clear lack of awareness among the non-drivers of EPCs could be identified. Summing up, the range and the charging infrastructure are usage barriers according to the group interview.

When it comes to the value barriers, all of the discussants agreed that the purchase price is a clear reason for them to not buy an EPC and is thus identified as a reason for the resistance towards EPCs. However, leasing offerings are according to them a good incentive for deciding upon an EPC despite the purchase price. The EPC-drivers added that these leasing offerings from the car brands themselves make the cars much more affordable and that the leasing time, in their case two years, is a good opportunity to test the car.
In case there will be a similar offering from the time their own leasing contract will expire, they would according to their own statements “stick to it”. Thus, such offerings might weaken this barrier. However, they are related to the car industry and cannot be influenced by the consumers themselves. Very often mentioned was the argument governmental support of EPCs on Gotland which is according to the people interviewed not existent at all. Participants claimed “bad policies” of the local municipality being responsible for the situation.

Participants suggested that the municipality as an organization takes the role of an ideal for consumers by including EPCs in their own car fleet in order to promote them as a sustainable alternative of transportation. Unanimously, the group is persuaded that the local government could help to support the further implementation of EPCs on Gotland and concluded that governmental incentives are necessary in order to give people incentives to buy and use EPCs. Thus, the purchase price and the governmental support can be identified as value barriers according to the group interview.

The participants stated that they can imagine switching to public transportation if this is required. The EPC-drivers explained, however, that this is generally not necessary, as long as one plans the trips with the car. Considering the target group for EPCs, the group was discordant about the question if EPCs are suitable for everyone. Some stated that EPCs might be an obstacle for people having a job not close enough to their home in order to afford it with an EPC. Others said that everyone can theoretically use an EPC and “if not, it’s only about their laziness”. In consideration of the survey result that identifies this issue not as a barrier and the fact that no clear result could be reasoned here, it is not considered as a barrier. Furthermore, the EPC-drivers explained that the fact that they drive an EPC is perceived positively by others. The other participants agreed and confirmed a positive association with EPCs and the persons driving them. This is in line with the survey’s result that consumers have positive associations with EPCs. Therefore, neither tradition nor image barrier exist according to the group interview.

According to the discussants, they would rather wait a couple of years before buying an EPC because of technological uncertainties. Above all, they worry about the battery technology and prefer to wait until they are “better developed”. This identifies the argument as a risk barrier. Some of the participants claimed further that they could imagine buying an EPC within the next 5 – 10 years.
The discussants can thus be categorized as postponers who worry to invest too early in such products and fear to miss a following ‘better’ version of the innovation (Kleijnen et al., 2009).

Particularly interesting in this context are the different opinions between EPC-drivers and non-drivers. The reason for the different perceptions and attitudes towards EPCs seem to be constituted in the different levels of knowledge and awareness about this topic between both groups of people. Additionally, according to some of the participants, including the EPC-owners, the local car dealers could not provide sufficient information about EPCs when the according sales men were asked. Therefore, a lot of self-studies were necessary. Furthermore, all participants agreed that there is no kind of promotion for EPCs in the island except during the political week on Gotland, where people can try an electric car model of Tesla.

4.3 Expert Interviews

4.3.1 Public Relations

In order to get insight into the public relations’ perspective regarding possible reasons for consumer resistance on Gotland, a journalist was interviewed.

No specific usage barrier was explicitly referred to. Instead, a general uncertainty was described among consumers when it comes to EPCs as this type of car is still perceived as a “project in the future” for many consumers (Norrby, 2016). Only people that are actively interested in the topic of EPCs are aware that the island offers for example a relatively expanded infrastructure: “There is a wider range of public that doesn’t have this [EPCs] as their main interest, that haven’t looked for this type of information”. The local newspapers and journals have not published any information regarding EPCs according to the interviewee, which might be one reason for the lacking awareness among consumers. Thus, the people who are not actively interested are not aware of EPC-related issues on Gotland. In this context, the interviewee mentioned also the local car industry on Gotland. According to Norrby (2016), Gotland itself represents a relative small car market with an extraordinary high share of old cars. People would rather fix their old car before buying a new one.

This according to the interviewee would happen due to economic reasons considering that there are also lower taxes for cars older than 30 years. Own experiences of the interviewee also proved that car dealers do not feel very confident in answering questions about EPCs (Norrby, 2016) which might increase also the consumers’ own uncertainty.
Furthermore, the car dealers and the car industry in general lack incentives to make consumers switch from ICEs to EPCs, particularly on Gotland, where “keeping old cars going is easier than in larger cities such as Stockholm for example” (Norrby, 2016). However, the argument related to the car industry is not covered by the image barrier, where the argument ‘car market’ is only related to the variety of models. The argument the interviewee mentioned is rather related to the local car industry and the way it works. Thus, this aspect is not identified as an image barrier. Additionally, no tradition barriers were mentioned in the interview.

The consumers’ general uncertainty, which is in line with the findings of the survey and the group interview, goes along with the risk barrier regarding the battery technology that most people fear to be not sufficiently developed yet. Furthermore, people are generally likely to stick to their habits, and “when everything seems to be more a science project, people will stick to the gasoline and diesel cars instead” (Norrby, 2016). According to the interviewee, people might therefore rather remain with conventional fuel-driven cars and might consider buying an EPC in five or more years (Norrby, 2016). Therefore, consumers can be categorized as postponers who wait for a sufficiently developed technology until considering an EPC.

The governmental support can be identified as a value barrier, since there is currently no political priority of EPCs. Gotland’s municipality agreed upon biogas in its strategy, which means that they will stick to this decision at least until 2019. Therefore, according to the interviewee, the local government cannot focus on EPCs and consequently cannot support EPC-related operations. There are other, more prioritized, matters such as waste treatment, wind power, agriculture, or social care that are supported by the local government due to the population’s interest. Thus, according to the interviewee, the municipality is currently not able to focus on other alternative transportation issues (Norrby, 2016).

4.3.2 Project Leaders of Elbil Gotland and Elbilslanetd

Elbil Gotland and Elbilslanetd are two projects running on Gotland that work on the implementation and promotion of EPCs. As experts out of this field both project leaders were interviewed.
Both interviewees agreed in the opinion that the purchase price as a value barrier is a critical reason for consumers to not consider buying or using an EPC. According to Sandström (2016), there is a general interest, however, consumers tend to think in the first place about economics and “see only the initial costs, but don’t know about the generally lower costs” of an EPC regarding service requirements or fueling for example compared to an ICE (Sandström, 2016). Malmsten (2016) complemented this by explaining that people think EPCs are expensive to buy. Few consider that there are leasing offerings for e.g. 3,000 Swedish krona per month or do the overall calculation which includes much lower running cost (Malmsten, 2016). Nevertheless, consumers tend to prioritize the initial cost of the product. Thus, the purchase price is identified as a value barrier. Despite the price, the lacking knowledge of consumers need to be considered here to an equal extent although it cannot be categorized within the theoretical framework. Malmsten (2016) argued that electricity is much cheaper than petrol and “if you live on Gotland it is almost impossible to run out of reach”. The problem is that people just do not know that. Other potential advantages, like the possibility to charge the car from home, are not known by most people as well. Sandström (2016) called the lacking knowledge and awareness among consumers the “pedagogical problem”. In his opinion, people need to be explicitly informed about the innovation (Sandström, 2016).

Another reason categorized in the category of value barriers is the governmental support. However, this support exceeds the definition of the theoretical framework in terms of providing financial support for consumers in order to increase their willingness to buy EPCs. According to the interviewees, governmental support should include additionally political regulations for the car industry in order to provide them incentives to distribute more EPCs, and also the support for enabling the expansion and improvement of the charging infrastructure with public charging stations. Sandström (2016) explained that the legislation which is in his opinion one of the main reasons for the current non-adoption, does not support EPCs in any way. Such support includes for example regulations or incentives that motivate consumers to buy EPCs. Sandström (2016) claimed that political decisions are crucial since the resulting rules and laws are binding for the car industry and the car dealers. Thus, such decisions are to a certain extent deciding what the car dealers do. When it comes to the car dealers, Sandström (2016) named also the aspect that salesmen receive a lower commission for selling an EPC compared to an ICE, which certainly influences which types of car they promote.
Malmsten (2016) confirmed this issue regarding the commission. Moreover, there are no incentives for car dealers to sell EPCs, as on the one hand it is more difficult to explain a perceived new innovation to customers than to explain a conventional car which a customer often already knows about. On the other hand, ICEs require for example much more service after the actual purchase than EPCs, which might mean less profit due to sold EPCs for the industry according to Malmsten (2016).

Furthermore, with regard to the usage barriers, Sandström (2016) claimed that the existing charging infrastructure was developed and installed exclusively by the two projects and that the municipality contributed and still contributes very little to it. This is in line with Malmsten’s (2016) explanation that “the municipality hasn’t invested in public chargers yet. They have two or three, which is not enough” (Malmsten, 2016). The infrastructure can serve about 1,500 EPCs, and nearly all charging stations are located on private property as the municipality did not allow using public spaces. According to Malmsten (2016), there is currently no political strategy present for an extension of the charging infrastructure in public parking spaces which would make it possible for visitors of e.g. Visby and people living in housing estates to charge. This is also important as only people who have access to own parking lots next to their houses can charge their EPCs at home. People who live in an apartment would need an alternative way to charge their cars (Sandström, 2016). Nevertheless, the existing charging infrastructure can be generally seen as sufficient and is thus is not considered as a usage barrier. Rather the governmental support as described above seems to be the source of this issue. As Malmsten (2016) explained, it is the municipality’s responsibility to fulfil the national goal to have a car fleet that is not dependent on fossil fuel by 2030. The municipality needs a relatively high amount of cars (according to Municipality Region Gotland, 2016, about 400) and it could be one way to fulfil this goal by replacing the car fleet partly with EPCs to drive the development. Another way could be to continue using biogas-driven cars for the municipality’s car fleet and simultaneously make it possible for consumers to use electric cars, e.g. by setting a plan for a charging infrastructure in public spaces (Malmsten, 2016).

4.3.3 Car Dealers
In order to get insights into the car dealers’ perspective, two sales men who work at two separate car dealers offering EPCs on Gotland were interviewed.
The main argument that prevents people from buying EPCs is according to the salesmen the purchase price. Thus, this reason is identified as a value barrier. Salesman 1 explained that there is a general interest in EPCs but that the price prevents people from buying one despite their interest. This is in line with the statement of Salesman 2, who explained that customers are only interested in EPCs if there are “good leasing-offers” from car brands, like for the Nissan Leaf from November 2015 until March 2016. Since there are currently no such offers available, EPCs were following not promoted by local car dealers on Gotland. In this context, Salesman 1 explained that EPCs are not promoted in any way and customers are often already informed about the car they would like to buy when coming to the car dealer. Information about EPCs is provided if the customer asks for them but the salesmen “don’t promote EPCs that much” according to Salesman 2. This might contribute to consumers’ apparently lacking awareness of EPCs on Gotland, as determined in the previous sections.

Another reason identified as a value barrier is the lacking governmental support, as financial aids for the buyers would increase the sales numbers of EPCs considerably in the car dealer’s opinion. Salesman 1 claimed that the government has to provide “more financial support” for the buyer and mentioned Norway as example, where people do not have to pay taxes for EPCs. In addition, the interviewee said that the existing financial return of 40,000 Swedish krona that consumers receive when buying an EPC is not enough. According to Salesman 1, many more consumers would consider and actually realize buying an EPC if the government would offer financial incentives.

4.3.4 Municipality Region Gotland

With the purpose to get to know the municipality’s general opinion about EPCs on Gotland and why they do not find a higher level of acceptance, the leader of strategy for environmental development of the municipality Region Gotland was interviewed.

According to the interviewee, for the municipality’s own car fleet the purchase price as well as worries if it is economical worthwhile to use EPCs are the main reasons not to use them. These reasons represent value barriers.

Furthermore, the usage barrier regarding the limited range of an EPC is perceived as questionable for the fulfilment of the municipality Region Gotland’s responsibilities and daily operations, like the health and care services.
The representative of the local government discussed these different reasons responsible for the non-adoption of EPCs for the largest part regarding the municipality’s own car fleet, and not relating to the Gotlandic consumers. However, as these reasons are in line with the reasons mentioned by the consumers themselves as well as by the interviewed experts, the barriers will be considered for the further analysis and discussion though.

Factors that might contribute to the non-adoption of EPCs but are not part of the theoretical framework were described apart from the already mentioned barriers. About 60 – 70% of the municipality’s car fleet consists of biogas cars due to a commercial agreement with car suppliers. According to the interviewee, the public decision to support biogas is binding until the year 2019. The interviewee stated further that there is indeed a lack of governmental support present, since the municipality decided on the one hand upon biogas for alternative transportation and on the other hand sees EPCs being not an economic solution right now. The interviewee added that EPCs might be economically viable in about five years and thus may be an option to consider for the next commercial agreement with the car suppliers. According to the interviewee EPCs are above all suitable for private persons and for small businesses.

Despite the prioritization of the municipality’s role to push the local use of EPCs by the previously analyzed interviewees, the governmental representative made clear that the municipality itself plans to support the installation of further charging stations by only offering and proposing public places and spaces for parking and charging spaces for EPCs. The supply of charging and parking places will be considered in the municipality’s parking strategy. However, an economical support or the installation itself is not intended and has to be realized by other actors, so the interviewee. Governmental support for the consumers themselves, for example through financial aids, can only be decided on a national level and not by a county itself. Considering this it looks like the municipality would deny the task of supporting EPCs in Gotland.

4.4 Analysis Summary
Back to the framework of rejecters, postponers, and opponents as already mentioned in the theory chapter, the consumers on Gotland represent the group of postponers.
Although 50% of the survey’s respondents consider EPCs as an option but are not sure yet if they will really buy one in the future, which actually identifies them as opponents, the data analysis reveals that consumers are postponers indeed. As described in the theory chapter, postponement is typical for technological innovations since people wait for a ‘better version’ of the product. This is also reflected by the collected data as already presented above.

When looking at the theoretical framework used for this study, the reasons for the non-adoption of EPCs on Gotland are according to the data analysis the usage barriers with the arguments range and charging infrastructure, the value barriers in terms of the purchase price and the governmental support, and the risk barrier regarding the battery technology. These functional barriers mean according to the definition, that consumers have to face changes due to the innovation adoption (Ram and Sheth, 1989). Referred to the study’s case EPCs are for example on the one hand not compatible with a consumer’s current habits and on the other hand mean functional and economic risk for them. Only the survey revealed the tradition barrier because of the potentially necessary alternative transportation as well as the image barrier regarding the model variety offered by the EPC market. However, as explained previously, the results were rather unclear regarding these arguments. Since none of the other involved interviewees referred to these points again, the alternative transportation as well as the model variety of EPCs are not defined as reasons for the non-adoption of EPCs in the case of Gotland and will therefore not be included in the further discussion. After analyzing all data according to the theoretical framework, it thus turns out that no psychological barriers could be identified. This means that the innovation of an EPC does not conflict with the consumers’ past experiences (Ram and Sheth, 1989). Only the mentioned functional barriers exist on Gotland.

However, in this case it is important, if not crucial, that also aspects which cannot be categorized in one of the barriers according to Ram and Sheth’s (1989) model need to be considered. Exactly these aspects contribute according to the data analysis considerably to the consumer resistance behavior towards EPCs on Gotland. These are first, consumers’ lacking knowledge about the product itself as well as the lacking awareness about the current status of development on a local level. Second, the local car industry which represents an influential factor on consumers’ behaviour and attitude regarding the buying decision of a car. Third, the local government, as one of the most discussed arguments during the data collection, which is crucial when it comes to consumers’ attitudes towards EPCs.
Thus, the following chapter explains the three mentioned aspects more in-depth and demonstrates the interrelations between them. This intends to emphasize how consumer resistance towards EPCs on Gotland is mainly formed by these.
5. The Case of Gotland

There were three main aspects identified due to the findings of the analysis. After describing these on a deeper level, it will be explained how these aspects modify the framework originally used for this study. The chapter ends with the demonstration of how the revealed aspects are related to each other and how they form consumers’ resistance towards EPCs on Gotland.

5.1 Consumers’ Knowledge and Awareness

Only people that already are interested in alternative transportation and particularly in electric mobility have a certain degree of knowledge and awareness about this issue (Norrby, 2016). The majority of the interviewed consumers is not aware of the existing infrastructure and has too few information about the product itself to be able to estimate if this product is suitable for them or not. Especially the respondents of the questionnaire could often not even decide if one of the arguments is a barrier for them as they obviously just do not have the according information to estimate that. This is also in line with the statements of other interviewees:

*People don’t know that electric cars are as good as they are, they think that they are very small and can only go for short distances. [...] You run for about two [Swedish] crona per 10 km, which is cheaper than petrol. But people don’t know that. And if you live on Gotland it is almost impossible to run out of reach. So, I think knowledge is the problem.* (Malmsten, 2016)

Sandström (2016) describes this as a pedagogical problem, as people are not informed, although there is interest in this topic. This is in line with the car dealers’ statements, as they do not promote EPCs and customers generally inform themselves previously about the cars they are interested in. Due to the lacking public promotion and the missing provision of information about EPCs, consequently only those groups of people that are actively interested in this topic or drive EPCs themselves have the required knowledge and awareness.

*It is uncertain [...] when you want to buy a car and you don’t know how it is going to work. So, when everything seems to be more a science project, then people will stick to the gasoline and diesel cars instead.* (Norrby, 2016)
Considering especially the non-drivers’ uncertainty regarding above all technical and economic issues due to lacking knowledge and awareness, this leads to the non-adoption of EPCs despite the growing interest in this topic (Sandström, 2016; Malmsten, 2016; Salesman 1, 2016; Group Interview, 2016).

5.2 The Local Car Industry

When searching for barriers that might be responsible for consumers’ resistance towards EPCs on Gotland, the car industry plays according to the findings of the study an important role.

On a global level, the car industry influences the functional issues regarding EPCs, like the battery technology and issues such as the model variety. Barriers that are related to these fields and that prevent consumers from adopting EPCs might concern not only the consumers on Gotland but consumers on a global level. However, particularly the local car industry on Gotland seems to be to a certain extent responsible for Gotlandic consumers’ behavior and attitude regarding their cars (Norrby, 2016). The considerably high amount of old cars on Gotland (Norrby, 2016) implies that people indeed do not tend to switch to new variations of car models. This is in line with Norrby’s (2016) explanation that people on Gotland tend to let their cars repair as long as it is possible and that it is rather unusual to buy another car instead. However, if a consumer decides to buy a new car at any of the local car dealers, these can influence the consumer’s buying decision to a huge extent. According to salesman 2, EPCs are only presented if customers explicitly ask for them. There is no promotion of EPCs on the part of the car dealers; the only promotion comes from the car brands themselves. Furthermore, the EPCs are for example not positioned obviously for customers but located at the backside of the building in the case of car dealer 2 (Salesman 2, 2016). As a further outcome of the interviews with potential consumers, people did not feel provided with sufficient information when they asked the car dealers for consultation about EPCs which required self-studies in order to get informed about EPCs (Group Discussion, 2016). Therefore, the local car industry is relevant in terms of its contribution to the consumers’ lack of knowledge and awareness when it comes to EPCs on Gotland.
5.3 The Local Government

The issue of governmental support was highly discussed as a value barrier throughout the different sources of data. However, the argument according to the theoretical framework includes only the financial support for the buyers of EPCs. In this study, though, governmental support does not only mean financial aid for consumers, since according to the municipality this has to be decided upon the national level anyway and counties are not able to provide financial support on a local level (Municipality Region Gotland, 2016). Much more than this argument, the whole local political strategy on Gotland is included and means support in terms of fostering the further implementation of EPCs by e.g. extending an appropriate infrastructure through the provision of public spaces for the installation of charging stations.

“The main problem is the legislation, the government.” (Sven Sandström, 2016)

Local political decisions are extremely important as the resulting rules and laws are binding for the car industry and thus deciding what car dealers do and which type of car is primarily promoted. Particularly in the case of Gotland, the municipality and the car dealers are closely related in an economic sense, since there are contracts or agreements between them regarding the municipality's own car fleet. Since the municipality represents thus a relative big purchaser for the car dealers, the municipality means a particularly big incentive for car dealers to sell the cars this organization demands, which are until 2019 ostensibly biogas-driven cars. Consequently, in combination with other factors mentioned previously (e.g. lower commission for EPCs) the promotion and sales of EPCs fade into the background which again affects the consumers in a way that they neither perceive nor consider EPCs in their buying decision. Additionally, all interviewed persons agreed on the point that governmental support is one of the preconditions that is obligatory for the successful implementation of EPCs. What is currently the most crucial issue is the use of public spaces in order to expand the charging infrastructure (Malmsten, 2016; Sandström, 2016). This can only be realized with the support of the municipality which has to permit the use of these spaces. In this context, the municipality’s attitude towards this issue needs to be noted:
As a municipal organization, we are not planning to be the one who supply other with charging stations. We cannot support the installation economically. [...] What we can do is to use our parking strategy that we will use to decide where it is most efficient to have loading stations for EVs and then we will have to let some other put the loading station and the payment services. (Municipality Region Gotland, 2016)

Despite these plans and considering that until now only very few public charging stations were installed, nothing contributive happened since the projects have been started. This implies that the lacking governmental support might even hinder the successful adoption of EPCs on Gotland.

5.4 The Modified Framework for the Case of Gotland

In the case of Gotland, it is not sufficient to narrow the reasons for the resistance towards EPCs down to the theoretical framework used for this study. This would not reflect the actual case and the ‘whole’ picture of the situation of EPCs on Gotland. Therefore, the framework needs to be modified and also extended with additional barriers according to the findings.

Considering the theoretical framework of Ram and Sheth (1989), the reasons for consumer resistance towards EPCs on Gotland can be found in the functional barriers. Although these are valid and applicable in the case of Gotland, they can also be traced back to the three aspects of consumers’ knowledge and awareness, the local car industry, and local government which considerably contribute to consumers’ resistance towards EPCs on Gotland. Thus, the case of Gotland requires a broader consideration and classification of barriers responsible for consumers’ resistance than identified in previous literature. The three aspects can be categorized into the new overarching main barriers which are named institutional, contextual, and cognitive barriers. The according political, industrial, and pedagogical barriers and the respective arguments are specifically related to the case of Gotland (see Figure 2).
5.4.1 The Institutional Barrier

The institutional barrier includes all local public institutions which potentially influence consumer resistance behavior. The corresponding political barrier refers to the local government on Gotland since the data analysis revealed that the political activities can potentially strengthen or weaken the existing barriers. If the municipality would for example provide public spaces for the expansion of the charging infrastructure, which is by most of the consumers perceived as insufficient, this previously identified usage barrier could be weakened. Therefore, it can be assumed that the local municipality can indeed support the implementation of EPCs in several ways. Since such issues influence not only consumers’ behavior but also the local car industry, this point cannot be categorized exclusively as a value barrier, but rather needs to be considered as a separate barrier that includes all of the mentioned points.

5.4.2 The Contextual Barrier

The contextual barrier includes all economic, social, and industrial environments that potentially influence the consumer resistance behavior. The industrial barrier refers to the local car industry on Gotland and includes all economic and functional issues in the context of EPCs as well as their promotion and how this is influencing consumers’ behavior towards EPCs.
The industry’s seemingly lacking incentives and lacking promotion of EPCs contributes in the case of Gotland to the lacking awareness and knowledge of consumers regarding EPCs. Therefore, the local car industry is one of the reasons responsible for the non-adoption of EPCs on Gotland.

5.4.3 The Cognitive Barrier
Considering the category of cognitive barriers, which are generally related to consumers’ level of knowledge about an innovation, the corresponding pedagogical barrier refers to consumers’ knowledge and awareness regarding EPCs, which is in the case of Gotland necessary in order to reach a further adoption of EPCs. It is called a pedagogical barrier, as people need to be informed about the topic of EPCs by other instances and actors. This need is emphasized by the finding this study revealed that consumers had to inform themselves about EPCs which might not be possible to an appropriate extent all the time.

5.5 The Shaping of Consumer Resistance Behavior towards EPCs on Gotland
As the upside down pyramid in figure 3 shows, the three fields to which the barriers can be referred to are influencing each other from the top to the bottom. Related to the case of Gotland and due to the findings of this study’s investigation the local government means the overarching aspect when searching for reasons for consumers’ resistance towards EPCs. The local government brings off political barriers which are in turn influencing the car industry as well. Considering the car dealers on Gotland it is up to them to inform their customers about economic and functional characteristics of EPCs. However, since selling EPCs seems not to be in the interest of the car dealers for several reasons, an according promotion of EPCs does not occur. This fact in turn contributes to the lacking knowledge and awareness of consumers regarding EPCs. Nevertheless, not only the local car dealers but also the government can contribute to an arising degree of knowledge and awareness of people on Gotland by informing people about e.g. financial support or the charging infrastructure which would weaken the barrier of knowledge and awareness.
If the interference of the three fields as described above could end up in a closed circle of interdependencies when an increased interest and demand from consumers’ side occurs is left to future research.
6. Conclusion and Further Research

In a global strive for sustainability, countries set ambitious political goals while industries develop innovative products in order to progress towards a more sustainable development. EPCs as a technological innovation, which seem particularly appropriate for the Swedish island Gotland, represent an alternative to conventional ICEs. Nevertheless, due to the existing resistance behavior on Gotland, EPCs do not find further adoption among consumers. The purpose of this study was thus to identify the reasons for this resistance behavior. The motivations were twofold: On the one hand, the authors intended to contribute theoretically to the under-researched phenomenon of consumer resistance. On the other hand, the identified reasons could shed new light on the special case of the non-adopted EPCs on Gotland. To conduct this study, Ram and Sheth’s (1989) previously identified barriers served as the base for the theoretical framework.

These were complemented with further particular reasons for the non-adopter of EPCs found by previously conducted studies. A survey, a group interview with Gotlandic people as well as different expert interviews with representatives from the car industry, the local municipality, the local public relations sector, and the local projects involved in EPC issues on Gotland, served as data sources. The data analysis revealed interesting findings. First of all, consumers on Gotland can be classified as postponers who delay the decision whether to buy an EPC or not to a point of time in the future. Reasons for that and also for the consumer resistance on Gotland are only functional barriers considering the framework used for this study. These barriers are the limited range, the charging infrastructure, the purchase price, and the battery technology. However, the named barriers do not present the case of Gotland appropriately as strong barriers could be identified that are not part of the theoretical framework. The overarching reasons why consumer resistance behavior exists to that extent on Gotland are first the local government, second the local car industry, and third consumers’ lacking knowledge and awareness. These reasons can be categorized into more general barriers, as described in the following. Institutional barriers arise since the local government does not provide sufficient support for the further implementation of electric cars and related issues. Contextual barriers are in the case of Gotland represented by the local car industry which contributes considerably to the existence of the last identified barrier, namely the cognitive barrier.
Such a barrier is in the case of Gotland clearly evident in form of the pedagogical barrier which concerns the consumers themselves since their lacking knowledge and awareness about issues related to electric cars on Gotland is one of the main reasons for the resistance towards this innovation. Therefore, the used theoretical framework was adapted to the findings and the institutional, contextual, and cognitive barriers were added. These barriers are clearly evident in the case of Gotland and do not only influence each other but also to a considerable extent influence and shape the consumer resistance on Gotland.

This study can also serve as a base for further research. Future studies could relate the findings to existing research about for example the influence of consumers’ knowledge on their purchasing behavior or similar. Other researchers could also for example investigate if these findings can be applied for innovative products in general, especially regarding the institutional, contextual, and cognitive barriers, or only in case of EPCs. If so it could be further explored if the barriers identified by Ram and Sheth (1989) need to be complemented with other, more overarching, barriers as well. Furthermore, it could be examined whether the findings are valid also for other places and countries, or to which extent other findings differ from the case of Gotland. This study’s findings might lead to interesting and relevant implications which is left to further research. The study might also serve as a base for the local actors involved in EPC issues on Gotland to plan further steps in order to increase consumers’ adoption of EPCs and thus to contribute to a more sustainable development.
Literature References


Salesman 2 (2016). Interview with V. Engesser and I. Sawatzki on 02 May 2016. Visby. [Recording in possession of authors].


Appendix

A: Questionnaire of the survey conduction

Electric Cars on Gotland


We, Valeska and Inna, are studying 'Sustainable Management' at the Uppsala University on Campus Gotland. In the framework of our master's thesis we investigate the situation of electric passenger cars on the island from a consumer's perspective. With the results of this questionnaire we want to contribute to a better understanding of what people think about electric cars.

All questionnaires are of course treated anonymously. Please take about 5 - 10 minutes to fill in this questionnaire.

We appreciate your participation, thank you very much!

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Mail: inna_sawatzki@yahoo.de

Valeska Engesser
Tel.: +49 176 80745666
Mail: valeskaengesser@web.de

Kontakta oss om ni undrar något.
Please feel free to contact us anytime in case you have questions!
Electric Cars on Gotland

Markera det svar som bäst överensstämmer med er uppfattning.

Please tick the most appropriate answer!

Kön
Gender

☐ Kvinna
Female

☐ Man
Male

Ålder
Age

☐ Yngre än 20 år
Younger than 20 years

☐ 21 – 30 år
21 – 30 years

☐ 31 – 40 år
31 – 40 years

☐ 41 – 50 år
41 – 50 years

☐ 51 – 60 år
51 – 60 years

☐ Äldre än 60 år
Older than 60 years

Vilken typ av bil kör du nu?
Which type of car are you currently driving?

☐ Bensin
Petrol

☐ Diesel
Diesel

☐ Biogas
Gas

☐ El
Electric

☐ Jag har ingen bil.
I don’t have a car.
Vilken typ av bil letar du efter?
*Which type of car are you looking for?*

- Bensin
  *Petrol*
- Diesel
  *Diesel*
- Biogas
  *Gas*
- El
  *Electric*
- Just nu jag söker ingen bil.
  *Currently, I'm not looking for a car.*

Hur många km kör du i snitt per dag?
*How many kilometers do you drive per day?*

- 0 – 5 km
- 6 – 50 km
- 51 – 100 km
- Mer än 100 km
  *More than 100 km*

Har du några erfarenheter av Elbilar?
*Do you have any previous experience with electric cars?*

- Ja.
  *Yes.*
- Nej.
  *No.*

Är du intresserad av Elbilar?
*Are you generally interested in electric cars?*

- Ja.
  *Yes.*
- Nej.
  *No.*
Electric Cars on Gotland

Markera det svar som bäst överensstämmer med er uppfattning.
Please tick the most appropriate answer!

1. Jag anser att räckvidden på en genomsnittlig Elbil är tillräcklig.
   In my opinion, the range of an average electric car is sufficient.

   1  □  Håller helt med
   2  □  Håller ganska med
   3  □  Osäker
   4  □  Håller inte riktigt med
   5  □  Håller absolut inte med

   Strongly agree  Mostly Agree  Not sure  Mostly disagree  Strongly disagree

   In my opinion, the public infrastructure on Gotland is sufficient to charge electric cars regularly to manage the daily distances.

   1  □  Håller helt med
   2  □  Håller ganska med
   3  □  Osäker
   4  □  Håller inte riktigt med
   5  □  Håller absolut inte med

   Strongly agree  Mostly Agree  Not sure  Mostly disagree  Strongly disagree

   I believe that I can charge an electric car with the attached cable everywhere on every charging station, independently of place and country.

   1  □  Håller helt med
   2  □  Håller ganska med
   3  □  Osäker
   4  □  Håller inte riktigt med
   5  □  Håller absolut inte med

   Strongly agree  Mostly Agree  Not sure  Mostly disagree  Strongly disagree

4. Jag anser att laddningstiderna av Elbilen inte skulle påverka mina dagliga behov.
   In my opinion, the charging times of an electric car do not influence my daily structure.

   1  □  Håller helt med
   2  □  Håller ganska med
   3  □  Osäker
   4  □  Håller inte riktigt med
   5  □  Håller absolut inte med

   Strongly agree  Mostly Agree  Not sure  Mostly disagree  Strongly disagree
5. Jag anser att en Elbil erbjuder samma funktionalitet och bekvämlighet som en motsvarande konventionell bil.
In my opinion, an electric car offers generally the same functionality and the same features as a conventional internal combustion engine car.

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In my opinion, the average purchasing costs for an electric car are not higher than for a conventional internal combustion engine car.

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7. Användningen av Elbilar är ekonomisk.
The use of electric cars is economical.

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8. Jag anser att regeringen borde stödja Elbilsförsäljningen genom olika bidrag.
In my opinion, the use of electric cars should be supported governmentally by incentive programs.

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I fear that the battery technology has not yet been sufficiently developed to use an electric car.

1 2 3 4 5
Håller helt med Håller ganska med Osäker Håller inte riktigt med Håller absolut inte med
Strongly agree Mostly Agree Not sure Mostly disagree Strongly disagree

10. I kan föreställa mig att använda Elbilen i kombination med kollektiv trafik på längre sträckor.

I can imagine to switch to public transportation for longer distances than the electric car can manage (fully charged).

1 2 3 4 5
Håller helt med Håller ganska med Osäker Håller inte riktigt med Håller absolut inte med
Strongly agree Mostly Agree Not sure Mostly disagree Strongly disagree


I might be perceived differently by others when becoming an electric-car-driver.

1 2 3 4 5
Håller helt med Håller ganska med Osäker Håller inte riktigt med Håller absolut inte med
Strongly agree Mostly Agree Not sure Mostly disagree Strongly disagree


In my opinion, electric cars are a sustainable and environmentally friendly alternative to conventional internal combustion engine cars.

1 2 3 4 5
Håller helt med Håller ganska med Osäker Håller inte riktigt med Håller absolut inte med
Strongly agree Mostly Agree Not sure Mostly disagree Strongly disagree
In my opinion, the electric car market offers an appropriate variety of car models.

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In my opinion, electric cars are for everyone.

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15. Kan du tänka dig att äga Elbil i framtiden?
Can you imagine owning an electric car in the future?

- Jag har redan Elbil. 
  I already do own an electric car.
- Ja, inom de närmaste 5 åren. 
  Yes, within the next 5 years.
- Kanske, jag är inte säker. 
  Maybe, I am not sure yet.
- Nej, inte alls. 
  No, not at all.
- Inget svar. 
  No answer.

Tack så mycket! 
Thank you!
B: Guidelines: Semi – structured Interviews

Although the interviews were guided by these questions, it needs to be considered that the order of the questions varied according to the particular interview. Furthermore, questions were sometimes added depending on the specific interview and interviewee. Departing from these questions, the interview developed into a broader discussion which gave us detailed insights into the expert’s fields.

Questions:

1. Do you think there is a general interest in electric cars on Gotland?
2. Do you know about the running projects regarding electric cars on Gotland?
3. What does the electric car market on Gotland look like?
4. Are electric cars promoted in any way?
5. Currently, there are about 50-60 registered electric cars on Gotland. Why, do you think, aren’t there more?
6. Do you think the barriers are rather technical regarding the product, or rather because of the people themselves?
7. How do you think could the further implementation of electric cars be supported?
### C: Overall results of the data collection

<table>
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<tr>
<th>Barrier</th>
<th>Argument</th>
<th>Consumers</th>
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